Estia Dry Creek and Placer Creek Residential Project

SCH# 2025040378

Draft Environmental Impact Report

Prepared for

Placer County

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Prepared by

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TABLE OF CONTENTS

TABLE OF CONTENTS

CHAPTER **PAGE**

1. Introduction 1-1

1.1 Type and Purpose of the EIR 1-1
1.2 Known Responsible and Trustee Agencies 1-2
1.3 Project Summary 1-3
1.4 EIR Process 1-5
1.5 Scope of the EIR 1-6
1.6 Definition of Baseline 1-6
1.7 Significance Criteria 1-7
1.8 Notice of Preparation and Scoping 1-8
1.9 Comments Received on the Notice of Preparation 1-9
1.10 Draft EIR and Public Review 1-11
1.11 Organization of the Draft EIR 1-11
1.12 Technical Chapter Format 1-14
1.13 Final EIR and EIR Certification 1-16

2. Executive Summary 2-1

2.1 Introduction 2-1
2.2 Summary Description of the Proposed Project 2-1
2.3 Environmental Impacts and Mitigation 2-3
2.4 Summary of Project Alternatives 2-3
2.5 Areas of Known Controversy 2-7

3. Project Description 3-1

3.1 Introduction 3-1
3.2 Project Location 3-1
3.3 Project Setting and Surrounding Land Uses 3-1
3.4 Project Objectives 3-4
3.5 Project Components 3-5
3.6 Project Approvals 3-25

4. Aesthetics 4-1

4.1 Introduction 4-1
4.2 Existing Environmental Setting 4-2
4.3 Regulatory Context 4-9
4.4 Impacts and Mitigation Measures 4-15

5. Agricultural Resources 5-1

5.1 Introduction 5-1
5.2 Existing Environmental Setting 5-1
5.3 Regulatory Context 5-10
5.4 Impacts and Mitigation Measures 5-16

CHAPTER **PAGE**

6. Air Quality and Greenhouse Gas Emissions 6-1

6.1 Introduction 6-1
6.2 Existing Environmental Setting 6-1
6.3 Regulatory Context 6-16
6.4 Impacts and Mitigation Measures 6-32

7. Biological Resources 7-1

7.1 Introduction 7-1
7.2 Existing Environmental Setting 7-1
7.3 Regulatory Context 7-27
7.4 Impacts and Mitigation Measures 7-45

8. Cultural Resources 8-1

8.1 Introduction 8-1
8.2 Existing Environmental Setting 8-1
8.3 Regulatory Context 8-8
8.4 Impacts and Mitigation Measures 8-13

9. Energy 9-1

9.1 Introduction 9-1
9.2 Existing Environmental Setting 9-1
9.3 Regulatory Context 9-5
9.4 Impacts and Mitigation Measures 9-14

10. Geology and Soils 10-1

10.1 Introduction 10-1
10.2 Existing Environmental Setting 10-1
10.3 Regulatory Context 10-8
10.4 Impacts and Mitigation Measures 10-12

11. Hazards and Hazardous Materials 11-1

11.1 Introduction 11-1
11.2 Existing Environmental Setting 11-1
11.3 Regulatory Context 11-6
11.4 Impacts and Mitigation Measures 11-13

12. Hydrology and Water Quality 12-1

12.1 Introduction 12-1
12.2 Existing Environmental Setting 12-1
12.3 Regulatory Context 12-10
12.4 Impacts and Mitigation Measures 12-23

13. Land Use and Planning/Population and Housing 13-1

13.1 Introduction 13-1
13.2 Existing Environmental Setting 13-1
13.3 Regulatory Context 13-11
13.4 Impacts and Mitigation Measures 13-13

CHAPTER **PAGE**

14. Noise 14-1

14.1 Introduction 14-1
14.2 Existing Environmental Setting 14-1
14.3 Regulatory Context 14-6
14.4 Impacts and Mitigation Measures 14-14

15. Public Services and Utilities 15-1

15.1 Introduction 15-1
15.2 Existing Environmental Setting 15-2
15.3 Regulatory Context 15-12
15.4 Impacts and Mitigation Measures 15-27

16. Transportation 16-1

16.1 Introduction 16-1
16.2 Existing Environmental Setting 16-2
16.3 Regulatory Context 16-8
16.4 Impacts and Mitigation Measures 16-16

17. Tribal Cultural Resources 17-1

17.1 Introduction 17-1
17.2 Existing Environmental Setting 17-1
17.3 Regulatory Context 17-4
17.4 Impacts and Mitigation Measures 17-7

18. Wildfire 18-1

18.1 Introduction 18-1
18.2 Existing Environmental Setting 18-1
18.3 Regulatory Context 18-13
18.4 Impacts and Mitigation Measures 18-18

19. Effects Not Found to be Significant 19-1

19.1 Introduction 19-1
19.2 Aesthetics 19-1
19.3 Agricultural Resources 19-1
19.4 Geology and Soils 19-2
19.5 Hazards and Hazardous Materials 19-3
19.6 Land Use and Planning/Population and Housing 19-3
19.7 Noise 19-4

20. Statutorily Required Sections 20-1

20.1 Introduction 20-1
20.2 Growth-Inducing Impacts 20-1
20.3 Cumulative Impacts 20-5
20.4 Significant Irreversible Environmental Changes 20-7
20.5 Significant and Unavoidable Impacts 20-8

CHAPTER **PAGE**

21. Alternatives Analysis

21.1 Introduction 21-1
21.2 Purpose of Alternatives 21-1
21.3 Selection of Alternatives.....21-9
21.4 Environmentally Superior Alternative.....21-28

22. EIR Authors and Persons Consulted 22-1

23. References 23-1

Appendices

Appendix A Notice of Preparation (NOP)
Appendix B NOP Comment Letters
Appendix C Air Quality and Greenhouse Gas Emissions Modeling Results
Appendix D Biological Resources Assessment
Appendix E Geotechnical Due Diligence Review
Appendix F Phase I Environmental Site Assessment
Appendix G Drainage Reports
Appendix H Noise Technical Report
Appendix I Preliminary Water Report
Appendix J Wastewater Report
Appendix K Vehicle Miles Traveled (VMT) Memorandum
Appendix L Local Transportation Analysis

LIST OF FIGURES

FIGURE **PAGE**

3. Project Description

3-1 Regional Location 3-2
3-2 Project Location 3-3
3-3 Conceptual Site Plan 3-6
3-4 Existing and Proposed General Plan/DCWPCP Land Use Designations 3-8
3-5 Existing and Proposed Zoning Designations 3-9
3-6 Large Lot Tentative Subdivision Map 3-11
3-7 Vesting Phased Small Lot Tentative Subdivision Map....3-12
3-8 Off-Site Affordable Housing Parcel Location 3-13
3-9 Conceptual Landscape Plan (1 of 2) 3-17
3-10 Conceptual Landscape Plan (2 of 2) 3-18
3-11 Sewer Routing 3-21
3-12 Community Facility District #1 Sewer Lift Station Location 3-24

4. Aesthetics

4-1 Existing View of the Project Site from Baseline Road, Looking Southwest....4-3
4-2 Existing View of the Project Site from Walerga Road, Looking Northwest....4-4
4-3 Existing View of the Project Site from Walerga Road, Looking East....4-5
4-4 Existing View of the Project Site from Vineyard Road, Looking West....4-6
4-5 Existing View of the Off-Site Affordable Housing Parcel from PFE Road, Looking North 4-8
4-6 Existing Versus Simulated Post-Project Conditions from Baseline Road, Looking Southwest....4-19
4-7 Existing Versus Simulated Post-Project Conditions from Walerga Road, Looking Northwest 4-20
4-8 Existing Versus Simulated Post-Project Conditions from Walerga Road, Looking East 4-21
4-9 Existing Versus Simulated Post-Project Conditions from Vineyard Road, Looking West 4-22

5. Agricultural Resources

5-1 Project Site FMMP Classifications 5-4
5-2 Off-Site Affordable Housing Parcel FMMP Classifications....5-5
5-3 Project Site Soil Types 5-8
5-4 Off-Site Affordable Housing Parcel Soil Types 5-9

7. Biological Resources

7-1 On- and Off-Site Study Areas....7-3
7-2 Aquatic Resources, On-Site Land Covers, and Observed Species Locations 7-5
7-3 PCCP Stream System and CARP Riparian Buffers....7-9

FIGURE **PAGE**

7-4 California Natural Diversity Database Occurrences and Critical Habitat 7-10
7-5 Impacts to Aquatic Resources and Land Covers 7-52
7-6 Impacts to PCCP-Specific Boundaries 7-91

9. Energy

9-1 California Energy Generation by Source 9-4
9-2 California Energy Consumption by Sector 9-4

10. Geology and Soils

10-1 Soil Sample Location Map 10-5

12. Hydrology and Water Quality

12-1 Project Site FEMA FIRMs 06061C0938H and 06061C1026H 12-4
12-2 Off-Site Sewer Lift Station Improvements Area FEMA FIRM 6061C1026H 12-5
12-3 Existing Dry Creek Walerga Road Tributary Watershed 12-6
12-4 Pre-Development Overall Drainage Shed Map 12-7
12-5 Off-Site Affordable Housing Parcel FEMA FIRM 06061C1007H 12-9
12-6 Drainage Management Areas 12-33
12-7 Phase 1 Underground Volumetric Retention Option 12-43
12-8 Phase 1 Post-Development Drainage Shed Map 12-46
12-9 Phase 2 Post-Development Drainage Shed Map 12-47
12-10 Phase 3 Post-Development Drainage Shed Map 12-48
12-11 Phase 4 Post-Development Drainage Shed Map 12-49
12-12 Baseline Road Backbone Infrastructure Post-Development Drainage Shed Map 12-50
12-13 Walerga Road Backbone Infrastructure Post-Development Drainage Shed Map 12-51
12-14 Proposed Dry Creek Walerga Road Tributary Watershed 12-52
12-15 Walerga Tributary Profile and Walerga Road Culvert Cross Section 12-56

13. Land Use and Planning/Population and Housing

13-1 Existing Land Use Designations and Zoning Districts 13-4
13-2 Existing and Proposed PCGP/DCWPCP Land Use Designations 13-18
13-3 Existing and Proposed Zoning Districts 13-21

14. Noise

14-1 Noise Measurement Locations 14-4
14-2 Average Noise Contours for Daytime Construction Noise Levels (Phase 1, dB L_{eq}) 14-22
14-3 Average Noise Contours for Daytime Construction Noise Levels (Phase 2, dB L_{eq}) 14-23
14-4 Average Noise Contours for Daytime Construction Noise Levels (Phases 3 and 4, dB L_{eq}) 14-24
14-5 Average Noise Contours for Nighttime Construction Noise Levels (Aboveground Work, dB L_{eq}) 14-26
14-6 RVSP Noise Prediction Locations 14-37

FIGURE **PAGE**

15. Public Services and Utilities

15-1 Fire Districts in Placer County 15-3
15-2 Sewer Routing 15-45
15-3 Emergency Wastewater Storage Plan 15-47

16. Transportation

16-1 Existing Roadways in Project Vicinity 16-3
16-2 Planned Bicycle Facilities 16-6
16-3 Planned Transit Facilities 16-7
16-4 Conceptual Access to the Off-Site Affordable Housing Parcel 16-31

18. Wildfire

18-1 Fire Hazard Severity Zones 18-4
18-2 Wildland-Urban Interface Zones in Project Vicinity 18-5
18-3 High Fire-Threat District Map 18-11

21. Alternatives Analysis

21-1 Properties Considered for Off-Site Alternative 21-12
21-2 Reduced Project Alternative 21-18
21-3 Resource Avoidance Alternative 21-24

LIST OF TABLES

TABLE **PAGE**

2. Executive Summary

2-1 Summary of Impacts and Mitigation Measures....2-9

3. Project Description

3-1 Surrounding Land Use and Zoning Designations....3-4
3-2 Land Use Summary....3-14

5. Agricultural Resources

5-1 Land Capability Classifications....5-6
5-2 Storie Index Rating System....5-6
5-3 Agricultural Ratings of On-Site Soils....5-7

6. Air Quality and Greenhouse Gas Emissions

6-1 Summary of Criteria Pollutants....6-3
6-2 Ambient Air Quality Standards....6-4
6-3 Placer County Attainment Status Designations....6-12
6-4 Air Quality Data Summary (2022-2024)....6-12
6-5 GWPs and Atmospheric Lifetimes of Select GHGs....6-15
6-6 PCAPCD Thresholds of Significance....6-33
6-7 PCAPCD Operational GHG Efficiency Thresholds of Significance....6-37
6-8 Maximum Unmitigated Construction Emissions – Proposed Project (lbs/day)....6-40
6-9 Maximum Unmitigated Construction Emissions – Off-Site Affordable Housing Component (lbs/day)....6-44
6-10 Total Maximum Unmitigated Construction Emissions – Proposed Project and Off-Site Affordable Housing (lbs/day)....6-44
6-11 Maximum Unmitigated Operational Emissions – Proposed Project (lbs/day)....6-48
6-12 Maximum Unmitigated Operational Emissions – Off-Site Affordable Housing Parcel (lbs/day)....6-48
6-13 Total Maximum Unmitigated Operational Emissions – Proposed Project and Off-Site Affordable Housing Parcel (lbs/day)....6-49
6-14 Maximum Unmitigated Construction GHG Emissions – Proposed Project....6-65
6-15 Maximum Unmitigated Construction GHG Emissions – Off-Site Affordable Housing Parcel....6-66
6-16 Total Maximum Unmitigated Construction GHG Emissions – Proposed Project and Off-Site Affordable Housing Parcel....6-66
6-17 Maximum Unmitigated Operational GHG Emissions – Proposed Project....6-67
6-18 Maximum Unmitigated Annual Project Operational GHG Emissions Per Capita....6-68

TABLE **PAGE**

6-19 Maximum Unmitigated Operational GHG Emissions – Off-Site Affordable Housing Parcel 6-69
6-20 Total Maximum Unmitigated Operational GHG Emissions – Proposed Project and Off-Site Affordable Housing Parcel....6-70
6-21 Total Maximum Unmitigated Annual Project Operational GHG Emissions Per Capita....6-70

7. Biological Resources

7-1 PCCP Land Cover Types within the Study Area 7-4
7-2 Aquatic Resources Delineated Within the Study Area....7-6
7-3 Special-Status Species with Potential to Occur Within the Study Area....7-12
7-4 Impacts to PCCP Special Habitats and CARP Setbacks within the Study Area....7-90
7-5 Acres of Aquatic Resources Impacts within the Study Area 7-98
7-6 Acres of Terrestrial Land Cover Impacts within the Study Area....7-116

9. Energy

9-1 Project Consistency with the PCSP 9-23

12. Hydrology and Water Quality

12-1 On-Site Peak Flow Characteristics – Existing Conditions....12-3
12-2 Peak Flow Characteristics: Pre- and Post-Construction Peak Flows....12-45
12-3 Flows and WSE from HEC-RAS 12-54
12-4 CFD #1 WSE from HEC-RAS 12-57

13. Land Use and Planning/Population and Housing

13-1 Summary of Adjacent Community Plan Land Use Designations and Zoning Districts....13-3
13-2 Off-Site Affordable Housing Parcel Summary of Adjacent Community Plan Land Use Designations and Zoning Districts....13-5
13-3 DCWPCP Projected 2010 Population 13-8
13-4 DCWPCP Area Population and Household Growth....13-9
13-5 Average Household Size (Persons Per Household) 13-10
13-6 Placer County Regional Housing Needs Allocations (2021-2029)....13-11
13-7 PCGP and DCWPCP Policy Discussion 13-33

14. Noise

14-1 Typical Noise Levels 14-2
14-2 Existing Noise Survey Results 14-3
14-3 Existing AM/PM Peak Hour Traffic Noise Levels Along Roadways in the Project Vicinity 14-5
14-4 Allowable L_{dn} Noise Levels Within Specified Zone Districts Applicable to New Projects Affected by or Including Non-Transportation Noise Sources....14-7
14-5 Maximum Allowable Noise Exposure for Transportation Noise Sources 14-9
14-6 Noise Level Standards for Non-Transportation Noise Sources....14-12
14-7 Significance of Changes in Cumulative Noise Exposure (dB DNL) 14-16
14-8 Typical Noise Levels from Construction Equipment 14-19

TABLE **PAGE**

14-9 Predicted Daytime Construction Noise Levels from Grading Activities (dB, L_{eq}) 14-21
14-10 Predicted Nighttime Construction Noise Levels (dB, L_{eq})....14-25
14-11 Estimated AM/PM Peak Hour Traffic Noise Levels Along Roadways in the Project Vicinity (dB CNEL) 14-32
14-12 Noise Modeling for Project Area Roadway Traffic Noise (dB CNEL) 14-35
14-13 Vibration Levels During Construction (PPV)....14-38
14-14 Estimated AM/PM Cumulative Peak Hour Traffic Noise Levels Along Roadways in the Project Vicinity (dB CNEL) 14-40

15. Public Services and Utilities

15-1 Schools Serving the Project Site 15-5
15-2 PCWA Average Year Supply (AFY) 15-7
15-3 West Placer Service Area Supply and Demand Comparison (AFY) 15-7
15-4 CAL-AM's Water Demand Used in PCWA's 2020 UWMP (AFY)....15-8
15-5 Park Classification System....15-21
15-6 Proposed Project: Enrollment, Capacity, and Student Generation by School....15-36
15-7 Off-Site Affordable Housing Parcel: Enrollment, Capacity, and Student Generation by School 15-37
15-8 Proposed Project and Off-Site Affordable Housing Parcel: Total Enrollment, Capacity, and Student Generation by School 15-37
15-9 Project Site Buildout Water Demand 15-52
15-10 Comparison of PCWA and CAL-AM Water Projections for the West Placer Service Area (AFY) 15-53

16. Transportation

16-1 Roadway Right-of-Way Standards 16-13
16-2 Dry Creek CIP Improvements 16-15
16-3 CEQA Impact Significance Criteria 16-17
16-4 VMT Thresholds of Significance by Project Type for Western Placer County 16-18
16-5 Proposed Project Trip Generation....16-20
16-6 Intersection Crash Rate Summary 16-27
16-7 VMT Analysis Results 16-32

18. Wildfire

18-1 Dry Creek CIP Improvements 18-21

21. Alternatives Analysis

21-1 Land Use Comparison – Reduced Project Alternative....21-17
21-2 Land Use Comparison – Resource Avoidance Alternative 21-25
21-3 Comparison of Environmental Impacts for Project Alternatives 21-30

1. Introduction

1. INTRODUCTION

1.1 TYPE AND PURPOSE OF THE EIR

The Estia Dry Creek and Placer Creek Residential Project EIR has been prepared in accordance with CEQA, Public Resources Code (PRC) Sections 21000-21189.91, as amended, and the Guidelines for Implementation of the California Environmental Quality Act, California Code of Regulations (CCR) Title 14, Sections 15000-15387 (CEQA Guidelines). Placer County is the lead agency for the environmental review of the Estia Dry Creek and Placer Creek Residential Project (proposed project) evaluated herein and has the principal responsibility for reviewing the impacts and considering approval of the proposed project. As required by Sections 15121 through 15126.6 of the CEQA Guidelines, this EIR will (a) inform public agency decision-makers, and the public generally, of the significant environmental effects of the project, (b) identify mitigation measures to minimize the significant adverse environmental effects, and (c) describe potentially feasible project alternatives that would attain most of the basic objectives of the project while avoiding or substantially lessening any of the significant environmental effects of the project. The public agency shall consider the information in the EIR along with other information that may be presented to the agency.

As provided in the CEQA Guidelines Section 15021, public agencies are charged with the duty to avoid or minimize environmental damage where feasible. The public agency has an obligation to balance a variety of public objectives, including economic, environmental, and social issues. CEQA requires the preparation of an EIR prior to approving any project that may have a significant effect on the environment. For the purposes of CEQA, the term *project* refers to the whole of an action that has the potential for resulting in a direct physical change or a reasonably foreseeable indirect physical change in the environment and that is either (i) undertaken by a public agency, (ii) supported or subsidized by a public agency, or (iii) permitted or otherwise authorized by a public agency (CEQA Guidelines Section 15378[a]). With respect to the proposed project, the County has determined that the proposed development is a *project* within the definition of CEQA, which has the potential for resulting in significant environmental effects.

The lead agency is required to consider the information in the EIR along with any other available information in deciding whether to approve the proposed project. The basic requirements for an EIR include discussions of the environmental setting, significant environmental impacts, mitigation measures, potentially feasible alternatives, growth-inducing impacts, and cumulative impacts.

The CEQA Guidelines identify several types of EIRs, each applicable to different project circumstances. This EIR has been prepared as a *project-level EIR* pursuant to CEQA Guidelines Section 15161, which is an analysis that examines the environmental impacts of a specific development project. A *project-level EIR* focuses primarily on the changes in the environment that would result from the development of the project, and examines all phases of the project, including planning, construction, and operation.

1.2 KNOWN RESPONSIBLE AND TRUSTEE AGENCIES

To the extent that such information is known, the lead agency must provide "a list of the agencies that are expected to use the EIR in their decision making" (CEQA Guidelines Section 15124(d)(1)(A). Most such agencies (not including federal agencies) qualify as a "responsible agency."

The term "Responsible agency" applies to a public agency that proposes to carry out or approve a project for which a lead agency is preparing or has prepared an EIR or Negative Declaration. For the purpose of CEQA, the term responsible agency includes all California public agencies other than the lead agency that have discretionary approval power over the project or an aspect of the project (CEQA Guidelines Section 15381).

Another category of agency recognized by CEQA is "trustee agency," which is defined as a "state agency having jurisdiction by law over natural resources affected by a project which are held in trust for the people of the State of California" (CEQA Guidelines Section 15386). Unlike responsible agencies, trustee agencies have no discretionary approval authority over a project.

The proposed project would require the following approvals/permits from other responsible agencies:

- Placer County Conservation Program Authorization (Placer Conservation Authority);
- Section 401 Water Quality Certification (Regional Water Quality Control Board [RWQCB] – Central Valley Region);
- Streambed Alteration Agreement (California Department of Fish and Wildlife [CDFW]) issued pursuant to Section 1602 of the Fish and Game Code; and
- City of Roseville Encroachment Permit.

The proposed project will be subject to the existing National Pollutant Discharge Elimination System (NPDES) Construction General Permit issued by the RWQCB – Central Valley Region. This General Permit is already in place and requires the preparation of a stormwater pollution prevention plan (SWPPP) that is submitted to, but need not be approved by, the RWQCB.

The only known possible trustee agency is the CDFW, which the CEQA Guidelines recognize as a trustee agency with regard to the fish and wildlife of the state, designated rare or endangered native plants, and game refuges, ecological reserves, and other areas administered by CDFW.

Although not subject to California law, and, thus, outside the definitions of responsible agency or trustee agency, the U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (USFWS), and Federal Emergency Management Agency (FEMA) will also be called upon to grant approvals — under federal law — necessary for the development of the project site. The above agencies do not have duties under CEQA, but, rather, are governed by a variety of federal statutes, such as the Clean Water Act, which governs the dredging and filling of waters of the U.S. (e.g., wetlands), and the Endangered Species Act, which requires USACE to consult with the USFWS as part of the review process for any wetland or fill permits that may be required.

1.3 PROJECT SUMMARY

The following sections include summaries of the project location, setting and project description.

Project Location and Setting

The project site consists of approximately 92.2 gross (87.6 net) acres located south of Baseline Road, immediately east of the abandoned old Walerga Road right-of-way, west of the Fiddyment Road/Baseline Road/Walerga Road intersection and the western portion of Sun Valley Oaks residential subdivision, and north of the Morgan Creek residential subdivision in the Dry Creek-West Placer Community Plan Area (DCWPCP) of unincorporated Placer County. Walerga Road, which curves from the northeast to the southwest, separates the northern 52.3-acre portion of the project site, identified by Assessor's Parcel Number (APN) 023-221-076, and the southern 35.3-acre portion of the project site, identified by APN 023-221-074.

The 52.3-acre northern portion of the site (APN 023-221-076) is bounded by Baseline Road to the north and Walerga Road to the south. The northern portion of the site is undeveloped, consists of non-native annual grassland with gently rolling topography, and is interspersed with seasonal wetlands and vernal pools. The 35.3-acre southern portion of the site (APN 023-221-074) is bounded by Walerga Road to the north and west. The southern portion of the site includes a paved sewer easement which extends from Vineyard Road to the east and Walerga Road to the west. In addition, the southern portion of the site includes undeveloped annual grassland with gently rolling topography, interspersed with seasonal wetlands, vernal pools, and is bisected by an un-named tributary of Dry Creek (named "Placer Creek" for this project) which flows east to west.

The FEMA 100-year floodplain, containing approximately 4.7 acres, is located within the Placer Creek tributary area, which bisects the southern portion of the project site. A band of oak woodlands is located along the Placer Creek riparian corridor.

Roadways in the immediate project vicinity include Baseline Road to the north, Walerga Road bisecting the project site from the southwest to the northeast, Town Center Avenue to the west, and Vineyard Road to the southeast. Additionally, the northern boundary of the project site is adjacent to the Roseville City Limits, and the southern boundary of the project site is located approximately 1.2 miles from the Placer County/Sacramento County line.

The Placer County General Plan/DCWPCP land use designations for the project site are Rural-Low Density Residential (1-2.3 acre minimum) (RLDR) and Greenbelt and Open Space (OS). The site is zoned Residential Single-Family, combining Agriculture, combining a minimum Building Site of 40,000 square feet, combining Planned Residential Development of one dwelling unit per acre (RS-AG-B-40 PD=1), and Open Space, combining Planned Residential Development of one dwelling unit per acre (O PD=1).

Project Description

The proposed project would include the development of two separate residential communities over the course of five phases. Phase 1 would consist of the 220-unit Estia Dry Creek development, and Phases 2A, 2B, 3, and 4 would consist of the 212-lot Placer Creek Residential development. Development of Phases 1, 2A, and 2B would occur on the northern portion of the site, north of Walerga Road, and development of Phases 3 and 4 would occur on the southern portion of the site, south of Walerga Road. The gross project density would be approximately 4.6 residential units per acre.



Various associated improvements would be included in the development of the proposed project, including, but not limited to, parks, trails, landscaping, and utility installation. Circulation system improvements would include vehicular access to each phase of the proposed project, including a new driveway from Baseline Road for access to Phase 1, new roadway connections from Walerga Road for access to Phases 2 and 3, and the western extension of Vineyard Road for access to Phase 4. From the proposed access points, the proposed project would be served by an internal roadway system with vehicle gates at the proposed Phase 3 and 4 access points. Phase 1 would also be gated on both sides of the parking lot at the entrance from Baseline Road.

As detailed in the Project Description chapter of this EIR, the applicant intends to satisfy the project's affordable housing requirements through an equivalency proposal including rezoning and transferring the fee title to the County an off-site vacant parcel under Homes by Towne ownership, within the Riolo Vineyard Specific Plan (RVSP). This EIR also evaluates an alternative means by which the proposed project can meet the County's affordable housing regulations by providing a minimum of 22 Accessory Dwelling Units (ADUs) on lots with single-family residential units.

The proposed project would include development of a 2.1-acre public neighborhood park in Phase 2 of the Placer Creek Residential portion of the project. The proposed project would include approximately 9.9 acres of open space bisected by Placer Creek and situated between the Placer Creek Residential Phases 3 and 4 neighborhoods. In addition, the proposed project would include an approximately 1,300-foot-long Class I meandering trail along the Baseline Road frontage, and an approximately 2,300-foot-long Class I meandering trail along the southern/eastern Walerga Road frontage. Placer Creek Residential Phase 4 would also include an approximately 1,600-foot-long Class I trail on the southern side of Placer Creek, providing connection from Walerga Road at the western Emergency Vehicle Access (EVA) entry of Phase 4, traversing east, and connecting to the stubbed path north of the three existing Sun Valley Oaks homes fronting White Mill Crescent Road at Vineyard Road. From the proposed trail, a pedestrian bridge would go over Placer Creek and connect to a trail south of Phase 3, ultimately connecting to N Street within the Placer Creek Residential Phase 3 neighborhood. The project would also implement 2,130 feet of minor enhancements to the abandoned Old Walerga Road right-of-way corridor that separates the project site from Placer Vineyards to the west. The corridor is privately-owned and encumbered by existing public utility easements; accordingly, any proposed enhancements would be subject to landowner consent, utility coordination, and applicable approvals, and would not be implemented absent such consent.

The proposed project would require County approval of a General Plan/DCWPCP Amendment, Rezone, Vesting Large Lot Tentative Subdivision Map, Vesting Phased Small Lot Tentative Subdivision Map, Design Review, Variance, and three service area annexations.

The off-site affordable housing parcel, if chosen in order to satisfy the project's affordable housing requirements, would require County approval of a General Plan/RVSP Amendment, Rezone, and Development Agreement Amendment.

The details of the proposed project, including required approvals, are described in further detail in Chapter 3, Project Description, of this EIR.

1.4 EIR PROCESS

The EIR process begins with the decision by the lead agency to prepare an EIR, either during a preliminary review of a project or at the conclusion of an Initial Study. Once the decision is made to prepare an EIR, the lead agency sends a Notice of Preparation (NOP) to appropriate government agencies, including the Governor's Office of Land Use and Climate Innovation (LCI), to each responsible and trustee agency, and to the county clerk of each county in which the project will be located. Upon receipt of the NOP, the responsible and trustee agencies and LCI have 30 days in which to provide the lead agency with specific details about the scope and content of the environmental information related to the responsible agency's or trustee agency's area of statutory responsibility that must be included in the draft EIR. The responses shall identify, at a minimum, (i) the significant environmental issues and reasonable alternatives and mitigation measures that the responsible or trustee agency, or LCI will need to have explored in the draft EIR; and (ii) whether the agency will be a responsible agency or trustee agency for the project. The State Clearinghouse (SCH) within LCI will ensure that responsible and trustee State agencies reply within the required time. The SCH assigns an identification number to the project, which then becomes the identification number for all subsequent environmental documents on the project.

The NOP completed for the proposed project was circulated to the public; local, State and federal agencies; and other known interested parties for a 30-day review period from April 7, 2025, to May 7, 2025 (see Appendix A).

Upon completion of the Draft EIR and prior to circulation to State and local agencies and interested members of the public, a notice of completion is filed with the SCH and a public notice of availability is published to inform interested parties that a Draft EIR is available for agency and public review. In addition, the notice provides information regarding the location where copies of the Draft EIR are available for public review and any public meetings or hearings that are scheduled. The Draft EIR is circulated for a minimum period of 45 days, during which time reviewers may submit comments on the document to the lead agency. The lead agency must respond in writing to significant environmental issues raised in timely comments. If significant new information, as defined in CEQA Guidelines Section 15088.5, is added to an EIR after public notice of availability is given but before certification of the EIR, the revised EIR or affected chapters must be recirculated for an additional public review period with related comments and responses.

A Final EIR will be prepared, containing public comments on the Draft EIR and written responses to those comments, as well as a list of any changes to the Draft EIR text necessitated by public comments, as warranted. Before approving a project, the lead agency must certify that the EIR (consisting of the Draft EIR and Final EIR) has been completed in compliance with CEQA, and that the EIR has been presented to the decision-making body of the lead agency, which has reviewed and considered the EIR. The lead agency must also certify that the EIR reflects the lead agency's independent judgment and analysis.

Prior to project approval, the lead agency's decision-making body (here, the Placer County Board of Supervisors) must adopt what are commonly known as "CEQA Findings," which must (i) identify all significant environmental effects of a proposed project, (ii) identify all mitigation measures that will be adopted, (iii) explain why any proposed mitigation measures that have been rejected are infeasible, and (iv) address the feasibility of any EIR alternatives potentially available to reduce the severity of any significant unavoidable effects of the proposed project. These findings must

be based on substantial evidence in the administrative record and must include explanations that bridge the gap between evidence in the record and the conclusions required by CEQA. If the decision-making body elects to proceed with a project that would have unavoidable significant impacts, then that body must also adopt a Statement of Overriding Considerations explaining why, notwithstanding those unavoidable impacts, the body has determined that the specific economic, legal, social, technological, or other benefits of the project, including region-wide or statewide environmental benefits, outweigh those impacts and render them acceptable.

1.5 SCOPE OF THE EIR

An Initial Study has not been prepared for the proposed project, as the EIR addresses all CEQA-required environmental topics identified in the CEQA Guidelines. The following environmental issue areas are addressed in the EIR:

- Aesthetics;
- Agricultural Resources;
- Air Quality and Greenhouse Gas Emissions;
- Biological Resources;
- Cultural Resources;
- Energy;
- Geology and Soils;
- Hazards and Hazardous Materials;
- Hydrology and Water Quality;
- Land Use and Planning/Population and Housing;
- Noise;
- Public Services and Utilities;
- Transportation;
- Tribal Cultural Resources; and
- Wildfire.

In addition to the foregoing resource areas, Chapter 19, Effects Not Found to be Significant, has been prepared to present information regarding resource areas that do not have the potential to be affected by the proposed project.

The evaluation of effects is presented on a resource-by-resource basis in Chapters 4 through 18 of the EIR. Each chapter is divided into the following four sections: Introduction, Existing Environmental Setting, Regulatory Context, and Impacts and Mitigation Measures. Impacts that are determined to be significant in Chapters 4 through 18, and for which feasible mitigation measures are not available to reduce those impacts to a less-than-significant level, are identified as *significant and unavoidable*. Chapter 19 of the EIR presents a discussion of the environmental effects not found to be significant. Chapter 20 of the EIR presents a discussion of growth-inducing impacts, summary of cumulative impacts, and significant irreversible environmental changes associated with the project. Alternatives to the proposed project are discussed in Chapter 21 of the EIR.

1.6 DEFINITION OF BASELINE

According to CEQA Guidelines Section 15125, an EIR must include a description of the existing physical environmental conditions in the vicinity of the project to provide the “baseline physical conditions” against which project-related changes can be compared. In addition, CEQA

Guidelines Section 15126.2(a) states that an EIR shall identify and focus on the significant environmental effects of the proposed project. The CEQA Guidelines, Section 15126.2(a), states in pertinent part:

> An EIR shall identify and focus on the significant environmental effects of the proposed project. In assessing the impact of a proposed project on the environment, the lead agency should normally limit its examination to changes in the existing physical conditions in the affected area as they exist at the time the notice of preparation is published, or where no notice of preparation is published, at the time environmental analysis is commenced.

Normally, the baseline condition is the physical condition that exists when the NOP is published. The NOP for the proposed project was published on April 7, 2025. Therefore, conditions existing at that time are considered to be the baseline against which changes that would result from the proposed project are evaluated. Impacts could include both direct and reasonably foreseeable indirect physical changes to the baseline condition. The baseline condition for the proposed project site is described in Chapter 3, Project Description, of this EIR. The baseline conditions pertaining to each resource area are also described in the "Existing Environmental Setting" section of the respective chapters of this EIR.

In addition, with regard to the baseline conditions for the off-site affordable housing parcel, as described further in Chapter 3, Project Description, of this EIR, the off-site affordable housing parcel is within the RVSP and is currently approved for development. In cases where a project is undergoing subsequent review under CEQA, the "baseline" for the purposes of CEQA is adjusted such that the originally approved project is assumed to exist.[1] However, the analysis of the off-site affordable housing parcel included within this EIR is not considered a subsequent review pursuant to CEQA Guidelines Section 15162 through 15164 (e.g., a Subsequent EIR, Supplemental EIR, or Addendum). Thus, the baseline conditions for the off-site affordable housing parcel are conservatively assumed to be the existing conditions of the parcel. Notwithstanding, for informational purposes, certain sections of this EIR provide a comparison between the approved RVSP development and the proposed development conditions of the off-site affordable housing parcel.

1.7 SIGNIFICANCE CRITERIA

The CEQA Guidelines define a significant effect on the environment as "a substantial, or potentially substantial adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic and aesthetic significance." In addition, the Guidelines state, "An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant." (CEQA Guidelines Section 15382).

As presented in Section 1.12 below, the level of significance of an impact prior to mitigation is included at the end of each impact discussion throughout the technical chapters of this EIR. The following levels of significance prior to mitigation are used in this EIR:

[1] See Michael H. Remy et al. *Guide to CEQA, 11th Edition*. Point Arena: Solano Press Books (2007), pg. 207; Stephen L. Kostka and Michael H. Zischke. *Practice Under the Environmental Quality Act, Second Edition* (Vol. 1). Oakland: Continuing Education of the Bar (2018), pgs. 12-32; *Benton v. Board of Supervisors* (1st Dist. 1991) 226 Cal. App. 3d 1467.

1) Less than Significant: Impacts that are insubstantial, do not exceed the specified standards of significance, and do not require any mitigation to reduce impacts;
2) Significant: Impacts that exceed the defined standards of significance and require mitigation;
3) Less than Cumulatively Considerable: Where cumulative impacts have been identified, but the project's incremental contribution towards the cumulative impacts would not be considered significant in and of itself; and
4) Cumulatively Considerable: Where cumulative impacts have been identified and the project's incremental contribution towards the cumulative impacts would be considered significant in and of itself.

If an impact is determined to be significant or cumulatively considerable, mitigation is included, if available, in order to reduce the specific impact to the maximum extent feasible. A statement of the level of significance of an impact after mitigation is also included in each impact discussion throughout the technical chapters of this EIR. The following levels of significance after implementation of mitigation are used in the EIR:

1) Less than Significant: Impacts that exceed the defined standards of significance but can be eliminated or reduced to a less-than-significant level through the implementation of feasible mitigation measures;
2) Less than Cumulatively Considerable: Where the project's incremental contribution towards cumulative impacts would be eliminated or reduced to a less than cumulatively considerable level through the implementation of feasible mitigation measures; and
3) Significant and Unavoidable Impact: An impact (project-level or cumulative) that cannot be eliminated or reduced to a less-than-significant or less than cumulatively considerable level through the implementation of feasible mitigations measures.

Each environmental area of analysis uses a distinct set of significance criteria. Where measurable and explicit quantification of significance is identified, such as violation of an ambient noise level standard, this measurement is used to assess the level of significance of a particular impact in this EIR. If criteria for determining significance relative to a specific environmental resource impact are not identified in CEQA or the CEQA Guidelines, criteria were developed for this EIR.

The significance criteria are identified at the beginning of the Impacts and Mitigation Measures section in each of the technical chapters of this EIR. Although significance criteria are necessarily different for each resource considered, the provided significance levels ensure consistent evaluation of impacts for all resource areas evaluated.

1.8 NOTICE OF PREPARATION AND SCOPING

In accordance with CEQA Guidelines Section 15082, an NOP was circulated to the public; local, State and federal agencies; and other known interested parties for a 30-day public and agency review period from April 7, 2025 to May 7, 2025 (see Appendix A). The purpose of the NOP was to provide notification that an EIR for the proposed project was being prepared and to solicit public input on the scope and content of the document.

Pursuant to CEQA Guidelines Section 15082, Placer County held an NOP scoping meeting for the EIR during the 30-day review period, on April 24, 2025, for the purpose of receiving comments on the scope of the environmental analysis to be prepared for the proposed project. Agencies and members of the public were invited to attend and provide input on the scope of the EIR. All

comments were taken into consideration during the preparation of this EIR. A summary of the NOP comments received, including the verbal comments received at the NOP scoping meeting, is provided in Section 1.9 below.

1.9 COMMENTS RECEIVED ON THE NOTICE OF PREPARATION

During the NOP public review period from April 7, 2025 to May 7, 2025, Placer County received 15 comment letters. A copy of each letter is provided in Appendix B of this EIR. Two verbal comments were received during the NOP scoping meeting on April 24, 2025. The comment letters and verbal comments received were issued by the following representatives of public agencies and groups, as well as individual members of the general public:

Public Agencies

- California Department of Transportation (Caltrans) – Gary S. Arnold;
- Central Valley RWQCB – Peter G. Minkel;
- Native American Heritage Commission (NAHC) – Pricilla Torres-Fuentes;
- Pacific Gas and Electric Company (PG&E) – Plan Review Team, Land Management;
- Placer County Air Pollution Control District (PCAPCD) – Laura Navarro; and
- Placer County Local Agency Formation Commission (LAFCo) – Amanda Ross

Groups

- Redbud Chapter – California Native Plant Society (CNPS) – Sue Stack and Jeanne Wilson;
- Sierra Club Placer Group – Harry White; and
- Sierra Foothills Audubon Society – Donald L. Rivenes

Individuals

- Laura Bullard (3);
- Patty Greene;
- Lisa Mendenhall;
- Abe Nelson;
- John Schell; and
- Harry White.

The following list, categorized by issue, summarizes the concerns brought forth in the comment letters and verbal comments received on the scope of the EIR:

Aesthetics *(see Chapter 4)*	Concerns related to: • Change from natural landscape to development. • Changes to character of neighborhood. • Emphasizing the use of California native plants. • Landscaping designed to allow PG&E to access facilities and adhere to guidelines for safe landscaping.
Agricultural Resources *(see Chapter 5)*	Concerns related to: • Potential agricultural impacts. • Potential impacts to prime agricultural land under Government Code Section 56064. • Converting natural lands into urban uses.

Air Quality and Greenhouse Gas Emissions *(see Chapter 6)*	Concerns related to: • The use of natural gas and associated health impacts. • Compliance with all permitting requirements. • Fugitive dust generation. • Implementation of a dust control plan. • The use of wood burning appliances.
Biological Resources *(see Chapter 7)*	Concerns related to: • Impedance of the Placer County Conservation Plan's (PCCP's) ability to meet its biological goals and objectives. • Inclusion of adequate avoidance, minimization, and/or mitigation measures for all potential impacts. • Potential direct, indirect, and cumulative impacts to biological resources during construction and operation. • The reduction of open space. • Preservation of native plants. • Habitat connectivity. • Impacts to wildlife corridors. • Encroachment into stream corridors. • The spread of invasive weeds. • Compliance with requirements of the DCWPCP.
Hazards and Hazardous Materials *(see Chapter 11)*	Concerns related to: • Storage of fuel or combustibles within PG&E's easement.
Hydrology and Water Quality *(see Chapter 12)*	Concerns related to: • Compliance with all permitting requirements. • Potential water supply impacts. • Potential impacts to surface and groundwater quality during construction and operation. • Implementation of a Storm Water Prevention Plan.
Land Use and Planning/Population and Housing *(see Chapter 13)*	Concerns related to: • Variances, rezoning, and consistency with the existing neighborhood. • Consistency with City or County General and Specific Plans.
Noise *(see Chapter 14)*	Concerns related to: • Noise impacts from increased traffic.
Public Services and Utilities *(see Chapter 15)*	Concerns related to: • Increased demand on public services with population increase. • Impacts to existing PG&E gas transmission pipelines.
Transportation *(see Chapter 16)*	Concerns related to: • Increased traffic. • Increase in vehicle miles travelled (VMT). • Impact to operations and safety of the State Highway System. • Impacts to nearby County and City roads. • Consistency with the Sacramento Council of Governments Regional Transportation Plan/Sustainable Communities Strategy. • The extension of Vineyard Road through to Walerga Road. • Vehicle access to the proposed project.
Tribal Cultural Resources *(see Chapter 17)*	Concerns related to: • Potential presence of tribal cultural resources at project site. • Compliance with tribal consultation pursuant to Senate Bill (SB) 18 and Assembly Bill (AB) 52.

All of these issues are addressed in this EIR, in the relevant sections identified in the first column.

1.10 DRAFT EIR AND PUBLIC REVIEW

This Draft EIR is being circulated for public review and comment for a period of 45 days. During this period, the general public, organizations, and agencies can submit comments to the Lead Agency on the Draft EIR's accuracy and completeness. Release of the Draft EIR marks the beginning of a 45-day public review period pursuant to CEQA Guidelines Section 15105. The public can review the Draft EIR at the County's website at:

https://www.placer.ca.gov/10218/Estia-Dry-Creek-and-Placer-Creek-Residen

Comments may be submitted in written form and/or orally at the public hearing on the Draft EIR. Notice of the time and location of the hearing will be published in local newspapers, mailed to property owners and residents surrounding the project, emailed to residents that have requested to be placed on the project's email notification list, posted on the County's website, and posted at and adjacent to the site prior to the hearing.

All comments or questions regarding the Draft EIR should be addressed to:

Placer County, Community Development Resource Agency
Environmental Coordination Services
3091 County Center Drive, Suite 190
Auburn, CA 95603
(530) 745-3132
fax (530) 745-3080
cdraecs@placer.ca.gov

1.11 ORGANIZATION OF THE DRAFT EIR

The EIR is organized into the following sections:

Chapter 1 – Introduction

Provides an introduction and overview describing the intended use of the EIR and the review and certification process, as well as summaries of the issues and concerns received from the public and public agencies during the NOP review period.

Chapter 2 – Executive Summary

Summarizes the elements of the project and the environmental impacts that would result from implementation of the proposed project, describes proposed mitigation measures, and indicates the level of significance of impacts after mitigation. In addition, the Executive Summary includes a summary of the project alternatives and areas of known controversy.

Chapter 3 – Project Description

Provides a detailed description of the proposed project, including the project's location, background information, objectives, and technical characteristics.

Chapter 4 – Aesthetics

The Aesthetics chapter of the EIR describes existing aesthetic resources for the project area and the region, and evaluates potential aesthetic impacts of the project. In addition, the DCWPCP goals and policies pertaining to aesthetics are described. According to Appendix G to the CEQA



Guidelines, the concept of aesthetic resources refers to scenic vistas, scenic resources (such as trees, rock outcroppings, and historic buildings within a State Scenic Highway), conflicts with applicable zoning and other regulations governing scenic quality, and light and glare impacts.

Chapter 5 – Agricultural Resources

The Agricultural Resources chapter of the EIR summarizes the status of the existing agricultural resources within the boundaries of the project site, using the current State model and data, including identification of any Prime/Unique Farmland or Farmland of Statewide Importance within the project boundaries. If Prime/Unique Farmland or Farmland of Statewide Importance is determined to be on-site, the analysis will address the conversion of said lands to residential uses. In addition, any conflicts with existing zoning for agricultural use or right-to-farm ordinances applicable to the proposed project will be identified.

Chapter 6 – Air Quality and Greenhouse Gas Emissions

The Air Quality and Greenhouse Gas (GHG) Emissions chapter of the EIR describes the impacts of construction and operation of the proposed project related to air quality and global climate change. The chapter was prepared using methodologies and assumptions recommended within the CEQA Air Quality Handbook of the PCAPCD, as well as the GHG reduction measures included in the Placer County Sustainability Plan (PCSP).

Chapter 7 – Biological Resources

The Biological Resources chapter of the EIR evaluates the biological resources known to occur or potentially occur within the project area. The chapter uses information from the Placer County Conservation Plan (PCCP), describes potential impacts to protected biological resources and identifies measures to eliminate or substantially reduce those impacts.

Chapter 8 – Cultural Resources

The Cultural Resources chapter of the EIR evaluates archaeological and historical resources known to be located within the project area, as well as the potential for discovering unknown resources. The chapter summarizes the existing setting with respect to the aforementioned resources, identifies thresholds of significance and project impacts to such resources, and sets forth mitigation measures that would be necessary to reduce impacts.

Chapter 9 – Energy

The Energy chapter of the EIR discusses the potential impacts of the proposed project related to wasteful, inefficient, or unnecessary consumption of energy resources during project construction and operation. The chapter also evaluates the project consistency with applicable State or local plans for renewable energy, including the PCSP. The chapter includes a discussion of the existing energy setting and whether the proposed project would result in impacts associated with energy use.

Chapter 10 – Geology and Soils

The Geology and Soils chapter of the EIR describes the geologic and soil characteristics of the project site and evaluates the extent to which implementation of the proposed project could be affected by seismic hazards such as ground shaking, liquefaction, and expansive/unstable soils. In addition, the chapter identifies any known paleontological resources or unique geologic features within the project area and evaluates any potential adverse effects of the proposed project on such resources.

Chapter 11 – Hazards and Hazardous Materials

The Hazards and Hazardous Materials chapter of the EIR describes existing and potential hazards and hazardous materials within the project area. The chapter discusses potential impacts posed by these hazards to the surrounding environment.

Chapter 12 – Hydrology and Water Quality

The Hydrology and Water Quality chapter of the EIR describes existing drainage and stormwater conditions for the project site, as well as current stormwater flows and stormwater infrastructure, and potential for flooding. The chapter evaluates potential impacts of the proposed project with respect to increases in impervious surface area and associated stormwater flows, degradation of water quality, groundwater recharge, and on- and off-site flooding.

Chapter 13 – Land Use and Planning/Population and Housing

The Land Use and Planning/Population and Housing chapter of the EIR examines the proposed project's compatibility with existing land uses in the area, and current General Plan and DCWPCP policies adopted for the purpose of avoiding or mitigating an environmental effect. The chapter further evaluates the potential of the proposed project to induce substantial population growth within the area, either directly or indirectly.

Chapter 14 – Noise

The Noise chapter of the EIR describes the existing noise environment in the project vicinity and identifies potential impacts and mitigation measures related to the construction and operation of the proposed project, as well as potential impacts of construction vibration. The method by which the potential impacts are analyzed is discussed, followed by the identification of potential impacts and the recommended mitigation measures designed to reduce significant impacts.

Chapter 15 – Public Services and Utilities

The Public Services and Utilities chapter of the EIR addresses fire and law enforcement services, schools, parks, and recreation facilities, and other public facilities such as libraries. In addition, the chapter evaluates the proposed project's increase in water supply demand and wastewater generation in comparison to the capacity of the existing water and sewer infrastructure systems. The chapter also evaluates the proposed project's increase in solid waste disposal needs, as well as electricity and natural gas services.

Chapter 16 – Transportation

The Transportation chapter of the EIR discusses existing transportation and circulation conditions within the project area and the effects to the roadway network as a result of the proposed project and future, projected growth. VMT is used as the metric for assessing transportation impacts, consistent with the CEQA Guidelines. The analysis includes consideration of transit, bicycle, and pedestrian impacts, as well as emergency evacuation and roadway safety.

Chapter 17 – Tribal Cultural Resources

The Tribal Cultural Resources chapter of the EIR addresses known tribal cultural resources in the vicinity of the project area and the potential for tribal cultural resources to be present on the project site. The chapter summarizes the existing setting with respect to tribal cultural resources, identifies thresholds of significance, discusses the results of AB 52 and SB 18 consultation, evaluates project impacts to such resources, and sets forth mitigation measures designed to reduce impacts.

Chapter 18 – Wildfire
The Wildfire chapter of the EIR includes an evaluation of whether the proposed project would exacerbate the risk for wildfires, expose people and/or structures to significant wildfire risks, substantially impair an adopted emergency response plan or emergency evacuation plan, or expose people or structures to significant risks, including downslope flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. The chapter offers mitigation measures to eliminate or substantially reduce impacts, as necessary.

Chapter 19 – Effects Not Found to be Significant
The Effects Not Found to be Significant chapter of the EIR addresses the project's effects that were determined not to be significant. CEQA Guidelines Section 15128 requires a brief discussion explaining why these effects were not found to be significant.

Chapter 20 – Statutorily Required Sections
The Statutorily Required Sections chapter of the EIR provides discussions required by CEQA regarding impacts that would result from the proposed project, including a summary of cumulative impacts, potential growth-inducing impacts, significant and unavoidable impacts, and significant irreversible changes to the environment.

Chapter 21 – Alternatives Analysis
The Alternatives Analysis chapter of the EIR describes and evaluates a reasonable range of potentially feasible alternatives to the proposed project. The alternatives are analyzed at a level of detail less than that of the proposed project; however, the analyses include sufficient detail to allow for a meaningful comparison of impacts.

Chapter 22 – EIR Authors and Persons Consulted
The EIR Authors and Persons Consulted chapter of the EIR lists EIR and technical report authors who provided technical assistance in the preparation and review of the EIR.

Chapter 23 – References
The References chapter of the EIR provides bibliographic information for all references and resources cited.

Appendices
The Appendices include the NOP, comments received during the NOP comment period, and technical reports prepared for the proposed project.

1.12 TECHNICAL CHAPTER FORMAT
Each technical chapter addressing a specific environmental issue begins with an **introduction** describing the purpose of the section. The introduction is followed by a description of the project's **existing environmental setting** as the setting pertains to that particular issue. The setting description is followed by the **regulatory context** and the **impacts and mitigation measures** discussion, which contains the **standards of significance**, followed by the **method of analysis**. The **impact and mitigation measures** discussion includes impact statements prefaced by a number in bold-faced type (for both project-level and cumulative analyses). An explanation of each impact and an analysis of the impact's significance follow each impact statement. All mitigation measures pertinent to each individual impact follow directly after the impact statement (see below). The extent of mitigation provided by identified mitigation measures is also evaluated. An example of the format is shown below:

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed project in comparison with the standards of significance.

X-1 Statement of Impact

Discussion of impact for the proposed project in paragraph format.

Statement of ***level of significance*** of impact prior to mitigation is included at the end of each impact discussion. The following levels of significance are used in the EIR: less than significant, significant, or significant and unavoidable. If an impact is determined to be significant, mitigation will be included in order to reduce the specific impact to the maximum extent feasible. Impacts that cannot be reduced to a less-than-significant level with implementation of all feasible mitigation would be considered to remain significant and unavoidable.

Mitigation Measure(s)

Statement of *level of significance* after the mitigation is included immediately preceding mitigation measures.

X-1(a) *Required mitigation measure(s) presented in italics and numbered in consecutive order.*

X-1(b) *Required additional mitigation measure, if necessary.*

Cumulative Impacts and Mitigation Measures

The following discussion of cumulative impacts is based on implementation of the proposed project in combination with cumulative development within the applicable area or region.

X-2 Statement of Cumulative Impact

Discussion of cumulative impacts for the proposed project in paragraph format.

As discussed in detail in Chapter 20, Statutorily Required Sections, of the EIR, the cumulative setting for the proposed project is generally considered to be development anticipated to occur upon buildout of Estia Dry Creek and Placer Creek Residential Project, as well as buildout of a number of approved or reasonably foreseeable projects within the DCWPCP area (i.e., the Placer Vineyards Specific Plan [PVSP], RVSP, etc.).

Statement of ***level of significance*** of cumulative impact prior to mitigation is included at the end of each impact discussion. The following levels of significance are used in the EIR for cumulative impacts: less than significant, less than cumulatively considerable, cumulatively considerable, or significant and unavoidable. If an impact is determined to be cumulatively considerable, mitigation will be included in order to reduce the specific impact to the maximum extent feasible. Impacts that cannot be reduced to a less than cumulatively considerable level with the implementation of all feasible mitigation would be considered to remain significant and unavoidable.

Mitigation Measure(s)

Statement of *level of significance* after the mitigation is included immediately preceding mitigation measures.

X-2(a) *Required mitigation measure(s) presented in italics and listed in consecutive order.*

X-2(b) *Required additional mitigation measure, if necessary.*

1.13 FINAL EIR AND EIR CERTIFICATION

Upon completion of the Draft EIR public review period, a Final EIR will be prepared. It will include written and verbal comments on the Draft EIR received during the public review period and responses to significant environmental issues raised in those comments. The Final EIR will also include the Mitigation Monitoring and Reporting Plan (MMRP) prepared in accordance with PRC Section 21081.6. The Final EIR will include any revisions to the Draft EIR made in response to public comments. The Draft EIR and Final EIR together will comprise the EIR for the proposed project. Before the County Board of Supervisors can consider approval of the project, the Board must first certify that the EIR has been completed in compliance with CEQA, that the Board has reviewed and considered the information in the EIR, and that the EIR reflects the independent judgment of the County. The County will also be required to adopt Findings of Fact, and, for any impacts determined to be significant and unavoidable, adopt a Statement of Overriding Considerations.

2. Executive Summary

2. EXECUTIVE SUMMARY

2.1 INTRODUCTION

The Executive Summary chapter of the EIR provides an overview of the proposed project (see Chapter 3, Project Description, for further details) and provides a table summary of the conclusions of the environmental analysis provided in Chapters 4 through 18. This chapter also summarizes the alternatives to the proposed project that are described in Chapter 21, Alternatives Analysis, and identifies the Environmentally Superior Alternative. Table 2-1 contains the environmental impacts associated with the proposed project, the significance of the impacts, the proposed mitigation measures for the impacts, and the significance of the impacts after implementation of the mitigation measures.

2.2 SUMMARY DESCRIPTION OF THE PROPOSED PROJECT

The project site consists of approximately 92.2 gross (87.6 net) acres located south of Baseline Road, immediately east of the abandoned Old Walerga Road right-of-way, west of the Fiddyment Road/Baseline Road/Walerga Road intersection and the western portion of Sun Valley Oaks residential subdivision, and north of the Morgan Creek residential subdivision in the Dry Creek-West Placer Community Plan Area (DCWPCP) of unincorporated Placer County. Walerga Road, which curves from the northeast to the southwest, separates the northern 52.3-acre portion of the project site, identified by Assessor's Parcel Number (APN) 023-221-076, and the southern 35.3-acre portion of the project site, identified by APN 023-221-074.

The project site is bisected by Walerga Road, which generally curves from northeast to southwest. The 52.3-acre northern portion of the site (APN 023-221-076) is bounded by Baseline Road to the north and Walerga Road to the south. The northern portion of the site is undeveloped, consists of non-native annual grassland with gently rolling topography, and is interspersed with seasonal wetlands and vernal pools. The 35.3-acre southern portion of the site (APN 023-221-074) is bounded by Walerga Road to the north and west. The southern portion of the site includes a paved sewer easement which extends from Vineyard Road to the east and Walerga Road to the west. In addition, the southern portion of the site includes undeveloped annual grassland with gently rolling topography, interspersed with seasonal wetlands, vernal pools, and is bisected by an un-named tributary of Dry Creek (named "Placer Creek" for this project) which flows east to west. The Federal Emergency Management Agency (FEMA) 100-year floodplain, containing approximately 4.7 acres, is located within the Placer Creek tributary area, which bisects the southern portion of the project site. A band of oak woodlands is located along the Placer Creek riparian corridor.

Roadways in the immediate project vicinity include Baseline Road to the north, Walerga Road bisecting the project site from the southwest to the northeast, Town Center Avenue to the west, and Vineyard Road to the southeast. Additionally, the northern boundary of the project site is contiguous to the Roseville City Limits, and the southern boundary of the project site is located approximately 1.2 miles from the Placer County/Sacramento County line.

The Placer County General Plan/DCWPCP land use designations for the project site are Rural-Low Density Residential (1-2.3 acre minimum) (RLDR), and Greenbelt and Open Space (OS).

The site is zoned Residential Single-Family, combining Agriculture, combining a minimum Building Site of 40,000 square feet, combining Planned Residential Development of one dwelling unit per acre (RS-AG-B-40 PD=1) and Open Space, combining Planned Residential Development of one dwelling unit per acre (O PD=1).

The proposed project includes the development of two separate residential communities over the course of five phases. Phase 1 would consist of the 220-unit multi-family Estia Dry Creek development, and Phases 2A, 2B, 3, and 4 would consist of the 212-lot detached single-family Placer Creek Residential development. Development of Phases 1, 2A, and 2B would occur on the northern portion of the site (APN 023-221-076), north of Walerga Road, and development of Phases 3 and 4 would occur on the southern portion of the site (APN 023-221-074), south of Walerga Road. The gross project density would be approximately 4.6 residential units per acre.

Various associated improvements would be included in the development of the proposed project, including, but not limited to, parks, trails, landscaping, and utility installation. Circulation system improvements would include a new gated driveway located along Baseline Road, to the north of the site, providing access to the Phase 1 development; access to the Phase 2 neighborhood by a Springhill Drive extension and a new roadway off of Walerga Road between Springhill Drive and Town Center Avenue; access to Phase 3 from a new eastern/fourth leg of the existing signalized intersection at Walerga Road and Town Center Avenue; and access to Phase 4 from the western extension of Vineyard Road.

The proposed project would include development of a public, 2.1-acre neighborhood park in the Placer Creek Residential Phase 2 development and approximately 9.9 acres of open space bisected by “Placer Creek” and situated between the Placer Creek Residential Phase 3 and 4 neighborhoods. In addition, the proposed project would include an approximately 1,300-foot-long Class I meandering trail along the Baseline Road frontage, and an approximately 2,300-foot-long Class I meandering trail along the southern/eastern Walerga Road frontage. Placer Creek Residential Phase 4 would also include an approximately 1,600-foot-long Class I trail on the southern side of Placer Creek, providing connection from Walerga Road at the western Emergency Vehicle Access (EVA) entry of Phase 4, traversing east and connecting to the stubbed path north of the three existing Sun Valley Oaks homes fronting White Mill Crescent Road at Vineyard Road. From the proposed trail, a pedestrian bridge would go over Placer Creek and connect to a trail south of Phase 3, ultimately connecting to N Street within the Placer Creek Residential Phase 3 neighborhood. The project would also implement 2,130 feet of minor enhancements to the abandoned Old Walerga Road right-of-way corridor that separates the project site from Placer Vineyards to the west. The corridor is privately-owned and encumbered by existing public utility easements; accordingly, any proposed enhancements would be subject to landowner consent, utility coordination, and applicable approvals, and would not be implemented absent such consent.

As detailed in the Project Description chapter of this EIR, the applicant intends to satisfy the project’s affordable housing requirements through an equivalency proposal including rezoning and transferring the fee title to the County an off-site vacant parcel under Homes by Towne ownership, within the Riolo Vineyard Specific Plan (RVSP). This EIR also evaluates an alternative means by which the proposed project can meet the County’s affordable housing regulations by providing a minimum of 22 Accessory Dwelling Units (ADUs) on lots with single-family residential units.

The proposed project would require County approval of a General Plan/DCWPCP Amendment, Rezone, Vesting Large Lot Tentative Subdivision Map, Vesting Phased Small Lot Tentative Subdivision Map, Design Review, Variance, and three service area annexations.

The off-site affordable housing parcel, if chosen in order to satisfy the project's affordable housing requirements, would require County approval of a General Plan/RVSP Amendment, Rezone, and Development Agreement Amendment.

The proposed project, including required approvals, is described in further detail in Chapter 3, Project Description, of this EIR.

2.3 ENVIRONMENTAL IMPACTS AND MITIGATION

Under CEQA, a significant effect on the environment is defined as a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, mineral, flora, fauna, ambient noise, and objects of historic or aesthetic significance. Any feasible mitigation measures must be implemented as part of the approval of the proposed project to reduce potential adverse impacts to a less-than-significant level. Such mitigation measures are noted in this EIR and are found in the following technical chapters: Aesthetics; Air Quality and Greenhouse Gas Emissions; Biological Resources; Cultural Resources; Geology and Soils; Hydrology and Water Quality; Noise; Public Services and Utilities; Transportation; and Tribal Cultural Resources. The mitigation measures presented in the EIR will form the basis of the Mitigation Monitoring and Reporting Program (MMRP). Any impact that remains significant after implementation of mitigation measures is considered a significant and unavoidable impact.

In Table 2-1, provided at the end of this chapter, a summary of the proposed project impacts are identified for each technical chapter (Chapters 4 through 18) of the EIR. In addition, Table 2-1 includes the level of significance of each impact, any mitigation measures required for each impact, and the resulting level of significance after implementation of mitigation measures for each impact.

2.4 SUMMARY OF PROJECT ALTERNATIVES

The following section presents a summary of the evaluation of the alternatives considered for the proposed project, which include the following:

- No Project (No Build) Alternative;
- Reduced Project Alternative; and
- Resource Avoidance Alternative.

For a more thorough discussion of project alternatives, please refer to Chapter 21, Alternatives Analysis. As discussed therein, reasonable alternatives to the project must be capable of feasibly attaining most of the basic objectives of the project. The following project objectives have been developed by the project applicant:

1. Create a high-quality neighborhood environment containing a mix of residential, open space, and recreational land uses.
2. Develop a well-designed, economically feasible residential community that consists of a variety of residential products and unit types.

3. Offer an amenity-rich residential community that offers modern amenities and open spaces for residents, such as trails, parks, recreational areas, and gathering spaces.
4. Provide a comprehensively planned project that protects sensitive environmental habitat and resources, including existing riparian and oak woodland habitat on the project site, within a permanent greenbelt area providing a significant public benefit.
5. Use land resources efficiently by providing a well-planned development on an underutilized vacant site.
6. Promote pedestrian-oriented development, providing medium and high-density housing on a major transportation corridor and within walking distance of places of business and employment.
7. Provide a well-designed residential community with neighborhood identity in close proximity to jobs and services in Placer and Sacramento counties.
8. Increase the supply and diversity of housing types in the DCWPCP area that can support a wider range of lifestyles, consistent with the goals and policies of the County's Housing Element.
9. Assist in providing affordable housing and complying with Regional Housing Needs Allocation (RHNA) requirements by conveying a four-acre affordable housing site within the Riolo Vineyards Specific Plan area to Placer County.
10. Create a development of a density, scale and character that complements and is supportive of surrounding development.
11. Design a residential neighborhood that complements surrounding/existing neighborhoods by incorporating compatible land uses, lot sizes, street layouts while providing smooth transitions to adjacent neighborhoods through the appropriate setbacks, landscaping, and open space features; and establishing logical roadway and pedestrian connections consistent with the County's design principles.

No Project (No Build) Alternative

The No Project (No Build) Alternative assumes that the current conditions of the project site and off-site affordable housing parcel would remain, and the sites would not be developed. As described in this EIR, the northern portion of the project site (i.e., north of Walerga Road) is undeveloped, consists of non-native annual grassland with gently rolling topography, and is interspersed with seasonal wetlands and vernal pools. The southern portion of the project site similarly includes undeveloped annual grassland with gently rolling topography, interspersed with seasonal wetlands, vernal pools, and is bisected by Placer Creek, which flows east to west. The FEMA 100-year floodplain, containing approximately 4.7 acres, is located within the Placer Creek tributary area, which bisects the southern portion of the project site. A band of oak woodlands is located along the Placer Creek riparian corridor. The off-site affordable housing parcel is undeveloped and consists of grassy fields with gently rolling topography. The No Project (No Build) Alternative would not meet any of the project objectives and would not meet the overall intent of the DCWPCP's land use designation for the project site. Because the project site is assumed to remain in its current condition under the No Project (No Build) Alternative, all of the impacts resulting from the proposed project would not occur under the Alternative.

Reduced Project Alternative

Under the Reduced Project Alternative, Phases 3 and 4 of the proposed project would not be developed, and on-site open space around Placer Creek would be increased. Similar to the proposed project, the Reduced Project Alternative would require a General Plan/DCWPCP Amendment and rezone to change the residential portions of the northern portion of the project site to High Density Residential (HDR) and Medium Density Residential (MDR). Unlike the

proposed project, the entire portion of the project site south of Walerga Road would be designated OS. Under the Reduced Project Alternative, the MDR portion of the project site would be developed at a density of 3.17 dwelling units per acre (du/ac) and the HDR portion of the project site would be developed at a density of 9.5 du/ac.

The Reduced Project Alternative would result in the development of 105 fewer residential units (327 vs 432 units) than the proposed project. The 220 multi-family HDR units would remain the same under the Alternative, and the single-family MDR units would be reduced from 212 units to 107 units. Should the project applicant choose the affordable housing option to develop on-site ADUs, a total of 11 ADUs (10 percent of the 107 single-family residential units) would be included under the Alternative to satisfy the County's affordable housing obligation, for a total of 338 residential units. The open space area would be increased under the Alternative by 24.6 acres (34.5 vs 9.9 acres). Because the Reduced Project Alternative would include fewer single-family residential units than the proposed project, and Phases 3 and 4 of the proposed project would not be developed, the Alternative would result in a smaller area of disturbance as compared to the proposed project. As such, the Alternative would result in an overall lesser disturbance area and a larger open space area than the proposed project.

Similar to the proposed project, the Reduced Project Alternative would include development of a residential community with both multi-family and single-family units, as well as an open space area. Because the Alternative would not include development in the southern portion of the project site, development near Placer Creek would be avoided, and the construction of new stormwater outfalls into Placer Creek and the pedestrian bridge over Placer Creek would not occur. Off-site improvements required under the proposed project, including upgrades to the existing Community Facilities District #1 Sewer Lift Station and improvements to nearby intersections and roadways, would still occur under the Reduced Project Alternative.

Due to the residential nature of the Reduced Project Alternative, and because the design would generally resemble the proposed project, including open space, most project objectives would be fully or partially met by the Alternative. However, due to the reduced number of single-family residential units, the Reduced Project Alternative would satisfy Objective 8 to a lesser extent. The Reduced Project Alternative would result in fewer impacts as compared to impacts associated with the proposed project related to all of the eight issue areas for which significant project impacts were identified.

The significant and unavoidable impact related to Noise that was identified for the proposed project would remain under the Alternative. However, under the Reduced Project Alternative, fewer sensitive receptors would be exposed to significant temporary noise increases. As such, the significant and unavoidable impact would be reduced in intensity under the Reduced Project Alternative as compared to the proposed project.

Resource Avoidance Alternative

The Resource Avoidance Alternative would require a General Plan/DCWPCP Amendment and rezone to change the residential portions of the project site to MDR. Under the Resource Avoidance Alternative, the residential portion of the project site would be developed at a density of 3.81 du/ac with no multi-family residential units constructed. Under the Resource Avoidance Alternative, the overall disturbance area of the project site would be reduced, as the Alternative would include the development of 165 fewer residential units (267 vs 432 units) than the proposed project and residential development under the Alternative would be reduced by 3.1 acres (77.1

acres vs 80.2 acres). Should the project applicant choose the affordable housing option to develop on-site ADUs, a total of 27 ADUs (10 percent of the 267 single-family residential units) would be included under the Alternative to satisfy the County's affordable housing obligation, for a total of 294 residential units. The amount of on-site park area would be increased by 1.2 acres (3.3 vs 2.1 acres) and open space area would be increased by 1.9 acres (11.8 vs 9.9 acres) as compared to the proposed project in order to avoid the largest on-site vernal pool in the park lot, as well as the smaller vernal pool along the eastern Phase 3 site boundary.

Similar to the proposed project, the Resource Avoidance Alternative would include development of single-family units. However, the Alternative would not include development of multi-family units in the northern portion of the project site, and instead would develop single-family units throughout the residential areas of the project site. Upgrades to the off-site existing Community Facilities District #1 Sewer Lift Station would still occur under the Resource Avoidance Alternative.

Due to the residential nature of the Resource Avoidance Alternative, and because the Alternative would include open space, most project objectives would be fully or partially met. However, because the Alternative would develop 165 fewer residential units (excluding potential ADUs) than the proposed project, and would only develop single-family units, and not provide a mix of single-family and multi-family units, Objectives 2, 6, and 8 would not be met. The Resource Avoidance Alternative would result in impacts similar to those of the proposed project related to Noise, and fewer impacts related to the remaining seven issue areas for which significant project impacts were identified. The significant and unavoidable impact related to Noise that was identified for the proposed project would remain under the Alternative.

Environmentally Superior Alternative

An EIR is required to identify the environmentally superior alternative from among the range of reasonable alternatives that are evaluated. Section 15126(e)(2) of the CEQA Guidelines requires that an environmentally superior alternative be designated and states, "If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." The No Project (No Build) Alternative would be considered the environmentally superior alternative, because the project site is assumed to remain in its current condition under the alternative. Consequently, many of the impacts resulting from the proposed project would not occur under the Alternative.

The No Project (No Build) Alternative would not meet any of the project objectives and would not meet the overall intent of the DCWPCP's land use designation for the project site. Because the Reduced Project Alternative and the Resource Avoidance Alternative would include the development of a residential neighborhood incorporating open space, and because the designs of each Alternative would generally resemble the proposed project, including the upgrades to the existing Community Facilities District #1 Sewer Lift Station and improvements to nearby intersections and roadways, most project objectives would be fully or partially met by each Alternative. However, due to the reduced number of single-family residential units, the Reduced Project Alternative would satisfy Objective 8 to a lesser extent than the proposed project. In addition, because the Resource Avoidance Alternative would only develop single-family units and would eliminate the multi-family unit component of the proposed project, the Resource Avoidance Alternative would not satisfy Project Objectives 2, 6, or 8. Overall, none of the alternatives would be as effective as the proposed project in satisfying the portion of the underlying purpose of the proposed project focused on addressing statewide and regional housing shortages.

The Reduced Project Alternative would result in fewer impacts as compared to impacts associated with the proposed project related to all of the eight issue areas for which significant project impacts were identified. The Resource Avoidance Alternative would result in impacts similar to those of the proposed project related to one issue area, and fewer impacts related to the remaining seven issue areas for which significant project impacts were identified. While the significant and unavoidable impact related to Noise identified for the proposed project would still occur under all of the Alternatives, the significant and unavoidable impact related to Noise would be reduced under the Reduced Project Alternative, but would be similar under the Resource Avoidance Alternative, as compared to the proposed project.

Based on the above, the Reduced Project Alternative would satisfy Project Objective 8 to a lesser extent, but would result in fewer impacts than the proposed project related to each issue area for which significant project impacts were identified, whereas the Resource Avoidance Alternative would not satisfy Project Objectives 2, 6, or 8 and would result in a similar impact for the short-term significant and unavoidable impact related to Noise. Therefore, the Reduced Project Alternative would be considered the Environmentally Superior Alternative. However, as discussed above, the significant and unavoidable impact related to Noise that was identified for the proposed project would still occur under the Reduced Project Alternative. As such, the number of significant and unavoidable impacts overall would be the same under the Reduced Project Alternative and the proposed project.

2.5 AREAS OF KNOWN CONTROVERSY

Areas of controversy that were identified in Notice of Preparation (NOP) comment letters, and are otherwise known for the project area, include concerns related to the following:

- Change from natural landscape to development;
- Changes to character of neighborhood;
- Emphasizing the use of California native plants;
- Landscaping designed to allow Pacific Gas & Electric Company (PG&E) to access facilities and adhere to guidelines for safe landscaping;
- Potential agricultural impacts;
- Potential impacts to prime agricultural land under Government Code Section 56064;
- Converting natural lands into urban uses;
- The use of natural gas and associated health impacts;
- Compliance with all permitting requirements;
- Fugitive dust generation;
- Implementation of a dust control plan;
- The use of wood burning appliances;
- Impedance of the Placer County Conservation Plan's (PCCP's) ability to meet its biological goals and objectives;
- Inclusion of adequate avoidance, minimization, and/or mitigation measures for all potential impacts;
- Potential direct, indirect, and cumulative impacts to biological resources during construction and operation;
- The reduction of open space;
- Preservation of native plants;
- Habitat connectivity;
- Impacts to wildlife corridors;

- Encroachment into stream corridors;
- The spread of invasive weeds;
- Compliance with requirements of the DCWPCP;
- Storage of fuel or combustibles within PG&E's easement;
- Compliance with all permitting requirements;
- Potential water supply impacts;
- Potential impacts to surface and groundwater quality during construction and operation;
- Implementation of a Storm Water Prevention Plan;
- Variances, rezoning, and consistency with the existing neighborhood;
- Consistency with City or County General and Specific Plans;
- Noise impacts from increased traffic;
- Increased demand on public services with population increase;
- Impacts to existing PG&E gas transmission pipelines;
- Increased traffic;
- Increase in vehicle miles travelled (VMT);
- Impact to operations and safety of the State Highway System;
- Impacts to nearby County and City roads;
- Consistency with the Sacramento Council of Governments Regional Transportation Plan/Sustainable Communities Strategy;
- The extension of Vineyard Road through to Walerga Road;
- Vehicle access to the proposed project;
- Potential presence of tribal cultural resources at project site; and
- Compliance with tribal consultation pursuant to Senate Bill (SB) 18 and Assembly Bill (AB) 52.

Table 2-1
Summary of Impacts and Mitigation Measures

Impact		Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
4. Aesthetics				
4-1	**Have a substantial adverse effect on a scenic vista.**	LS	*None required.*	N/A
4-2	**In a non-urbanized area, substantially degrade the existing visual character or quality of public views of the site and its surroundings (public views are those that are experienced from publicly accessible vantage point) or, in an urbanized area, conflict with applicable zoning and other regulations governing scenic quality.**	S	*Off-Site Affordable Housing Parcel* *4-2 Implement RVSP EIR Mitigation Measure 8-3a:* *Oak trees and other large-scale vegetation compatible with the existing cemetery landscape shall be planted to form a visual buffer between the cemetery and proposed residences to the east and south, sufficient to completely screen views of residences from the cemetery in the long term. In order to provide adequate mitigation in the short term, large-scale, fast-growing shrubs shall also be planted in the buffer area to provide screening within a short period of time; this buffer would then be enhanced over the long term with maturation of oaks and other trees. Newly planted trees in the buffer area shall be monitored for 5 years. All new plantings will be irrigated for the first 2 years of growth to ensure successful establishment. Alternative visual buffer designs would be considered as part of the design review process for individual projects. Any alternative would need to achieve the above objectives, which include completely screening views of surrounding residences, and compatibility with the existing cemetery landscape. An alternative design may include a masonry wall with landscaping to soften the effect of the wall.*	LS

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
4-3 Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	S	*Proposed Project* *4-3(a) Prior to Improvement Plan approval, the project applicant shall submit a lighting plan for the project to Placer County for review and approval, demonstrating that proposed lighting is Dark-Sky compliant as specified by the International Dark-Sky Association. The lighting plan shall include, but not necessarily be limited to, the following provisions:* • *Shield or screen lighting fixtures to direct the light downward and prevent light spill on adjacent properties;* • *Place shields or screens on any flood or area lighting needed for construction activities and/or security so as not to disturb adjacent residential areas and passing motorists;* • *For public lighting, prohibit the use of light fixtures that are of unusually high intensity or brightness (e.g., harsh mercury vapor, low-pressure sodium, or fluorescent bulbs) or that blink or flash; and* • *Use appropriate building materials (such as low-glare glass, low-glare building glaze or finish, neutral, earth-toned colored paint and roofing materials), shielded or screened lighting, and appropriate signage to prevent light and glare from adversely affecting motorists on nearby roadways.*	LS

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		Off-Site Affordable Housing Parcel *4-3(b) Implement RVSP EIR Mitigation Measure 8-4a, as slightly modified below (shown in strikethrough and double-underline):* *The Applicant proposes the following lighting guidelines as mitigation measures that would apply to lighting placed within public rights-of-ways and within open space areas.* *i. Lights on arterials will use American Electric Lighting, Roadway Series catalog number 325_S MR DT1 R2 FG Caltrans 4B or equivalent.* *ii. Primary Residential and Secondary Residential Street lights will use Holophane outdoor lighting Hscape series, catalog number GE 100HP_2 B S 72 N H; CVC 27" 1 CA BK or equivalent.* *These ornamental lighting styles shall be installed throughout the specific plan area with the exception of the following street corridors:* • *PFE Road* • *Walerga Road* • *Watt Avenue* *Standard "cobra head" street lighting may be provided along the street corridors listed above.* *iii. Bollards for trails will use Holophane outdoor lighting Hscapes series catalog number BOL/C*	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		45/13/LW CA BK or equivalent. The source, wattage, and voltage will be determined by Placer County's Department of Public Works. *iv. Street lighting standards shall be spaced dependent upon County requirements.* *v. Lighting shall be provided to ensure a safe environment but shall not cause areas of intense light or glare.* *vi. Lighting shall be sensitive to adjacent land uses and viewsheds. Architectural features or lighting fixtures that provide down-lighting and lighting that is shielded from adjacent uses shall be implemented.* *4-3(c) Implement RVSP EIR Mitigation Measure 8-4b:* *To minimize project contributions to cumulative, areawide night light pollution, no upward lighting shall be permitted, and all light standards shall include shielding to direct illumination downward. All lighting shall be of minimum brightness consistent with safety.* *No direct offsite light trespass shall be permitted; all lighting shall use shielded and directed light standards such that no direct offsite illumination will occur.*	
4-4 Conflict with applicable zoning and other regulations governing scenic quality associated with cumulative	LS	*None required.*	N/A

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Table 2-1
Summary of Impacts and Mitigation Measures

	Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
	development of the proposed project in combination with future buildout of the DCWPCP area.			
4-5	**Creation of new sources of light or glare associated with cumulative development of the proposed project in combination with future buildout of the DCWPCP.**	CC	*Proposed Project* *4-5(a) Implement the following Mitigation Measure set forth in this EIR:* • *4-3(a) Prior to Improvement Plan approval, the project applicant shall submit a lighting plan for the project to Placer County for review and approval, demonstrating that proposed lighting is Dark-Sky compliant as specified by the International Dark-Sky Association. The lighting plan shall include, but not necessarily be limited to, the following provisions:* ○ *Shield or screen lighting fixtures to direct the light downward and prevent light spill on adjacent properties;* ○ *Place and shield or screen flood and area lighting needed for construction activities and/or security so as not to disturb adjacent residential areas and passing motorists;* ○ *For public lighting, prohibit the use of light fixtures that are of unusually high intensity or brightness (e.g., harsh mercury vapor, low-pressure sodium, or*	LCC

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		fluorescent bulbs) or that blink or flash; and ○ *Use appropriate building materials (such as low-glare glass, low-glare building glaze or finish, neutral, earth-toned colored paint and roofing materials), shielded or screened lighting, and appropriate signage to prevent light and glare from adversely affecting motorists on nearby roadways.* *Off-Site Affordable Housing Parcel* *4-5(b) Implement the following Mitigation Measure set forth in this EIR, as slightly modified below (shown in strikethrough and double-underline):* • *4-3(b) Implement RVSP EIR Mitigation Measure 8-4a:* *The Applicant proposes the following lighting guidelines as mitigation measures that would apply to lighting placed within public rights-of-ways and within open space areas.* *i. Lights on arterials will use American Electric Lighting, Roadway Series catalog number 325_S MR DT1 R2 FG Caltrans 4B or equivalent.* *ii. Primary Residential and Secondary Residential Street lights will use*	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		Holophane outdoor lighting Hscape series, catalog number GE 100HP_2 B S 72 N H; CVC 27" 1 CA BK or equivalent. *These ornamental lighting styles shall be installed throughout the specific plan area with the exception of the following street corridors:* • *PFE Road* • *Walerga Road* • *Watt Avenue* *Standard "cobra head" street lighting may be provided along the street corridors listed above.* *iii. Bollards for trails will use Holophane outdoor lighting Hscapes series catalog number BOL/C 45/13/LW CA BK or equivalent. The source, wattage, and voltage will be determined by Placer County's Department of Public Works.* *iv. Street lighting standards shall be spaced dependent upon County requirements.* *v. Lighting shall be provided to ensure a safe environment but shall not cause areas of intense light or glare.* *vi. Lighting shall be sensitive to adjacent land uses and viewsheds. Architectural*	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		features or lighting fixtures that provide down-lighting and lighting that is shielded from adjacent uses shall be implemented. *4-5(c) Implement the following Mitigation Measure set forth in this EIR:* • *4-3(c) Implement RVSP EIR Mitigation Measure 8-4b:* *To minimize project contributions to cumulative, areawide night light pollution, no upward lighting shall be permitted, and all light standards shall include shielding to direct illumination downward. All lighting shall be of minimum brightness consistent with safety.* *No direct offsite light trespass shall be permitted; all lighting shall use shielded and directed light standards such that no direct offsite illumination will occur.*	
5. Agricultural Resources			
5-1 Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and	LS	*None required.*	N/A

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Table 2-1
Summary of Impacts and Mitigation Measures

	Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
	Monitoring Program of the California Resources Agency, to non-agricultural use, or involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use.			
5-2	**Conflict with existing zoning for agricultural use, a Williamson Act contract, or a Right-to-Farm policy.**	LS	*None required.*	N/A
5-3	**Conflict with General Plan or other policies regarding land use buffers for agricultural operations.**	LS	*None required.*	N/A
5-4	**Involve changes in the existing environment which, due to their location or nature, could cumulatively result in loss of Farmland to non-agricultural use.**	LCC	*None required.*	N/A
6. Air Quality and Greenhouse Gas Emissions				
6-1	**Conflict with or obstruct implementation of the applicable air quality plan**	S	*Off-Site Affordable Housing Parcel* *6-1(a) Implement RVSP EIR Mitigation Measure 10-1a:*	LS

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
during project construction.		*The Applicant shall submit to the PCAPCD and receive approval of a Construction Emission/Dust Control Plan prior to groundbreaking. This plan must address the minimum Administrative Requirements found in Sections 300 and 400 of District Rule 228, Fugitive Dust (www.placer.ca.gov/airpollution/airpolut.htm).* *The Applicant shall have a pre-construction meeting for grading activities for 20 or more acres to discuss the construction emission/dust control plan with employees and/or contractors and the District is to be invited.* *The Applicant shall suspend all grading operations when fugitive dust exceeds District Rule 228 fugitive dust limitations. An Applicant representative, CARB-certified to perform Visible Emissions Evaluations (VEE), shall routinely evaluate compliance with Rule 228. This requirement for a VEE is for projects grading 20 or more acres in size regardless in how many acres are to be disturbed daily.* *It is to be noted that fugitive dust is not to exceed 40 percent opacity and not to go beyond the property boundary at any time. If lime or other drying agents are used to dry out wet grading areas, they shall be controlled so as not to exceed District Rule 228 fugitive dust limitations.* *6-1(b) Implement RVSP EIR Mitigation Measure 10-1b:*	

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Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		The PCAPCD shall be provided with a list of construction equipment and anticipated construction timeline for each project. The prime contractor for each construction project shall submit to the PCAPCD a comprehensive inventory (i.e., make, model, year, emission rating) of all the heavy-duty off-road equipment (50 horsepower of greater) that will be used an aggregate of 40 or more hours for the construction project. The PCAPCD shall be provided with the anticipated construction timeline for each project including start date, and name and phone number of the project manager and onsite foreman. A plan for each project shall be submitted for approval by the PCAPCD demonstrating that the heavy-duty (> 50 horsepower) off-road vehicles to be used in the construction project, including owned, leased and subcontractor vehicles, will achieve a project wide fleet-average 20 percent NOX reduction and 45 percent particulate reduction compared to the most recent CARB fleet average. The PCAPCD should be contacted for average fleet emission data. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, aftertreatment products, and/or other options as they become available. During smog season (May through October), the construction period shall be lengthened so as to minimize the number of vehicles and equipment operating at the same time. Contractors can access the Sacramento Metropolitan AQMD's web site to determine if their off-road fleet meets the requirements listed in this measure	

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		(http://www.airquality.org/ceqa/Construction_Mitigation_Calculator.xls). *6-1(c) Implement RVSP EIR Mitigation Measure 10-1c:* *Construction equipment and vehicles shall be maintained for each project. Construction equipment exhaust emissions shall not exceed PCAPCD Rule 202 Visible Emission limitations. Operators of vehicles and equipment found to exceed opacity limits are to be immediately notified and the equipment must be repaired within 72 hours. An Applicant/developer representative (CARB-certified to perform visible emissions evaluations) shall routinely evaluate project related off-road and heavy-duty on-road equipment emissions for compliance with this requirement for projects grading more than 20 acres in size regardless of how many acres are to be disturbed daily.* *6-1(d) Implement RVSP EIR Mitigation Measure 10-1d:* *Idling time for all diesel-powered equipment shall be minimized to 5 minutes.* *6-1(e) Implement RVSP EIR Mitigation Measure 10-1e:* *For each project, the contract language shall stipulate that contractors shall not engage in open burning of removed vegetation. Vegetative material shall be*	

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Summary of Impacts and Mitigation Measures

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		chipped, delivered to waste to energy facilities, or disposed at an appropriate disposal site.	
6-2 Conflict with or obstruct implementation of the applicable air quality plan during project operation.	S	*Off-Site Affordable Housing Parcel* *6-2(a) Implement RVSP EIR Mitigation Measure 10-2a:* *The Riolo Vineyards Specific Plan shall incorporate and implement the following measures, or equally effective measures, to reduce energy consumption:* • *Install low-NO_X hot water heaters per PCAPCD Rule 246.* • *Encourage landscape maintenance companies to use battery-powered or electric equipment for nonresidential maintenance activities, where feasible.* • *Provide natural gas lines or electrical outlets to all backyards to encourage natural gas or electric barbecues, as well as electric lawn equipment.* • *Install Class I bicycle lockers along with bike racks in commercial sites.* • *Encourage landscaping with drought-resistant species, and the use of groundcovers rather than pavement to reduce heat reflection.* • *Include Energy Star efficient appliances, such as dishwashers, refrigerators, and clothes washers.* • *Include energy-efficient SunCoat Max window glazings, which have a solar heat gain of 0.27.* • *Include high-efficiency heating and efficient ventilation methods on all new residential units.*	LS

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		Furnaces to be low-NO_X with an AFUE of 80 percent. • *Incorporate solar heaters and panels in proposed project residences as feasible.* • *Include high-efficiency water heaters. The external insulation used should have an R-value of 16 and an efficiency value of 0.62.* • *Include high efficiency insulation with the following ratings – Ceilings: R-38, 2×6 Walls, 2×4 Walls: R-19, and Ducts: R-6.4.* *Implementation of Mitigation Measure 10-2a will also help reduce atmospheric and greenhouse gas emissions from the Riolo Vineyards project and/or reduce energy consumption, and thus may reduce the project's contribution to the impact of global climate change.* *6-2(b) Implement RVSP EIR Mitigation Measure 10-2b:* *Open burning of any kind shall be prohibited in the residential, commercial, and recreational parcels of the Riolo Vineyards Specific Plan Area. Open burning will be allowed on the Agricultural, Agriculture-10, and Rural Residential parcels in accordance with PCAPCD Regulation 3, which requires a burn permit to be issued by the PCAPCD. Open burning creates substantial pollutant emissions of ozone precursors, CO, and PM. Any company employed to maintain landscapes within the Plan Area will be prohibited from open burning of vegetative refuse anywhere in the SVAB. The*	

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		incorporation of this mitigation measure as part of the by-laws of a homeowners association (e.g., covenants, conditions, and restrictions) would ensure compliance with this future rule, which will be enforced by PCAPCD as a requirement for the County to comply with the ambient air quality standard for $PM_{2.5}$ pollutants. The Applicant proposes additional open-burning restrictions, which state that burning activities shall be limited to vegetation materials (green waste) and conducted within 200 feet of a public street, trail, or park facility. Additionally, open-burning activities shall require a burn permit from the Placer County Air Pollution Control District (APCD) and shall be in compliance with APCD Regulation 3. *6-2(c) Implement RVSP EIR Mitigation Measure 10-2d:* *Each project shall implement an offsite mitigation program, coordinated through the PCAPCD, to offset the project's long-term ozone precursor emissions. The project offsite mitigation program must be approved by the PCAPCD. The project's offsite mitigation program provides monetary incentives to sources of air pollution within the project's air basin that are not required by law to reduce their emissions. Therefore, the emission reductions are real, quantifiable and implement provisions of the 1994 State Implementation Plan. The offsite mitigation program reduces emissions within the air basin that would not otherwise be eliminated. In lieu of each project implementing its own offsite mitigation*	

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		program, the Applicant can choose to participate in the PCAPCD Offsite Mitigation Program by paying an equivalent amount of money into the District program. Based on the URBEMIS results in Appendix G2, the per house unit fee is $323 and the multi family per unit fee is $232. This is a one time fee that would be payable at the time of the final map recording.	
6-3 Expose sensitive receptors to substantial pollutant concentrations.	LS	*None required.*	N/A
6-4 Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.	LS	*None required.*	N/A
6-5 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).	CC	*Off-Site Affordable Housing Parcel* *6-5 Implement RVSP EIR Mitigation Measure 10-6a:* *Implement the following mitigation measures:* • *Mitigation Measure 10-1a [incorporated as Mitigation Measure 6-1(a) of this EIR] (Prepare and implement emission control/dust control measures);* • *Mitigation Measure 10-1b [incorporated as Mitigation Measure 6-1(b) of this EIR] (Provide PCAPCD with a list of construction equipment and anticipated construction timeline);*	LCC

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		• *Mitigation Measure 10-1c [incorporated as Mitigation Measure 6-1(c) of this EIR] (Maintain construction equipment and vehicles);* • *Mitigation Measure 10-1d [incorporated as Mitigation Measure 6-1(d) of this EIR] (Minimize idling time for diesel-power equipment);* • *Mitigation Measure 10-1e [incorporated as Mitigation Measure 6-1(e) of this EIR] (No open burning of removed vegetation);* • *Mitigation Measure 10-2a [incorporated as Mitigation Measure 6-2(a) of this EIR] (Implement measures to reduce energy consumption);* • *Mitigation Measure 10-2b [incorporated as Mitigation Measure 6-2(b) of this EIR] (Prohibit open burning); and* • *Mitigation Measure 10-2d [incorporated as Mitigation Measure 6-2(c) of this EIR] (Implement offsite mitigation programs or pay an in-lieu amount into the Placer County Air Pollution Control District's Air Quality Mitigation Program).* *The complete descriptions of these mitigation measures are provided above.*	
6-6 Generation of GHG emissions that may have a significant impact on the environment or conflict with an applicable plan, policy or regulation of an agency adopted for the	CC	*Off-Site Affordable Housing Parcel* *6-6 Implement RVSP EIR Mitigation Measure 10-7a:* *Implement the following mitigation measures:*	LCC

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	purpose of reducing the emissions of GHGs.		• *Mitigation Measure 10-1c [incorporated as Mitigation Measure 6-1(c) of this EIR] (Maintain construction equipment and vehicles);* • *Mitigation Measure 10-1d [incorporated as Mitigation Measure 6-1(d) of this EIR] (Minimize idling time for diesel-powered equipment);* • *Mitigation Measure 10-2a [incorporated as Mitigation Measure 6-2(a) of this EIR] (Implement measures to reduce energy consumption); and* • *Mitigation Measure 10-2d [incorporated as Mitigation Measure 6-2(c) of this EIR] (Implement offsite mitigation programs or pay an in-lieu amount into the Placer County Air Pollution Control District's Air Quality Mitigation Program).*	
	7. Biological Resources			
7-1	**Impacts to special-status plant species either directly (e.g., threaten to eliminate a plant community) or through substantial habitat modifications.**	S	*Proposed Project, Off-Site Sewer Lift Station Improvements Area, and Off-Site Affordable Housing Parcel* *7-1 If construction within the 97.4-acre study area analyzed in the BRA prepared for the proposed project has not commenced prior to March 15, 2027, a new round of special-status plant surveys shall be conducted in areas proposed for disturbance within three years prior to the commencement of construction.* *At such time the off-site affordable housing parcel gets developed, a new round of special-status plant surveys shall be conducted in areas proposed for disturbance, prior to the commencement of construction.*	LS

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		The surveys shall be conducted in accordance with the USFWS Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants, the CNPS Botanical Survey Guidelines of the California Native Plant Society, and Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities. The survey results shall be submitted to the Placer County Community Development Resource Agency prior to the commencement of construction activities. If special-status plant species are not found, further mitigation shall not be required. *If special-status plants are found within the proposed impact area and they are perennials, such as Sanford's arrowhead or big-scale balsamroot, then mitigation shall consist of a qualified biologist or botanist digging up the plants and transplanting them into a suitable avoided area (e.g., planned open space) on-site prior to construction. If the plant found is an annual such as dwarf downingia, then mitigation shall consist of collecting seed-bearing soil and spreading it into a suitable constructed wetland at a mitigation site. If special-status plants are impacted, a mitigation plan shall be developed and approved by the Placer County Community Development Resource Agency. The Mitigation Plan shall describe the proposed mitigation for impacts to the plant species, and include (at minimum) details regarding success criteria, monitoring, reporting, and contingency in case of failure. Mitigation*	

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		for the transplantation/establishment of rare plants shall not result in the net loss of individual plants after a five-year monitoring period.	
7-2 Impacts to Crotch's bumble bee either directly (e.g., cause a wildlife population to drop below self-sustaining levels or threaten to eliminate an animal community) or through substantial habitat modifications or substantial reduction in the number or range of the species.	S	*Proposed Project, Off-Site Sewer Lift Station Improvements Area, and Off-Site Affordable Housing Parcel* *7-2 Initial ground-disturbing activities associated with development of the 97.4-acre study area or at such time the off-site affordable housing parcel gets developed (e.g., grading, vegetation removal, staging) should take place between September 1 and March 31 (i.e., outside the colony active period) to avoid potential impacts on Crotch's bumble bee. If initial ground-disturbing activities do not occur between September 1 and March 31, then at a maximum of 14 days prior to the commencement of construction activities, a qualified biologist with 10 or more years of experience conducting biological resource surveys within California shall conduct a preconstruction survey for Crotch's bumble bee in the area(s) proposed for impact.* *The survey shall occur during the period from one hour after sunrise to two hours before sunset, with temperatures between 65 degrees Fahrenheit and 90 degrees Fahrenheit, with low wind and zero rain. If the timing of the start of construction makes the survey infeasible due to the temperature requirements, the surveying biologist shall select the most appropriate days based on the National Weather Service seven-day*	LS

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		forecast and shall survey at a time of day that is closest to the temperature range stated above. The survey duration shall be commensurate with the physical extent of suitable floral resources (which represent foraging habitat) present within the area proposed for impact, and the level of effort shall be based on the metric of a minimum of one person-hour of searching per three acres of suitable floral resources/foraging habitat. A meandering pedestrian survey shall be conducted throughout the area proposed for impact in order to identify patches of suitable floral resources. *Suitable floral resources for Crotch's bumble bee include species in the following families: Apocynaceae, Asteraceae, Boraginaceae, Fabaceae, and Lamiaceae.* *At a minimum, preconstruction survey methods shall include the following:* • *Search areas with floral resources for foraging bumble bees. Observed foraging activity may indicate a nest is nearby, and therefore, the survey duration shall be increased when foraging bumble bees are present;* • *If Crotch's bumble bee are observed, watch any Crotch's bumble bees present and observe their flight patterns. Attempt to track their movements between foraging areas and the nest;*	

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		• *Visually look for nest entrances. Observe burrows, any other underground cavities, logs, or other possible nesting habitat;* • *If floral resources or other vegetation preclude observance of the nest, small areas of vegetation may be removed via hand removal, line trimming, or mowing to a height of a minimum of four inches to assist with locating the nest;* • *Look for concentrated Crotch's bumble bee activity;* • *Listen for the humming of a nest colony; and* • *If bumble bees are observed, attempt to photograph the individual and identify it to species.* *The biologist conducting the survey shall record when the survey was conducted, a general description of any suitable foraging habitat/floral resources present, a description of observed bumble bee activity, a list of bumble bee species observed, a description of any vegetation removed to facilitate the survey, and their determination of if survey observations suggest a Crotch's bumble bee nest(s) may be present or if construction activities could result in take of special-status bumble bees. The report shall be submitted to the Placer County Community Development Resource Agency prior to the commencement of construction activities.*	

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		If bumble bees are not located during the preconstruction survey or the bumble bees located are definitively identified as a common species (i.e., not special-status species), then further mitigation or coordination with the California Department of Fish and Wildlife (CDFW) is not required. *If any sign(s) of a bumble bee nest is observed, and if the species present cannot be established as a common bumble bee, then construction shall not commence until either (1) the bumble bees present are positively identified as common (i.e., not a special-status species), or (2) the completion of coordination with CDFW to identify appropriate mitigation measures, which may include, but not be limited to, waiting until the colony active season ends, establishment of nest buffers, or obtaining an Incidental Take Permit (ITP) from CDFW.* *If special-status bees are located, and after coordination with CDFW take of special-status bumble bees cannot be avoided, the project applicant shall obtain an ITP from CDFW, and the applicant shall implement all conditions identified in the ITP.* *Consistent with Fish and Game Code Section 2081, mitigation required by any ITP obtained from CDFW shall minimize and fully mitigate any impacts of the authorized take, be roughly proportional in extent to the impact of the take, be capable of successful implementation, and, where various alternative measures are available,*	

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		maintain the applicant's objectives to the greatest extent possible. Specific required permit conditions may include, but not be limited to, the project applicant's qualified biologist translocating nesting substrate in accordance with the latest scientific research to another suitable location (i.e., a location that supports similar or better floral resources as the impact area), enhancing floral resources on areas of the project site that will remain appropriate habitat, worker awareness training, and/or other measures specified by CDFW.	
7-3 Impacts to special-status branchiopods either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications or substantial reduction in the number or range of the species.	S	*Proposed Project and Off-Site Sewer Lift Station Improvements Area* *7-3(a) The Permittee shall apply for and be issued coverage under the PCCP to mitigate for all impacts to Covered Species, land cover, and sensitive natural communities. Prior to application approval, additional species surveys may be necessary, and prior to construction, land cover and special habitat fees shall be paid. The Permittee shall comply with the terms of the PCCP Coverage Certificate, including compliance with all avoidance, mitigation, and minimization measures, which may include pre-construction surveys, construction monitoring, and BMPs.* *PCCP General Condition 3: The proposed project shall pay a land conversion fee for the permanent conversion of natural land cover including VPC Low, VPC Intermediate, and Valley Foothill Riparian Woodland. The fees to be*	LS

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		paid shall be those in effect at the time of ground disturbance authorization for each project phase and shall be based on the effect to modeled species habitat at the parcel scale. *In addition to land conversion, the project would result in permanent direct effects and temporary effects to PCCP Special Habitats as estimated in Table 6 of the BRA prepared for the proposed project. The total special habitat fee obligation including temporary effect fees shall be paid prior to issuance of a land conversion authorization that allows ground disturbance.* *7-3(b) <u>PCCP Community Condition 1.1</u>: Prior to land conversion authorization approval, the unavoidable effects to vernal pool type wetlands or their buffers shall be mitigated through payment of special habitat fees. The fees to be paid to the PCA shall be those in effect at the time of land conversion authorization issuance.* *Off-Site Affordable Housing Parcel* *7-3(c) Implement RVSP EIR Mitigation Measure 6-4a:* *The presence of listed vernal pool branchiopods shall be assumed on all parcels containing appropriate habitat where protocol-level surveys have not been conducted. Compensation described in this mitigation measure shall be implemented or USFWS-protocol surveys for special-status branchiopods shall be conducted to determine*	

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		presence or absence. If vernal pool branchiopods are present, or if special-status vernal pool branchiopods are assumed to be present, the habitat shall be avoided to the extent feasible. If avoidance is not feasible, compensation shall be provided at a ratio of 3 acres for every 1 acre affected (3:1). This ratio will include creation of 1 acre of vernal pool habitat for every 1 acre impacted (1:1) and preservation of 2 acres of vernal pools for every 1 acre impacted (2:1), as described in the USFWS programmatic biological opinion issued to the Corps for small impacts to listed branchiopods (USFWS, 1996). Mitigation for impacts to listed branchiopods would be implemented according to one of the following three options, to be determined and completed prior to impact: (1) participation in a USFWS approved mitigation bank; (2) off-site mitigation at a non-bank location approved by the USFWS; or (3) contribution to the USFWS Species Fund. In the event that protocol level surveys demonstrate the absence of listed vernal pool branchiopods in these off-site features, mitigation would not be required.	
7-4 Impacts to VELB either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications.	S	*Proposed Project* *7-4 The project applicant shall apply avoidance and minimization measures as specified in the USFWS's Conservation Guidelines for the Valley Elderberry Longhorn Beetle (U.S. Fish and Wildlife Service 1999b) or the current Wildlife Agency–approved avoidance and minimization protocol. When take is authorized the project applicant shall coordinate with the PCA to provide transplants and seedlings or cuttings for planting in*	LS

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		suitable habitat on the Reserve System consistent with the USFWS Guidelines/Framework. Project-by-project mitigation requirements for VELB cannot be applied to the PCCP restoration requirements for a project's associated riparian native trees/shrubs impacts to be planted as replacement habitat (i.e., mitigation for impacts to valley elderberry longhorn beetle [transplants and plantings of seedlings/cuttings] does not count as mitigation for impacts to riverine and riparian [restoration of riverine and riparian]). *Proof of compliance with appliable VELB avoidance and mitigation measures shall be submitted to the Placer County Community Development Resource Agency prior to the commencement of construction activities.*	
7-5 Impacts to western spadefoot either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications.	S	*Proposed Project and Off-Site Sewer Lift Station Improvements Area* *7-5(a) Within two years prior to the commencement of construction activities, one nocturnal acoustic survey of all areas within 300 feet of vernal pools and seasonal wetlands shall be conducted during the end of the wet season, specifically March or April. The acoustic survey shall consist of walking through the area and listening for the distinctive snore-like call of the species. Timing and methodology for the acoustic survey shall be based on those described in Distribution of the Western Spadefoot (Spea hammondii) in the Northern Sacramento Valley of California, with Comments on Status and Survey Methodology. The results of the survey shall be submitted*	LS

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		to the Placer County Community Development Resource Agency. *If the nocturnal acoustic survey is negative, further mitigation shall not be necessary. If western spadefoots are observed within aquatic habitat proposed for impact, the tadpoles shall be captured and relocated by the applicant's qualified biologist to an off-site open space preserve with suitable habitat of equivalent or greater value in the vicinity of the overall project site. If western spadefoots are observed within aquatic habitat proposed for avoidance, then the project applicant may either relocate the tadpoles to an off-site open space preserve with habitat of equivalent or greater value (e.g., vernal pools and seasonal wetlands in a grassland/woodland matrix) in the vicinity of the overall project site, or install silt fence along the edge of the proposed area of disturbance within 300 feet of the occupied aquatic habitat to prevent metamorphosed individuals from dispersing into the construction area.* *Off-Site Affordable Housing Parcel* *7-5(b)* *Implement Mitigation Measure 7-5(a).* *7-5(c)* *Implement RVSP EIR Mitigation Measure 6-1c:* *The following BMPs to avoid impacts to wetlands in the Plan Area shall be implemented for all construction related to the proposed project:*	

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		• *Four-foot-tall, brightly colored (yellow or orange), synthetic mesh material or chainlink fencing shall be installed at the edge of all avoided wetlands and a minimum of 50 feet from the edge of tributaries to Dry Creek prior to any construction equipment being moved on site or any construction activities taking place. Fencing shall be continuously maintained and shall be the responsibility of an onsite compliance officer designated by the developer. Fencing is to remain intact until construction is complete and may not be removed without the written consent of the County.* • *Ground disturbance associated with construction, including vehicle operation/parking and construction material storage, shall be prohibited within wetlands or within 50 feet of the edge of tributaries to Dry Creek.* • *Where working areas encroach on live or dry streams, lakes, or wetlands, RWQCB-approved physical barriers adequate to prevent the flow or discharge of sediment into these systems shall be constructed and maintained between working areas and streams, lakes and wetlands. Discharge of sediment into streams shall be held to a minimum during construction of the barriers. Discharge will be contained through the use RWQCB-approved measures that will keep sediment from entering jurisdictional waters beyond the project limits.*	

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		• *Oily or greasy substances originating from the Contractor's operations shall not be allowed to enter or be placed where they will later enter a live or dry stream, pond, or wetland.* • *Asphalt concrete shall not be allowed to enter a live or dry stream, pond, or wetland.* • *All off-road construction equipment shall be cleaned of potential noxious weed sources (mud, vegetation) before entry into the site and after entering a potentially infested area before moving on to another area, to help ensure noxious weeds from outside of the Plan Area are not introduced into the Plan Area. The contractor shall employ whatever cleaning methods (typically the use of a high-pressure water hose) are necessary to ensure that equipment is free of noxious weeds. Equipment shall be considered free of soil, seeds, and other such debris when a visual inspection does not disclose such material. Disassembly of equipment components or specialized inspection tools is not required. Equipment washing stations shall be placed in areas that afford easy containment and monitoring and that do not drain into sensitive (riparian, wetland, etc.) areas.* • *To further minimize the risk of introducing additional nonnative species into the area, only native plant species appropriate for the Plan Area will be used in any erosion control or revegetation seed mix or stock. No dry-farmed straw will be*	

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Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		used, and certified weed-free straw shall be required where erosion control straw is to be used. In addition, any hydroseed mulch used for revegetation activities must also be certified weed-free. • *The Applicant will restore and revegetate all temporary construction disturbance areas. Temporary disturbance areas will be restored to the original topography and hydrology, disked to relieve compaction, and planted with an erosion control mix composed only of native species. The proposed restoration and revegetation measures shall be summarized in the storm water pollution prevention plan for the project and submitted to Placer County for approval prior to initiation of construction activities.*	
7-6 Impacts to northwestern pond turtle either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications.	S	*Proposed Project and Off-Site Sewer Lift Station Improvements Area* *7-6(a) Implement the following Mitigation Measure set forth in this EIR:* • *<u>7-3(a)</u> The Permittee shall apply for and be issued coverage under the PCCP to mitigate for all impacts to Covered Species, land cover, and sensitive natural communities. Prior to application approval, additional species surveys may be necessary, and prior to construction, land cover and special habitat fees shall be paid. The Permittee shall comply with the terms of the*	LS

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		PCCP Coverage Certificate, including compliance with all avoidance, mitigation, and minimization measures, which may include pre-construction surveys, construction monitoring, and BMPs. *PCCP General Condition 3: The proposed project shall pay a land conversion fee for the permanent conversion of natural land cover including VPC Low, VPC Intermediate, and Valley Foothill Riparian Woodland. The fees to be paid shall be those in effect at the time of ground disturbance authorization for each project phase and shall be based on the effect to modeled species habitat at the parcel scale.* *In addition to land conversion, the project would result in permanent direct effects and temporary effects to PCCP Special Habitats as estimated in Table 6 of the Biological Resources Assessment (BRA) prepared for the proposed project. The total special habitat fee obligation including temporary effect fees shall be paid prior to issuance of a land conversion authorization that allows ground disturbance.* *7-6(b) PCCP General Condition 1: Prior to improvement plan approval, the proposed project shall obtain coverage*	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit Order 2009-0057-DWQ), including requirements to develop a project-based Storm Water Pollution Prevention Plan (SWPPP) and applicable NPDES program requirements as implemented by the County. Construction activity subject to this permit includes clearing, grading and disturbances to the ground such as stockpiling, or excavation. *The project shall comply with the West Placer Storm Water Quality Design Manual (Design Manual). The project shall implement the following BMPs. This list shall be included on the notes page of the improvement/grading plans and shall be shown on the plans:* 1. *When possible, vehicles and equipment shall be parked on pavement, existing roads, and previously disturbed areas. When vehicle parking areas are to be established as a temporary facility, the site shall be recovered to pre-project or ecologically improved conditions within one year of start of groundbreaking to ensure effects are temporary (refer to Section 6.3.1.4, General Condition 4, Temporary Effects, for the process to demonstrate temporary effects).* 2. *Trash generated by Covered Activities shall be promptly and properly removed from the site.*	

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Table 2-1
Summary of Impacts and Mitigation Measures

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		3. Appropriate erosion control measures (e.g., fiber rolls, filter fences, vegetative buffer strips) shall be used on site to reduce siltation and runoff of contaminants into avoided wetlands, ponds, streams, or riparian vegetation. *(a) Erosion control measures shall be of material that will not entrap wildlife (i.e., no plastic monofilament). Erosion control blankets shall be used as a last resort because of their tendency to biodegrade slowly and trap reptiles and amphibians.* *(b) Erosion control measures shall be placed between the area of disturbance and any avoided aquatic feature, within an area identified with highly visible markers (e.g., construction and erosion-control fencing, flagging, silt barriers) prior to commencement of construction activities. Such identification will be properly maintained until construction is completed and the soils have been stabilized.* *(c) Fiber rolls used for erosion control shall be certified by the California Department of Food and Agriculture or any agency that is a successor or receives delegated authority during the permit term as weed free.*	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		(d) Seed mixtures applied for erosion control shall not contain California Invasive Plant Council–designated invasive species (http://www.cal-ipc.org/paf/) but shall be composed of native species appropriate for the site or sterile non-native species. If sterile non-native species are used for temporary erosion control, native seed mixtures must be used in subsequent treatments to provide long-term erosion control and slow colonization by invasive non-natives. *4. If the runoff from the development will flow within 100 feet of a wetland or pond, vegetated storm water filtration features, such as rain gardens, grass swales, tree box filters, infiltration basins, or similar LID features to capture and treat flows, shall be installed consistent with local programs and ordinances.* *7-6(c) <u>PCCP Community Condition 2.2</u>: Prior to land conversion authorization, the applicant shall coordinate with the PCA to determine which In-Stream and Stream System Best Management Practices (BMPs) from Table 7-1 of the User's Guide apply to the proposed project. The applicant shall identify the applicable BMPs on the project's improvement or grading plans. The selected BMPs shall be incorporated into the project's Land Conversion Authorization letter.*	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		Prior to land conversion authorization approval, the unavoidable effects to riverine and riparian habitat or their buffers shall be mitigated through payment of special habitat fees. The fees to be paid shall be those in effect at the time of land conversion authorization.	
		7-6(d) PCCP Stream System Condition 1: The project shall be designed to minimize development activities within the stream system to the maximum extent possible.	
		7-6(e) PCCP Stream System Condition 2: The project's development footprint is directly impacting the Stream System. The area of encroachment is subject to the Stream System Encroachment Special Habitats Fee as described in Chapter 5 of the PCCP User's Guide. Fees shall be paid to the PCA prior to the issuance of any permit or authorization that results in ground disturbance within the Stream System.	
		7-6(f) PCCP Community Condition 2.1: To the maximum extent possible, the proposed project shall not modify any area within a buffer that extends 50 feet outward from the outermost bounds of the riparian vegetation. The improvement or grading plans shall show the location of the riverine/riparian buffer.	
		7-6(g) A northwestern pond turtle survey shall be conducted by a qualified biologist within 48 hours prior to construction where construction activities overlap with Dry Creek, intermittent drainages, and woodlands within 150 feet of	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		these aquatic resources. The results of the survey shall be submitted to the Placer County Community Development Resource Agency. *If northwestern pond turtles or nests are not found, further mitigation is not necessary. If a northwestern pond turtle is observed within the proposed impact area, a qualified biologist shall relocate the individual to habitat of equivalent or greater value (e.g., riparian wetlands or riparian woodlands adjacent to a perennial creek or intermittent drainage) outside of the proposed impact area prior to construction. If a northwestern pond turtle nest is observed within the proposed impact area, the nest shall be fenced off and avoided until the eggs hatch. The exclusion fencing shall be placed at least 25 feet from the nest. A qualified biologist shall monitor the nest daily during construction to ensure that hatchlings do not disperse into the construction area. Relocation of hatchlings shall occur as stipulated above, if necessary.*	
7-7 Have a substantial adverse effect, either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications or substantial reduction in the number or range of the	S	*Proposed Project and Off-Site Sewer Lift Station Improvements Area* *7-7(a) Implement the following Mitigation Measure set forth in this EIR:* • *<u>7-3(a)</u> The Permittee shall apply for and be issued coverage under the PCCP to mitigate for all impacts to Covered Species, land cover, and sensitive natural communities. Prior to application approval, additional species surveys may be*	LS

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
species, on Swainson's hawk.		*necessary, and prior to construction, land cover and special habitat fees shall be paid. The Permittee shall comply with the terms of the PCCP Coverage Certificate, including compliance with all avoidance, mitigation, and minimization measures, which may include pre-construction surveys, construction monitoring, and BMPs.* *PCCP General Condition 3: The proposed project shall pay a land conversion fee for the permanent conversion of natural land cover including VPC Low, VPC Intermediate, and Valley Foothill Riparian Woodland. The fees to be paid shall be those in effect at the time of ground disturbance authorization for each project phase and shall be based on the effect to modeled species habitat at the parcel scale.* *In addition to land conversion, the project would result in permanent direct effects and temporary effects to PCCP Special Habitats as estimated in Table 6 of the Biological Resources Assessment (BRA) prepared for the proposed project. The total special habitat fee obligation including temporary effect fees shall be paid prior to issuance of a land conversion authorization that allows ground disturbance.*	

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		7-7(b)	*PCCP Species Condition 1: Planning-level Swainson's hawk surveys shall be required a year in advance of construction using the survey guidelines developed for the PCCP. Planning-level surveys are intended to identify nest trees to guide avoidance during project tree removal and construction.* *Additionally, the year of construction (starting in February) and pre-construction (no more than 15 days prior to ground disturbance) surveys shall be conducted within a 1,320-foot radius of the project. Surveys shall be conducted consistent with PCCP guidelines (based on Swainson's Hawk Technical Advisory Committee 2000). In instances where an adjacent parcel is not accessible to a survey, the qualified biologist shall scan all potential nest trees from the adjacent property, roadsides, or other safe, publicly accessible viewpoints, without trespassing, using binoculars and/or a spotting scope. Surveys are typically required from February 1 to September 15 (or sooner if it is determined that birds are nesting earlier in the year). The applicant shall contact the PCA for assistance with survey timing. If a Swainson's hawk nest is located and presence confirmed, only one follow-up visit is required.* *During the nesting season (approximately February 1 to September 15 or sooner if it is determined that birds are nesting earlier in the year), ground-disturbing activities within 1,320 feet of occupied nests or nests under construction shall be prohibited to minimize the potential*	

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		for nest abandonment. While the nest is occupied, activities outside the buffer can take place provided they do not stress the breeding pair. *If the active nest site is shielded from view and noise from the project site by other development, topography, or other features, the project applicant can apply to the PCA for a reduction in the buffer distance or waiver. A qualified biologist shall be required to monitor the nest and determine that the reduced buffer does not cause nest abandonment. A monitoring, reporting, and/or buffer reduction plan shall be developed in coordination with PCA and CDFW. If PCA and CDFW, based on a qualified biologist's observations, determine nestlings have fledged, PCCP Covered Activities can proceed normally.* *Construction monitoring shall be conducted by a qualified biologist if work is to continue outside of the nest buffer, and shall focus on ensuring that activities do not occur within the buffer zone. The qualified biologist performing the construction monitoring shall ensure that effects on Swainson's hawks are minimized. If monitoring indicates that construction outside of the buffer is affecting nesting, the buffer shall be increased if space allows (e.g., move staging areas farther away). If space does not allow, all construction activities shall cease until the young have fledged from the nest (as confirmed by a qualified biologist).*	

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		The frequency of monitoring shall be approved by the PCA and based on the frequency and intensity of construction activities and the likelihood of disturbance of the active nest. In most cases, monitoring shall occur at least every other day, but in some cases, daily monitoring may be appropriate to ensure that direct effects on Swainson's hawks are minimized. The qualified biologist shall train construction personnel on the avoidance procedures and buffer zones. *Off-Site Affordable Housing Parcel* *7-7(c) Implement RVSP EIR Mitigation Measure 6-10a:* *The CDFG shall be consulted to determine appropriate mitigation for loss of Swainson's hawk foraging habitat. The Applicant shall submit to the County documentation of the mitigation plan for Swainson's hawks as approved by CDFG. Mitigation shall include any offsite impacts as determined by the Applicant and CDFG based upon the final design of the offsite project components. CDFG considers loss of foraging habitat within a 10-mile radius of any active nest as an impact to this species. Implementation of the following measures would reduce the impact on foraging habitat of this species to a less-than-significant level.* *(i) Projects or related activities within 1 mile of an active nest tree shall provide mitigation as follows:*	

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Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		A. Preserve 1 acre of habitat management lands for each acre of development authorized (1:1 ratio). At least 10 percent of the habitat management land requirements shall be met by fee title acquisition or a conservation easement allowing for the active management of the habitat, with the remaining 90 percent of the habitat management lands protected by a conservation easement on agricultural lands or other suitable habitats, which provide foraging habitat. *or,* *B. Preserve 0.5 acre of habitat management land for each acre of development authorized (0.5:1 ratio) with the entire habitat management land requirement being met by fee title acquisition or with a conservation easement, which allows for the active management of the habitat for prey production.* *or,* *C. Acquire Swainson's hawk foraging habitat credits from a CDFG-approved mitigation bank at the ratios.*	

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		(ii) Projects within 5 miles of an active nest tree but greater than 1 mile from the nest tree shall provide 0.75 acre of habitat management land for each acre of urban development authorized or purchase the equivalent area from a CDFG-approved habitat conservation bank. *(iii) Projects within 10 miles of an active nest tree but greater than 5 miles from an active nest tree shall provide 0.5 acre of habitat management land for each acre of urban development authorized (0.5:1 ratio) or purchase the equivalent area from a CDFG-approved habitat conservation bank.*	
7-8 Impacts to burrowing owl either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications.	S	*Proposed Project and Off-Site Sewer Lift Station Improvements Area* *7-8(a) Implement the following Mitigation Measure set forth in this EIR:* • *7-3(a) The Permittee shall apply for and be issued coverage under the PCCP to mitigate for all impacts to Covered Species, land cover, and sensitive natural communities. Prior to application approval, additional species surveys may be necessary, and prior to construction, land cover and special habitat fees shall be paid. The Permittee shall comply with the terms of the PCCP Coverage Certificate, including compliance with all avoidance, mitigation, and minimization measures, which may include pre-*	LS

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Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		construction surveys, construction monitoring, and BMPs. *PCCP General Condition 3: The proposed project shall pay a land conversion fee for the permanent conversion of natural land cover including VPC Low, VPC Intermediate, and Valley Foothill Riparian Woodland. The fees to be paid shall be those in effect at the time of ground disturbance authorization for each project phase and shall be based on the effect to modeled species habitat at the parcel scale.* *In addition to land conversion, the project would result in permanent direct effects and temporary effects to PCCP Special Habitats as estimated in Table 6 of the Biological Resources Assessment (BRA) prepared for the proposed project. The total special habitat fee obligation including temporary effect fees shall be paid prior to issuance of a land conversion authorization that allows ground disturbance.* *7-8(b) PCCP Species Condition 3: Two surveys shall be conducted within 15 days prior to ground disturbance to establish the presence or absence of burrowing owls. The surveys shall be conducted at least seven days apart (if burrowing owls are detected on the first survey, a second*	

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		survey is not needed) for both breeding and non-breeding season surveys. All burrowing owls observed shall be counted and mapped. *During the breeding season (February 1 to August 31), surveys shall document whether burrowing owls are nesting in or within 250 feet of the project area.* *During the non-breeding season (September 1 to January 31), surveys shall document whether burrowing owls are using habitat in or directly adjacent to any area to be disturbed. Survey results will be valid only for the season (breeding or non-breeding) during which the survey was conducted. The results of the burrowing owl surveys shall be submitted to the Placer County Community Development Resource Agency and PCA.* *The qualified biologist shall survey the proposed footprint of disturbance and a 250-foot radius from the perimeter of the proposed footprint to determine the presence or absence of burrowing owls. The site shall be surveyed by walking line transects, spaced 20 to 60 feet apart, adjusting for vegetation height and density. At the start of each transect and, at least, every 300 feet, the surveyor, with use of binoculars, shall scan the entire visible project area for burrowing owls. During walking surveys, the surveyor shall record all potential burrows used by burrowing owls, as determined by the presence of one or more burrowing owls, pellets, prey remains, whitewash, or decoration. Some burrowing owls may be detected by*	

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		their calls; therefore, observers shall also listen for burrowing owls while conducting the survey. Adjacent parcels under different land ownership shall be surveyed only if access is granted. If portions of the survey area are on adjacent sites for which access has not been granted, the qualified biologist shall get as close to the non-accessible area as possible, and use binoculars to look for burrowing owls. *The presence of burrowing owls or their sign anywhere on the site or within the 250-foot accessible radius around the site shall be recorded and mapped. Surveys shall map all burrows and occurrence of sign of burrowing owl on the project site. Surveys must begin one hour before sunrise and continue until two hours after sunrise (three hours total) or begin two hours before sunset and continue until one hour after sunset. Additional time may be required for large project sites.* *If burrowing owls are found during the breeding season (approximately February 1 to August 31), the project applicant shall avoid all nest sites that could be disturbed by project construction during the remainder of the breeding season or while the nest is occupied by adults or young (occupation includes individuals or family groups foraging on or near the site following fledging). The applicant shall establish a 250-foot non-disturbance buffer zone around nests. The buffer zone shall be flagged or otherwise clearly marked. Should construction activities cause the nesting bird to vocalize, make*	

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		defensive flights at intruders, or otherwise display agitated behavior, then the exclusionary buffer shall be increased such that activities are far enough from the nest so that the bird(s) no longer display this agitated behavior. The exclusionary buffer shall remain in place until the chicks have fledged or as otherwise determined by a qualified biologist in consultation with PCA. Construction may only occur within the 250-foot buffer zone during the breeding season if a qualified raptor biologist monitors the nest and determines that the activities do not disturb nesting behavior, or the birds have not begun egg-laying and incubation, or that the juveniles from the occupied burrows have fledged and moved off site, in consultation with PCA. Measures such as visual screens may be used to further reduce the buffer with CDFW approval and provided a biological monitor confirms that such measures do not cause agitated behavior. *If burrowing owls are found during the non-breeding season (approximately September 1 to January 31), the project applicant shall establish a 160-foot buffer zone around active burrows. The buffer zone shall be flagged or otherwise clearly marked. Measures such as visual screens may be used to further reduce the buffer with PCA and CDFW approval and provided a biological monitor confirms that such measures do not cause agitated behavior.* *After all alternative avoidance and minimization measures are exhausted as confirmed by CDFW, a*	

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		qualified biologist may passively exclude birds from those burrows during the non-breeding season. A burrowing owl exclusion plan shall be developed by a qualified biologist consistent with the most recent guidance from the USFWS and/or CDFW and submitted to and approved by the PCA and the USFWS and CDFW. Burrow exclusion shall be conducted for burrows located in the project footprint and within a 160-foot buffer zone as necessary. *A biological monitor shall be present on site daily to ensure that no Covered Activities occur within the buffer zone. The qualified biologist performing the construction monitoring shall ensure that effects on burrowing owls are minimized. If monitoring indicates that construction outside of the buffer is affecting nesting, the buffer shall be increased if space allows (e.g., move staging areas farther away). If space does not allow, construction shall cease until the young have fledged from all the nests in the colony (as confirmed by a qualified biologist) or until the end of the breeding season, whichever occurs first.* *A biological monitor shall conduct training of construction personnel on the avoidance procedures, buffer zones, and protocols in the event a burrowing owl flies into an active construction zone.* *Off-Site Affordable Housing Parcel* *7-8(c) Implement RVSP EIR Mitigation Measure 6-11a:*	

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		If construction is proposed during the burrowing owl breeding season (February 1 through August 31), focused surveys for active burrows shall be conducted within 30 days prior to the beginning of the construction activities. Surveys shall be conducted by a qualified biologist. If active nests are found, no construction activities shall take place within 250 feet of the nest until the young have fledged. Burrows that cannot be avoided shall be removed during the nonbreeding season (September 1 to January 31) in accordance with CDFG protocols (CDFG, 1995). If no active nests are found during focused surveys, no further mitigation will be required. *If occupied burrows would be removed as a result of construction and there is suitable habitat in the Plan Area, onsite passive relocation shall be implemented. Owls will be excluded from the occupied burrows using one-way doors and allowed to occupy alternate natural or artificial burrows that are beyond 250 feet from the impact zone and that are within or contiguous to a minimum of 6.5 acres of potential foraging habitat for each pair of relocated owls. Relocation of owls should only be implemented during the nonbreeding season. Onsite preservation of foraging habitat adjacent to any relocated owls shall be protected in a conservation easement and managed to promote burrowing owl use of the site. CDFG approval would be required for the habitat conservation easement.*	

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		If there is not suitable habitat on site, burrowing owl habitat mitigation credits shall be purchased from a conservation bank approved by the CDFG. Offsite habitat must provide suitable burrowing owl habitat. Land shall be purchased and /or placed in a conservation easement in perpetuity and managed to main suitable habitat. Offsite mitigation shall use the following ratios: *(i) Replacement of occupied habitat with occupied habitat: 1.5 times 6.5 acres per pair or single bird (9.75 acres).* *(ii) Replacement of occupied habitat with habitat contiguous to currently occupied habitat: 2 times 6.5 acres per pair or single bird (13.0 acres).* *(iii) Replacement of occupied habitat with suitable unoccupied habitat: 3 times 6.5 acres per pair or single bird (19.5 acres).*	
7-9 Impacts to other nesting birds and raptors protected under the MBTA and CFGC either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications or substantial reduction in	S	*Proposed Project and Off-Site Sewer Lift Station Improvements Area* *7-9(a) Implement the following Mitigation Measure set forth in this EIR:* • *<u>7-3(a)</u> The Permittee shall apply for and be issued coverage under the PCCP to mitigate for all impacts to Covered Species, land cover, and sensitive natural communities. Prior to application approval, additional species surveys may be necessary, and prior to construction, land cover and special habitat fees shall be paid. The*	LS

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the number or range of the species.		*Permittee shall comply with the terms of the PCCP Coverage Certificate, including compliance with all avoidance, mitigation, minimization measures, which may include pre-construction surveys, construction monitoring, and BMPs.* *PCCP General Condition 3: The proposed project shall pay a land conversion fee for the permanent conversion of natural land cover including VPC Low, VPC Intermediate, and Valley Foothill Riparian Woodland. The fees to be paid shall be those in effect at the time of ground disturbance authorization for each project phase and shall be based on the effect to modeled species habitat at the parcel scale.* *In addition to land conversion, the project would result in permanent direct effects and temporary effects to PCCP Special Habitats as estimated in Table 6 of the Biological Resources Assessment (BRA) prepared for the proposed project. The total special habitat fee obligation including temporary effect fees shall be paid prior to issuance of a land conversion authorization that allows ground disturbance.*	

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Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		7-9(b) *PCCP Species Condition 4 (Tricolored Blackbird): Prior to initiation of PCCP Covered Activities associated with the proposed project, the qualified biologist(s) shall conduct preconstruction surveys to evaluate the presence of tricolored blackbird nesting colonies for each phase of the project. In instances where an adjacent parcel is not accessible to survey because the qualified biologist was not granted permission to enter, the qualified biologist shall scan all potential nest colony site(s) from the adjacent property, roadsides, or other safe, publicly accessible viewpoints, without trespassing, using binoculars and/or a spotting scope to look for tricolored blackbird nesting activity.* *Surveys shall be conducted at least twice, with at least one month between surveys, during the nesting season one year prior to initial ground disturbance for the Covered Activity (if feasible), and the year of ground disturbance for the Covered Activity (required). If Covered Activities will occur in the project work area during the nesting season, three surveys shall be conducted within 15 days prior to the Covered Activity, with one of the surveys occurring within five days prior to the start of the Covered Activity. The survey methods will be based on Kelsey (2008) or a similar protocol approved by the PCA and the USFWS and CDFW based on site-specific conditions.* *If the first survey indicates that suitable nesting habitat is not present on the project site or within 1,300 feet of the*	

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Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		project work area, additional surveys for nest colonies are not required. *If an active colony is known to occur within three miles of the project site, a qualified biologist shall conduct two surveys of foraging habitat within the project site and within a 1,300-foot radius around the project site to determine whether foraging habitat is being actively used by foraging tricolored blackbirds. The qualified biologist shall map foraging habitat, as defined by the land cover types listed above, within a 1,300-foot radius around the project site to delineate foraging habitat that will be surveyed. The surveys shall be conducted approximately one week apart, with the second survey occurring no more than five calendar days prior to ground-disturbing activities.* *Construction activity or other covered activities that may disturb an occupied nest colony site, as determined by a qualified biologist, shall be prohibited during the nesting season (March 15 through July 31) or until the chicks have fledged or the colony has been abandoned on its own) within a 1,300-foot buffer zone around the nest colony, to the extent practicable. The intent of this condition is to prevent disturbance to occupied nest colony sites on or near project sites so they can complete their nesting cycle. This condition is not intended to preserve suitable breeding habitat on project sites but to ensure impacts to active colony sites only take place once the site is no longer occupied by the nesting colony. The*	

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		buffer shall be applied to extend beyond the nest colony site as follows: 1) if the colony is nesting in a wetland, the buffer must be established from the outer edge of all hydric vegetation associated with the colony, or 2) if the colony is nesting in non-wetland vegetation (e.g., Himalayan blackberry), the buffer must be established from the edge of the colony substrate. This buffer may be modified to a minimum of 300 feet, with written approval from the USFWS and CDFW, in areas with dense forest, buildings, or other features between the Covered Activities and the occupied active nest colony; where there is sufficient topographic relief to protect the colony from excessive noise or visual disturbance; where sound curtains have been installed; or other methods developed in consultation with the USFWS and CDFW where conditions warrant reduction of the buffer distance. If tricolored blackbirds colonize habitat adjacent to Covered Activities after the activities have been initiated, the project applicant shall reduce disturbance through establishment of buffers or noise reduction techniques or visual screens, as determined in consultation with the USFWS, CDFW, and PCA. The buffer must be clearly marked to prevent project-related activities from occurring within the buffer zone. *Active nesting colonies that occur within the non-disturbance buffer shall be monitored by the qualified biologist(s) to verify the Covered Activity is not disrupting the nesting behavior of the colony. The frequency of monitoring shall be approved by the PCA and based on*	

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		the frequency and intensity of construction activities and the likelihood of disturbance of the active nest. In most cases, monitoring will occur at least every other day, but in some cases, daily monitoring may be appropriate to ensure that direct effects on tricolored blackbird are minimized. The biologist shall train construction personnel on the avoidance procedures and buffer zones. *If the qualified biologist(s) determines that the Covered Activity is disrupting nesting and/or foraging behavior, the qualified biologist(s) shall notify the project applicant immediately, and the project applicant shall notify the PCA within 24 hours to determine additional protective measures that can be implemented. The qualified biologist(s) shall have the authority to stop Covered Activities until additional protective measures are implemented. Additional protective measures shall remain in place until the qualified biologist(s) determine(s) tricolored blackbird behavior has normalized. If additional protective measures are ineffective, the qualified biologist(s) shall have the authority to stop Covered Activities as needed until the additional protective measures are modified and nesting behavior of tricolored blackbird returns to normal.* *Additional protective measures may include increasing the size of the buffer (within the constraints of the project site), delaying Covered Activities (or the portion of Covered Activities causing the disruption) until the colony is finished breeding and chicks have left the nest site,*	

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		temporarily relocating staging areas, or temporarily rerouting access to the project work area. The project proponent shall notify the PCA and USFWS and CDFW within 24 hours if nests or nestlings are abandoned. If the nestlings are still alive, the qualified biologist(s) shall work with the USFWS and CDFW to determine appropriate actions for salvaging the eggs or nestlings. Notification to PCA and USFWS and CDFW shall be via telephone or email, followed by a written incident report. Notification shall include the date, time, location, and circumstances of the incident. *Foraging habitat within the buffer shall be monitored by the qualified biologist(s) to verify that the Covered Activity is not disrupting tricolored blackbird foraging behavior. The frequency of monitoring shall be approved by the PCA and based on the frequency and intensity of construction activities and the likelihood of disturbance of foraging tricolored blackbirds. In most cases, monitoring will occur at least every other day, but in some cases, daily monitoring may be appropriate to ensure that effects on tricolored blackbird are minimized. The biologist shall train construction personnel on the avoidance procedures and buffer zones.* *If the qualified biologist(s) determines that the Covered Activity is disrupting foraging behavior, the qualified biologist(s) shall notify project applicant immediately, and the project applicant shall notify the PCA within 24 hours to determine additional protective measures that can be*	

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		implemented. The qualified biologist(s) shall have the authority to stop Covered Activities until additional protective measures are implemented. Additional protective measures shall remain in place until the qualified biologist(s) determine(s) tricolored blackbird behavior has normalized. If additional protective measures are ineffective, the qualified biologist(s) shall have the authority to stop Covered Activities as needed until the additional protective measures are modified and foraging behavior of tricolored blackbird returns to normal. Additional protective measures may include increasing the size of the buffer (within the constraints of the project site), temporarily relocating staging areas, or temporarily rerouting access to the project work area. *7-9(c) A preconstruction nesting bird survey shall be conducted by the qualified biologist (project biologist) throughout the portions of the project site and off-site affordable housing parcel, if proposed for construction, as well as all accessible areas within a 500-foot radius of proposed construction areas for each phase, no more than three days prior to the initiation of construction. If there is a break in construction activity of more than three days, then subsequent surveys shall be conducted.* *A report summarizing the survey(s) shall be provided to the Placer County Community Development Resource Agency and the PCA within 30 days of the completed survey and is valid for one construction season, assuming that a break in construction activities of more than three*	

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		days does not occur. If nests are not found, further mitigation is not required. *If an active raptor nest is found, construction activities shall not take place within 500 feet of the nest until the young have fledged. If active songbird nests are found, a 100-foot non-disturbance buffer shall be established. The non-disturbance buffers may be reduced if a smaller, sufficiently protective buffer is proposed by the project biologist and approved by the County after taking into consideration the natural history of the species of bird nesting, the proposed activity level adjacent to the nest, the nest occupants' habituation to existing or ongoing activity, and nest concealment (i.e., whether there are visual or acoustic barriers between the proposed activity and the nest). The project biologist can visit the nest as needed to determine when the young have fledged the nest and are independent of the site or the nest can be left undisturbed until the end of the nesting season.* *7-9(d) When it is determined that the size of the non-disturbance buffer requires the project biologist to monitor the nest, that monitoring shall include observations about the bird's behaviors relative to the construction activities. Should construction activities cause a nesting bird to do any of the following in a way that would be considered a result of construction activities, then the exclusionary buffer shall be increased such that activities are far enough from the nest to stop the following agitated behavior: vocalize, make defensive flights at intruders, get up from a*	

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		brooding position, or fly off the nest. The revised non-disturbance buffer shall remain in place until the chicks have fledged or as otherwise determined by a qualified biologist in consultation with the County. *Construction activities may only resume within the non-disturbance buffer after a follow-up survey by the project biologist has been conducted and a report has been prepared indicating that the nest (or nests) is no longer active, and that no new nests have been identified.* *Off-Site Affordable Housing Parcel* *7-9(e)* *Implement RVSP EIR Mitigation Measure 6-12a below. Alternatively, the future affordable housing developer may choose to participate in the PCCP for Swainson's hawk.* *If project or program activities occur are proposed during the breeding period of the Swainson's hawk or other nesting raptors (March 1 to September 15), a qualified biologist shall conduct pre-construction surveys within a 0.5-mile radius of the project, not more than two weeks prior to construction. Surveys shall be conducted using the guideline established in the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley. If nesting Swainson's hawks or other raptors are found, project activities will be delayed within the following buffer distances until the young have fledged:*	

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		• *Swainson's hawks – 1,300 feet (0.25-mile)* • *Other raptor species – 500 feet (0.10-mile)* *Swainson's hawk nest sites within 0.5-mile of active construction will be monitored by a qualified biologist to evaluate whether the construction activities are disturbing nesting hawks. If the nesting birds appear distressed, the monitor shall halt all construction activities within 0.5-mile of the nest site and CDFG will be contacted to identify appropriate contingency measures. These measures might include limitations on the activities that would be allowed within 0.5-mile of the nest site or termination of all work within 0.5-mile of the nest site. All CDFG recommendations shall be complied with. If construction activities occur over more than one year, surveys shall be conducted during each year of construction.* *If active nests are not identified during the preconstruction survey or if construction activities are proposed to occur during the nonbreeding season (September 16 through February 28), preconstruction surveys or other mitigation measures for Swainson's hawk or other nesting raptors shall not be required.*	
7-10 Impacts to roosting bats either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through	S	*Proposed Project and Off-Site Sewer Lift Station Improvements Area* *7-10(a) Prior to the commencement of construction activities, a qualified biologist shall conduct a bat habitat assessment of all potential roosting habitat features, including trees within the proposed impact footprint within the project*	LS

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substantial habitat modifications.		*vicinity. The habitat assessment shall identify all potentially suitable roosting habitat and may be conducted up to one year prior to the start of construction. The results of the assessment shall be submitted to the Placer County Community Development Resource Agency.* • *If potential roosting habitat is identified (cavities in trees or potential roosts within structures) within the areas proposed for impact, the biologist shall survey the potential roosting habitat during the active season (generally April through October or from January through March on days with temperatures in excess of 50 degrees Fahrenheit) to determine the presence of roosting bats. The surveys are recommended to be conducted utilizing methods that are considered acceptable by bat experts after consultation with CDFW. Methods may include evening emergence surveys, acoustic surveys, inspecting potential roosting habitat with fiberoptic cameras, or a combination thereof.* • *If roosting bats are identified within any of the trees planned for removal, or if presence is assumed, the trees shall be removed outside of pup season, only on days with temperatures in excess of 50 degrees Fahrenheit. Pup season is generally during the months of May through August. Two-step tree removal shall be utilized under the supervision of the qualified biologist.*	

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		Two-step tree removal involves removal of all branches of the tree that do not provide roosting habitat on the first day, and then the next day cutting down the remaining portion of the tree. • *Additionally, it is recommended that all other tree removal shall be conducted from January through March on days with temperatures in excess of 50 degrees Fahrenheit to avoid potential impacts to foliage-roosting bat species.* • *If roosting bats are identified within any structures planned for removal, a bat exclusion plan shall be prepared by a qualified bat biologist describing the methods to be used to humanely exclude bats prior to disturbance. The plan shall be approved by the Placer County Community Development Resource Agency after consultation with CDFW and shall be implemented prior to the start of construction.* • *The requirements for the bat expert and County to consult with CDFW prior to approving survey methods and a bat exclusion plan shall be satisfied either where CDFW responds to requests for consultation within 30 days of the requests or where the bat expert and County have attempted to consult with CDFW but CDFW has failed to respond to the request within 30 days of the placement of the request.* *Off-Site Affordable Housing Parcel* *7-10(b) Implement RVSP EIR Mitigation Measure 6-8a:*	

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		Prior to construction, a qualified biologist shall survey any affected structures and trees for evidences of bat roosts (e.g., bat guano). If roosts are found, they shall be removed in April, September, or October in order to avoid the hibernation and maternity seasons. Appropriate exclusion methods will be used, as needed, during habitat removal. If bats must be excluded, the Applicant shall work with a qualified biologist to determine appropriate exclusion methods. If bats are found onsite and cannot be avoided, each Applicant/developer for construction projects within the Plan Area shall work with a qualified biologist to determine if additional mitigation, such as the construction of bat boxes, is appropriate. Determination of these additional measures will depend on the species present and their specific ecological preferences/requirements. Other steps could include improving other avoided bat habitat or designing new project elements such as bat-friendly road crossings. If no active bat roosts are found during focused surveys, no further mitigation will be required.	
7-11 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 CDFW or USFWS.	S	*Proposed Project and Off-Site Sewer Lift Station Improvements Area* *7-11(a) Implement the following Mitigation Measures set forth in this EIR:* • *7-3(a) The Permittee shall apply for and be issued coverage under the PCCP to mitigate for all impacts to Covered Species, land cover, and sensitive natural communities. Prior to*	LS

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Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		application approval, additional species surveys may be necessary, and prior to construction, land cover and special habitat fees shall be paid. The Permittee shall comply with the terms of the PCCP Coverage Certificate, including compliance with all avoidance, mitigation, and minimization measures, which may include pre-construction surveys, construction monitoring, and BMPs. *PCCP General Condition 3: The proposed project shall pay a land conversion fee for the permanent conversion of natural land cover including VPC Low, VPC Intermediate, and Valley Foothill Riparian Woodland. The fees to be paid shall be those in effect at the time of ground disturbance authorization for each project phase and shall be based on the effect to modeled species habitat at the parcel scale.* *In addition to land conversion, the project would result in permanent direct effects and temporary effects to PCCP Special Habitats as estimated in Table 6 of the Biological Resources Assessment (BRA) prepared for the proposed project. The total special habitat fee obligation including temporary effect fees shall be paid prior to issuance of*	

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		a land conversion authorization that allows ground disturbance of a special habitat. • *7-4(c) PCCP Community Condition 2.2: Prior to land conversion authorization, the applicant shall coordinate with the PCA to determine which In-Stream and Stream System Best Management Practices (BMPs) from Table 7-1 of the Placer County Conservation Plan apply to the proposed project. The applicant shall identify the applicable BMPs on the project's improvement or grading plans. The selected BMPs shall be incorporated into the project's Land Conversion Authorization letter.* *Prior to land conversion authorization approval, the unavoidable effects to riverine and riparian habitat or their buffers shall be mitigated through payment of special habitat fees. The fees to be paid shall be those in effect at the time of land conversion authorization.* • *7-6(b) PCCP Community Condition 2.1: To the maximum extent possible, the proposed project shall not modify any area within a buffer that extends 50 feet outward from the outermost bounds of the riparian vegetation. The improvement or grading plans shall show the location of the riverine/riparian buffer.*	

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		7-11(b)	*PCCP General Condition 4: The applicant shall restore all temporarily disturbed areas and, one year after project groundbreaking, provide the County with a written assessment of how the performance standards were met. The project would result in temporary effects to special habitats (riverine/riparian). Prior to issuance of land conversion authorization, the project shall pay a fee based on the acres of impact. The fee to be paid shall be that in effect at the time of land conversion authorization issuance. If it is determined by the County or the PCCP biologist that the effects remain one year after groundbreaking activities have commenced, the effects shall be considered permanent and the County project lead shall reassess fees based on those effects.*	
		7-11(c)	*Prior to the commencement of ground-disturbing activities, the applicant shall apply for a Section 1600 Lake or Streambed Alteration Agreement from CDFW for the entire project or by phase as needed. The Lake and Streambed Alteration Agreement program is not fully integrated into the PCCP and must be applied for separate and apart from the PCCP. The information provided shall include a description of all activities associated with the project, not just those closely associated with the drainages and/or riparian vegetation. Impacts shall be outlined in the application and are expected to be in substantial conformance with the impacts to biological resources outlined in this document. Impacts for each activity shall be broken down by temporary and permanent, and a description of the*	

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		proposed mitigation for biological resource impacts shall be outlined per activity and then by temporary and permanent. Information regarding project-specific drainage and hydrology changes resulting from project implementation shall be provided as well as a description of storm water treatment methods. Minimization and avoidance measures shall be proposed as appropriate and may include: preconstruction species surveys and reporting, protective fencing around avoided biological resources, worker environmental awareness training, seeding disturbed areas adjacent to open space areas with native seed, and installation of project-specific storm water BMPs. Mitigation shall be determined by CDFW and result in no net loss of riparian habitat.	
7-12 Have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.	S	*Proposed Project and Off-Site Sewer Lift Station Improvements Area* *7-12(a) Implement the following Mitigation Measures set forth in this EIR:* • *7-3(a) The Permittee shall apply for and be issued coverage under the PCCP to mitigate for all impacts to Covered Species, land cover, and sensitive natural communities. Prior to application approval, additional species surveys may be necessary, and prior to construction, land cover and special habitat fees shall be paid. The Permittee shall comply with the terms of the PCCP Coverage Certificate, including compliance with all avoidance, mitigation, and*	LS

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		minimization measures, which may include pre-construction surveys, construction monitoring, and BMPs. *PCCP General Condition 3: The proposed project shall pay a land conversion fee for the permanent conversion of natural land cover including VPC Low, VPC Intermediate, and Valley Foothill Riparian Woodland. The fees to be paid shall be those in effect at the time of ground disturbance authorization for each project phase and shall be based on the effect to modeled species habitat at the parcel scale.* *In addition to land conversion, the project would result in permanent direct effects and temporary effects to PCCP Special Habitats as estimated in Table 6 of the Biological Resources Assessment (BRA) prepared for the proposed project. The total special habitat fee obligation including temporary effect fees shall be paid prior to issuance of a land conversion authorization that allows ground disturbance of a special habitat.* • *7-3(b) PCCP Community Condition 1.1: Prior to land conversion authorization approval, the unavoidable effects to vernal pool type wetlands or their buffers shall be mitigated through*	

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		payment of special habitat fees. The fees to be paid to the PCA shall be those in effect at the time of land conversion authorization issuance. • *7-6(c) PCCP Community Condition 2.2: Prior to land conversion authorization, the applicant shall coordinate with the PCA to determine which In-Stream and Stream System Best Management Practices (BMPs) from Table 7-1 of the Placer County Conservation Plan apply to the proposed project. The applicant shall identify the applicable BMPs on the project's improvement or grading plans. The selected BMPs shall be incorporated into the project's Land Conversion Authorization letter.* *Prior to land conversion authorization approval, the unavoidable effects to riverine and riparian habitat or their buffers shall be mitigated through payment of special habitat fees. The fees to be paid shall be those in effect at the time of land conversion authorization.* • *7-6(d) PCCP Stream System Condition 1: The project shall be designed to minimize development activities within the stream system to the maximum extent possible.* • *7-6(e) PCCP Stream System Condition 2: The project's development footprint is directly*	

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		impacting the Stream System. The area of encroachment is subject to the Stream System Encroachment Special Habitats Fee as described in Chapter 5 of the PCCP User's Guide. Fees shall be paid to the PCA prior to the issuance of any permit or authorization that results in ground disturbance within the Stream System. • *7-6(f) PCCP Community Condition 2.1: To the maximum extent possible, the proposed project shall not modify any area within a buffer that extends 50 feet outward from the outermost bounds of the riparian vegetation. The improvement or grading plans shall show the location of the riverine/riparian buffer.* • *7-11(b) PCCP General Condition 4: The applicant shall restore all temporarily disturbed areas and, one year after project groundbreaking, provide the County with a written assessment of how the performance standards were met. The project would result in temporary effects to special habitats, including riverine/riparian, riverine/riparian buffer, and stream system (which includes blue oak woodland). Prior to issuance of land conversion authorization, the project shall pay a fee based on the acres of impact. The fee to be paid shall be that in effect at the time of land conversion*	

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		authorization issuance. If it is determined by the County or the PCCP biologist that the effects remain one year after groundbreaking activities have commenced, the effects shall be considered permanent and the County project lead shall reassess fees based on those effects. *7-12(b)* *PCCP Community Condition 1.2: Prior to land conversion authorization approval, the unavoidable effects to non-vernal pool wetlands or their buffers shall be mitigated through payment of special habitat fees. The fees to be paid to the PCA shall be those in effect at the time of land conversion authorization issuance.* *7-12(c)* *PCCP Community Condition 1.3: Prior to land conversion authorization, the project shall demonstrate compliance with the following measures. These measures shall be included on the (improvement or grading) plans.* *1. Personnel conducting ground-disturbing activities in or around other wetlands must be trained by a qualified biologist in these minimization measures and the permit obligations of project applicants working under the Plan.* *2. Construction and maintenance vehicles or equipment cannot be refueled within the wetland or its buffer unless a bermed and lined refueling area is constructed and hazardous material*	

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		absorbent pads are available in the event of a spill. 3. *No equipment will be present in the wetted portion of the aquatic feature. Equipment may only enter the area when the aquatic feature is dry and there is no forecasted rain within 72 hours. Vehicles will be checked for leaks prior to entering or traveling around the aquatic feature.* 4. *All organic matter must be removed from nets, traps, boots, vehicle tires, and all other surfaces that have come into contact with aquatic features, or potentially contaminated sediments. Items shall be rinsed with clean water before leaving each study site (U.S. Fish and Wildlife Service 2005).* 5. *Measures to minimize the spread of disease and non-native species shall be implemented based on current Wildlife Agency protocols (e.g., Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog, Appendix B, Recommended Equipment Decontamination Procedures [U.S. Fish and Wildlife Service 2005]) and other best available science.* 6. *Used cleaning materials (e.g., liquids) must be disposed of safely and, if necessary, taken off site for proper disposal. Used disposable gloves shall be retained for safe disposal in sealed bags (U.S. Fish and Wildlife Service 2005).*	

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Summary of Impacts and Mitigation Measures

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		7. *Native vegetation (shrubs and small trees) must be planted between other wetlands and the development such that the line of sight between other wetlands and the development is shielded. This measure is only required when the reviewing Permittee deems it necessary to shield other wetlands from adjacent development or to avoid direct or indirect effects from the adjacent development (e.g., trespass).* 8. *The reviewing Permittee will make a determination if fencing shall be required on a case-by-case basis. If needed, the type of fencing will match the activity and impact types. For example, projects that have the potential to cause erosion will require erosion-control barriers, and projects that may bring more household pets to a site must have permanent fencing to exclude pets. The temporal requirements for fencing also depend on the activity and impact type. For example, fencing to minimize permanent effects will be permanent, and fencing to minimize short-term effects will be removed after the activity is completed. Permanent fencing will be installed after grading or other construction activities in the area have been completed. If installed, a party responsible for maintenance will be identified prior to construction.*	

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Summary of Impacts and Mitigation Measures

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		7-12(d) *PCCP Community Condition 1.4: Prior to ground disturbance, the applicant shall schedule grading and construction in coordination with the PCA to provide the PCA the opportunity to salvage topsoil from the vernal pool wetland if they choose to do so. The applicant shall notify the PCA of their construction schedule within 30 days of the construction start date to allow the PCA the opportunity to salvage soils while the pools are completely dry (generally July through September) and the PCA must make salvage plans sufficiently far in advance so as to not unreasonably impair construction.* 7-12(e) *PCCP Community Condition 2.3: Covered Activities that affect riverine or riparian constituent habitat shall contribute to restoration as mitigation to compensate for loss of riverine or riparian constituent habitat.* *Projects that affect riverine and riparian shall contribute to replacement of these resources. Riverine restoration measures shall be located in the same watershed and salmonid habitat type (e.g., spawning or migrating if the effects occur in a salmonid stream) in which the effects occur.* *Generally, restoration and replacement actions shall be undertaken by the PCA and funded by additional fees imposed on projects. Riverine and riparian restoration to offset project effects may be implemented on-site to replace the functions of the riparian woodland degraded or lost to the Covered Activity. Riparian restoration*	

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		implemented on-site will be credited to Plan restoration targets if the restoration helps to meet the biological goals and objectives of the Plan. When it is deemed infeasible to implement restoration at the project site, in-kind restoration shall be required at an off-site location or through the payment of fees to the PCA. Stream enhancement shall be implemented in concert with Community Condition 2.2, Minimize Riverine and Riparian Effects. *7-12(f) PCCP Community Condition 3: Irrigation shall be prohibited in and around the avoided Valley oak woodland. Alteration of onsite hydrology (including from onsite sewage disposal system installation) shall be designed to ensure the Valley oak woodland receives no additional water than pre-project conditions. The Landscape Plans shall demonstrate that irrigation is not placed within the critical root zone of protected trees. Unavoidable effects to individual Valley oak trees or Valley oak woodlands or their 50-foot buffers shall pay the Plan land conversion fee by quantifying impacts as described in Effects on Valley Oak Woodlands of the PCCP User's Guide.* *7-12(g) Depending on the acreage of aquatic resources within the project area the USACE considers jurisdiction when project permitting occurs, the project applicant shall either apply for coverage under the streamlined PCCP Letter of Permission (LOP) process directly with the USACE using avoidance and minimization guidance from the CARP, a*	

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		component of the PCCP, or the applicant shall utilize the Western Placer County HCP/NCCP Programmatic General Permit 18 in compliance with the CARP. *7-12(h) The applicant shall submit an application to the RWQCB for water quality certification of the PCCP LOP or utilize General Order R5-2020-0048, the Waste Discharge Requirements of the Clean Water Act Section 401 Water Quality Certification for the Western Placer County HCP/NCCP Programmatic General Permit, as applicable, and adhere to the certification conditions.* *7-12(i) <u>PCCP CARP Authorization Conditions</u>: The project applicant shall comply with the PCCP CARP Authorization Conditions, which are as follows:* • *<u>CARP Condition 1a</u>: All work within the PCCP plan area that impacts Aquatic Resources of Placer County shall be completed according to the plans and documents included in the CARP application, Water Quality Certification, and, if applicable, Waste Discharge Requirements (WDRs). All changes to those plans shall be reported to Placer County. Minor changes may require an amendment to the CARP Authorization, Water Quality Certification, and, if applicable, WDRs. Substantial changes may render the authorization, Water Quality Certification, and, if applicable, WDRs, void, and a new application may be required.*	

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		• *CARP Condition 1b: All deviations from plans and documents provided with the application and approved by Placer County Community Development Resource Agency shall be reported to Placer County Community Development Resource Agency immediately.* • *CARP Condition 2: Any construction within the Stream System shall be implemented in a way to avoid and minimize impacts to vegetation outside the construction area. All preserved wetlands, other Aquatic Resources of Placer County, and the Stream Zone shall be protected with bright construction fencing. Temporary fencing shall be removed immediately upon completion of the project.* • *CARP Condition 3: Erosion control measures shall be specified as part of the CARP application, and the application shall not be complete without them. All erosion control specified in the permit application shall be in place and functional before the beginning of the rainy season and shall remain in place until the end of the season. Site supervisors shall be aware of weather forecasts year-round and shall be prepared to establish erosion control on short notice for unusual rain events. Erosion control features shall be inspected and maintained after each rainfall period. Maintenance includes, but is not limited to, removal of accumulated silt and the*	

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		replacement of damaged barriers and other features. • *CARP Condition 4: All required setbacks shall be implemented according to the Western Placer County HCP/NCCP Condition 4 (Western Placer County HCP/NCCP Section 6.1.2).* • *CARP Condition 5: All work in aquatic resources within the Stream System shall be restricted to periods of low flow and dry weather between April 15 and October 15, unless otherwise permitted by the Placer County Community Development Resource Agency and approved by the appropriate State and federal regulatory agency. Work within aquatic resources in the Stream System outside of the specified periods may be permitted under some circumstances. The project applicant shall provide Placer County Community Development Resource Agency with the following information: a) the extent of work already completed; b) specific details about the work yet to be completed; and c) an estimate of the time needed to complete the work in the Stream System.* • *CARP Condition 6: Weather forecasts should be monitored, and erosion control established before all storm events.* • *CARP Condition 7: Following work in a stream channel, the low flow channel shall be returned to its natural state to the extent possible. The shape and gradient of the streambed shall be*	

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		restored to the same gradient that existed before the work to the extent possible. • *CARP Condition 8: Except for site preparation for the installation and removal of dewatering structures, no excavation is allowed in flowing streams unless dredging WDRs are issued by the RWQCB. Detailed plans for dewatering must be part of the application.* • *CARP Condition 9: Temporary crossings as described in the application shall be installed no earlier than April 15 and shall be removed no later than October 15, unless otherwise permitted by the Placer County Community Development Resource Agency and approved by the appropriate State and federal regulatory agency. This work window could be modified at the discretion of Placer County and the CDFW.* • *CARP Condition 10: Vehicles other than necessary earthmoving and construction equipment shall not be allowed within the Stream System after the section of stream where work is performed is dewatered. The equipment and vehicles used in the Stream System shall be described in the application.* • *CARP Condition 11: Staging areas for equipment, materials, fuels, lubricants, and solvents shall be located outside the stream channel and banks and away from all preserved aquatic resources. All stationary equipment operated within the Stream System shall be*	

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		positioned over drip-pans. Equipment entering the Stream System shall be inspected daily for leaks that could introduce deleterious materials into aquatic resources. All discharges, unintentional or otherwise, shall be reported immediately to the Placer County Community Development Resource Agency. The Placer County Community Development Resource Agency shall then immediately notify the appropriate state and federal agencies. • *CARP Condition 12: Cement, concrete, washings, asphalt, paint, coating materials, oil, other petroleum products, and other materials that could be hazardous to aquatic life shall be prevented from reaching streams, lakes, or other water bodies. These materials shall be placed a minimum of 50 feet away from aquatic environments. All discharges, unintentional or otherwise, shall be reported immediately to the Placer County Community Development Resource Agency. The Placer County Community Development Resource Agency shall then immediately notify the appropriate State and federal agencies.* • *CARP Condition 13: During construction, litter or construction debris shall not be dumped into water bodies or other aquatic resources, nor shall it be placed in a location where it might be moved by wind or water into aquatic resources. All*	

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		construction debris shall be removed from the site upon completion of the project. • *CARP Condition 14: Only herbicides registered with the California Department of Pesticide Regulation shall be used in streams, ponds, and lakes, and shall be applied in accordance with label instructions. A list of all pesticides that may be used in the project area shall be submitted to the Placer County Community Development Resource Agency before use. The PCCP does not authorize the use of herbicides; herbicide application is not a Covered Activity.* • *CARP Condition 15: Before beginning construction, the project applicant shall have a valid CARP authorization or waiver notice. In order to obtain a permit, the project applicant shall pay all mitigation fees or purchase appropriate credits from an agency-approved mitigation bank.* • *CARP Condition 16: A copy of the CARP conditions and Water Quality Certification and WDRs shall be given to individuals responsible for activities on the site. Site personnel (employees, contractors, and subcontractors) shall be adequately informed and trained to implement all permit, Water Quality Certification, and WDR conditions and shall have a copy of all permits available on-site at all times for review by site personnel and agencies.*	

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		• *CARP Condition 17: Work shall not disturb active bird nests until young birds have fledged. To avoid impacts to nesting birds, any disturbance shall occur between September 1 and February 1 prior to the nesting season. Tree removal, earthmoving or other disturbance at other times is at the Placer County Community Development Resource Agency's discretion and shall require surveys by a qualified biologist to determine the absence of nesting birds prior to the activity.* • *CARP Condition 18: All trees marked for removal within the Stream System must be shown on maps included with the Application. Native trees over five inches diameter at breast height (DBH) shall not be removed without the consent of the Placer County Community Development Resource Agency.* • *CARP Condition 19: The Placer County Community Development Resource Agency shall be notified immediately if threatened or endangered species that are not Covered Species are discovered during construction activities. Placer County Community Development Resource Agency shall suspend work and notify the USFWS, National Marine Fisheries Service (NMFS), and the CDFW for guidance.* • *CARP Condition 20: Wildlife entering the construction site shall be allowed to leave the*	

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		area unharmed or shall be flushed or herded humanely in a safe direction away from the site. • *CARP Condition 21: All pipe sections shall be capped or inspected for wildlife before being placed in a trench. Pipes within a trench shall be capped at the end of each day to prevent entry by wildlife, except for those pipes that are being used to divert stream flow.* • *CARP Condition 22: At the end of each workday, all open trenches will be provided with a ramp of dirt or wood to allow trapped animals to escape.* • *CARP Condition 23: If human remains or cultural artifacts are discovered during construction, the applicant shall stop work in the area and notify the Placer County Community Development Resource Agency immediately. Work shall not continue in the area until the County Coroner and a qualified archaeologist have evaluated the remains, conducted a survey, prepared an assessment, and required consultations are completed.* *Off-Site Affordable Housing Parcel* *7-12(j) Implement the following Mitigation Measure set forth in this EIR:* • *7-5(c) Implement RVSP EIR Mitigation Measure 6-1c:*	

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		The following BMPs to avoid impacts to wetlands in the Plan Area shall be implemented for all construction related to the proposed project: • *Four-foot-tall, brightly colored (yellow or orange), synthetic mesh material or chainlink fencing shall be installed at the edge of all avoided wetlands and a minimum of 50 feet from the edge of tributaries to Dry Creek prior to any construction equipment being moved on site or any construction activities taking place. Fencing shall be continuously maintained and shall be the responsibility of an onsite compliance officer designated by the developer. Fencing is to remain intact until construction is complete and may not be removed without the written consent of the County.* • *Ground disturbance associated with construction, including vehicle operation/parking and construction material storage, shall be prohibited within wetlands or within 50 feet of the edge of tributaries to Dry Creek.* • *Where working areas encroach on live or dry streams, lakes, or wetlands, RWQCB-approved physical barriers adequate to prevent the flow or*	

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		discharge of sediment into these systems shall be constructed and maintained between working areas and streams, lakes and wetlands. Discharge of sediment into streams shall be held to a minimum during construction of the barriers. Discharge will be contained through the use RWQCB-approved measures that will keep sediment from entering jurisdictional waters beyond the project limits. • *Oily or greasy substances originating from the Contractor's operations shall not be allowed to enter or be placed where they will later enter a live or dry stream, pond, or wetland.* • *Asphalt concrete shall not be allowed to enter a live or dry stream, pond, or wetland.* • *All off-road construction equipment shall be cleaned of potential noxious weed sources (mud, vegetation) before entry into the site and after entering a potentially infested area before moving on to another area, to help ensure noxious weeds from outside of the Plan Area are not introduced into the Plan Area. The contractor shall employ whatever cleaning methods (typically the use of a high-pressure water hose) are*	

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		necessary to ensure that equipment is free of noxious weeds. Equipment shall be considered free of soil, seeds, and other such debris when a visual inspection does not disclose such material. Disassembly of equipment components or specialized inspection tools is not required. Equipment washing stations shall be placed in areas that afford easy containment and monitoring and that do not drain into sensitive (riparian, wetland, etc.) areas. • *To further minimize the risk of introducing additional nonnative species into the area, only native plant species appropriate for the Plan Area will be used in any erosion control or revegetation seed mix or stock. No dry-farmed straw will be used, and certified weed-free straw shall be required where erosion control straw is to be used. In addition, any hydroseed mulch used for revegetation activities must also be certified weed-free.* • *The Applicant will restore and revegetate all temporary construction disturbance areas. Temporary disturbance areas will be restored to the original topography and hydrology, disked to relieve compaction, and planted with an erosion*	

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		control mix composed only of native species. The proposed restoration and revegetation measures shall be summarized in the storm water pollution prevention plan for the project and submitted to Placer County for approval prior to initiation of construction activities. *7-12(k) Implement RVSP EIR Mitigation Measure 6-1d:* *The final drainage master plan will be developed to ensure that the stormwater drainage facilities will avoid the excavation or placement of fill within jurisdictional Waters of the U.S.*	
7-13 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.	LS	*None required.*	N/A
7-14 Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, or have a	S	*Proposed Project and Off-Site Sewer Lift Station Improvements Area* *7-14(a) Implement the following Mitigation Measure set forth in this EIR:*	LS

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substantial adverse effect on the environment by converting oak woodlands or impacting individual trees.		• *7-3(a) The Permittee shall apply for and be issued coverage under the PCCP to mitigate for all impacts to Covered Species, land cover, and sensitive natural communities. Prior to application approval, additional species surveys may be necessary, and prior to construction, land cover and special habitat fees shall be paid. The Permittee shall comply with the terms of the PCCP Coverage Certificate, including compliance with all avoidance, mitigation, and minimization measures, which may include pre-construction surveys, construction monitoring, and BMPs.* *PCCP General Condition 3: The proposed project shall pay a land conversion fee for the permanent conversion of natural land cover including VPC Low, VPC Intermediate, and Valley Foothill Riparian Woodland. The fees to be paid shall be those in effect at the time of ground disturbance authorization for each project phase and shall be based on the effect to modeled species habitat at the parcel scale.* *In addition to land conversion, the project would result in permanent direct effects and temporary effects to PCCP Special Habitats as estimated in Table 6 of the Biological Resources Assessment (BRA) prepared for*	

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		the proposed project. The total special habitat fee obligation including temporary effect fees shall be paid prior to issuance of a land conversion authorization that allows ground disturbance. *7-14(b) <u>PCCP General Condition 5</u>: Prior to initiation of construction activities, all project construction personnel shall participate in a Worker Environmental Training Program that will educate workers regarding the Covered Species and their habitats, the need to avoid impacts, state and federal protection, and the legal implications of violating environmental laws and regulations. At a minimum this training may be accomplished through tailgate presentations at the project site and the distribution of informational brochures, with descriptions of sensitive biological resources and regulatory protections, to construction personnel prior to initiation of construction work. The signed documentation of training completion by all construction workers shall be submitted to the Placer County Resource Development Agency and the PCA.* *Off-Site Affordable Housing Parcel* *7-14(c) Implement RVSP EIR Mitigation Measure 6-13a:* *Mitigation for the loss of native trees in the Plan Area shall follow the policies and mitigation guidelines set forth in The Placer County Tree Preservation Ordinance found in Chapter 12, Article 12.16 of the Placer County Code. See*	

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		Article 12.16 for details on protection, replanting and mitigation for removed trees. *The replacement or replanting of trees for mitigation may occur within the open space areas of the Specific Plan area, with approval of the County. If a suitable area for replacement planting is not available, Placer County's Tree Preservation Ordinance allows mitigation in the form of a contribution to the Tree Preservation Fund. This contribution shall be in an amount sufficient to offset the costs of purchase, planting, and maintenance of all trees planted for mitigation as result of the project.* *7-14(d) Implement RVSP EIR Mitigation Measure 6-13b:* *Native trees that are not planned for removal shall be preserved and protected per the Placer County Tree Preservation Ordinance, particularly Section 12.16.070, Item "D".*	
7-15 Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.	LS	*None required.*	N/A
7-16 Cumulative loss of habitat for special-status species.	LCC	*None required.*	N/A

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8. Cultural Resources				
8-1	**Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines, Section 15064.5.**	LS	*None required.*	N/A
8-2	**Cause a substantial adverse change in the significance of a unique archeological resource pursuant to CEQA Guidelines, Section 15064.5.**	S	*Project Site and Off-Site Sewer Lift Station Improvements Area* *8-2(a) Prior to initiation of ground-disturbing activities, a qualified archaeologist shall conduct a short awareness training session for all construction workers and supervisory personnel. The course shall explain the importance of, and legal basis for, the protection of significant archaeological resources (i.e., unique archaeological resources and historical resources of an archaeological nature). Each worker shall also learn the proper procedures to follow in the event cultural resources or human remains/burials are uncovered during construction activities, including work curtailment or redirection and to immediately contact their supervisor and the archaeological monitor. The worker education session shall include visuals of artifacts (prehistoric and historic) that might be found in the project vicinity, and take place on the construction site immediately prior to the start of any construction activities including equipment staging, installation of fencing, and any project-related ground disturbance. All ground-disturbing equipment operators shall be required to receive the*	LS

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		training and sign a form that acknowledges receipt of the training. *8-2(b) In the event that cultural resources are inadvertently discovered during project activities, work in the area must be halted within a 100-foot radius of the find and a qualified archaeologist (pursuant to the Standards at 36 CFR Part 61) and representative from the United Auburn Indian Community (if the resource is precontact) shall be notified immediately to evaluate the resource(s) encountered to determine whether they may be unique archaeological resources and/or historical resources. Notification of the resource for evaluation purposes shall also be provided immediately to the United Auburn Indian Community (UAIC) and Placer County. Construction activities may continue in other areas. If the qualified archaeologist determines that the discovery includes either unique archaeological resources or historical resources of an archaeological nature, the qualified archaeologist shall develop mitigation or treatment measures for consideration and approval by the Director of the Placer County Community Development Resource Agency or his or her designee in consultation with the project applicant. The Director may also consult with the State Historic Preservation Officer [SHPO] or any other regulatory agency that the Director believes may have informed and useful input to provide. Mitigation shall be developed and implemented in accordance with Public Resources Code Section 21083.2 and Section 15126.4 of the CEQA Guidelines, with a preference for*	

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		preservation in place. Consistent with Section 15126.4(b)(3), preservation in place may be accomplished through one or more of the following: planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement. If approved by the Director, such measures shall be implemented and completed prior to commencing further work for which grading or building permits were issued, unless otherwise directed by the Director. Avoidance or preservation of unique archaeological resources or historical resources of an archaeological nature shall not be required where such avoidance or preservation in place is deemed infeasible, as determined by the Director in consultation with the project applicant. Where avoidance or preservation are not appropriate, the qualified archaeologist, in consultation with the Director, shall prepare a detailed treatment plan for consideration and approval by the Director, which may include data recovery for resources that are not considered Tribal Cultural Resources by the UAIC. If employed, data recovery strategies for unique archaeological resources that do not also qualify as historical resources of an archaeological nature shall follow the applicable requirements and limitations set forth in Public Resources Code Section 21083.2. Data recovery will normally consist of (but would not be limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim of recovering important scientific data contained within the	

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		unique archaeological resource or historical resource of an archaeological nature. The data recovery plan shall include provisions for analysis of data in a regional context, reporting of results within a timely manner, curation of artifacts and data at an approved facility, and dissemination of reports to local and State repositories, libraries, and interested professionals. If data recovery is determined by the Director to not be appropriate, then an equally effective treatment shall be proposed and implemented. Work may not resume within the no-work radius until the Director, in consultation with the qualified archaeologist and tribal representative, determines that the site either: 1) does not contain unique archaeological resources or historical resources of an archaeological nature; or 2) that the preservation and/or treatment measures have been completed to the Director's satisfaction. This determination shall be made in coordination with the project archaeologist and UAIC Representative if a Tribal Cultural Resource is involved. *Off-Site Affordable Housing Parcel* *8-2(c) Implement RVSP EIR Mitigation Measure 7-1a if culturally significant materials are discovered during construction:* *Potentially unique archaeological resources will be capped with soil prior to construction in the area except in locations in which such capping would be infeasible due to project design. An acceptable process of "capping"*	

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		archaeological resources with soil must include the following elements: • *The soils to be covered must not suffer serious compaction;* • *The covering materials must not be chemically active;* • *The site must be one in which the natural process of deterioration have been arrested; and* • *The site must have been recorded, including the areal extent of subsurface deposits.* *8-2(d) Implement RVSP EIR Mitigation Measure 7-1b if culturally significant materials are discovered during construction:* *A qualified professional archaeologist shall be retained to conduct subsurface testing at potentially important known archaeological sites. As it has not been determined if the known sites within the Specific Plan Area are eligible for inclusion to either the NRHP or CRHR, subsurface testing (i.e., resource evaluation) should be initiated for sites when construction is to occur within 100 feet of the resource and where Mitigation Measure 7-1a [incorporated as Mitigation Measure 8-2(c) of this EIR] proves infeasible. Subsurface testing should also be implemented if culturally significant materials (i.e., unique archaeological resources or historical resources) are inadvertently exposed during construction.*	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		Subsurface testing procedures could involve shovel testing, augering, or other such techniques designed to identify and/or characterize subsurface archaeological deposits. If a resource is determined to be important under CEQA (i.e., because it is a unique archaeological resource or an historical resource), then Mitigation Measure 7-1c [incorporated as Mitigation Measure 8-2(e) of this EIR] must also be implemented. *8-2(e) Implement RVSP EIR Mitigation Measure 7-1c if culturally significant materials are discovered during construction:* *A qualified professional archaeologist shall be retained to conduct data recovery excavation. This mitigation measure will be implemented as an alternative to Mitigation Measures 7-1a [incorporated as Mitigation Measure 8-2(c) of this EIR] at cultural resource sites determined to be eligible for inclusion in either the NRHP or CRHR.* *In compliance with CEQA, implementation of this mitigation measure would entail preparation and adoption of a data recovery plan that makes provisions for adequately recovering the scientifically consequential information from and about the resource. The data recovery plan must be prepared and adopted prior to commencing any excavation activities.*	

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Table 2-1
Summary of Impacts and Mitigation Measures

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8-3 Disturb any human remains, including those interred outside of dedicated cemeteries.	S	*Project Site, Off-Site Sewer Lift Station Improvements Area, and Off-Site Affordable Housing Parcel* *8-3(a) The following language shall be noted on project Improvement Plans, subject to review and approval by the Placer County Community Development Resource Agency:* *If articulated or disarticulated human remains are encountered on the proposed project site, off-site improvement area, or off-site affordable housing parcel during construction activities, all work within 100 feet of the find must cease, and any necessary steps to ensure the integrity of the immediate area must be taken. The Placer County Coroner shall be immediately notified. If the Coroner determines the remains are of Native American origin, the Coroner shall notify the Native American Heritage Commission (NAHC) within 24 hours. The NAHC shall determine and notify a Most Likely Descendant (MLD). Further actions shall be determined, in part, by the desires of the MLD. The MLD shall be afforded 48 hours to make recommendations regarding the disposition of the remains following notification from the NAHC of the discovery. If the MLD does not make recommendations within 48 hours, the owner shall, with appropriate dignity, reinter the remains in an area of the property secure from further disturbance. Alternatively, if the owner does not accept the MLD's recommendations,*	LS

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Summary of Impacts and Mitigation Measures

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		the owner or the descendant may request mediation by the NAHC. *Off-Site Affordable Housing Parcel* *8-3(b) Implement the following Mitigation Measure set forth in this EIR if archeological or historical resources are discovered during construction:* • *8-2(d) Implement RVSP EIR Mitigation Measure 7-1b:* *A qualified professional archaeologist shall be retained to conduct subsurface testing at potentially important known archaeological sites. As it has not been determined if the known sites within the Specific Plan Area are eligible for inclusion to either the NRHP or CRHR, subsurface testing (i.e., resource evaluation) should be initiated for sites when construction is to occur within 100 feet of the resource and where Mitigation Measure 7-1a [incorporated as Mitigation Measure 8-2(c) of this EIR] proves infeasible. Subsurface testing should also be implemented if culturally significant materials (i.e., unique archaeological resources or historical resources) are inadvertently exposed during construction.* *Subsurface testing procedures could involve shovel testing, augering, or other such*	

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Summary of Impacts and Mitigation Measures

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		techniques designed to identify and/or characterize subsurface archaeological deposits. If a resource is determined to be important under CEQA (i.e., because it is a unique archaeological resource or an historical resource), then Mitigation Measure 7-1c [incorporated as Mitigation Measure 8-2(e) of this EIR] must also be implemented. *8-3(c) Implement the following Mitigation Measure set forth in this EIR if archeological or historical resources are discovered during construction:* • *<u>8-2(e)</u> Implement RVSP EIR Mitigation Measure 7-1c:* *A qualified professional archaeologist shall be retained to conduct data recovery excavation. This mitigation measure will be implemented as an alternative to Mitigation Measures 7-1a [incorporated as Mitigation Measure 8-2(c) of this EIR] at cultural resource sites determined to be eligible for inclusion in either the NRHP or CRHR.* *In compliance with CEQA, implementation of this mitigation measure would entail preparation and adoption of a data recovery plan that makes provisions for adequately recovering the scientifically consequential information from and about the resource. The data recovery plan must*	

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		be prepared and adopted prior to commencing any excavation activities. *8-3(d) Implement RVSP EIR Mitigation Measure 7-2a if archeological or historical resources are discovered during construction:* *In the event of the discovery of buried archaeological artifacts, exotic rock (non-native), or unusual amounts of shell or bone, it is recommended that project activities in the vicinity of the find be immediately stopped and a qualified professional archaeologist consulted to assess the resource and provide proper management recommendations. If the find is determined to be a historical or unique archaeological resource, contingency funding and a time allotment to allow for implementation of avoidance measures or appropriate mitigation shall be made available, as provided in Section 15064.5 of the CEQA Guidelines. In addition, the Placer County Planning Department and Department of Museums must also be contacted. Work in the area may only proceed after authorization is granted by the Placer County Planning Department. All construction and improvement plans for subsequent development within the Plan Area involving ground disturbance shall include these provisions. The archaeologist shall evaluate any potential effects on any historical resource or unique archaeological resource, and where such effects would be significant, shall recommend potential mitigation to the County for its consideration. The County will assess the*	

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Table 2-1
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Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		feasibility of any proposed mitigation (e.g., avoidance of the historical resource) and impose the mitigation where feasible in light of factors such as the nature of the find, project design, costs, Specific Plan policies and land use assumptions, and other considerations. If avoidance is unnecessary or infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of the project site while mitigation for paleontological resources is carried out.	
8-4 Have the potential to cause a physical change which would affect unique ethnic cultural values, or restrict existing religious or sacred uses within the potential impact area.	S	*Project Site and Off-Site Sewer Lift Station Improvements Area* *8-4(a) Implement the following Mitigation Measures set forth in this EIR:* • *<u>17-1(a)</u> The following language shall be noted on project Improvement Plans, subject to review and approval by the Placer County Community Development Resource Agency:* *If any suspected Tribal Cultural Resources (TCRs) or resources of cultural significance to the UAIC, including, but not limited to, features, anthropogenic/cultural soils, cultural belongings or objects (artifacts), shell, bone, shaped stones or bone, or ash/charcoal deposits are discovered by any person during construction activities, including ground disturbing activities, all work shall pause immediately within 100 feet of the find, or an agreed upon distance based on the*	LS

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Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		project area and nature of the find. Work shall cease in and within the immediate vicinity of the find regardless of whether the construction is being actively monitored by a Tribal Monitor, cultural resources specialist, or professional archaeologist. *A Tribal Representative and the Placer County Community Development Resource Agency shall be immediately notified, and the Tribal Representative, in coordination with the Placer County Community Development Resource Agency, shall determine if the find is a TCR (PRC Section 21074) and the Tribal Representative shall make recommendations for further evaluation and treatment as necessary.* *<u>Treatment and Documentation:</u>* *The culturally affiliated Tribe shall consult with the Placer County Community Development Resource Agency to (1) identify the boundaries of the new TCR and (2) if feasible, identify appropriate preservation in place and avoidance measures, including redesign or adjustments to the existing construction process, and long-term management, or 3) if avoidance is infeasible, identify a reburial location in proximity of the find where no future disturbance is anticipated. Permanent curation of TCRs shall not take place*	

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Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		unless approved in writing by the culturally affiliated Tribe. *The construction contractor(s) shall provide secure, on-site storage for culturally sensitive soils or objects that are components of TCRs that are found or recovered during construction. Only Tribal Representatives shall have access to the storage. Storage size shall be determined by the nature of the TCR and can range from a small lock box to a conex box (shipping container). A secure (locked), fenced area can also provide adequate on-site storage if larger amounts of material must be stored.* *The construction contractor(s) and Placer County shall facilitate the respectful reburial of the culturally sensitive soils or objects. This includes providing a reburial location that is consistent with the Tribe's preferences, excavation of the reburial location, and assisting with the reburial, upon request.* *Any discoveries shall be documented on a Department of Parks and Recreation (DPR) 523 form within two weeks of the discovery and submitted to the appropriate CHRIS center in a timely manner. The DPR 523 forms shall be completed and submitted to the CHRIS center by the project archaeologist. If the project does not*	

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Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		require an archaeologist, the DPR forms shall be completed and submitted to the CHRIS by the UAIC. If completed by the project archaeologist, the UAIC shall have an opportunity to review the completed forms. *Work at the TCR discovery location shall not resume until authorization is granted by the Placer County in coordination with the culturally affiliated Tribe.* *If articulated or disarticulated human remains, or human remains in any state of decomposition or skeletal completeness, are discovered during construction activities, the Placer County Coroner and the culturally affiliated Tribe shall be contacted immediately. Upon determination by the Placer County Coroner that the find is Native American in origin, the Native American Heritage Commission will assign the Most Likely Descendent who will work with the project proponent to define appropriate treatment and disposition of the burials.* • *17-1(b) The following language shall be noted on project Improvement Plans, subject to review and approval by the Placer County Community Development Resource Agency:*	

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Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		The project proponent or their construction contractor shall comply with the following measure to assist with identification of TCRs at the earliest possible time during project-related earthmoving activities: o *The project proponent shall contact the UAIC Tribal Historic Preservation Officer (THPO) (thpo@auburnrancheria.com) at least two months prior to project ground-disturbing activities to retain the services of a UAIC Certified Tribal Monitor(s). The duration of the construction schedule and Tribal Monitoring shall be determined at this time.* o *A contracted Tribal Monitor(s) shall monitor all ground-disturbing activities (e.g., vegetation removal, grading, and/or other ground disturbing activities; note: fill activities are excluded from this requirement) in the mapped area and 50' buffer provided by the UAIC to the County on June 26, 2025 (confidential map provided to the County and subsequently to the applicant). All ground-disturbing activities in the mapped area provided by the UAIC to the County on June 26, 2025, shall be subject to Tribal Monitoring unless*	

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Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		otherwise determined unnecessary by the UAIC. ○ *Specific to the off-site sewer lift station location, a contracted Tribal Monitor(s) shall monitor initial clearing and grubbing for the entire footprint of disturbance.* o *Tribal Monitors or Tribal Representatives shall have the authority to direct that work be temporarily paused, diverted, or slowed within 100 feet of the immediate impact area if sites, cultural soils, or objects of potential significance are identified. The temporary pause/diversion shall be of an adequate duration for the Tribal Representative to examine the resource.* o *Appropriate treatment of TCRs may include, but is not limited to:* *A. Recordation of the resource(s);* *B. Avoidance and preservation of the resource(s); and/or* *C. Recovery and reburial of the resource(s) onsite or in a feasible off-site location in a designated area subject to no future disturbance. The location of the reburial shall be acceptable to the UAIC.*	

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		o *To track the implementation of this measure, the Tribal Monitor(s) shall document field-monitoring activities on a Tribal Monitor log.* o *The Tribal Monitor(s) shall wear the appropriate safety equipment while on the construction site.* o *The Tribal Monitor, in consultation with the UAIC THPO and the project proponent, shall determine a mutual end or reduction to the on-site monitoring if/when construction activities have a low potential for impacting TCRs.* o *In the event the Tribal Monitor does not report to the job site at the scheduled time after receiving 24 hour business day notice, construction activities may proceed without tribal monitoring. At no time, regardless of the presence or absence of a Tribal Monitor, shall suspected TCRs be mishandled or disrespected.* o *The County shall assist with resolution of disagreements between the project proponent/contractor and the Tribe if such occurs on the project.* • *<u>17-1(c)</u> The following language shall be noted on Improvement Plans for the off-site sewer lift station improvements, subject to review and*	

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Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		approval by the Placer County Community Development Resource Agency: ○ *The Applicant/Contractor shall provide a Tribal Cultural Awareness and Sensitivity Training (training) for all personnel involved in project construction, including field consultants and construction workers, at their own expense. The training shall be developed in coordination with interested Native American Tribes.* ○ *The training shall be conducted before any project-related construction activities begin at the project site. The training will include relevant information regarding sensitive cultural resources and tribal cultural resources, including applicable regulations, protocols for avoidance, and consequences of violating State laws and regulations. The training will also describe appropriate avoidance and impact minimization measures for cultural resources and tribal cultural resources that could be located at the project site and will outline what to do and who to contact if any potential cultural resources or tribal cultural resources are encountered. The training will emphasize the requirement for*	

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Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		confidentiality and culturally appropriate treatment of any discovery of significance to Native Americans and will discuss appropriate behaviors and responsive actions, consistent with Native American tribal values. The training may be done in coordination with the project archaeologist. ○ *All ground-disturbing equipment operators shall be required to receive the training and sign a form that acknowledges receipt of the training.* *Off-Site Affordable Housing Parcel* *8-4(b) Implement the following Mitigation Measure set forth in this EIR:* • *<u>8-2(d)</u> Implement RVSP EIR Mitigation Measure 7-1b if culturally significant materials are discovered during construction:* *A qualified professional archaeologist shall be retained to conduct subsurface testing at potentially important known archaeological sites. As it has not been determined if the known sites within the Specific Plan Area are eligible for inclusion to either the NRHP or CRHR, subsurface testing (i.e., resource evaluation) should be initiated for sites when construction is to occur within 100 feet of the resource and*	

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Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		where Mitigation Measure 7-1a [incorporated as Mitigation Measure 8-2(c) of this EIR] proves infeasible. Subsurface testing should also be implemented if culturally significant materials (i.e., unique archaeological resources or historical resources) are inadvertently exposed during construction. *Subsurface testing procedures could involve shovel testing, augering, or other such techniques designed to identify and/or characterize subsurface archaeological deposits. If a resource is determined to be important under CEQA (i.e., because it is a unique archaeological resource or an historical resource), then Mitigation Measure 7-1c [incorporated as Mitigation Measure 8-2(e) of this EIR] must also be implemented.* *8-4(c) Implement the following Mitigation Measure set forth in this EIR:* • *<u>8-2(e)</u> Implement RVSP EIR Mitigation Measure 7-1c if culturally significant materials are discovered during construction:* *A qualified professional archaeologist shall be retained to conduct data recovery excavation. This mitigation measure will be implemented as an alternative to Mitigation Measures 7-1a*	

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		[incorporated as Mitigation Measure 8-2(c) of this EIR] at cultural resource sites determined to be eligible for inclusion in either the NRHP or CRHR. *In compliance with CEQA, implementation of this mitigation measure would entail preparation and adoption of a data recovery plan that makes provisions for adequately recovering the scientifically consequential information from and about the resource. The data recovery plan must be prepared and adopted prior to commencing any excavation activities.* *8-4(d) Implement the following Mitigation Measure set forth in this EIR:* • *<u>8-3(d)</u> Implement RVSP EIR Mitigation Measure 7-2a if significant archaeological or historical resources are discovered during construction:* *In the event of the discovery of buried archaeological artifacts, exotic rock (non-native), or unusual amounts of shell or bone, it is recommended that project activities in the vicinity of the find be immediately stopped and a qualified professional archaeologist consulted to assess the resource and provide proper management recommendations. If the find is determined to be a historical or unique archaeological resource, contingency funding and a time allotment to allow*	

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		for implementation of avoidance measures or appropriate mitigation shall be made available, as provided in Section 15064.5 of the CEQA Guidelines. In addition, the Placer County Planning Department and Department of Museums must also be contacted. Work in the area may only proceed after authorization is granted by the Placer County Planning Department. All construction and improvement plans for subsequent development within the Plan Area involving ground disturbance shall include these provisions. The archaeologist shall evaluate any potential effects on any historical resource or unique archaeological resource, and where such effects would be significant, shall recommend potential mitigation to the County for its consideration. The County will assess the feasibility of any proposed mitigation (e.g., avoidance of the historical resource) and impose the mitigation where feasible in light of factors such as the nature of the find, project design, costs, Specific Plan policies and land use assumptions, and other considerations. If avoidance is unnecessary or infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of the project site while mitigation for paleontological resources is carried out.	
8-5 Cause a cumulative loss of cultural resources.	LS	*None required.*	N/A

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	9. Energy			
9-1	**Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction.**	LS	*None required.*	N/A
9-2	**Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project operations.**	LS	*None required.*	N/A
9-3	**Conflict with or obstruct a State or local plan for renewable energy or energy efficiency.**	LS	*None required.*	N/A
9-4	**Result in cumulative energy impacts.**	LS	*None required.*	N/A
	10. Geology and Soils			
10-1	**Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, or seismic-related**	LS	*None required.*	N/A

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ground failure, including liquefaction, and landslides.			
10-2 **Result in substantial soil erosion or the loss of topsoil.**	S	*Project Site, Off-Site Sewer Lift Station Improvements Area, and Off-Site Affordable Housing Parcel* *10-2(a)* *Prior to construction commencing, the applicant shall provide evidence to the ESD of a Waste Discharge Identification (WDID) number generated from the State Regional Water Quality Control Board's Stormwater Multiple Application & Reports Tracking System (SMARTS). This serves as the Regional Water Quality Control Board approval or permit under the National Pollutant Discharge Elimination System (NPDES) construction stormwater quality permit.* *10-2(b)* *The applicant shall prepare and submit Improvement Plans, specifications and cost estimates (per the requirements of Section II of the Land Development Manual (LDM) that are in effect at the time of submittal) to the Engineering and Surveying Division (ESD) for review and approval of each project phase. The applicant shall pay plan check and inspection fees and Placer County Fire Department improvement plan review and inspection fees with the 1st Improvement Plan submittal. (NOTE: Prior to plan approval, all applicable recording and reproduction costs shall be paid).*	LS

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		The Final Subdivision Map(s) shall not be submitted to the Engineering and Surveying Division (ESD) until the Improvement Plans are submitted for the second review. Final technical review of the Final Subdivision Map(s) shall not conclude until after the Improvement Plans are approved by the ESD. *Any Building Permits associated with this project shall not be issued until, at a minimum, the Improvement Plans are approved by the Engineering and Surveying Division.* *Prior to the County's final acceptance of the project's improvements, submit to the Engineering and Surveying Division one copy of the Record Drawings in digital format along with one blackline hardcopy (black print on bond paper) and one PDF copy.* *10-2(c) No grading, clearing, or tree disturbance shall occur until the Improvement Plans are approved and all temporary construction fencing has been installed and inspected by a member of the County.* *The Improvement Plan(s) shall identify the stockpiling and/or vehicle staging areas with locations as far as practical from existing dwellings and protected resources in the area. The applicant shall revegetate all disturbed areas. Revegetation, undertaken from April 1 to October 1, shall include regular watering to ensure adequate growth. A winterization plan shall be provided with project Improvement Plans.*	

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		The applicant shall submit to the ESD a letter of credit or cash deposit in the amount of 110 percent of an approved engineer's estimate using the County's current Plan Check and Inspection Fee Spreadsheet for winterization and permanent erosion control work prior to Improvement Plan approval. For an improvement plan with a calculated security that exceeds $100,000, a minimum of $100,000 shall be provided as letter of credit or cash security and the remainder can be bonded. *Off-Site Affordable Housing Parcel* *10-2(d) Implement RVSP EIR Mitigation Measure 12-3a:* *For each construction phase within the Plan Area, stockpiling and/or vehicle staging areas shall be identified on the Improvement Plans. These areas shall be located as far as practical from existing dwellings and protected resources in the area.* *10-2(e) Implement RVSP EIR Mitigation Measure 12-3b:* *This project is subject to construction-related stormwater permit requirements of the federal Clean Water Act NPDES program. Each applicant/developer for future construction projects within the Plan Area shall implement Mitigation Measure 13-1c [the standards of which are included as Mitigation Measure 10-2(g) of this EIR], which requires an applicant to submit a Notice of Intent (NOI) to comply with the NPDES General Permit for Stormwater Discharges associated with Construction Activities to the*	

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		State Regional Water Quality Control Board if the specific project would disturb 1 acre of land or more. The project applicant/developer shall provide to the ESD evidence of a state-issued Waste Discharge Identification (WDID) number or filing of a NOI and fees prior to start of construction, as required by the County's Sample Conditions and Improvement Plans, paragraph ip15 (Placer County Community Development Resource Agency, 2006). *10-2(f) Implement RVSP EIR Mitigation Measure 12-3c:* *Development within the Plan Area must comply with the NPDES Phase II General Permit for the Discharge of Stormwater from small municipal separate storm sewer systems. Placer County is operating under the NPDES Phase II Rule permit, and as such, new development within the County must comply with the permit requirements. New development is subject to Attachment 4 Design Standards of the State Water Resource Control Board NPDES Phase II General Permit. These standards require that new development must be designed so as to minimize, to the maximum extent practicable, the introduction of pollutants of concern that may result in significant impacts, generated from site runoff of directly connected impervious areas, to the stormwater conveyance system as approved by the building official.* *10-2(g) Implement RVSP EIR Mitigation Measure 12-3d:*	

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Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		For all construction activities that will disturb 1 or more acre of land, a stormwater pollution prevention plan (SWPPP) for the construction phase must be prepared and implemented. *The SWPPP will include development of site-specific structural and operational BMPs to prevent and control impacts to runoff quality, measures to be implemented before each storm event, inspection and maintenance of BMPs, and monitoring of runoff quality by visual and/or analytical means. The contents of the SWPPP are set forth in detail in the permit application package. BMPs shall be designed according to the California Stormwater Quality Association Stormwater Best Management Practice Handbooks for Construction (or other similar source as approved by the DPW). BMPs for the proposed project include, but are not limited to, silt fencing (Sediment Control SE -1), straw bale barriers (Sediment Control SE-9), fiber rolls (Sediment Control SE-5), storm drain inlet protection (Sediment Control SE-10), hydraulic mulch (Erosion Control EC-3), and stabilized construction entrance (Tracking Control TR-1). The SWPPP shall also include erosion control measures, to be implemented during construction, that conform to the NPDES, Storm Drain Standards, and local standards.*	
10-3 Be located on a geological unit or soil that is unstable, or that would become unstable as a result of the project, and potentially	S	*Project Site and Off-Site Sewer Lift Station Improvements Area* *10-3(a) The Improvement Plan submittal shall include a final geotechnical engineering report produced by a California*	LS

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Table 2-1
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result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse, or be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code.		*Registered Civil Engineer or Geotechnical Engineer for ESD review and approval. The report shall address and make recommendations on the following:* *A. Road, pavement, and parking area design;* *B. Structural foundations, including retaining wall design (if applicable);* *C. Grading practices;* *D. Erosion/winterization;* *E. Special problems discovered on-site, (i.e., groundwater, expansive/unstable soils, potential for smectite clays etc.); and* *F. Slope stability.* *It is the responsibility of the developer to provide for engineering inspection and certification that earthwork has been performed in conformity with recommendations contained in the report.* *If the geotechnical engineering report indicates the presence of critically expansive or other soil problems that, if not corrected, could lead to structural defects, a certification of completion of the requirements of the soils report shall be required for subdivisions, prior to issuance of Building Permits. This certification may be completed on a lot- by-lot basis or on a Tract basis. This shall be so noted on the Improvement Plans, in the Development Notebook (if required), in the Conditions, Covenants and Restrictions (CC&Rs), and on the Informational Sheet filed with the Final Subdivision Map(s).*	

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Summary of Impacts and Mitigation Measures

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		10-3(b) *The Geotechnical Due Diligence Review prepared by ENGEO Incorporated, dated December 26, 2023, indicated the presence of expansive and loose soils, and/or other soil problems which, if not corrected, would lead to structural defects.* • *For pad graded lots, prior to final acceptance of project improvements or consideration of early Building Permits and after the completion of the pad grading for all lots, the applicant shall submit to the ESD for review and approval, a soil investigation of each lot produced by a California Registered Civil or Geotechnical Engineer (Section 17953-17955 California Health and Safety Code).* *The soil investigations shall include recommended corrective action that is likely to prevent structural damage to each proposed dwelling. In addition, the applicant shall include in the Development Notebook the soil problems encountered on each specific lot as well as the recommended corrective actions. A note shall be included on the Improvement Plans, Conditions, Covenants and Restrictions (CC&Rs), and the Informational Sheet filed with the Final Subdivision Map(s), which indicates the requirements of this condition.* *Off-Site Affordable Housing Parcel* *10-3(c)* *Implement RVSP EIR Mitigation Measure 12-5a:*	

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Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		For each development phase or construction project within the Plan Area, a geotechnical engineering report produced by a California Registered Civil Engineer or Geotechnical Engineer shall be submitted to the ESD for review and approval. The report shall address and make recommendations on the following: • *Road, pavement, and parking area design;* • *Structural foundations, including retaining wall design (if applicable);* • *Grading practices;* • *Erosion/winterization;* • *Special problems discovered on site (i.e., groundwater, expansive/unstable soils, etc.); and* • *Slope stability.* *When approved by the ESD, two copies of the final report shall be provided to the ESD and one copy to the Building Department for their use. If the soils report indicates the presence of critically expansive soils or other soils problems which, if not corrected, could lead to structural defects, a certification of completion of the requirements of the soils report will be required for subdivisions and other entitlements, prior to issuance of building permits. This certification may be completed on a lot by lot basis or on a tract basis, or other defined project basis. This shall be so noted in the Covenants, Conditions, and Restrictions and on the informational sheet filed with the final map(s). It is the responsibility of the developer to provide for engineering inspection and certification that*	

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		earthwork has been performed in conformity with recommendations contained in the report.	
10-4 Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	S	*Proposed Project and Off-Site Sewer Lift Station Improvements Area* *10-4(a) Prior to construction activities, the developer shall retain a qualified paleontologist to prepare a paleontological resources worker environmental awareness plan (WEAP). The WEAP shall be presented to all construction personnel on the first day of construction activities prior to ground disturbance. The WEAP shall serve to educate all personnel involved in the project, particularly construction personnel, of the protocols to be followed if fossils are found at the project site during ground-disturbing activities. A sign-in sheet shall be provided for all personnel in attendance at the WEAP presentation. The WEAP presentation shall be recorded for future use in the circumstance that new personnel start after the WEAP presentation occurs. The language of this mitigation measure shall be included on all future grading plans, utility plans, and improvement plans subject to approval by the Placer County ESD for the proposed project.* *10-4(b) If paleontological resources are discovered during ground-disturbing activities, work shall be halted in the area within 50 feet of the find. The applicant shall notify the Placer County Community Development Resource Agency and retain a qualified paleontologist to inspect the discovery. If the find is deemed to contain unique*	LS

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		paleontological resources under criteria established by the Society for Vertebrate Paleontology with respect to authenticity, completeness, preservation, and identification, the resource(s) shall then be salvaged and deposited in an accredited and permanent scientific institution (e.g., UCMP or Sierra College), where the discovery would be properly curated and preserved for the benefit of current and future generations. The language of this mitigation measure shall be included on any future grading plans, utility plans, and improvement plans approved by the Placer County ESD for the proposed project, where excavation work would be required. Construction may continue in areas outside of the buffer zone. *Off-Site Affordable Housing Parcel* *10-4(c) Implement RVSP EIR Mitigation Measure 7-3a:* *A professional paleontologist shall be retained to develop and implement a plan for managing paleontological resources and periodic monitoring of grading activities. The plan shall also include provisions for salvaging fossils, as necessary. The plan shall also include the timing and extent of monitoring needed. A copy of the plan shall be provided to the Placer County Planning Department prior to any grading occurring on site.* *10-4(d) Implement RVSP EIR Mitigation Measure 7-3b:*	

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		If paleontological resources are identified at a particular site, the project manager shall cease operation until a qualified professional can provide an evaluation. 1. *Identify and evaluate paleontological resource by intense field survey where impacts are considered high;* 2. *Assess effects on identified sites;* 3. *Consult with the institutional/academic paleontologists conducting research investigations within the geological formations that are slated to be impacted;* 4. *Obtain comments from the researchers; and* 5. *Comply with researchers' recommendations to address any significant adverse effects where determined by the County to be feasible.* *In considering any suggested mitigation proposed by the consulting paleontologist, Placer County Planning Department staff shall determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, Specific Plan policies and land use assumptions, and other considerations. If avoidance is unnecessary or infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of the project site while mitigation for paleontological resources is carried out.*	

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10-5 Result in significant disruptions, displacements, compaction or overcrowding of the soil, or substantial change in topography or ground surface relief features.	S	*Project Site, Off-Site Sewer Lift Station Improvements Area, and Off-Site Affordable Housing Parcel* *10-5 Implement the following Mitigation Measures set forth in this EIR:* • *<u>10-2(b)</u> The applicant shall prepare and submit Improvement Plans, specifications and cost estimates (per the requirements of Section II of the Land Development Manual (LDM) that are in effect at the time of submittal) to the Engineering and Surveying Division (ESD) for review and approval of each project phase. The applicant shall pay plan check and inspection fees and Placer County Fire Department improvement plan review and inspection fees with the 1st Improvement Plan submittal. (NOTE: Prior to plan approval, all applicable recording and reproduction costs shall be paid).* *The Final Subdivision Map(s) shall not be submitted to the Engineering and Surveying Division (ESD) until the Improvement Plans are submitted for the second review. Final technical review of the Final Subdivision Map(s) shall not conclude until after the Improvement Plans are approved by the ESD.*	LS

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Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		Any Building Permits associated with this project shall not be issued until, at a minimum, the Improvement Plans are approved by the Engineering and Surveying Division. *Prior to the County's final acceptance of the project's improvements, submit to the Engineering and Surveying Division one copy of the Record Drawings in digital format along with one blackline hardcopy (black print on bond paper) and one PDF copy.* • *10-2(c) No grading, clearing, or tree disturbance shall occur until the Improvement Plans are approved and all temporary construction fencing has been installed and inspected by a member of the County.* *The Improvement Plan(s) shall identify the stockpiling and/or vehicle staging areas with locations as far as practical from existing dwellings and protected resources in the area. The applicant shall revegetate all disturbed areas. Revegetation, undertaken from April 1 to October 1, shall include regular watering to ensure adequate growth. A winterization plan shall be provided with project Improvement Plans.*	

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Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		The applicant shall submit to the ESD a letter of credit or cash deposit in the amount of 110 percent of an approved engineer's estimate using the County's current Plan Check and Inspection Fee Spreadsheet for winterization and permanent erosion control work prior to Improvement Plan approval. For an improvement plan with a calculated security that exceeds $100,000, a minimum of $100,000 shall be provided as letter of credit or cash security and the remainder can be bonded. • *<u>10-3(a)</u> The Improvement Plan submittal shall include a final geotechnical engineering report produced by a California Registered Civil Engineer or Geotechnical Engineer for ESD review and approval. The report shall address and make recommendations on the following:* *A. Road, pavement, and parking area design;* *B. Structural foundations, including retaining wall design (if applicable);* *C. Grading practices;* *D. Erosion/winterization;* *E. Special problems discovered on-site, (i.e., groundwater, expansive/unstable soils, potential for smectite clays etc.); and* *F. Slope stability.*	

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Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		It is the responsibility of the developer to provide for engineering inspection and certification that earthwork has been performed in conformity with recommendations contained in the report. *If the geotechnical engineering report indicates the presence of critically expansive or other soil problems that, if not corrected, could lead to structural defects, a certification of completion of the requirements of the soils report shall be required for subdivisions, prior to issuance of Building Permits. This certification may be completed on a lot- by-lot basis or on a Tract basis. This shall be so noted on the Improvement Plans, in the Development Notebook (if required), in the Conditions, Covenants and Restrictions (CC&Rs), and on the Informational Sheet filed with the Final Subdivision Map(s).* • *10-3(b) The Geotechnical Due Diligence Review prepared by ENGEO Incorporated, dated December 26, 2023, indicated the presence of expansive and loose soils, and or other soil problems which, if not corrected, would lead to structural defects.* • *For pad graded lots, prior to final acceptance of project improvements or consideration of early Building Permits and after the completion of the pad*	

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		grading for all lots, the applicant shall submit to the ESD for review and approval, a soil investigation of each lot produced by a California Registered Civil or Geotechnical Engineer (Section 17953-17955 California Health and Safety Code). *The soil investigations shall include recommended corrective action that is likely to prevent structural damage to each proposed dwelling. In addition, the applicant shall include in the Development Notebook the soil problems encountered on each specific lot as well as the recommended corrective actions. A note shall be included on the Improvement Plans, Conditions, Covenants and Restrictions (CC&Rs), and the Informational Sheet filed with the Final Subdivision Map(s), which indicates the requirements of this condition.*	
10-6 Cumulative increase in the potential for geological related impacts and hazards.	LS	*None required.*	N/A
11. Hazards and Hazardous Materials			
11-1 Create a significant hazard to the public or the environment through the routine transport, use, or	LS	*None required*	N/A

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	disposal of hazardous materials.			
11-2	**Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.**	LS	*None required*	N/A
11-3	**Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.**	LS	*None required.*	N/A
11-4	**Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.**	LS	*None required.*	N/A
11-5	**Cumulative exposure to potential hazards, including wildfire, and increases in the transport, storage, and use of hazardous materials.**	LS	*None required.*	N/A

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Table 2-1
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Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
12. Hydrology and Water Quality			
12-1 Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality during construction.	S	*Proposed Project and Off-Site Sewer Lift Station Improvements Area* *12-1(a) Implement the following Mitigation Measures set forth in this EIR:* • *10-2(a) Prior to construction commencing, the applicant shall provide evidence to the ESD of a Waste Discharge Identification (WDID) number generated from the State Regional Water Quality Control Board's Stormwater Multiple Application & Reports Tracking System (SMARTS). This serves as the Regional Water Quality Control Board approval or permit under the National Pollutant Discharge Elimination System (NPDES) construction stormwater quality permit.* • *10-2(b) The applicant shall prepare and submit Improvement Plans, specifications and cost estimates (per the requirements of Section II of the Land Development Manual (LDM) that are in effect at the time of submittal) to the Engineering and Surveying Division (ESD) for review and approval of each project phase. The applicant shall pay plan check and inspection fees and Placer County Fire Department improvement plan review and inspection fees with the 1st Improvement Plan submittal. (NOTE: Prior to*	LS

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Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		plan approval, all applicable recording and reproduction costs shall be paid). *The Final Subdivision Map(s) shall not be submitted to the Engineering and Surveying Division (ESD) until the Improvement Plans are submitted for the second review. Final technical review of the Final Subdivision Map(s) shall not conclude until after the Improvement Plans are approved by the ESD.* *Any Building Permits associated with this project shall not be issued until, at a minimum, the Improvement Plans are approved by the Engineering and Surveying Division.* *Prior to the County's final acceptance of the project's improvements, submit to the Engineering and Surveying Division one copy of the Record Drawings in digital format along with one blackline hardcopy (black print on bond paper) and one PDF copy.* • *10-2(c) No grading, clearing, or tree disturbance shall occur until the Improvement Plans are approved and all temporary construction fencing has been installed and inspected by a member of the County.*	

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		The Improvement Plan(s) shall identify the stockpiling and/or vehicle staging areas with locations as far as practical from existing dwellings and protected resources in the area. The applicant shall revegetate all disturbed areas. Revegetation, undertaken from April 1 to October 1, shall include regular watering to ensure adequate growth. A winterization plan shall be provided with project Improvement Plans. *The applicant shall submit to the ESD a letter of credit or cash deposit in the amount of 110 percent of an approved engineer's estimate using the County's current Plan Check and Inspection Fee Spreadsheet for winterization and permanent erosion control work prior to Improvement Plan approval. For an improvement plan with a calculated security that exceeds $100,000, a minimum of $100,000 shall be provided as letter of credit or cash security and the remainder can be bonded.* *Off-Site Affordable Housing Parcel* *12-1(b) Implement RVSP EIR Mitigation Measure 12-1b:* *All proposed grading, drainage improvements, vegetation, and tree removal shall be shown on the proposed project's Improvement Plans, and all work shall conform to provisions of the County Grading Ordinance*	

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		(Ref. Article 15.48, Placer County Code) that is in effect at the time of submittal. No grading, clearing, or tree disturbance shall occur until the Improvement Plans are approved and all temporary construction fencing has been installed and inspected by a member of the DRC. All cut/fill slopes shall be at a maximum of 2:1 (horizontal:vertical) unless a soils report supports a steeper slope and the ESD concurs with said recommendation. *The Applicant shall revegetate all disturbed areas. Revegetation undertaken from April 1 to October 1 shall include regular watering to ensure adequate growth. A winterization plan shall be provided with project Improvement Plans. It will be the Applicant's responsibility to ensure proper installation and maintenance of erosion control/winterization during project construction. Where soil stockpiling or borrow areas are to remain for more than one construction season, proper erosion control measures shall be applied as specified in the Improvement Plans/Grading Plans. Where roadside drainage is off of the pavement, erosion control shall be provided for to the satisfaction of the ESD. The Applicant shall submit to the ESD a letter of credit or cash deposit in the amount of 110 percent of an approved engineer's estimate for winterization and permanent erosion control work, prior to Improvement Plan approval, to guarantee protection against erosion and improper grading practices. Upon the County's acceptance of improvements and satisfactory completion of a one-year*	

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		maintenance period, unused portions of this deposit will be refunded to the Applicant or authorized agent. *If at any time during construction a field review by County personnel indicates a significant deviation from the proposed grading shown on the Improvement Plans, specifically with regard to slope heights, slope ratios, erosion control, winterization, tree disturbance, and/or pad elevations and configurations, the plans shall be reviewed by the DRC/ESD for a determination of substantial conformance to the project approvals prior to any further work proceeding. Failure of the DRC/ESD to make a determination of substantial conformance may serve as grounds for the revocation/modification of the project approval by the appropriate hearing body (Placer County Community Development Resource Agency, 2006).* *The project's erosion control plan shall indicate that proper control of siltation, sedimentation, and other pollutants will be implemented in accordance with National Pollutant Discharge and Elimination System (NPDES) permit requirements and County ordinance standards. The plan shall propose best management practices (BMPs) to reduce erosion and water quality degradation during construction to the maximum extent practicable.* *12-1(c) Implement the following Mitigation Measure set forth in this EIR:*	

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		• *<u>10-2(e)</u> Implement RVSP EIR Mitigation Measure 12-3b:* *This project is subject to construction-related stormwater permit requirements of the federal Clean Water Act NPDES program. Each applicant/developer for future construction projects within the Plan Area shall implement Mitigation Measure 13-1c [the standards of which are included as Mitigation Measure 10-2(g) of this EIR], which requires an applicant to submit a Notice of Intent (NOI) to comply with the NPDES General Permit for Stormwater Discharges associated with Construction Activities to the State Regional Water Quality Control Board if the specific project would disturb 1 acre of land or more. The project applicant/developer shall provide to the ESD evidence of a state-issued Waste Discharge Identification (WDID) number or filing of a NOI and fees prior to start of construction, as required by the County's Sample Conditions and Improvement Plans, paragraph ip15 (Placer County Community Development Resource Agency, 2006).* *12-1(d) Implement the following Mitigation Measure set forth in this EIR:* • *<u>10-2(g)</u> Implement RVSP EIR Mitigation Measure 12-3d:*	

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		For all construction activities that will disturb 1 or more acre of land, a stormwater pollution prevention plan (SWPPP) for the construction phase must be prepared and implemented. *The SWPPP will include development of site-specific structural and operational BMPs to prevent and control impacts to runoff quality, measures to be implemented before each storm event, inspection and maintenance of BMPs, and monitoring of runoff quality by visual and/or analytical means. The contents of the SWPPP are set forth in detail in the permit application package. BMPs shall be designed according to the California Stormwater Quality Association Stormwater Best Management Practice Handbooks for Construction (or other similar source as approved by the DPW). BMPs for the proposed project include, but are not limited to, silt fencing (Sediment Control SE -1), straw bale barriers (Sediment Control SE-9), fiber rolls (Sediment Control SE-5), storm drain inlet protection (Sediment Control SE-10), hydraulic mulch (Erosion Control EC-3), and stabilized construction entrance (Tracking Control TR-1). The SWPPP shall also include erosion control measures, to be implemented during construction, that conform to the NPDES, Storm Drain Standards, and local standards.*	

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12-2 Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality during operations.	S	*Proposed Project* *12-2(a) This project is located within the permit area covered by Placer County's Small Municipal Separate Storm Sewer System (MS4) Permit (State Water Resources Control Board National Pollutant Discharge Elimination System (NPDES)). Project-related storm water discharges are subject to all applicable requirements of said permit. The project shall implement permanent and operational source control measures and Low Impact Development (LID) standards designed to reduce runoff, treat storm water, and provide baseline hydromodification management. Water quality measures shall be designed for pollutant generating activities or sources consistent with recommendations from the West Placer Storm Water Quality Design Manual and shall be shown on the Improvement Plans.* *Storm drainage from on- and off-site impervious surfaces (including roads) shall be collected and routed through specially designed facilities, as approved by the Engineering and Surveying Division (ESD). No water quality facility construction shall be permitted within any identified wetlands area, floodplain, right-of-way, or Multi-Purpose easement, except as authorized by project approvals.* *All permanent BMPs shall be maintained as required to ensure effectiveness. The applicant shall provide for the establishment of vegetation, where specified, by means of proper irrigation. The project owners/permittees shall*	LS

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		provide maintenance of these facilities and annually report a certification of completed maintenance to the County DPW Stormwater Coordinator. (For Phase 1, Contractual evidence of a monthly parking lot sweeping and vacuuming, and catch basin cleaning program is required.) Prior to Improvement Plan approval or Final Subdivision Map recordation, easements shall be created and offered for dedication to the County for maintenance and access to these facilities in anticipation of possible County maintenance. *Pursuant to the State of California NPDES Phase II MS4 Permit, this project creates and/or replaces 2,500 square feet or more of impervious surface. A final Storm Water Quality Plan (SWQP) shall be submitted, either within the final Drainage Report or as a separate document that identifies how this project will meet the Phase II MS4 permit obligations.* *12-2(b) The Improvement Plans shall include the message details, placement, and locations showing that all storm drain inlets and catch basins within the project area shall be permanently marked/embossed with prohibitive language such as "No Dumping! Flows to Creek." or other language /graphical icons to discourage illegal dumping as approved by the Engineering and Surveying Division (ESD). ESD-approved signs and prohibitive language and/or graphical icons, which prohibit illegal dumping, shall be posted at public access points along channels and creeks within the project area. The*	

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Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		Homeowners'/Property Owners' association is responsible for maintaining the legibility of stamped messages and signs. *Off-Site Affordable Housing Parcel* *12-2(c) Implement the following Mitigation Measure set forth in this EIR:* • *10-2(f) Implement RVSP EIR Mitigation Measure 12-3c:* *Development within the Plan Area must comply with the NPDES Phase II General Permit for the Discharge of Stormwater from small municipal separate storm sewer systems. Placer County is operating under the NPDES Phase II Rule permit, and as such, new development within the County must comply with the permit requirements. New development is subject to Attachment 4 Design Standards of the State Water Resource Control Board NPDES Phase II General Permit. These standards require that new development must be designed so as to minimize, to the maximum extent practicable, the introduction of pollutants of concern that may result in significant impacts, generated from site runoff of directly connected impervious areas, to the stormwater conveyance system as approved by the building official.*	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		12-2(d) *Implement RVSP EIR Mitigation Measure 13-4b:* *Each applicant/developer for each construction phase within the Plan Area shall submit a project-specific BMP Plan with the project improvement plans showing the onsite locations and effectiveness of the BMP facilities proposed for long-term water quality impact reduction during the Subsequent Conformity Review process and prior to Improvement Plan approval. The plan shall include a method for financing the long-term maintenance of the proposed project-specific facilities.* *All BMPs for water quality protection, source control, and treatment control shall be developed in accordance with the California Stormwater Quality Association Stormwater Best Management Practice Handbook for New Development/Redevelopment (or other similar source approved by the Engineering and Surveying Division) for the applicable type of development and/or improvement. BMPs shall be designed to mitigate (minimize, infiltrate, filter, or treat) stormwater runoff. Flow or volume based post-construction BMPs shall be designed at a minimum in accordance with the Placer County Guidance Document for Volume and Flow-Based Sizing of Permanent Post-Construction Best Management Practices for Stormwater Quality Protection. Provisions shall be included for long-term maintenance of BMPs. BMPs shall reflect improvements in techniques and opportunities made available over time and shall reflect site-specific limitations. The County shall*	

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		make the final determinations as to the appropriateness of the BMPs proposed for each project. *Source control BMPs should be incorporated into the design of each future construction project within the Plan Area. These BMPs emphasize reducing or eliminating pollutant in stormwater runoff at their source through runoff reduction and by segregating pollutants from stormwater runoff. Examples of source control BMPs that should be evaluated during design and could be incorporated into the project-specific BMP Plan as feasible include the following:* • *Incorporate landscaping into the design, including planting of native and drought-tolerant plants to maximize natural water storage and infiltration opportunities and protect slopes and channels (Source Control SD-10);* • *Direct roof runoff to grassy areas and away from paved areas or storm drains to promote overland flow of stormwater runoff and reduce velocities and peak flow rates (Source Control SD-11);* • *Incorporate pervious pavement to promote infiltration and reduce runoff (Source Control SD-20);* • *Provide enclosed commercial trash areas to avoid contact with stormwater runoff (Source Control SD-32);*	

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		• *Design parking lots to direct storm water to storm drain inlets and away from garbage disposal areas (Source Control SD-32);* • *Perform street and parking lot cleaning to remove potential debris and pollutants that could be picked up and conveyed by storm water;* • *Where practical, install drip and low-flow irrigation systems to provide efficient irrigation and minimize runoff of excess irrigation water (Source Control SD-12); and* • *Select building materials that do not introduce sources of pollutants (Source Control SD-21).* *In addition, storm drainage from onsite and offsite impervious surfaces (including roads) shall be collected and routed through specially designed water quality treatment facilities (i.e., treatment control BMPs) for removal of pollutants of concern (i.e., sediment, oil/grease, etc.), as approved by the County's Engineering and Surveying Division. Treatment control BMPs should be integrated into and throughout the site to enhance the removal of pollutants that have entered the stormwater runoff. Examples of treatment control BMPs that should be evaluated during design include the following:* • *Provide vegetative swale or buffer areas, which could be incorporated into landscaped areas, to slow down runoff velocities and allow sediments*	

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		and other pollutants to settle (Treatment Control TC-30, TC-31); • *Install water quality inlets (e.g., oil/water separators) to remove "first flush" pollutants, including oil and grease (Treatment Control TC-50); and* • *Incorporate biofiltration facilities to capture stormwater runoff from impervious areas and remove pollutants (Source Control TC-32).* *With the Improvement Plans, the applicant/developer for the construction project shall verify that proposed BMPs are appropriate to treat the pollutants of concern from the project. The applicant/developer shall provide for the establishment of vegetation, where specified, by means of proper irrigation, for effective performance of BMPs. No water quality facility construction shall be permitted within any identified wetlands area, floodplain, or right-of-way except as authorized by the project approvals or subsequent amendments approved by the County.* *12-2(e) Implement RVSP EIR Mitigation Measure 13-4c:* *Storm drainage from impervious surfaces proposed with the project shall be collected and routed through specially designed catchbasins, vegetated swales, vaults, infiltration basins, water quality basins, filters, etc., for entrapment of sediment, debris, and oils/greases or other identified pollutants, as approved by the Placer County ESD. The Applicant shall provide for the establishment of*	

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		vegetation, where specified, by means of proper irrigation, for effective performance of BMPs. Contractual evidence of a monthly parking lot sweeping and vacuuming, and catch basin cleaning program shall be provided to ESD upon request. Failure to do so will be grounds for discretionary permit revocation. Maintenance of BMP facilities shall be provided by the project owners/permittees for each future construction project within the Plan Area unless, and until, a County Service Area is created and said facilities are accepted by the County for maintenance. Prior to approval of improvement plans, final maps shall show easements to be created and offered for dedication to the County for maintenance and access to these facilities in anticipation of possible County maintenance. No water quality facility construction shall be permitted within any identified wetlands area, floodplain, or right-of-way, except as authorized by project approval or subsequent amendments approved by the County. *12-2(f) Implement RVSP EIR Mitigation Measure 14-4a:* *To reduce the potential for any of the proposed water or recycled water supply or wastewater transmission pipelines to leak and affect service and environmental conditions of surrounding areas, Placer County standards specify material type; wall thicknesses; connection methods, including coupling information; backfill material type and placement methods; and installation location relative to other utilities. Adhering to these standards will*	

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		reduce the likelihood that the project pipelines would affect adjacent or sensitive areas. However, in areas where the groundwater table is close to the pipeline, additional measures may be needed to protect groundwater quality, including more robust pipe joint details, use of fusible C-900/905 pipe sections, pipe wrap, or cathodic protection.	
12-3 Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin or conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	LS	*None required.*	N/A
12-4 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: substantially	S	*Proposed Project* *12-4(a) As part of the Improvement Plan submittal process, the preliminary Drainage Report provided during environmental review shall be submitted in final format in conformance with the requirements of the Land Development Manual and the Placer County Stormwater Management Manual that are in effect at the time of submittal. The final Drainage Report may require more*	LS

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increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; or create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff either during construction or in the post-construction condition.		*detail than that provided in the preliminary report and will be reviewed in concert with the Improvement Plans to confirm conformity between the two.* *12-4(b) This project is subject to the one-time payment of drainage improvement and flood control fees pursuant to the "Dry Creek Watershed Interim Drainage Improvement Ordinance" (Ref. Article 15.32, Placer County Code). Fees shall be made payable to the Engineering and Surveying Division (ESD) prior to Building Permit issuance. The fees to be paid shall be based on the fee program in effect at the time that the Building Permit is issued.* *12-4(c) This project is subject to payment of annual drainage improvement and flood control fees pursuant to the "Dry Creek Watershed Interim Drainage Improvement Ordinance" (Ref. Chapter 15, Article 15.32, Placer County Code). Prior to Building Permit issuance, the applicant shall cause the subject property to become a participant in the existing Dry Creek Watershed County Service Area for purposes of collecting such annual assessments.* *12-4(d) On the Improvement Plans and Informational Sheet(s) filed with the appropriate Final Subdivision Map(s), show:* *A) The limits of the future, unmitigated, fully developed, 100-year floodplain (after grading) for the Dry Creek Walerga Road Tributary Reach*	

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		and designate same as a building setback line unless greater setbacks are required by other conditions contained herein. The Improvement Plans shall also show the limits of the future, unmitigated, fully developed, 100-year floodplain for the existing project site conditions. *B) That finished house pad elevations for Tentative Map all Lot's for all lots along the floodplain shall be a minimum of two feet above the 100-year floodplain line (or finished floor -three feet above the 100-year floodplain line). The final pad elevation shall be certified by a California registered civil engineer or licensed land surveyor and submitted to the Engineering and Surveying Division. This certification shall be done prior to construction of the foundation or at the completion of final grading, whichever comes first. No building construction is allowed until the certification has been received by the Engineering.* *12-4(e) The final Drainage Report shall demonstrate that the proposed project will not increase the limits or water surface elevation of the off-site 100 year floodplain upstream and downstream of the project site, on both sides, to the satisfaction of the Engineering and Surveying Department and Placer County Flood Control District.*	

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		Off-Site Affordable Housing Parcel *12-4(f) Implement RVSP EIR Mitigation Measure 13-2a:* *Each applicant/developer for future construction projects within the Plan Area shall prepare and submit with their project Improvement Plans a project-specific drainage report in conformance with the requirements of Section 5 of the Land Development Manual and the Placer County Stormwater Management Manual (SWMM) that are in effect at the time of submittal, to the Placer County ESD for review and approval. The project-specific drainage reports shall be consistent with the Drainage Master Plan and Development Standards for Plan Area. The report shall be prepared by a Registered Civil Engineer and shall, at a minimum, include:* • *Written text describing existing conditions and proposed improvements,* • *The effects of the improvements,* • *All appropriate calculations,* • *A watershed map,* • *Increases in downstream flows, and* • *Proposed onsite and offsite improvements and drainage easements to accommodate flows from the project.* *The report shall identify water quality protection features and methods to be used both during construction and for long-term post-construction water quality protection.*	

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		"Best Management Practice" (BMP) measures shall be provided to reduce erosion, water quality degradation, and prevent the discharge of pollutants to stormwater to the maximum extent practicable. *No construction shall be permitted within any identified wetlands area, floodplain, or right-of-way, except as authorized by project approvals. The project-specific drainage report shall demonstrate compliance with all relevant mitigation measures included in this Draft EIR.* *12-4(g) Implement RVSP EIR Mitigation Measure 13-2b:* *The project-specific drainage reports prepared for each future construction project within the Plan Area shall evaluate offsite drainage facilities for conditions and capacity and shall be upgraded, replaced, or mitigated as specified by the Placer County ESD. Each future construction project shall upgrade or replace drainage facilities, or mitigate drainage impacts in other ways as needed and as specified by Placer County ESD. This includes any existing drainage facilities located immediately downstream of the project that would receive drainage and would be changed by the proposed project. The analysis must include any existing roadside ditches and/or culverts along Walerga Road, PFE Road, and Watt Avenue. While the Plan Area is within the Dry Creek watershed and as such onsite detention is not required to reduce peak flow rates due to development, onsite detention may be required in order to comply with the*	

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		County's requirements regarding road encroachments. In accordance with the SWMM, all travel lanes of Watt Avenue, PFE Road, and Walerga Road may be required to remain clear of stormwater flow for all storm events, including the 100-year event. In addition, the Applicant will be required to mitigate peak flow rates to pre-development levels for 10- and 100-year storm events (per the Placer County Stormwater Management Manual) for only the portion of the Riolo Vineyards Plan Area that drains south towards PFE Road. *12-4(h) Implement RVSP EIR Mitigation Measure 13-2c:* *New development in the Plan Area shall be subject to the one-time payment of drainage improvement and flood control fees pursuant to the Dry Creek Watershed Interim Drainage Improvements Ordinance (Ref. Article 15.32, formerly Chapter 4, Subchapter 20, Placer County Code). This fee is used to fund installation and maintenance of roadway drainage and stormwater drainage improvements within the watershed. The actual fees to be paid will be those in effect at the time the payment occurs and are assessed on the amount of development area. Each developer will be responsible for submitting the appropriate fee for the specific land development project to the Placer County ESD. The one-time fee shall be paid prior to issuance of the building permit or approval of improvement plans.* *12-4(i) Implement RVSP EIR Mitigation Measure 13-2d:*	

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		New development in the Plan Area shall be subject to payment of annual drainage improvement and flood control fees pursuant to the Dry Creek Watershed Interim Drainage Improvements Ordinance (Ref. Article 15.32, formerly Chapter 4, Subchapter 20, Placer County Code). These fees are used to fund installation and maintenance of roadway drainage and stormwater drainage improvements within the watershed. The Applicant will be required to form a County Service Area zone, if one currently does not cover the Plan Area, for collecting the annual special assessment. The actual fees to be paid will be those in effect at the time the payment occurs and are assessed on the basis of the new development acreage. The annual fee is a yearly charge and will be included on a parcel's property tax bill.	
12-5 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows or expose people or structures to risk of loss, injury or death involving flooding through the placement of housing in a	S	*12-5(a) Prior to Improvement Plan approval, if required by the Federal Emergency Management Agency (FEMA), the Placer County Flood Control District, or the County Floodplain Administrator, the applicant shall obtain from FEMA, a Conditional Letter of Map Revision (CLOMR) or Conditional Letter of Map Revision based on Fill (CLOMR-F) for fill within a Special Flood Hazard Area. A copy of the letter shall be provided to the Engineering and Surveying Division. A Letter of Map Revision (LOMR), or a Letter of Map Revision based on Fill (LOMR-F) from FEMA shall be provided to the Engineering and Surveying Division (ESD) prior to acceptance of project improvements as complete.*	LS

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flood hazard area, or risk release of pollutants due to project inundation.		*12-5(b) Implement the following Mitigation Measure set forth in this EIR:* • *12-4(d) On the Improvement Plans and Informational Sheet(s) filed with the appropriate Final Subdivision Map(s), show:* *A) The limits of the future, unmitigated, fully developed, 100-year floodplain (after grading) for the Dry Creek Walerga Road Tributary Reach and designate same as a building setback line unless greater setbacks are required by other conditions contained herein. The Improvement Plans shall also show the limits of the future, unmitigated, fully developed, 100-year floodplain for the existing project site conditions.* *B) That finished house pad elevations for Tentative Map all Lot's for all lots along the floodplain shall be a minimum of two feet above the 100-year floodplain line (or finished floor -three feet above the 100-year floodplain line). The final pad elevation shall be certified by a California registered civil engineer or licensed land surveyor and submitted to the Engineering and Surveying Division. This certification shall be done prior to construction of the foundation or at the*	

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		completion of final grading, whichever comes first. No building construction is allowed until the certification has been received by the Engineering and Surveying Division. *12-5(c) Implement the following Mitigation Measure set forth in this EIR:* • *12-4(e) The final Drainage Report shall demonstrate that the proposed project will not increase the limits or water surface elevation of the off-site 100 year floodplain upstream and downstream of the project site, on both sides, to the satisfaction of the Engineering and Surveying Department and Placer County Flood Control District.*	
12-6 Cumulative impacts related to the violation of water quality standards or waste discharge requirements, groundwater quality, management, and recharge, and impacts resulting from the alteration of existing drainage patterns.	LCC	*None required.*	N/A

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13. Land Use and Planning/Population and Housing				
13-1	**Physically divide an established community.**	LS	*None required.*	N/A
13-2	**Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.**	LS	*None required.*	N/A
13-3	**Result in the development of incompatible uses and/or the creation of land use conflicts.**	LS	*None required.*	N/A
13-4	**Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure).**	LS	*None required.*	N/A
13-5	**Cause a significant cumulative environmental impact due to a conflict with any land use plan, policy, or regulation**	LS	*None required.*	N/A

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	adopted for the purpose of avoiding or mitigating an environmental effect.			
13-6	**Cumulative unplanned population growth.**	LS	*None required.*	N/A
			14. Noise	
14-1	**Generation of a substantial temporary increase in ambient noise levels in noise-sensitive locations in the vicinity of the project or a substantial temporary increase in ambient noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.**	S	*Proposed Project* *14-1(a) Prior to commencement of on-site construction activities (including tree removal), the project applicant shall implement the following construction noise reduction measures, subject to review and approval by the Community Development Resource Agency Director:* • *Noise-generating construction activities (e.g., construction, alteration, or repair activities) shall be limited to the hours exempted/required by Placer County Code Section 9.36.030(A)(7) and DCWPCP Noise Policy 7.* • *All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, State, or local agency shall comply with such regulations while in the course of project activity.* • *Electrically powered equipment shall be used instead of pneumatic or internal combustion-powered equipment, where feasible.* • *Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be*	SU

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		located as far as practicable from noise-sensitive receptors. • *Construction site and access road speed limits shall be established and enforced during the construction period.* • *A six-foot-tall temporary sound wall shall be constructed on the eastern site boundary of the proposed Phase 2 lots along the fenceline of the existing single-family residences on Wellbrook Place and Bridgestone Crescent Road to the east.* • *A six-foot-tall temporary sound wall shall be constructed on the southern site boundary of the proposed Phase 4 lots along the fenceline of the single-family residences on French Creek Court, Eagle Creek Court, Marsh Creek Court, and Rockporte Court to the south.* • *The sound wall fencing shall consist of 0.5-inch plywood or minimum Sound Transmission Class (STC) 27 sound curtains placed to shield nearby noise-sensitive receptors from construction noise. The plywood barrier shall be free from gaps, openings, or penetrations to ensure maximum performance. The temporary construction sound wall shall be constructed prior to any tree removal or other ground-disturbing activities associated with project construction.* • *The Construction Contractor shall designate a "Construction Noise Coordinator" to be responsible for responding to any local*	

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		complaints about construction noise. The Construction Noise Coordinator shall determine the cause of the complaint and shall require implementation of reasonable measures to correct the problem. The telephone number for the Construction Noise Coordinator shall be conspicuously posted at the construction site. • *At least three weeks prior to the start of construction activities, the Construction Contractor shall provide written notification to residences within 500 feet of the construction site informing them of the estimated start date and duration of construction activities, the role of the Construction Noise Coordinator, and how to contact the Construction Noise Coordinator.* • *All construction equipment shall be properly maintained and in good working order.* • *Staging areas shall be located at the greatest feasible distances away from nearby noise-sensitive receptors.* • *Noise-reducing enclosures or acoustic barriers shall be used around stationary noise-generating equipment (e.g., generators, air compressors).* • *All construction equipment powered by gasoline or diesel engines shall be fitted with sound control devices (i.e., mufflers) that are at least as effective as those originally provided by the manufacturer and all equipment shall be operated and maintained to minimize noise generation.*	

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		• *Heavy-duty construction equipment shall be operated at the lowest operating power possible.* *14-1(b)* *At least two weeks prior to any project-related nighttime construction, the Construction Contractor shall provide written notification to residences within 600 feet of the nighttime construction footprint. The written notification shall provide the estimated start time and duration of the nighttime construction, recommendations to these residences to keep windows and doors closed during nighttime construction events, the role of the Construction Noise Coordinator, and how to contact the Construction Noise Coordinator. Proof of compliance with the foregoing measure shall be submitted to the Placer County Community Development Resource Agency.* *Off-Site Affordable Housing Parcel* *14-1(c)* *Implement RVSP EIR Mitigation Measure 11-1a:* *Prior to construction plan approval, the Department of Public Works (DPW) will develop and implement a construction noise abatement program acceptable to Placer County Division of Environmental Health (DEH) and conforming to Minute Order 98-08. The plan shall require that:* • *All construction vehicles or equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers;* • *Stockpiling and/or vehicle staging areas shall be identified on the improvement plans and shall be*	

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		located as far as is practical from existing occupied dwellings; • *Construction noise emanating from any construction activities for which a Grading or Building Permit is required is prohibited on Sundays and federal holidays, and shall only occur during the following times:* o *Monday through Friday, 6:00 a.m. to 8:00 p.m. (during daylight savings)* o *Monday through Friday, 7:00 a.m. to 8:00 p.m. (during standard time)* o *Saturdays, 8:00 a.m. to 6:00 p.m.* *These parameters are standard construction times set by the County's Planning Commission.* • *Specific noise-control measures shall be identified that will reduce the hourly noise level to 70 dBA or lower at all schools during periods when schools are in session;* • *Specific noise-control measures shall be identified that will reduce the hourly average noise level to 70 dBA or lower at other noise-sensitive receptors where feasible. The construction contractor shall consider implementation of the following measures in the construction noise control plan:*	

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		1. *Select equipment capable of performing the necessary tasks with the lowest noise-emission level and the lowest possible height for the acoustic center of noise emissions.* 2. *Noise barriers may be required to block the line of sight from noise sources to noise-sensitive receivers of concern or to further reduce noise levels beyond that provided by line-of-sight breaks afforded by topographical features. The noise barriers could be constructed using either plywood sheets or other solid material that provides sufficient mass per unit surface area (perhaps approaching 4 pounds per square foot) and has minimal openings between the top of barrier and ground surface (perhaps as little as 1 percent). Noise barriers of a given height are generally most effective when placed as close as possible to either the source or receiver, and perhaps at two such separate locations. The least desirable location is generally at a middle distance between sources and receptors. The plan shall identify the proper height, location, and effectiveness of a noise barrier in terms of the expected hourly average noise level due to construction activity at noise-*	

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Impact		Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
			sensitive receivers of concern, with the objective of reducing contributions from construction activity to an hourly average of 70 dBA or less.	
14-2	**Generation of a substantial permanent increase in ambient noise levels in noise-sensitive locations in the vicinity of the project or generation of a substantial permanent increase in ambient noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.**	LS	*None required.*	N/A
14-3	**Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.**	LS	*None required.*	N/A
14-4	**Generation of a substantial permanent increase in ambient noise levels associated with cumulative development of the proposed project in combination with future buildout of the DCWPCP.**	LCC	*None required.*	N/A

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact		Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
15. Public Services and Utilities				
15-1	**Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or 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 services.**	LS	*None required.*	N/A
15-2	**Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other**	LS	*None required.*	N/A

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Table 2-1
Summary of Impacts and Mitigation Measures

	Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
	performance objectives for law enforcement services.			
15-3	**Result in substantial adverse physical impacts associated with the provision of new or physically altered school services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or performance objectives.**	LS	*None required.*	N/A
15-4	**Result in an increase in 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, or include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.**	LS	*None required.*	N/A

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
15-5 Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or performance objectives for maintenance of public facilities, including roads, or for other government services.	LS	*None required.*	N/A
15-6 Require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.	S	*Off-Site Affordable Housing Parcel* *15-6(a) Implement RVSP EIR Mitigation Measure 14-1a:* *Payment of the connection fees is intended to act to offset future maintenance of the planned water main extensions. Construction of the lines to the appropriate standards is intended to ensure the transmission mains are in a condition suitable for operation and maintenance by Cal-Am in the future, provide a reliable resource to the area, and provide a source of water for adjoining uses not included in the project.*	LS

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		15-6(b) *Implement the following Mitigation Measure set forth in this EIR:* • *12-2(f) Implement RVSP EIR Mitigation Measure 14-4a:* *To reduce the potential for any of the proposed water or recycled water supply or wastewater transmission pipelines to leak and affect service and environmental conditions of surrounding areas, Placer County standards specify material type; wall thicknesses; connection methods, including coupling information; backfill material type and placement methods; and installation location relative to other utilities. Adhering to these standards will reduce the likelihood that the project pipelines would affect adjacent or sensitive areas. However, in areas where the groundwater table is close to the pipeline, additional measures may be needed to protect groundwater quality, including more robust pipe joint details, use of fusible C-900/905 pipe sections, pipe wrap, or cathodic protection.*	
15-7 Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.	S	*Off-Site Affordable Housing Parcel* *15-7* *Implement RVSP EIR Mitigation Measure 14-1b:* *Prior to approval of any small lot tentative subdivision map, the County shall comply with Government Code Section 66473.7 or make a factual showing or impose conditions similar to those required by Section 66473.7,*	LS

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		as appropriate to the size of the subdivision. Prior to the recordation of any final subdivision map or prior to County approval or any similar approval or entitlement required for nonresidential uses, the Applicant shall obtain a written certification from the water service provider that either existing services are available or that needed improvements will be in place prior to occupancy.	
15-8 Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.	S	*Off-Site Affordable Housing Parcel* *15-8 Implement RVSP EIR Mitigation Measure 14-5a:* *Commitments from the wastewater treatment provider to receive anticipated flows from the specific plan area at the Dry Creek WWTP shall be secured by Placer County prior to County approval of improvement plans for wastewater collection and transmission infrastructure.*	LS
15-9 Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals, or conflict with federal, State, and local management and reduction statutes and regulations related to solid waste.	LS	*None required.*	N/A

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
15-10 Cumulative impacts to public services.	LS	*None required.*	N/A
15-11 Increase in demand for utilities and service systems associated with the proposed project, in combination with future buildout in the DCWPCP area.	LCC	*None required.*	N/A
16. Transportation			
16-1 Conflict with a program, plan, ordinance, or policy, except LOS, addressing the circulation system during construction activities.	S	*Proposed Project and Off-Site Sewer Lift Station Improvements Area* *16-1(a) The Improvement Plans shall include a signing and striping plan and shall include all on- and off-site traffic control devices. At least two weeks prior to the commencement of construction, a construction signing and traffic control plan shall be provided to the Engineering and Surveying Division and Department of Public Works for review and approval. The construction signing and traffic control plan shall include (but not be limited to) items such as:* • *Guidance on the number and size of trucks per day entering and leaving the project site;* • *Identification of arrival/departure times that would minimize traffic impacts;* • *Approved truck circulation patterns;* • *Locations of staging areas;*	LS

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		• *Locations of employee parking and methods to encourage carpooling and use of alternative transportation;* • *Methods for partial/complete street closures (e.g., timing, signage, location and duration restrictions);* • *Criteria for use of flaggers and other traffic controls;* • *Preservation of safe and convenient passage for bicyclists and pedestrians through/around construction areas;* • *Monitoring for roadbed damage and timing for completing repairs;* • *Limitations on construction activity during peak/holiday weekends and special events;* • *Preservation of emergency vehicle access;* • *Coordination of construction activities with construction of other projects that occur concurrently in the Dry Creek-West Placer Community Plan (DCWPCP) to minimize potential additive construction traffic disruptions, avoid duplicative efforts (e.g., multiple occurrences if similar signage), and maximize effectiveness of traffic mitigation measures (e.g., joint employee alternative transportation programs);* • *Removing traffic obstructions during emergency evacuation events; and*	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		• *Providing a point of contact for DCWPCP residents and guests to obtain construction information, have questions answered, and convey complaints.* *The construction signing and traffic control plan shall be developed such that the following minimum set of performance standards is achieved throughout project construction. Additional performance standards are anticipated to be developed once details of project construction are better known.* • *All construction employees shall park in designated lots owned by the project applicant or on private lots otherwise arranged for by the project applicant.* • *Roadways shall be maintained clear of debris (e.g., rocks) that could otherwise impede travel and impact public safety.* *Off-Site Affordable Housing Parcel* *16-1(b) Implement RVSP EIR Mitigation Measure 9-1a:* *Prior to improvement plan approval, including roadway improvements and the offsite water and sewer line improvements, a Construction Traffic Management Plan shall be prepared to the satisfaction of the Placer County Public Works Department. The purpose of the plan is to provide for vehicular, pedestrian, equestrian, and bicycle safety, and to minimize adverse LOS, including*	

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Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		neighborhood traffic impacts during project construction. This plan shall include the following components: *1. A striping and signing plan including offsite traffic control devices, shall be prepared by the Applicant and shall be reviewed and approved by the County Traffic Engineer;* *2. An analysis of traffic volumes on roadways where one-way traffic control would be required, if any, to determine whether the hours of such control should be limited;* *3. Provision of flag persons as necessary to facilitate traffic flow through construction areas;* *4. Arranging construction schedules to begin and end during off-peak hours, as necessary and feasible as approved by Placer County; and* *5. A community relations program to be implemented prior to and during the construction period.* *The Applicant shall implement the Construction Traffic Management Plan.*	
16-2 Conflict with a program, plan, ordinance, or policy, except LOS, addressing the circulation system, including transit, roadway bicycle, and pedestrian facilities, during operations.	LS	*None required.*	N/A

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Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
16-3 Substantially increase hazards to vehicle safety due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	LS	*None required.*	N/A
16-4 Result in inadequate emergency access or access to nearby uses.	LS	*None required.*	N/A
16-5 Result in VMT which exceeds an applicable threshold of significance, except as provided in CEQA Guidelines Section 15064.3, subdivision (b).	LS	*None required.*	N/A
17. Tribal Cultural Resources			
17-1 Cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074.	S	*Project Site and Off-Site Sewer Lift Station Improvements Area* *17-1(a) The following language shall be noted on project Improvement Plans, subject to review and approval by the Placer County Community Development Resource Agency:* *If any suspected Tribal Cultural Resources (TCRs) or resources of cultural significance to the UAIC, including,*	LS

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		but not limited to, features, anthropogenic/cultural soils, cultural belongings or objects (artifacts), shell, bone, shaped stones or bone, or ash/charcoal deposits are discovered by any person during construction activities, including ground disturbing activities, all work shall pause immediately within 100 feet of the find, or an agreed upon distance based on the project area and nature of the find. Work shall cease in and within the immediate vicinity of the find regardless of whether the construction is being actively monitored by a Tribal Monitor, cultural resources specialist, or professional archaeologist. *A Tribal Representative and the Placer County Community Development Resource Agency shall be immediately notified, and the Tribal Representative, in coordination with the Placer County Community Development Resource Agency, shall determine if the find is a TCR (PRC Section 21074) and the Tribal Representative shall make recommendations for further evaluation and treatment as necessary.* *<u>Treatment and Documentation:</u>* *The culturally affiliated Tribe shall consult with the Placer County Community Development Resource Agency to (1) identify the boundaries of the new TCR and (2) if feasible, identify appropriate preservation in place and avoidance measures, including redesign or adjustments to the existing construction process, and long-term management, or 3) if avoidance is infeasible, identify a*	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		reburial location in proximity of the find where no future disturbance is anticipated. Permanent curation of TCRs shall not take place unless approved in writing by the culturally affiliated Tribe. *The construction contractor(s) shall provide secure, on-site storage for culturally sensitive soils or objects that are components of TCRs that are found or recovered during construction. Only Tribal Representatives shall have access to the storage. Storage size shall be determined by the nature of the TCR and can range from a small lock box to a conex box (shipping container). A secure (locked), fenced area can also provide adequate on-site storage if larger amounts of material must be stored.* *The construction contractor(s) and Placer County shall facilitate the respectful reburial of the culturally sensitive soils or objects. This includes providing a reburial location that is consistent with the Tribe's preferences, excavation of the reburial location, and assisting with the reburial, upon request.* *Any discoveries shall be documented on a Department of Parks and Recreation (DPR) 523 form within two weeks of the discovery and submitted to the appropriate CHRIS center in a timely manner. The DPR 523 forms shall be completed and submitted to the CHRIS center by the project archaeologist. If the project does not require an archaeologist, the DPR forms shall be completed and submitted to the CHRIS by the UAIC. If completed by the*	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		project archaeologist, the UAIC shall have an opportunity to review the completed forms. *Work at the TCR discovery location shall not resume until authorization is granted by Placer County in coordination with the culturally affiliated Tribe.* *If articulated or disarticulated human remains, or human remains in any state of decomposition or skeletal completeness, are discovered during construction activities, the Placer County Coroner and the culturally affiliated Tribe shall be contacted immediately. Upon determination by the Placer County Coroner that the find is Native American in origin, the Native American Heritage Commission will assign the Most Likely Descendent who will work with the project proponent to define appropriate treatment and disposition of the burials.* *17-1(b) The following language shall be noted on project Improvement Plans, subject to review and approval by the Placer County Community Development Resource Agency:* *The project proponent or their construction contractor shall comply with the following measure to assist with identification of TCRs at the earliest possible time during project-related earthmoving activities:*	

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Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		○ *The project proponent shall contact the UAIC Tribal Historic Preservation Officer (THPO) (thpo@auburnrancheria.com) at least two months prior to project ground-disturbing activities to retain the services of a UAIC Certified Tribal Monitor(s). The duration of the construction schedule and Tribal Monitoring shall be determined at this time.* ○ *A contracted Tribal Monitor(s) shall monitor all ground-disturbing activities (e.g., vegetation removal, grading, and/or other ground disturbing activities; note: fill activities are excluded from this requirement) in the mapped area and 50' buffer provided by the UAIC to the County on June 26, 2025 (confidential map provided to the County and subsequently to the applicant). All ground-disturbing activities in the mapped area provided by the UAIC to the County on June 26, 2025, shall be subject to Tribal Monitoring unless otherwise determined unnecessary by the UAIC.* ○ *Specific to the off-site sewer lift station location, a contracted Tribal Monitor(s) shall monitor initial clearing and grubbing for the entire footprint of disturbance.* ○ *Tribal Monitors or Tribal Representatives shall have the authority to direct that work be temporarily paused, diverted, or slowed within 100 feet of the immediate impact area if sites, cultural soils, or objects of potential significance are identified. The temporary pause/diversion*	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		shall be of an adequate duration for the Tribal Representative to examine the resource. ○ *Appropriate treatment of TCRs may include, but is not limited to:* *A. Recordation of the resource(s);* *B. Avoidance and preservation of the resource(s); and/or* *C. Recovery and reburial of the resource(s) onsite or in a feasible off-site location in a designated area subject to no future disturbance. The location of the reburial shall be acceptable to the UAIC.* • *To track the implementation of this measure, the Tribal Monitor(s) shall document field-monitoring activities on a Tribal Monitor log.* • *The Tribal Monitor(s) shall wear the appropriate safety equipment while on the construction site.* • *The Tribal Monitor, in consultation with the UAIC THPO and the project proponent, shall determine a mutual end or reduction to the on-site monitoring if/when construction activities have a low potential for impacting TCRs.* • *In the event the Tribal Monitor does not report to the job site at the scheduled time after receiving 24 hour business day notice, construction activities may proceed without tribal monitoring. At no time, regardless of the presence or*	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		absence of a Tribal Monitor, shall suspected TCRs be mishandled or disrespected. • *The County shall assist with resolution of disagreements between the project proponent/contractor and the Tribe if such occurs on the project.* *17-1(c) The following language shall be noted on Improvement Plans for the off-site sewer lift station improvements, subject to review and approval by the Placer County Community Development Resource Agency:* • *The Applicant/Contractor shall provide a Tribal Cultural Awareness and Sensitivity Training (training) for all personnel involved in project construction, including field consultants and construction workers, at their own expense. The training shall be developed in coordination with interested Native American Tribes.* • *The training shall be conducted before any project-related construction activities begin at the project site. The training will include relevant information regarding sensitive cultural resources and tribal cultural resources, including applicable regulations, protocols for avoidance, and consequences of violating State laws and regulations. The training will also describe appropriate avoidance and impact minimization measures for cultural resources and tribal cultural resources that could be located at the project site*	

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		and will outline what to do and who to contact if any potential cultural resources or tribal cultural resources are encountered. The training will emphasize the requirement for confidentiality and culturally appropriate treatment of any discovery of significance to Native Americans and will discuss appropriate behaviors and responsive actions, consistent with Native American tribal values. The training may be done in coordination with the project archaeologist. • *All ground-disturbing equipment operators shall be required to receive the training and sign a form that acknowledges receipt of the training.* *Off-Site Affordable Housing Parcel* *17-1(d) Implement the following Mitigation Measure set forth in this EIR:* • *<u>8-2(d)</u> Implement RVSP EIR Mitigation Measure 7-1b if culturally significant materials are discovered during construction:* *A qualified professional archaeologist shall be retained to conduct subsurface testing at potentially important known archaeological sites. As it has not been determined if the known sites within the Specific Plan Area are eligible for inclusion to either the NRHP or CRHR, subsurface testing (i.e., resource evaluation) should be initiated for sites when construction is*	

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Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		to occur within 100 feet of the resource and where Mitigation Measure 7-1a [incorporated as Mitigation Measure 8-2(c) of this EIR] proves infeasible. Subsurface testing should also be implemented if culturally significant materials (i.e., unique archaeological resources or historical resources) are inadvertently exposed during construction. *Subsurface testing procedures could involve shovel testing, augering, or other such techniques designed to identify and/or characterize subsurface archaeological deposits. If a resource is determined to be important under CEQA (i.e., because it is a unique archaeological resource or an historical resource), then Mitigation Measure 7-1c [incorporated as Mitigation Measure 8-2(e) of this EIR] must also be implemented.* *17-1(e) Implement the following Mitigation Measure set forth in this EIR:* • *<u>8-2(e)</u> Implement RVSP EIR Mitigation Measure 7-1c if culturally significant materials are discovered during construction:* *A qualified professional archaeologist shall be retained to conduct data recovery excavation. This mitigation measure will be implemented as*	

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Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		an alternative to Mitigation Measures 7-1a [incorporated as Mitigation Measure 8-2(c) of this EIR] at cultural resource sites determined to be eligible for inclusion in either the NRHP or CRHR. *In compliance with CEQA, implementation of this mitigation measure would entail preparation and adoption of a data recovery plan that makes provisions for adequately recovering the scientifically consequential information from and about the resource. The data recovery plan must be prepared and adopted prior to commencing any excavation activities.* *17-1(f) Implement the following Mitigation Measure set forth in this EIR if significant archaeological materials are discovered during construction:* • *<u>8-3(d)</u> Implement RVSP EIR Mitigation Measure 7-2a:* *In the event of the discovery of buried archaeological artifacts, exotic rock (non-native), or unusual amounts of shell or bone, it is recommended that project activities in the vicinity of the find be immediately stopped and a qualified professional archaeologist consulted to assess the resource and provide proper management recommendations. If the find is determined to be a historical or unique archaeological resource,*	

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Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		contingency funding and a time allotment to allow for implementation of avoidance measures or appropriate mitigation shall be made available, as provided in Section 15064.5 of the CEQA Guidelines. In addition, the Placer County Planning Department and Department of Museums must also be contacted. Work in the area may only proceed after authorization is granted by the Placer County Planning Department. All construction and improvement plans for subsequent development within the Plan Area involving ground disturbance shall include these provisions. The archaeologist shall evaluate any potential effects on any historical resource or unique archaeological resource, and where such effects would be significant, shall recommend potential mitigation to the County for its consideration. The County will assess the feasibility of any proposed mitigation (e.g., avoidance of the historical resource) and impose the mitigation where feasible in light of factors such as the nature of the find, project design, costs, Specific Plan policies and land use assumptions, and other considerations. If avoidance is unnecessary or infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of the project site while mitigation for paleontological resources is carried out.	

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Summary of Impacts and Mitigation Measures

Impact		Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
17-2	**Cause a cumulative loss of tribal cultural resources.**	LS	*None required.*	N/A
	18. Wildfire			
18-1	**Substantially impair an adopted emergency response plan or emergency evacuation plan.**	LS	*None required.*	N/A
18-2	**Due to factors such as on-site fuel sources, slope, and prevailing winds, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.**	LS	*None required.*	N/A
18-3	**Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.**	LS	*None required.*	N/A

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18-4	**Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.**	LS	*None required.*	N/A
18-5	**Increase in wildfire risk attributable to the proposed project, in combination with cumulative development.**	LS	*None required.*	N/A

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3. Project Description

3. PROJECT DESCRIPTION

3.1 INTRODUCTION

The Project Description chapter of the EIR provides a comprehensive description of the Estia Dry Creek and Placer Creek Residential Project (proposed project) in accordance with CEQA Guidelines Section 15124. A detailed description of the project location, project setting and surrounding uses, project purpose and objectives, project components, and required project approvals is presented below.

3.2 PROJECT LOCATION

The project site consists of approximately 92.2 gross (87.6 net) acres located south of Baseline Road, immediately east of the abandoned Old Walerga Road right-of-way, west of the Fiddyment Road/Baseline Road/Walerga Road intersection and the western portion of Sun Valley Oaks residential subdivision, and north of the Morgan Creek residential subdivision in the Dry Creek-West Placer Community Plan Area (DCWPCP) of unincorporated Placer County (see Figure 3-1 and Figure 3-2). Walerga Road, which curves from the northeast to the southwest, separates the northern 52.3-acre portion of the project site, identified by Assessor's Parcel Number (APN) 023-221-076, and the southern 35.3-acre portion of the project site, identified by APN 023-221-074.

3.3 PROJECT SETTING AND SURROUNDING LAND USES

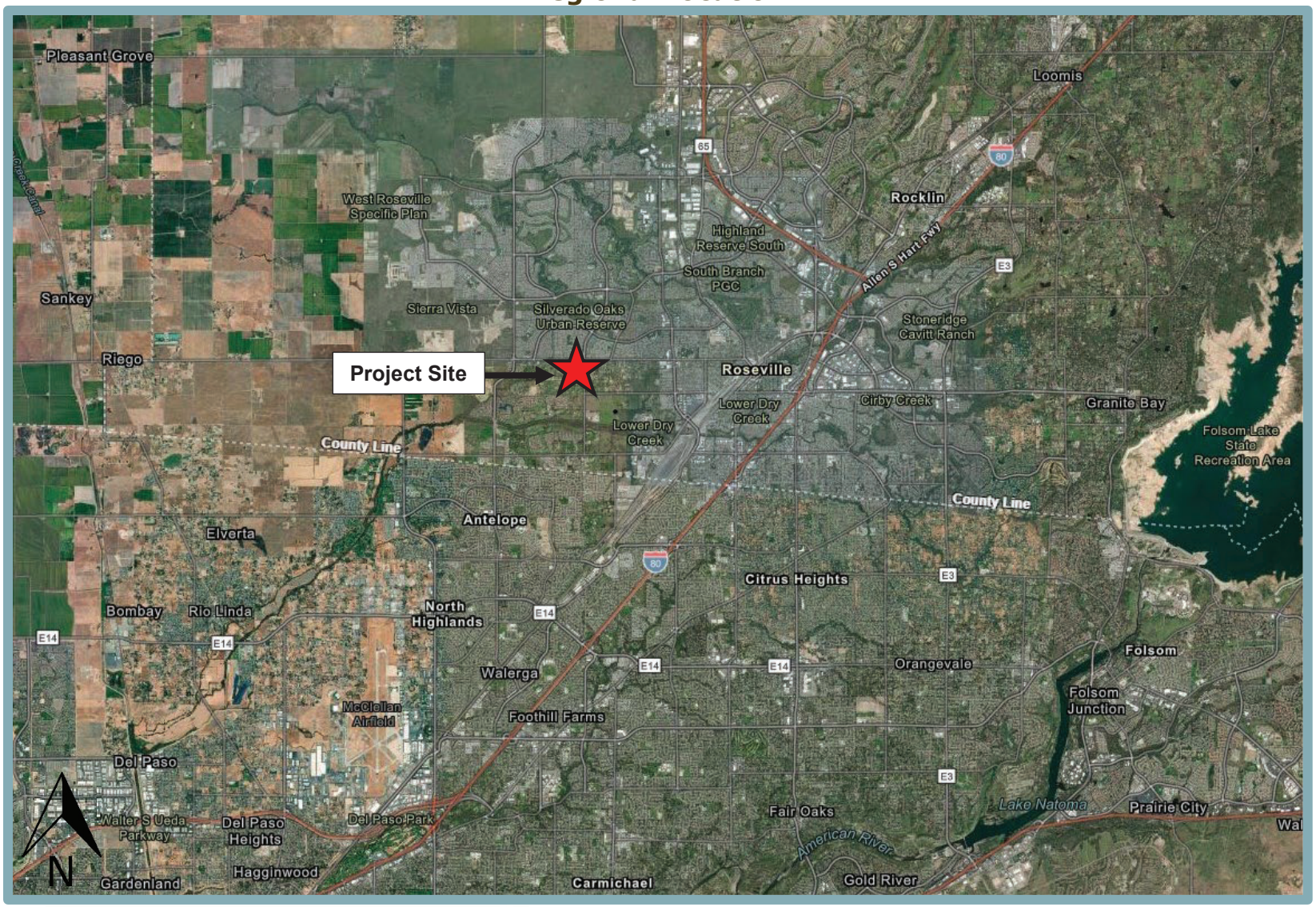
Section 15125 of the CEQA Guidelines requires an EIR to include a description of the physical environmental conditions in the vicinity of the project, from a local and regional perspective, as they exist at the time the Notice of Preparation (NOP) is published. Knowledge of the existing environmental setting is critical to the assessment of environmental impacts. Pursuant to CEQA Guidelines Section 15125, the description of the environmental setting shall not be longer than necessary to understand the potential significant effects of the project.

The following sections describe the existing setting of the project site and the surrounding land uses in the project vicinity. Please note that detailed discussions of the existing setting in compliance with CEQA Guidelines Section 15125, specific to each environmental resource area, are included in each corresponding technical chapter of this EIR.

Site Characteristics

The project site is bisected by Walerga Road, which generally curves from northeast to southwest. The 52.3-acre northern portion of the site (APN 023-221-076) is bounded by Baseline Road to the north and Walerga Road to the south. The northern portion of the site is undeveloped, consists of non-native annual grassland with gently rolling topography, and is interspersed with seasonal wetlands and vernal pools. The 35.3-acre southern portion of the site (APN 023-221-074) is bounded by Walerga Road to the north and west. The southern portion of the site includes a paved sewer easement which extends from Vineyard Road to the east and Walerga Road to the west. In addition, the southern portion of the site includes undeveloped annual grassland with gently rolling topography, interspersed with seasonal wetlands, vernal pools, and is bisected by an un-named tributary of Dry Creek (named "Placer Creek" for this project) which flows east to west.

Figure 3-1
Regional Location



* Figure not OCR Compatible

Figure 3-2
Project Location



* Figure not OCR Compatible

The Federal Emergency Management Agency (FEMA) 100-year floodplain, containing approximately 4.7 acres, is located within the Placer Creek tributary area, which bisects the southern portion of the project site. A band of oak woodlands is located along the Placer Creek riparian corridor.

Roadways in the immediate project vicinity include Baseline Road to the north, Walerga Road bisecting the project site from the southwest to the northeast, Town Center Avenue to the west, and Vineyard Road to the southeast. Additionally, the northern boundary of the project site is contiguous to the Roseville City Limits, and the southern boundary of the project site is located approximately 1.2 miles from the Placer County/Sacramento County line.

The Placer County General Plan/DCWPCP land use designations for the project site are Rural-Low Density Residential (1-2.3 acre minimum) (RLDR), and Greenbelt and Open Space (OS). The site is zoned Residential Single-Family, combining Agriculture, combining a minimum Building Site of 40,000 square feet, combining Planned Residential Development of one dwelling unit per acre (RS-AG-B-40 PD=1) and Open Space, combining Planned Residential Development of one dwelling unit per acre (O PD=1).

Surrounding Land Uses

Surrounding existing land uses for the project site include the under-construction Baseline Marketplace to the north, across Baseline Road; single-family residences associated with the Sun Valley Oaks residential neighborhood, a vacant property owned by Dry Creek Joint Elementary School District, and Dry Creek tributaries to the east; single-family residences associated with the Morgan Creek residential neighborhood to the south; and the under-construction Property 1A of the Placer Vineyards Specific Plan (PVSP), which will include 1,285 residential units, to the west. Table 3-1 describes the land use and zoning designations of the parcels surrounding the project site.

Table 3-1
Surrounding Land Use and Zoning Designations

Parcel Location	Land Use	Zoning
North of the Project Site	City of Roseville: Community Commercial (CC)	City of Roseville: General Commercial (GC)
South of the Project Site	Placer County: RLDR	Placer County: RS-AG-B-40 PD=1
East of the Project Site	Placer County: RLDR	Placer County: RS-AG-B-40 PD=1, O PD=1
West of the Project Site	Placer County: Placer Vineyards Specific Plan	Placer County: Specific Plan, Placer Vineyards Specific Plan (SPL-PVSP)

3.4 PROJECT OBJECTIVES

The following project objectives have been developed by the project applicant:

1. Create a high-quality neighborhood environment containing a mix of residential, open space, and recreational land uses.
2. Develop a well-designed, economically feasible residential community that consists of a variety of residential products and unit types.
3. Offer an amenity-rich residential community that offers modern amenities and open spaces for residents, such as trails, parks, recreational areas, and gathering spaces.

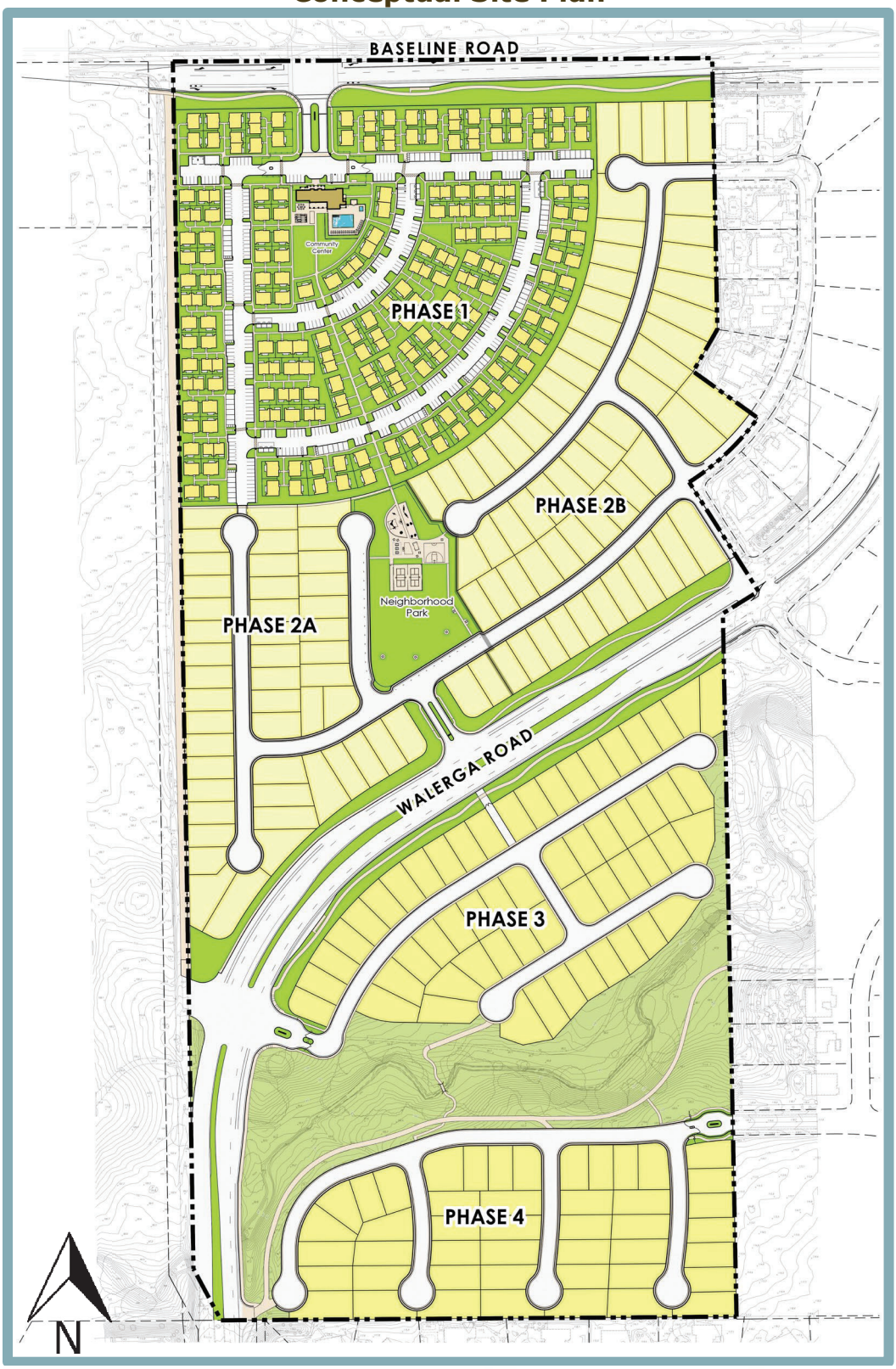
4. Provide a comprehensively planned project that protects sensitive environmental habitat and resources, including existing riparian and oak woodland habitat on the project site, within a permanent greenbelt area providing a significant public benefit.
5. Use land resources efficiently by providing a well-planned development on an underutilized vacant site.
6. Promote pedestrian-oriented development, providing medium and high-density housing on a major transportation corridor and within walking distance of places of business and employment.
7. Provide a well-designed residential community with neighborhood identity in close proximity to jobs and services in Placer and Sacramento counties.
8. Increase the supply and diversity of housing types in the DCWPCP area that can support a wider range of lifestyles, consistent with the goals and policies of the County's Housing Element.
9. Assist in providing affordable housing and complying with Regional Housing Needs Allocation (RHNA) requirements by conveying a four-acre affordable housing site within the Riolo Vineyards Specific Plan area to Placer County.
10. Create a development of a density, scale and character that complements and is supportive of surrounding development.
11. Design a residential neighborhood that complements surrounding/existing neighborhoods by incorporating compatible land uses, lot sizes, and street layouts while providing smooth transitions to adjacent neighborhoods through the appropriate setbacks, landscaping, and open space features; and establishing logical roadway and pedestrian connections consistent with the County's design principles.

3.5 PROJECT COMPONENTS

The proposed project includes the development of two separate residential communities over the course of five phases. Phase 1 would consist of the 220-unit multi-family Estia Dry Creek development, and Phases 2, 3, and 4 would consist of the 212-lot detached single-family Placer Creek Residential development. Development of Phases 1, 2A, and 2B would occur on the northern portion of the site (APN 023-221-076), north of Walerga Road, and development of Phases 3 and 4 would occur on the southern portion of the site (APN 023-221-074), south of Walerga Road (see Figure 3-3). The gross project density would be approximately 4.6 residential units per acre.

The proposed project would require County approval of a General Plan/DCWPCP Amendment, Rezone, Vesting Large Lot Tentative Subdivision Map, Vesting Phased Small Lot Tentative Subdivision Map, Design Review, Variance, and three service area annexations. These entitlement requests are discussed in further detail below, as are the two options by which the applicant could satisfy the project's affordable housing requirements, one of which includes transferring in fee title to the County an off-site vacant parcel under Homes by Towne ownership, within the Riolo Vineyards Specific Plan (RVSP). Additional County approvals would be required for this off-site affordable housing proposal (see Affordable Housing section below).

Figure 3-3
Conceptual Site Plan



* Figure not OCR Compatible

Other approvals necessary to implement the proposed project would include Placer County Conservation Program (PCCP) authorization, a Section 404 permit from U.S. Army Corps of Engineers (USACE), a Section 1602 permit from the California Department of Fish and Wildlife (CDFW), a Section 401 Water Quality Certification from the Regional Water Quality Control Board (RWQCB), a National Pollutant Discharge Elimination System (NPDES) Construction General Permit, and an Encroachment Permit from the City of Roseville for road improvements within their jurisdiction.

The proposed project components, including the required approvals, are described in further detail below.

Estia Dry Creek

The Estia Dry Creek development (Phase 1) would include 220 single-story multi-family units consisting of 80 one-bedroom units and 140 two-bedroom units, ranging from approximately 700 square feet (sf) to 1,100 sf. Units would be either detached or in duet configurations. Each unit would include a private fenced backyard. A 3,537-sf community center building would also be developed and would include a club room, two fitness rooms, and leasing offices with associated lounge, break room, and storage areas. An outdoor pool with patios and grill areas would be located adjacent to the community center. Additional amenities would include a centrally located dog park, pet washing stations, and car washing stations. Garages, covered, and surface parking would be located throughout the site. The density for the Estia Dry Creek portion of the proposed project would be approximately 9.5 residential units per acre.

Placer Creek Residential

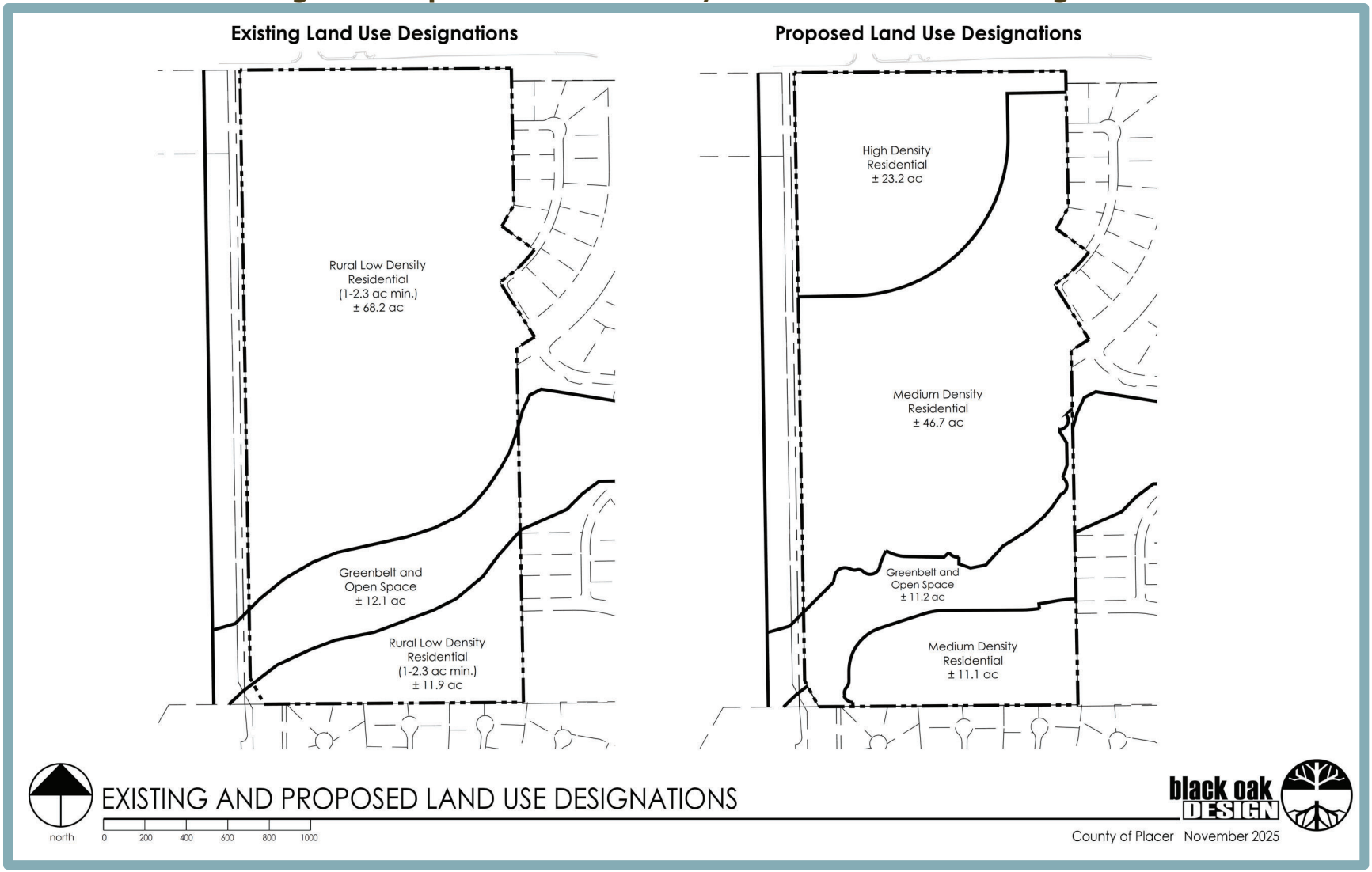
The Placer Creek Residential development (Phases 2, 3, and 4) would include 212 single-family residential lots with a minimum lot size of 6,036 sf. There are no lot coverage restrictions for lots less than 13,000 sf in the RS zone; for lots greater than 13,000 sf, maximum lot coverage is 40 percent for both single- and two-story homes. The Phase 2 neighborhood would have the potential to build as two phases: Phase 2A would include 49 lots and Phase 2B would include 61 lots. The overall Phase 2 would include a total of 110 single-family lots, and a centrally located 2.1-acre public neighborhood park with pickleball courts and associated amenities (described further below). Phase 3 would include the development of 56 single-family lots. Phase 4 would include the development of 46 single-family lots and the western extension of Vineyard Road, which would provide site access, along with trails and the 9.9-acre oak woodlands area along the “Placer Creek” riparian corridor, which would be preserved as open space.

The Placer Creek riparian corridor would separate the Phase 3 and 4 developments. The average residential density of the Placer Creek Residential site would be approximately 3.67 dwelling units per acre.

General Plan/DCWPCP and RVSP Amendments and Rezone

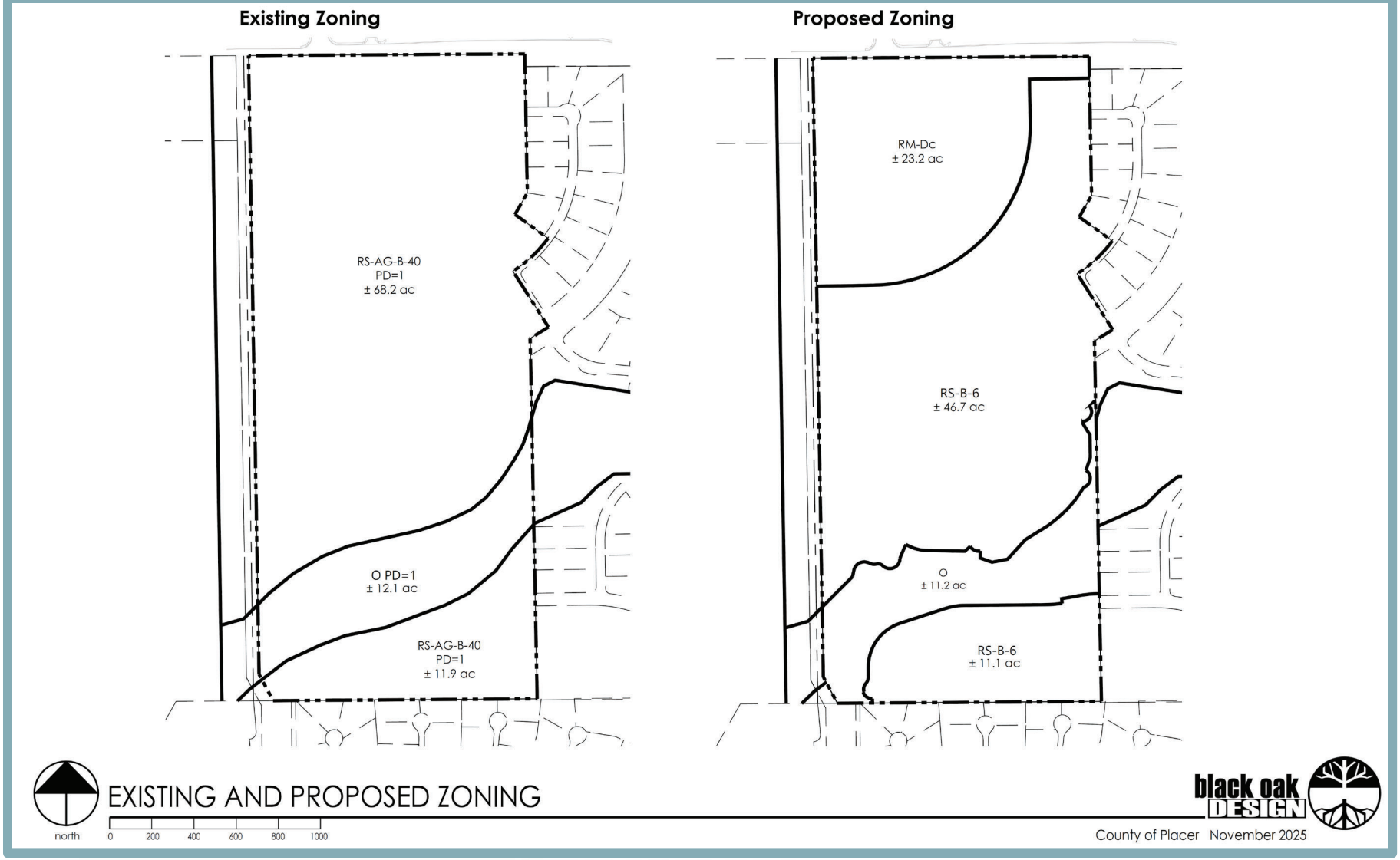
The 92.2-acre project site (including Walerga Road) is currently designated RLDR (80.1 acres) and OS (12.1 acres). The project would include a General Plan/DCWPCP Amendment to change the site’s land use designations to High Density Residential (HDR) (23.2 acres), Medium Density Residential (MDR) (57.8 acres), and OS (11.2 acres) (see Figure 3-4). In addition, the project would include a rezone to change the site’s zoning designations from RS-AG-B-40 PD=1 (80.1 acres) and O PD=1 (12.1 acres), to Residential Multifamily, combining Design Scenic Corridor (RM-Dc) (23.2 acres), Residential Single Family, combining minimum Building Site of 6,000 sf (RS-B-6) (57.8 acres), and Open Space (O) (11.2 acres) (see Figure 3-5).

Figure 3-4
Existing and Proposed General Plan/DCWPCP Land Use Designations



* Figure not OCR Compatible

Figure 3-5
Existing and Proposed Zoning Designations



* Figure not OCR Compatible

As discussed further below in the Affordable Housing section, this EIR evaluates two options by which the applicant could satisfy the project's affordable housing requirements, one of which includes transferring in fee title to the County an off-site vacant parcel under Homes by Towne ownership, within the RVSP. This option would involve rezoning the off-site affordable housing parcel to Residential Multifamily 30, combining Design Scenic Corridor (RM30-Dc) zone, which would result in a maximum development potential of 120 affordable income-restricted units.

Rezoning the off-site affordable housing parcel would also require a RVSP Amendment and Development Agreement Amendment. The off-site affordable housing parcel is not currently proposed for development as part of the proposed project, but rather the proposed project would transfer land in-lieu to accommodate future affordable housing. Approval of the currently proposed entitlements would allow for the future development of an affordable housing project either by the County or another developer. The second option for satisfying the project's affordable housing requirements includes developing 22 Accessory Dwelling Units (ADUs) on-site.

Tentative Subdivision Maps

The proposed project would include a Vesting Large Lot Tentative Subdivision Map to subdivide the net 87.6-acre project site into large lot parcels corresponding to the residential areas of the site (Lots 1 through 4), the on-site open space (Lot 5), and the Park lot (Lot P-1) (see Figure 3-6). In addition, the proposed project would include a Vesting Phased Small Lot Tentative Subdivision Map (see Figure 3-7) to subdivide large Lots 2A, 2B, 3, and 4 into 212 single-family residential lots ranging from approximately 6,036 sf to 15,673 sf. The proposed project would be constructed over the course of five development phases. As shown below in Table 3-2, the total unit count would be 432, which includes 212 single-family lots and 220 multi-family units.

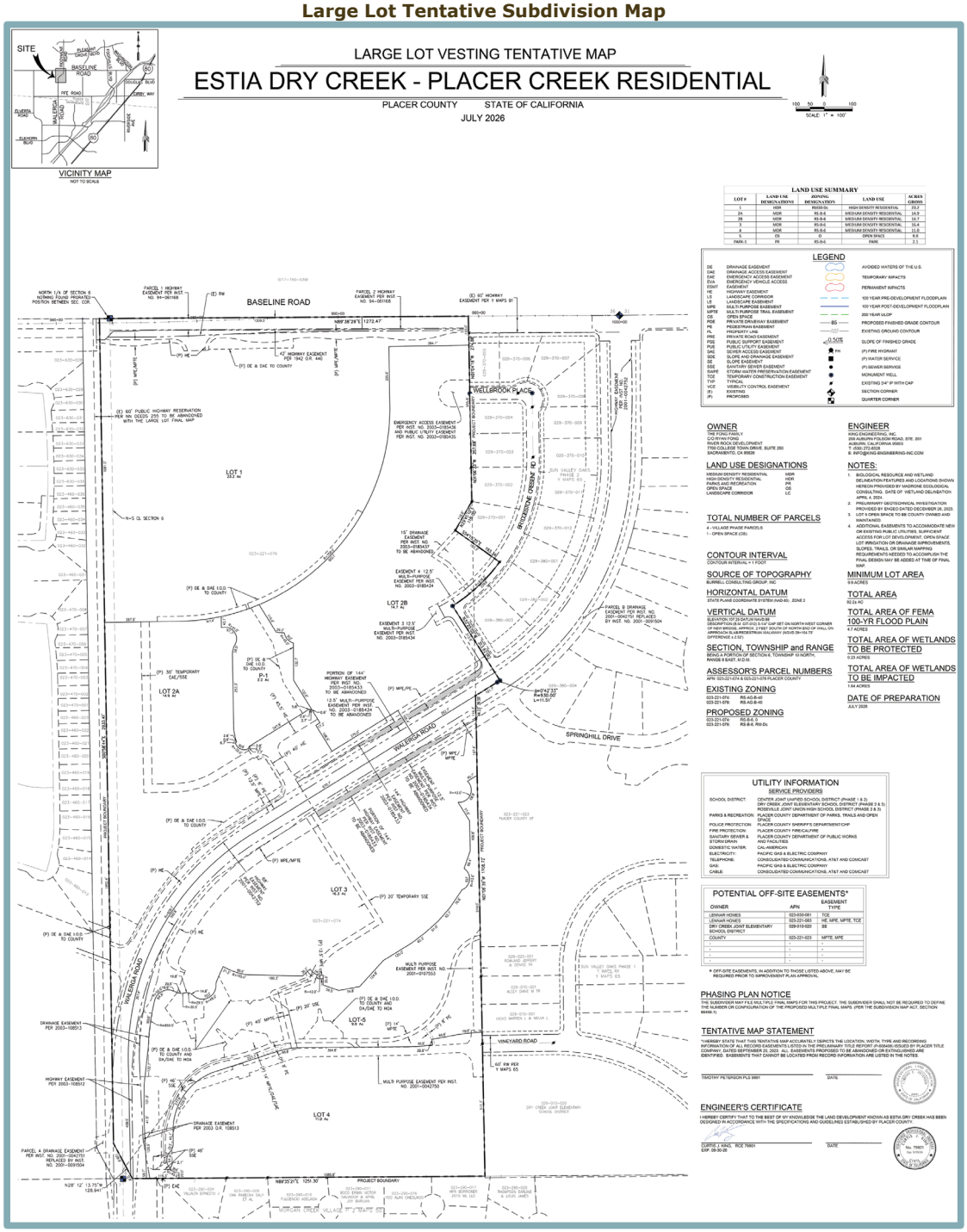
Affordable Housing

The Estia Dry Creek development is exempt from the Placer County Inclusionary Housing Ordinance (County Code 15.65.050.B.16) due to all unit sizes being less than 1,600 sf and being inherently affordable by design.

As discussed in the Rezone section above, this EIR evaluates two options by which the applicant could satisfy the project's affordable housing requirements, one of which includes an equivalency proposal composed of transferring in fee title to the County an off-site vacant parcel under Homes by Towne ownership, within the RVSP. The proposed off-site affordable housing parcel is approximately four acres, located at the northeast corner of PFE Road and Watt Avenue, and is identified as APN 023-200-056-000 (see Figure 3-8). The RVSP EIR analyzed development of the off-site affordable housing parcel with 60 High-Density Residential (HDR) units. However, in 2015, the County approved an amendment to the RVSP, which redesignated the subject parcel from HDR to Commercial. The 2015 RVSP Amendment did not include additional traffic analysis; thus, the County limited the amount of commercial development on this parcel to a maximum of 3,750 sf, which roughly equates to the same number of vehicle trips that could be generated by the previously approved HDR use.

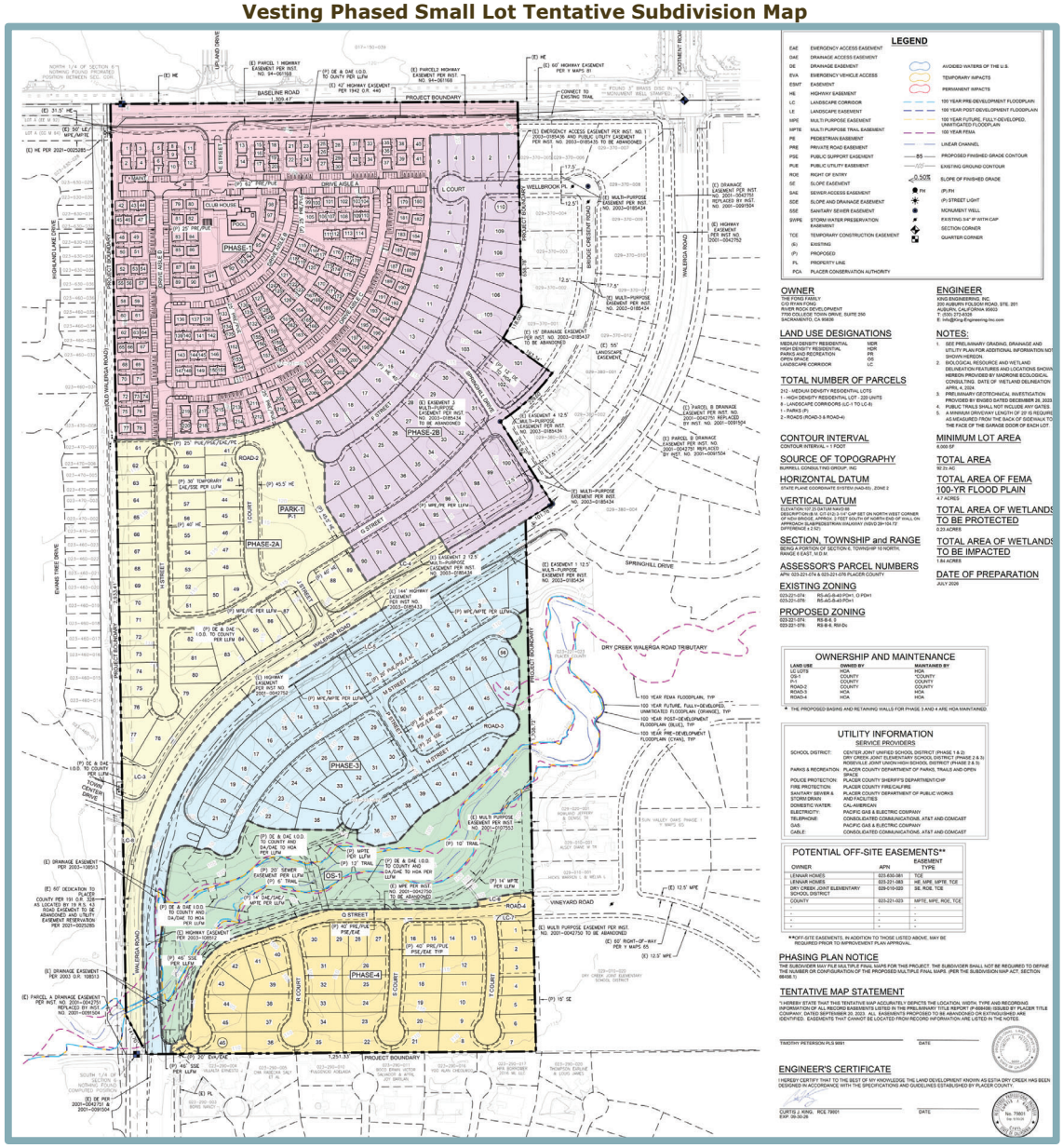
In addition to a commercial development potential of 3,750 sf, the applicant, Homes by Towne, has 39 density reserve units available towards the off-site affordable housing parcel. Thus, the baseline development potential for the proposed off-site affordable housing parcel consists of 3,750 sf of commercial, plus the 39 density reserve units.

Figure 3-6
Large Lot Tentative Subdivision Map



* Figure not OCR Compatible

Figure 3-7
Vesting Phased Small Lot Tentative Subdivision Map



* Figure not OCR Compatible

Figure 3-8
Off-Site Affordable Housing Parcel Location



* Figure not OCR Compatible

Table 3-2
Land Use Summary

Lot	Phase	Land Use Designation	Zoning Designation	Land Use	Gross Acres
Lot 1 (220 Units)	1	HDR	RM-Dc	High Density Residential	23.2
41-89	2A	MDR	RS-B-6	Medium Density Residential	8.2
LC-3	2A	LC	RS-B-6	Landscape Corridor	0.8
LC-4	2A	LC	RS-B-6	Landscape Corridor	0.5
LC-8	2A	LC	RS-B-6	Landscape Corridor	0.1
PARK-1	2A	PR	RS-B-6	Park	2.1
ROAD-2	2A	HE	RS-B-6	Public Road	2.1
Walerga Road	2A	HE	RS-B-6	Public Road	3.1
1-40, 90-110	2B	MDR	RS-B-6	Medium Density Residential	11.5
LC-4	2B	LC	RS-B-6	Landscape Corridor	0.4
ROAD-2	2B	HE	RS-B-6	Public Road	2.4
Walerga Road	2B	HE	RS-B-6	Public Road	0.5
1-55	3	MDR	RS-B-6	Medium Density Residential	9.4
LC-5	3	LC	RS-B-6	Landscape Corridor	1.5
OS-1*	3	OS	O	Open Space	9.9
ROAD-3	3	MDR	RS-B-6	Private Road	2.3
Walerga Road	3	HE	RS-B-6	Public Road	3.2
1-46	4	MDR	RS-B-6	Medium Density Residential	8.4
LC-6	4	LC	RS-B-6	Landscape Corridor	0.06
LC-7	4	LC	RS-B-6	Landscape Corridor	0.04
ROAD-4	4	MDR	RS-B-6	Private Road	2.6
Total					92.2

Note: Lot acreages are approximate and will be refined through the EIR process.

*Lot developed with the Large Lot Final Map.

This option would involve an Amendment to the RVSP and a rezone of the proposed off-site affordable housing parcel to the RM30-Dc zone, which would result in a maximum development potential of 120 affordable income-restricted units. The amendment and rezone would allow the parcel to be developed at a future date with HDR units at a density of 30 units/acre. While development of the off-site affordable housing parcel is not currently proposed and this option would only involve the transfer of land, this EIR will evaluate the potential environmental impacts associated with the net increase in development potential at the off-site affordable housing parcel within the RVSP. In addition, future development of the off-site affordable housing parcel would require an Amendment to the Riolo Vineyards Development Agreement to add a High Density Residential (HDR) land use designation, Development Standards and Design Guidelines, rezoning of the property, and a change in assumptions for level of services.

This EIR also evaluates an alternative means by which the proposed project can meet the County's affordable housing regulations. According to Policy HE-C-3, included in the Housing Element of the County's General Plan, ADUs of less than 750 sf are considered to be affordable by design and eligible to satisfy low-income housing requirements in specific plans and new developments. The County's regulations require a minimum of 10 percent of the units within the

proposed project be affordable housing; thus, the proposed project could provide a minimum of 22 ADUs on lots with single-family residential units. ADUs are allowed by-right, pursuant to State and County regulations, within the project site's proposed land use and zoning designations.

Parks, Recreation, Open Space, and Trails

The proposed project would include development of a public, 2.1-acre neighborhood park in the Placer Creek Residential Phase 2 development (Lot PARK-1), which would include two pickleball courts, half basketball court, open turf areas, restrooms, pollinator garden, child play area, covered play structures, covered picnic area with barbecue, cornhole, lounge area, walking trails, and picnic tables throughout the park.. The proposed project would include approximately 9.9 acres of open space bisected by "Placer Creek" and situated between the Placer Creek Residential Phase 3 and 4 neighborhoods (Lot 5/Lot OS-1). The open space area would be preserved as natural open space by virtue of the underlying zoning and an open space easement to be recorded with the final map. Placer Creek Residential parks, trails and open space would be open to the public.

The Estia Dry Creek development would feature an extensive internal pedestrian circulation system that would provide connectivity to project amenities and the surrounding community. A 3,537-sf community center building would include a club room, two fitness rooms, a dog washing facility, and leasing offices with associated lounge, break room, and storage areas. An outdoor pool with patios and grill areas would be located adjacent to the community center. Additional amenities would include a centrally located dog park and car washing stations. The amenities and recreational facilities associated with the Estia Dry Creek development would be private.

The proposed project would include an approximately 1,300-foot-long Class I meandering trail along the Baseline Road frontage, and an approximately 2,300-foot-long Class I meandering trail along the southern/eastern Walerga Road frontage. Placer Creek Residential Phase 4 would also include an approximately 1,600-foot-long Class I trail on the southern side of Placer Creek, providing connection from Walerga Road at the western Emergency Vehicle Access (EVA) entry of Phase 4, traversing east and connecting to the stubbed path north of the three existing Sun Valley Oaks homes fronting White Mill Crescent Road at Vineyard Road. From the proposed trail, a pedestrian bridge would go over Placer Creek and connect to a trail south of Phase 3, ultimately connecting to N Street within the Placer Creek Residential Phase 3 neighborhood.

In addition, the proposed project aims to implement minor enhancements within the abandoned Old Walerga Road corridor, which bisects the project site and existing residential development to the west of the project site within the broader Placer Vineyards area. The corridor is privately owned and encumbered by existing public utility easements; accordingly, any proposed enhancements would be subject to landowner consent, utility coordination, and applicable approvals, and would not be implemented absent such consent. Proposed enhancements would be limited to areas previously disturbed by the former roadway and may include linkages on the north side to the planned Class I trail along Baseline Road and on the south side to Town Center Drive, limited pavement surface treatments (such as slurry seal or comparable non-structural applications), signage, and striping to accommodate pedestrians and bicyclists. If implemented, the improvements to the Old Walerga Road corridor would enhance connectivity of local residents to nearby retail and commercial centers, provide additional safety for pedestrians and cyclists, support multimodal access, and contribute to the overall functionality and integration of the local trail network.

The project site would be annexed into County Service Area 28, Zone of Benefit 169 (Dry Creek Parks) for ongoing maintenance of public parks, trails, and recreation amenities within the Dry Creek community.

Landscaping

The project frontage on the south side of Baseline Road would include a landscaped corridor with a six-foot tall concrete masonry unit (CMU) wall. The Phase 1/Estia Dry Creek and Placer Creek Residential Phase 2 entries on Walerga and Baseline Roads would be landscaped with native and adaptive vegetation and marked with enhanced hardscape features, using materials consistent with the DCWPCP and the Placer County Landscape Guidelines. Phase 1 would also be gated on both sides of the parking lot at the entrance from Baseline Road. The Placer Creek Residential Phase 3 entry from Walerga Road would include a landscaped median with a vehicle gate beyond the median, and the Placer Creek Residential Phase 4 entry on Vineyard Road would also be gated. Pedestrian gates would be located at the project entries and would remain unlocked during daylight hours. Project-identification monument features would be located at each of the entries.

Trees and shrubs would be planted throughout the Estia Dry Creek development. A six-foot tall tubular open view fence and landscape strip would be located along the western boundary of the Estia Dry Creek development, and a six-foot tall privacy fence along the southern boundary. Trees and shrubs would also be planted along both sides of Walerga Road within the project site and along the boundary of the 2.1-acre neighborhood park. Within the Phase 4 development, native tree plantings and a post and cable fence would be provided along the Class I trail on the southern side of Placer Creek (see Figure 3-9 and Figure 3-10). All landscaping would conform to the DCWPCP and Placer County Landscape Design Guidelines.

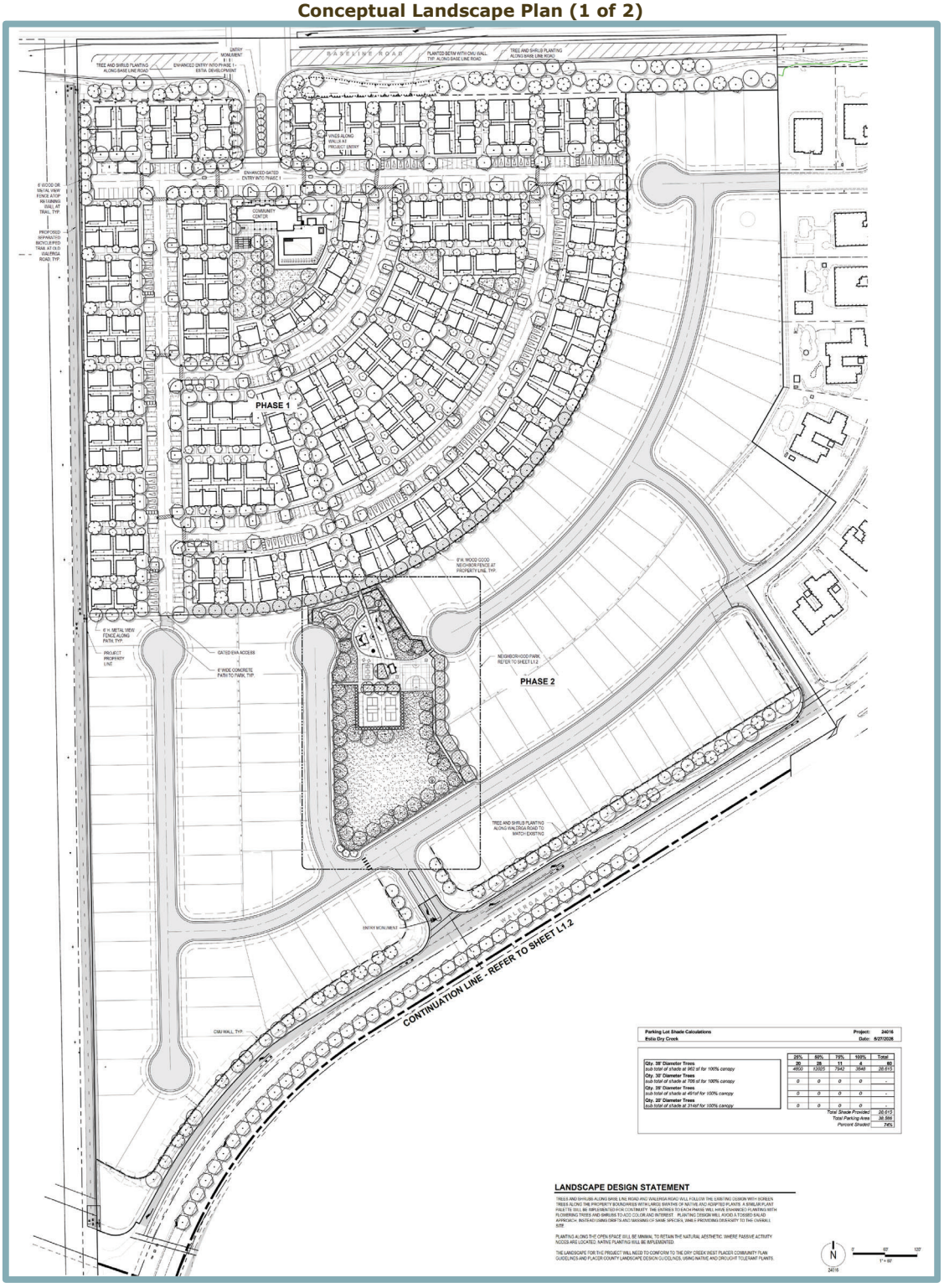
Finally, a six-foot tall noise barrier, using a combination berm and wall, would be constructed between the Walerga Road frontages and adjacent residential units.

Access and Circulation

Primary access to the Estia Dry Creek development would be provided by way of a new driveway located along Baseline Road, to the north of the site. The proposed driveway would be aligned with the fully signalized Upland Drive, which serves the Baseline Marketplace Commercial development located north of the site, along the north side of Baseline Road. A temporary EVA to the Estia Dry Creek development would be through future Phase 2 by way of a non-signalized Walerga Road intersection (EVA only) located between Springhill Drive and the existing signalized access (i.e., Town Center Avenue) to the Placer Vineyards Property 1A development to the southwest of the site. The ultimate Estia Dry Creek EVA would use the Phase 2 subdivision roadways and connections to Walerga Road, including an additional Walerga Road connection by way of Springhill Road.

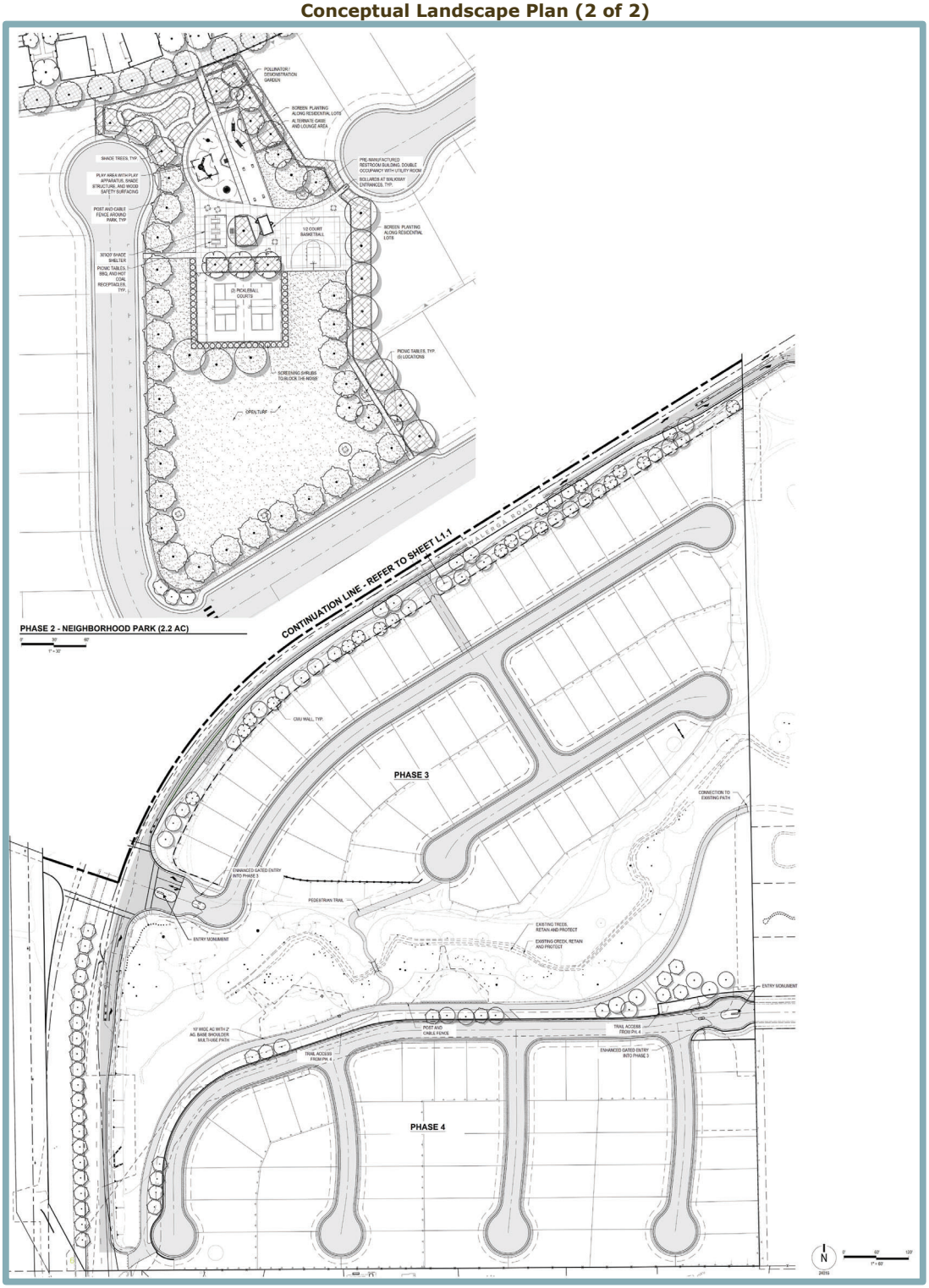
Access to the Placer Creek Residential Phase 2 neighborhood would be provided by a Springhill Drive extension and a new roadway off of Walerga Road between Springhill Drive and Town Center Avenue. Both access points would allow for right-in ingress and right-out egress controlled by a median in Walerga Road. While the new roadway off of Walerga Road would be restricted to right-in/right-out only, lefts-in would still be permitted at Springhill Drive.

Figure 3-9
Conceptual Landscape Plan (1 of 2)



* Figure not OCR Compatible

Figure 3-10
Conceptual Landscape Plan (2 of 2)



* Figure not OCR Compatible

Access to the Placer Creek Residential Phase 3 neighborhood would be from a new eastern/fourth leg of the existing signalized intersection at Walerga Road and Town Center Avenue, and an EVA is proposed from Walerga Road to M Street, opposite the new Phase 2 access on Walerga Road.

Access to the southern Phase 4 Placer Creek Residential neighborhood would be from the western extension of Vineyard Road, which currently terminates at the project site, just west of the southern entry to the Sun Valley Oaks subdivision at White Mill Crescent Road. An EVA for Phase 4 is proposed from Q Court to Walerga Road in the southwest corner of the project site, in the same location as the existing encroachment for Sewer and Emergency Access.

From the proposed access points, the Placer Creek Residential neighborhoods would be served by an internal roadway system, which would include sidewalks on each side. Interior roadways would be public in Phase 2 and private in Phases 1, 3 and 4. Low Impact Development (LID) features would be included along the roads, and on-street parking would be permitted on both sides of the residential subdivision streets (Phases 2-4).

Parking spaces provided in the Estia Dry Creek multi-family residential site would comply with the parking requirements pursuant to Placer County Municipal Code 17.54.040 and the Multifamily and Mixed-Use Design Manual. A total of 418 parking spaces would be included in the Estia Dry Creek site, including 346 surface spaces and 72 garage parking spaces in twelve, six car garage structures. All garage spaces would be electric vehicle (EV) capable. Additionally, three level 3 fast EV chargers would be provided on-site, one of which would be located at the Community Center, and two of which would be located within the community. Each single-family residence within the Placer Creek Residential development would include a private garage and driveway parking for a minimum of four cars as required by County code.

The proposed project would also include frontage improvements for the six-lane reconfiguration of Walerga Road and Baseline Road. Frontage improvements along Walerga Road would include the development of two, seven-foot-wide bike lanes, a Class I trail or sidewalk, and increasing from two existing travel lanes in each direction to three 12-foot-wide travel lanes in each direction. Baseline Road along the project frontage currently consists of two travel lanes in both the east and westbound directions and a center striped median of various widths and a signal at Upland Drive. The project would widen Baseline Road along its frontage to accommodate one half of the ultimate six-lane cross section with seven-foot-wide bike lanes on both sides of the street, along with curb and gutter improvements.

Additional Roadway and Intersection Improvements as Identified in the Local Transportation Analysis

The Local Transportation Analysis (LTA) prepared for the proposed project by Kimley-Horn identifies roadway improvements that would be triggered by the proposed project. As determined by the LTA, the following improvements would be required at the specified timing below:

- Baseline Road at Crowder Lane (Estia at Dry Creek/Phase 1): Project-induced Level of Service (LOS) deficiency would be improved by restricting northbound left turns. Westbound project trips from Crowder Lane would instead turn right from Crowder Lane on to Baseline Road and navigate a newly installed left-turn/U-turn at Baseline Road, near the existing entry to the St. Clare Catholic Church parking lot. The northbound left-turn restriction would be implemented by installing a mountable raised median and appropriate

signage. Additionally, the Baseline Road median would be modified at the St. Clare Catholic Church entry to allow for U-turns.

- Walerga Road at Project Access/Springhill Drive (Full Project Buildout): Project-induced LOS deficiency would be improved by restricting the left turns out of the proposed Phase 2 and Phase 3 neighborhoods. Thus, northbound project trips from Springhill Drive would turn right from the proposed Phase 2 neighborhood onto Walerga Road and navigate a U-turn at the Walerga Road intersection with Town Center Avenue. Similarly, because left-turns out of the proposed neighborhoods would be restricted, southbound trips from Springhill Drive would turn right from the proposed Phase 3 neighborhood on to Walerga Road and navigate a U-turn at the Walerga Road intersection with Baseline Road. The left-turn out restrictions would be implemented by installing a median curb restriction.

Both of the above improvements would include coordination with the City of Roseville to implement the required modifications at the Baseline Road/Fiddyment Road/Walerga Road intersection to accommodate U-turns (signage, signal timing, etc.).

In addition, if dedication of the off-site affordable housing parcel is used to satisfy the project's affordable housing obligations, signalization of the Watt Avenue/PFE Road intersection would be a required improvement at the time of future development of the parcel. Installation of a traffic signal at this intersection is also required for RVSP buildout; thus, the timing of the respective developments may dictate the party responsible for constructing this signal, be it the RVSP developer or affordable housing parcel developer.

Utilities and Public Services

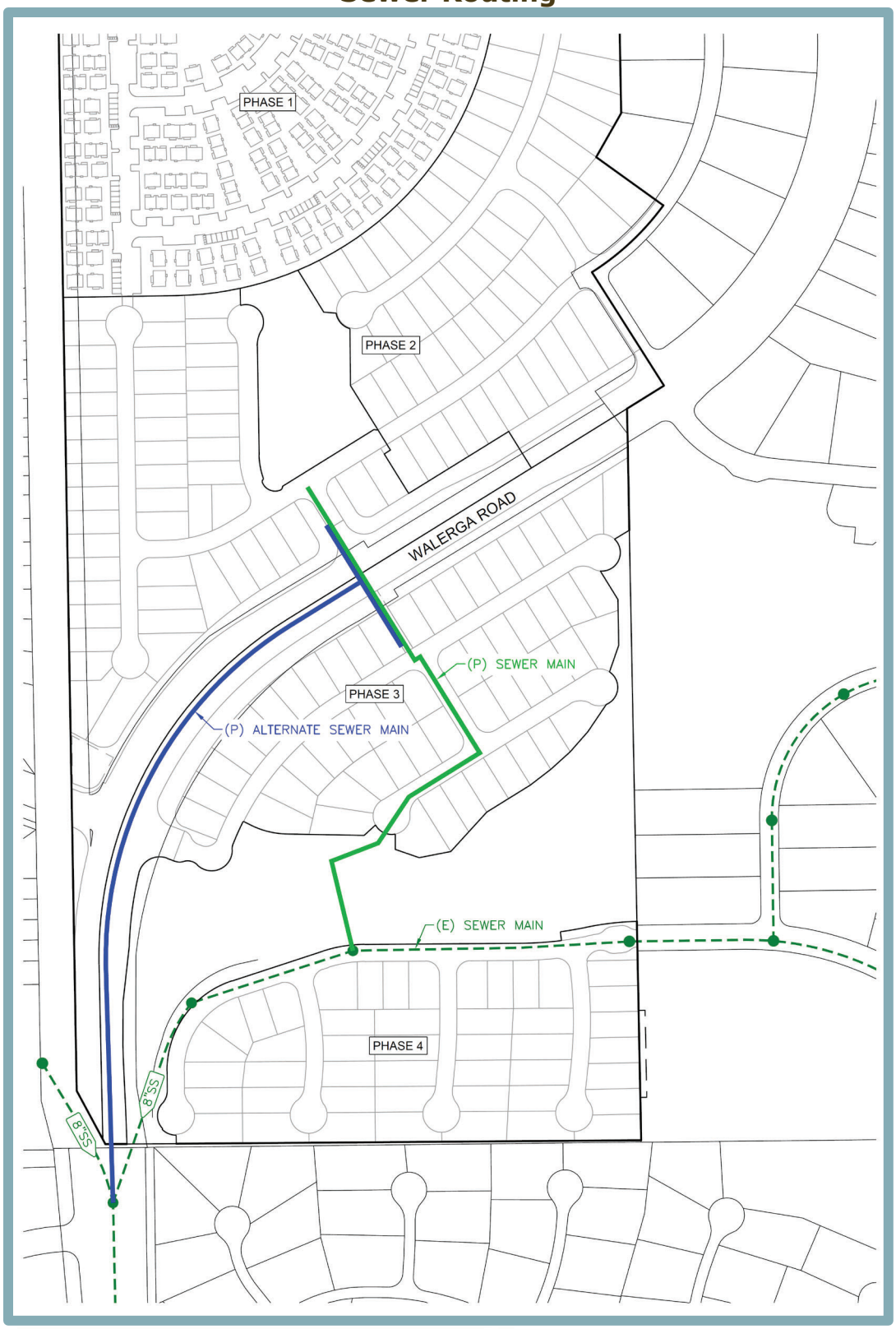
Treated water service for the project would be provided by California American Water (CAL-AM) through an agreement with Placer County Water Agency (PCWA). The Estia Dry Creek development would include construction of a 12-inch loop system. In addition, the proposed project would include four- to 12-inch internal water lines for domestic water service and fire/hydrant connections. Internal water lines would connect to an existing 16-inch line in Walerga Road and an existing 24-inch line in Baseline Road.

The proposed project would be served by the Dry Creek Wastewater Treatment Plant (Dry Creek WWTP). Flows would be conveyed through existing eight-inch "Sewer B" gravity lines within Walerga Road to the Dry Creek WWTP. The proposed project would include the development of an eight-inch sewer line either extending under Placer Creek or within Walerga Road in order to route sewer flows to the south (see Figure 3-11). Eight-inch sanitary sewer lines would be included throughout the project site and would connect to an existing eight-inch sewer line to the south of the project site.

In addition, the proposed project would include improvements to the existing Community Facility District #1 Sewer Lift Station, as discussed further in the Off-Site Sewer Lift Station Improvements header below.

All sewer improvements would be consistent with the South Placer Regional Wastewater and Recycled Water Systems Evaluation. The project site would be annexed into Placer County Service Area 28, Zone 173 for sanitary sewer service.

Figure 3-11
Sewer Routing



* Figure not OCR Compatible

The majority of the project site is located within the Dry Creek Watershed, with the northern portion (35.6 acres) of the project site located within the Curry Creek Watershed. The project site would be divided into seven drain management areas (DMAs) for stormwater quality treatment. The seven DMAs include the portions of the project site that would be developed as a result of the proposed project. The Estia Dry Creek portion of the project site (i.e., Phase 1) is divided into two DMAs: A and B. Both DMAs would provide stormwater quality treatment through bioretention basins at the north and south boundaries of the Estia Dry Creek portion of the project site.

This EIR considers two options for providing the required retention for the stormwater runoff from DMA A, which flows to the Curry Creek watershed (which has detention and volumetric retention obligations). The first option consists of routing runoff from DMA A to the proposed Basin A north of the site, along Baseline Road. Excess runoff that does not infiltrate within Basin A would be routed to the existing storm drain infrastructure within Baseline Road. If the proposed project does not participate in a regional retention basin, underground volumetric retention would be required for the runoff within DMA A. Stormwater runoff within DMA B (i.e., the remainder of the Estia Dry Creek portion of the project site) is proposed to be shifted to the Dry Creek watershed. The re-directed flows would be routed to Basin B in the southern portion of the Phase 1 area for treatment and infiltration.

Runoff within Phase 2 of Placer Creek Residential would be routed to a new storm drain pipe within Walerga Road, which would discharge into proposed Basin C in the southwest portion of the Phase 2 area. During large storm events, excess runoff that does not infiltrate within Basin C would discharge into a new 24-inch storm drain pipe that would connect to an existing 48-inch pipe in Walerga Road that currently outfalls into the on-site “Placer Creek” tributary between Phases 3 and 4. The existing 48-inch outfall would be extended to accommodate the Walerga Road improvements to be completed as part of the proposed project. In addition, the existing box culvert underneath Walerga Road would be extended.

The “Placer Creek” tributary to Dry Creek is located between the Placer Creek Residential Phases 3 and 4 residential neighborhoods and flows southwest to Dry Creek. Development of the project site would require installation of on-site drainage facilities and alteration of site topography to accommodate the proposed land uses. Phase 3 and Phase 4 would include water quality Basins D through F, which would each outfall to the Placer Creek tributary through 24-inch and 18-inch storm drains during large storm events.

The proposed project is within the service area of Pacific Gas & Electric Company (PG&E) for electric and natural gas service. A 30-inch PG&E gas transmission line is located along the north side of Baseline Road within an existing easement. In addition, Consolidated Communications and Comcast would provide fiber communication and internet services to the proposed project. The proposed project would connect to the existing dry utility lines within the project vicinity.

Solid waste would be collected by Recology Auburn Placer, a private collection firm, and transported to the Western Placer Waste Management Authority’s Western Regional Sanitary Landfill, located north of the City of Roseville.

Additionally, the proposed project would be served by the Placer County Sheriff’s Office, California Highway Patrol (CHP), Placer County Fire, Center Joint Unified School District (grades K-12), Dry Creek Joint Elementary School District (grades K-8), and Roseville Joint Union High School District (grades 9-12). The nearest Placer County Fire Station is the Dry Creek Fire Station (Station 100), located at 8350 Cook Riolo Road, approximately 1.5 miles east of the project site.

A new fire station is planned for the Placer Vineyards Project, which would provide supplemental fire services. The proposed project would require annexation into the Dry Creek Fire Zone of Benefit (County Service Area 28, Zone of Benefit 165) for provision of fire protection services.

Off-Site Sewer Lift Station Improvements

The existing Community Facility District #1 Sewer Lift Station is located east of Walerga Road and south of Dry Creek, approximately 0.53-mile to the south at the Dry Creek Community Park (see Figure 3-12). The Emergency Wastewater Storage Plan prepared for the proposed project would include a third 47,000-gallon underground tank adjacent to the existing lift station to be developed as part of the proposed project.

The tank areas would require embankment work to raise the access and maintenance areas out of the adjacent Dry Creek 100-year floodplain. Such embankment for flood protection would reduce Dry Creek floodwater storage in the area. To offset the reduced floodwater storage and maintain the same volume of floodwater storage, commensurate excavation would be required immediately north of the facility in an undeveloped area. The compensatory excavation areas are estimated to be two to four feet in depth and would be designed to re-establish natural drainage flow characteristics.

Design Review

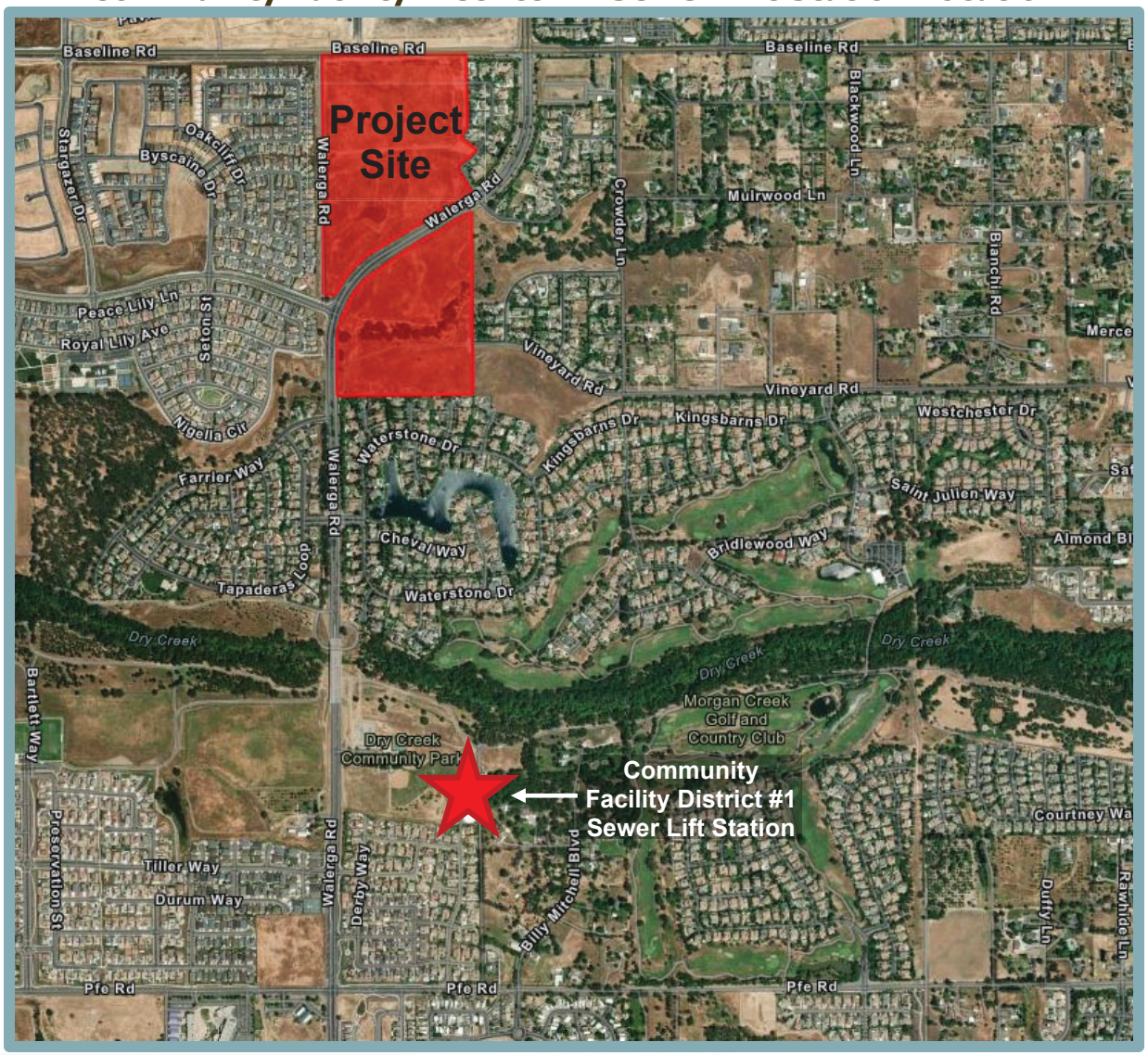
Pursuant to Placer County Code Section 17.52.070, the Estia Dry Creek development would require County approval of Design Review for the rezone to the RM-Dc zoning designation to ensure compliance with the County's Multifamily and Mixed-Use Design Manual. The purpose of the design review (-Dc, -Dh, -Ds) combining districts is to provide special regulations to protect and enhance the aesthetic character of lands and buildings within public view; to protect historic buildings; to minimize any adverse impacts of conflicting land uses; to enhance tourism through the protection of lands and buildings having unique aesthetic characteristics; and to provide special project review procedures for lands and uses which by their nature require special attention to architectural design and massing, landscaping, circulation, and/or energy conservation. A Variance to allow for up to 12 consecutive parking spaces bounded by landscaped parking islands, where no more than a maximum of six is required by the Multi-Family and Mixed Use Design Manual, would be required to be approved with the Design Review.

Annexations

The proposed project would require annexation into the Placer County Service Area 28, Zone 173, for sanitary sewer service, subject to approval by the County Board of Supervisors. While maintenance and operation of the sewer collection system would be the responsibility of Placer County, the project's wastewater would be treated at the City of Roseville's Dry Creek WWTP, consistent with normal County practice for projects in this area.

The proposed project would also require annexation into the Placer County Service Area 28, Zone 169, for ongoing maintenance and the generation of funds for public parks, trails, and open space recreation amenities within the Dry Creek community, and annexation into the Dry Creek Fire Zone of Benefit (County Service Area 28, Zone of Benefit 165) for provision of fire protection services, subject to Placer County approval.

Figure 3-12
Community Facility District #1 Sewer Lift Station Location



* Figure not OCR Compatible

Project Phasing and Construction

As shown in Figure 3-3, the proposed project would be constructed over the course of five development phases, with the first phase (i.e., the Estia Dry Creek development) located adjacent to Baseline Road. The proposed Large Lot Tentative Subdivision Map parcels correspond to the conceptual phasing (see Figure 3-6). Development of Phases 1 and 2 would occur on the northern portion of the site (APN 023-221-076), north of Walerga Road, and development of Phases 3 and 4 would occur on the southern portion of the site (APN 023-221-074), south of Walerga Road. The Estia Dry Creek and Placer Creek Residential Phase 2 would be constructed in two separate sub-phases (2A and 2B), with all site work, including grading and necessary infrastructure, completed with the applicable phase. The Placer Creek Residential Phases 3 and 4 could be developed in a single phase, but the two neighborhoods would be physically separated. The Phase 3 and 4 sites would require mass grading.

3.6 PROJECT APPROVALS

The proposed project would require County approval of the following discretionary actions:

- General Plan/DCWPCP Amendment to change the land use designations to High Density Residential (HDR) (23.2 acres), Medium Density Residential (MDR) (57.8 acres), and Greenbelt & Open Space (O) (11.2 acres);
- General Plan/RVSP Map Amendment to change the land use designation of the four-acre parcel (APN 023-200-056-000), located on the northeast corner of PFE Road and Watt Avenue from Commercial to High Density Residential (HDR);
- Amendment to the RVSP to add High Density Residential (HDR) land use designation, Development Standards and Design Guidelines; rezone the property; and Amend the Development Agreement.
- Rezone to Residential Multifamily, combining Design Scenic Corridor (RM-Dc) (23.2 acres), Residential Single Family, combining a minimum Building Site of 6,000 sf (RS-B-6) (57.8 acres), and Open Space (O) (11.2 acres);
- Rezone of a four-acre parcel (APN 023-200-056-000), located at the northeast corner of PFE Road and Watt Avenue from Residential Single Family, combining Agriculture, combining a minimum Building Site of 20,000 square feet, combining Development Reserve, combining Planned Residential Development of 2 units per acre (RS-AG-B-20-DR PD = 2) and Specific Plan District – Riolo Vineyards Specific Plan (SPL-RVSP) to Residential Multifamily 30, combining Design Scenic Corridor (RM30-Dc);
- Vesting Large Lot Tentative Subdivision Map;
- Vesting Phased Small Lot Tentative Subdivision Map;
- Design Review for the Estia Dry Creek multifamily neighborhood to ensure compliance with the County's Multifamily and Mixed-Use Design Manual;
- A Variance to allow for up to 12 consecutive parking spaces bounded by landscaped parking islands, where no more than a maximum of six is required by the Multi-Family and Mixed Use Design Manual;
- Annexation into Placer County Service Area 28, Zone 173 for sanitary sewer service;
- Annexation into Placer County Service Area 28, Zone 169 for ongoing maintenance of public parks, trails and open space recreation amenities within the Dry Creek community; and
- Annexation into the Dry Creek Fire Zone of Benefit (County Service Area 28, Zone of Benefit 165) for provision of fire protection services.

In addition, the proposed project would require County approval of a PCCP Authorization.

The proposed project would also require the following approvals/permits from responsible agencies:

- Section 401 Water Quality Certification (RWQCB – Central Valley Region);
- Streambed Alteration Agreement (CDFW) issued pursuant to Section 1602 of the Fish and Game Code;
- NPDES Construction General Permit (RWQCB – Central Valley Region); and
- City of Roseville Encroachment Permit.

The project would also require the approval from federal agencies, including USACE, the Federal Emergency Management Agency (FEMA), and the U.S. Fish and Wildlife Service (USFWS), for a Section 404 Nationwide Permit (or Letter of Permission), Conditional Letter of Map Revision (CLOMR), and potentially Incidental Take Permits (ITPs).

4. Aesthetics

4. AESTHETICS

4.1 INTRODUCTION

As discussed in Chapter 3, Project Description, of this EIR, the proposed project would include a total of 432 residential units and associated improvements, off-site sewer lift station improvements, and two options to meet the County's affordable housing regulations. The affordable housing options include the provision of a minimum of 22 Accessory Dwelling Units (ADUs) on lots proposed for development with single-family residential units, or an off-site proposal wherein Homes by Towne would rezone and transfer the fee title to the County for an approximately four-acre parcel off-site within the Riolo Vineyards Specific Plan (RVSP), which could develop a maximum of 120 affordable income-restricted units.

The Aesthetics chapter of the EIR describes existing aesthetic resources in the area of the proposed project and the broader region, and evaluates the potential aesthetic impacts of the project, including the off-site sewer lift station improvements and off-site affordable housing parcel. Legislative intent language in CEQA states that "it is the policy of the state to … [t]ake all action necessary to provide the people of this state with clean air and water, enjoyment of *aesthetic*, natural, *scenic*, and historic environmental qualities, and freedom from excessive noise." (Public Resources Code [PRC] Section 21001[b], italics added.) Questions in the sample Initial Study checklist found in Appendix G to the CEQA Guidelines address potential impacts on aesthetic resources in terms of scenic vistas, scenic resources (such as trees, rock outcroppings, and historic buildings within a State scenic highway), and the existing visual quality or character of the project area. Light and glare are additional concerns that are addressed in this chapter. The following analysis is based on information drawn from the Placer County General Plan (PCGP),[1] the PCGP EIR,[2] the RVSP EIR,[3] and visual simulations prepared for the proposed project. Further information was sourced from the Dry Creek-West Placer Community Plan (DCWPCP),[4] the Placer County Design Guidelines,[5] and the Placer County Landscape Design Guidelines.[6]

Pursuant to the court ruling in *Preserve Poway v. City of Poway* (2016) 245 Cal.App.4th 560 576-582, community character is separate and apart from aesthetic impacts and, thus, is not a CEQA issue. Rather, the analysis of aesthetics should be limited to tangible, physical evidence that a project is visually inconsistent with the surrounding community (rather than a psychological "feel"). Therefore, where applicable, the analysis presented within this chapter focuses on potential physical changes to the visual character or quality of the project site and surrounding area, rather than overall community character.

1 Placer County. *Countywide General Plan Policy Document*. August 1994 (updated May 2013).
2 Placer County. *Countywide General Plan EIR*. July 1994.
3 Placer County. *Riolo Vineyard Specific Plan Environmental Impact Report*. January 2008.
4 Placer County. *Dry Creek-West Placer Community Plan.* Amended May 12, 2009.
5 Placer County. *Design Guidelines Manual.* Revised September 24, 2003.
6 Placer County. *Placer County Landscape Design Guidelines.* Adopted May 7, 2013.

4.2 EXISTING ENVIRONMENTAL SETTING

The following setting information provides an overview of the existing conditions of visual resources in the vicinity of the project site, which is located within the DCWPCP, immediately south of the City of Roseville city limits, in unincorporated Placer County.

Visual Character of the Region

The area covered by the DCWPCP encompasses approximately 9,200 acres in the southwest portion of Placer County, California. Currently, the project region is developed with a variety of scattered rural single-family residential units, a number of residential subdivisions, and two Specific Plan areas: Riolo Vineyards and Placer Vineyards. In addition, commercial uses, including a Costco Wholesale, are currently being developed to the north of the project site. The most dominant natural feature in the DCWPCP area is Dry Creek and associated woodlands and riparian habitats. Dry Creek and the associated tributaries generally trend east to west through the central portion of the region, punctuating the open grassland/large lot residential areas present in the eastern portion of the DCWPCP area and the residential subdivisions to the west. The topography is generally flat.

State Scenic Highways

According to the California Department of Transportation (Caltrans) map of designated and eligible scenic routes under the California Scenic Highway Program, officially designated State scenic highways do not exist within the vicinity of the project site or in Placer County.[7]

Visual Character of the Project Site, Off-Site Affordable Housing Parcel, and Surrounding Area

The following information provides an overview of the existing conditions of the project site, off-site affordable housing parcel, and surrounding area in relation to visual character.

Project Site

The project site consists of approximately 92.2 acres located south of Baseline Road, immediately east of the abandoned old Walerga Road right-of-way, west of the Fiddyment Road/Baseline Road/Walerga Road intersection and the western portion of Sun Valley Oaks residential subdivision, and north of the Morgan Creek residential subdivision in the DCWPCP area of unincorporated Placer County.

The project site is bisected by Walerga Road, which generally curves from northeast to southwest. The 52.3-acre northern portion of the site is bounded by Baseline Road to the north and Walerga Road to the south. The northern portion of the site is undeveloped, consists of non-native annual grassland with gently rolling topography, and is interspersed with seasonal wetlands and vernal pools (see Figure 4-1). The 35.3-acre southern portion of the site is bounded by Walerga Road to the north and west (see Figure 4-2). The southern portion of the site includes a paved bicycle trail, which extends from Vineyard Road to the east and Walerga Road to the west. In addition, the southern portion of the site includes undeveloped annual grassland with gently rolling topography (see Figure 4-3). Vineyard Road terminates at the eastern project site boundary of the southern portion of the site (see Figure 4-4).

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[7] California Department of Transportation. *California State Scenic Highway System Map*. Available at: https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways. Accessed June 2025.

Figure 4-1
Existing View of the Project Site from Baseline Road, Looking Southwest



* Figure not OCR Compatible

Figure 4-2
Existing View of the Project Site from Walerga Road, Looking Northwest



* Figure not OCR Compatible

Figure 4-3
Existing View of the Project Site from Walerga Road, Looking East



* Figure not OCR Compatible

Figure 4-4
Existing View of the Project Site from Vineyard Road, Looking West



* Figure not OCR Compatible

The southern portion of the site is interspersed with seasonal wetlands, vernal pools, and is bisected by an unnamed tributary of Dry Creek (named "Placer Creek" for this project) which flows east to west. The Federal Emergency Management Agency (FEMA) 100-year floodplain, containing approximately 4.7 acres, is located within the Placer Creek tributary area. A band of oak woodlands is located along the Placer Creek riparian corridor.

Surrounding Areas

Surrounding existing land uses for the project site include the under-construction Baseline Marketplace to the north, across Baseline Road; single-family residences associated with the Sun Valley Oaks residential neighborhood to the east; single-family residences associated with the Morgan Creek residential neighborhood to the south; and the under-construction Property 1A of the Placer Vineyards Specific Plan (PVSP), which will include 1,285 residential units, to the west of the project site. Table 3-1 within Chapter 3, Project Description, of this EIR describes the land use and zoning designations of the parcels surrounding the project site.

Off-Site Sewer Lift Station Improvements Area

As discussed in further detail within Chapter 3, Project Description, of this EIR, the existing Community Facility District #1 Sewer Lift Station is located east of Walerga Road and south of Dry Creek, approximately 0.53-mile to the south at the Dry Creek Community Park. Generally, the off-site sewer lift station improvements area does not possess unique visual characteristics and has been largely subject to past development as part of the existing park.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel is approximately four acres and is located at the northeast corner of PFE Road and Watt Avenue within the RVSP. The off-site affordable housing parcel is undeveloped and consists of grassy fields with gently rolling topography (see Figure 4-5).

Viewer Types

Viewer types in the vicinity that have views of the project site include the following:

- *Motorists* along Baseline Road and Walerga Road have existing views of the project site while driving past the site, and motorists along Watt Avenue and PFE Road have views of the off-site affordable housing parcel.
- *Pedestrians and bicyclists* in the area include nearby residents and visitors that use the public roadways to walk or bike to their destination. Such pedestrians have views of the project site from Baseline Road and Walerga Road. In general, views experienced by pedestrians and bicyclists are similar to views experienced by motorists. However, because sidewalks or dedicated street bike lanes are currently not provided along Baseline Road, pedestrian and bicyclist traffic along the roadway is relatively limited. Similarly, only a short portion of Walerga Road (near the Springhill Drive intersection) includes sidewalks. Walerga Road does not include dedicated street bike lanes. PFE Road and Watt Avenue along the off-site affordable housing parcel do not include sidewalks or bicycle lanes.
- *Residents* of the existing single-family residences to the east and west have visibility of the project site. Residents of the existing single-family residences to the west of the off-site affordable housing parcel, across Watt Avenue, also have views of the off-site affordable housing parcel.

Figure 4-5
Existing View of the Off-Site Affordable Housing Parcel from PFE Road, Looking North



* Figure not OCR Compatible

Public Versus Private Views

Travelers along nearby roadways, as well as the nearby residences east, west, and south of the project site, would be considered sensitive visual receptors. However, it is important to distinguish between public and private views. Private views are views seen from privately-owned land and are typically viewed by individual viewers, including views from private residences. Public views are views that are experienced by the collective public. In the case of the proposed project, public views would consist primarily of views from Baseline Road and Walerga Road.

CEQA (PRC Section 21000 et seq.) case law has established that only public views, not private views, are protected under CEQA. For example, in *Association for Protection etc. Values v. City of Ukiah* (1991) 2 Cal.App.4th 720 [3 Cal. Rptr.2d 488] the court determined that "we must differentiate between adverse impacts upon particular persons and adverse impacts upon the environment of persons in general." As recognized by the court in *Topanga Beach Renters Assn. v. Department of General Services* (1976) 58 Cal.App.3d 188 [129 Cal.Rptr. 739]: '[A]ll government activity has some direct or indirect adverse effect on some persons. The issue is not whether [the project] will adversely affect particular persons but whether [the project] will adversely affect the environment of persons in general.'" Such conclusions are consistent with the inquiries set forth in Appendix G of the CEQA Guidelines, which ask whether projects outside urbanized areas would "substantially degrade the existing visual character or quality of *public* views" of a project site and its surroundings (italics added). Therefore, it is appropriate to focus the aesthetic impact analysis on potential impacts to public views, rather than private views.

Light Pollution and Glare

Light pollution refers to all forms of unwanted light in the night sky, including glare, light trespass, sky glow, and over-lighting. Views of the night sky can be an important part of the natural environment, particularly in communities surrounded by extensive open space. Excessive light and glare can also be visually disruptive to humans and nocturnal animal species.

The project site and off-site affordable housing parcel are primarily characterized by an undeveloped, unlighted landscape. As such, significant sources of light and glare do not currently occur within the sites. However, both the project site and the off-site affordable housing parcel are located within the vicinity of existing residential development. Lighting associated with such development, as well as street lighting along nearby roadways and headlights from vehicles traveling on the roadways, contributes to the overall nighttime lighting environment in the area surrounding the sites.

4.3 REGULATORY CONTEXT

Applicable federal laws or regulations pertaining to the aesthetic quality of the project area do not exist. Existing State and local laws and regulations applicable to the proposed project are listed below.

State Regulations

The following is an applicable State regulation related to aesthetic resources.

California Scenic Highway Program

The State Scenic Highway System includes a list of highways that are either eligible for designation as scenic highways or have been so designated. Such highways are identified in Section 263 et seq. of the California Streets and Highways Code.

Local Regulations

The following local regulations are applicable to the proposed project.

Placer County General Plan

The following design goals and policies of the PCGP are applicable to the proposed project.

Land Use Element

Goal 1.K To protect the visual and scenic resources of Placer County as important quality-of-life amenities for County residents and a principal asset in the promotion of recreation and tourism.

Policy 1.K.1 The County shall require that new development in scenic areas (e.g., river canyons, lake watersheds, scenic highway corridors, ridgelines, and steep slopes) is planned and designed in a manner which employs design, construction, and maintenance techniques that:

a. Avoid locating structures along ridgelines and steep slopes;
b. Incorporate design and screening measures to minimize the visibility of structures and graded areas; and
c. Maintain the character and visual quality of the area.

Policy 1.K.2 The County shall require that new development in scenic areas be designed to utilize natural landforms and vegetation for screening structures, access roads, building foundations, and cut and fill slopes.

Policy 1.K.3 The County shall require that new development in rural areas incorporates landscaping that provides a transition between the vegetation in developed areas and adjacent open space or undeveloped areas.

Policy 1.K.4 The County shall require that new development incorporates sound soil conservation practices and minimizes land alterations. Land alterations should comply with the following guidelines:

a. Limit cuts and fills;
b. Limit grading to the smallest practical area of land;
c. Limit land exposure to the shortest practical amount of time;
d. Replant graded areas to ensure establishment of plant cover before the next rainy season;
e. Create grading contours that blend with the natural contours on site or with contours on property immediately adjacent to the area of development; and
f. Provide and maintain site-specific construction Best Management Practices (BMPs).

Policy 1.K.5 The County shall require that new roads, parking, and utilities be designed to minimize visual impacts. Unless limited by geological

or engineering constraints, utilities should be installed underground and roadways and parking areas should be designed to conform to the natural terrain.

Goal 1.O To promote and enhance the quality and aesthetics of development in Placer County.

Policy 1.O.1 Except as otherwise provided in the Design Guidelines of an approved Specific Plan, the County shall require all new development to be designed in compliance with applicable provisions of the Placer County Design Guidelines Manual.

Policy 1.O.3 The County shall require that all new development be designed to be compatible with the scale and character of the area. Structures, especially those outside of village, urban, and commercial centers, should be designed and located so that:

a. They do not silhouette against the sky above ridgelines or hilltops;
b. Rooflines and vertical architectural features blend with and do not detract from the natural background or ridge outline;
c. They fit the natural terrain; and
d. They utilize building materials, colors, and textures that blend with the natural landscape (e.g., avoid high contrasts).

Policy 1.O.5 The County shall require that new development at entrances to rural communities be designed to include elements such as signage, landscaping, and appropriate architectural detailing to help establish distinct identities for such communities.

Policy 1.O.9 The County shall discourage the use of outdoor lighting that shines unnecessarily onto adjacent properties or into the night sky.

Natural Resources Element

Goal 6.D To preserve and protect the valuable vegetation resources of Placer County.

Policy 6.D.1 The County shall encourage landowners and developers to preserve the integrity of existing terrain and natural vegetation in visually-sensitive areas such as hillsides, ridges, and along important transportation corridors.

Policy 6.D.12 The County shall support the retention of heavily vegetated corridors along circulation corridors to preserve their rural character.

Dry Creek-West Placer Community Plan

The relevant goals and policies from the DCWPCP related to aesthetics are presented below.

Community Development Element: The Land Use Plan

Goal 2 To preserve outstanding visual features, natural resources, and landmarks.

Goal 6 To encourage compatibility between neighboring land uses.

Policy 7 The design of future residential developments should emphasize character, quality, livability, and the provision of all necessary services and facilities, to ensure their permanent attractiveness.

Community Development Element: Community Design Element

Goal 1 This plan strives to preserve the natural land forms, natural vegetation, and natural resources of the area as much as possible, while also recognizing the deleterious effects of intense development in the surrounding areas.

Goal 2 It is a goal of the plan to encourage and support projects which exemplify good design characteristics when judged against the goals and policies of this plan as well as other applicable design and landscape guidelines.

Goal 5 It is a goal to maintain the heavily vegetated corridors that exist along circulation routes to preserve their rural nature and their value as natural noise buffers.

Goal 6 It is a goal to create residential development which allows the following elements: human interaction, bicycle and pedestrian circulation, an appropriate relationship to existing development in the area, and the creation of a neighborhood identity and/or focus (i.e. parks, schools, natural open space areas, creek site of historical or archaeological significance, etc.).

Goal 8 A major goal of the plan is to utilize and improve the Dry Creek environs as a focal point of existing and new neighborhoods to be created in the area through the placement of park facilities, roadways, trails, interpretive areas, visibility, etc.

Policy 1 Wherever possible, natural features should be retained as buffers between different, potentially incompatible uses. Where natural features are not available, landscaped buffer yards shall be provided to minimize the adverse effects of higher intensity uses upon lower intensity uses.

Policy 3 Preservation of natural features, noise exposure, road access, and relationship to the surrounding properties shall be considered in preparing subdivision designs. Subdivision density, or total number of lots, will ultimately be determined by these factors. The development of the maximum number of lots permitted by the zoning will not be possible in most cases due to these and other design considerations required by this Plan.

Policy 9 Night lighting, visible from the exterior of buildings shall be limited to that necessary for security, safety, and identification.

Policy 10	Projects within the Plan area will comply with the Placer County Landscape Guidelines, the Placer County Design Guidelines, and the specific design guidelines contained in the Plan.
Policy 11	Landscaping shall be used to reduce the visual impact of all structures, including solid fences. Natural vegetation should dominate where possible. Where existing vegetation is inadequate the use of native plant materials is encouraged. Landscaping materials provide an informal character and smooth transition between buildings, parking lots, adjoining roadways and open areas.
Policy 12	Large, bulky and unscreened structures shall be discouraged, particularly if they are visible from the road.
Policy 13	The use of natural materials (i.e., wood siding, brick, block, and field stone) is required. Primary exterior colors shall blend with the surrounding natural landscape. The use of "earthtones" or natural finishes which blend with the natural background is encouraged.
Policy 15	In place of sound wall construction, require, wherever possible, the use of greater setbacks to provide a scenic corridor for all parcels fronting on all the major circulation routes (2, 4, or 6 lanes of traffic). Long expanses of sound walls are not consistent with the desired character of the Plan area and the use of open space setbacks and landscaping instead, will be a major difference between this area and surrounding areas to the north and south.
Policy 18	Utility lines shall be installed underground to ensure minimum disruption to the environment and as little disturbance as possible to vegetation, particularly in scenic corridors.
Policy 20	Where residential development is proposed adjacent to Dry Creek, design it in such a way as to place streets and open space, not backyards, next to the riparian areas in order to enhance the creekside and neighborhood environments as well as providing a sense of ownership and to permit public access to this important resource.

Placer County Landscape Design Guidelines

The Placer County Landscape Design Guidelines were adopted by the Placer County Board of Supervisors on May 7, 2013. The overall purpose of the Placer County Landscape Design Guidelines is to provide County staff, prospective developers, and stakeholders with a basic framework for designing landscaped areas within unincorporated Placer County and to ensure continuity, consistency, and quality design. In addition, the Guidelines are used to assist the Planning Services Division with their review of submitted plans for landscape improvements by providing consistent and specific design criteria intended to help determine if a proposal is acceptable. The Guidelines focus on landscaping requirements for streetscape and parking lots.

Placer County Design Guidelines Manual

The Placer County Design Guidelines Manual includes guidelines and standards that aim to remove as much design discretion as possible at the staff level in order for prospective developers to assess their chances of approval based on consistency with the manual. The overall goal of the Placer County Design Guidelines Manual is to promote visual environments in the communities of western Placer County that are of high aesthetic quality, offer variety in developing community design images reflective of community heritage, and, in some cases, maintain an overall rural continuity while, in others, identify an appropriate urban design theme.

While the Placer County Design Guidelines Manual does not include a particular "style" for residential or institutional structures in western Placer County, the focus should be on constructing a high-quality residential environment which is sensitive to the surrounding neighborhood character. The Guidelines strive for "quality" architecture through the descriptions of appropriate and inappropriate materials and architectural expression.

Multifamily and Mixed-Use Design Manual

The Multifamily and Mixed-Use Design Manual consists of objective development standards and aesthetic design guidelines for multifamily and mixed-use development project types. The standards and guidelines are a regulatory tool, rather than a set of policies, meaning that development applications must be consistent with the standards and guidelines to be approved. The Design Manual provides measurable, objective standards for multifamily and mixed-use projects that will streamline the review process for duplexes, triplexes, fourplexes, townhouses, multifamily, and mixed-use projects.

Placer County Code

Section 17.54.070(A)(2)(i) of the Placer County Code ("Lighting") requires that "[l]ighting shall be provided as required by project conditions of approval, or as deemed appropriate by the development review committee (DRC), based upon the lighting standards contained within the Placer County design guidelines manual. The lighting patterns (i.e., the amount of light provided to the paved circulation areas) shall be coordinated with the design of the parking spaces and aisles so that maximum lighting benefit is derived from the placement of all approved light fixtures."

Riolo Vineyard Specific Plan

The off-site affordable housing parcel is located within the RVSP Plan Area. The RVSP is implemented by Placer County with the supporting Riolo Vineyards Design Guidelines and the Riolo Vineyard Development Standards. The aforementioned documents are used in conjunction with the RVSP to ensure full implementation of General Plan goals and policies. The Riolo Vineyard Design Guidelines recommend a series of design policies which implement traditional architecture fitting into the West Placer context. The Riolo Vineyard Development Standards implement the regulatory framework and planning concepts of the Specific Plan. The Riolo Vineyard Development Standards supersede portions of the Placer County Zoning Ordinance. Additionally, all project proposals within the RVSP area will be reviewed by the Placer County Design/Site Review Committee. The Placer County Design/Site Review Committee is required to make a finding of consistency among the development plan, the RVSP, and the accompanying Development Standards and Design Guidelines.

4.4 IMPACTS AND MITIGATION MEASURES

This section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to aesthetics. A discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, an aesthetic impact is considered significant if the proposed project would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway (see Chapter 19, Effects Not Found to be Significant);
- In a non-urbanized area, substantially degrade the existing visual character or quality of public views of the site and its surroundings (public views are those that are experienced from publicly accessible vantage point) or, in an urbanized area, conflict with applicable zoning and other regulations governing scenic quality; or
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

As noted above, issues related to whether the proposed project would result in the following impact are discussed in Chapter 19, Effects Not Found To Be Significant, of this EIR:

- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway.

The sample Initial Study checklist found in Appendix G to the CEQA Guidelines suggests that different aesthetic standards apply in "non-urbanized" and "urbanized areas" respectively. For non-urbanized areas, there is an inquiry asking whether a proposed project "would substantially degrade the existing visual character or quality of public views of the site and its surroundings." For urbanized areas, the question is whether the project would "conflict with applicable zoning and other regulations governing scenic quality."

The likely reason that the California Natural Resources Agency (CNRA), in fashioning the inquiries in Appendix G, suggests different approaches to aesthetic analyses in non-urbanized areas and urbanized areas, is CNRA did not want purely aesthetic concerns – such as height and mass by themselves – to deter dense, land-efficient development in urbanized areas. In such highly developed areas, additional high-density development can reduce the long-term environmental effects of what is often called sprawl by making an efficient use of areas that are already highly urbanized. Thus, projects proposed in such areas only require an evaluation of consistency with city or county regulations that govern scenic quality, such as design guidelines. (See *Bowman v. City of Berkeley* (2004) 122 Cal.App.4th 572, 592, 594 ["[t]he aesthetic difference between a four-story and a three-story building on a commercial lot on a major thoroughfare in a developed urban area is not a significant environmental impact, even under the fair argument standard"; "[w]here a project must undergo design review under local law that process itself can be found to mitigate purely aesthetic impacts to insignificance"].)

In contrast, in less developed areas, concerns about mass and height, and how they affect existing visual conditions, are more appropriate.

With respect to the proposed project, the County considers the project site to be located in an urbanized area, as the area includes existing development and/or development that has been recently approved or is under construction. For example, the existing Sun Valley Oaks single-family residential neighborhood is located to the east, and the single-family residences associated with the Morgan Creek residential neighborhood are located to the south. In addition, existing and future single-family residences associated with the PVSP are located to the west of the site. The Baseline Marketplace is currently under construction to the north, across Baseline Road. Similarly, the off-site affordable housing parcel is located within the RVSP and is located near existing residential development. The County has therefore undertaken the inquiry appropriate for "urbanized areas" within this chapter.

Method of Analysis

The section below considers the development of the proposed project and acknowledges physical changes to the existing setting. Impacts to the existing environment of the project area are to be determined by the contrast between the visual setting before and after buildout of the proposed project. The standards of significance listed above are used to delineate the significance of any visual alterations of the site. As noted above, the project site and off-site affordable housing parcel are considered to be located within an "urbanized area," given the existing development and/or development under construction in the vicinity. Therefore, the appropriate inquiry to apply to the proposed project is for "urbanized areas" and whether the proposed project would conflict with the applicable zoning and other regulations governing scenic quality.

The following analysis assesses the potential for the proposed project to conflict with applicable zoning and other regulations governing scenic quality. In order to facilitate the analysis, computer-generated photo simulations of the proposed project viewed from Baseline Road and Walerga were prepared for the project.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts related to aesthetics is based on implementation of the proposed project, as well as the two affordable housing options analyzed throughout this EIR, in comparison to existing conditions and the standards of significance presented above. In most cases, potential environmental impacts associated with the proposed project and the 22 on-site ADUs would not differ. Thus, unless otherwise noted, the below analysis applies to both the proposed project and the on-site ADUs.

4-1 Have a substantial adverse effect on a scenic vista. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts associated with the proposed project and the off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, related to having a substantial adverse effect on a scenic vista.

Proposed Project, Off-Site Sewer Lift Station Improvements Area, and Off-Site Affordable Housing Parcel

A scenic vista is an area that is designated, signed, and accessible to the public for the express purposes of viewing and sightseeing, or an undesignated area of particular aesthetic quality, such as sweeping mountain views, or verdant valleys. Federal and State agencies have not designated any scenic vistas within Placer County for viewing and

sightseeing. Similarly, Placer County, according to the PCGP, has determined that the planning area of the General Plan does not contain officially designated scenic highways, corridors, vistas, or viewing areas.

In addition, both the project site and the off-site affordable housing parcel, as well as the surrounding areas (including the off-site sewer lift station improvements area), lack defining features of particular aesthetic prominence that could contribute to the area being considered an undesignated scenic vista. Sweeping mountain views are not afforded from the project site, off-site sewer lift station improvements area, off-site affordable housing parcel, or immediate environs, nor are there uninterrupted valleys or open spaces.

Based on the above information, because scenic vistas are not located on or adjacent to the project site, the proposed project would not have a substantial adverse effect on a scenic vista. Therefore, the project would result in a ***less-than-significant*** impact.

Mitigation Measure(s)

None required.

4-2 In a non-urbanized area, substantially degrade the existing visual character or quality of public views of the site and its surroundings (public views are those that are experienced from publicly accessible vantage point) or, in an urbanized area, conflict with applicable zoning and other regulations governing scenic quality. Based on the analysis below, and with implementation of mitigation for the Off-Site Affordable Housing Parcel, the impact is *less than significant.*

Because the project site is located within an urbanized area, the relevant threshold is whether the proposed project would conflict with applicable zoning and other regulations governing scenic quality. The following discussion includes an analysis of such potential impacts related to development of the proposed project and off-site sewer lift station improvements area, as well as the potential future development of the off-site affordable housing parcel.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

The DCWPCP and the County's Zoning Ordinance carry out the policies of the PCGP by classifying and regulating the uses of land and structures within the unincorporated County, consistent with the General Plan. The site's land uses are currently designated as 80.1 acres of Rural-Low Density Residential (1-2.3 acre minimum) (RLDR) and 12.1 acres of Greenbelt and Open Space (OS). The 80.1 acres of the project site designated RLDR are currently zoned Residential Single-Family, combining Agriculture, combining a minimum Building Site of 40,000 square feet, combining Planned Residential Development of one dwelling unit per acre (RS-AG-B-40 PD=1). The remaining 12.1 acres are zoned Open Space, combining Planning Residential Development of one dwelling unit per acre (O PD=1). The proposed project would include a General Plan/DCWPCP Amendment to change the site's land use designations to High Density Residential (HDR) (23.2 acres), Medium Density Residential (MDR) (57.8 acres), and OS (11.2 acres). In addition, the project would include a rezone to change the site's zoning designations to

Residential Multifamily, combining Design Scenic Corridor (RM-Dc) (23.2 acres), Residential Single Family, combining minimum Building Site of 6,000 sf (RS-B-6) (57.8 acres), and O (11.2 acres). While the proposed project would include a General Plan/DCWPCP Amendment and a Rezone to allow for development of the project, the County previously planned for buildout of the general areas of the site proposed for development, as indicated by the current land use and zoning designation. The proposed project would include subdivision of the project site and the development of 432 total residential units comprised of 212 single-family lots and 220 multi-family units, a 2.1-acre park, recreational amenities, 9.6 acres of open space, 3.3 acres of landscape corridors, and various associated on- and off-site improvements. The density for the Estia Dry Creek portion of the proposed project, which is located in the northwest area of the project site, would be approximately 9.5 residential units per acre. The average residential density of the Placer Creek Residential site, which comprises the remainder of the overall project site, would be approximately 3.8 dwelling units per acre. Lot coverage within the Placer Creek Residential site is proposed to be 40 percent for single-story and two-story homes on lots greater than 13,000 sf and less than maximum coverage on lots less than 13,000 sf.

As discussed above, computer-generated photo simulations of the proposed project viewed from Baseline Road and Walerga Road were prepared for the project. The photo simulations of the Phase 1 entry from Baseline Road and the Phase 2 entry from Walerga Road are included as Figure 4-6 and Figure 4-7, respectively. As shown in the photo simulations, the Phase 1 and 2 entries on Baseline Road and Walerga Road would be landscaped with native vegetation and marked with enhanced hardscape features, such as an entry monument and an enhanced gated entry. Phase 1 would also be gated on both sides of the parking lot at the entrance from Baseline Road. The foregoing components would use materials consistent with the DCWPCP and the Placer County Landscape Guidelines. The photo simulation of the Phase 3 entry from Walerga Road is included as Figure 4-8. As shown therein, the Phase 3 entry from Walerga Road would include a landscaped median with a vehicle gate beyond the median. The Phase 4 entry on Vineyard Road would also be gated in a similar manner (see Figure 4-9). Pedestrian gates would be located at the project entries for Phases 3 and 4 and would remain unlocked during daylight hours. Project-identification monument features would be located at each of the entries. The project frontage on the south side of Baseline Road would include a landscaped corridor with a six-foot tall concrete masonry unit (CMU) wall, which would help screen the proposed development from surrounding areas. Trees and shrubs would also be planted along both sides of Walerga Road within the project site, along the boundary of the 2.1-acre neighborhood park, and throughout the Estia Dry Creek development. A six-foot tall tubular open view fence would also be located along the western boundary of the Estia Dry Creek development, and a six-foot tall privacy fence along the southern boundary. Within the Phase 4 area in the southernmost portion of the project site, native tree plantings, and a post and cable fence would be provided along the Class I trail proposed along the southern side of Placer Creek. The proposed project has been designed to retain the Placer Creek tributary, consistent with General Plan Policies 6.D.1 and 6.D.2 related to preserving and protecting vegetation corridors, as well as DCWPCP goals and policies related to preserving natural features (e.g., Community Design Element Goal 1 and Land Use Plan Goal 2).

Figure 4-6
Existing Versus Simulated Post-Project Conditions from Baseline Road, Looking Southwest



* Figure not OCR Compatible

Figure 4-7
Existing Versus Simulated Post-Project Conditions from Walerga Road, Looking Northwest



* Figure not OCR Compatible

Figure 4-8
Existing Versus Simulated Post-Project Conditions from Walerga Road, Looking East





* Figure not OCR Compatible

Figure 4-9
Existing Versus Simulated Post-Project Conditions from Vineyard Road, Looking West



* Figure not OCR Compatible

Construction activities associated with the proposed project and associated off-site improvements would include mass grading of the site, trenching for utilities, and other temporary activities that would be visible from Baseline Road and Walerga Road. The project would be constructed over the course of five development phases. The Estia Dry Creek and Placer Creek Residential Phase 2 (with subphases 2A and 2B) would be constructed separately, with all site work, including grading and necessary infrastructure, completed with the applicable phase. The Phase 1 development (Estia Dry Creek) would be located off Baseline Road and include 220 single-story multi-family units. The Estia Dry Creek multi-family neighborhood would be subject to Placer County's Multifamily and Mixed-Use Design Manual, which includes specific design guidelines related to building facades, outdoor living space, landscaping, exterior lighting, parking, and fences and walls. As such, the Phase 1 development would be subject to Placer County's Design Review process to ensure compliance with the County's Multifamily and Mixed-Use Design Manual, including the design guidelines therein.

In addition, Phases 3 and 4, located to the south of Walerga Road, could be developed in a single phase, although the two neighborhoods would be physically separated by the Placer Creek riparian corridor. All construction-related effects on the visual quality of the project site and/or surrounding area would be temporary.

As a condition of project approval, all of the proposed frontage improvements would be required to be consistent with the Placer County Design Guidelines and the Placer County Landscape Design Guidelines, and the specific design guidelines contained in the DCWPCP. For example, pursuant to DCWPCP Community Development: Community Design Policy 11, the proposed project would include landscaping and solid fences and walls to reduce the visual impact of new structures. In addition, DCWPCP Community Development: Community Design Policy 15 requires, wherever possible, the use of greater setbacks, rather than sound walls, to provide a scenic corridor on major circulation routes. While the proposed project would include sound walls along Walerga Road and Baseline Road, the sound walls would be located in landscaped areas between the proposed residential areas and the surrounding roadways, which allows for greater setback distances from Baseline Road and Walerga Road. The proposed project would also be subject to all applicable sections of Article 16.08, Design Standards and Improvements, and Article 17.54, General Development Regulations, of the Placer County Code. For example, in accordance with Section 16.08.130, the project would underground all utilities. Overall, the proposed project would be consistent with the Placer County Design Guidelines and the specific design guidelines contained in the DCWPCP.

Off-Site Affordable Housing Parcel

As discussed within Chapter 3, Project Description, of this EIR, the potential future development of the off-site affordable housing parcel would require an Amendment to the RVSP and a rezone of the parcel to the Residential Multifamily 30 (RM30) zone, which could result in a maximum development potential of 120 affordable income-restricted units. While this approach to meeting the County's affordable housing obligations would include a Rezone to allow for development of the aforementioned units, the County has previously planned for buildout of the site, as evidenced by the site's previous designations of HDR and Commercial.

The off-site affordable housing parcel does not currently include any site-specific development plans, designs, or proposals. However, future development of the off-site affordable housing parcel would be subject to County review and the applicable development standards for the RM30 zoning district included in Article 17.49 of the Placer County Code. As discussed therein, any residential multi-family development within the RM30 zone district is required to be developed at a minimum density of 20 units per acre and maximum density of 30 units per acre, and would be subject to the requirements established in the Multifamily and Mixed Use Design Manual (June 2021) for lot area, site width, setbacks, floor area ratio, height limit, and other applicable standards.

The Design Manual includes development standards for multi-family development, including duplexes, triplexes, fourplexes, and townhouses, as well as mixed use development. Specifically, the Design Manual would require that all multi-family and mixed-use development be designed such that rooflines, exterior materials, windows, railings, porches, and other design elements have the same exterior appearance as the design elements of the existing buildings in the area. In addition, the Design Manual includes design guidelines intended to complement and support the development standards by providing direction on architectural details and infrastructure, various building elements, and site planning considerations. The general design guidelines provide guidance on overall design, proportion, scale, and arrangement and architectural form and massing, which are intended to create attractive buildings, well-suited and compatible with surrounding buildings. More specific guidance is also included for building facades, including windows, materials and detailing, outdoor living space, landscaping and drainage, exterior lighting, fences and walls, and equipment and service areas. Future development of the off-site affordable housing parcel would be subject to all applicable design guidelines including, but not limited to, DG-37, which requires development projects to use landscaping and related site improvements to promote privacy, reduce off-site visual impacts, and manage stormwater, while maintaining significant scenic views enjoyed by existing neighbors.

The RVSP did not specifically analyze potential conflicts with applicable zoning and other regulations governing scenic quality. However, Impact 8-3 of the RVSP EIR evaluated the potential for new residences to result in visual intrusion and adverse changes to existing views from Union Cemetery, which is located immediately north of the off-site affordable housing parcel. As discussed therein, although a landscape corridor would be maintained to serve as a visual buffer, additional visual screening by large trees and other vegetation would be required because viewers at the cemetery were assumed by the EIR to have high sensitivity to visual changes. Therefore, the RVSP EIR included Mitigation Measure 8-3a, which requires the provision of a visual buffer between cemetery and adjacent homes. As determined in the RVSP EIR, implementation of Mitigation Measure 8-3a would reduce potential impacts to a less-than-significant level. At such time the off-site affordable housing parcel gets developed, the future developer would be required by the County to implement RVSP EIR Mitigation Measure 8-3a, which has been incorporated into this EIR as Mitigation Measure 4-2.

Furthermore, future development of the off-site affordable housing units would be required to comply with applicable guidelines and regulations related to visual quality, including the Placer County Design Guidelines, Placer County Landscape Design Guidelines, the Design Guidelines and Development Standards associated with the RVSP, and Article 17.54 of the Placer County Code. Compliance with such standards would reduce potential



impacts to the visual character of the project area due to future development of the rezone sites, and would ensure that the proposed project would not conflict with applicable zoning and other regulations governing scenic quality.

Conclusion

Based on the above, the proposed project would be consistent with the Placer County Design Guidelines, the specific design guidelines contained in the DCWPCP and/or RVSP, and Placer County Code design standards. Any future development of the off-site affordable housing parcel would require implementation of Mitigation Measure 8-3a of the RVSP EIR to ensure a ***significant*** impact does not occur. The referenced RVSP mitigation measure is incorporated into this EIR as Mitigation Measure 4-2 below.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

Off-Site Affordable Housing Parcel

4-2 Implement RVSP EIR Mitigation Measure 8-3a:

Oak trees and other large-scale vegetation compatible with the existing cemetery landscape shall be planted to form a visual buffer between the cemetery and proposed residences to the east and south, sufficient to completely screen views of residences from the cemetery in the long term. In order to provide adequate mitigation in the short term, large-scale, fast-growing shrubs shall also be planted in the buffer area to provide screening within a short period of time; this buffer would then be enhanced over the long term with maturation of oaks and other trees. Newly planted trees in the buffer area shall be monitored for 5 years. All new plantings will be irrigated for the first 2 years of growth to ensure successful establishment. Alternative visual buffer designs would be considered as part of the design review process for individual projects. Any alternative would need to achieve the above objectives, which include completely screening views of surrounding residences, and compatibility with the existing cemetery landscape. An alternative design may include a masonry wall with landscaping to soften the effect of the wall.

4-3 Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project, as well as the potential future development of the off-site affordable housing parcel, which could create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

The proposed off-site sewer lift station improvements would provide additional underground emergency sewer storage capacity and would not result in new sources of

light or glare. Thus, impacts related to light and glare associated with the off-site sewer improvements area are not discussed further.

Proposed Project

As noted previously, the project site is primarily characterized by an undeveloped, unlighted landscape. Existing sources of light in the site vicinity include headlights from vehicles traveling on Baseline Road and Walerga Road, as well as the existing neighborhoods to the east, west, and south. As such, sources of light currently exist in the project vicinity. Nonetheless, development of the project site with single- and multi-family residences and associated improvements would introduce additional sources of light and/or glare to a site where few currently exist.

Individual homes within the project site would introduce new sources of night lighting in the form of exterior light sources such as porch and patio lights, architectural accent lighting, motion-activated security lighting, driveway lighting, landscape lighting, and interior lighting visible through windows. In addition, accent lighting could potentially be included along project frontages at the proposed entrances to the project site, and street lighting would be provided throughout the project site. Lighting could also be interspersed within the proposed on-site park and along the proposed trails for safety purposes. Pursuant to Section 17.54.070(A)(2)(i) of the Placer County Code, the project would be subject to compliance with the applicable sections of the Placer County Design Guidelines related to light pollution, including, but not limited to, shielding of fixtures such that direct rays do not pass property lines.

The proposed project would also be required to comply with Policy 9 of the DCWPCP Design Element, which requires that night lighting, visible from the exterior of buildings, must be limited to that which is necessary for security, safety, and identification. Compliance with Policy 9 of the DCWPCP Design Element would be ensured by requiring all on-site lighting to be “dark sky approved” by the International Dark-Sky Association (IDA). IDA’s Fixture Seal of Approval Program certifies outdoor lighting fixtures as being Dark Sky Friendly, meaning that they minimize glare while reducing light trespass and skyglow. All products approved in the program are required to be fully shielded and to minimize the amount of blue light in the nighttime environment.

Off-Site Affordable Housing Parcel

Because the off-site affordable housing parcel is currently undeveloped, potential future development of the site with a maximum of 120 affordable income-restricted units and associated improvements would introduce additional sources of light and/or glare to a site where few currently exist. Such residences would introduce new sources of night lighting in the form of exterior light sources, interior lighting visible through windows, possible accent lighting along project frontages, and street lighting throughout the project site. As discussed above and pursuant to Section 17.54.070(A)(2)(i) of the Placer County Code, the potential future development of the off-site affordable housing parcel would be subject to compliance with the applicable sections of the Placer County Design Guidelines related to light pollution, including, but not limited to, shielding of fixtures such that direct rays do not pass property lines.

The RVSP EIR evaluated potential increases in night light and glare under Impact 8-4. As discussed therein, new night lighting associated with RVSP buildout could have site-

specific glare impacts. Therefore, the RVSP EIR included Mitigation Measures 8-4a and 8-4b, which establish various lighting guidelines to mitigate potential light and glare impacts. As determined in the RVSP EIR, implementation of Mitigation Measures 8-4a and 8-4b would reduce potential impacts to a less-than-significant level. At such time the off-site affordable housing parcel gets developed, the future developer would be required by the County to implement RVSP EIR Mitigation Measures 8-4a and 8-4b, which have been incorporated into this EIR as Mitigation Measures 4-3(b) and 4-3(c).

Any potential future development of the off-site affordable housing parcel would also be required to comply with the lighting policies of the RVSP Design Guidelines, which requires the following: that street lighting standards shall be spaced according to County requirements; lighting shall be provided to ensure a safe environment, but shall not result in excessive light or glare; that lighting shall be sensitive to adjacent land uses and viewsheds; and that fixtures that provide down-lighting shall be shielded from adjacent uses where feasible.

In addition, because the RVSP is located within the DCWPCP, future development of the off-site affordable housing units would also be required to comply with Policy 9 of the DCWPCP Design Element. Compliance with DCWPCP Policy 9 would be ensured by requiring all on-site lighting to comply with RVSP EIR Mitigation Measures 8-4a and 8-4b.

Conclusion

Because the types of lighting and the specific locations have not yet been determined, the proposed project could increase the amount of light and glare generated on-site, which could be visible from the surrounding residential development and roadways in the project vicinity, including contributions to nighttime sky glow that deteriorate the “dark sky” setting of the project site and surrounding environs. Therefore, the proposed project could be considered to create a new source of substantial light or glare which would adversely affect day or nighttime views in the area, and a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

Proposed Project

4-3(a) *Prior to Improvement Plan approval, the project applicant shall submit a lighting plan for the project to Placer County for review and approval, demonstrating that proposed lighting is Dark-Sky compliant as specified by the International Dark-Sky Association. The lighting plan shall include, but not necessarily be limited to, the following provisions:*

- *Shield or screen lighting fixtures to direct the light downward and prevent light spill on adjacent properties;*
- *Place shields or screens on any flood or area lighting needed for construction activities and/or security so as not to disturb adjacent residential areas and passing motorists;*
- *For public lighting, prohibit the use of light fixtures that are of unusually high intensity or brightness (e.g., harsh mercury vapor, low-pressure sodium, or fluorescent bulbs) or that blink or flash; and*

- *Use appropriate building materials (such as low-glare glass, low-glare building glaze or finish, neutral, earth-toned colored paint and roofing materials), shielded or screened lighting, and appropriate signage to prevent light and glare from adversely affecting motorists on nearby roadways.*

Off-Site Affordable Housing Parcel

4-3(b) *Implement RVSP EIR Mitigation Measure 8-4a, as slightly modified below (shown in strikethrough and double-underline):*

The Applicant proposes the following lighting guidelines as mitigation measures that would apply to lighting placed within public rights-of-ways and within open space areas.

i. *Lights on arterials will use American Electric Lighting, Roadway Series catalog number 325_S MR DT1 R2 FG Caltrans 4B or equivalent.*
ii. *Primary Residential and Secondary Residential Street lights will use Holophane outdoor lighting Hscape series, catalog number GE 100HP_2 B S 72 N H; CVC 27" 1 CA BK or equivalent.*

    These ornamental lighting styles shall be installed throughout the specific plan area with the exception of the following street corridors:

    - *PFE Road*
    - *Walerga Road*
    - *Watt Avenue*

    Standard "cobra head" street lighting may be provided along the street corridors listed above.

iii. *Bollards for trails will use Holophane outdoor lighting Hscapes series catalog number BOL/C 45/13/LW CA BK or equivalent. The source, wattage, and voltage will be determined by Placer County's Department of Public Works.*
iv. *Street lighting standards shall be spaced dependent upon County requirements.*
v. *Lighting shall be provided to ensure a safe environment but shall not cause areas of intense light or glare.*
vi. *Lighting shall be sensitive to adjacent land uses and viewsheds. Architectural features or lighting fixtures that provide down-lighting and lighting that is shielded from adjacent uses shall be implemented.*

4-3(c) *Implement RVSP EIR Mitigation Measure 8-4b:*

To minimize project contributions to cumulative, areawide night light pollution, no upward lighting shall be permitted, and all light standards shall

include shielding to direct illumination downward. All lighting shall be of minimum brightness consistent with safety.

No direct offsite light trespass shall be permitted; all lighting shall use shielded and directed light standards such that no direct offsite illumination will occur.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

Some types of impacts to aesthetic resources are localized and not cumulative in nature. For example, the creation of glare or shadows at one location is not worsened by glare or shadows created at another location. Rather these effects are independent, and the determination as to whether they are adverse is specific to the project and location where they are created. Projects that block a view or affect the visual quality of a site also have localized aesthetic impacts. The impact occurs specific to a site or area and remains independent from another project elsewhere that may block a view or degrade the visual environment of a specific site.

Two types of aesthetic impacts may be additive in nature and thus cumulative, including night sky lighting and overall changes in the visual environment as the result of increasing urbanization of large areas. As development in one area increases and possibly expands over time and meets or connects with development in an adjoining exurban area, the effect of night sky lighting experienced outside the region may increase in the form of larger and/or more intense nighttime glow in the viewshed.

Similarly, as development in one area changes from rural to urban, and this pattern continues to occur throughout the undeveloped areas of a jurisdiction, the changes in visual character may become additive and cumulatively considerable. The proposed project's incremental contribution to night sky lighting and changes in visual character are addressed below.

The cumulative setting for impacts related to aesthetics encompasses buildout of the DCWPCP area, including the under-construction or planned Creekview Ranch project and PVSP, the latter of which is located west of the project site, as well as the RVSP and off-site affordable housing parcel, Brady Vineyard Subdivision project, Double S Ranch project, The Ranch project, Brookwood Estates project, and Mill Creek project. For more details regarding the cumulative setting, refer to Chapter 20, Statutorily Required Sections, of this EIR.

4-4 Conflict with applicable zoning and other regulations governing scenic quality associated with cumulative development of the proposed project in combination with future buildout of the DCWPCP area. Based on the analysis below, the cumulative impact is *less than significant*.

The geographic setting for analysis of long-term cumulative changes in visual character associated with the proposed project is the area covered by the DCWPCP, as development within the DCWPCP has the potential to affect many of the same views analyzed for the proposed project. Specific existing views of the project site from Baseline Road and Walerga Road are identified in Figure 4-1 through Figure 4-3 of this EIR. Currently, a number of projects within the cumulative geographic setting are under construction or are planned, including, but not limited to, the RVSP (under construction), the PVSP (portions under construction west of the project site), and the approved Creekview Ranch project, The Ranch project, and Mill Creek project.

Future development within the DCWPCP would result in changes to the existing land use environment through conversion of vacant land to developed uses that would result in a change in visual character. The goals and objectives of the DCWPCP are to identify those features of the DCWPCP area that characterize the unique nature and identifying traits of the community and then to specify standards of site development for proposed projects, which would implement the goals and policies of the DCWPCP.

Development within the DCWPCP area includes the under-construction Creekview Ranch Project, approximately 1.59 miles southeast of the project site; the under-construction Brady Vineyard Subdivision project, approximately 2.25 miles to the east of the project site down Vineyard Road; the under-construction Double S Ranch Subdivision Project, approximately 1.28 miles east of the project site; the PVSP, portions of which are currently under construction west of the project site, across Walerga Road; the RVSP, currently under construction southeast of the PVSP; the approved Mill Creek Project, approximately 1.80 miles to the southeast of the project site; and the under-construction The Ranch Project, approximately 1.50 miles east of the project site. Development of other approved projects, as well as the project site, would change the existing visual character of those specific locations from vacant or minimally developed land to more intensively developed residential areas with one- and two-story homes on various sized lots.

Such projects would be required to comply with the Placer County Landscape Guidelines, the Placer County Design Guidelines, the specific design guidelines contained in the DCWPCP, and all applicable sections of the Placer County Code. The Placer County Design Guidelines Manual provides instruction on the design direction to be implemented with the construction of new buildings, which includes setbacks, extensive use of wood, colors consistent with earth tones and significant amounts of landscaping. Such standards serve to reduce impacts on visual character and help to maintain general consistency with the project surroundings. The proposed project would use natural building materials (e.g., masonry, stucco, wood, and faux stone and complementary natural, earth tone colors) consistent with the Placer County Design Guidelines. Cumulative projects in the DCWPCP would result in substantial conversion of vacant land to developed land; however, the projects, including the proposed project, would develop new residential uses that would be well designed and consistent with other residential developments in the larger project

vicinity. Development patterns would include landscaping and setbacks that would both partially screen the projects from the adjacent neighbors and provide a transition space from existing surrounding rural residential lots.

While, cumulative buildout in the non-urbanized geographic areas of the County could result in a substantial change in visual character of the project region and, thus, a significant cumulative impact, the project site is located within an urbanized area and Impact 4-2 above appropriately evaluates the proposed project against the applicable threshold for urbanized areas. As discussed under Impact 4-2, overall, the proposed project would be consistent with the Placer County Design Guidelines and the specific design guidelines contained in the DCWPCP, which would ensure that the proposed project incorporates natural building materials, colors, and landscaping. Similar to the proposed project, the projects within the cumulative geographic setting and all future development within the DCWPCP would be required to comply with the applicable zoning and other regulations governing scenic quality. Therefore, the proposed project, in combination with other reasonably foreseeable development, would result in a ***less-than-significant*** cumulative impact under the non-urbanized threshold related to conflicting with zoning and other regulations governing scenic quality.

Mitigation Measure(s)

None required.

4-5 Creation of new sources of light or glare associated with cumulative development of the proposed project in combination with future buildout of the DCWPCP. Based on the analysis below and with implementation of mitigation, the project's incremental contribution to the significant cumulative impact is *less than cumulatively considerable*.

Cumulative effects of lighting are visible over a wide area, due to the potential for lighting from a number of projects to create sky glow. Cumulative development throughout the DCWPCP area, particularly conversion of rural or currently vacant sites to urban uses, would increase the sources of light and glare, which would have the potential to contribute to sky glow in the area and result in a significant cumulative impact. Such sources of light would be typical of existing residential development in the greater project vicinity, such as the residences to the east and west, as well as the residential subdivisions located further to the west, north of Baseline Road.

However, cumulative development within the DCWPCP area, including the proposed project and the potential future development of the off-site affordable housing parcel, would be subject to existing regulations and guidelines related to light and glare. For example, Section 17.54.070(i) of the Placer County Code requires that lighting in new development is consistent with the lighting standards contained within the Placer County Design Guidelines Manual. As described in Impact 4-3 above, the proposed project in particular would be required to submit a lighting plan for the project to the Placer County Planning Services Division for review and approval prior to Improvement Plan approval (see Mitigation Measure 4-3[a]). Mitigation Measure 4-3(a) requires the project's lighting to be Dark-Sky compliant as specified by the IDA.

Based upon the above analysis, cumulative development within the DCWPCP area would be subject to Section 17.54.070(i) of the Placer County Code requiring that new development within the County comply with lighting standards, and prior to project implementation, a lighting plan would be submitted showing that the proposed project would avoid contribution to sky glow through Dark-Sky design compliance. However, without compliance with Mitigation Measure 4-3(a), which requires submittal of a lighting plan, the proposed project, in combination with cumulative development of the DCWPCP area, could result in a significant cumulative impact related to light and glare and the impact could be ***cumulatively considerable***.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less than cumulatively considerable* level by ensuring that the project will not create any substantial sources of light or glare that would adversely affect day or nighttime views in the project area and surrounding properties.

Proposed Project

4-5(a) Implement the following Mitigation Measure set forth in this EIR:

- *4-3(a) Prior to Improvement Plan approval, the project applicant shall submit a lighting plan for the project to Placer County for review and approval, demonstrating that proposed lighting is Dark-Sky compliant as specified by the International Dark-Sky Association. The lighting plan shall include, but not necessarily be limited to, the following provisions:*
    - *Shield or screen lighting fixtures to direct the light downward and prevent light spill on adjacent properties;*
    - *Place and shield or screen flood and area lighting needed for construction activities and/or security so as not to disturb adjacent residential areas and passing motorists;*
    - *For public lighting, prohibit the use of light fixtures that are of unusually high intensity or brightness (e.g., harsh mercury vapor, low-pressure sodium, or fluorescent bulbs) or that blink or flash; and*
    - *Use appropriate building materials (such as low-glare glass, low-glare building glaze or finish, neutral, earth-toned colored paint and roofing materials), shielded or screened lighting, and appropriate signage to prevent light and glare from adversely affecting motorists on nearby roadways.*

Off-Site Affordable Housing Parcel

4-5(b) Implement the following Mitigation Measure set forth in this EIR, as slightly modified below (shown in strikethrough and double-underline):

- *4-3(b) Implement RVSP EIR Mitigation Measure 8-4a:*

The Applicant proposes the following lighting guidelines as mitigation measures that would apply to lighting placed within public rights-of-ways and within open space areas.

i. *Lights on arterials will use American Electric Lighting, Roadway Series catalog number 325_S MR DT1 R2 FG Caltrans 4B or equivalent.*
ii. *Primary Residential and Secondary Residential Street lights will use Holophane outdoor lighting Hscape series, catalog number GE 100HP_2 B S 72 N H; CVC 27" 1 CA BK or equivalent.*

    These ornamental lighting styles shall be installed throughout the specific plan area with the exception of the following street corridors:

    - *PFE Road*
    - *Walerga Road*
    - *Watt Avenue*

    Standard "cobra head" street lighting may be provided along the street corridors listed above.

iii. *Bollards for trails will use Holophane outdoor lighting Hscapes series catalog number BOL/C 45/13/LW CA BK or equivalent. The source, wattage, and voltage will be determined by Placer County's Department of Public Works.*
iv. *Street lighting standards shall be spaced dependent upon County requirements.*
v. *Lighting shall be provided to ensure a safe environment but shall not cause areas of intense light or glare.*
vi. *Lighting shall be sensitive to adjacent land uses and viewsheds. Architectural features or lighting fixtures that provide down-lighting and lighting that is shielded from adjacent uses shall be implemented.*

4-5(c) *Implement the following Mitigation Measure set forth in this EIR:*

- *4-3(c) Implement RVSP EIR Mitigation Measure 8-4b:*

  To minimize project contributions to cumulative, areawide night light pollution, no upward lighting shall be permitted, and all light standards shall include shielding to direct illumination downward. All lighting shall be of minimum brightness consistent with safety.

  No direct offsite light trespass shall be permitted; all lighting shall use shielded and directed light standards such that no direct offsite illumination will occur.

5. Agricultural Resources

5. AGRICULTURAL RESOURCES

5.1 INTRODUCTION

As discussed in Chapter 3, Project Description, of this EIR, the proposed project would include a total of 432 residential units and associated improvements, off-site sewer lift station improvements, and two options to meet the County's affordable housing regulations. The affordable housing options include the provision of a minimum of 22 Accessory Dwelling Units (ADUs) on lots proposed for development with single-family residential units, or an off-site proposal wherein Homes by Towne would rezone and transfer the fee title to the County for an approximately four-acre parcel off-site within the Riolo Vineyards Specific Plan (RVSP), which could develop a maximum of 120 affordable income-restricted units.

The Agricultural Resources chapter of the EIR describes the status of the existing agricultural resources within the boundaries of the project site and off-site sewer lift station improvements area, as well as the off-site affordable housing parcel, using the current State data, including identification of any Prime Farmland, Unique Farmland or Farmland of Statewide Importance. In addition, potential conflicts with existing zoning for agricultural use or right-to-farm ordinances applicable to the proposed project are identified, as well as Williamson Act Contracts. Documents referenced to prepare this chapter include the Placer County General Plan (PCGP),[1] the PCGP EIR,[2] the RVSP EIR,[3] the Dry Creek-West Placer Community Plan (DCWPCP),[4] the Placer Legacy Open Space and Agricultural Conservation Program Implementation Report,[5] the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey,[6] and the California Important Farmland Finder.[7]

Information regarding forest resources is included in Chapter 19, Effects Not Found to be Significant, of this EIR.

5.2 EXISTING ENVIRONMENTAL SETTING

The Existing Environmental Setting section describes current farmland and soil productivity classification systems, as well as the extent and quality of any agricultural resources present on the project site.

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1 Placer County. *Countywide General Plan Policy Document*. August 1994 (updated May 2013).
2 Placer County. *Countywide General Plan EIR*. July 1994.
3 Placer County. *Riolo Vineyard Specific Plan Environmental Impact Report*. January 2008.
4 Placer County. *Dry Creek-West Placer Community Plan.* Amended April 18, 2023.
5 Placer County. *Placer Legacy Open Space and Agricultural Conservation Program, Implementation Report.* June 2000.
6 U.S. Department of Agriculture, National Resources Conservation Service. *Web Soil Survey*. Available at: http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed November 2025.
7 California Department of Conservation. *California Important Farmland Finder*. Available at: https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed November 2025.

Farmland Classifications

The Farmland Mapping and Monitoring Program (FMMP), part of the California Department of Conservation (DOC) Division of Land Resource Protection, uses soil agricultural productivity information from the NRCS to create maps illustrating the types of farmland in a particular area.

The FMMP was established in 1982 to continue the Important Farmland mapping efforts begun in 1975 by the USDA. The intent of the USDA was to produce agriculture maps based on soil quality and land use across the nation. As part of the nationwide agricultural land use mapping effort, the USDA developed a series of definitions known as Land Inventory and Monitoring (LIM) criteria. The LIM criteria classified the land's suitability for agricultural production; suitability included both the physical and chemical characteristics of soils and the actual land use. Important Farmland maps are derived from the USDA soil survey maps using the LIM criteria.

Since 1980, the State of California has assisted the USDA with completing the mapping in the State. The FMMP was created within the California DOC to carry on the mapping activity on a continuing basis, and with a greater level of detail. The California DOC applied a greater level of detail by modifying the LIM criteria for use in California. The LIM criteria in California use the Land Capability Classification and Storie Index Rating systems, but also consider physical conditions such as dependable water supply for agricultural production, soil temperature range, depth of the groundwater table, flooding potential, rock fragment content, and rooting depth.

The California DOC classifies lands into seven agriculture-related categories: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, Grazing Land, Urban and Built-Up Land, and Other Land. The first three types listed above are collectively designated by the State as Agricultural Land for the purposes of CEQA (see Public Resources Code [PRC] Section 21060.1). Important Farmland maps for California are compiled using the modified LIM criteria and current land use information. The minimum mapping unit is 10 acres unless otherwise specified. Units of land smaller than 10 acres are incorporated into surrounding classifications.

Each of the seven farmland types are summarized below, based on California DOC's A Guide to the Farmland Mapping and Monitoring Program.[8]

Prime Farmland

Prime Farmland is land with the best combination of physical and chemical features able to sustain the long-term production of agricultural crops. The land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. The land must have been used for the production of irrigated crops at some time during the two update cycles (a cycle is equivalent to two years) prior to the mapping date.

Farmland of Statewide Importance

Farmland of Statewide Importance is land similar to Prime Farmland, but with minor shortcomings, such as greater slopes or with less ability to hold and store moisture. The land must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date.

[8] California Department of Conservation, Division of Land Resource Protection. *A Guide to the Farmland Mapping and Monitoring Program*. 2004.

Unique Farmland
Unique Farmland is land of lesser quality soils used for the production of the State's leading agricultural crops. The land is usually irrigated, but may include non-irrigated orchards or vineyards, as found in some climatic zones in California. The land must have been cultivated at some time during the two update cycles prior to the mapping date.

Farmland of Local Importance
Farmland of Local Importance is land of importance to the local agricultural economy, as determined by each county's Board of Supervisors and a local advisory committee. Placer County farmland of local importance includes lands which do not qualify as Prime, Statewide, or Unique designation, but are currently irrigated crops or pasture or non-irrigated crops; lands that would meet the Prime or Statewide designation and have been improved for irrigation, but are now idle; and lands that currently support confined livestock, poultry operations, and aquaculture.

Grazing Land
Grazing Land is land on which the existing vegetation, whether grown naturally or through management, is suited to the grazing of livestock. The minimum mapping unit for the Grazing Land category is 40 acres.

Urban and Built-Up Land
Urban and Built-Up Land is occupied with structures with a building density of at least one unit to one-half acre. Uses may include but are not limited to, residential, industrial, commercial, construction, institutional, public administration purposes, railroad yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment plants, water control structures, and other development purposes. Highways, railroads, and other transportation facilities are mapped as part of this unit, if they are part of a surrounding urban area.

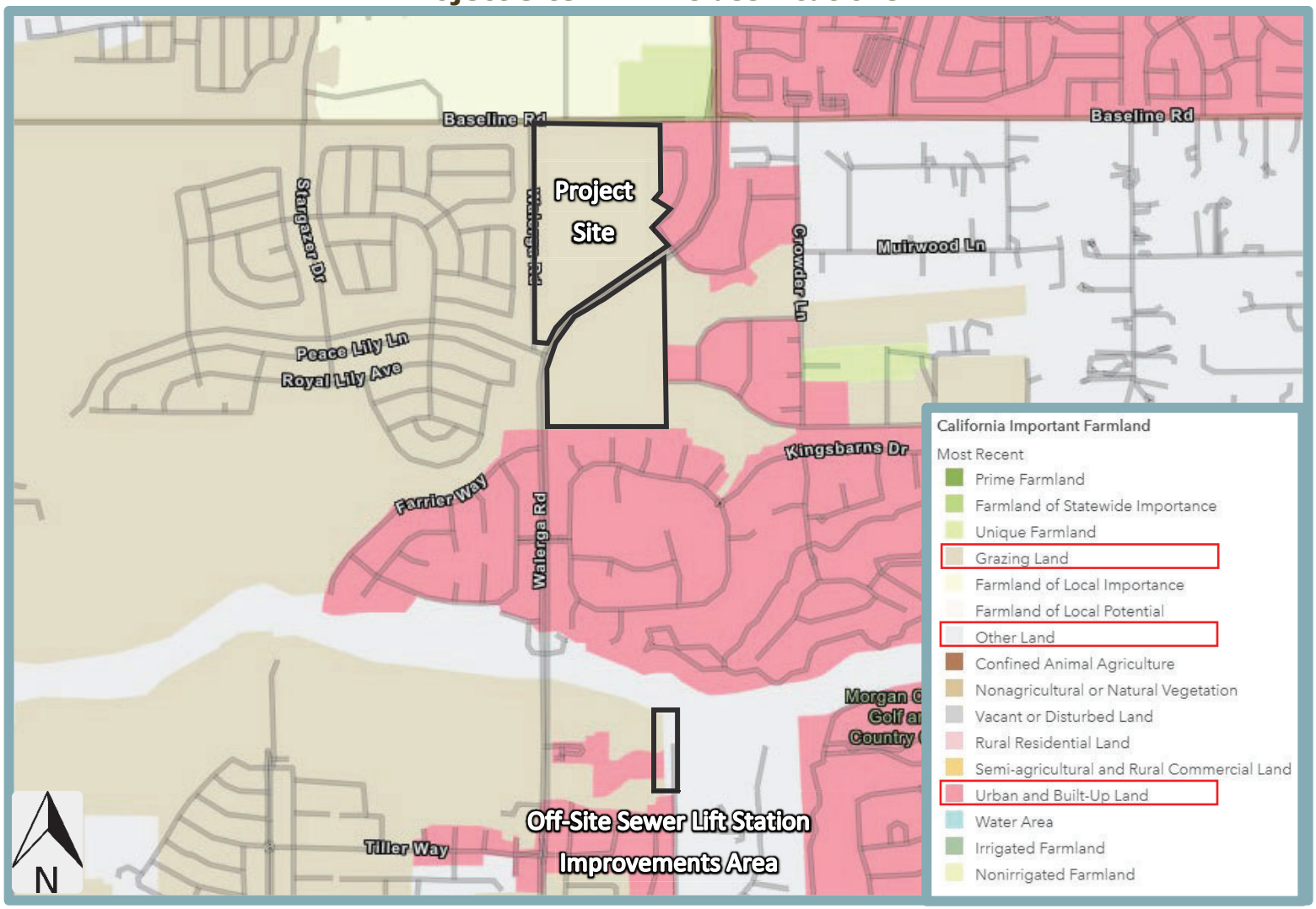
Other Land
Other Land is land that is not included in any other mapping categories. The following uses are generally included: rural development, brush timber, government land, strip mines, borrow pits, and a variety of other rural land uses.

Project Site Farmland Classifications
According to the FMMP, the project site and the off-site affordable housing parcel are mapped as Grazing Land, and the off-site sewer lift station improvements area is comprised of Grazing Land, Urban and Built-Up Land, and Other Land. (see Figure 5-1 and Figure 5-2).

Agricultural Productivity of Soils
The USDA NRCS uses two systems to determine a soil's agricultural productivity: the Land Capability Classification System and the Storie Index Rating System. The "prime" soil classification of both systems indicates the presence of few to no soil limitations, which, if present, would require the application of management techniques (e.g., drainage, leveling, special fertilizing practices) to enhance production.

The Land Capability Classification System takes into consideration soil limitations, the risk of damage when soils are used, and the way in which soils respond to treatment. Capability classes range from Class I soils, which have few limitations for agriculture, to Class VIII soils, which are unsuitable for agriculture.

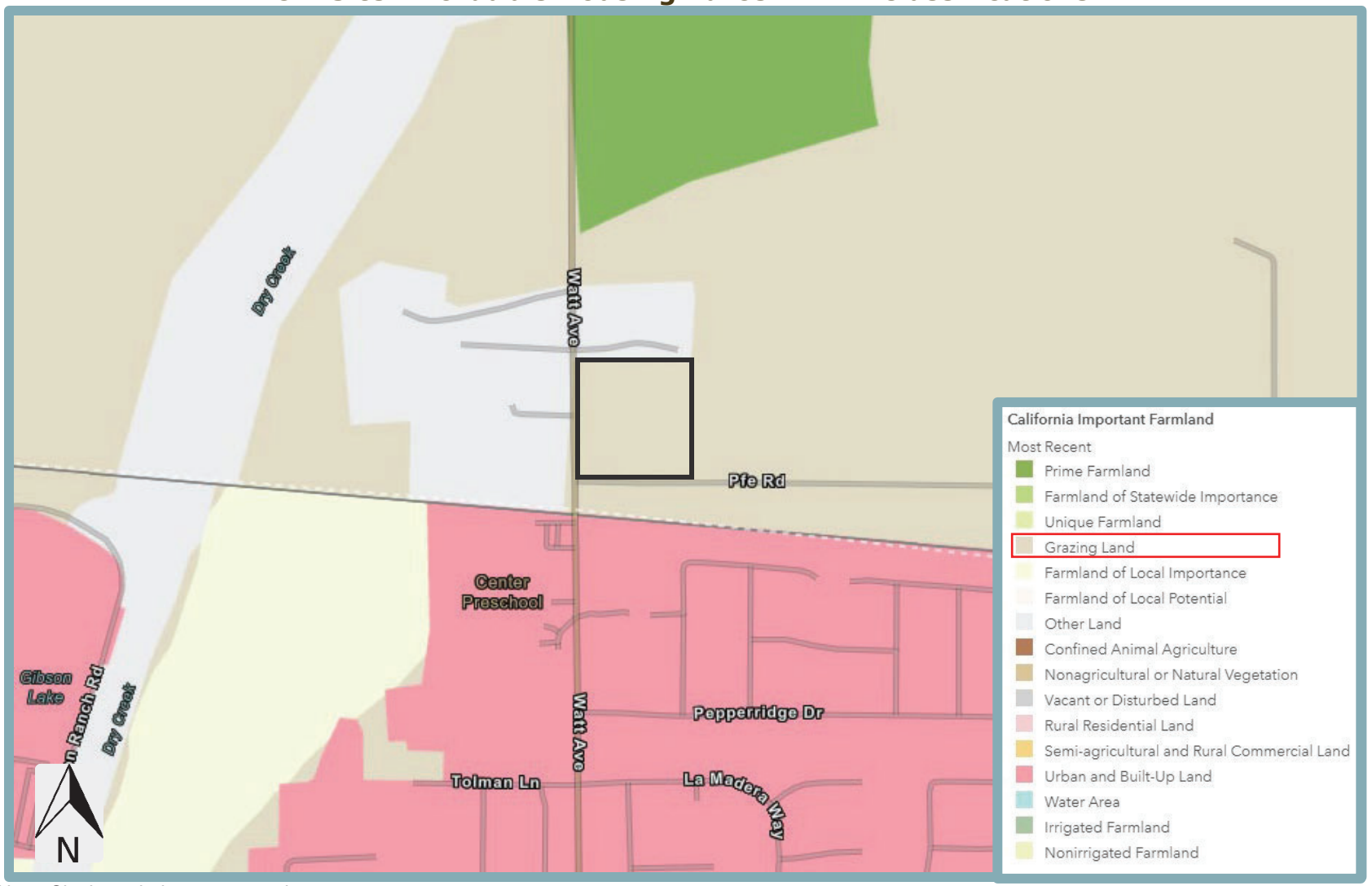
Figure 5-1
Project Site FMMP Classifications



Note: Site boundaries are approximate.
Source: Department of Conservation, Farmland Mapping and Monitoring Program, 2025.

* Figure not OCR Compatible

Figure 5-2
Off-Site Affordable Housing Parcel FMMP Classifications



Note: Site boundaries are approximate.
Source: Department of Conservation, Farmland Mapping and Monitoring Program, 2025.

* Figure not OCR Compatible

Generally, as the rating of the capability classification system increases, yields and profits are more difficult to obtain. A general description of soil classification, as defined by the NRCS, is provided in Table 5-1.

Table 5-1
Land Capability Classifications

Class	Definition
I	Soils have slight limitations that restrict their use.
II	Soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.
III	Soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.
IV	Soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.
V	Soils are not likely to erode but have other limitations; impractical to remove that limit their use largely to pasture or range, woodland, or wildlife habitat.
VI	Soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife habitat.
VII	Soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or wildlife habitat.
VIII	Soils and landforms have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife habitat, or water supply or to aesthetic purposes.

Source: USDA, Natural Resources Conservation Service. Available at: https://efotg.sc.egov.usda.gov/references/Delete/2004-3-27/landcap.htm. Accessed June 2025.

The Storie Index Rating system ranks soil characteristics according to suitability for agriculture from Grade 1 soils (80 to 100 rating), which have few or no limitations for agricultural production, to Grade 6 soils (less than 10 rating), which are not suitable for agriculture. Under the Storie Index Rating system, soils deemed less than prime can function as prime soils when limitations such as poor drainage, slopes, or soil nutrient deficiencies are partially or entirely removed. Unlike the Land Capability Classification outlined above, the Storie Index Rating System does not distinguish between irrigated and non-irrigated soils. The six grades, ranges in index rating, and definition of the grades, as defined by the NRCS, are provided below in Table 5-2.

Table 5-2
Storie Index Rating System

Grade	Index Rating	Definition
1 – Excellent	81 through 100	Few limitations that restrict their use for crops
2 – Good	61 through 80	Suitable for most crops, but have minor limitations that narrow the choice of crops and have a few special management needs
3 – Fair	41 through 60	Suited to a few crops, or special crops, and require special management
4 – Poor	21 through 40	If used for crops, severely limited and require special management
5 – Very Poor	11 through 20	Not suited for cultivated crops, but can be used for pasture/range
6 – Non-Agriculture	Less and 10	Soil and land types generally not suited to farming

Source: USDA, Web Soil Survey, 2025.

Table 5-3 below summarizes the on-site soil types, as well as the soils within the off-site improvement area and affordable housing parcel. Table 5-3 also summarizes the Land Capability Classification and Storie Index Rating for each soil type. The locations of the soil types within the

project site and off-site affordable housing parcel, are shown in Figure 5-3 and Figure 5-4. As shown in Table 5-3, according to the USDA NRCS Web Soil Survey, soils within the project site have Land Capability Classifications of Class III and Class IV.

Table 5-3
Agricultural Ratings of On-Site Soils

Soil Type	Land Capability Classification	Storie Index Grade	% Area (acres)[1]
Cometa sandy loam, 1 to 5 percent slopes	III	Grade 3 - Fair	27.8% (24.4)
Cometa-Fiddyment complex, 1 to 5 percent slopes	IV	Grade 3 - Fair	22.9% (20.0)
Cometa-Ramona sandy loams, 1 to 5 percent slopes	III	Grade 3 - Fair	9.4% (8.3)
Fiddyment loam, 1 to 8 percent slopes	IV	Grade 4 - Poor	3.8% (3.3)
Fiddyment-Kaseberg loams, 2 to 9 percent slopes	IV	Grade 4 - Poor	1.5% (1.4)
Ramona sandy loam, 2 to 9 percent slopes	III	Grade 1 - Excellent	7.5% (6.6)
San Joaquin-Cometa sandy loams, 1 to 5 percent slopes	IV	Grade 4 - Poor	13.0% (11.4)
Xerofluvents, frequently flooded	IV	Grade 3 - Fair	14.0% (12.2)
		Totals	**100% (87.6)**

[1] Soil type acreages were approximated using the USDA web soil survey, and are based on the total net acreage of the site.

Source: USDA, Web Soil Survey, 2025.

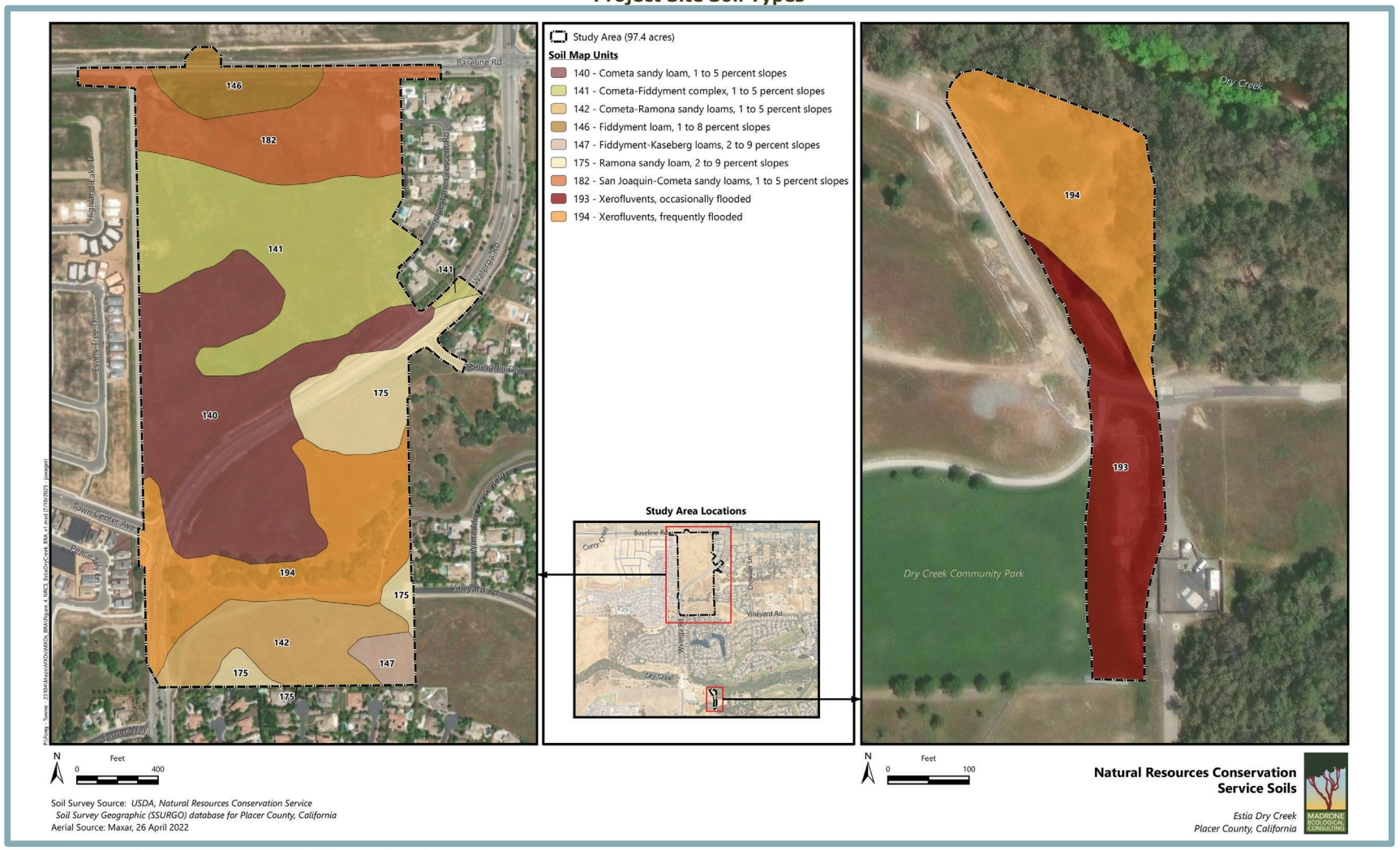
Class III soils are defined as having severe limitations that restrict the choice of plants or that require special conservation practices, or both. Class IV soils are defined as having very severe limitations that reduce the choice of plants or that require very careful management, or both.[9]

The Storie Index Ratings of the on-site soils include Grade 1 – Excellent, Grade 3 – Fair, and Grade 4 – Poor. Grade 1 soils have few limitations that restrict use and are suitable for most crops. Grade 3 soils are fairly well-suited to a few crops, or special crops, and require special management, while Grade 4 soils are severely limited for crop use and require special management.[10]

With respect to the off-site affordable housing parcel, the USDA NRCS Web Soil Survey shows the soils as having Land Capability Classifications of Class III and Class IV, and a Storie Index Rating of Grade 3 – Fair and Grade 4 – Poor.[11]

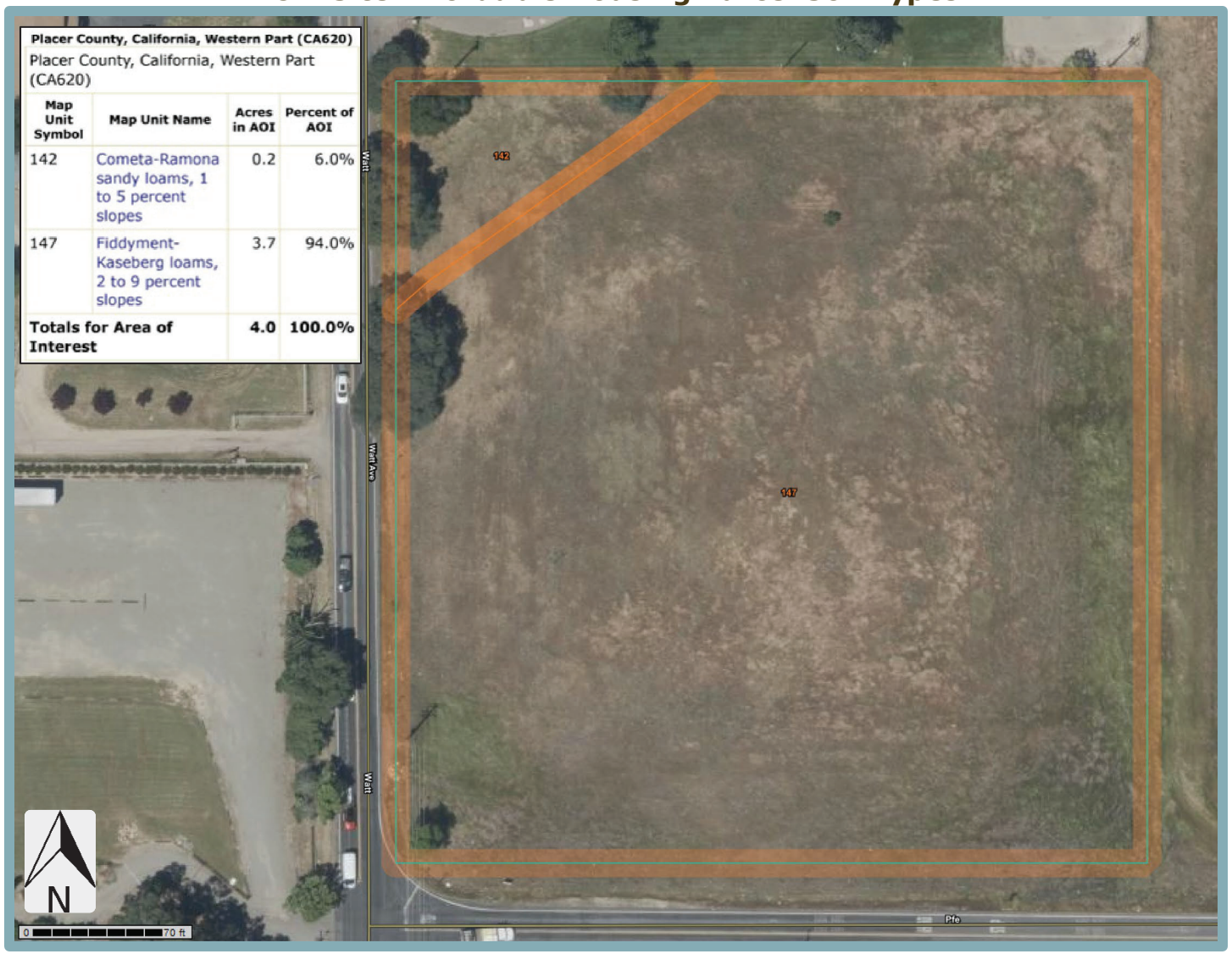
[9] U.S. Department of Agriculture, Natural Resources Conservation Service. *Web Soil Survey.* Available at: Available at: http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed November 2025.
[10] U.S. Department of Agriculture, Soil Conservation Service. *Soil Survey of Placer County, California, Western Part* [pg. 76]. 1980.
[11] *Ibid.*

Figure 5-3
Project Site Soil Types



* Figure not OCR Compatible

Figure 5-4
Off-Site Affordable Housing Parcel Soil Types



* Figure not OCR Compatible

Williamson Act Contracts

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. Approximately 33,621 acres of agricultural land (31,853 acres under contract and 1,768 acres non-renewal), or approximately 3.5 percent of the County's total 960,788 acres, are currently enrolled under Williamson Act contracts. Pursuant to the Placer County Land Information Search viewer, neither the project site nor the off-site affordable housing parcel are subject to a Williamson Act contract.[12]

Existing Agricultural Operations

Existing agricultural operations do not occur within the project site. The northern portion of the site is undeveloped, consists of non-native annual grassland with gently rolling topography, and is interspersed with seasonal wetlands and vernal pools. The southern portion of the site includes undeveloped annual grassland with gently rolling topography, interspersed with seasonal wetlands, vernal pools, and is bisected by Placer Creek, which flows east to west. In addition, the southern portion of the site includes a paved bicycle trail which extends from Vineyard Road to the east and Walerga Road to the west.

Similarly, existing agricultural operations do not occur within the off-site affordable housing parcel, which is currently undeveloped and consists of grassy fields with gently rolling topography.

5.3 REGULATORY CONTEXT

Federal laws or regulations pertaining to agricultural resources are not applicable for this analysis. The existing State and local laws and regulations are listed below, as applicable.

State Regulations

The following are applicable State regulations related to agricultural resources.

Williamson Act

The California Land Conservation Act, better known as the Williamson Act, has been the State's premier agricultural land protection program since the act's enactment in 1965. The California Legislature passed the Williamson Act in 1965 to preserve agricultural and open space lands by discouraging premature and unnecessary conversion to urban uses. The Williamson Act creates an arrangement whereby private landowners contract with counties and cities to voluntarily restrict land to agricultural and open space uses. The vehicle for these agreements is a rolling term 10-year contract (i.e., unless either party files a "notice of non-renewal," the contract is automatically renewed annually for an additional year). In return, restricted parcels are assessed for property tax purposes at a rate consistent with their actual use, rather than potential market value.

Local Regulations

The following are the local regulations and standards relevant to the CEQA review process with respect to agricultural resources.

Placer County General Plan

The following goals and policies from the PCGP are applicable to the proposed project:

[12] Placer County. *CDRA – Land Information Search*. Available at: https://www.placer.ca.gov/1471/County-Map. Accessed September 2025.

Land Use Element

Goal 1.H To designate adequate agricultural land and promote development of agricultural uses to support the continued viability of Placer County's agricultural economy.

Policy 1.H.1 The County shall maintain agriculturally-designated areas for agricultural uses and direct urban uses to designated urban growth areas and/or cities.

Policy 1.H.2 The County shall seek to ensure that new development and public works projects do not encourage expansion of urban uses into designated agricultural areas.

Policy 1.H.4 The County shall allow the conversion of existing agricultural land to urban uses only within community plan areas and within city spheres of influence where designated for urban development on the General Plan Land Use Diagram.

Policy 1.H.5 The County shall require development within or adjacent to designated agricultural areas to incorporate design, construction, and maintenance techniques that protect agriculture and minimize conflicts with adjacent agricultural uses.

Policy 1.H.6 The County shall require new non-agricultural development immediately adjacent to agricultural lands to be designed to provide a buffer in the form of a setback of sufficient distance to avoid land use conflicts between the agricultural uses and the nonagricultural uses, except as it may be determined to be unnecessary or inappropriate within a Specific Plan as part of the Specific Plan approval. Such setback or buffer areas shall be established by recorded easement or other instrument, subject to the approval of County Counsel. A method and mechanism (e.g., a homeowners association or easement dedication to a non-profit organization or public entity) for guaranteeing the maintenance of this land in a safe and orderly manner shall be also established at the time of development approval.

Agricultural and Forestry Resources Element

Goal 7.B: To minimize existing and future conflicts between agricultural and non-agricultural uses in agriculturally-designated areas.

Policy 7.B.1 The County shall identify and maintain clear boundaries between urban/suburban and agricultural areas and require land use buffers between such uses where feasible. These buffers shall occur on the parcel for which the development

permit is sought and shall favor protection of the maximum amount of farmland.

Policy 7.B.3 The County shall consider fencing subdivided lands adjoining agricultural uses as a potential mitigation measure to reduce conflicts between residential and agricultural uses. Factors to be considered in implementing such a measure include: The type of agricultural operation (i.e., livestock, orchard, timber, row crops);

a. The size of the lots to be created;
b. The presence or lack of fences in the area;
c. Existing natural barriers that prevent trespass; and
d. Passage of wildlife.

Policy 7.B.4 The County shall continue to enforce the provisions of its Right-to-Farm Ordinance and of the existing state nuisance law.

Placer Legacy Open Space and Conservation Program

The Placer Legacy Open Space and Agricultural Conservation Program (Placer Legacy Program) was adopted in June 1998 to protect and conserve open space and agricultural lands in Placer County.[13] The Placer Legacy Program implements the goals, policies, and programs of the 1994 PCGP and supplements existing open space and conservation programs. The Placer Legacy Program also provides important resource information to guide and direct decisions on the preparation of environmental documents for compliance with CEQA and for discretionary land use entitlements being examined by County staff. The objectives of the Placer Legacy Program include the following:

- Maintain a viable agricultural segment of the economy;
- Conserve natural features necessary for access to a variety of outdoor recreation opportunities;
- Retain important scenic and historic areas;
- Preserve the diversity of plant and animal communities;
- Protect endangered and other special status plant and animal species;
- Separate urban areas into distinct communities; and
- Ensure public safety.

For implementation purposes, the County was divided into 10 study areas based on common geographic and political boundaries. The development of the implementation measures was based on an assessment of each area's existing open space resources, development trends, stressors and conflicts, and opportunities for Placer Legacy Program involvement. The project site is located within the South Placer Urban Study Area. Placer Legacy Program implementation measures for the South Placer Study Area that are pertinent to agricultural resources on and in the vicinity of the project site are listed below:

[13] Placer County. *Placer Legacy Open Space and Agricultural Conservation Program, Implementation Report.* June 2000.

SP-1. Work with farmers and ranchers to protect agricultural lands outside of designated development areas through the use of conservation easements.

SP-2. Provide certainty to farmers and ranchers concerning the future extent of urban encroachment by coordinating with cities to create permanent greenbelts around urban areas.

SP-3. Support the County's Right-To-Farm Ordinance provisions.

SP-12. Create regional trail connections and develop new regional trails, consistent with adjacent agricultural uses.

SP-20. Establish permanent transition areas and buffers between urban/suburban areas and agricultural areas through conservation easements and/or fee title acquisition of lands containing multiple resource values.

Placer County Right-to-Farm Ordinance

Placer County has adopted a Right-to-Farm Ordinance (Section 5.24.040 of the Placer County Code) to minimize loss of the County's commercial agricultural resources by limiting the circumstances under which agricultural operations may be deemed to constitute a nuisance. The provisions of the Right-to-Farm Ordinance are as follows:

A. It is the declared policy of the county of Placer to preserve, protect and encourage the development and improvement of its agricultural land for the production of food and other agricultural products. When nonagricultural land uses extend into the agricultural areas, agricultural operations often become the subject of nuisance suits. As a result, agricultural operations are sometimes forced to cease or are substantially curtailed. Others may be discouraged from making investments in agricultural improvements. It is the purpose of this section to reduce the loss to the county of its commercial agricultural resources by limiting the circumstances under which agricultural operations may be deemed to constitute a nuisance.
B. No agricultural activity, operation, or facility, or appurtenances thereof, conducted or maintained for commercial purposes, and in a manner consistent with proper and accepted customs and standards, as established and followed by similar agricultural operations, shall be or become a nuisance, private or public, due to any changed condition in or about the locality, after the same has been in operation for more than one year if it was not a nuisance at the time it began.
C. For purpose of this section, the term "agricultural activity, operation, or facility, or appurtenances thereof" shall include, but not be limited to, the cultivation and tillage of soil, dairying, the production, cultivation, growing, and harvesting of any agricultural commodity including timber, Christmas trees, viticulture, apiculture, nursery stock, or horticulture, the raising of livestock, fur bearing animals, fish, or poultry, and game birds, and any practices performed by a farmer or on a farm as incident to or in conjunction with such farming operations, including preparation for market, delivery to storage, or to market, or to carriers for transportation to market.
D. For the purpose of this section, commercial "agriculture" means those agricultural lands in designated areas, or those lands that are within the California Land Conservation Act, or within a timber preserve zone or those lands that produce a gross annual income of four thousand five hundred dollars ($4,500.00) from the sale of agricultural products.
E. Each prospective buyer of property in unincorporated Placer County shall be informed by the seller or his/her authorized agent of the right-to-farm ordinance.

The seller or his/her authorized agent will keep on file a disclosure statement signed by the buyer with the escrow process.

F. Whenever a building designated for residential occupancy is to be located on property in the unincorporated area of Placer County, the owners of the property, or their authorized agent, shall acknowledge receipt of the right-to-farm ordinance. (Ord. 4983-B, 1999: prior code § 5.715)

Dry Creek-West Placer Community Plan

The relevant goals and policies from the DCWPCP related to agricultural resources are presented below.

Community Development Element: The Land Use Plan

Policy 2 Maintain large agricultural areas and require development to provide adequate buffer zones between agricultural uses and other uses, as described in the Placer County General Plan.

Policy 15 Encourage logical expansion of the area by developing in-fill areas and those lands lying closest to existing developed areas before extending into outlying areas. On a Countywide basis, encourage in-fill of lands in cities and areas of the unincorporated portions of the County designated for urban uses before allowing the premature conversion of open space and agricultural lands.

Community Development Element: Community Design Element

Policy 5 Where a development permit/approval is sought adjacent to an agricultural operation/land use category, protection of agricultural operations shall be provided by the establishment of a man-made or retention of a natural buffer between the agricultural land use and the proposed use. This buffer shall occur on the parcel for which the development permit is sought and shall favor protection of the maximum amount of farmland.

Environmental Resources Management: Natural Resources

Goal 7 Recognize agricultural lands as a resource and seek to protect these areas from urban encroachment.

Policy 20 Preserve agricultural lands as an economically viable land use, and for the purposes of open space, groundwater recharge, wildlife habitat, buffering, flood control, and soil conservation.

Environmental Resources Management: Open Space

Goal 8 To permit existing agricultural uses to continue, and to conserve lands suitable for agricultural uses while allowing urban/suburban/rural residential uses.

Policy 2 Identify and, where possible, preserve all soils which are suitable for agricultural uses.

Policy 8 Preserve productive agricultural lands as regional open space.

Placer County Conservation Program

On September 1, 2020, Placer County adopted the Placer County Conservation Program (PCCP), which is a Habitat Conservation Plan under the Federal Endangered Species Act (FESA) and a Natural Community Conservation Plan under the California Natural Community Conservation Planning Act. The PCCP contains conservation measures to protect natural communities, including agricultural land such as rice, field crop, and orchard/vineyard habitat. Avoidance and minimization measures are set forth in Chapter 6 of the PCCP and are intended to ensure that adverse effects on natural communities are avoided and minimized.

Objective AO-1.1 of the PCCP (*Protect Agricultural Lands*), as set forth on page 5-33 of the Plan, is to "[p]rotect at least 8,240 acres of agricultural lands or natural communities in the Valley, including patches of natural vegetation, such as trees and shrubs that may be used by Covered Species, and provide large, contiguous blocks of open space between protected natural communities, agricultural land, and urban/suburban land uses in the Reserve System (Table 5-3)."

The rationale for this Objective, as set forth on pages 5-33 and 5-34 of the Plan, reads as follows: "Since agriculture is an important component of the economy and culture of Placer County, the Plan seeks to achieve a sustainable balance of agriculture and conservation within the landscape. The commitment for agriculture and other open space protection is large enough to assemble an interconnected Reserve System of natural communities and agricultural land in the Valley [Reserve Acquisition Area]. Objective GGS-1.1 ensures that at least 2,000 of the 8,240 acres will be rice land (or wetland equivalent; see Section 5.2.7.5, *Giant Garter Snake, Objective GGS-1.1 Rationale*) grown and managed (including securing the necessary water rights) annually to benefit giant garter snake. The remaining 6,240 acres will not be required to be maintained in any particular crop type, and therefore will not count toward meeting the U.S. Fish and Wildlife Service (USFWS) federal permit requirements or habitat commitments for mitigation for any Covered Species. The crops planted on the 6,240 acres will vary depending on market demand, future water availability, climate change, and a host of other factors. The 6,240 acres, while not required to meet Natural Community Conservation Plan (NCCP) requirements, will provide the following additional benefits under the NCCP Act to conserve representative natural and semi-natural landscapes: maintain the ecological integrity of large habitat blocks, ecosystem function, and biologically diversity (Fish and Game Code 2820 [a][4][A]) and sustain the effective movement and interchange of organisms between habitat areas in a manner that maintains the ecological integrity of the habitat areas within the Plan Area (Fish and Game Code 2820 [a][4][(E]) (Table 5-3)."

On page 5-35, the PCCP further explains that "[o]n all the protected agricultural lands, common practices can be implemented to increase the habitat value for wildlife, and landowners may voluntarily choose to adopt these practices in agreement with the PCA. These practices include use of hedgerows, herbaceous field borders, filter strips, grassed waterways, windbreaks, and riparian forest buffers (Clark and Reeder 2007). Landowners may also choose to restrict use of pesticides in their easements. These practices are described in Section 5.3.2.3.5, Agriculture and Other Open Space." The PCCP continues the explanation with "The Plan's Covered Activities will result in the loss of up to 2,900 acres of agricultural land throughout Plan Area A, including an estimated 2,000 acres of rice and 900 acres of other agricultural land-cover types. With the exception of rice for giant garter snake, the Plan will not mitigate effects on Covered Species that use agricultural lands through protection and management of agricultural lands; rather, the Plan

will mitigate loss of agricultural Covered Species' habitat through protection, restoration, management and enhancement of natural communities supporting habitat for these species."

To obtain coverage under the PCCP, project applicants are required to obtain a signed Certificate of PCCP Authorization form from Placer County for potential impacts to terrestrial and aquatic habitats (including loss of agricultural lands and open space). During the local impact authorization process, impact fees are calculated utilizing land cover data. Fees include Land Conversion fees and may also include Aquatic/Wetland Special Habitat fees. To address disturbances to vegetation communities/land covers within the PCCP, development fees are applied for a development project's vegetation community impacts, in accordance with PCCP guidelines.

5.4 IMPACTS AND MITIGATION MEASURES

The Impacts and Mitigation Measures section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to agricultural resources. A discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, the PCGP, and the DCWPCP, a significant impact related to agricultural resources would occur if the proposed project would do any of the following:

- 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 non-agricultural use;
- Conflict with existing zoning for agricultural use, a Williamson Act contract, or a Right-to-Farm Policy;
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in PRC Section 12220[g]), timberland (as defined by PRC Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g]) (see Chapter 19, Effects Not Found to be Significant);
- Result in the loss of forest land or conversion of forest land to non-forest use (see Chapter 19, Effects Not Found to be Significant);
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use;
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of forest land to non-forest use (see Chapter 19, Effects Not Found to be Significant); or
- Conflict with General Plan or other policies regarding land use buffers for agricultural operations.

Issues related to whether the proposed project would result in any of the following impacts are discussed in Chapter 19, Effects Not Found To Be Significant, of this EIR:

- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in PRC Section 12220[g]), timberland (as defined by PRC Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g]);
- Result in the loss of forest land or conversion of forest land to non-forest use; and

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

Method of Analysis

Evaluation of potential impacts of the proposed project on agricultural resources is based on the following: the PCGP, the associated EIR, the Placer Legacy Open Space and Agricultural Conservation Program, Implementation Report, the NRCS Web Soil Survey, and the FMMP online mapping system. Soil data from the FMMP was used to determine if the project site supports Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance. The standards of significance listed above are used to delineate the significance of any potential impacts.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the proposed project and off-site sewer lift station improvements, as well as the two affordable housing options analyzed throughout this EIR, in comparison to existing conditions and the standards of significance presented above. In most cases, potential environmental impacts associated with the proposed project and the potential 22 on-site ADUs would not differ. Thus, unless otherwise noted, the below analysis applies to both the proposed project and the on-site ADUs.

5-1 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 non-agricultural use, or involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts associated with the proposed project and the off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, related to converting Farmland to non-agricultural uses.

Proposed Project, Off-Site Sewer Lift Station Improvements Area, and Off-Site Affordable Housing Parcel

According to the DOC Important Farmland Finder, the project site and the off-site affordable housing parcel are designated as Grazing Land (see Figure 5-1 and Figure 5-2). The off-site sewer lift station improvements area is comprised of Grazing Land, Urban and Built-Up Land, and Other Land. PRC Section 21060.1 defines “agricultural land” as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland (Farmland). Therefore, the project site, off-site sewer lift station improvements area, and off-site affordable housing parcel do not constitute Farmland under CEQA, and development of the sites would not result in the conversion of Farmland to a non-agricultural use.

In addition, the current PCGP/DCWPCP land use designations for the project site are Rural-Low Density Residential (1-2.3 acre minimum) (RLDR) and Greenbelt and Open Space (OS). Pursuant to the County’s General Plan, typical land uses for RLDR include

detached single-family dwellings, secondary dwellings, and facilities and services that support residential neighborhoods, such as churches, schools, parks, golf courses, childcare facilities, and necessary public utility and safety facilities. The off-site affordable housing parcel was re-designated in 2015 from High-Density Residential (HDR) to Commercial. As such, the County has previously anticipated buildout of the sites with non-agricultural uses.

Based on the above, the proposed project would not convert Farmland, as shown on the maps prepared pursuant to the FMMP of the California Resources Agency, to non-agricultural use or involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use. Thus, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

5-2 Conflict with existing zoning for agricultural use, a Williamson Act contract, or a Right-to-Farm policy. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, as well as the off-site affordable housing parcel, which could conflict with existing zoning for agricultural use, a Williamson Act contract, or a Right-to-Farm policy.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

As noted above, the project site is not subject to an active Williamson Act contract. Thus, the proposed project would not conflict with a Williamson Act contract. The project site is zoned Residential Single-Family, combining Agriculture, combining a minimum Building Site of 40,000 square feet, combining Planned Residential Development of one dwelling unit per acre (RS-AG-B-40, PD=1); and Open Space, combining Planned Residential Development of one dwelling unit per acre (O PD=1). While the O zoning designation is not designated for agricultural purposes, the remainder of the project site includes an -AG combining district designation, which allows agricultural development as a use. While the -AG combining district allows for some limited agricultural uses, the district is generally intended primarily for residential uses. In addition, the project site is designated as RLDR and OS by the PCGP/DCWPCP. As such, the County has previously anticipated buildout of the site with non-agricultural uses. The proposed project would rezone the project site to O, Residential Multifamily, combining Design Scenic Corridor (RM-Dc), Residential Single Family, combining minimum Building Site of 6,000 sf (RS-B-6), thereby removing the -AG combining district designation. Upon approval of the proposed rezone, the project would be consistent with the new zoning designations.

Pursuant to the Placer County Code, commercial agricultural operations are protected by the County's Right-To-Farm Ordinance, provided that such operations occur on agricultural lands in designated areas, on lands that are protected by the California Land Conservation Act, within a timber preserve zone, or on lands that produce a gross annual income of $4,500 from the sale of agricultural products. The project site is not currently used for agricultural purposes or for livestock grazing, and surrounding existing land uses

do not include agricultural operations or activities. Therefore, because the proposed project is not currently used for agricultural purposes and is not located adjacent to commercial agricultural operations, the project would not conflict with existing zoning for agricultural use.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel is not subject to an active Williamson Act contract. Thus, this component of the proposed project would not conflict with a Williamson Act contract. The off-site affordable housing parcel is currently zoned Specific Plan – Riolo Vineyards Specific Plan (SPL-RVSP). Pursuant to Section 17.51.010 of the Placer County Code, the purpose of the specific plan (SPL) district is to allow unique zone districts to be established consistent with an adopted specific plan (in the case of the off-site affordable housing parcel, the RVSP) and provide more flexibility. The specific plan specifies all permitted uses and land use permit requirements for the SPL district; as such, the RVSP's designation of the site as Commercial would establish the permitted uses. As such, the County has previously anticipated buildout of the site with non-agricultural uses. As discussed within Chapter 3, Project Description, of this EIR, this affordable housing option would involve a rezone of the subject parcel to Residential Multifamily 30, combining Design Scenic Corridor (RM30-Dc) zone. Upon approval of the proposed rezone, future development of affordable units within the parcel would be consistent with the new zoning designation.

Similar to the proposed project discussed above, the off-site affordable housing parcel is not currently used for agricultural purposes or for livestock grazing and surrounding existing land uses do not include agricultural operations or activities. Therefore, the project would not conflict with existing zoning for agricultural use.

Conclusion

Based on the above, the proposed project would not conflict with existing zoning for agricultural use, a Williamson Act contract, or a Right-to-Farm Policy, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

5-3 Conflict with General Plan or other policies regarding land use buffers for agricultural operations. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts associated with the development of proposed project and the off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could conflict with General Plan or other policies regarding land use buffers for agricultural operations.

Proposed Project, Off-Site Sewer Lift Station Improvements Area, and Off-Site Affordable Housing Parcel

The PCGP establishes Land Use Buffer Zone Standards for several types of development including agriculture/timberland, industrial/residential, and public facility buffer zone requirements.[14] The buffers are intended to separate incompatible land uses from surrounding areas, such as land uses where noise associated with vehicles and equipment could be substantial, the use of hazardous materials such as in manufacturing processes occurs, or where truck traffic and otherwise heavy traffic volumes occur. Regarding land use buffers for agricultural operations, the juxtaposition of agricultural lands and residential uses can result in land use compatibility issues. For example, agricultural activities may result in noise, dust, or odors that may be perceived as nuisances by non-agricultural neighbors. Additionally, residences may be a nuisance for agricultural uses due to the potential for trespassing. Agricultural practices, such as chemical applications, may also be a public health issue for residents should they affect air or water quality.

The surrounding existing uses to the project site and the off-site affordable housing parcel do not include agricultural operations. Surrounding existing land uses to the project site include the under-construction Baseline Marketplace to the north, across Baseline Road; single-family residences associated with the Sun Valley Oaks residential neighborhood and Dry Creek tributaries to the east; single-family residences associated with the Morgan Creek residential neighborhood to the south; and the under-construction Property 1A of the Placer Vineyards Specific Plan (PVSP), which will include 1,285 residential units, to the west, across Walerga Road. Surrounding land uses to the off-site affordable housing parcel include public uses associated with the existing cemetery to the north and single-family residential uses across Watt Avenue to the west and PFE Road to the south. In addition, the RVSP includes planned medium density residential (MDR) uses to the east of the parcel.

Based on the above information, the proposed project would not conflict with the General Plan or other policies regarding land use buffers for agricultural operations, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, “cumulative impacts” refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Additional detail regarding the cumulative setting is included in Chapter 20, Statutorily Required Sections, of this EIR.

[14] Placer County. *Countywide General Plan Policy Document, Part 1, Land Use/Circulation Diagrams and Standards* [pg. 19]. August 1994 (updated May 2013).

5-4 Involve changes in the existing environment which, due to their location or nature, could cumulatively result in loss of Farmland to non-agricultural use. Based on the analysis below, the project's incremental contribution to the significant cumulative impact is *less than cumulatively considerable*.

The PCGP EIR concluded that the PCGP would bring about changes to the existing land uses in the unincorporated areas of the County. In addition, the buildout scenario presented in the DCWPCP presupposed that land uses would change as a result of growth and development occurring under buildout of the DCWPCP. Both the PCGP EIR and the DCWPCP anticipated that the conversion of existing farmland in the region to urban use would result in the loss of agricultural production. Furthermore, the PCCP anticipated the conversion of agricultural land to urban development. Specifically, approximately 30,000 acres of agricultural or natural and semi-natural land were anticipated to be converted to urban/suburban and rural-residential development within the PCCP area. While the PCGP EIR stated that the loss of Farmland and agricultural production was considered a significant adverse impact, the EIR did not provide mitigation measures sufficient to reduce the adverse impact to a less-than-significant level. The loss and conversion of agricultural lands, including lands within the project site, was identified as a significant and unavoidable impact of development in the Final EIR for the adopted DCWPCP. The aforementioned conclusion was included in the Placer County Board of Supervisors' Statement of Overriding Considerations adopted in 1990, in conjunction with the certification of the Final EIR and adoption of the DCWPCP.

With respect to the proposed project, as discussed under Impact 5-1 above, neither the project site nor the off-site affordable housing parcel contain Prime Farmland, Farmland of Statewide Importance, or Unique Farmland. The sites are designated as Grazing Land, which is not considered Farmland under CEQA. In addition, neither site is currently used for agricultural purposes. Thus, development of the proposed project would not result in the direct conversion of Farmland to non-agricultural uses, and the proposed project's incremental contribution to the significant cumulative impact would be ***less than cumulatively considerable***.

Mitigation Measure(s)

None required.

6. Air Quality and Greenhouse Gas Emissions

6. AIR QUALITY AND GREENHOUSE GAS EMISSIONS

6.1 INTRODUCTION

As discussed in Chapter 3, Project Description, of this EIR, the proposed project would include a total of 432 residential units and associated improvements, off-site sewer lift station improvements, and two options to meet the County's affordable housing regulations. The affordable housing options include the provision of a minimum of 22 Accessory Dwelling Units (ADUs) on lots proposed for development with single-family residential units, or an off-site proposal wherein Homes by Towne would rezone and transfer the fee title to the County for an approximately four-acre parcel off-site within the Riolo Vineyards Specific Plan (RVSP), which could develop a maximum of 120 affordable income-restricted units.

The Air Quality and Greenhouse Gas Emissions chapter of the EIR describes the potential impacts of the proposed project and off-site sewer lift station improvements area, as well as the potential future development of the off-site affordable housing parcel, on local and regional air quality emissions, and potential impacts related to greenhouse gas emissions (GHGs) and climate change. The chapter includes a discussion of the existing air quality and GHG setting, construction-related air quality impacts resulting from grading and equipment emissions, direct and indirect air quality and GHG emissions associated with operations of the project, the impacts of these emissions on both the local and regional scale, and mitigation measures warranted to reduce or eliminate any identified significant impacts. This chapter is based on the Placer County General Plan (PCGP)[1] and associated EIR,[2] the Dry Creek-West Placer Community Plan (DCWPCP),[3] the Placer County Air Pollution Control District's (PCAPCD) CEQA Air Quality Handbook,[4] Review of Land Use Projects Under CEQA,[5] the Placer County Sustainability Plan: A Greenhouse Gas Emission Reduction Plan and Adaptation Strategy (PCSP),[6] the RVSP EIR,[7] and the technical analysis performed by Raney Planning and Management, Inc.

6.2 EXISTING ENVIRONMENTAL SETTING

The following information provides an overview of the existing environmental setting in relation to air quality within the proposed project area. Air basin characteristics, ambient air quality standards (AAQS), attainment status and regional air quality plans, local air quality monitoring, odors, and sensitive receptors are discussed. In addition to the information pertaining to air quality, information related to climate change and GHGs is provided.

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1 Placer County. *Countywide General Plan Policy Document*. August 1994 (updated May 21, 2013).
2 Placer County. *Countywide General Plan EIR*. July 1994.
3 Placer County. *Dry Creek-West Placer Community Plan*. Amended May 12, 2009.
4 Placer County Air Pollution Control District. *CEQA Air Quality Handbook*. November 21, 2017.
5 Placer County Air Pollution Control District. *Placer County Air Pollution Control District Policy. Review of Land Use Projects Under CEQA.* October 13, 2016.
6 Placer County. *Placer County Sustainability Plan: A Greenhouse Gas Emission Reduction Plan and Adaptation Strategy.* January 28, 2020.
7 Placer County. *Riolo Vineyard Specific Plan Environmental Impact Report*. January 2008.

Air Basin Characteristics

The project site and the proposed off-site affordable housing parcel are located in western Placer County, which falls within the Sacramento Valley Air Basin (SVAB), within the jurisdictional boundaries of the PCAPCD. Air flows into the SVAB through the Carquinez Strait, moves across the Delta and carries pollutants from the heavily populated San Francisco Bay Area into the SVAB. The climate is characterized by hot, dry summers and cool, rainy winters. Characteristic of SVAB winter weather are periods of dense and persistent low-level fog, which are most prevalent between storms. From May to October, the region's intense heat and sunlight lead to high ozone concentrations. Prevailing winds are from the south and southwest, and as a result of prevailing winds coming generally from south to southwest, air quality in the area is heavily influenced by mobile and stationary sources of air pollution located upwind in the Sacramento Metropolitan Area.

Most precipitation in the SVAB results from air masses moving in from the Pacific Ocean during the winter months. Storms usually move through the area from the west or northwest. During the winter rainy season (November through February) over half the total annual precipitation falls while the average winter temperature is a moderate 49 degrees Fahrenheit. During the summer, daytime temperatures can exceed 100 degrees Fahrenheit. Dense fog occurs mostly in mid-winter and rarely in the summer. Daytime temperatures from April through October average between 60 and 80 degrees Fahrenheit with low humidity. The inland location and surrounding mountains shelter the valley from much of the ocean breeze that keeps the coastal regions moderate in temperature. The only breech in the mountain barrier is the Carquinez Strait, which exposes the midsection of the valley to the coastal air mass.

Air quality in Placer County is also affected by inversion layers, which occur when a layer of warm air traps a layer of cold air, preventing vertical dispersion of air contaminants. The presence of an inversion layer results in higher concentrations of pollutants near ground level. Summer inversions are strong and frequent, but are less troublesome than those that occur in the fall. Autumn inversions, formed by warm air subsiding in a region of high pressure, have accompanying light winds that do not provide adequate dispersion of air pollutants.

Air quality in the project vicinity is influenced by both local and distant emission sources. Air pollutant sources in the immediate project vicinity primarily include emissions from vehicle traffic on nearby roadways. Other sources of air pollutants in the area include activities associated with commercial, residential, and industrial land uses.

Ambient Air Quality Standards

Both the U.S. Environmental Protection Agency (USEPA) and the California Air Resources Board (CARB) have established AAQS for common pollutants. The federal standards are divided into primary standards, which are designed to protect the public health, and secondary standards, which are designed to protect the public welfare. The AAQS for each contaminant represent safe levels that avoid specific adverse health effects. Pollutants for which AAQS have been established are called “criteria” pollutants. Table 6-1 identifies the major pollutants, characteristics, health effects and typical sources. The national and California AAQS (NAAQS and CAAQS, respectively) are summarized in Table 6-2. The NAAQS and CAAQS were developed independently with differing purposes and methods. As a result, the federal and State standards differ in some cases. In general, the State of California standards are more stringent than the federal standards, particularly for ozone and particulate matter (PM).

A description of each criteria pollutant and its potential health effects is provided in the following section.

Table 6-1
Summary of Criteria Pollutants

Pollutant	Characteristics	Health Effects	Major Sources
Ozone	A highly reactive gas produced by the photochemical process involving a chemical reaction between the sun's energy and other pollutant emissions. Often called photochemical smog.	• Eye irritation • Wheezing, chest pain, dry throat, headache, or nausea • Aggravated respiratory disease such as emphysema, bronchitis, and asthma	Combustion sources such as factories, automobiles, and evaporation of solvents and fuels.
Carbon Monoxide	An odorless, colorless, highly toxic gas that is formed by the incomplete combustion of fuels.	• Impairment of oxygen transport in the bloodstream • Impaired vision, reduced alertness, chest pain, and headaches • Can be fatal in the case of very high concentrations	Automobile exhaust, combustion of fuels, and combustion of wood in woodstoves and fireplaces.
Nitrogen Dioxide	A reddish-brown gas that discolors the air and is formed during combustion of fossil fuels under high temperature and pressure.	• Lung irrigation and damage • Increased risk of acute and chronic respiratory disease	Automobile and diesel truck exhaust, industrial processes, and fossil-fueled power plants.
Sulfur Dioxide	A colorless, irritating gas with a rotten egg odor formed by combustion of sulfur-containing fossil fuels.	• Aggravation of chronic obstruction lung disease • Increased risk of acute and chronic respiratory disease	Diesel vehicle exhaust, oil-powered power plants, and industrial processes.
Particulate Matter (PM_{10} and $PM_{2.5}$)	A complex mixture of extremely small particles and liquid droplets that can easily pass through the throat and nose and enter the lungs.	• Aggravation of chronic respiratory disease • Heart and lung disease • Coughing • Bronchitis • Chronic respiratory disease in children • Irregular heartbeat • Nonfatal heart attacks	Combustion sources such as automobiles, power generation, industrial processes, and wood burning. Also from unpaved roads, farming activities, and fugitive windblown dust.
Lead	A metal found naturally in the environment as well as in manufactured products.	• Loss of appetite, weakness, apathy, and miscarriage • Lesions of the neuromuscular system, circulatory system, brain, and gastrointestinal tract	Industrial sources and combustion of leaded aviation gasoline.

Sources:
- ***California Air Resources Board. California Ambient Air Quality Standards (CAAQS). Available at: http://www.arb.ca.gov/research/aaqs/caaqs/caaqs.htm. Accessed July 2025.***
- ***Sacramento Metropolitan, El Dorado, Feather River, Placer, and Yolo-Solano Air Districts: Sacramento Region Spare the Air. Air Quality Information for the Sacramento Region. Available at: https://sparetheair.com/health-effects/. Accessed July 2025.***
- ***California Air Resources Board. Glossary of Air Pollution Terms. Available at: http://www.arb.ca.gov/html/gloss.htm. Accessed July 2025.***

Table 6-2
Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS	NAAQS	
			Primary	Secondary
Ozone	1 Hour	0.09 ppm	-	Same as primary
	8 Hour	0.070 ppm	0.070 ppm	
Carbon Monoxide	8 Hour	9 ppm	9 ppm	-
	1 Hour	20 ppm	35 ppm	
Nitrogen Dioxide	Annual Mean	0.030 ppm	53 ppb	Same as primary
	1 Hour	0.18 ppm	100 ppb	-
Sulfur Dioxide	24 Hour	0.04 ppm	-	-
	3 Hour	-	-	0.5 ppm
	1 Hour	0.25 ppm	75 ppb	-
Respirable Particulate Matter (PM_{10})	Annual Mean	20 ug/m^3	-	Same as primary
	24 Hour	50 ug/m^3	150 ug/m^3	
Fine Particulate Matter ($PM_{2.5}$)	Annual Mean	12 ug/m^3	9 ug/m^3	15 ug/m^3
	24 Hour	-	35 ug/m^3	Same as primary
Lead	30 Day Average	1.5 ug/m^3	-	-
	Calendar Quarter	-	1.5 ug/m^3	Same as primary
Sulfates	24 Hour	25 ug/m^3	-	-
Hydrogen Sulfide	1 Hour	0.03 ppm	-	-
Vinyl Chloride	24 Hour	0.010 ppm	-	-
Visibility Reducing Particles	8 Hour	see note below	-	-

ppm = parts per million
ppb = parts per billion
µg/m^3 = micrograms per cubic meter

Note: Statewide Visibility Reducing Particle Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

Source: California Air Resources Board. Ambient Air Quality Standards. July 16, 2024. Available at: https://ww2.arb.ca.gov/sites/default/files/2024-08/AAQS%20Table_ADA_FINAL_07222024.pdf. Accessed July 2025.

Ozone

Ozone is a reactive gas consisting of three oxygen atoms. In the troposphere, ozone is a product of the photochemical process involving the sun's energy, and is a secondary pollutant formed as a result of a complex chemical reaction between reactive organic gases (ROG) and oxides of nitrogen (NO_X) emissions in the presence of sunlight. As such, unlike other pollutants, ozone is not released directly into the atmosphere from any sources. In the stratosphere, ozone exists naturally and shields Earth from harmful incoming ultraviolet radiation. The primary source of ozone precursors is mobile sources, including cars, trucks, buses, construction equipment, and agricultural equipment.

Ground-level ozone reaches the highest level during the afternoon and early evening hours. High levels occur most often during the summer months. Ground-level ozone is a strong irritant that could cause constriction of the airways, forcing the respiratory system to work harder to provide oxygen. Ozone at the Earth's surface causes numerous adverse health effects and is a major

component of smog. High concentrations of ground level ozone can adversely affect the human respiratory system and aggravate cardiovascular disease and many respiratory ailments.

Reactive Organic Gas

ROG refers to several reactive chemical gases composed of hydrocarbon compounds typically found in paints and solvents that contribute to the formation of smog and ozone by involvement in atmospheric chemical reactions. A separate health standard does not exist for ROG. However, some compounds that make up ROG are toxic, such as the carcinogen benzene.

Oxides of Nitrogen

NO_X are a family of gaseous nitrogen compounds and are precursors to the formation of ozone and particulate matter. The major component of NO_X, nitrogen dioxide (NO_2), is a reddish-brown gas that discolors the air and is toxic at high concentrations. NO_X results primarily from the combustion of fossil fuels under high temperature and pressure. On-road and off-road motor vehicles and fuel combustion are the major sources of NO_X. NO_X reacts with ROG to form smog, which could result in adverse impacts to human health, damage the environment, and cause poor visibility. Additionally, NO_X emissions are a major component of acid rain. Health effects related to NO_X include lung irritation and lung damage and can cause increased risk of acute and chronic respiratory disease.

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless, poisonous gas produced by incomplete burning of carbon-based fuels such as gasoline, oil, and wood. When CO enters the body, the CO combines with chemicals in the body, which prevents blood from carrying oxygen to cells, tissues, and organs. Symptoms of exposure to CO can include problems with vision, reduced alertness, and general reduction in mental and physical functions. Exposure to CO can result in chest pain, headaches, reduced mental alertness, and death at high concentrations.

Sulfur Dioxide

Sulfur dioxide (SO_2) is a colorless, irritating gas with a rotten egg odor formed primarily by the combustion of sulfur-containing fossil fuels from mobile sources, such as locomotives, ships, and off-road diesel equipment. SO_2 is also emitted from several industrial processes, such as petroleum refining and metal processing. Similar to airborne NO_X, suspended sulfur oxide particles contribute to poor visibility. The sulfur oxide particles are also a component of PM_{10}. Exposure to SO_2 can result in aggravation of chronic obstruction lung disease and increased risk of acute and chronic respiratory disease.

Particulate Matter

Particulate matter, also known as particle pollution or PM, is a complex mixture of extremely small particles and liquid droplets. Particle pollution is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. The size of particles is directly linked to their potential for causing health impacts. The USEPA is concerned about particles that are 10 micrometers in diameter or smaller (PM_{10}) because those are the particles that generally pass through the throat and nose and enter the lungs. Once inhaled, the particles could affect the heart and lungs and cause serious health effects. USEPA groups particle pollution into three categories based on their size and where they are deposited:

- "Inhalable coarse particles ($PM_{2.5-10}$)," which are found near roadways and dusty industries, are between 2.5 and 10 micrometers in diameter. $PM_{2.5-10}$ is deposited in the thoracic region of the lungs.
- "Fine particles ($PM_{2.5}$)," which are found in smoke and haze, are 2.5 micrometers in diameter and smaller. $PM_{2.5}$ particles could be directly emitted from sources such as forest fires, or could form when gases emitted from power plants, industries, and automobiles react in the air. They penetrate deeply into the thoracic and alveolar regions of the lungs.
- "Ultrafine particles (UFP)," are very, very small particles (less than 0.1 micrometers in diameter) largely resulting from the combustion of fossil fuels, meat, wood, and other hydrocarbons. While UFP mass is a small portion of $PM_{2.5}$, their high surface area, deep lung penetration, and transfer into the bloodstream could result in disproportionate health impacts relative to their mass. UFP is not currently regulated separately, but is analyzed as part of $PM_{2.5}$.

PM_{10}, $PM_{2.5}$, and UFP include primary pollutants, which are emitted directly to the atmosphere and secondary pollutants, which are formed in the atmosphere by chemical reactions among precursors. Generally speaking, $PM_{2.5}$ and UFP are emitted by combustion sources like vehicles, power generation, industrial processes, and wood burning, while PM_{10} sources include the same sources plus roads and farming activities. Fugitive windblown dust and other area sources also represent a source of airborne dust. Long-term PM pollution, especially fine particles, could result in significant health problems including, but not limited to, the following: increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing; decreased lung function; aggravated asthma; development of chronic respiratory disease in children; development of chronic bronchitis or obstructive lung disease; irregular heartbeat; heart attacks; and increased blood pressure.

Lead

Lead is a relatively soft and chemically resistant metal that is a natural constituent of air, water, and the biosphere. Lead forms compounds with both organic and inorganic substances. As an air pollutant, lead is present in small particles. Sources of lead emissions in California include a variety of industrial activities. Gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels. The use of leaded fuel has been mostly phased out, with the result that ambient concentrations of lead have dropped dramatically. However, because lead was emitted in large amounts from vehicles when leaded gasoline was used, lead is present in many soils (especially urban soils) as a result of airborne dispersion and could become re-suspended into the air.

Because lead is slowly excreted by the human body, exposures to small amounts of lead from a variety of sources could accumulate to harmful levels. Effects from inhalation of lead above the level of the AAQS may include impaired blood formation and nerve conduction. Lead can adversely affect the nervous, reproductive, digestive, immune, and blood-forming systems. Symptoms could include fatigue, anxiety, short-term memory loss, depression, weakness in the extremities, and learning disabilities in children. Lead also causes cancer.

Sulfates

Sulfates are the fully oxidized ionic form of sulfur and are colorless gases. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. The sulfur is oxidized to SO_2 during the combustion process and subsequently

converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features.

The sulfates standard established by CARB is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility, and, because they are usually acidic, can harm ecosystems and damage materials and property.

Hydrogen Sulfide

Hydrogen sulfide (H_2S) is associated with geothermal activity, oil and gas production, refining, sewage treatment plants, and confined animal feeding operations. Hydrogen sulfide is extremely hazardous in high concentrations, especially in enclosed spaces (800 ppm can cause death).

Vinyl Chloride

Vinyl chloride (C_2H_3Cl, also known as VCM) is a colorless gas that does not occur naturally, but is formed when other substances such as trichloroethane, trichloroethylene, and tetrachloro-ethylene are broken down. Vinyl chloride is used to make polyvinyl chloride (PVC) which is used to make a variety of plastic products, including pipes, wire and cable coatings, and packaging materials. Exposure to vinyl chloride can result in skin or eye irritation, nausea, headache, dizziness, drowsiness, fatigue, central nervous system depression and cardiac arrhythmias, and liver damage or cancer.

Visibility Reducing Particles

Visibility reducing particles are a mixture of suspended particulate matter consisting of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. The standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

Toxic Air Contaminants

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are also a category of environmental concern. TACs are present in many types of emissions with varying degrees of toxicity. Public exposure to TACs can result from emissions from normal operations, as well as accidental releases. Common stationary sources of TACs include gasoline stations, dry cleaners, and diesel backup generators, which are subject to PCAPCD stationary source permit requirements. The other, often more significant, common source type is on-road motor vehicles, such as cars and trucks, on freeways and roads, and off-road sources such as construction equipment, ships, and trains.

Fossil fueled combustion engines, including those used in cars, trucks, and some pieces of construction equipment, release at least 40 different TACs. In terms of health risks, the most volatile contaminants are diesel particulate matter (DPM), benzene, formaldehyde, 1,3-butadiene, toluene, xylenes, and acetaldehyde. Gasoline vapors contain several TACs, including benzene, toluene, and xylenes. Diesel engines emit a complex mixture of air pollutants, including both gaseous and solid material. The solid material in diesel exhaust, DPM, is composed of carbon particles and numerous organic compounds, including over 40 known cancer-causing organic substances. Examples of such chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene. Diesel exhaust also contains gaseous



pollutants, including ROG and NO_X. Due to the published evidence of a relationship between diesel exhaust exposure and lung cancer and other adverse health effects, the CARB has identified DPM from diesel-fueled engines as a TAC. Although a variety of TACs are emitted by fossil fueled combustion engines, the cancer risk due to DPM exposure represents a more significant risk than the other TACs discussed above.[8]

More than 90 percent of DPM is less than one micrometer in diameter, and, thus, DPM is a subset of $PM_{2.5}$. As a California statewide average, DPM comprises about eight percent of $PM_{2.5}$ in outdoor air, although DPM levels vary regionally due to the non-uniform distribution of sources throughout the State. Most major sources of diesel emissions, such as ships, trains, and trucks, operate in and around ports, rail yards, and heavily-traveled roadways. Such areas are often located near highly populated areas. Thus, elevated DPM levels are mainly an urban problem, with large numbers of people exposed to higher DPM concentrations, resulting in greater health consequences compared to rural areas.

Due to the high levels of diesel activity, high volume freeways, stationary diesel engines, rail yards and facilities attracting heavy and constant diesel vehicle traffic are identified as having the highest associated health risks from DPM. Construction-related activities also have the potential to generate concentrations of DPM from on-road haul trucks and off-road equipment exhaust emissions.

The size of diesel particulates that are of the greatest health concern are fine particles (i.e., $PM_{2.5}$) and UFPs. The small diameter of UFPs imparts the particulates with unique attributes, such as high surface areas and the ability to penetrate deeply into lungs. Once UFPs have been deposited in lungs, the small diameter allows the UFPs to be transferred to the bloodstream. The high surface area of the UFPs also allows for a greater adsorption of other chemicals, which are transported along with the UFPs into the bloodstream of the inhaler, where the chemicals can eventually reach critical organs.[9] The penetration capability of UFPs may contribute to adverse health effects related to heart, lung, and other organ health.[10] UFPs are a subset of DPM and activities that create large amounts of DPM, such as the operations involving heavy diesel-powered engines, also release UFPs. Considering that UFPs are a subset of DPM, and DPM represents a subset of $PM_{2.5}$, estimations of either concentrations or emissions of $PM_{2.5}$ or DPM include UFPs.

Health risks from TACs are a function of both the concentration of emissions and the duration of exposure, which typically are associated with long-term exposure and the associated risk of contracting cancer. Health effects of exposure to TACs other than cancer can include birth defects, neurological damage, and death. Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, State, and federal level. The identification, regulation, and monitoring of TACs is relatively new compared to criteria air pollutants that have established AAQS. TACs are regulated or evaluated on the basis of risk to human health rather than comparison to an AAQS or emission-based threshold.

Diesel Particulate Matter

Diesel powered engines, including locomotive engines, represent a major source of DPM in California. Because locomotive engines emit DPM during operations, areas where locomotive

8 California Air Resources Board. *Reducing Toxic Air Pollutants in California's Communities*. February 6, 2002.
9 Health Effects Institute. *Understanding the Health Effects of Ambient Ultrafine Particles*. January 2013.
10 South Coast Air Quality Management District. *Final 2012 Air Quality Management Plan*. December 2012.

engines are operated in place/idle frequently or for long periods of time can experience increased atmospheric concentrations of DPM. Consequently, the CARB considers rail yards to be substantial sources of TACs.

The Union Pacific J.R. Davis Yard (rail yard), located in Roseville, California, covers approximately 950 acres and is used for service and maintenance operations with approximately 30,000 locomotives visiting the rail yard annually. The rail yard is located approximately three miles northwest of the project site and four miles west of the off-site affordable housing parcel.

In 2004, the CARB and PCAPCD conducted a health risk assessment (HRA) to determine the potential public health risks from DPM emissions due to locomotive activity at the rail yard. The CARB concluded that operation of the rail yard resulted in the emission of approximately 25 tons of DPM in the year 2000. Moving locomotives accounted for 50 percent of the emissions, while idling locomotives accounted for 45 percent and testing accounted for five percent of the DPM emissions from the rail yard. The HRA showed that the potential impacts from DPM emissions originating at the rail yards to residents in the area varied with distance from the rail yard.[11]

Potential impacts related to DPM emissions were estimated based on a 70-year exposure period (i.e., a resident living a given distance from the rail yard for 70 years) and were presented as an increase in cancer risk per million residents. Representing increased cancer risk per million resident means that if a cancer risk of one per million is estimated, then in a population of one million people, one new case of cancer above the expected cancer risk may occur. At the time that the HRA was prepared for the rail yards, the risks estimated based on the DPM emissions from the rail yard ranged from as high as 500 cases per million for residents in proximity to the service area, to 10 cases per million for residents farther away from the project site. At the time of the 2004 study, at least 155,000 people lived within areas with increased cancer risk of 10 in one million or more.[12]

Subsequent to the preparation of the HRA, on December 9, 2004, the PCAPCD authorized an agreement with Union Pacific Railroad (UPRR) concerning mitigation measures and continued air monitoring at the rail yard. In addition, the CARB signed a Memorandum of Understanding (MOU) with the UPRR and BNSF Railway Company to mitigate emissions from major rail yards throughout the State. The PCAPCD agreement included a Mitigation Plan with four main areas of focus: 1) Reduction of unnecessary idling; 2) Introduction of low-sulfur diesel fuel for locomotives; 3) Switcher locomotive fleet replacements/upgrades; and 4) Investigate the use of emission control from the service, test, and maintenance and repair locations using stationary source type of equipment (often referred to as the “hood” or Advanced Locomotive Emission Control System [ALECS]).[13]

In 2009, the PCAPCD summarized findings from ongoing monitoring of the rail yard, and concluded that by the end of 2007, DPM emissions from operations of the rail yard had been reduced from 25 tons per year in 2000 to 19 tons per year in 2007, with emission of all pollutants from the overall facility operations being reduced by 23 percent. The reduction in pollutant emissions is a result of implementation of mitigation measures one through three. While a proof-

11 California Air Resources Board. *Roseville Rail Yard Study*. October 14, 2004.
12 *Ibid*.
13 Placer County Air Pollution Control District. *Memorandum: Final Update Pertaining to the Mitigation Measures and Monitoring Activities for the Union Pacific Roseville Railyard (Information)*. December 10, 2009.

of-concept test was completed for the ALECS technology, ALECS had not been deployed within the rail yard at the time of the 2009 report summarizing the monitoring of the rail yard.[14]

Although the PCAPCD has not released any subsequent health impact analyses based on the 2009 report and measured emissions reductions, the 23 percent reduction in overall emissions would directly reduce the exposure of nearby residences to pollutants; thus, reducing health risks to residents. Since the 2009 study, continued implementation of the PCAPCD-UPRR Agreement, as well as the CARB-UPRR-BNSF MOU, is anticipated to have resulted in maintained emissions reductions or further reductions.[15] In addition, as part of the PCAPCD Assembly Bill (AB) 617 Grant Agreement to implement the Community Air Protection Program, annual reports are prepared which include a summary of all activities associated with Community Air Protection Program tasks conducted by the PCAPCD. As noted in the Annual Report #2, dated March 31, 2020,[16] to investigate complaints regarding diesel exhaust from neighboring communities surrounding the Rail Yard, PCAPCD staff worked with the CARB Enforcement Division and the City of Roseville in order to install a video surveillance system at a City-owned property near the Rail Yard's maintenance shop to better confirm the complaints of excessive locomotive emissions. The surveillance system installed by CARB has a camera directly facing the maintenance yard, which provides video surveillance to assist in the investigation of potential excessive diesel emissions from the locomotives. As noted in Annual Report #3, dated April 1, 2021,[17] PCAPCD is working with additional vendors to update the surveillance systems further.

Furthermore, PCAPCD is working with CARB and the UPRR to discuss possible updates to the locomotive inventory, activity, and emissions data, and potentially develop an updated HRA for the Rail Yard. According to Annual Report #3, PCAPCD and CARB have begun discussions regarding data acquisition and analysis approaches for the HRA update. CARB has obtained the activity data from UPRR, and is evaluating the data quality for further modeling analysis.

The PCAPCD is also planning to purchase PM monitors for deployment around the Rail Yard to provide instant PM concentration measurements from the Rail Yard's activities. The data from the PM monitors could better provide an indication as to how locomotive activities affect local PM concentrations. However, reports summarizing emissions at the rail yards since 2009 have not yet been prepared.[18]

Considering the above, emissions and resulting health risks from the rail yard have decreased from the levels analyzed in the 2004 HRA. However, rail yard activity continues to involve emissions, which could pose health risks to residents in the area.

Naturally Occurring Asbestos

Another concern related to air quality is naturally occurring asbestos (NOA). Asbestos is a term used for several types of naturally-occurring fibrous minerals found in many parts of California. The most common type of asbestos is chrysotile, but other types are also found in California. When rock containing asbestos is broken or crushed, asbestos fibers may be released and become airborne. Exposure to asbestos fibers may result in health issues such as lung cancer,

[14] Placer County Air Pollution Control District. *Memorandum: Final Update Pertaining to the Mitigation Measures and Monitoring Activities for the Union Pacific Roseville Railyard (Information)*. December 10, 2009.
[15] *Ibid*.
[16] Placer County Air Pollution Control District. *AB 617 Grant Agreement Annual Report #2.* March 31, 2020.
[17] Placer County Air Pollution Control District. *AB 617 Grant Agreement Annual Report #3.* April 1, 2021.
[18] Angel Green, Senior Planner, Planning Services Division, Placer County. Personal Communication [email] with Nick Pappani, Vice President, Raney Planning and Management. February 23, 2022.

mesothelioma (a rare cancer of the thin membranes lining the lungs, chest and abdominal cavity), and asbestosis (a non-cancerous lung disease which causes scarring of the lungs). Because asbestos is a known carcinogen, NOA is considered a TAC. Sources of asbestos emissions include: unpaved roads or driveways surfaced with ultramafic rock; construction activities in ultramafic rock deposits; or rock quarrying activities where ultramafic rock is present.

NOA is typically associated with fault zones, and areas containing serpentinite or contacts between serpentinite and other types of rocks. According to the Special Report 190: Relative Likelihood for the Presence of Naturally Occurring Asbestos in Placer County, California, prepared by the Department of Conservation, the project site and the off-site affordable housing parcel are located within an area categorized as least likely to contain NOA, because faults and serpentinite outcroppings are not known to exist in the project area.[19]

Attainment Status and Regional Air Quality Plans

The Federal Clean Air Act (FCAA) and the California Clean Air Act (CCAA) require all areas of California to be classified as attainment, nonattainment, or unclassified as to their status with regard to the NAAQS and/or CAAQS. The FCAA and CCAA require that the CARB, based on air quality monitoring data, designate portions of the State where the federal or State AAQS are not met as "nonattainment areas." Because of the differences between the national and State standards, the designation of nonattainment areas is different under the federal and State legislation. The CCAA requires local air pollution control districts to prepare air quality attainment plans. These plans must provide for district-wide emission reductions of five percent per year averaged over consecutive three-year periods or, provide for adoption of "all feasible measures on an expeditious schedule.

As presented in Table 6-3, under the CCAA, Placer County has been designated nonattainment for the State one-hour ozone, State and federal eight-hour ozone and State PM_{10} standards. The County is designated attainment or unclassified for all other AAQS.

Due to the nonattainment designations, the PCAPCD, along with the other air districts in the SVAB region, is required to develop plans to attain the federal and State standards for ozone and particulate matter. The air quality plans include emissions inventories to measure the sources of air pollutants, to evaluate how well different control measures have worked, and show how air pollution would be reduced. In addition, the plans include the estimated future levels of pollution to ensure that the area would meet air quality goals. Each of the attainment plans currently in effect are discussed in further detail in the Regulatory Context section of this chapter.

Local Air Quality Monitoring

Air quality is monitored by CARB at various locations to determine which air quality standards are being violated, and to direct emission reduction efforts, such as developing attainment plans and rules, incentive programs, etc. The nearest local air quality monitoring station to the project site and the off-site affordable housing parcel is the Roseville-N Sunrise Ave station, which is located approximately five miles east of the project site and approximately seven miles east of the off-site affordable housing parcel. Based on the data available from the applicable monitoring station, Table 6-4 presents the number of days that the State and federal AAQS were exceeded for the three-year period from 2022 to 2024.

[19] California Department of Conservation, California Geological Survey. *Special Report 190: Relative Likelihood for the Presence of Naturally Occurring Asbestos in Placer County, California*. Published 2006.

Table 6-3
Placer County Attainment Status Designations

Pollutant	Averaging Time	California Standards	Federal Standards
Ozone	1 Hour	**Nonattainment**	-
	8 Hour	**Nonattainment**	**Nonattainment**
Carbon Monoxide	1 Hour	Attainment	Attainment
	8 Hour	Attainment	Attainment
Nitrogen Dioxide	Annual Mean	Attainment	Attainment
	1 Hour	Attainment	Unclassified
Sulfur Dioxide	Annual Mean	Attainment	Attainment
	24 Hour	Attainment	Attainment
	1 Hour	Attainment	Attainment
Respirable Particulate Matter (PM_{10})	Annual Mean	**Nonattainment**	-
	24 Hour	**Nonattainment**	Attainment
Fine Particulate Matter ($PM_{2.5}$)	Annual Mean	Attainment	Attainment
	24 Hour	-	**Nonattainment***
Lead	30 Day Average	Attainment	-
	Calendar Quarter	-	Attainment

Note: The Sacramento area was designated as nonattainment for the federal 24-hour $PM_{2.5}$ standard in 2009. Because of regional collaborative efforts, the Sacramento area's local air districts were able to submit a clean data finding report to the U.S. EPA in May 2012, and were issued an attainment determination by U.S. EPA for the Sacramento $PM_{2.5}$ nonattainment area in 2013.

Source: Placer County Air Pollution Control District. CEQA Air Quality Handbook [Table 1-1]. November 21, 2017.

Table 6-4
Air Quality Data Summary (2022-2024)

Pollutant	Standard	Days Standard Was Exceeded		
		2022	2023	2024
1-Hour Ozone	State	0	0	0
	Federal	0	0	0
8-Hour Ozone	State	0	4	4
	Federal	3	8	14
24-Hour $PM_{2.5}$	Federal	1	0	0
24-Hour PM_{10}	State	4	0	0
	Federal	0	0	0
1-Hour Nitrogen Dioxide	State	0	0	0
	Federal	0	0	0

Note: Data was obtained from Roseville-N Sunrise Ave monitoring site, located at 151 North Sunrise Avenue.

Source: California Air Resources Board. Aerometric Data Analysis and Management (iADAM) System. Available at: http://www.arb.ca.gov/adam/welcome.html. Accessed August 2025.

Odors

While offensive odors rarely cause physical harm, they can be unpleasant, leading to considerable annoyance and distress among the public and can generate citizen complaints to local governments and air districts. Adverse effects of odors on residential areas and other sensitive receptors warrant the closest scrutiny; but consideration is also given to other land use types where people congregate, such as recreational facilities, worksites, and commercial areas.

The potential for an odor impact is dependent on a number of variables including the nature of the odor source, distance between a receptor and an odor source, and local meteorological conditions.

One of the most important factors influencing the potential for an odor impact to occur is the distance between the odor source and receptors, also referred to as a buffer zone or setback. The greater the distance between an odor source and receptor, the less concentrated the odor emission would be when reaching the receptor.

Meteorological conditions also affect the dispersion of odor emissions, which determines the exposure concentration of odiferous compounds at receptors. The predominant wind direction in an area influences which receptors are exposed to the odiferous compounds generated by a nearby source. Receptors located upwind from a large odor source may not be affected due to the produced odiferous compounds being dispersed away from the receptors. Wind speed also influences the degree to which odor emissions are dispersed away from any area.

Odiferous compounds could be generated from a variety of source types including both construction and operational activities. Examples of common land use types that typically generate significant odor impacts include, but are not limited to, wastewater treatment plants, sanitary landfills, composting/green waste facilities, recycling facilities, petroleum refineries, chemical manufacturing plants, painting/coating operations, rendering plants, and food packaging plants.

The Dry Creek Wastewater Treatment Plant (WWTP) is located approximately two miles from the project site and approximately four miles from the off-site affordable housing parcel and is considered a potential source of odors. Although the Dry Creek WWTP represents an existing potential source of odors in proximity to the project site and off-site affordable housing parcel, *California Building Industry Assn. v. Bay Area Air Quality Management Dist.* (2015) 62 Cal.4th 369, 377-378 case law dictates that analysis of existing environmental conditions must be limited to the effects of the proposed project on the environment. Nevertheless, the Project-Specific Impacts and Mitigation Measures section of this Chapter includes a brief discussion of potential odors associated with the Dry Creek WWTP for informational purposes only.

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others, due to the types of population groups or activities involved. Children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the effects of air pollution. Accordingly, land uses that are typically considered to be sensitive receptors include residences, schools, day care centers, playgrounds, and medical facilities. The nearest sensitive receptors to the project site are the single-family residences located adjacent to the site's eastern, western, and southern boundaries. Additionally, the nearest sensitive receptors to the off-site affordable housing parcel are the single-family residences located to the west of the parcel, across Watt Avenue, and to the south of the parcel, across PFE Road.

Greenhouse Gas Emissions

GHGs are gases that absorb and emit radiation within the thermal infrared range, trapping heat in the Earth's atmosphere. Some GHGs occur naturally and are emitted into the atmosphere through both natural processes and human activities. Other GHGs are created and emitted solely through human activities. The principal GHGs that enter the atmosphere due to human activities

are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated carbons. Other common GHGs include water vapor, ozone, and aerosols. The increase in atmospheric concentrations of GHG due to human activities has resulted in more heat being held within the atmosphere, which is the accepted explanation for global climate change.

The primary GHG emitted by human activities is CO_2, with the next largest components being CH_4 and N_2O. A wide variety of human activities result in the emission of CO_2. Some of the largest sources of CO_2 include the burning of fossil fuels for transportation and electricity, industrial processes including fertilizer production, agricultural processing, and cement production. The primary sources of CH_4 emissions include domestic livestock sources, decomposition of wastes in landfills, releases from natural gas systems, coal mine seepage, and manure management. The main human activities producing N_2O are agricultural soil management, fuel combustion in motor vehicles, nitric acid production, manure management, and stationary fuel combustion. Emissions of GHG by economic sector indicate that energy-related activities account for the majority of U.S. emissions. Electricity generation is the largest single-source of GHG emissions, and transportation is the second largest source, followed by industrial activities. The agricultural, commercial, and residential sectors account for the remainder of GHG emission sources.[20]

Emissions of GHG are partially offset by uptake of carbon and sequestration in trees, agricultural soils, landfilled yard trimmings and food scraps, and absorption of CO_2 by the Earth's oceans. Additional emission reduction measures for GHG could include, but are not limited to, compliance with local, State, or federal plans or strategies for GHG reductions, on-site and off-site mitigation, and project design features. Attainment concentration standards for GHGs have not been established by the federal or State government.

Global Warming Potential

Global warming potential (GWP) is one type of simplified index (based upon radiative properties) that can be used to estimate the potential future impacts of emissions of various gases. According to the USEPA, the GWP of a gas, or aerosol, to trap heat in the atmosphere is the "cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas." The reference gas for comparison is CO_2. GWP is based on a number of factors, including the heat-absorbing ability of each gas relative to that of CO_2, as well as the decay rate of each gas relative to that of CO_2. Each gas's GWP is determined by comparing the radiative forcing associated with emissions of that gas versus the radiative forcing associated with emissions of the same mass of CO_2, for which the GWP is set at one. Methane gas, for example, is estimated by the USEPA to have a comparative global warming potential 25 times greater than that of CO_2, as shown in Table 6-5.

As shown in the table, at the extreme end of the scale, sulfur hexafluoride is estimated to have a comparative GWP 22,800 times that of CO_2. The atmospheric lifetimes of such GHGs are estimated by the USEPA to vary from 50 to 200 years for CO_2, to 50,000 years for CF_4. Longer atmospheric lifetimes allow GHG to buildup in the atmosphere; therefore, longer lifetimes correlate with the GWP of a gas. The common indicator for GHG is expressed in terms of metric tons of CO_2 equivalents ($MTCO_2e$), which is calculated based on the GWP for each pollutant.

[20] U.S. Environmental Protection Agency. *Sources of Greenhouse Gas Emissions*. Available at: https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions. Accessed October 2025.

Effects of Global Climate Change

Globally, climate change has the potential to affect numerous environmental resources through uncertain impacts related to future air temperatures and precipitation patterns. The Intergovernmental Panel on Climate Change's (IPCC) Climate Change 2021: The Physical Science Basis report indicated that warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia.[21] Signs that global climate change has occurred include:

- Warming of the atmosphere and ocean;
- Diminished amounts of snow and ice;
- Rising sea levels; and
- Ocean acidification.

Table 6-5
GWPs and Atmospheric Lifetimes of Select GHGs

Gas	Atmospheric Lifetime (years)	GWP (100-year time horizon)
Carbon Dioxide (CO_2)	See footnote[1]	1
Methane (CH_4)	12.4	28
Nitrous Oxide (N_2O)	121	265
HFC-23	222	12,400
HFC-134a	13.4	1,300
HFC-152a	1.5	138
PFC: Tetrafluoromethane (CF_4)	50,000	6,630
PFC: Hexafluoroethane (C_2F_6)	10,000	11,100
Sulfur Hexafluoride (SF_6)	3,200	23,500

[1] For a given amount of CO_2 emitted, some fraction of the atmospheric increase in concentration is quickly absorbed by the oceans and terrestrial vegetation, some fraction of the atmospheric increase will only slowly decrease over a number of years, and a small portion of the increase will remain for many centuries or more.

Source: U.S. Environmental Protection Agency. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022 [Table 1-2]. April 11, 2024.

Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. A scientific consensus confirms that climate change is already affecting California. The Office of Environmental Health Hazard Assessment (OEHHA) identified various indicators of climate change in California, which are scientifically based measurements that track trends in various aspects of climate change. Many indicators reveal discernable evidence that climate change is occurring in California and is having significant, measurable impacts in the State. Changes in the State's climate have been observed, including:

- An increase in annual average air temperature with record warmth from 2012 to 2016;
- More frequent extreme heat events;
- More extreme drought;
- A decline in winter chill; and
- An increase in variability of statewide precipitation.

[21] Intergovernmental Panel on Climate Change. *Climate Change 2021: The Physical Science Basis Summary for Policymakers*. Available at: https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf. Accessed July 2025.

Warming temperatures and changing precipitation patterns have altered California's physical systems—the ocean, lakes, rivers and snowpack—upon which the State depends. Winter snowpack and spring snowmelt runoff from the Sierra Nevada and southern Cascade Mountains provide approximately one-third of the State's annual water supply. Impacts of climate on physical systems have been observed, such as high variability of snow-water content (i.e., amount of water stored in snowpack), decrease in snowmelt runoff, glacier change (loss in area), rise in sea levels, increase in average lake water temperature and coastal ocean temperature, and a decrease in dissolved oxygen in coastal waters. Impacts of climate change on biological systems, including humans, wildlife, and vegetation, have also been observed, including climate change impacts on terrestrial, marine, and freshwater ecosystems. However, it should be noted that the effects of climate change are not fully understood. For example, due to a series of atmospheric rivers that occurred throughout the 2022-2023 winter season, California saw the most snow the State has seen since the record was set in the 1982-1983 winter season.

Nonetheless, in Placer County, specifically, effects of climate change will be more localized. Such hazards could include agriculture and forestry pests and diseases, avalanche, drought, extreme heat, flooding, fog, human health hazards, landslides, severe weather, severe winter weather, and wildfire. Some hazards, such as wildfire and drought, relate directly to the occurrence of other hazards, such as agriculture and forestry pests and diseases, landslides, and flooding. Placer County is currently experiencing some of the aforementioned changes, and others may not occur for several decades.[22]

6.3 REGULATORY CONTEXT

Air quality and GHG emissions are monitored and regulated through the efforts of various international, federal, State, and local government agencies. Agencies work jointly and individually to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for regulating and improving the air quality within the project area and monitoring or reducing GHG emissions are discussed below.

Federal Regulations Related to Air Quality

The following discussion provides a summary of the federal regulations relevant to air quality, organized by pollutant type.

Criteria Pollutants

The FCAA, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The USEPA is responsible for implementing most aspects of the FCAA, including setting NAAQS for major air pollutants; setting hazardous air pollutant standards; approving state attainment plans; setting motor vehicle emission standards; issuing stationary source emission standards and permits; and establishing acid rain control measures, stratospheric ozone protection measures, and enforcement provisions. Under the FCAA, NAAQS are established for the following criteria pollutants: ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead.

The NAAQS describes acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for ozone, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for ozone, NO_2, SO_2, PM_{10}, $PM_{2.5}$ are based on statistical calculations over one- to three-

[22] Placer County. *Placer County Sustainability Plan: A Greenhouse Gas Emission Reduction Plan and Adaptation Strategy* [pg. 14]. January 28, 2020.

year periods, depending on the pollutant. The FCAA requires the USEPA to reassess the NAAQS at least every five years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a state implementation plan that demonstrates how those areas will attain the standards within mandated time frames.

Hazardous Air Pollutants/Toxic Air Contaminants

The 1977 FCAA amendments required the USEPA to identify national emission standards for hazardous air pollutants to protect public health and welfare. Hazardous air pollutants include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Under the 1990 FCAA Amendments, which expanded the control program for hazardous air pollutants, 189 substances and chemical families were identified as hazardous air pollutants.

Federal Regulations Related to GHG Emissions

The following are the federal regulations relevant to GHG emissions.

Federal Vehicle Standards

In 2010, President Obama issued a memorandum directing the Department of Transportation, Department of Energy, USEPA, and National Highway Traffic Safety Administration (NHTSA) to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, the USEPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017 through 2025 light-duty vehicles. The proposed standards were projected to achieve emission rates as low as 163 grams of CO_2 per mile by model year 2025 on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if the foregoing emissions level was achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017 through 2021 (77 FR 62624–63200), and NHTSA intended to set standards for model years 2022 through 2025 in future rulemaking.

In August 2016, the USEPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program would have applied to vehicles with model years 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all types of sizes of buses and work trucks. The final standards were expected to lower CO_2 emissions by approximately 1.1 billion metric tons (MT), and reduce oil consumption by up to two billion barrels over the lifetime of the vehicles sold under the program.

In August 2018, the USEPA and NHTSA proposed to amend certain fuel economy and GHG standards for passenger cars and light trucks and establish new, less-stringent standards for model years 2021 through 2026. Compared to maintaining the post-2020 standards that were previously in place, the 2018 proposal would increase U.S. fuel consumption by approximately 0.5 million barrels per day, and would impact the global climate by 3/1000th of one degree Celsius by 2100. California and other states stated their intent to challenge federal actions that would delay or eliminate GHG reduction measures, and committed to cooperating with other countries to implement global climate change initiatives.

On September 27, 2019, the USEPA and NHTSA published the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program (84 FR 51,310), which became effective

November 26, 2019. The Part One Rule revokes California's authority to set its own GHG emissions standards and set zero-emission-vehicle mandates in California. On March 31, 2020, the USEPA and NHTSA issued the Part Two Rule, which sets CO_2 emissions standards and corporate average fuel economy standards for passenger vehicles and light-duty trucks for model years 2021 through 2026. On January 20, 2021, an Executive Order (EO) was issued on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, which includes review of the Part One Rule by April 2021 and review of the Part Two Rule by July 2021. In response to the Part One Rule, in December 2021, the U.S. Department of Transportation withdrew its portions of the "SAFE I" rule. As a result, states are now allowed to issue their own GHG emissions standards and zero-emissions vehicle mandates.[23] In addition, the Part Two Rule was adopted to revise the existing national GHG emission standards for passenger cars and light trucks through model year 2026. These standards are the strongest vehicle emissions standards ever established for the light-duty vehicle sector and will result in avoiding more than three billion tons of GHG emissions through 2050.[24]

State Regulations Related to Air Quality

The following discussion summarizes applicable State regulations related to air quality, organized by pollutant type. Only the most prominent and applicable California air quality-related legislation is included below. An exhaustive list and extensive details of California air quality legislation can be found at the CARB website (http://www.arb.ca.gov/html/lawsregs.htm).

Criteria Air Pollutants

The FCAA delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB, which became part of the California Environmental Protection Agency (CalEPA) in 1991, is responsible for ensuring implementation of the CCAA of 1988, responding to the FCAA, and regulating emissions from motor vehicles and consumer products.

CARB has established CAAQS, which are generally more restrictive than the NAAQS. The CAAQS describe adverse conditions; that is, pollution levels must be below these standards before a basin can attain the standard. Air quality is considered "in attainment" if pollutant levels are continuously below the CAAQS and do not violate the standards more than once each year. The CAAQS for ozone, CO, SO_2 (one-hour and 24-hour), NO_2, PM_{10}, $PM_{2.5}$, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. The NAAQS and CAAQS are presented in Table 6-2.

Hazardous Air Pollutants/Toxic Air Contaminants

The State Air Toxics Program was established in 1983 under AB 1807 (Tanner), and involved definition of a list of TACs. The California TAC list identifies more than 700 pollutants, of which carcinogenic and noncarcinogenic toxicity criteria have been established for a subset of these pollutants pursuant to the California Health and Safety Code. The State list of TACs includes the

[23] National Highway Traffic Safety Administration. *In Removing Major Roadblock to State Action on Emissions Standards, U.S. Department of Transportation Advances Biden-Harris Administration's Climate and Jobs Goals.* Available at: https://www.nhtsa.gov/press-releases/cafe-preemption-final-rule. Accessed July 2025.

[24] U.S. Environmental Protection Agency. *Final Rule to Revise Existing National GHG Emissions Standards for Passenger Cars and Light Trucks Through Model Year 2026*. Available at: https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-revise-existing-national-ghg-emissions. Accessed July 2025.

federally-designated hazardous air pollutants. In 1987, the Legislature enacted the Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) to address public concern over the release of TACs into the atmosphere. AB 2588 law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hot spots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over five years. TAC emissions from individual facilities are quantified and prioritized. "High-priority" facilities are required to perform a health risk assessment, and, if specific thresholds are exceeded, the facility operator is required to communicate the results to the public in the form of notices and public meetings.

CARB Air Quality and Land Use Handbook

CARB's Air Quality and Land Use Handbook: A Community Health Perspective (CARB Handbook) addresses the importance of considering health risk issues when siting sensitive land uses, including residential development, in the vicinity of intensive air pollutant emission sources including freeways or high-traffic roads, distribution centers, ports, petroleum refineries, chrome plating operations, dry cleaners, and gasoline dispensing facilities (GDFs).[25] The CARB Handbook draws upon studies evaluating the health effects of traffic traveling on major interstate highways in metropolitan California centers within Los Angeles (Interstate-405 and Interstate-710), the San Francisco Bay, and San Diego areas. The recommendations identified by CARB, including siting residential uses a minimum distance of 500 feet from freeways or other high-traffic roadways, are consistent with those adopted by the State of California for location of new schools. Specifically, the CARB Handbook recommends, "Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day."[26]

Importantly, the Introduction chapter of the CARB Handbook clarifies that the guidelines are strictly advisory, recognizing that: "[l]and use decisions are a local government responsibility. The Air Resources Board Handbook is advisory and these recommendations do not establish regulatory standards of any kind." CARB recognizes that there may be land use objectives as well as meteorological and other site-specific conditions that need to be considered by a governmental jurisdiction relative to the general recommended setbacks, specifically stating, "[t]hese recommendations are advisory. Land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues."[27]

Diesel Particulate Matter

In 2000, CARB approved a comprehensive diesel risk reduction plan to reduce diesel emissions, including DPM, from new and existing diesel-fueled vehicles and engines. The regulation was anticipated to result in an 80 percent decrease in statewide diesel health risk by 2020 compared with the diesel risk in 2000. Additional regulations apply to new trucks and diesel fuel, including the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Off-Road Diesel Vehicle Regulation, and the New Off-Road Compression-Ignition (Diesel) Engines and Equipment program. The aforementioned regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel-powered equipment. Several Airborne Toxic Control Measures (ATCMs)

25 California Air Resources Board. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005.
26 *Ibid.*
27 *Ibid.*

exist that reduce diesel emissions, including In-Use Off-Road Diesel-Fueled Fleets (13 California Code of Regulations [CCR] 2449 et seq.) and In-Use On-Road Diesel-Fueled Vehicles (13 CCR 2025).

Heavy-Duty Diesel Truck and Bus Regulation

CARB adopted the final Heavy-Duty Truck and Bus Regulation, Title 13, Division 3, Chapter 1, Section 2025, on December 31, 2014, to reduce DPM and NO_X emissions from heavy-duty diesel vehicles. The rule requires nearly all diesel trucks and buses to be compliant with the 2010 model year engine requirement by January 1, 2023. CARB also adopted an ATCM to limit idling of diesel-fueled commercial vehicles on December 12, 2013. The rule requires diesel-fueled vehicles with gross vehicle weights greater than 10,000 pounds to idle no more than five minutes at any location (13 CCR 2485).

California Health and Safety Code Section 41700

Section 41700 of the Health and Safety Code states that a person must not discharge from any source whatsoever quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or that endanger the comfort, repose, health, or safety of any of those persons or the public; or that cause, or have a natural tendency to cause, injury or damage to business or property. Section 41700 also applies to sources of objectionable odors.

Heavy-Duty Vehicle Idling Emission Reduction Program

On October 20, 2005, CARB approved a regulatory measure to reduce emissions of toxics and criteria pollutants by limiting idling of new and in-use sleeper berth equipped diesel trucks.[28] The regulation established new engine and in-use truck requirements and emission performance requirements for technologies used as alternatives to idling the truck's main engine. For example, the regulation requires 2008 and newer model year heavy-duty diesel engines to be equipped with a non-programmable engine shutdown system that automatically shuts down the engine after five minutes of idling, or optionally meet a stringent NO_X emission standard. The regulation also requires operators of both in-state and out-of-state registered sleeper berth equipped trucks to manually shut down their engine when idling more than five minutes at any location within California. Emission producing alternative technologies such as diesel-fueled auxiliary power systems and fuel-fired heaters are also required to meet emission performance requirements that ensure emissions are not exceeding the emissions of a truck engine operating at idle.

In-Use Off-Road Diesel Vehicle Regulation

On July 26, 2007, CARB adopted a regulation to reduce DPM and NO_X emissions from in-use (existing), off-road, heavy-duty diesel vehicles in California.[29] Such vehicles are used in construction, mining, and industrial operations. The regulation is designed to reduce harmful emissions from vehicles by subjecting fleet owners to retrofit or accelerated replacement/repower requirements, imposing idling limitations on owners, operators, renters, or lessees of off-road diesel vehicles. The idling limits require operators of applicable off-road vehicles (self-propelled diesel-fueled vehicles 25 horsepower and up that were not designed to be driven on-road) to limit idling to less than five minutes. The idling requirements are specified in Title 13 of the CCR.

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28 California Air Resources Board. *Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling*. October 24, 2013. Available at: https://ww2.arb.ca.gov/our-work/programs/atcm-to-limit-vehicle-idling. Accessed June 2025.

29 California Air Resources Board. *In-Use Off-Road Diesel Vehicle Regulation*. December 10, 2014. Available at: http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm. Accessed June 2025.

State Regulations Related to GHG Emissions

The statewide GHG emissions regulatory framework is summarized below. The following text describes EOs, legislation, regulations, and other plans and policies that would directly or indirectly reduce GHG emissions and/or address climate change issues. The following discussion does not include an exhaustive list of applicable regulations; rather, only the most prominent and applicable California legislation related to GHG emissions and climate change is included below.

State Climate Change Targets

California has taken a number of actions to address climate change, including EOs, legislation, and CARB plans and requirements, which are summarized below.

Executive Order S-3-05

EO S-3-05 (June 2005) established California's GHG emissions reduction targets and laid out responsibilities among the State agencies for implementing the EO and for reporting on progress toward the targets. The EO established the following targets:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

EO S-3-05 also directed CalEPA to report biannually on progress made toward meeting the GHG targets and the impacts to California due to global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry. The Climate Action Team was formed, which subsequently issues yearly GHG reduction report cards to track the progress of emission reduction strategies. Each report card documents the effectiveness of measures to reduce GHG in California, presents GHG emissions from State agencies' operations, and shows reductions that have occurred in the two years prior to publication.

Assembly Bill 32

In furtherance of the goals established in EO S-3-05, the Legislature enacted AB 32 (Núñez and Pavley). The bill is referred to as the California Global Warming Solutions Act of 2006 (September 27, 2006). AB 32 provided initial direction on creating a comprehensive, multi-year program to limit California's GHG emissions at 1990 levels by 2020 and initiate the transformations required to achieve the State's long-range climate objectives. AB 32 also required that the CARB prepare a "scoping plan" for achieving the maximum technologically feasible and cost-effective GHG emission reductions by 2020. The CARB's Scoping Plan is described in further detail below.

Executive Order B-30-15

EO B-30-15 (April 2015) identified an interim GHG reduction target in support of targets previously identified under EO S-3-05 and AB 32. EO B-30-15 set an interim target goal of reducing GHG emissions to 40 percent below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80 percent below 1990 levels by 2050 as set forth in EO S-3-05. To facilitate achieving this goal, EO B-30-15 called for an update to the CARB's Climate Change Scoping Plan: A Framework for Change (Scoping Plan) to express the 2030 target in terms of million metric tons (MMT) of CO_2e. The CARB's Scoping Plan is discussed in further detail below. The EO also called for State agencies to continue to develop and implement GHG emission reduction programs in support of the reduction targets.

Senate Bill 32 and Assembly Bill 197

Senate Bill (SB) 32 and AB 197 (enacted in 2016) are companion bills. SB 32 codified the 2030 emissions reduction goal of EO B-30-15 by requiring CARB to ensure that statewide GHG emissions are reduced to 40 percent below 1990 levels by 2030. AB 197 established the Joint Legislative Committee on Climate Change Policies, consisting of at least three members of the Senate and three members of the Assembly, to provide ongoing oversight over implementation of the State's climate policies. AB 197 also added two members of the Legislature to the Board as non-voting members; requires CARB to make available and update (at least annually through the CARB's website) emissions data for GHGs, criteria air pollutants, and TACs from reporting facilities; and requires CARB to identify specific information for GHG emissions reduction measures when updating the Scoping Plan.

CARB's Climate Change Scoping Plan

One specific requirement of AB 32 is for CARB to prepare a scoping plan for achieving the maximum technologically feasible and cost-effective GHG emission reductions by 2020 (Health and Safety Code Section 38561[a]), and to update the Scoping Plan at least once every five years. In 2008, CARB approved the first Scoping Plan. The Scoping Plan included a mix of recommended strategies that combined direct regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs calculated to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the State's long-range climate objectives. The key elements of the Scoping Plan include the following:

1. Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
2. Achieving a statewide renewable energy mix of 33 percent;
3. Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85 percent of California's GHG emissions;
4. Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;
5. Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard (LCFS) (17 CCR, Section 95480 et seq.); and
6. Creating targeted fees, including a public goods charge on water use, fees on high GWP gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation.

The Scoping Plan also identified local governments as essential partners in achieving California's goals to reduce GHG emissions because they have broad influence and, in some cases, exclusive authority over activities that contribute to significant direct and indirect GHG emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Specifically, the Scoping Plan encouraged local governments to adopt a reduction goal for municipal operations and for community emissions to reduce GHGs by approximately 15 percent from 2008 levels by 2020. Many local governments developed community-scale local GHG reduction plans based on this Scoping Plan recommendation.

In 2014, CARB approved the first update to the Scoping Plan. The First Update to the Climate Change Scoping Plan: Building on the Framework (First Update) defined the State's GHG emission reduction priorities for the next five years and laid the groundwork to start the transition

to the post-2020 goals set forth in EO S-3-05 and EO B-16-2012. The First Update concluded that California is on track to meet the 2020 target but recommended a 2030 mid-term GHG reduction target be established to ensure a continuation of action to reduce emissions. The First Update recommended a mix of technologies in key economic sectors to reduce emissions through 2050, including energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and the rapid market penetration of efficient and clean energy technologies. As part of the First Update, CARB recalculated the State's 1990 emissions level using more recent GWPs identified by the IPCC, from 427 MMT CO_2e to 431 MMT CO_2e.

In 2015, as directed by EO B-30-15, CARB began working on an update to the Scoping Plan to incorporate the 2030 target of 40 percent below 1990 levels by 2030 to keep California on a trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80 percent below 1990 levels by 2050, as set forth in EO S-3-05. In summer 2016, the Legislature affirmed the importance of addressing climate change through passage of SB 32 (Pavley, Chapter 249, Statutes of 2016).

In December 2017, the Scoping Plan was once again updated. The 2017 Scoping Plan built upon the successful framework established in the initial Scoping Plan and First Update, while identifying new, technologically feasible and cost-effective strategies that would serve as the framework to achieve the 2030 GHG target as established by SB 32 and define the State's climate change priorities to 2030 and beyond. For local governments, the 2017 Scoping Plan replaced the initial Scoping Plan's 15 percent reduction goal with a recommendation to aim for a communitywide goal of no more than six $MTCO_2e$ per capita by 2030, and no more than two $MTCO_2e$ per capita by 2050, which are consistent with the State's long-term goals. The 2017 Scoping Plan recognized the benefits of local government GHG planning (e.g., through Climate Action Plans [CAPs]) and provided more information regarding tools to support those efforts. The 2017 Scoping Plan also recognized the CEQA streamlining provisions for project-level review where a legally adequate CAP exists.

When discussing project-level GHG emissions reduction actions and thresholds in the context of CEQA, the 2017 Scoping Plan stated that "achieving no net additional increase in GHG emissions, resulting in no contribution to GHG impacts, is an appropriate overall objective for new development" for project-level CEQA analysis, but also recognized that such a standard may not be appropriate or feasible for every development project. The 2017 Scoping Plan further provided that "the inability of a project to mitigate its GHG emissions to net zero does not imply the project results in a substantial contribution to the cumulatively significant environmental impact of climate change under CEQA."

The most recent update to the Scoping Plan, the 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan) was adopted by the CARB in December 2022.[30] The 2022 Scoping Plan builds upon previous efforts to reduce GHG emissions and is designed to continue to shift the California economy away from dependence on fossil fuels. The 2022 Scoping Plan, the most comprehensive and far-reaching Scoping Plan developed to date, identifies a technologically feasible and cost-effective path to achieve carbon neutrality by 2045 while also assessing the progress California is making toward reducing its GHG emissions by at least 40 percent below 1990 levels by 2030, as called for in SB 32 and laid out in the 2017 Scoping Plan. The 2022 Scoping Plan also lays out a more ambitious 48 percent reduction target by 2030. The 2030 target

[30] California Air Resources Board. *2022 Scoping Plan for Achieving Carbon Neutrality*. November 16, 2022.

is an interim but important stepping stone along the critical path to the broader goal of deep decarbonization by 2045. The relatively longer path assessed in the Scoping Plan incorporates, coordinates, and leverages many existing and ongoing efforts to reduce GHGs and air pollution, while identifying new clean technologies and energy. Given the focus on carbon neutrality, the Scoping Plan also includes discussion for the first time of the Natural and Working Lands (NWL) sectors as both sources of emissions and carbon sinks.

The 2022 Scoping Plan lays out a path to achieve targets for carbon neutrality and reduce GHG emissions by 85 percent below 1990 levels by 2045, as directed by AB 1279. The actions and outcomes in the plan will achieve significant reductions in fossil fuel combustion by deploying clean technologies and fuels, further reductions in short-lived climate pollutants, support for sustainable development, increased action on NWL to reduce emissions and sequester carbon, and the capture and storage of carbon.

CARB's Regulations for the Mandatory Reporting of GHG Emissions

CARB's Regulation for the Mandatory Reporting of GHG Emissions (17 CCR 95100–95157) incorporated by reference certain requirements that the USEPA promulgated in its Final Rule on Mandatory Reporting of GHGs (40 Code of Federal Regulations [CFR] Part 98). In general, entities subject to the Mandatory Reporting Regulation that emit more than 10,000 $MTCO_2e$ per year are required to report annual GHGs through the California Electronic GHG Reporting Tool. Certain sectors, such as refineries and cement plants, are required to report regardless of emission levels. Entities that emit more than the 25,000 $MTCO_2e$ per year threshold are required to have their GHG emission report verified by a CARB-accredited third party.

Senate Bill 1383

SB 1383 establishes specific targets for the reduction of short-lived climate pollutants (SLCPs) (40 percent below 2013 levels by 2030 for CH_4 and HFCs, and 50 percent below 2013 levels by 2030 for anthropogenic black carbon), and provides direction for reductions from dairy and livestock operations and landfills. Accordingly, CARB adopted its SLCP Reduction Strategy in March 2017. The SLCP Reduction Strategy establishes a framework for the statewide reduction of emissions of black carbon, CH_4, and fluorinated gases.

Executive Order B-55-18/Assembly Bill 1279

EO B-55-18 (September 2018) establishes a statewide policy for California to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net-negative emissions thereafter. The goal is an addition to the existing statewide targets of reducing the State's GHG emissions. CARB has prepared the 2022 Scoping Plan, as discussed above, which identifies and recommends measures to achieve the carbon neutrality goal. On September 16, 2022, AB 1279, also known as the California Climate Crisis Act, codified the carbon neutrality goal established by EO B-55-18.

Mobile Sources

The following regulations relate to the control of GHG emissions from mobile sources. Mobile sources include both on-road vehicles and off-road equipment.

Assembly Bill 1493

AB 1493 (Pavley) (July 2002) was enacted in response to the transportation sector accounting for more than half of California's CO_2 emissions. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the State

board to be vehicles that are primarily used for non-commercial personal transportation in the State. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. When fully phased in, the near-term (2009–2012) standards would result in a reduction of approximately 22 percent of GHG emissions compared to the emissions from the 2002 fleet, and the mid-term (2013–2016) standards would result in a reduction of approximately 30 percent.

Senate Bill 375

SB 375 (Steinberg) (September 2008) addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. SB 375 requires CARB to adopt regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035, and to update those targets every eight years. SB 375 requires the State's 18 regional metropolitan planning organizations to prepare a sustainable communities strategy as part of their Regional Transportation Plans that will achieve the GHG reduction targets set by CARB. If a metropolitan planning organization is unable to devise a sustainable communities strategy to achieve the GHG reduction target, the metropolitan planning organization must prepare an alternative planning strategy demonstrating how the GHG reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies.

Pursuant to California Government Code Section 65080(b)(2)(K), a sustainable communities strategy does not (1) regulate the use of land, (2) supersede the land use authority of cities and counties, or (3) require that a city's or county's land use policies and regulations, including those in a general plan, be consistent with the sustainable community strategy. Nonetheless, SB 375 makes regional and local planning agencies responsible for developing those strategies as part of the federally required metropolitan transportation planning process and the State-mandated housing element process.

Executive Order N-79-20

EO N-79-20 (September 2020) directs the State to require that 100 percent of new passenger cars and light-duty trucks sold in California be zero-emission vehicles (ZEVs) by the year 2035. EO N-79-20 focuses on new vehicle sales for automakers, not existing cars and trucks already owned by California residents. The primary mechanism for achieving the ZEV target for passenger cars and light trucks is the Advanced Clean Cars II (ACC II) Program, as discussed in further detail below.

Advanced Clean Cars Program and Zero-Emissions Vehicle Program

The Advanced Clean Cars Program (January 2012) is an emissions-control program for model years 2015 through 2025. The program combines the control of smog- and soot-causing pollutants and GHG emissions into a single coordinated package. The package includes elements to reduce smog-forming pollution, reduce GHG emissions, promote clean cars, and provide the fuels for clean cars. To improve air quality, CARB has implemented new emission standards to reduce smog-forming emissions beginning with 2015 model year vehicles. By 2025, implementation of the rule is anticipated to reduce emissions of smog-forming pollution from cars by 75 percent compared to the average new car sold in 2015. To reduce GHG emissions, CARB, in conjunction with the USEPA and NHTSA, adopted GHG standards for model year 2017 to 2025 vehicles; the standards were estimated to reduce GHG emissions by 34 percent by 2025. The zero-emissions vehicle program acts as the focused technology of the Advanced Clean Cars

Program by requiring manufacturers to produce increasing numbers of zero-emissions vehicles and plug-in hybrid electric vehicles in the 2018 to 2025 model years.

In addition, the Advanced Clean Cars II Program was approved by CARB in August 2022 to establish the next phase of regulations beginning with the 2026 model year. The Advanced Clean Cars II Program (1) increased the stringency of the smog-causing criteria pollutant standards; (2) updated the ZEV regulation to require that 100 percent of new passenger vehicles meet zero-emission standards (including plug-in hybrids) by the 2035 model year, in compliance with EO N-79-20; and (3) established measures to ensure ZEV can provide enduring emission reductions. However, on May 22, 2025, the U.S. House of Representatives passed three Congressional Review Act (CRA) resolutions to rescind the U.S EPA's waiver for the Advanced Clean Cars II Program. The Senate passed all three resolutions on May 22, 2025, and President Donald Trump signed the CRA resolutions on June 12, 2025. Subsequently, a lawsuit has been filed by the State Attorney General on June 12, 2025 against the federal government's use of the CRA to upend California's clean vehicles program.[31] As such, the future enforceability of the Advanced Clean Cars II Program is currently unknown.

Executive Order B-16-12

EO B-16-12 (March 2012) required that State entities under the governor's direction and control support and facilitate the rapid commercialization of zero-emissions vehicles. The order directed CARB, California Energy Commission (CEC), California Public Utilities Commission (CPUC), and other relevant agencies to work with the Plug-In Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve goals by 2015, 2020, and 2025. On a statewide basis, EO B-16-12 established a target reduction of GHG emissions from the transportation sector equaling 80 percent less than 1990 levels by 2050. EO B-16-12 did not apply to vehicles that have special performance requirements necessary for the protection of the public safety and welfare.

Assembly Bill 1236

AB 1236 (October 2015) (Chiu) required a city, county, or city and county to approve an application for the installation of electric vehicle charging stations, as defined, through the issuance of specified permits unless the city or county makes specified written findings based on substantial evidence in the record that the proposed installation would have a specific, adverse impact upon the public health or safety, and a feasible method to satisfactorily mitigate or avoid the specific, adverse impact does not exist. The bill provided for appeal of that decision to the planning commission, as specified. AB 1236 required electric vehicle charging stations to meet specified standards. The bill required a city, county, or city and county with a population of 200,000 or more residents to adopt an ordinance, by September 30, 2016, that created an expedited and streamlined permitting process for electric vehicle charging stations. The bill also required a city, county, or city and county with a population of less than 200,000 residents to adopt the ordinance by September 30, 2017.

Water

The following regulations relate to the conservation of water, which reduces GHG emissions related to electricity demands from the treatment and transportation of water.

[31] State of California Department of Justice. *California Will Not Waver in Defending Itself from Federal Overreach: Attorney General Bonta Sues Trump Administration for Attack on California's Clean Vehicles Program.* Available at: https://oag.ca.gov/news/press-releases/california-will-not-waver-defending-itself-federal-overreach-attorney-general. Accessed June 12, 2025.

Executive Order B-29-15

In response to a drought in California, EO B-29-15 (April 2015) set a goal of achieving a statewide reduction in potable urban water usage of 25 percent relative to water use in 2013. The term of the EO extended through February 28, 2016, although many of the directives subsequently became permanent water-efficiency standards and requirements. The EO includes specific directives that set strict limits on water usage in the State. In response to EO B-29-15, the California DWR modified and adopted a revised version of the Model Water Efficient Landscape Ordinance (MWELO) that, among other changes, significantly increases the requirements for landscape water use efficiency, and broadens the applicability of the ordinance to include new development projects with smaller landscape areas.

Solid Waste

The following regulations relate to the generation of solid waste and means to reduce GHG emissions from solid waste produced within the State.

Assembly Bill 939 and Assembly Bill 341

In 1989, AB 939, known as the Integrated Waste Management Act (California Public Resources Code [PRC] Sections 40000 et seq.), was passed because of the observed increase in waste stream and the decrease in landfill capacity.

AB 341 (Chapter 476, Statutes of 2011 [Chesbro]) amended the California Integrated Waste Management Act of 1989 to include a provision declaring that the policy goal of the State is that not less than 75 percent of solid waste generated be source-reduced, recycled, or composted by 2020, and annually thereafter. In addition, AB 341 required the California Department of Resources Recycling and Recovery to develop strategies to achieve the State's policy goal.

Other State Actions

The following State regulations are broadly related to GHG emissions.

Senate Bill 97

SB 97 (Dutton) (August 2007) directed the Governor's Office of Planning and Research (OPR) (currently known as the Office of Land Use and Climate Innovation [LCI]) to develop guidelines under CEQA for the mitigation of GHG emissions. In 2008, the Governor's OPR issued a technical advisory as interim guidance regarding the analysis of GHG emissions in CEQA documents. The advisory indicated that the lead agency should identify and estimate a project's GHG emissions, including those associated with vehicular traffic, energy consumption, water usage, and construction activities. The advisory further recommended that the lead agency determine the significance of the impacts and impose all mitigation measures necessary to reduce GHG emissions to a level that is less than significant. The California Natural Resource Agency (CNRA) adopted the CEQA Guidelines amendments in December 2009, and the amended CEQA Guidelines became effective in March 2010.

Under the amended CEQA Guidelines, a lead agency has the discretion to determine whether to use a quantitative or qualitative analysis, or apply performance standards to determine the significance of GHG emissions resulting from a particular project (14 CCR 15064.4[a]). The CEQA Guidelines require a lead agency to consider the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4[b]). The CEQA Guidelines also allow a lead agency to consider feasible means of mitigating the significant effects of GHG emissions,

including reductions in emissions through the implementation of project features or off-site measures. The adopted amendments do not establish a GHG emission threshold, instead allowing a lead agency to develop, adopt, and apply the lead agency's own thresholds of significance or those developed by other agencies or experts. CNRA acknowledges that a lead agency may consider compliance with regulations or requirements implementing AB 32 in determining the significance of a project's GHG emissions.

With respect to GHG emissions, the CEQA Guidelines state that lead agencies should "make a good faith effort, to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions (14 CCR 15064.4[a]). The CEQA Guidelines note that an agency may identify emissions by either selecting a "model or methodology" to quantify the emissions or by relying on "qualitative analysis or other performance-based standards" (14 CCR 15064.4[a]). Section 15064.4(b) states that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment: (1) the extent to which a project may increase or reduce GHG emissions as compared to the existing environmental setting; (2) whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and (3) the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4[b]).

Executive Order S-13-08

EO S-13-08 (November 2008) is intended to hasten California's response to the impacts of global climate change, particularly sea-level rise. Therefore, the EO directs State agencies to take specified actions to assess and plan for such impacts. The final 2009 California Climate Adaptation Strategy report was issued in December 2009, and an update, Safeguarding California: Reducing Climate Risk, followed in July 2014. To assess the State's vulnerability, the report summarizes key climate change impacts to the State for the following areas: agriculture, biodiversity and habitat, emergency management, energy, forestry, ocean and coastal ecosystems and resources, public health, transportation, and water. Issuance of the Safeguarding California: Implementation Action Plans followed in March 2016. In January 2018, the CNRA released the Safeguarding California Plan: 2018 Update, which communicates current and needed actions that the State government should take to build climate change resiliency.

Local Regulations

The most prominent local regulations related to air quality and GHG emissions are established by the PCAPCD and the PCGP and are discussed in further detail below.

Placer County Air Pollution Control District

The PCAPCD regulates many sources of pollutants in the ambient air as well as GHG emissions, and is responsible for implementing certain programs and regulations for controlling air pollutant and GHG emissions to improve air quality to attain federal and State AAQS and reduce GHG emissions in compliance with State goals.

Air Quality Attainment Plan

As a part of the SVAB federal ozone nonattainment area, the PCAPCD works with the other local air districts within the Sacramento area to develop a regional air quality management plan under the FCAA requirement. The regional air quality management plan is called the State Implementation Plan (SIP) which describes and demonstrates how Placer County, as well as the Sacramento nonattainment area, would attain the required federal ozone standard by the



proposed attainment deadline. In accordance with the requirements of the FCAA, the PCAPCD, along with the other air districts in the region, prepared the *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan* (Ozone Attainment Plan), adopted by the PCAPCD on February 19, 2009. The CARB determined that the Ozone Attainment Plan met federal Clean Air Act requirements and approved the Plan on March 26, 2009 as a revision to the SIP. Revisions to the Placer County portion of the SIP or Ozone Attainment Plan were made and adopted on August 11, 2011. An update to the plan, *2013 Revisions to the Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan* (2013 Ozone Attainment Plan), was adopted on September 26, 2013, and approved by CARB as a revision to the SIP on November 21, 2013. The 2013 Ozone Attainment Plan was approved by the USEPA on January 9, 2015. In addition, another update was prepared in 2017. The *2017 Sacramento Regional 2008 NAAQS 8-Hour Ozone Attainment and Reasonable Further Progress Plan* (2017 Ozone Attainment Plan) demonstrates how the region will attain the 2008 ozone NAAQS, and includes an updated emissions inventory, sets motor vehicle emissions budgets, and documents the modeling used to support the attainment demonstration.

In addition to strengthening the 8-hour ozone NAAQS, the USEPA also strengthened the secondary 8-hour ozone NAAQS, making the secondary standard identical to the primary standard. The SVAB remains classified as a severe nonattainment area for ozone with an attainment deadline of 2027. On October 26, 2015, the USEPA released a final implementation rule for the revised NAAQS for ozone to address the requirements for reasonable further progress, modeling and attainment demonstrations, and reasonably available control measures (RACM) and reasonably available control technology (RACT). On April 30, 2018, the USEPA published designations for areas in attainment/unclassifiable for the 2015 ozone standards. The USEPA identified the portions of Placer County within the SVAB as nonattainment for the 2015 ozone standards.[32]

PCAPCD Rules and Regulations

All projects under the jurisdiction of the PCAPCD are required to comply with all applicable PCAPCD rules and regulations. In addition, PCAPCD permit requirements apply to many commercial activities (e.g., print shops, drycleaners, gasoline stations), and other miscellaneous activities (e.g., demolition of buildings containing asbestos). The proposed project is required to comply with all applicable PCAPCD rules and regulations, which shall be noted on County-approved construction plans. The PCAPCD regulations and rules include, but are not limited to, the following:

Regulation 2 – Prohibitions

Regulation 2 is comprised of prohibitory rules that are written to achieve emission reductions from specific source categories. The rules are applicable to existing sources as well as new sources. Examples of prohibitory rules include Visible Emissions (Rule 202), Nuisance (Rule 205), Cutback and Emulsified Asphalt Paving Materials (Rule 217), Architectural Coatings (Rule 218), Wood Burning Appliances (Rule 225), and Fugitive Dust (Rule 228).

Regulation 5 – Permits

Regulation 5 is intended to provide an orderly procedure for the review of new sources, and modification and operation of existing sources, of air pollution through the issuance of permits.

[32] U.S. Environmental Protection Agency. *Nonattainment and Unclassifiable Area Designations for the 2015 Ozone Standards*. April 30, 2018.

Regulation 5 primarily deals with permitting major emission sources and includes, but is not limited to, rules such as General Permit Requirements (Rule 501), New Source Review (Rule 502), Emission Statement (Rule 503), Emission Reduction Credits (Rule 504), and Toxics New Source Review (Rule 513).

Placer County General Plan

The following goals and policies related to air quality are from the PCGP:

Natural Resources Element

Goal 6.F To protect and improve air quality in Placer County.

Policy 6.F.2 The County shall develop mitigation measures to minimize stationary source and area source emissions.

Policy 6.F.3 The County shall support the Placer County Air Pollution Control District (PCAPCD) in its development of improved ambient air quality monitoring capabilities and the establishment of standards, thresholds, and rules to more adequately address the air quality impacts of new development.

Policy 6.F.4 The County shall solicit and consider comments from local and regional agencies on proposed projects that may affect regional air quality.

Policy 6.F.5 The County shall encourage project proponents to consult early in the planning process with the County regarding the applicability of Countywide indirect and areawide source programs and transportation control measures (TCM) programs. Project review shall also address energy-efficient building and site designs and proper storage, use, and disposal of hazardous materials.

Policy 6.F.6 The County shall require project-level environmental review to include identification of potential air quality impacts and designation of design and other appropriate mitigation measures or offset fees to reduce impacts. The County shall dedicate staff to work with project proponents and other agencies in identifying, ensuring the implementation of, and monitoring the success of mitigation measures.

Policy 6.F.7 The County shall encourage development to be located and designed to minimize direct and indirect air pollutants.

Policy 6.F.8 The County shall submit development proposals to the PCAPCD for review and comment in compliance with CEQA prior to consideration by the appropriate decision-making body.

Policy 6.F.9 In reviewing project applications, the County shall consider alternatives or amendments that reduce emissions of air pollutants.

Policy 6.F.10 The County may require new development projects to submit an air quality analysis for review and approval. Based on this analysis, the County shall require appropriate mitigation measures consistent with the PCAPCD's 1991 Air Quality Attainment Plan (or updated edition).

Policy 6.F.11 The County shall apply the buffer standards described in Part I of this Policy Document and meteorological analyses to provide separation between possible emission/nuisance sources (such as industrial and commercial uses) and residential uses.

Goal 6.G To integrate air quality planning with the land use and transportation planning process.

Policy 6.G.1 The County shall require new development to be planned to result in smooth flowing traffic conditions for major roadways. This includes traffic signals and traffic signal coordination, parallel roadways, and intra- and inter-neighborhood connections where significant reductions in overall emissions can be achieved.

Policy 6.G.2 The County shall continue and, where appropriate, expand the use of synchronized traffic signals on roadways susceptible to emissions improvement through approach control.

Policy 6.G.3 The County shall encourage the use of alternative modes of transportation by incorporating public transit, bicycle, and pedestrian modes in County transportation planning and by requiring new development to provide adequate pedestrian and bikeway facilities.

Policy 6.G.5 The County shall endeavor to secure adequate funding for transit services so that transit is a viable transportation alternative. New development shall pay its fair share of the cost of transit equipment and facilities required to serve new projects.

Policy 6.G.6 The County shall require large new developments to dedicate land for and construct appropriate improvements for park-and-ride lots, if suitably located.

Transportation and Circulation Element

Goal 3.D To provide a safe, comprehensive, and integrated system of facilities for non-motorized transportation.

Policy 3.D.5 The County shall continue to require developers to finance and install pedestrian walkways, equestrian trails, and multi-purpose paths in new development, as appropriate.

Policy 3.D.7 The County shall, where appropriate, require new development to provide sheltered public transit stops, with turnouts.

Policy 3.D.9 Consider Complete Streets infrastructure and design features in street design and construction to create safe and inviting environments for all users consistent with the land uses to be served.

Dry Creek-West Placer Community Plan

The following goals and policies related to air quality are from the DCWPCP:

Community Development Element: The Land Use Plan

Policy 28 Continue to monitor and control existing land uses that could deteriorate air and water quality.

Policy 29 Review Proposed Developments for their potential adverse effect on air and water quality.

Policy 30 Encourage application of measures to mitigate erosion and water pollution from earth disturbing activities such as grading and road construction.

Environmental Resources Management Element: Natural Resources

Goal 8 Recognize that clean air and water are essential resources for maintaining a high quality of living, and ensure that these resources are maintained at acceptable levels.

Policy 11 Recognize clean air as a resource to be protected and improved through project mitigation.

Policy 22 Continue to monitor and control land uses which threaten to deteriorate air and water quality.

Placer County Sustainability Plan

The PCSP, adopted by the Placer County Board of Supervisors on January 28, 2020, includes goals and policies for energy efficiency and the reduction of GHGs.[33] Energy efficiency is specifically addressed in Chapter 9, Energy, of this EIR. The PCSP is a planning document that outlines the programs and policies that are recommended for implementation by the community and the County to achieve the most significant GHG emission reductions in unincorporated County. In addition to reducing GHG emissions, implementation of the PCSP is intended to help achieve multiple community-wide goals, such as lowering energy costs, reducing air and water pollution, supporting local economic development, and improving public health and quality of life within Placer County.

6.4 IMPACTS AND MITIGATION MEASURES

The standards of significance and methodology used to analyze and determine the proposed project's potential project-specific impacts related to air quality and GHG emissions are described below. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

[33] Placer County. *Placer County Sustainability Plan: A Greenhouse Gas Emission Reduction Plan and Adaptation Strategy*. January 28, 2020.

Standards of Significance

Based on the recommendations of PCAPCD and in coordination with the County, consistent with Appendix G of the CEQA Guidelines, the effects of a project are evaluated to determine if they would result in a significant adverse impact on the environment. For the purposes of this EIR, an impact related to air quality and GHG emissions is considered significant if the proposed project would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations (including localized CO concentrations and TAC emissions);
- Result in other emissions (such as those leading to odors) affecting a substantial number of people;
- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

Pursuant to CEQA Guidelines Section 15064.4(b)(2), the lead agency is charged with determining a threshold of significance that is applicable to the project. For the analysis within this EIR, the County has elected to use the PCAPCD's thresholds of significance. The analysis in this EIR uses the thresholds for criteria pollutants, localized CO, TAC emissions, and GHG emissions, as discussed below.

Criteria Pollutant Emissions and Toxic Air Contaminant Emissions

In order to evaluate criteria air pollutant emissions from development projects, the PCAPCD has established significance thresholds for emissions of ROG, NO_X, and PM_{10}. The significance thresholds, expressed in pounds per day (lbs/day), serve as air quality standards in the evaluation of air quality impacts associated with proposed development projects. The PCAPCD's recommended thresholds of significance are listed in Table 6-6.

Therefore, if the proposed project's emissions exceed the PCAPCD's pollutant thresholds presented in Table 6-6, the project could have a significant effect on air quality, the attainment of federal and State AAQS, and could conflict with or obstruct implementation of the applicable air quality plan or result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment.

Table 6-6
PCAPCD Thresholds of Significance

Pollutant	Construction Threshold (lbs/day)	Operational/Cumulative Threshold (lbs/day)
ROG	82	55
NO_X	82	55
PM_{10}	82	82

***Source:** Placer County Air Pollution Control District. Placer County Air Pollution Control District Policy. Review of Land Use Projects Under CEQA. October 13, 2016.*

Additionally, the PCAPCD has developed screening criteria for determining whether a project would cause substantial localized CO emissions at a given intersection. If the project would result in CO emissions from vehicle operations in excess of 550 lbs/day and either of the following conditions are met, the project could potentially result in substantial concentrations of localized CO and further analysis would be required:

- Degrade the peak hour level of service (LOS) on one or more streets or at one or more intersections (both signalized and non-signalized) in the project vicinity from an acceptable LOS (i.e., LOS A, B, C, or D) to an unacceptable LOS (i.e., LOS E or F); or
- Substantially worsen (i.e., increase delay by 10 seconds or more when project-generated traffic is included) an already existing unacceptable peak hour LOS on one or more streets or at one or more intersections in the project vicinity.[34]

However, considering that the law has changed with respect to how transportation-related impacts may be addressed under CEQA such that unacceptable LOS is no longer considered a significant impact on the environment under CEQA, this analysis relies on the 550 lbs/day of CO emissions screening criterion only.

For evaluating TAC emissions, if a project would introduce a new source of TAC or a new sensitive receptor near an existing source of TAC that would not meet the CARB's minimum recommended setback, a detailed HRA may be required. The PCAPCD considers an increase in cancer risk levels of more than 10 in one million persons or a non-cancer hazard index greater than 1.0 to be a significant impact related to TACs. The foregoing cancer risk level and non-cancer hazard index are typically applied to individual stationary sources of TACs; however, the PCAPCD does note that the cancer risk and hazard index thresholds may also be applied to activities that are non-stationary, such as diesel delivery trucks and off-road construction equipment.

With regard to other cumulative emissions, such as the cumulative emissions of criteria air pollutants, the PCAPCD directs lead agencies to use the region's existing attainment plans as a basis for analysis of cumulative emissions. If a project would interfere with an adopted attainment plan, the project would inhibit the future attainment of AAQS, and thus result in a significant incremental contribution to cumulative emissions. As discussed throughout this Chapter, the PCAPCD's recommended thresholds of significance for ozone precursors and PM_{10} are based on attainment plans for the region. Thus, the PCAPCD concluded that if a project's ozone precursor and PM_{10} emissions would be less than PCAPCD project-level thresholds, the project would not be expected to conflict with any relevant attainment plans, and would not result in a cumulatively considerable contribution to a significant cumulative impact. As a result, the operational phase cumulative-level emissions thresholds established by PCAPCD are identical to the project-level operational emissions thresholds; the operational/cumulative thresholds are presented in Table 6-6.[35]

Ascertaining cancer risk, or similar measurements of health effects from air pollutants, is very difficult for regional pollutants such as the ozone precursors ROG and NO_X. The challenge was addressed in *Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502, 510, 517-522. In that case, the California Supreme Court held generally that an EIR should "make a reasonable effort to substantively connect a project's air quality impacts to likely health consequences." A possible example of such a connection would be to calculate a project's "impact on the days of

[34] Placer County Air Pollution Control District. *CEQA Air Quality Handbook* [pg. 38]. November 21, 2017.
[35] Placer County Air Pollution Control District. *CEQA Air Quality Handbook* [pg. 40]. November 21, 2017.

nonattainment per year" (*Id*. at pp. 521). However, the court recognized that there might be scientific limitations on an agency's ability to make the connection between air pollutant emissions and public health consequences in a credible fashion, given limitations in technical methodologies (*Id*. at pp. 520-521). Thus, the court acknowledged that another option for an agency preparing an EIR might be "to explain why it was not feasible to provide an analysis that connected the air quality effects to human health consequences" (*Id*. at p. 522).

Here, the PCAPCD is the primary agency responsible for ensuring the health and welfare of sensitive individuals to elevated concentrations of emissions in Placer County. At present, PCAPCD has not provided any methodology to assist local governments in reasonably and accurately assessing the specific connection between mass emissions of ozone precursors (e.g., ROG and NO_X) and other pollutants of concern on a *regional* basis and any specific effects on public health or regional air quality concentrations that might result from such mass emissions.

Ozone concentrations, for instance, depend upon various complex factors, including the presence of sunlight and precursor pollutants, natural topography, nearby structures that cause building downwash, atmospheric stability, and wind patterns. Because of the complexities of predicting ground level ozone concentrations related to the NAAQS and CAAQS, it is not possible to link health risks to the magnitude of emissions exceeding the significance thresholds. To achieve the health-based standards established by the EPA, the air districts prepare air quality management plans that detail regional programs to attain the AAQS. However, if a project within PCACD exceeds the regional significance thresholds, the proposed project could contribute to an increase in health effects in the basin until the attainment standards are met in the SVAB.

Notably, during the litigation process that led to the California Supreme Court decision in *Sierra Club v. County of Fresno*, the San Joaquin Valley Air Pollution Control District (SJVAPCD) submitted an amicus curiae brief that provided scientific context and expert opinion regarding the feasibility of performing regional dispersion modeling for ozone. In the brief, SJVAPCD states that "CEQA does not require an EIR to correlate a project's air quality emissions to specific health impacts, because such an analysis is not reasonably feasible." As SJVAPCD explains (SJVAPCD 2015b [footnotes omitted]):

> Attainment of a particular NAAQS occurs when the concentration of the relevant pollutant remains below a set threshold on a consistent basis throughout a particular region. For example, the San Joaquin Valley attained the 1-hour ozone NAAQS when ozone concentrations remained at or below 0.124 parts per million Valley-wide on 3 or fewer days over a 3-year period. Because the NAAQS are focused on achieving a particular concentration of pollution region-wide, the Air District's tools and plans for attaining the NAAQS are regional in nature.
>
> For instance, the computer models used to simulate and predict an attainment date for the ozone or particulate matter NAAQS in the San Joaquin Valley are based on regional inputs, such as regional inventories of precursor pollutants (NOx, SOx and VOCs) and the atmospheric chemistry and meteorology of the Valley. At a very basic level, the models simulate future ozone or PM levels based on predicted changes in precursor emissions Valley wide. Because the NAAQS are set levels necessary to protect human health, the closer a region is to attaining a particular NAAQS, the lower the human health impact is from that pollutant.
>
> The goal of these modeling exercises is not to determine whether the emissions generated by a particular factory or development project will affect the date that the Valley attains the

> NAAQS. Rather, the Air District's modeling and planning strategy is regional in nature and based on the extent to which all of the emission-generating sources in the Valley (current and future) must be controlled in order to reach attainment.
>
> Accordingly, the Air District has based its thresholds of significance for CEQA purposes on the levels that scientific and factual data demonstrate that the [SJVAB] can accommodate without affecting the attainment date for the NAAQS. The Air District has tied its CEQA significance thresholds to the level at which stationary pollution sources must "offset" their emissions…Thus the CEQA air quality analysis for criteria air pollutants is not really a localized, project-level impact analysis but one of regional cumulative impacts.

The brief explains that the CEQA thresholds of significance are not intended to be applied such that any localized human health impact associated with a project's regional pollutant emissions could be identified. Rather, CEQA thresholds of significance are used to determine whether a project's emissions would obstruct a region's capability of attaining the NAAQS and CAAQS according to the emissions inventory prepared in a SIP, which is then submitted and reviewed by CARB and EPA. This sentiment is corroborated in an additional brief submitted by the South Coast Air Quality Management District in 2015. Based on the expert analyses submitted by such leading air districts, Placer County has concluded that it is not scientifically feasible to predict in a meaningful manner how mass emissions of pollutants of regional concern (e.g., ozone precursors) from a project of the size of the proposed project could lead to specific public health consequences, changes in pollutant concentrations, or changes in the number of days for which the SVAB will be in nonattainment for regional pollutants.

GHG Emissions

Nearly all development projects in the region have the potential to generate air pollutants that may increase global climate change. On October 13, 2016, the PCAPCD adopted GHG emissions thresholds. The thresholds were designed to analyze a project's compliance with applicable State laws including AB 32 and SB 32.[36] As discussed in the PCAPCD's Justification Report for the thresholds, the PCAPCD relied on a review of historical CEQA projects within the County during the 13-year period from 2003 to 2015. The PCAPCD modeled emissions from 688 approved projects for the model year 2020 and used the modeled emissions to determine a reasonable level to establish emissions thresholds. The PCAPCD found that with a threshold of 10,000 MT CO_2e/yr, 11 percent of projects would exceed the threshold, and those projects contribute approximately 82 percent of total GHG emissions of the 688 projects built-out. In addition to modeling past projects within Placer County, the PCAPCD modeled a range of potential future residential and commercial projects to provide additional County-specific evidence in developing the PCAPCD's thresholds.[37]

The GHG thresholds include a bright-line threshold for the construction and operational phases of land use projects and stationary source projects, a screening level threshold for the operational phase of land use projects, and efficiency thresholds for the operational phase of land use projects that result in GHG emissions that fall between the bright-line threshold and the screening level threshold.

The bright-line threshold of 10,000 MTCO_2e/yr represents the level at which a project's GHG emissions would be substantially large enough to contribute to cumulative impacts and mitigation

[36] Placer County Air Pollution Control District. *California Environmental Quality Act Thresholds of Significance: Justification Report*. October 2016.
[37] *Ibid.*

to lessen the emissions would be mandatory. The PCAPCD further recommends use of the 10,000 $MTCO_2e$/yr for analysis of construction-related GHG emissions for land use projects. Any project with GHG emissions below the screening level threshold of 1,100 $MTCO_2e$/yr is considered by the PCAPCD as having a less-than-significant impact related to GHG emissions, and would not conflict with any State or regional GHG emissions reduction goals. Projects that would result in GHG emissions above the 1,100 $MTCO_2e$/yr screening level threshold, but below the bright-line threshold of 10,000 $MTCO_2e$/yr, must result in GHG emissions below the efficiency thresholds in order to be considered to result in a less-than-significant impact related to GHG emissions and not conflict with any State or regional GHG emission reduction goals. The GHG efficiency thresholds, which are in units of $MTCO_2e$/yr per capita or per square foot (sf), are presented in Table 6-7.

Table 6-7
PCAPCD Operational GHG Efficiency Thresholds of Significance

Residential ($MTCO_2e$/capita)		Non-Residential ($MTCO_2e$/1,000 sf)	
Urban	**Rural**	**Urban**	**Rural**
4.5	5.5	26.5	27.3

Source: ***Placer County Air Pollution Control District. Placer County Air Pollution Control District Policy. Review of Land Use Projects Under CEQA. October 13, 2016.***

The PCAPCD directs lead agencies to determine whether a project is considered rural or urban. Because urban development generally exists within the project vicinity, the PCAPCD's urban efficiency threshold of 4.5 $MTCO_2e$/capita is used for further analysis of project-related operational emissions. The urban efficiency metric is more stringent, and, thus, use of the urban efficiency metric presents a conservative analysis.

In accordance with CARB and PCAPCD recommendations, the County, as lead agency, uses the currently adopted PCAPCD GHG thresholds of significance as presented above. Therefore, if the proposed project results in construction GHG emissions in excess of 10,000 $MTCO_2e$/yr, and/or operational GHG emissions in excess of 1,100 $MTCO_2e$/yr and is unable to show that emissions would achieve the efficiency thresholds presented in Table 6-7, the project would be considered to result in a cumulatively considerable contribution to global climate change.

Method of Analysis

The analysis protocol and guidance provided by the PCAPCD's CEQA Air Quality Handbook, including screening criteria and pollutant thresholds of significance, was used to analyze the proposed project's air quality impacts.

The analysis herein considers the development of the proposed 432 residential units and associated improvements, off-site sewer lift station improvement, and the two options by which the applicant could satisfy the project's affordable housing requirements. As discussed within Chapter 3, Project Description, of this EIR, one affordable housing option includes transferring in fee title to the County an off-site vacant parcel under Homes by Towne ownership, within the RVSP. This option would involve rezoning the off-site affordable housing parcel to the Residential Multifamily 30 (RM30) zone and an RVSP amendment, which could result in a maximum development potential of 120 affordable income-restricted units. The second option by which the proposed project can meet the County's affordable housing regulations would be through the provision of a minimum of 22 Accessory Dwelling Units (ADUs) on lots with single-family residential units. Thus, this analysis considers emissions from the off-site affordable housing parcel, as well as the 22 on-site ADUs, in addition to the proposed on-site residences.

With regard to the off-site affordable housing parcel, the project applicant is seeking to rezone the affordable housing parcel to the RM30 zone, which can result in a maximum development potential of 120 affordable income-restricted units. Therefore, this analysis considers the net increase in development that would occur as a result of the off-site affordable housing parcel through a comparative analysis of the approved conditions of the site, which includes development of 3,750 sf of commercial uses and 39 residential units, to the proposed 120-unit affordable housing parcel.

Construction Emissions

The proposed project's short-term construction emissions were estimated using the California Emissions Estimator Model (CalEEMod) version 2022.1.1.30 web-based software, which is a statewide model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify air quality emissions from land use projects. The model applies inherent default values for various land uses, including trip generation rates based on the Institute of Transportation Engineers (ITE) Manual, vehicle mix, trip length, average speed, etc. However, where project-specific data was available, such data was input into the model.

The proposed project is expected to be built in five separate phases as described in Chapter 3, Project Description, of this EIR. However, for conservative analysis purposes, the entire project, including the off-site sewer lift station improvements area, roadway frontage improvements, potential on-site ADUs, and the off-site affordable housing parcel, was assumed to be built out over one phase. While build-out of the off-site affordable housing parcel would not occur as part of the proposed project, even if selected as the option to satisfy the project's affordable housing obligation, construction of such potential future development was included herein for the purpose of providing a conservative analysis. Based on information provided by the project applicant, the following assumptions were made for the construction modeling for the proposed project:

The construction modeling for the proposed project assumed the following:

- Construction would commence in May of 2026;[38]
- Construction would occur over an approximately four-year period;
- The site preparation, grading, paving, and building construction phase timing was adjusted based on project-specific information provided by the applicant; and
- Based on typical construction practices, the architectural coating phase of construction was assumed to begin two weeks after the commencement of the building construction phase and occur over a similar number of days.

The construction modeling for the off-site affordable housing parcel under both approved conditions (3,750 sf of commercial uses and 39 density reserve units) and proposed conditions (120 multi-family residential units) assumed the following:

- Construction would commence in May of 2026;[39]
- Construction would occur over an approximately one-year period; and

[38] It is noted that when the CalEEMod modeling was conducted for this analysis, project construction was anticipated to commence in May 2026. While this is no longer the case, the analysis conducted for this EIR is conservative because construction fleets and electricity generation are becoming more efficient over time due to State regulations; thus, modeling construction at an earlier start date provides a more conservative analysis.

[39] *Ibid.*

- Based on typical construction practices, the architectural coating phase of construction was assumed to begin two weeks after the commencement of the building construction phase and occur over a similar number of days.

The results of the total construction emissions modeling were compared to the standards of significance discussed above in order to determine the associated level of impact. All CalEEMod modeling results are included in Appendix C to this EIR.

Operational Emissions

The proposed project's operational emissions were also estimated using CalEEMod Version 2022. Based on applicant provided information, the proposed project was assumed to be fully operational by the year 2030. The modeling performed for the proposed project included compliance with PCAPCD rules and regulations, as well as with the Building Energy Efficiency Standards Code. The proposed project's compliance with such would be verified as part of the County's building permit application review process. The project-specific trip generation and Vehicle Miles Traveled (VMT) data provided by Kimley-Horn for the proposed project was applied to the project modeling.[40] In addition, the modeling assumed that fireplaces would not be installed in the proposed residences.

The off-site affordable housing parcel, under both the approved (3,750 sf of commercial uses and 39 density reserve units) and proposed (120 multi-family residential units) conditions, was assumed to be fully operational by the year 2027. While build-out and associated operation of the off-site affordable housing parcel would not occur as part of the proposed project, even if selected as the option to satisfy the project's affordable housing obligation, the operation of such potential future development was included herein for the purpose of providing a conservative analysis. The modeling performed for the off-site affordable housing parcel included compliance with PCAPCD rules and regulations, as well as with the Building Energy Efficiency Standards Code. The off-site affordable housing parcel's compliance with such would be verified as part of the County's building permit application review process. The project-specific trip generation and VMT data provided by Kimley-Horn for the off-site affordable housing parcel was applied to the project modeling.[41] In addition, the modeling assumed that fireplaces would not be installed in the proposed residences.

The results of total operational emissions estimations were compared to the standards of significance discussed above in order to determine the associated level of impact. All CalEEMod modeling results are included in Appendix C to this EIR.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the proposed project and the off-site sewer lift station improvements area, as well as the two affordable housing options analyzed throughout this EIR, in comparison with the standards of significance identified above. It should be noted that GHG emissions are inherently cumulative; thus, the discussion of associated GHG impacts is included under the Cumulative Impacts and Mitigation Measures section below.

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40 Kimley-Horn. *Estia Dry Creek and Placer Creek Residential, Vehicle Miles Traveled (VMT) Analysis Memorandum.* October 3, 2025.

41 *Ibid.*

In most cases, potential environmental impacts associated with the proposed project and the 22 on-site ADUs would not differ. Thus, unless otherwise noted, the below analysis applies to both the proposed project and the on-site ADUs.

6-1 Conflict with or obstruct implementation of the applicable air quality plan during project construction. Based on the analysis below, and with implementation of mitigation for the off-site affordable housing parcel, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and the off-site sewer lift station improvements area, as well as potential future development of the off-site affordable housing parcel which could conflict with or obstruct implementation of the applicable air quality plan during project construction.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

During construction of the proposed project and the off-site sewer lift station improvements area, various types of equipment and vehicles would temporarily operate on the project sites. Construction-related emissions would be generated from construction equipment, vegetation clearing and earth movement activities, construction workers' commute, and construction material hauling for the entire construction period. The aforementioned activities would involve the use of diesel- and gasoline-powered equipment that would generate emissions of criteria pollutants. Project construction activities also represent sources of fugitive dust, which include PM emissions. As construction of the proposed project and the off-site sewer lift station improvements area would generate emissions of criteria air pollutants, including ROG, NO_X, and PM_{10}, intermittently within the sites and in the vicinity of the sites, until all construction has been completed, construction is a potential concern, as the proposed project and off-site sewer lift station improvements area are located in a nonattainment area for ozone and PM.

The estimated unmitigated construction-related emissions associated with the proposed project are presented in Table 6-8. The emissions shown in Table 6-8 also account for construction of the off-site sewer lift station improvements area and the roadway frontage improvements described in Chapter 3, Project Description, of this EIR.

Table 6-8
Maximum Unmitigated Construction Emissions - Proposed Project (lbs/day)

	ROG	NO_X	PM_{10}
Proposed Project Emissions	8.30	29.00	21.00
PCAPCD Significance Threshold	**82.0**	**82.0**	**82.0**
Exceeds Threshold?	**NO**	**NO**	**NO**

Note: Although modeling was conducted for both the proposed project and the proposed project plus the 22 on-site ADUs, the addition of the 22 ADUs would result in a negligible increase in construction-related emissions.

Source: CalEEMod, December 2025. (see Appendix C).

As shown in the table above, the estimated unmitigated construction-related emissions associated with the proposed project and all off-site improvements would be below the applicable PCAPCD thresholds of significance for ROG, NO_X, and PM_{10}.

Construction activity related to implementation of the proposed project and all off-site improvements would be subject to PCAPCD Rule 228. Rule 228 requires projects involving earth-disturbing activities to implement various dust control measures, such as minimizing track-out onto paved public roadways, limiting vehicle travel on unpaved surfaces to 15 miles per hour, and stabilization of storage piles and disturbed areas. Furthermore, standard Placer County conditions of approval for projects within the County include various requirements that would result in additional reductions of emissions related to implementation of the proposed project and all off-site improvements from what has been estimated and presented above in Table 6-8. The County's standard conditions of approval are listed below:

- The applicant shall submit a Dust Control Plan to the Placer County Air Pollution Control District (APCD) when the project area to be disturbed is greater than one acre. The Dust Control Plan shall be submitted to the APCD a minimum of 21 days before construction activity is scheduled to commence. The Dust Control Plan can be submitted online via a fill-in form: http://www.placerair.org/dustcontrolrequirements/dustcontrolform.
- With submittal of the Dust Control Plan, the contractor shall submit to the APCD a comprehensive equipment inventory (e.g., make, model, year, emission rating) of all the heavy-duty off-road equipment (50 horsepower of greater) that will be used in aggregate of 40 or more hours. If any new equipment is added after submission of the inventory, the contractor shall notify the APCD prior to the new equipment being utilized. At least three business days prior to the use of subject heavy-duty off-road equipment, the project representative shall provide the APCD with the anticipated construction timeline including start date, name, and phone number of the property owner, project manager, and on-site foreman.
- With submittal of the equipment inventory, the contractor shall provide a written calculation to the APCD for approval demonstrating that the heavy-duty (> 50 horsepower) off-road vehicles to be used in the construction project, including owned, leased and subcontractor vehicles, will achieve a project-wide fleet-average of 20 percent NO_X reduction and 45 percent particulate reduction comparing with the statewide fleet averages. Acceptable options for reducing emissions may include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. The following link shall be used to calculate compliance with this condition and shall be submitted to the APCD as described above: http://www.airquality.org/businesses/ceqa-land-use-planning/mitigation (click on the current "Construction Mitigation Tool" spreadsheet under Step 1).

Moreover, the County's standard conditions of approval require Grading Plans for the proposed project and all off-site improvements to include the following notes:

- Prior to construction activity, a Dust Control Plan or Asbestos Dust Mitigation Plan shall be submitted to the Placer County Air Pollution Control District (APCD) when

the project area to be disturbed is greater than one acre. The Dust Control Plan shall be submitted to the APCD a minimum of 21 days before construction activity is scheduled to commence. The Dust Control Plan can be submitted online via the fill-in form:
http://www.placerair.org/dustcontrolrequirements/dustcontrolform.

- Construction equipment exhaust emissions shall not exceed the APCD Rule 202 Visible Emissions limitations. Operators of vehicles and equipment found to exceed opacity limits are to be immediately notified by the APCD to cease operations, and the equipment must be repaired within 72 hours.
- Dry mechanical sweeping is prohibited. Watering of a construction site shall be carried out to mitigate visible emissions. (Based on APCD Rule 228 / Section 301).
- The contractor shall not discharge into the atmosphere volatile organic compounds caused by the use or manufacture of Cutback or Emulsified asphalts for paving, road construction or road maintenance unless such manufacture or use complies with the provisions of Rule 217 Cutback and Emulsified Asphalt Paving Materials.
- The contractor shall utilize existing power sources (e.g., power poles) or clean fuel (e.g., gasoline, biodiesel, natural gas) generators rather than temporary diesel power generators.
- During construction, open burning of removed vegetation is only allowed under APCD Rule 304 Land Development Smoke Management. A Placer County Air Pollution Control District permit could be issued for land development burning, if the vegetation removed is for residential development purposes from the property of a single or two family dwelling or when the applicant has provided a demonstration as pursuant to Section 400 of the Rule that there is no practical alternative to burning and that the Air Pollution Control Officer (APCO) has determined that the demonstration has been made. The APCO may weigh the relative impacts of burning on air quality in requiring a more persuasive demonstration for more densely populated regions for a large proposed burn versus a smaller one. In some cases, all of the removed vegetative material shall be either chipped on site or taken to an appropriate recycling site, or if a site is not available, a licensed disposal site. (Based on APCD Rule 304).
- The contractor shall minimize idling time to a maximum of five minutes for all diesel-powered equipment. (Placer County Code Chapter 10, Article 10.14).
- Idling of construction-related equipment and construction-related vehicles shall be minimized within 1,000 feet of any sensitive receptor (i.e., house, hospital, or school).
- The contractor shall suspend all grading operations when fugitive dust exceeds the APCD Rule 228 (Fugitive Dust) limitations. Fugitive dust is not to exceed 40 percent opacity, nor go beyond the property boundary at any time. Lime or other drying agents utilized to dry out wet grading areas shall not exceed APCD Rule 228 limitations. (Based on APCD Rule 228 / section 302 and 401.4).
- The prime contractor shall be responsible for keeping adjacent public thoroughfares clean by keeping dust, silt, mud, dirt and debris from being released or tracked offsite. Wet broom or other methods can be deployed as control and as approved by the individual jurisdiction. (Based on APCD Rule 228 / section 401.5).
- During construction activity, traffic speeds on all unpaved surfaces shall be limited to 15 miles per hour or less unless the road surface and surrounding area is sufficiently stabilized to prevent vehicles and equipment traveling more than 15

miles per hour from emitting dust or visible emissions from crossing the project boundary line. (Based on APCD Rule 228 / section 401.2).

- The contractor shall apply methods such as surface stabilization, the establishment of a vegetative cover, paving, (or use another method to control dust as approved by the individual jurisdiction) to minimize wind-driven dust.
- The contractor shall apply water or use methods to control dust impacts offsite. Construction vehicles leaving the site shall be cleaned to prevent dust, silt, mud, and dirt from being released or tracked off-site. (Based on APCD Rule 228 / section 304).
- The contractor shall suspend all grading operations when wind speeds (including instantaneous gusts) are high enough to result in dust emissions crossing the boundary line, despite the application of dust mitigation measures. (Based on APCD Rule 228 / section 401.6).
- In order to minimize wind driven dust during construction, the prime contractor shall apply methods such as surface stabilization, establishment of a vegetative cover, paving (or use of another method to control dust as approved by Placer County). (Based on APCD Rule 228 / section 402).
- Any device or process that discharges 2 pounds per day or more of air contaminants into the atmosphere, as defined by Health and Safety Code Section 39013, may require an APCD permit. Developers/contractors should contact the APCD prior to construction and obtain any necessary permits prior to the issuance of a Building Permit. (APCD Rule 501).

Off-Site Affordable Housing Parcel

As discussed throughout this EIR, the proposed RVSP amendment and rezone would result in a maximum development potential of 120 affordable income-restricted units within the off-site affordable housing parcel. The existing zoning allows for the development of 3,750 sf of commercial, and 39 density reserve units.

As discussed under Impact 10-1 of the RVSP EIR, construction of the RVSP would result in a significant impact related to the short-term construction emissions of ROG, NO_X, and CO. The RVSP EIR included Mitigation Measures 10-1a and 10-1b, which would reduce fugitive dust emissions, and reduce the emissions of NO_X and PM_{10} from off-road construction equipment. However, the RVSP EIR determined that implementation of Mitigation Measures 10-1a and 10-1b would not reduce construction emissions to below the significance thresholds for ROG, NO_X, and CO. Additionally, Mitigation Measures 10-1c through 10-1e are recommended, which would require construction equipment and vehicles to be maintained, minimize idling time for diesel powered equipment, and restrict the burning of removed vegetation. However, these additional mitigation measures could not be quantified within the RVSP EIR. Therefore, the RVSP EIR concluded that RVSP would result in a significant impact related to short-term emissions of NO_X, CO, and ROG during construction, and a less-than-significant impact for PM_{10} and long-term construction-related emissions.

The estimated unmitigated net increase in construction-related emissions associated with the off-site affordable housing parcel is presented in Table 6-9.

Table 6-9
Maximum Unmitigated Construction Emissions – Off-Site Affordable Housing Parcel (lbs/day)

Scenario	ROG	NO_X	PM_{10}
Approved Conditions (3,750 sf of commercial uses and 39 density reserve units)	3.20	29.20	21.10
Proposed Future Conditions (120 multi-family residential units)	5.87	29.20	21.10
Net Increase	*+2.67*	--	--
Adopted PCAPCD Threshold	**82.0**	**82.0**	**82.0**
Exceed?	**NO**	**NO**	**NO**

Source: CalEEMod, August 2025 (see Appendix C).

In addition, the total maximum unmitigated construction-related emissions associated with the proposed project in combination with the net increase associated with the off-site affordable housing parcel are presented in Table 6-10.

Table 6-10
Total Maximum Unmitigated Construction Emissions - Proposed Project and Off-Site Affordable Housing Parcel (lbs/day)

Scenario	ROG	NO_X	PM_{10}
Proposed Project[1]	7.90	29.00	21.00
Off-Site Affordable Housing Parcel (Net Increase)	2.67	--	--
Combined Emissions	*10.57*	*29.00*	*21.00*
Adopted PCAPCD Threshold	**82.0**	**82.0**	**82.0**
Exceed?	**NO**	**NO**	**NO**

[1] Although modeling was conducted for both the proposed project and the proposed project plus the 22 on-site ADUs, the addition of the 22 ADUs would result in a negligible increase in construction-related emissions.

Source: CalEEMod, August/December 2025 (see Appendix C).

As shown in the tables above, the total maximum unmitigated construction-related emissions associated with the proposed project in combination with the net increase associated with potential future development of the off-site affordable housing parcel would be below the applicable PCAPCD thresholds of significance for ROG, NO_X, and PM_{10}. In addition, even if the total emissions from the off-site affordable housing parcel were added to the emissions from the proposed project's 432 units, the total combined

emissions would be under the applicable PCAPCD thresholds (13.77 lbs/day of ROG, 58.2 lbs/day of NO_X, and 42.1 lbs/day of PM_{10}).

Nonetheless, at such time the off-site affordable housing parcel gets developed, the future developer would be required to implement RVSP EIR Mitigation Measures 10-1a through 10-1e, which have been incorporated into this EIR as Mitigation Measures 6-2(a) through 6-2(e).

Conclusion

Because the proposed project's and the off-site affordable housing parcel's estimated unmitigated construction emissions would be below the applicable PCAPCD thresholds of significance, construction activities associated with the proposed project and all off-site improvements, as well as the potential future development of the off-site affordable housing parcel would not substantially contribute to the PCAPCD's nonattainment status for ozone or PM. Nevertheless, the off-site affordable housing parcel is located within the overall RVSP area for which the RVSP EIR included mitigation measures intended to be implemented by all future development to reduce total construction-related emissions within the RVSP area. Thus, the impact herein is determined to be ***significant*** as a means to incorporate the applicable RVSP mitigation measures into this EIR and ensure the applicable RVSP EIR mitigation measures are implemented for the potential future development of the off-site affordable housing parcel. Therefore, at such time the off-site affordable housing parcel gets developed, implementation of Mitigation Measures 10-1a through 10-1e would be required to ensure a significant impact does not occur. The referenced RVSP mitigation measures are incorporated into this EIR as Mitigation Measures 6-1(a) through 6-1(e) below.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

Off-Site Affordable Housing Parcel

6-1(a) *Implement RVSP EIR Mitigation Measure 10-1a:*

The Applicant shall submit to the PCAPCD and receive approval of a Construction Emission/Dust Control Plan prior to groundbreaking. This plan must address the minimum Administrative Requirements found in Sections 300 and 400 of District Rule 228, Fugitive Dust (www.placer.ca.gov/airpollution/airpolut.htm).

The Applicant shall have a pre-construction meeting for grading activities for 20 or more acres to discuss the construction emission/dust control plan with employees and/or contractors and the District is to be invited.

The Applicant shall suspend all grading operations when fugitive dust exceeds District Rule 228 fugitive dust limitations. An Applicant representative, CARB-certified to perform Visible Emissions Evaluations (VEE), shall routinely evaluate compliance with Rule 228. This requirement for a VEE is for projects grading 20 or more acres in size regardless in how many acres are to be disturbed daily.

It is to be noted that fugitive dust is not to exceed 40 percent opacity and not to go beyond the property boundary at any time. If lime or other drying agents are used to dry out wet grading areas, they shall be controlled so as not to exceed District Rule 228 fugitive dust limitations.

6-1(b) *Implement RVSP EIR Mitigation Measure 10-1b:*

The PCAPCD shall be provided with a list of construction equipment and anticipated construction timeline for each project. The prime contractor for each construction project shall submit to the PCAPCD a comprehensive inventory (i.e., make, model, year, emission rating) of all the heavy-duty off-road equipment (50 horsepower of greater) that will be used an aggregate of 40 or more hours for the construction project. The PCAPCD shall be provided with the anticipated construction timeline for each project including start date, and name and phone number of the project manager and onsite foreman. A plan for each project shall be submitted for approval by the PCAPCD demonstrating that the heavy-duty (> 50 horsepower) off-road vehicles to be used in the construction project, including owned, leased and subcontractor vehicles, will achieve a project wide fleet-average 20 percent NO_X reduction and 45 percent particulate reduction compared to the most recent CARB fleet average. The PCAPCD should be contacted for average fleet emission data. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, aftertreatment products, and/or other options as they become available. During smog season (May through October), the construction period shall be lengthened so as to minimize the number of vehicles and equipment operating at the same time. Contractors can access the Sacramento Metropolitan AQMD's web site to determine if their off-road fleet meets the requirements listed in this measure (http://www.airquality.org/ceqa/Construction_Mitigation_Calculator.xls).

6-1(c) *Implement RVSP EIR Mitigation Measure 10-1c:*

Construction equipment and vehicles shall be maintained for each project. Construction equipment exhaust emissions shall not exceed PCAPCD Rule 202 Visible Emission limitations. Operators of vehicles and equipment found to exceed opacity limits are to be immediately notified and the equipment must be repaired within 72 hours. An Applicant/developer representative (CARB-certified to perform visible emissions evaluations) shall routinely evaluate project related off-road and heavy-duty on-road equipment emissions for compliance with this requirement for projects grading more than 20 acres in size regardless of how many acres are to be disturbed daily.

6-1(d) *Implement RVSP EIR Mitigation Measure 10-1d:*

Idling time for all diesel-powered equipment shall be minimized to 5 minutes.

6-1(e) Implement RVSP EIR Mitigation Measure 10-1e:

For each project, the contract language shall stipulate that contractors shall not engage in open burning of removed vegetation. Vegetative material shall be chipped, delivered to waste to energy facilities, or disposed at an appropriate disposal site.

6-2 Conflict with or obstruct implementation of the applicable air quality plan during project operation. Based on the analysis below, and with implementation of mitigation for the off-site affordable housing parcel, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and the off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could conflict with or obstruct implementation of the applicable air quality plan during project operation.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

The proposed off-site sewer lift station improvements are related to providing additional floodwater storage capacity, and would not result in operational air quality emissions. Therefore, the below discussion focuses on operational emissions associated with the proposed project.

As discussed above, due to the nonattainment designations of the area, the PCAPCD has developed plans to attain the State and federal standards for ozone and particulate matter. The currently applicable air quality plan is the 2017 Ozone Attainment Plan. Adopted PCAPCD rules and regulations, as well as the thresholds of significance, have been developed with the intent to ensure continued attainment of AAQS, or to work towards attainment of AAQS for which the area is currently designated nonattainment, consistent with the applicable air quality plan. Thus, if a project's operational emissions exceed the PCAPCD's mass emission thresholds, a project would be considered to conflict with or obstruct implementation of the PCAPCD's air quality planning efforts.

Operational emissions of ROG, NO_X, and PM_{10} would be generated by the proposed project from both mobile and stationary sources. Day-to-day activities such as future resident vehicle trips to and from the project site would make up the majority of the mobile emissions. As discussed in the Method of Analysis section above, to capture the potential emissions related to mobile sources from the proposed project, the project-specific trip generation rates and VMT estimates prepared by Kimley-Horn were applied to the project modeling. Emissions would also occur from area sources such as architectural coatings, landscape maintenance equipment exhaust, and consumer products (e.g., deodorants, detergents, hair spray, cleaning products, spray paint, insecticides, floor finishes, polishes, etc.).

Estimated unmitigated operational emissions associated with the proposed project are presented in Table 6-11. As shown in the table, the unmitigated operational emissions associated with the proposed project would be below the PCAPCD's thresholds of significance for ROG, NO_X, and PM_{10}.

Table 6-11
Maximum Unmitigated Operational Emissions – Proposed Project (lbs/day)

	ROG	NO_X	PM_{10}
Proposed Project Emissions	33.00	13.00	18.00
PCAPCD Significance Threshold	**55.00**	**55.00**	**82.00**
Exceeds Threshold?	**NO**	**NO**	**NO**

Note: The project emissions shown above include emissions associated with the proposed project and the 22 on-site ADUs.

Sources: CalEEMod, December 2025. (see Appendix C).

Off-Site Affordable Housing Parcel

As discussed under Impact 10-2 of the RVSP EIR, operation of the RVSP would result in a significant impact related to the short-term operational emissions of ROG, NO_X, and PM_{10}, and long-term operational emissions of ROG and PM_{10}. The RVSP EIR included Mitigation Measures 10-2a through 10-2d, which are intended to reduce energy consumption, prohibit open burning, allow only gas-fired appliances, and implement an offsite mitigation program or pay an in-lieu amount into the PCAPCD's Air Quality Mitigation Program. However, the effectiveness of Mitigation Measures 10-2a through 10-2d could not be reliably quantified within the RVSP EIR. Therefore, the RVSP EIR concluded that RVSP would result in a significant impact related to long-term emissions of ROG, NO_X, and PM_{10} during operation.

The estimated unmitigated net increase in operational emissions associated with the potential future development of the off-site affordable housing parcel is presented in Table 6-12.

Table 6-12
Maximum Unmitigated Operational Emissions – Off-Site Affordable Housing Parcel (lbs/day)

Scenario	ROG lbs/day	NO_X lbs/day	PM_{10} lbs/day
Approved Conditions (3,750 sf of commercial uses and 39 density reserve units)	3.39	2.37	3.98
Proposed Conditions (120 multi-family residential units)	7.50	4.42	7.14
Net Increase	*+4.11*	*+2.05*	*+3.16*
Adopted PCAPCD Threshold	**55.00**	**55.00**	**82.00**
Exceed?	**NO**	**NO**	**NO**

Source: CalEEMod, August 2025 (see Appendix C).

In addition, the total maximum unmitigated operational emissions associated with the proposed project in combination with the net increase associated with the potential future development of the off-site affordable housing parcel are presented in Table 6-13.

Table 6-13
Total Maximum Unmitigated Operational Emissions – Proposed Project and Off-Site Affordable Housing Parcel (lbs/day)

Scenario	ROG lbs/day	NO_X lbs/day	PM_{10} lbs/day
Proposed Project	31.00	12.00	17.30
Off-Site Affordable Housing Parcel (Net Increase)	4.11	2.05	3.16
Combined Emissions	*35.21*	*14.15*	*20.19*
Adopted PCAPCD Threshold	**55.00**	**55.00**	**82.00**
Exceed?	**NO**	**NO**	**NO**

Note: The proposed project emissions shown above do not include emissions associated with the 22 on-site ADUs.

Source: CalEEMod, August/December 2025 (see Appendix C).

As shown in the tables above, the combined total unmitigated operational emissions associated with the proposed project and the off-site affordable housing parcel would be below the PCAPCD's thresholds of significance for ROG, NO_X, and PM_{10}. In addition, even if the total operational emissions from the off-site affordable housing parcel were added to the operational emissions from the proposed project's 432 units, the total combined emissions would be under the applicable PCAPCD thresholds (38.5 lbs/day of ROG, 16.42 lbs/day of NO_X, and 24.44 lbs/day of PM_{10}).

Furthermore, at such time the off-site affordable housing parcel gets developed, operations related to such would be required to comply with all applicable PCAPCD regulations listed above, as well as RVSP EIR Mitigation Measures 10-2a, 10-2b, and 10-2d, which have been incorporated into this EIR as Mitigation Measures 6-2(a) through 6-2(c). RVSP EIR Mitigation Measure 10-2c would not be applicable to the off-site affordable housing parcel, as fireplaces are not proposed.

Conclusion

Based on the above, operations of the proposed project and the potential future development of the off-site affordable housing parcel would not violate any AAQS or contribute substantially to an existing or projected air quality violation. Nevertheless, the off-site affordable housing parcel is located within the overall RVSP area for which the RVSP EIR included mitigation measures intended to be implemented by all future development to reduce total operational emissions within the RVSP area. Thus, the impact herein is determined to be ***significant*** as a means to incorporate the applicable RVSP mitigation measures into this EIR and ensure the applicable RVSP EIR mitigation measures are implemented for the off-site affordable housing parcel. Therefore, at such time the off-site affordable housing parcel gets developed, implementation of Mitigation

Measures 10-2a through 10-2d would be required to ensure a significant impact does not occur. The referenced RVSP mitigation measures are incorporated into this EIR as Mitigation Measures 6-2(a) through 6-2(c) below.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

Off-Site Affordable Housing Parcel

6-2(a) Implement RVSP EIR Mitigation Measure 10-2a:

The Riolo Vineyards Specific Plan shall incorporate and implement the following measures, or equally effective measures, to reduce energy consumption:

- *Install low-NO_X hot water heaters per PCAPCD Rule 246.*
- *Encourage landscape maintenance companies to use battery-powered or electric equipment for nonresidential maintenance activities, where feasible.*
- *Provide natural gas lines or electrical outlets to all backyards to encourage natural gas or electric barbecues, as well as electric lawn equipment.*
- *Install Class I bicycle lockers along with bike racks in commercial sites.*
- *Encourage landscaping with drought-resistant species, and the use of groundcovers rather than pavement to reduce heat reflection.*
- *Include Energy Star efficient appliances, such as dishwashers, refrigerators, and clothes washers.*
- *Include energy-efficient SunCoat Max window glazings, which have a solar heat gain of 0.27.*
- *Include high-efficiency heating and efficient ventilation methods on all new residential units. Furnaces to be low-NO_X with an AFUE of 80 percent.*
- *Incorporate solar heaters and panels in proposed project residences as feasible.*
- *Include high-efficiency water heaters. The external insulation used should have an R-value of 16 and an efficiency value of 0.62.*
- *Include high efficiency insulation with the following ratings – Ceilings: R-38, 2×6 Walls, 2×4 Walls: R-19, and Ducts: R-6.4.*

Implementation of Mitigation Measure 10-2a will also help reduce atmospheric and greenhouse gas emissions from the Riolo Vineyards project and/or reduce energy consumption, and thus may reduce the project's contribution to the impact of global climate change.

6-2(b) Implement RVSP EIR Mitigation Measure 10-2b:

Open burning of any kind shall be prohibited in the residential, commercial, and recreational parcels of the Riolo Vineyards Specific Plan Area. Open

burning will be allowed on the Agricultural, Agriculture-10, and Rural Residential parcels in accordance with PCAPCD Regulation 3, which requires a burn permit to be issued by the PCAPCD. Open burning creates substantial pollutant emissions of ozone precursors, CO, and PM. Any company employed to maintain landscapes within the Plan Area will be prohibited from open burning of vegetative refuse anywhere in the SVAB. The incorporation of this mitigation measure as part of the by-laws of a homeowners association (e.g., covenants, conditions, and restrictions) would ensure compliance with this future rule, which will be enforced by PCAPCD as a requirement for the County to comply with the ambient air quality standard for $PM_{2.5}$ pollutants. The Applicant proposes additional open-burning restrictions, which state that burning activities shall be limited to vegetation materials (green waste) and conducted within 200 feet of a public street, trail, or park facility. Additionally, open-burning activities shall require a burn permit from the Placer County Air Pollution Control District (APCD) and shall be in compliance with APCD Regulation 3.

6-2(c) *Implement RVSP EIR Mitigation Measure 10-2d:*

Each project shall implement an offsite mitigation program, coordinated through the PCAPCD, to offset the project's long-term ozone precursor emissions. The project offsite mitigation program must be approved by the PCAPCD. The project's offsite mitigation program provides monetary incentives to sources of air pollution within the project's air basin that are not required by law to reduce their emissions. Therefore, the emission reductions are real, quantifiable and implement provisions of the 1994 State Implementation Plan. The offsite mitigation program reduces emissions within the air basin that would not otherwise be eliminated. In lieu of each project implementing its own offsite mitigation program, the Applicant can choose to participate in the PCAPCD Offsite Mitigation Program by paying an equivalent amount of money into the District program. Based on the URBEMIS results in Appendix G2, the per house unit fee is $323 and the multi family per unit fee is $232. This is a one time fee that would be payable at the time of the final map recording.

6-3 Expose sensitive receptors to substantial pollutant concentrations. Based on the analysis below, the impact is *less than significant*.

The major pollutant concentrations of concern are localized CO emissions, TAC emissions, and criteria pollutant emissions. The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel which could result in impacts to sensitive receptors through the exposure to substantial pollutant concentrations of localized CO emissions, TAC emissions, and criteria pollutant emissions.

Localized CO Emissions

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel associated with localized CO emissions.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Localized concentrations of CO are related to the levels of traffic and congestion along streets and at intersections. The proposed off-site sewer lift station improvements are related to providing additional floodwater storage capacity, and would not result in any increased traffic. Therefore, the below discussion focuses on localized concentrations of CO associated with the proposed project.

Implementation of the proposed project would increase traffic volumes on streets near the project site; therefore, the project would be expected to increase local CO concentrations. Concentrations of CO approaching the AAQS are only expected where background levels are high, and traffic volumes and congestion levels are high.

The statewide CO Protocol document identifies signalized intersections operating at LOS E or F, or projects that would result in the worsening of signalized intersections to LOS E or F, as having the potential to result in localized CO concentrations in excess of AAQS, as a result of large numbers of cars idling at stop lights.[42]

As noted previously, the PCAPCD has established screening methodology for localized CO emissions. According to the PCAPCD's screening methodology, if the project would result in vehicle operations producing more than 550 lbs/day of CO emissions, then a potentially significant adverse health impact related to localized CO emissions could occur. According to the modeling performed for the proposed project, operation of the project would result in maximum unmitigated mobile source CO emissions of 89 lbs/day (see Appendix C). Consequently, CO emissions related to mobile sources associated with operation of the proposed project would be below the 550 lbs/day screening threshold used by PCAPCD. Therefore, according to the PCAPCD's screening methodology for localized CO emissions, the proposed project would not be expected to generate localized CO emissions that would contribute to an exceedance of AAQS, and the proposed project would not expose sensitive receptors to substantial concentrations of localized CO.

Off-Site Affordable Housing Parcel

As discussed within Impact 10-3 of the RVSP EIR, the buildout of the RVSP would result in a less-than-significant impact related to CO emissions. The RVSP EIR concluded that the increase in ambient concentrations of CO at nearby intersections were found not to exceed the 1-hour average standard of 20 ppm and/or the 8-hour average standard of 9.0 ppm, which if exceeded would result in a significant impact. Thus, the RVSP EIR concluded that buildout of the RVSP would not expose sensitive receptors to substantial concentrations of localized CO and would result in a less-than-significant impact.

As discussed above, the PCAPCD has established screening methodology for localized CO emissions. The off-site affordable housing parcel would result in a maximum net

[42] University of California, Davis. *Transportation Project-Level Carbon Monoxide Protocol*. December 1997.

increase in mobile source CO emissions of 15.7 lbs/day (see Appendix C). Additionally, the proposed project (without inclusion of the 22 on-site ADUs) would result in maximum unmitigated mobile source CO emissions of 84 lbs/day. Thus, the combined maximum unmitigated mobile source CO emissions associated with the proposed project and the off-site affordable housing parcel would be 99.7 lbs/day. Therefore, the combined CO emissions associated with the proposed project and the off-site affordable housing parcel would be far below the 550 lbs/day screening threshold. As a result, according to the PCAPCD's screening methodology for localized CO emissions, the off-site affordable housing parcel would not be expected to generate localized CO emissions that would contribute to an exceedance of AAQS, and the off-site affordable housing parcel would not expose sensitive receptors to substantial concentrations of localized CO.

TAC Emissions

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel associated with TAC emissions.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

As stated above, if a project would introduce a new source of TACs, a detailed health risk assessment may be required. The PCAPCD considers an increase in cancer risk levels of more than 10 in one million persons or a non-cancer hazard index greater than 1.0 to be a significant impact related to TACs.

The closest sensitive receptors to the project site are existing single-family residences located to the south, west, and east of the project site, the closest of which is approximately 20 feet from the site's eastern boundary. Additionally, the closest sensitive receptors to the off-site sewer lift station improvements area are the existing single-family residences located to the south of the lift station, the closest of which is approximately 30 feet from the site. Thus, activities related to the construction and operation of the proposed project and the off-site sewer lift station improvements area are qualitatively analyzed to determine whether the proposed project would expose nearby sensitive receptors to TAC emissions.

The CARB has identified DPM from diesel-fueled engines as a TAC; thus, high volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic are identified as having the highest associated health risks from DPM. Health risks from TACs are a function of both the concentration of emissions and the duration of exposure. Health-related risks associated with DPM in particular are primarily associated with long-term exposure and associated risk of contracting cancer.

Construction-related activities have the potential to generate concentrations of TACs, specifically DPM, from on-road haul trucks and off-road equipment exhaust emissions. The construction period would be temporary and would occur over a relatively short duration in comparison to the operational lifetime of the proposed project. While methodologies for conducting health risk assessments are associated with long-term exposure periods (e.g., over a 30-year period or longer), construction activities associated with the proposed project were estimated to occur over an approximately four-year period. Only portions of the site would be disturbed at any given time throughout the construction

period, with operation of construction equipment occurring intermittently throughout the course of a day rather than continuously at any one location on each site. In addition, all construction equipment and operation thereof would be regulated per the In-Use Off-Road Diesel Vehicle Regulation. The In-Use Off-Road Diesel Vehicle Regulation includes emissions reducing requirements such as limitations on vehicle idling, disclosure, reporting, and labeling requirements for existing vehicles, as well as standards relating to fleet average emissions and the use of Best Available Control Technologies. As discussed above, through standard conditions of approval, Placer County requires off-road equipment used within the County to achieve lower than State-average emissions of NO_X and PM. Thus, on-site emissions of PM would be reduced, which would result in a proportional reduction in DPM emissions and exposure of nearby residences to DPM. Project construction would also be required to comply with all applicable PCAPCD rules and regulations, including Rule 501 related to General Permit Requirements.

Considering the intermittent nature of construction equipment operating within an influential distance to the nearest sensitive receptors, the duration of construction activities in comparison to the operational lifetime of the proposed project, the typical long-term exposure periods associated with conducting health risk assessments, and compliance with regulations, the likelihood that any one nearby sensitive receptor would be exposed to high concentrations of DPM for any extended period of time would be low.

Furthermore, as discussed above, the proposed project's and the off-site sewer lift station improvements area's construction-related emissions would be below the applicable mass emissions thresholds of significance for PM_{10}, which includes DPM and fugitive dust related to construction. The PCAPCD's Handbook advises that if construction-related emissions have been quantified and are below the thresholds of significance, the proposed project would result in a less-than-significant impact regarding PM emissions.[43] Considering that PM_{10} emissions, which include emissions of DPM, would be below the PCAPCD's thresholds of significance, construction of the proposed project and the off-site sewer lift station improvements area would not be expected to generate substantial DPM emissions such that an increase in cancer risk levels of more than 10 in one million persons or a non-cancer hazard index greater than 1.0 would occur. Therefore, the proposed project and the off-site sewer lift station improvements area would not expose sensitive receptors to substantial concentrations of DPM during construction.

Operational-related emissions of TACs are typically associated with stationary diesel engines or land uses that involve heavy truck traffic or idling. The proposed residences would not involve long-term or frequent operations of any stationary diesel engines.

J.R. Davis Rail Yard

As discussed above, the Union Pacific J.R. Davis rail yard, located in Roseville, California, is approximately three miles northwest of the project site. In 2004, the CARB and PCAPCD conducted an HRA to determine the potential public health risks from DPM emissions due to locomotive activity at the rail yard, and in 2009, the PCAPCD summarized findings from ongoing monitoring of the rail yard. Considering the proposed project's proximity to the rail yard, the conclusions of the 2004 rail yard study, and the 2009 summary of findings, the project site is anticipated to be within an area of increased cancer risk due to rail yard related DPM. Because the proposed project is a residential development, future residents

[43] Placer County Air Pollution Control District. *CEQA Air Quality Handbook* [pg. 31 and 32]. November 21, 2017.

of the project may be exposed to increased cancer risk related to DPM from rail yard activity.

In 2013, in response to a Court of Appeal opinion entitled, *California Building Industry Association v. Bay Area Air Quality Management District* (2013) 218 Cal.App.4th 1171, the California Supreme Court granted limited review to the question: Under what circumstances, if any, does CEQA require an analysis of how existing environmental conditions will impact future residents or users (receptors) of a proposed project? The question specifically concerned the applicability of thresholds promulgated by the Bay Area Air Quality Management District (BAAQMD), some of which related to exposure of sensitive receptors to existing TAC emissions. In its opinion published on December 17, 2015, entitled *California Building Industry Assn. v. Bay Area Air Quality Management Dist.* (2015) 62 Cal.4th 369, 377-378, the Supreme Court held that "agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents. But when a proposed project risks exacerbating those environmental hazards or conditions that already exist, an agency must analyze the potential impact of such hazards on future residents or users. In those specific instances, it is the *project's* impact on the environment—and not the *environment's* impact on the project—that compels an evaluation of how future residents or users could be affected by exacerbated conditions." (Original italics.) It is therefore appropriate to evaluate a project's potentially significant *exacerbating* effects on existing environmental hazards – effects that arise because the project brings "development and people into the area affected." (*Id*. at p. 388.) The Supreme Court stated that even in those specific instances where evaluation of a project's potentially significant exacerbating effects on existing environmental hazards is appropriate, the evaluation of how future residents or users could be affected by the exacerbated conditions is still compelled by the project's impact on the environment, for instance the project's emission of TACs, and not the environment's impact on the project, such as the exposure of proposed receptors to existing off-site TAC emissions.

Considering the court ruling, while the future residents of the proposed project would be considered sensitive receptors, consideration of potential impacts from existing sources of TACs, such as the existing rail yard, would only be justified if the proposed project would exacerbate existing hazardous conditions. The proposed project involves a residential development that would operate separately from the rail yard and would not have an effect on rail yard operations or rail yard related DPM emissions. In addition, while operation of the proposed project would include on-site deliveries, which could involve the use of diesel-powered delivery vehicles, depending on the vendor's fleet, the number of deliveries that would occur on-site would not be substantial such that DPM emissions would significantly increase in the project area. Most delivery companies operate a varied fleet including multiple size options and alternative fuel vehicles. Therefore, only a portion of delivery vehicles would be diesel-powered. Delivery vehicle fleets are also becoming increasingly more efficient, as companies are transitioning from traditional diesel-powered delivery vehicles to alternative-fueled or electric delivery vehicles.

Similarly, while residents have the potential to drive diesel-powered passenger vehicles and trucks, based on typical fleet mix data for the project area,[44] only a small percentage of passenger vehicles and trucks run on diesel fuel. Therefore, the assumption can be

[44] California Air Resources Board. *Emission Factor (EMFAC) 2025 – Emissions Inventory Software*. Available at: https://arb.ca.gov/emfac/emissions-inventory. Accessed December 2025.

made that the portion of on-site residents driving diesel-powered vehicles would not be a substantial amount such that DPM emissions would significantly increase in the project area.

While on-site construction-related activities have the potential to generate concentrations of TACs, specifically DPM, from on-road haul trucks and off-road equipment exhaust emissions, the construction period would be temporary and would occur over a relatively short duration in comparison to the operational lifetime of the proposed project and the off-site sewer lift station improvements area. Moreover, methodologies for conducting health risk assessments are associated with long-term exposure periods (e.g., over a 30-year period or longer) and construction activities associated with the proposed project and the off-site sewer lift station improvements area were estimated to occur over an approximately four-year period. Considering the duration of construction activities in comparison to the operational lifetime of the project and the typical long-term exposure periods associated with conducting health risk assessments, construction associated with the proposed project and the off-site sewer lift station improvements area is not anticipated to result in a substantial increase in DPM emissions in the project area.

Based on the above, the proposed project and the off-site sewer lift station improvements area would not be considered to exacerbate an existing hazardous condition, and further analysis of potential impacts related to DPM exposure of future residents is not warranted.

Also relevant in this context are considerations drawn in the CARB Handbook, which lists rail yards as a source category associated with emissions of TACs and, specifically, DPM. The CARB Handbook also provides advisory recommendations for siting sensitive receptors near such source categories in order to avoid health risks. The project site is located over 15,000 feet northwest of the J.R. Davis rail yard and, thus, would comply with the CARB's recommended 1,000-foot buffer distance between rail yards and sensitive land uses.[45]

Off-Site Affordable Housing Parcel

As discussed within Impact 10-5 of the RVSP EIR, the buildout of the RVSP would result in a less-than-significant impact related to the exposure of nearby sensitive receptors to TACs. The CARB off-road equipment regulations and mitigation measures identified for Impact 10-1 would reduce DPM from construction. During operation, CARB recommends sensitive receptors should not be sited within 500 feet of a freeway or urban roads with 100,000 vehicles per day. Watt Avenue, the most travelled road in the Plan vicinity, receives approximately 68,000 vehicles/day. Thus, the RVSP EIR concluded that buildout of the RVSP would result in a less-than-significant impact related to the exposure of nearby sensitive receptors to TACs.

The construction activities associated with potential future development of the off-site affordable housing parcel were estimated to occur over a one-year period. Only portions of the parcel would be disturbed at any given time throughout the construction period, with operation of construction equipment occurring intermittently throughout the course of a day rather than continuously at any one location on each site. Additionally, the potential future construction of the off-site affordable housing parcel would be subject to all rules, regulations, and Best Available Control Technologies listed above. Therefore, the

[45] California Air Resources Board. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005.

likelihood that any one nearby sensitive receptor would be exposed to high concentrations of DPM for any extended period of time would be low.

As discussed above, the PCAPCD's Handbook advises that if construction-related emissions have been quantified and are below the thresholds of significance, the proposed project would result in a less-than-significant impact regarding PM emissions. The proposed off-site affordable housing parcel would result in PM_{10} emissions below the PCAPCD's threshold of significance. Therefore, the off-site affordable housing parcel would not be expected to generate substantial DPM emissions such that an increase in cancer risk levels of more than 10 in one million persons or a non-cancer hazard index greater than 1.0 would occur.

Additionally, the off-site affordable housing parcel would not involve long-term or frequent operations of any stationary diesel engines and would not involve heavy truck traffic or idling.

The Union Pacific J.R. Davis rail yard, located in Roseville, California, is approximately four miles west of the off-site affordable housing parcel. Similar to the proposed project, the off-site affordable housing parcel would not be considered to exacerbate an existing hazardous condition, and further analysis of potential impacts related to DPM exposure of future residents is not warranted. In addition, the off-site affordable housing parcel is located over 21,000 feet west of the J.R. Davis rail yard and, thus, would comply with the CARB's recommended 1,000-foot buffer distance between rail yards and sensitive land uses.[46]

Naturally Occurring Asbestos

According to the *Special Report 190: Relative Likelihood for the Presence of Naturally Occurring Asbestos in Placer County, California*, prepared by the Department of Conservation, neither the project site nor off-site affordable housing parcel is located near a fault zone, additionally, the general area containing both sites is categorized as least likely to contain NOA, because serpentinite outcroppings are not known to exist in the project area.[47] Consequently, NOA is not anticipated to be present on either site.

Criteria Pollutants

The following discussion includes an analysis of potential impacts related to development of the proposed project, off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel associated with criteria pollutant emissions.

Proposed Project, Off-Site Sewer Lift Station Improvements Area, and Off-Site Affordable Housing Parcel

As noted in Table 6-1, exposure to criteria air pollutants can result in adverse health effects. The AAQS presented in Table 6-2 are health-based standards designed to ensure safe levels of criteria pollutants that avoid specific adverse health effects. Because the SVAB is designated as nonattainment for State and federal eight-hour ozone and State

[46] California Air Resources Board. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005.
[47] California Department of Conservation, California Geological Survey. *Special Report 190: Relative Likelihood for the Presence of Naturally Occurring Asbestos in Placer County, California*. Published 2006.

PM_{10} standards, the PCAPCD, along with other air districts in the SVAB region, has adopted federal and state attainment plans to demonstrate progress towards attainment of the AAQS. Full implementation of the attainment plans would ensure that the AAQS are attained and sensitive receptors within the SVAB are not exposed to excess concentrations of criteria pollutants. The PCAPCD's thresholds of significance were established with consideration given to the health-based air quality standards established by the AAQS, and are designed to aid the district in implementing the applicable attainment plans to achieve attainment of the AAQS.[48] Thus, if a project's criteria pollutant emissions exceed the PCAPCD's mass emission thresholds of significance, a project would be considered to conflict with or obstruct implementation of the PCAPCD's air quality planning efforts, thereby delaying attainment of the AAQS. Because the AAQSs are representative of safe levels that avoid specific adverse health effects, a project's hinderance of attainment of the AAQS could be considered to contribute towards regional health effects associated with the existing nonattainment status of ozone and PM_{10} standards.

However, as discussed in Impacts 6-1 and 6-2, the proposed project and the off-site affordable housing parcel would not result in emissions that exceed the PCAPCD's thresholds of significance. Consequently, implementation of the proposed project and the off-site affordable housing parcel would not conflict with the PCAPCD's adopted attainment plans nor would the proposed project and the off-site affordable housing parcel inhibit attainment of regional AAQS. Therefore, implementation of the proposed project and the potential future development of the off-site affordable housing parcel would not contribute towards regional health effects associated with the existing nonattainment status of ozone and PM_{10} standards.

Conclusion

Based on the above analysis, the proposed land uses would not be anticipated to result in the production of substantial concentrations of pollutants such as TACs (including DPM), localized CO, or criteria pollutants. In addition, the likelihood of NOA being present on each site is low. Therefore, the proposed project and the potential future development of the off-site affordable housing parcel would not result in the exposure of sensitive receptors to substantial pollutant concentrations, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

6-4 Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. Based on the analysis below, the impact is *less than significant*.

Emissions of pollutants have the potential to adversely affect sensitive receptors within the project area. Pollutants of principal concern include emissions leading to odors, visible emissions (including dust), or emissions considered to constitute air pollutants. Air pollutants have been discussed in Impacts 6-1 through 6-3 above. Therefore, the following discussion focuses on emissions of odors and visible emissions.

[48] Placer County Air Pollution Control District. *CEQA Air Quality Handbook* [pg. 20]. November 21, 2017.

Odors

The following discussion includes an analysis of potential odor-related impacts associated with development of the proposed project and the off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Odors are generally regarded as an annoyance rather than a health hazard. Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, quantitative methodologies to determine the presence of a significant odor impact are difficult. Certain land uses such as wastewater treatment and conveyance facilities, landfills, confined animal facilities, composting operations, food manufacturing plants, refineries, and chemical plants have the potential to generate considerable odors. Operations of the proposed residential units would not introduce any such activities. The proposed off-site sewer lift station improvements would be limited to constructing additional underground emergency wastewater storage and would not generate additional odors.

The Dry Creek WWTP, which is a land use type associated with the potential to generate odors, is located to approximately two miles to the west of the proposed project. However, impacts of the existing environment on the proposed project is outside the purview of CEQA.[49] Nonetheless, a brief discussion is provided herein for informational purposes. The closest proposed residence would be sited over two miles away from the nearest water treatment pond. Additionally, the prevailing wind direction in the project area is from the south. Therefore, any odors associated with the Dry Creek WWTP would usually be directed in the north/northeast direction, and away from the project site.

Since the 1990s, the WWTP has undergone a number of plant improvements that have increased operating efficiencies, increased treatment levels, and reduced most latent odors. Such improvements included covering new primaries, odor-controlled headworks, new secondary clarifiers, a digester, and enclosed generators and blowers. Converting chlorine disinfection to ultraviolet (UV) disinfection and replacing the influent pumping structure further reduced odor and improved safety. Most treatment processes occur indoors or in other facilities that attenuate odor and noise. An in-ground biofilter and chemical scrubber abate odor by collecting and treating odor from the plant headworks and primary clarifier area. In addition, the City is designing and constructing a replacement odor system on the primary sedimentation basin to rehabilitate aging infrastructure and further reduce odors. Design of the improvements is underway, and construction is currently anticipated to commence in autumn or winter of 2026. Due to the proposed project's distance from the Dry Creek WWTP and the plant improvements to the WWTP, residents of the proposed project are unlikely to be exposed to substantial odors.

Diesel fumes from construction equipment are often found to be objectionable; however, construction is temporary, and operation of equipment is regulated by federal, State, and local standards, including PCAPCD rules and regulations. Buildout of the proposed project would involve construction activity in different areas of each site throughout the construction period. Therefore, construction equipment would operate at varying distances from existing sensitive receptors, and potential odors from such equipment

[49] See *Ballona Wetlands Land Trust v. City of Los Angeles,* [2011] 201 Cal.App.4th 455, 473.

would not expose any single receptor to odors for a substantial period of time. Furthermore, construction activity would be restricted to certain hours of the day per the Placer County Code, Section 9.36.030(A)(7), which would limit the times of day during which construction related odors would potentially be emitted. Development of the proposed project would be required to comply with all applicable PCAPCD rules and regulations, which would help to control construction-related odorous emissions. Due to the temporary duration of construction and the regulated nature of construction equipment, project-related construction activity would not be anticipated to result in the creation of substantial odors.

In addition, PCAPCD Rule 205, Nuisance, addresses the exposure of "nuisance or annoyance" air contaminant discharges, which would include odors, and provides enforcement of nuisance control. Rule 205 is complaint-based, where if public complaints are sufficient to cause the emission source to be considered a public nuisance, then the PCAPCD is required to investigate the identified source, as well as determine and ensure a solution for the source of the complaint, which could include operational modifications to correct the nuisance condition. Thus, although not anticipated, if odor complaints are made during project construction or operations, the PCAPCD would be required (per PCAPCD Rule 205) to ensure that such complaints are addressed and mitigated, as necessary.

Considering the above, construction equipment would be unlikely to result in the creation of substantial odors. Consequently, implementation of the proposed project would not be anticipated to result in a significant impact related to the emission of compounds, such as those leading to odors.

Off-Site Affordable Housing Parcel

As discussed under Impact 10-4 of the RVSP EIR, buildout of the RVSP would result in a less-than-significant impact related to the exposure of nearby sensitive receptors to odor. The buildout of the RVSP would not involve or construct sources, such as wastewater treatment plants, composting facilities, chemical plants, and other similar facilities and the Plan Area would not be located within a mile of sources which would emit objectionable odors. Therefore, the RVSP EIR concluded that RVSP would result in a less-than-significant impact related to the exposure of nearby sensitive receptors to odor.

Operations of the off-site affordable housing units would not introduce any odiferous land uses. Additionally, while the off-site affordable housing parcel would be located approximately four miles from Dry Creek WWTP, due to the parcel's distance from the Dry Creek WWTP, residents of the off-site affordable housing parcel are unlikely to be exposed to substantial odors.

Additionally, construction activities associated with the potential future development of the off-site affordable housing parcel would be regulated by federal, State, and local standards, including PCAPCD rules and regulations, such as PCAPCD Rule 205, and would be restricted to certain hours of the day per the Placer County Code, Section 9.36.030(A)(7). Thus, similar to the proposed project, construction activity associated with the potential future development of the off-site affordable housing parcel would not be anticipated to result in the creation of substantial odors. Consequently, implementation of the off-site affordable housing parcel would not be anticipated to result in a significant impact related to the emission of compounds, such as those leading to odors.

Visible Emissions

The following discussion includes an analysis of potential visible emissions-related impacts associated with development of the proposed project, the off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel.

Proposed Project, Off-Site Sewer Lift Station Improvements Area, and Off-Site Affordable Housing Parcel

As defined in PCAPCD Rule 202, visible emissions may be smoke, dust, or any other substance that obscures an observer's view based on standardized scales of opacity. Visible emissions may result from the use of internal combustion engines, such as smoke from diesel fueled equipment, the burning of vegetation, or the upset and release of soil as dust.

PCAPCD Rule 202 specifically prohibits any person from discharging visible emissions of any air contaminant for a period or periods aggregating to more than three minutes in any one-hour time. Operation of the proposed land uses would not be anticipated to result in any visible emissions that would have the potential of violating Rule 202. Construction equipment on-site would be required to meet the visible emissions standards of Rule 202, and, considering the regulated nature of construction equipment, as well as the temporary use of such equipment on-site, would not be anticipated to result in substantial visible emissions. Additionally, PCAPCD Rule 228 requires implementation of dust control measures, such as minimizing track-out on to paved public roadways, limiting vehicle travel on unpaved surfaces to 15 miles per hour, and stabilization of storage piles and disturbed areas. Following project construction, vehicles operating within the project sites would be limited to paved areas of the site, which would not have the potential to create substantial dust emissions.

Considering the above, implementation of the proposed project and the off-site affordable housing parcel would not be anticipated to result in substantial visible emissions during project construction or operations.

Conclusion

For the aforementioned reasons, the proposed project and the off-site affordable housing parcel would not result in emissions of other pollutants (such as those leading to odors) that could adversely affect a substantial number of people. Accordingly, implementation of the proposed project and potential future development of the off-site affordable housing parcel would result in a ***less-than-significant*** impact.

Mitigation Measure(s)

None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

A project's emissions may be individually limited, but cumulatively considerable when taken in combination with past, present, and future development projects. The geographic context for the cumulative air quality analysis includes Placer County and surrounding areas within the portion of the SVAB that is designated nonattainment for ozone and PM_{10}.

As mentioned above, global climate change is, by nature, a cumulative impact. Emissions of GHG contribute, on a cumulative basis, to the significant adverse environmental impacts of global climate change (e.g., sea level rise, impacts to water supply and water quality, public health impacts, impacts to ecosystems, impacts to agriculture, and other environmental impacts). A single project could not generate enough GHG emissions to contribute noticeably to a change in the global average temperature. However, the combination of GHG emissions from a project in combination with other past, present, and future projects could contribute substantially to the world-wide phenomenon of global climate change and the associated environmental impacts. Although the geographical context for global climate change is the Earth, for analysis purposes under CEQA, and due to the regulatory context pertaining to GHG emissions and global climate change applicable to the proposed project, the geographical context for global climate change in this EIR is limited to the State of California.

6-5 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors). Based on the analysis below, and with implementation of mitigation for the off-site affordable housing parcel, the project's incremental contribution to the significant cumulative impact is *less than cumulatively considerable*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and the off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or State ambient air quality standard.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

The proposed project is within a nonattainment area for ozone and PM_{10}. By nature, air pollution is largely a cumulative impact. The population growth and vehicle usage within the nonattainment area from the proposed project, in combination with other past, present, and reasonably foreseeable projects within Placer County and surrounding areas, contributes to the region's adverse air quality impacts on a cumulative basis, and could either delay attainment of AAQS or require the adoption of additional controls on existing and future air pollution sources to offset emission increases. Thus, the project's emissions of criteria air pollutants would contribute to cumulative regional air quality effects.

As noted in the Standards of Significance section above, the PCAPCD directs lead agencies to use the region's existing attainment plans as a basis for analysis of cumulative emissions. A project's interference with such plans may be determined through the use of the PCAPCD's recommended thresholds of significance for ozone precursors and PM_{10}.

The PCAPCD's recommended cumulative thresholds are identical to the operational thresholds, both of which are presented in Table 6-6. Accordingly, if the project would result in an increase of ROG, NO_X or PM_{10} in excess of PCAPCD's operational phase cumulative-level emissions thresholds, which are identical to PCAPCD's project-level operational emissions thresholds, the project could potentially result in a significant incremental contribution towards cumulative air quality impacts.

As discussed under Impact 6-2 and demonstrated in Table 6-11, operational criteria pollutant emissions associated with the proposed project would be below the applicable PCAPCD thresholds of significance.

Off-Site Affordable Housing Parcel

As described within Impact 10-6 within the RVSP EIR, construction emissions for PM_{10}, NO_X, ROG, and CO would exceed the PCAPCD's thresholds of significance. Additionally, emissions of ROG during operation, resulting from new vehicle trips and area sources, were estimated to exceed PCAPCD's thresholds of significance. As such the RVSP included Mitigation Measure 10-6a, which would incorporate Mitigation Measures 10-1a through 10-1e and 10-2a through 10-2d, as described above. However, even with the implementation of Mitigation Measure 10-6a, the RVSP EIR concluded that buildout of the RVSP would exceed the PCAPCD's significance thresholds and a significant and unavoidable impact would occur. The Placer County Board of Supervisors adopted Findings of Fact and a Statement of Overriding Considerations for the significant and unavoidable impacts associated with the RVSP.

Although future potential development of 120 affordable income-restricted units on the off-site affordable housing parcel would result in a net increase in operational criteria pollutant emissions as compared to the approved conditions (see Table 6-12), the total emissions associated with potential future development of the off-site affordable housing parcel, as well as the net increase in emissions as compared to the approved conditions, would remain below the PCAPCD's thresholds of significance for operational criteria pollutant emissions. In addition, as noted above, even if the total emissions from the off-site affordable housing parcel were added to the proposed project's 432 units, the resulting emissions would be below the applicable PCAPCD thresholds. Therefore, future potential development of 120 affordable income-restricted units on the off-site affordable housing parcel would not result in a new significant environmental effect or a substantial increase in the severity of a previously identified significant effect beyond what was previously anticipated within the RVSP EIR.

Furthermore, at such time the off-site affordable housing parcel gets developed, RVSP EIR Mitigation Measure 10-6a, which has been incorporated into this EIR as Mitigation Measure 6-5, would be required.

Conclusion

Therefore, implementation of the proposed project and the off-site affordable housing parcel would not result in a significant incremental contribution to a cumulative violation of any air quality standards, contribute substantially to an existing or projected air quality violation, or conflict with and/or obstruct implementation of the PCAPCD's air quality planning efforts. Nevertheless, the off-site affordable housing parcel is located within the overall RVSP area for which the RVSP EIR included mitigation measures intended to be

implemented by all future development to reduce total operational emissions within the RVSP area. Thus, the impact herein is determined to be ***cumulatively considerable*** as a means to incorporate the applicable RVSP mitigation measures into this EIR and ensure the applicable RVSP EIR mitigation measures are implemented for the potential future development of the off-site affordable housing parcel. Therefore, at such time the off-site affordable housing parcel gets developed, implementation of Mitigation Measure 10-6a of the RVSP EIR would be required to ensure a cumulatively considerable incremental contribution to the significant cumulative impact does not occur. The referenced RVSP mitigation measure is incorporated into this EIR as Mitigation Measure 6-5 below.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-cumulatively considerable* level.

Off-Site Affordable Housing Parcel

6-5 Implement RVSP EIR Mitigation Measure 10-6a:

Implement the following mitigation measures:

- *Mitigation Measure 10-1a [incorporated as Mitigation Measure 6-1(a) of this EIR] (Prepare and implement emission control/dust control measures);*
- *Mitigation Measure 10-1b [incorporated as Mitigation Measure 6-1(b) of this EIR] (Provide PCAPCD with a list of construction equipment and anticipated construction timeline);*
- *Mitigation Measure 10-1c [incorporated as Mitigation Measure 6-1(c) of this EIR] (Maintain construction equipment and vehicles);*
- *Mitigation Measure 10-1d [incorporated as Mitigation Measure 6-1(d) of this EIR] (Minimize idling time for diesel-power equipment);*
- *Mitigation Measure 10-1e [incorporated as Mitigation Measure 6-1(e) of this EIR] (No open burning of removed vegetation);*
- *Mitigation Measure 10-2a [incorporated as Mitigation Measure 6-2(a) of this EIR] (Implement measures to reduce energy consumption);*
- *Mitigation Measure 10-2b [incorporated as Mitigation Measure 6-2(b) of this EIR] (Prohibit open burning); and*
- *Mitigation Measure 10-2d [incorporated as Mitigation Measure 6-2(c) of this EIR] (Implement offsite mitigation programs or pay an in-lieu amount into the Placer County Air Pollution Control District's Air Quality Mitigation Program).*

The complete descriptions of these mitigation measures are provided above.

6-6 Generation of GHG emissions that may have a significant impact on the environment or conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs. Based on the analysis below, and with implementation of mitigation for the off-site affordable housing parcel, the project's incremental contribution to the significant cumulative impact is *less than cumulatively considerable*.

Buildout of the proposed project, off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel would contribute to increases of GHG emissions that are associated with global climate change during construction and operation, as discussed in further detail below.

Construction GHG Emissions

The following discussion includes an analysis of potential impacts related to development of the proposed project and the off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could result in a generation of GHG emissions that may have a significant impact on the environment or conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs during construction.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

The estimated unmitigated maximum construction-related GHG emissions from the proposed project and the off-site sewer lift station improvements area are presented in Table 6-14.

Table 6-14
Maximum Unmitigated Construction GHG Emissions – Proposed Project

Proposed Project ($MTCO_2e$/yr)	Threshold of Significance ($MTCO_2e$/yr)	Exceeds Threshold?
809	10,000	**NO**

Note: Although modeling was conducted for both the proposed project and the proposed project plus the 22 on-site ADUs, the addition of the 22 ADUs would result in a negligible increase in construction-related GHG emissions.

Source: CalEEMod, December 2025. (see Appendix C).

As shown in the table, the maximum construction-related GHG emissions associated with the proposed project and the off-site sewer lift station improvements area would be well below the PCAPCD's bright-line threshold of 10,000 $MTCO_2e$/yr.

Off-Site Affordable Housing Parcel

The RVSP EIR did not include a discussion regarding construction-related GHG emissions. The estimated unmitigated net increase in construction-related GHG emissions associated with the off-site affordable housing parcel are presented in Table 6-15.

Table 6-15
Maximum Unmitigated Construction GHG Emissions – Off-Site Affordable Housing Parcel

Scenario	Project GHG Emissions ($MTCO_2e$/yr)
Approved Conditions (3,750 sf commercial uses and 39 density reserve units)	232
Proposed Conditions (120 multi-family residential units)	292
Net Increase	*+60*
Adopted PCAPCD Threshold	**10,000**
Exceed?	**NO**

Source: CalEEMod, August 2025 (see Appendix C).

In addition, the total maximum unmitigated construction-related GHG emissions associated with the proposed project in combination with the net increase associated with the off-site affordable housing parcel are presented in Table 6-16.

Table 6-16
Total Maximum Unmitigated Construction GHG Emissions – Proposed Project and Off-Site Affordable Housing Parcel

Scenario	Project GHG Emissions ($MTCO_2e$/yr)
Proposed Project[1]	790
Off-Site Affordable Housing Parcel (Net Increase)	60
Combined Emissions	*850*
Adopted PCAPCD Threshold	**10,000**
Exceed?	**NO**

[1] Although modeling was conducted for both the proposed project and the proposed project plus the 22 on-site ADUs, the addition of the 22 ADUs would result in a negligible increase in construction-related GHG emissions.

Source: CalEEMod, August/December 2025 (see Appendix C).

As shown in the table, the total maximum construction-related GHG emissions associated with the proposed project in combination with the net increase associated with potential future development of the off-site affordable housing parcel would be well below the PCAPCD's bright-line threshold of 10,000 $MTCO_2e$/yr. In addition, even if the total GHG emissions from the off-site affordable housing parcel were added to the GHG emissions from the proposed project's 432 units, the total combined emissions would be under the applicable PCAPCD thresholds (1,082 $MTCO_2e$/yr).

Long-Term Operational GHG Emissions

The following discussion includes an analysis of potential impacts related to development of the proposed project and the off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could result in a generation of GHG emissions that may have a significant impact on the environment or conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs during operations.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

The proposed off-site sewer lift station improvements are related to providing additional floodwater storage capacity, and would not result in operational GHG emissions. Therefore, the below discussion focuses on operational GHG emissions associated with the proposed project.

The modeling assumptions for the GHG emissions related to operations of the proposed project are discussed in the Method of Analysis section above. The estimated unmitigated operational GHG emissions for the proposed project at full buildout (2030) are presented in Table 6-17.

Table 6-17
Maximum Unmitigated Operational GHG Emissions – Proposed Project

Emission Source	GHG Emissions ($MTCO_2e$/yr)
Mobile	3,266.00
Area	5.70
Energy	950.00
Water	26.00
Waste	100
Refrigerants	0.84
Total Annual GHG Emissions	*4,347*
PCAPCD Screening Level Threshold	**1,100.00**
PCAPCD Bright Line Threshold	**10,000.00**

Notes:
- Rounding may result in small differences in summation.
- The project emissions shown above include emissions associated with the proposed project and the 22 on-site ADUs.

Source: CalEEMod, December 2025 (see Appendix C).

As presented in Table 6-17, the proposed project would result in total maximum annual operational GHG emissions below the PCACPD's Bright Line Threshold of 10,000 $MTCO_2e$/yr. However, emissions would exceed the PCAPCD's Screening Level Threshold. Therefore, the proposed project has been further evaluated in comparison with the efficiency thresholds presented in Table 6-7. The efficiency thresholds are in units of $MTCO_2e$/yr per capita for residential projects in rural or urban settings. In general, urban projects are considered to involve shorter vehicle trips, which would inherently reduce GHG emissions from mobile sources, while rural projects are considered to involve relatively longer vehicle trips and proportionally higher GHG emissions from mobile sources.

In recognition of the inherent inequality between mobile source GHG emissions from rural and urban projects, PCAPCD established higher efficiency thresholds for rural projects as compared to urban projects. The PCAPCD directs lead agencies to determine whether a project is considered rural or urban. Because urban development generally exists within the project vicinity, the PCAPCD's urban efficiency threshold is used for further analysis of project-related operational emissions. The urban efficiency metric is more stringent, and, thus, use of the urban efficiency metric presents a conservative analysis. The

estimated GHG emissions per capita for the proposed project are presented below in Table 6-18 and compared to the applicable PCAPCD efficiency threshold.

Table 6-18
Maximum Unmitigated Annual Project Operational GHG Emissions Per Capita

Proposed Project Emissions ($MTCO_2e$/yr/capita)	PCAPCD Efficiency Threshold for Urban Residential Projects ($MTCO_2e$/yr/capita)
3.31	4.5

Notes: As detailed in Chapter 13, Land Use and Planning/Population and Housing, of this EIR, the estimated population for the project at buildout is based on a 2.94 persons per household average and 1.91 persons per ADU rate for the DCWPCP area. Thus, the estimated population of the proposed project is 1,312 residents. ([432 du * 2.94 persons per household] + [22 du * 1.91 persons per ADU= 1,312

As shown in the table, the proposed project would result in operational GHG emissions below the applicable PCAPCD efficiency threshold. Therefore, operation of the proposed project would not be considered to generate GHG emissions that may have a significant impact on the environment.

Off-Site Affordable Housing Parcel

As described within Impact 10-7 within the RVSP EIR, operational GHG emissions associated with the buildout of the RVSP, specifically from mobile sources and energy consumption during operation, could result in a significant impact. The RVSP EIR describes several components of the RVSP which are consistent with the principles developed by the Sacramento Area Council of Governments (SACOG), such as "Smart Growth" Factors, Traffic Factors, and Electricity Factors which would target the reduction of GHG emissions during operation. In addition, the RVSP EIR includes Mitigation Measure 10-7a, which would require implementation of several RVSP Mitigation Measures, including Mitigation Measures 10-1c, 10-1d, 10-2a, 10-2d, as described above. Additionally, RVSP Mitigation Measure 10-7a requires implementation of Mitigation Measures 9-1a, 9-2a, 9-2b, 9-3a, 9-8a, 9-9a, 9-11a, 9-16a, 9-17a, 9-18a, 9-19a, and 19-20a included in Chapter 9, Transportation and Circulation, of the RVSP EIR, which would require the implementation of a Construction Traffic Management Plan, the creation of a Community Service Area to cover Transit Service, and road widening and roadway improvements to select roads in vicinity of the RVSP. However, Mitigation Measures 9-2a, 9-2b, 9-3a, 9-8a, 9-9a, 9-11a, 9-16a, and 9-17a, would not be applicable to the analysis below as they apply to roadways outside the vicinity of the off-site affordable housing parcel. Further, as discussed in Chapter 16, Transportation, of this EIR, RVSP Mitigation Measure 9-1a would not be applicable to the off-site affordable housing parcel, and the requirements of Mitigation Measure 9-18a have been previously implemented. Finally, Mitigation Measures 9-19a and 9-20a of the RVSP are related to LOS, and, given that the law has changed with respect to how transportation-related impacts may be addressed under CEQA such that unacceptable LOS is no longer considered a significant impact on the environment under CEQA, would not be applicable to the off-site affordable housing parcel.

Due to the uncertainties of determining whether the RVSP would result in a cumulatively considerable incremental contribution to global climate change, the RVSP EIR concluded

that even with the implementation of Mitigation Measure 10-7a, the RVSP would result in a significant and unavoidable impact related to GHG emissions and climate change. The Placer County Board of Supervisors adopted Findings of Fact and a Statement of Overriding Considerations for the significant and unavoidable impacts associated with the RVSP.

The estimated unmitigated net increase in operational GHG emissions associated with the off-site affordable housing parcel are presented in Table 6-19.

Table 6-19
Maximum Unmitigated Operational GHG Emissions – Off-Site Affordable Housing Parcel

Emission Source	GHG Emissions ($MTCO_2e$)		
	Approved Conditions	**Proposed Conditions**	**Net Increase**
Mobile	745.00	1,336.00	*+591.00*
Area	0.54	1.49	+0.95
Energy	49.50	137.00	+87.50
Water	2.63	6.58	+3.95
Waste	10.30	27.70	+17.40
Refrigerants	0.05	0.15	+0.10
Total Annual GHG Emissions	*808.00*	*1,509.00*	*+701.00*
PCAPCD Screening Level Threshold	**1,100.00**	**1,100.00**	**1,100.00**
PCAPCD Bright Line Threshold	**10,000.00**	**10,000.00**	**10,000.00**

Note: Rounding may result in small differences in summation.

Source: CalEEMod, August 2025 (see Appendix C).

In addition, the total maximum unmitigated operational GHG emissions associated with the proposed project in combination with the net increase associated with the off-site affordable housing parcel are presented in Table 6-20.

As presented in Table 6-20, the total maximum unmitigated operational GHG emissions associated with the proposed project in combination with the net increase associated with the off-site affordable housing parcel would be below the PCACPD's Bright Line Threshold of 10,000 $MTCO_2e$/yr. However, emissions would exceed the PCAPCD's Screening Level Threshold. Therefore, the total maximum unmitigated operational GHG emissions associated with the proposed project in combination with the net increase associated with the off-site affordable housing parcel have been further evaluated in comparison with the efficiency thresholds presented in Table 6-7.

Table 6-20
Total Maximum Unmitigated Operational GHG Emissions – Proposed Project and Off-Site Affordable Parcel

Emission Source	GHG Emissions ($MTCO_2e$)		
	Off-Site Affordable Housing Parcel (Net Increase)	Proposed Project	Combined Emissions
Mobile	591.00	3,075.00	3,666.00
Area	0.95	5.40	6.35
Energy	87.50	898.00	985.5
Water	3.95	24.00	27.95
Waste	17.40	96.00	113.40
Refrigerants	0.10	0.79	0.89
Total Annual GHG Emissions	*701.00*	*4,099.00*	*4,800.00*
PCAPCD Screening Level Threshold	**1,100.00**	**1,100.00**	**1,100.00**
PCAPCD Bright Line Threshold	**10,000.00**	**10,000.00**	**10,000.00**

Notes:
- Rounding may result in small differences in summation.
- The proposed project emissions shown above do not include emissions associated 22 on-site ADUs.

Source: CalEEMod, August/December 2025 (see Appendix C).

The estimated combined GHG emissions per capita for the proposed project and the net increase in emissions associated with the off-site affordable housing parcel are presented below in Table 6-21 and compared to the applicable PCAPCD efficiency threshold.

Table 6-21
Total Maximum Unmitigated Annual Project Operational GHG Emissions Per Capita

Proposed Project and Off-Site Affordable Housing Parcel Emissions ($MTCO_2e$/yr/capita)	PCAPCD Efficiency Threshold for Urban Residential Projects ($MTCO_2e$/yr/capita)
3.45	4.5

Notes: As detailed in Chapter 13, Land Use and Planning/Population and Housing, of this EIR, the estimated population for the project at buildout is based on a 2.94 persons per household average for the DCWPCP area. Thus, the estimated population of the proposed project is 1,270 residents. ([432 du * 2.94 persons per household]. In addition, using the same estimated number of persons by household used within the RVSP EIR, the off-site affordable housing parcel would result in a total of 240 future residents associated with development of the off-site affordable housing parcel, an increase in 120 future residents as compared to what was previously analyzed in the RVSP EIR. Thus, total population associated with the proposed project and the net increase associated with the off-site affordable housing parcel is 1,390.

As shown in the table, the net increase in emissions associated with the off-site affordable housing parcel, in combination with the proposed project, would result in operational GHG emissions below the applicable PCAPCD efficiency threshold. In addition, even if the total GHG emissions from the off-site affordable housing parcel were added to the GHG

emissions from the proposed project's 432 units, and divided by the total population associated with the proposed project and the off-site affordable housing parcel, the total combined per capita GHG emissions would be under the applicable PCAPCD efficiency threshold.[50] Therefore, operation of the off-site affordable housing parcel would not be considered to generate GHG emissions that may have a significant impact on the environment or result in a new significant environmental effect or a substantial increase in the severity of a previously identified significant effect beyond what was previously anticipated within the RVSP EIR.

In addition, at such time the off-site affordable housing parcel gets developed, operations related to such would be required to comply with all applicable PCAPCD rules and regulations, as well as RVSP EIR Mitigation Measure 10-7a, which has been incorporated into this EIR as Mitigation Measure 6-6.

Consistency with Placer County Sustainability Plan

The CARB encourages local governments to adopt a reduction goal for municipal operations emissions and move toward establishing similar goals for community emissions that parallel the State's commitment to reducing GHG emissions. As noted previously, Placer County adopted the PCSP in January 2020.[51] The PCSP includes an inventory of baseline emissions from the year 2005 and forecasted emissions in 2020, 2030, and 2050. In addition, the PCSP establishes a target of reducing GHG emissions from Placer County to 15 percent below 2005 levels by 2020 and achieving the State-wide per capita efficiency target of six $MTCO_2e$ per person by 2030. The GHG reductions presented within the PCSP are designed to achieve the State's adopted AB 32 and SB 32 reduction targets. The PCSP would not be applicable to projects that have been previously analyzed under a certified EIR, which are consistent with such analysis, and addresses the most recent GHG regulatory requirements.

As noted above, because the proposed project's and the off-site affordable housing parcel's operational GHG emissions would be below the applicable thresholds, implementation of the GHG reduction measures included in the PCSP is not required. Therefore, the proposed project and the potential future development of the off-site affordable housing parcel would not conflict with implementation of the PCSP.

Conclusion

Based on the above, the proposed project and the potential future development of the off-site affordable housing parcel would not be considered to generate GHG emissions, either directly or indirectly, that would have a significant impact on the environment, or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Nevertheless, the off-site affordable housing parcel is located within the overall RVSP area for which the RVSP EIR included mitigation measures intended to be implemented by all future development to reduce total GHG emissions within the RVSP area. Thus, the impact herein is determined to be ***cumulatively considerable*** as a means to incorporate the applicable RVSP mitigation measures into this EIR and ensure the applicable RVSP EIR mitigation measures are implemented for the off-site affordable

[50] 1,509.00 $MTCO_2e$/yr + 4,099.00 $MTCO_2e$/yr = 5,608 $MTCO_2e$/yr; 1,270 residents + 240 future residents = 1,510 residents; 5,608 $MTCO_2e$/yr / 1,510 residents = 3.71 $MTCO_2e$/yr/capita

[51] Placer County. *Placer County Sustainability Plan: A Greenhouse Gas Emission Reduction Plan and Adaptation Strategy.* January 28, 2020.

housing parcel. Therefore, at such time the off-site affordable housing parcel gets developed, implementation of Mitigation Measure 10-7a of the RVSP EIR would be required to ensure a cumulatively considerable incremental contribution to the significant cumulative impact does not occur. The referenced RVSP mitigation measure is incorporated into this EIR as Mitigation Measure 6-6 below.

Mitigation Measure(s)

As discussed above, RVSP Mitigation Measure 10-7a would require implementation of several RVSP Mitigation Measures, including Mitigation Measures 10-1c, 10-1d, 10-2a, 10-2d, as described above. Additionally, RVSP Mitigation Measure 10-7a requires implementation of Mitigation Measures 9-1a, 9-2a, 9-2b, 9-3a, 9-8a, 9-9a, 9-11a, 9-16a, 9-17a, 9-18a, 9-19a, and 19-20a included in Chapter 9, Transportation and Circulation, of the RVSP EIR, which would require the implementation of a Construction Traffic Management Plan, the creation of a Community Service Area to cover Transit Service, and road widening and roadway improvements to select roads in vicinity of the RVSP. However, Mitigation Measures 9-2a, 9-2b, 9-3a, 9-8a, 9-9a, 9-11a, 9-16a, and 9-17a, would not be applicable as they apply to roadways outside the vicinity of the off-site affordable housing parcel and would not be adversely affected by potential future development of the off-site affordable housing parcel. Further, as discussed in Chapter 16, Transportation, of this EIR, RVSP Mitigation Measure 9-1a would not be applicable to the off-site affordable housing parcel, and the requirements of Mitigation Measure 9-18a have been previously implemented. Finally, Mitigation Measures 9-19a and 9-20a of the RVSP are related to LOS, and, given that the law has changed with respect to how transportation-related impacts may be addressed under CEQA such that unacceptable LOS is no longer considered a significant impact on the environment under CEQA, these measures would not be applicable to the off-site affordable housing parcel. Thus, Mitigation Measure 6-6 below appropriately includes only the mitigation measures listed in RVSP Mitigation Measure 10-7a that would be applicable to the potential future development of the off-site affordable housing parcel. Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-cumulatively considerable* level.

Off-Site Affordable Housing Parcel

6-6 Implement RVSP EIR Mitigation Measure 10-7a:

Implement the following mitigation measures:

- *Mitigation Measure 10-1c [incorporated as Mitigation Measure 6-1(c) of this EIR] (Maintain construction equipment and vehicles);*
- *Mitigation Measure 10-1d [incorporated as Mitigation Measure 6-1(d) of this EIR] (Minimize idling time for diesel-powered equipment);*
- *Mitigation Measure 10-2a [incorporated as Mitigation Measure 6-2(a) of this EIR] (Implement measures to reduce energy consumption); and*
- *Mitigation Measure 10-2d [incorporated as Mitigation Measure 6-2(c) of this EIR] (Implement offsite mitigation programs or pay an in-lieu amount into the Placer County Air Pollution Control District's Air Quality Mitigation Program).*

7. Biological Resources

7. BIOLOGICAL RESOURCES

7.1 INTRODUCTION

As discussed in Chapter 3, Project Description, of this EIR, the proposed project would include a total of 432 residential units and associated improvements, off-site sewer lift station improvements, and two options to meet the County's affordable housing regulations. The affordable housing options include the provision of a minimum of 22 Accessory Dwelling Units (ADUs) on lots proposed for development with single-family residential units, or an off-site proposal wherein Homes by Towne would rezone and transfer the fee title to the County an approximately four-acre parcel off-site within the Riolo Vineyards Specific Plan (RVSP) which could develop a maximum of 120 affordable income-restricted units.

The Biological Resources chapter of the EIR evaluates the biological resources known to occur or potentially occur within the project site and surrounding environments. The chapter describes the potential impacts of the proposed project, off-site sewer lift station improvements area, and off-site affordable housing parcel related to biological resources and identifies measures to eliminate or substantially reduce impacts to a less-than-significant level. Existing plant communities, wetlands, wildlife habitats, and potential for special-status species and communities are discussed for the project region. The information contained in the analysis is primarily based on a Biological Resources Assessment (BRA) (see Appendix D of this EIR)[1] prepared by Madrone Ecological Consulting (Madrone). Further information was sourced from the Placer County General Plan (PCGP),[2] the PCGP EIR,[3] the Dry Creek-West Placer Community Plan (DCWPCP),[4] the RVSP EIR,[5] and the Placer County Conservation Program (PCCP).[6]

7.2 EXISTING ENVIRONMENTAL SETTING

The following sections describe the regional biological setting in which the project site is located, the biological setting of the project site, and the special-status species and sensitive natural communities known to occur within the project site and surrounding environs.

Regional Setting

The project site consists of 92.2 acres located south of Baseline Road, immediately east of the abandoned old Walerga Road right-of-way, west of the Fiddyment Road/Baseline Road/Walerga Road intersection and the western portion of Sun Valley Oaks residential subdivision, and north of the Morgan Creek residential subdivision in the DCWPCP of unincorporated Placer County. The off-site affordable housing parcel consists of approximately four acres located at the northeast corner of PFE Road and Watt Avenue in the RVSP. The DCWPCP area experiences a Mediterranean type climate with cool, wet winters, and hot, dry summers. Temperatures in the project region fluctuate from average highs in July of 96 degrees Fahrenheit, with average lows

1 Madrone Ecological Consulting. *Biological Resources Assessment, Estia Dry Creek and Placer Creek Residential, Placer County, California*. February 2026.
2 Placer County. *Countywide General Plan Policy Document.* August 1994 (updated May 2013).
3 Placer County. *Countywide General Plan EIR*. July 1994.
4 Placer County. *Dry Creek-West Placer Community Plan.* Amended May 12, 2009.
5 Placer County. *Riolo Vineyard Specific Plan Environmental Impact Report*. January 2008.
6 Placer County. *Placer County Conservation Program*. September 1, 2020.

in December of 40 degrees Fahrenheit.[7] Nearly all precipitation occurs between October and April in the form of rainfall, with February typically the wettest month, averaging 4.6 inches.

The DCWPCP area is located within the Sacramento Valley portion of Placer County. The Sacramento Valley is a broad valley characterized by predominantly agricultural uses and open space, with interspersed urban centers and rural towns. To the east and northeast of the DCWPCP area, the terrain transitions from the relatively flat Sacramento Valley to the foothill region of Placer County, followed by the increasingly steep and rugged Sierra Nevada Mountains. Habitat types within the Sacramento Valley portion of Placer County generally include oak woodland, riparian woodland, annual brome grasslands, and agricultural land.

The DCWPCP, itself, is unique in that the plan area contains vast tracts of undeveloped land interspersed with rural single-family lots and residential subdivisions. A portion of the DCWPCP, the Dry Creek floodplain, remains in its natural state and generally flows in a west-to-east direction. A variety of ecotypes are located within the DCWPCP boundaries, including valley grasslands, riparian woodlands, valley woodlands, and cultivated or grazed agricultural lands. Within such biological communities, unique and sensitive habitats are also present, including vernal pools, riparian areas, salmon-spawning grounds, and groves of mature native oaks. Many of the foregoing habitats are associated with Dry Creek and its tributaries. Due to the expanse of its watershed, Dry Creek flows year-round.

Project Setting

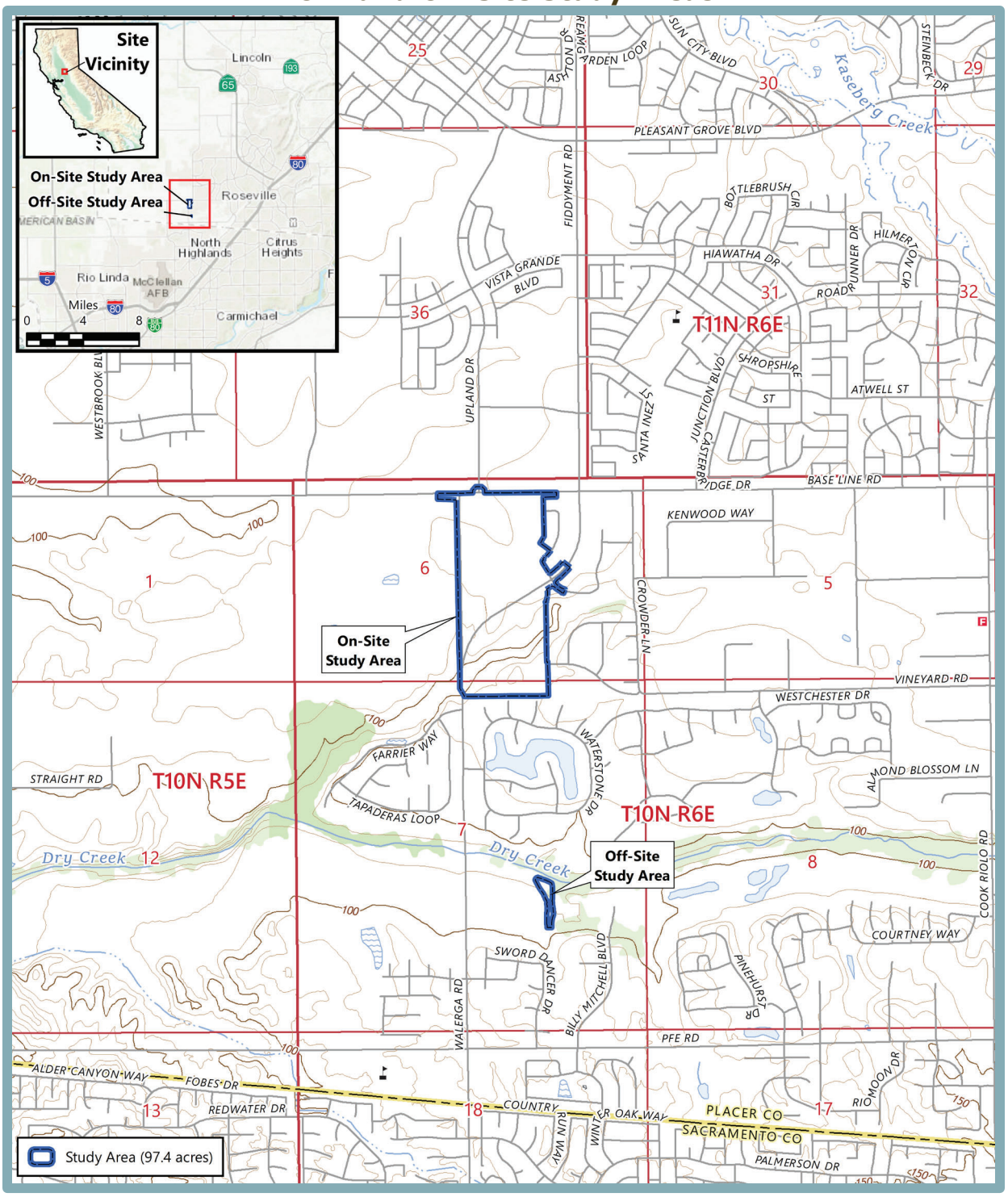
The approximately 97.4-acre study area for the BRA consists of a 95.5-acre on-site study area, consisting of the site and various nearby roadway segments, and an approximately two-acre off-site study area located south of Dry Creek and just east of Dry Creek Community Park associated with the Community Facility District #1 Sewer Lift Station located adjacent to the park (off-site sewer lift station improvements area) (see Figure 7-1). The project site generally consists of gently rolling hills with an intermittent tributary drainage of Dry Creek. Study area elevations range from approximately 100 feet above mean sea level (amsl) to 130 feet amsl.

The on-site study area is mostly undeveloped, with the exception of the Walerga Road corridor, which runs southwest to northeast through the site, and a paved bike path that crosses through the southern portion of the site. On-site undeveloped areas are comprised of ungrazed annual brome grassland and vernal pool complex (VPC) on gently rolling terrain interspersed with an assemblage of seasonal wetlands and vernal pools. Several man-made wetlands are present along the eastern boundary of the project site. The on-site paved bike path parallels the south side of an intermittent tributary drainage of Dry Creek that bisects the southern portion of the on-site study area. The intermittent drainage is bordered by valley foothill riparian woodland (VFRW) that supports native valley oak (*Quercus lobata*), blue oak (*Q. douglasii*), and interior live oak (*Q. wislizenii*).

The off-site sewer lift station improvements area is bordered by Dry Creek Community Park to the west and an undeveloped area to the east, and includes a small section of an existing paved bike path. The northern portion of the off-site sewer lift station improvements area is comprised of VFRW and portions of intermittent tributary drainages of Dry Creek.

[7] Weather Spark. *Climate and Average Weather Year Round in Roseville*. Available at: https://weatherspark.com/y/1156/Average-Weather-in-Roseville-California-United-States-Year-Round. Accessed September 2025.

Figure 7-1
On- and Off-Site Study Areas



* Figure not OCR Compatible

Terrestrial Vegetation Communities/PCCP Land Covers

Madrone identified the following PCCP land covers within the study area: Annual Brome Grassland/VPC Low and Intermediate, VFRW, Road, Urban Parks, and Urban/Suburban, as summarized in Table 7-1 and shown in Figure 7-2. The study area's vegetation communities are discussed in further detail below.

Table 7-1
PCCP Land Cover Types within the Study Area

Land Covers/Vegetation Communities		Acres
Annual Brome Grassland/VPC	VPC Intermediate	82.0
	VPC Low	0.8
VFRW		3.8
Road		8.1
Urban Parks		0.5
Urban/Suburban		2.2
Total		**97.4**

Note: Small summation errors may occur due to rounding.

Source: Madrone Ecological Consulting, 2026.

Annual Brome Grassland/VPC Low and Intermediate

The areas mapped as VPC low and VPC intermediate land covers by the PCCP consist of annual brome grasslands with varying densities of wetlands (1.6 percent and 5.5 percent, respectively). The BRA uses the term annual brome grassland/VPC to describe the foregoing land cover types, as Madrone considers it to be more descriptive. The annual brome grassland/VPC land cover within the study area is dominated by non-native grasses and forbs such as wild oat (*Avena fatua*), soft brome (*Bromus hordeaceus*), medusa head (*Elymus caput-medusae*), ryegrass (*Festuca perennis*), winter vetch (*Vicia villosa*), and caley pea (*Lathyrus hirsutus*).

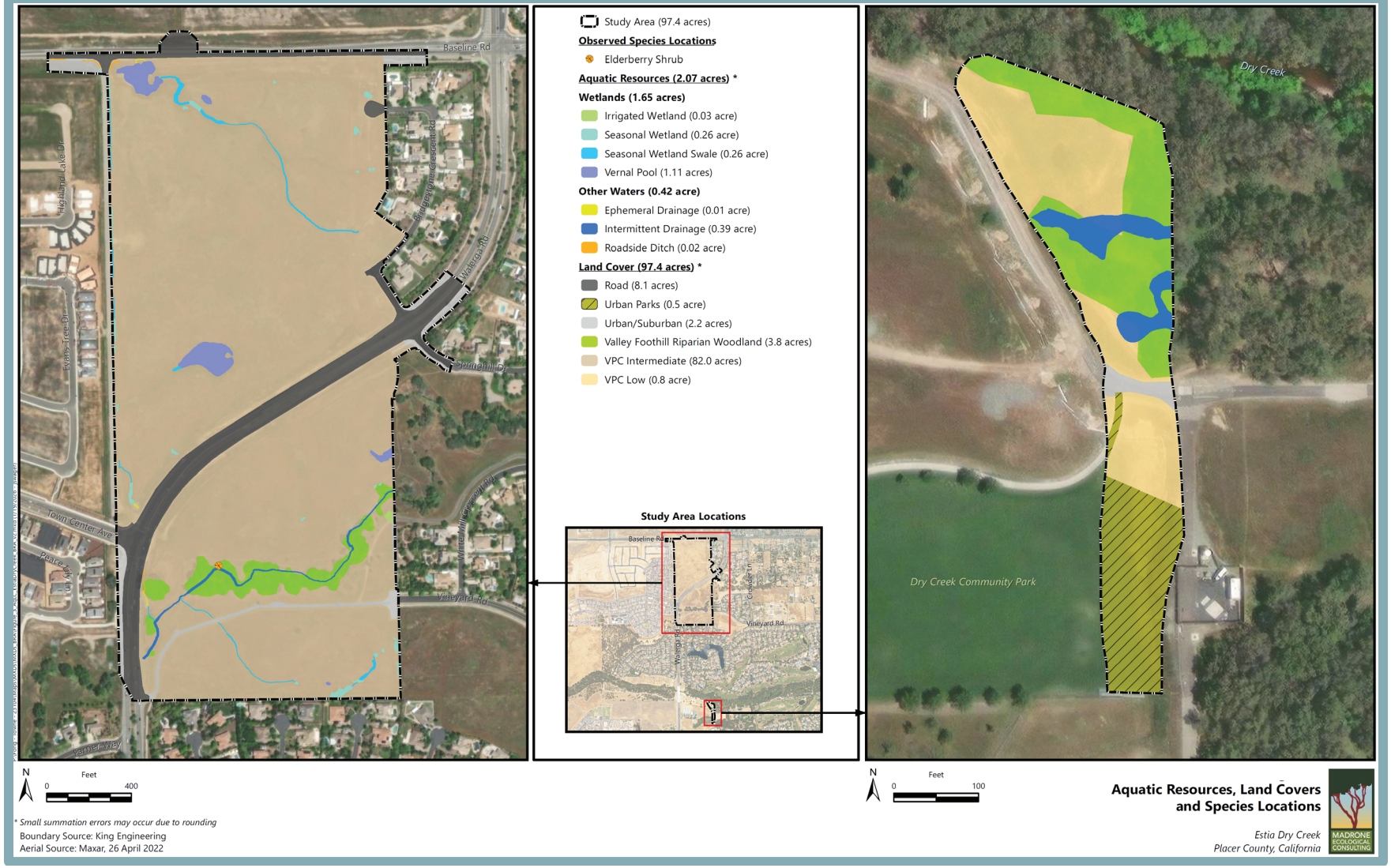
Valley Oak Riparian Woodland/Valley Foothill Riparian Woodland

Both sides of the intermittent drainage within the project site, as well as the northern portion of the off-site sewer lift station improvements area, support valley oak riparian woodland. The canopy of this community is comprised of valley oak (*Quercus lobata*), blue oak (*Quercus douglasii*), and interior live oak (*Quercus wislizeni*). The understory is primarily comprised of western poison oak (*Toxicodendron diversilobum*), California pipevine (*Aristolochia californica*), and species found in the surrounding annual brome grassland. The PCCP classifies valley oak woodlands in riparian areas as VFRW.

Urban (Non-Natural) Communities

A number of areas within the study area are designated as urban land covers that do not support species habitat. Such land covers are categorized as "Previously Converted" areas, and are not subject to Land Conversion Fees under the PCCP. Urban land cover within the study area includes 8.1 acres of road, consisting of the existing Walerga Road corridor, which runs southwest to northeast through the project site; a 0.5-acre portion of Dry Creek Community Park located within the off-site sewer lift station improvements area; and several areas within the study area mapped as urban and suburban.

Figure 7-2
Aquatic Resources, On-Site Land Covers, and Observed Species Locations



* Figure not OCR Compatible

Areas mapped as urban and suburban include paved roadways/pathways and adjacent street landscaping that are mostly paved or otherwise unvegetated. Some urban and suburban areas within the study area support maintained landscaping and ruderal vegetation. In addition, a paved bike bath is located parallel to the intermittent drainage in the southern portion of the project site as well as a paved path along the western boundary of the northern portion of the project site.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel consists of approximately four acres of undeveloped land with grassy fields and gently rolling topography located at the northeast corner of PFE Road and Watt Avenue. According to Figure 6-1a of the RVSP EIR, the off-site affordable housing parcel consists primarily of annual grasslands with seasonal wetland located on the southeast portion of the parcel. Several trees are present along the northern and western boundaries of the off-site affordable housing parcel. As part of the 2005 RVSP EIR, a BRA was prepared for the planning area.

Aquatic Resources

A total of approximately 2.07 acres of aquatic resources were delineated within the project site in accordance with the U.S. Army Corps of Engineers (USACE) Sacramento District's Minimum Standards for Acceptance of Preliminary Wetlands Delineations, and were verified by the USACE with Preliminary Jurisdictional Determinations (PJDs) (see Figure 7-2). Table 7-2 below provides the acreage of each aquatic resource located within the study area, as well as a detailed description of each.

Table 7-2
Aquatic Resources Delineated Within the Study Area

Resource Type	PCCP Classification	Acreage
Wetlands		
Irrigated Wetland	Aquatic/Wetland	0.03
Seasonal Wetland	Vernal Pool Constituent Habitat	0.26
Seasonal Wetland Swale	Vernal Pool Constituent Habitat	0.26
Vernal Pool	Vernal Pool Constituent Habitat	1.11
Other Waters		
Ephemeral Drainage	Riverine	0.01
Intermittent Drainage	Riverine	0.39
Roadside Ditch	Riverine	0.02
Total		**2.07**

Note: Small summation errors may occur due to rounding.

Source: Madrone Ecological Consulting, 2026.

Irrigated Wetland

One irrigated wetland was mapped along the eastern boundary of the project site. The irrigated wetland appears to be the result of irrigation runoff from adjacent residences. The fence around the adjacent residence has been designed to allow irrigation runoff to flow underneath, and into this wetland. Based on a review of historic aerial photography, it appears that this wetland formed between 2005 and 2006, shortly after the construction of adjacent houses. Because this wetland is supported by runoff during the dry season, a variety of plant species typical of prolonged saturation are present, including tall flatsedge (*Cyperus eragrostis*), common rush (*Juncus effusus*), Gooding's black willow (*Salix gooddingii*), Bermuda grass (*Cynodon dactylon*), English plantain (*Plantago lanceolata*), and yellow bristlegrass (*Setaria pumila*).

Seasonal Wetland

Several seasonal wetlands occur within the project site. In addition, based on Figure 6-1a of the RVSP EIR, seasonal wetlands occur within the southeastern portion of the off-site affordable housing parcel. Seasonal wetlands are depressional wetlands that pond water seasonally. Such features are often topographically and hydrologically similar to vernal pools, but have a short hydroperiod. As a result, seasonal wetlands support a slightly different plant community that is not characterized by the dominance of vernal pool endemics. The seasonal wetlands within the study area are largely dominated by Mediterranean barley (*Hordeum marinum*) and hyssop loosestrife *(Lythrum hyssopifolia*).

Seasonal Wetland Swale

The study area supports multiple seasonal wetland swales. Seasonal wetland swales are sloping, linear seasonal wetlands that convey surface runoff and may detain runoff for short periods of time. The seasonal wetland swales within the study area are dominated by ryegrass.

Vernal Pool

The project site supports five vernal pools. Vernal pools are topographic basins that are underlain with an impermeable or semi-permeable hardpan or duripan layer. They are inundated during the wet season, and typically dry by late spring, remaining dry through the summer months. Vernal pools are differentiated from depressional seasonal wetlands based upon the predominance of vernal pool endemic plant species. Vernal pools within the study area are dominated by Mediterranean barley, smooth goldfields (*Lasthenia glaberrima*), low manna grass (*Glyceria declinata*), and great valley popcorn flower (*Plagiobothrys stipitatus*).

Ephemeral Drainage

Three reaches of ephemeral drainage occur within the project site and are linear features that exhibit an ordinary high water mark (OHWM). Ephemeral drainages convey stormwater runoff for short periods of time directly after precipitation events, and do not convey any groundwater flow. The southern two drainages within the project site are the portions of a seasonal wetland swale. The third drainage is an incised drainage that drains a vernal pool into a culvert to the north.

Intermittent Drainage

Three reaches of intermittent drainage were mapped within the study area. Intermittent drainages flow seasonally, but for a longer duration than ephemeral drainages. Such drainages receive hydrological input from groundwater and, as a result, flow for weeks or months following rainfall events. The largest drainage, Placer Creek, flows from east to west across the project site and is a tributary to Dry Creek. Two smaller drainages occur within the off-site sewer lift station improvements area and are also tributary to Dry Creek. The intermittent drainages are largely unvegetated within their channels but contain patches of vegetation including ryegrass, creeping spikerush (*Eleocharis macrostachya*), and common monkeyflower (*Erythranthe guttata*).

Roadside Ditch

Several roadside ditches are present along the eastern edge of Walerga Road, and along the south side of Baseline Road. The ditches are unvegetated, maintained ditches that convey stormwater flows off of Baseline and Walerga Roads.

Placer County Conservation Program Special Habitats and County Aquatic Resources Program Setbacks

The following PCCP special habitats and Western Placer County Aquatic Resources Program (CARP) setbacks have been mapped within the study area, consistent with applicable guidelines (see Figure 7-3).

- PCCP Stream System along Dry Creek and its tributary drainages; and
- CARP Riparian Buffers, which are any areas within 50 feet of riparian land cover.

Stream System

A 6.7-acre area of PCCP-defined Stream System is present along the intermittent drainage that passes through the southern portion of the project site and encompasses the entire off-site sewer lift station improvements area that is just to the south of Dry Creek.

Special-Status Species

Special-status species are species that have been listed as threatened or endangered under the federal Endangered Species Act (FESA) or the California Endangered Species Act (CESA), that are "Fully Protected" under various California statutes (i.e., Fish and Game Code sections 3511, 4700, 5050, and 5515), that are protected under federal law (e.g., the federal Bald and Golden Eagle Protection Act), or that are of special concern to federal resource agencies, the State, or (in one instance) a private conservation organization, the California Native Plant Society (CNPS). A species may be considered to have special status due to declining populations, vulnerability to habitat change, or restricted distributions. A general description of the criteria and laws pertaining to special-status classifications is described below. Special-status plant and wildlife species may meet one or more of the following criteria:

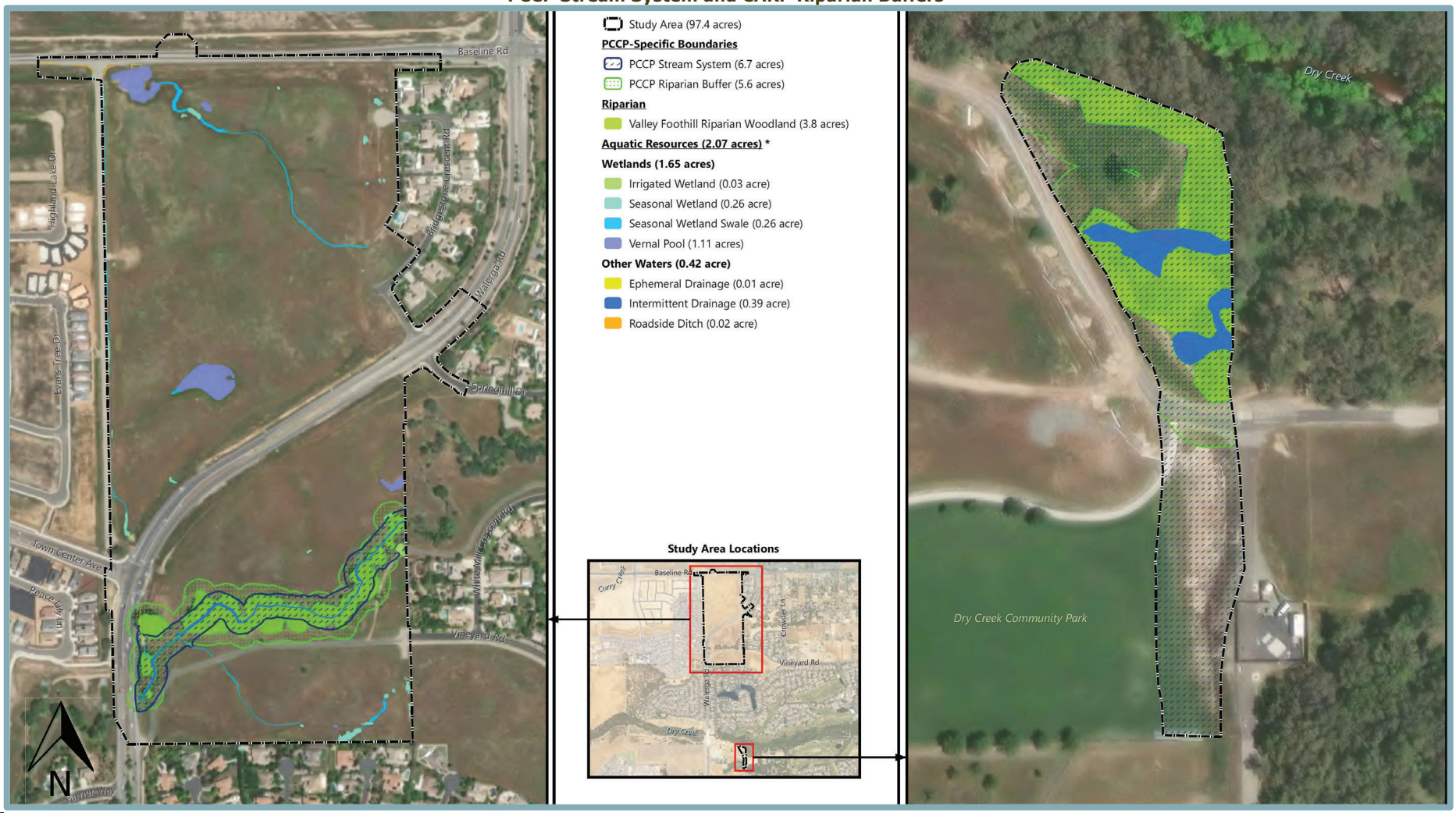
1. Listed as threatened or endangered, or proposed or candidates for listing by the U.S. Fish and Wildlife Service (USFWS) or National Marine Fisheries Service (NMFS);
2. Listed as threatened or endangered or candidates for listing by the California Department of Fish and Wildlife (CDFW);
3. Identified as Fully Protected species or Species of Special Concern by CDFW;
4. Identified as Medium or High priority species by the Western Bat Working Group (WBWG); and
5. Plant species considered to be rare, threatened, or endangered in California by CNPS and CDFW (California Rare Plant Rank [CRPR] 1, 2, and 3):

a. CRPR 1A: Plants presumed extinct.
b. CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere.
c. CRPR 2A: Plants extirpated in California, but common elsewhere.
d. CRPR 2B: Plants rare, threatened, or endangered in California, but more common elsewhere.
e. CRPR 3: Plants about which the CNPS needs more information – a review list.

Listed and Special-Status Plant Species

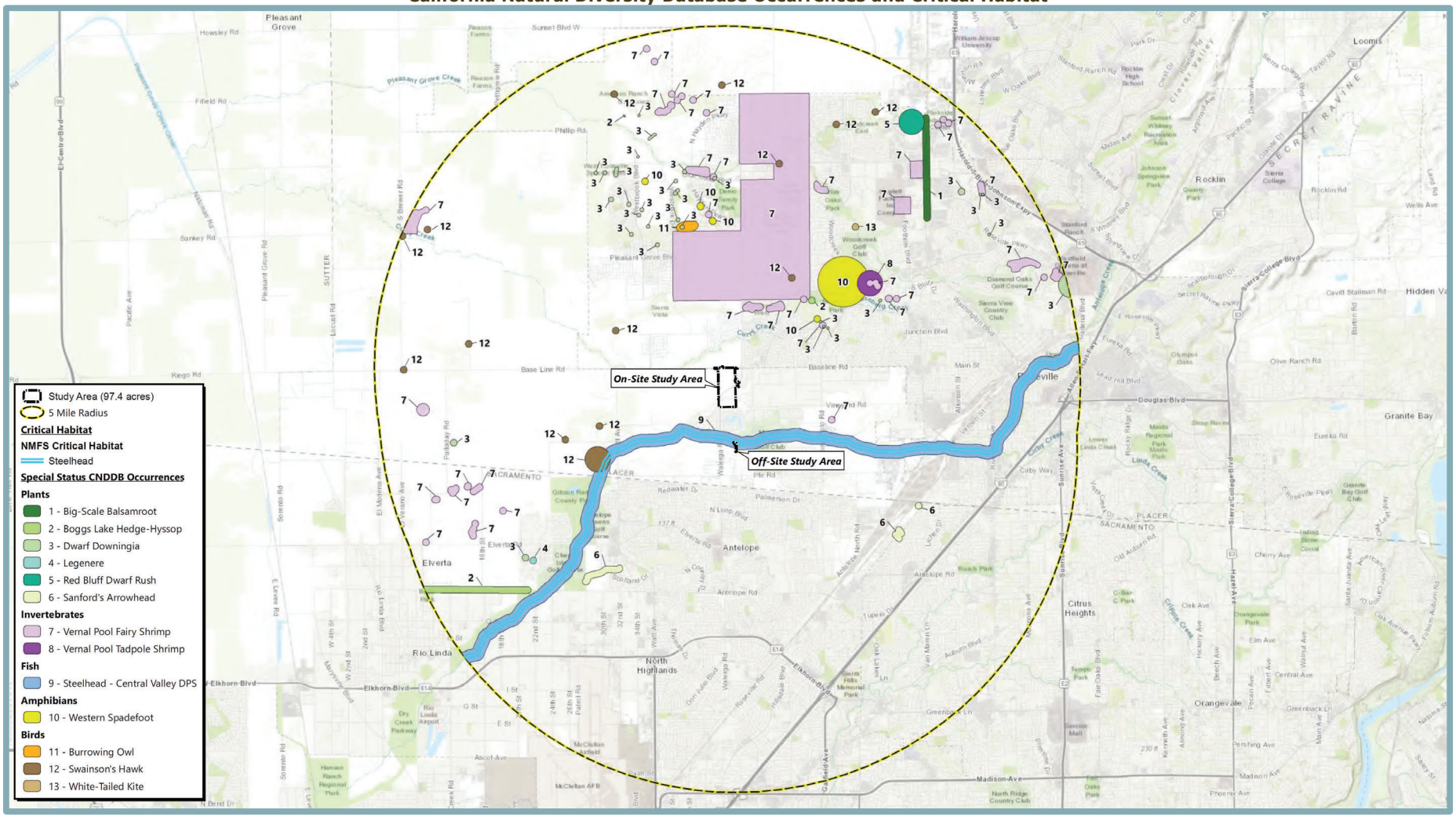
According to the records of the California Natural Diversity Database (CNDDB), maintained by the CDFW, 12 special-status plant species have the potential to occur on or within five miles of the study area, six of which have been documented within five miles of the study area (see Figure 7-4).

Figure 7-3
PCCP Stream System and CARP Riparian Buffers



* Figure not OCR Compatible

Figure 7-4
California Natural Diversity Database Occurrences and Critical Habitat



* Figure not OCR Compatible

The off-site affordable housing parcel is within five miles of the project site and, thus, was included in the CNDDB search conducted for the proposed project. Table 7-3 lists all 12 special-status plant species and all 31 special-status wildlife species with potential to occur in the vicinity of the study area. As part of determining the potential for special-status plant and wildlife species to occur within the study area, the following set of criteria was used:

- Present: Species occurs within the study area based on CNDDB records and/or was observed within the study area during the field surveys;
- High: The study area is within the known range of the species and suitable habitat exists within the study area;
- Moderate: The study area is within the known range of the species and very limited suitable habitat exists within the study area;
- Low: The study area is within the known range of the species and marginally suitable habitat exists within the study area or the species was not observed during protocol-level surveys conducted within the study area;
- Absent: The species was not observed during protocol-level surveys conducted within the study area; or
- No Habitat Present: The study area does not contain suitable habitat for the species, or the study area is outside the known range of the species.

As shown in the table, based on protocol-level special-status plant surveys and literature review (detailed further in this chapter under the Method of Analysis subsection), the study area was determined not to contain habitat for three species identified by the CNDDB: Spicate calycadenia, Hispid bird's-beak, and Red Bluff dwarf rush. The remaining nine special-status plant species: big-scale balsamroot, dwarf downingia, Bogg's Lake hedge-hyssop, Ahart's dwarf rush, Legenere, pincushion navarretia, slender Orcutt grass, Sacramento Orcutt grass, and Sanford's arrowhead, were determined to be *absent* from the project study area based on protocol-level surveys.

Listed and Special-Status Wildlife Species

According to the records search conducted as part of the BRA, 31 special-status wildlife species have the potential to occur on-site or within five miles of the study area, seven of which have been recorded within five miles of the study area (see Figure 7-4). The off-site affordable housing parcel is within five miles of the project site and, thus, was included in the CNDDB search conducted for the proposed project. Based on field observations and literature review (detailed further under the Method of Analysis subsection below), 19 of the 31 special-status wildlife species were determined to have the potential to occur within the study area. None of the aforementioned 19 are considered to be *present* within the study area. Species that are considered to have *high* potential to occur within the study area include Crotch's bumble bee, western spadefoot, northwestern pond turtle, Swainson's hawk, white-tailed kite, loggerhead shrike, pallid bat, and silver-haired bat. Species that are considered to have *low* potential to occur within the study area include vernal pool fairy shrimp, vernal pool tadpole shrimp, valley elderberry longhorn beetle (VELB), golden eagle, burrowing owl, northern harrier, olive-sided flycatcher, yellow warbler, western red bat, and hoary bat.

The following discussions provide further details of the 19 special-status wildlife species with the potential to occur within the study area. Table 7-3 lists all 31 special-status wildlife species identified in the literature and CNDDB searches.

Table 7-3
Special-Status Species with Potential to Occur Within the Study Area

Scientific Name (Common Name)	Federal Status	State Status	PCCP Covered Species	Habitat Requirements	Potential for Occurrence
Plants					
Balsamorhiza macrolepis Big-scale balsamroot	--	CRPR 1B.2	No	Occurs in chaparral, cismontane woodland and valley and foothill grasslands between 150 and 5,100 feet. Often associated with serpentine soils.	**Absent.** Marginally suitable habitat is present in the Annual Brome Grassland/VPC. Protocol-level surveys throughout the study area did not detect big-scale balsamroot.
Calycadenia spicata Spicate calycadenia		CRPR 1b.3	No	Occurs in disturbed areas and openings in annual grasslands and cismontane woodland between 130 and 4,600 feet. Found on a variety of open habitats including adobe clay, rock outcrops, gravelly areas, and mine tailings.	**No Habitat Present**. The clayey, rocky areas spicate calycadenia prefers are not present within the study area.
Chloropyron molle ssp. *hispidum* Hispid bird's-beak	--	CRPR 1B.1	No	Found in meadows and seeps, playas, and valley and foothill grasslands with alkaline soils between five and 510 feet in elevation.	**No Habitat Present**. Saline-alkali soils are not present within the study area.
Downingia pusilla Dwarf downingia	--	CRPR 2B.2	No	Strongly associated with vernal pools, depressional wetlands, and mesic valley and foothill grassland, and is found in elevations ranging from five to 1,460 feet. Dwarf downingia is typically associated with areas that experience a moderate degree of disturbance.	**Absent.** The vernal pools, seasonal wetlands, and seasonal wetland swales within the project site represent suitable habitat for dwarf downingia. Protocol-level surveys throughout the study area did not detect dwarf downingia.
Gratiola heterosepala Bogg's Lake hedge-hyssop	--	CE, CRPR 1B.2	No	Grows in vernal pools and around the perimeter of marshes and swamps between 35 and 7,790 feet. Known to favor clay soils.	**Absent**. The vernal pools and seasonal wetlands within the project site represent suitable habitat for Bogg's Lake hedge-hyssop. Protocol-level surveys throughout the study area did not detect Bogg's Lake hedge-hyssop.

(Continued on next page)

Table 7-3
Special-Status Species with Potential to Occur Within the Study Area

Scientific Name (Common Name)	Federal Status	State Status	PCCP Covered Species	Habitat Requirements	Potential for Occurrence
Juncus leiospermus var. *ahartii* Ahart's dwarf rush	--	CRPR 1B.2	No	Grows along the edges of vernal pools and swales within mesic valley and foothill grassland habitat between elevations of approximately 100 and 750 feet.	**Absent**. The vernal pools and seasonal wetlands within the project site represent suitable habitat for Ahart's dwarf rush. Protocol-level surveys throughout the study area did not detect Ahart's dwarf rush.
Juncus leiospermus var. *leiospermus* Red Bluff dwarf rush	--	CRPR 1B.1	No	Grows in various habitats such as chaparral, cismontane woodland, valley and foothill grassland, meadows and seeps, as well as mesic vernal pools. Found between elevations of approximately 100 and 750 feet	**No Habitat Present.** The study area is outside of the range of the species. The nearby occurrence is widely considered to be erroneous.
Legenere limosa Legenere	--	CRPR 1B.1	No	Associated with vernal pools and found between five and 2,885 feet.	**Absent**. The vernal pools and seasonal wetlands within the project site represent marginal habitat for legenere. Protocol-level surveys throughout the study area did not detect legenere.
Navarretia myersii ssp. *myersii* Pincushion navarretia	--	CRPR 1B.1	No	Found in vernal pools, often in acidic micro habitats between approximately 65 and 1,085 feet.	**Absent**. The vernal pools and seasonal wetlands within the project site represent suitable habitat for pincushion navarretia. Protocol-level surveys throughout the study area did not detect pincushion navarretia.
Orcuttia tenuis Slender Orcutt grass	FT	CE, CRPR 1B.1	No	Found in vernal pools with gravelly substrates at elevations generally ranging between 115 and 5,775 feet.	**Absent**. The vernal pools within the project site represent marginal habitat for slender Orcutt grass. Protocol-level surveys throughout the study area did not detect slender Orcutt grass.
Orcuttia viscida Sacramento Orcutt grass	FE	CE, CRPR 1B.1	No	Favors vernal pool habitats and is found between elevations of 100 and 330 feet.	**Absent**. The vernal pools within the project site represent marginal habitat for Sacramento Orcutt grass.

(Continued on next page)

Table 7-3
Special-Status Species with Potential to Occur Within the Study Area

Scientific Name (Common Name)	Federal Status	State Status	PCCP Covered Species	Habitat Requirements	Potential for Occurrence
					Protocol-level surveys throughout the study area did not detect Sacramento Orcutt grass.
Sagittaria sanfordii Sanford's arrowhead	--	CRPR 1B.2	No	Occurs in shallow freshwater habitats associated with drainages, canals, and larger ditches that sustain inundation and/or slow-moving water into early summer. Found from approximately sea level to 2,135 feet.	**Absent**. The intermittent drainages represent suitable habitat for Sanford's arrowhead. Protocol level surveys of the study area did not detect Sanford's arrowhead.
Invertebrates					
Bombus crotchii Crotch's bumble bee	--	CC	No	Occurs in open grasslands and scrub habitats. The species occurs primarily in California, including the Mediterranean region, Pacific Coast, Western Desert, Great Valley, and adjacent foothills throughout most of southwestern California.	**High**. The Annual Brome Grassland/VPC land cover within the study area represents suitable habitat for Crotch's bumble bee.
Branchinecta conservatio Conservancy fairy shrimp	FE	--	Yes	Occurs in very large, turbid vernal pools.	**No Habitat Present**. Although vernal pools do occur on-site, none of the vernal pools within the study area are the large, deep, alkaline, clay bottomed vernal pool playas with turbid water required by the species. Additionally, the study area is not within the required survey area shown on Figure 5-7 of the PCCP nor does it encompass any of the 10 localities known to support conservancy fairy shrimp species.
Branchinecta lynchi Vernal pool fairy shrimp	FT	--	Yes	Occurs in vernal pools.	**Low**. Suitable habitat for vernal pool fairy shrimp is present in the vernal pools within the study area. Vernal pool fairy shrimp was not found

(Continued on next page)

Table 7-3
Special-Status Species with Potential to Occur Within the Study Area

Scientific Name (Common Name)	Federal Status	State Status	PCCP Covered Species	Habitat Requirements	Potential for Occurrence
					onsite during a full year of protocol-level wet season surveys of all suitable habitat.
Danaus plexippus Monarch butterfly	FC	--	No	A migratory species that is most prevalent in the Central Valley in summer and early fall. Dependent upon milkweed (*Asclepias* species) plants as their exclusive larval host.	**No Habitat Present.** No milkweed plants are present within the study area.
Desmocerus californicus dimorphus Valley elderberry longhorn beetle (VELB)	FT	--	Yes	Dependent upon elderberry *(Sambucus* species) shrubs as primary host species.	**Low**. One elderberry shrub occurs within the study area. No VELB exit holes were found during the protocol-level survey.
Lepidurus packardi Vernal pool tadpole shrimp	FE	--	Yes	Occurs in vernal pools.	**Low**. Suitable habitat for vernal pool tadpole shrimp is present in the vernal pools within the study area. Vernal pool tadpole shrimp was not found onsite during a full year of protocol-level wet season surveys of all suitable habitat.
Fish					
Oncorhynchus mykiss irideus Central Valley steelhead	FE	--	Yes	Anadromous species requiring freshwater water courses with gravelly substrates for breeding. The young remain in freshwater areas before migrating to estuarine and marine environments.	**No Habitat Present**. Dry Creek just north of the off-site sewer lift station improvements area is designated as Critical Habitat for Central Valley Steelhead. The intermittent drainages within the study area are tributary to Dry Creek, but are unsuitable for spawning or rearing because they do not provide steady flow of cool, clear water or suitable substrate for spawning. Although steelhead could swim through the drainages occasionally, the

(Continued on next page)

Table 7-3
Special-Status Species with Potential to Occur Within the Study Area

Scientific Name (Common Name)	Federal Status	State Status	PCCP Covered Species	Habitat Requirements	Potential for Occurrence
					intermittent drainages are not considered suitable habitat for the species.
Oncorhynchus tshawytscha Central Valley fall-run chinook salmon	--	CSC	Yes	Anadromous species requiring freshwater water courses with gravelly substrates for breeding. The young remain in freshwater areas before migrating to estuarine and marine environments.	**No Habitat Present**. Dry Creek just north of the off-site sewer lift station improvements area serves as a migration corridor to spawning habitat upstream of the project area. The intermittent drainages within the study area are tributary to Dry Creek, but are unsuitable for spawning or rearing because they do not provide steady flow of cool, clear water or suitable substrate for spawning. Although chinook salmon could swim through them occasionally, the intermittent drainages are not considered suitable habitat for the species.
Amphibians					
Ambystoma californiense California tiger salamander	FT	CT, CSC	No	Breeds in ponds or other deeply ponded wetlands, and uses gopher holes and ground squirrel burrows in adjacent grasslands for upland refugia/foraging.	**No Habitat Present.** The study area is outside of the known range of the species.
Spea hammondii Western spadefoot toad	FPT	CSC	No	Breeds in vernal pools, seasonal wetlands, and associated swales. Forages and hibernates in adjacent grasslands.	**Moderate**. The seasonal wetlands and vernal pools within the study area represent suitable habitat for the species. No western spadefoot were observed within the study area during field surveys, including wet season surveys, which would have documented larval spadefoot if present.

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Table 7-3
Special-Status Species with Potential to Occur Within the Study Area

Scientific Name (Common Name)	Federal Status	State Status	PCCP Covered Species	Habitat Requirements	Potential for Occurrence
Reptiles					
Actinemys marmorata Northwestern pond turtle	FPT	CSC	Yes	Occurs in ponds, rivers, streams, wetlands, and irrigation ditches with associated marsh habitat.	**High**. The intermittent drainages within the study area represent marginally suitable habitat for northwestern pond turtle. No northwestern pond turtles were observed within the intermittent drainages during field surveys.
Thamnophis gigas Giant garter snake	FT	CT	Yes	Occurs in rivers, canals, irrigation ditches, rice fields, and other aquatic habitats with slow-moving water and heavy emergent vegetation.	**No Habitat Present.** The study area is outside of the known range of the species.
Birds					
Agelaius tricolor Tricolored blackbird	--	CE, CSC	Yes	Colonial nester in cattails, bulrush, or blackberries associated with marsh habitats.	**Low.** Potential breeding habitat is not present within the study area, but the Annual Brome Grassland/ VPC provides marginal foraging habitat.
Ammodramus savannarum Grasshopper sparrow	--	CSC	No	Typically found in expansive short- to middle-height, moderately open grasslands with scattered shrubs, or other song perches.	**No Habitat Present**. The Annual Brome Grassland/VPC within the study area are not sufficiently expansive to support the species.
Aquila chrysaetos Golden eagle	--	CFP	No	Forages in open areas including grasslands, savannahs, deserts, and early successional stages of shrub and forest communities. Nests in large trees and cliffs.	**Low**. The Annual Brome Grassland/VPC within the study area is marginally suitable foraging habitat for golden eagle due to the small patch size and relative isolation from other annual grassland areas.
Asio otus Long-eared owl		CFP	No	Inhabits woodlands and conifer grove with dense trees for nesting and roosting and open country for hunting.	**No Habitat Present.** The VFRW within the study area is not sufficiently dense to provide habitat for long-eared owl, and the site is

(Continued on next page)

Table 7-3
Special-Status Species with Potential to Occur Within the Study Area

Scientific Name (Common Name)	Federal Status	State Status	PCCP Covered Species	Habitat Requirements	Potential for Occurrence
					outside the known range of long-eared owl.
Athene cunicularia *Burrowing owl*	--	CSC	Yes	Nests in abandoned ground squirrel burrows associated with open grassland habitats.	**Low**. Potential burrows and debris scattered throughout the study area could provide artificial burrows. The Annual Brome Grassland/VPC provides suitable foraging habitat.
Buteo swainsoni Swainson's hawk	--	CT	Yes	Nests in large trees, preferably in riparian areas. Forages in fields, cropland, irrigated pasture, and grassland near large riparian corridors.	**High**. The Annual Brome Grasslands/VPC land cover throughout the study area represents suitable foraging habitat for Swainson's hawk, and the trees within the study area provide suitable nesting habitat. Swainson's hawks were observed foraging on-site during field surveys.
Circus cyaneus Northern harrier	--	CSC	No	Nests in emergent wetland/marsh, open grasslands, or savannah habitats. Forages in open areas such as marshes, agricultural fields, and grasslands.	**Low**. The Annual Brome Grassland/VPC, throughout the study area is marginally suitable nesting and foraging habitat for northern harrier due to the small patch size and relative isolation from other annual grassland areas.
Contopus cooperi Olive-sided flycatcher	--	CSC	No	Summer resident in California. Nests in conifer forests. Spring and fall transient in the Central Valley.	**Low**. Suitable spring and fall foraging habitat is present in the VFRW within the study area.
Elanus leucurus *White-tailed kite*	--	CFP	No	Open grasslands, fields, and meadows are used for foraging. Isolated trees in close proximity to foraging habitat are used for perching and nesting.	**High**. The Annual Brome Grassland/VPC throughout the study area represents suitable foraging habitat for white-tailed kite, and the trees throughout the study area provide suitable nesting habitat. A white-tailed kite was

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Table 7-3
Special-Status Species with Potential to Occur Within the Study Area

Scientific Name (Common Name)	Federal Status	State Status	PCCP Covered Species	Habitat Requirements	Potential for Occurrence
					observed foraging on-site during a field survey.
Haliaeetus leucocephalus Bald eagle	FD	CE	No	Nests in large trees within one mile of lakes, rivers, or larger streams.	**No Habitat Present**. Suitable nesting and foraging habitat are not present within the study area.
Lanius ludovicianus Loggerhead shrike	--	CSC	No	Occurs in open areas with sparse trees, shrubs, and other perches.	**High**. The Annual Brome Grassland/VPC within the study area represents suitable foraging habitat for loggerhead shrike, and the trees and shrubs within the study area provide suitable nesting habitat.
Laterallus jamaicensis coturniculus California black rail	--	CT	Yes	Nests and forages in salt, brackish, and fresh marshes with abundant vegetative cover.	**No Habitat Present**. Marshes do not occur within the study area.
Progne subis Purple martin	--	CSC	No	Nests in tall bridges and overpasses near water and open areas.	**No Habitat Present**. Tall bridges or overpasses occur within the study area, which are outside of the known range of purple martin.
Seophaga petechia Yellow warbler	--	CSC	No	Occupies riparian vegetation in close proximity to water along streams and in wet meadows. The species does not breed in the Central Valley, but occurs as a common migrant in the fall and winter months.	**Low**. Although the study area is outside of the species' breeding range, yellow warbler has been documented along Dry Creek near the off-site sewer lift station improvements area, and suitable winter foraging habitat is present in the VFRW within the study area.
Mammals					
Antrozous pallidus Pallid bat	--	CSC, WBWG H	No	Roosts in crevices in rocky outcrops and cliffs, caves, mines, trees, bridges, barns, porches, bat boxes, and human-occupied as well as vacant buildings.	**High**. Suitable roosting habitat for the species is present in tree hollows and under exfoliating bark on trees scattered throughout the study area.

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Table 7-3
Special-Status Species with Potential to Occur Within the Study Area

Scientific Name (Common Name)	Federal Status	State Status	PCCP Covered Species	Habitat Requirements	Potential for Occurrence
Lasionycteris noctivagans Silver-haired bat	--	WBWG M	No	Roosts in caves and cave analogues, such as abandoned mines, buildings, bridges, rock crevices and large basal hollows of coast redwoods and giant sequoias. Extremely sensitive to human disturbance.	**High**. Suitable roosting habitat for the species is present in tree hollows and under exfoliating bark on trees scattered throughout the study area.
Lasiurus blossevillii Western red bat	--	CSC, WBWG H	No	Roosts primarily in the foliage of trees or shrubs. An association with intact riparian habitat (particularly willows, cottonwoods, and sycamores) may exist.	**Low**. Trees scattered throughout the study area are suitable roosting habitat for the species, but the lack of willows, cottonwoods and sycamores decreases the habitat suitability.
Lasiurus cinereus Hoary bat	--	WBWG M	No	Roosts primarily in foliage of both coniferous and deciduous trees at the edges of clearings.	**Low**. Trees within the VFRW within the study area are suitable roosting habitat for the species.
Taxidea taxus American badger	--	CSC	No	The species prefers dry open fields, grasslands, and pastures.	**No Habitat Present**. The Annual Brome Grassland/VPC within the study area is not sufficiently expansive to support American badger.

Status Codes:
CC: CDFW Candidate for Listing
CE: CDFW Endangered
CFP: CDFW Fully Protected
CRPR: California Rare Plant Rank
CSC: CDFW Species of Special Concern
CT: CDFW Threatened
FC: Federal Candidate for Listing
FPT: Federal Proposed Threatened
FD: Federally Delisted
FE: Federally Endangered
FT: Federally Threatened
WBWG M: Western Bat Working Group Medium Threat Rank
WBWG H: Western Bat Working Group High Threat Rank

Source: Madrone Ecological Consulting, 2026.

Crotch's Bumble Bee

Crotch's bumble bee (*Bombus crotchii*) has a limited distribution in southwestern North America. The species occurs primarily in California, including the Mediterranean region, Pacific Coast, West Desert, Great Valley, and adjacent foothills through most of southwestern California. Crotch's bumble bee also occurs in Mexico (Baja California and Baja California Sur) and has been documented in southwest Nevada, near the California border. The species was historically common in the Central Valley of California, but now appears to be absent from most of the Valley, especially in the center of the species' historic range. In California, Crotch's bumble bee inhabits open grasslands and scrub habitats.

All bumblebees have three basic requirements: suitable nesting sites for the colonies, availability of nectar and pollen from floral resources throughout the duration of the entirety of the colony period (spring, summer, and fall), and suitable overwintering sites for the queens. Nests are often located underground in abandoned holes made by ground squirrels, mice, and rats, or occasionally abandoned bird nests. Some species nest on the surface of the ground in tufts of grass or in empty cavities. Bumble bees that nest aboveground may require undisturbed areas with nesting resources such as grass and hay to protect nests. As such, areas with woody cover, or other sheltered areas, such as downed wood, rock walls, or brush piles, provide bumble bees sites to build nests.

Bumble bees depend on the availability of habitats with a rich supply of floral resources that bloom continuously during the entirety of the colony's life. The queen collects nectar and pollen from flowers to support the production of her eggs, which are fertilized by sperm she has stored from mating the previous fall. As generalist foragers, bumble bees do not depend on any one flower type. Bumble bees generally prefer flowers that are purple, blue, or yellow; they are essentially blind to the color red. Very little is known about hibernacula, or overwintering sites used by most bumble bees. Generally, bumble bees overwinter in soft, disturbed soil, under leaf litter or other debris, in abandoned holes, or occasionally in abandoned burrows. Some species nest on the surface of the ground in grassy tussocks, or in empty cavities such as hollow logs, dead trees, or under rocks. Queens most likely overwinter in small cavities just below or on the ground surface.

The annual grassland/VPC within the study area represents suitable habitat for Crotch's bumble bee. The on-site habitat contains some flowering plants for much of the year and scattered small burrows in which the species could nest and overwinter. The species has not been documented within five miles of the study area in the CNDDB. Based on the above, Crotch's bumble bee has *high* potential for occurrence within the study area.

Vernal Pool Fairy Shrimp

The vernal pool fairy shrimp (*Branchinecta lynchi*) is listed as threatened, pursuant to the FESA. The species is also a PCCP Covered Species. Historically, the range of vernal pool fairy shrimp extended throughout the Central Valley. Vernal pool fairy shrimp populations have been found in several locations throughout California, with habitat extending from Stillwater Plain in Shasta County, through the Central Valley, to Pixley in Tulare County, and along the Central Coast range from northern Solano County to Pinnacles National Monument in San Benito County. Additional populations occur in San Luis Obispo, Santa Barbara, and Riverside counties. The historic and current ranges of vernal pool fairy shrimp are very similar in extent; however, the remaining populations are more fragmented and isolated than during historical times. The lifecycle of vernal pool fairy shrimp is adapted to seasonally inundated features such as vernal pools, seasonal wetlands, and seasonal wetland swales. Fairy shrimp embryos survive the dry season in cyst



form. Cysts "hatch" soon after pools become inundated during the wet season. Fairy shrimp complete their life cycle quickly and feed on small particles of detritus, algae, and bacteria.

The vernal pools within the project site represent suitable habitat for vernal pool fairy shrimp. Twenty CNDDB occurrences of vernal pool fairy shrimp have been recorded within five miles of the study area, the nearest of which is located 0.8-mile east of the project site in the Woodcreek Oaks Wetland Compensation Area (see Figure 7-4). Wet-season surveys of the vernal pools for the species were conducted during the 2024-2025 wet season, and the species was not detected. Based on the above, vernal pool fairy shrimp has *low* potential for occurrence within the study area.

Vernal Pool Tadpole Shrimp

The vernal pool tadpole shrimp (*Lepidurus packardi*) is listed as endangered, pursuant to the FESA, and is a PCCP Covered Species. The historic range of the vernal pool tadpole shrimp likely extended throughout the Central Valley and has been documented from east of Redding in Shasta County, south to Fresno County, and to the San Francisco Bay Wildlife Refuge in Alameda County. The historic and current ranges of vernal pool tadpole shrimp are very similar in extent; however, the remaining populations are more fragmented and isolated than during historical times. The species is associated with long-duration seasonal pools in grasslands throughout the northern and eastern portions of the Central Valley. Suitable vernal pools and seasonal swales are generally underlain by hardpan or sandstone. Similar to vernal pool fairy shrimp, vernal pool tadpole shrimp are adapted to seasonally inundated features, such as vernal pools, seasonal wetlands, and seasonal wetland swales.

Large vernal pools within the project site represent suitable habitat for the species. One documented CNDDB occurrence of vernal pool tadpole shrimp is within five miles of the study area (see Figure 7-4). The occurrence (CNDDB Occurrence #24) is located approximately 2.1 miles northeast of the project site in the Woodcreek Oaks Wetland Preserve and is considered potentially extirpated. Wet-season surveys of the vernal pools for the species were conducted during the 2024-2025 wet season, and the species was not detected. Based on the above, vernal pool tadpole shrimp has *low* potential for occurrence within the study area.

Valley Elderberry Longhorn Beetle

The VELB is listed as threatened pursuant to FESA and is a PCCP Covered Species. The historic range of VELB is limited to moist Valley oak woodlands along margins of rivers and streams in the lower Sacramento and lower San Joaquin Valley. At the time of its listing, the beetle was known from less than 10 localities in Merced, Sacramento, and Yolo Counties. Its current distribution is patchy throughout California's Central Valley and associated foothills.

The VELB is completely dependent on elderberry (*Sambucus species*), the species' host plant, which occurs in riparian and other woodland communities in California's Central Valley and the associated foothills. Female beetles lay their eggs in crevices on the stems or on the leaves of living elderberry plants. When the eggs hatch, larvae bore into the stems. The larval stages last for one to two years. The fifth instar larvae create emergence holes in the stems and then plug the holes and remain in the stems through pupation. Adults emerge through the emergence holes from late March through June. The short-lived adult beetles forage on leaves and flowers of elderberry shrubs.

One elderberry shrub is present to the north of the intermittent drainage within the project site. The shrub has two stems that are approximately three-inches in diameter, but exit holes typical of VELB were not observed on the shrub when surveyed by a qualified biologist on May 8, 2025. The species has not been documented within five miles of the study area in the CNDDB. Based on the above, VELB has *low* potential for occurrence within the study area.

Western Spadefoot

The western spadefoot (*Spea hammondii*) is proposed for federal listing and is a CDFW Species of Special Concern. The amphibian is a nocturnal animal that forages in grassland, open chaparral, and pine-oak woodlands for a variety of invertebrates, such as insects and worms. Western spadefoot breeds from January through May in a variety of temporary wetlands, including creeks, pools in intermittent drainages, vernal pools, and seasonal wetlands, and other fish-free water features. The tadpoles develop over three to 11 weeks and must complete their metamorphosis before the temporary pools dry. Post-metamorphic juveniles feed and then immediately seek underground refugia. Following metamorphosis, adults are largely terrestrial in nature and will burrow into sandy or gravelly soils utilizing the "spades" on their hind feet. The majority of an adult's life is spent in underground burrows. In Placer County, western spadefoots are known to breed in relatively deep manmade features, such as ponded areas adjacent to railroad tracks, and in intermittent drainage plunge pools or similar pools that hold water through late spring.

Western spadefoot was not observed during field surveys of the study area. However, several of the vernal pools and seasonal wetlands within the project site represent suitable breeding habitat for western spadefoot. The surrounding annual brome grasslands/VPC provides suitable dry-season habitat. Four documented CNDDB occurrences of western spadefoot are within five miles of the study area, the nearest of which (CNDDB Occurrence #171) is located approximately 1.2 miles to the northeast in the Woodcreek Oaks Open Space Preserve (see Figure 7-4). Based on the above, western spadefoot has *moderate* potential for occurrence within the study area.

Northwestern Pond Turtle

The northwestern pond turtle (*Actinemys marmorata*) is proposed for federal listing and is a CDFW Species of Special Concern and a PCCP Covered Species. Northwestern pond turtle's favored habitats include streams, large rivers, and canals with slow-moving water, aquatic vegetation, and open basking sites. Although the turtles must live near water, the species can tolerate drought by burrowing into the muddy beds of dried drainages. The species feeds mainly on invertebrates, such as insects and worms, but will also consume small fish, frogs, mammals, and some plants. Northwestern pond turtle predators include raccoons, coyotes, raptors, weasels, large fish, and bullfrogs. The species breeds from mid to late spring in adjacent open grasslands or sandy banks.

Northwestern pond turtle was not observed during reconnaissance level surveys of the study area. However, the intermittent drainages within the study area provide marginally suitable habitat for northwestern pond turtle due to their relatively short duration of inundation. The species has not been documented, pursuant to the CNDDB, within five miles of the study area; however, an unprocessed CNDDB record of the species has been documented approximately four miles to the east in Upper Linda Creek, a tributary of Dry Creek. Based on the above, northwestern pond turtle has *high* potential for occurrence within the study area.

Golden Eagle

Golden eagle (*Aquila chrysaetos*) is not listed pursuant to either the California or federal Endangered Species Acts; however, it is categorized as a Species of Special Concern and a Fully Protected species by the CDFW, and is protected under the federal Bald and Golden Eagle Protection Act. Golden eagle is a very large solitary raptor that feeds on mammals, carrion, and reptiles. It typically nests in large trees or cliffsides in rolling to mountainous terrain, and forages in large, expansive open grasslands and savannas. Although its natural densities are generally believed to be low, it was once relatively common to the open areas of California. Today, golden eagles are rarely observed in the Central Valley. Golden eagle typically nests between February and August.

The annual brome grassland/VPC within the study area provides marginally suitable foraging habitat due to the relatively small patch size and recent isolation of the habitat. Golden eagle has not been documented within five miles of the study area in the CNDDB. Based on the above, golden eagle has *low* potential to occur within the study area.

Burrowing Owl

Burrowing owl (*Athene cunicularia*) is a candidate for State listing, a CDFW Species of Special Concern, and a PCCP Covered Species. The species is designated as a CDFW Species of Special Concern and is a PCCP Covered Species. Burrowing owls typically inhabit dry open rolling hills, grasslands, desert floors, and open bare ground with gullies and arroyos. The species typically uses burrows created by fossorial mammals, most notably the California ground squirrel, but may also use manmade structures such as culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement. The species' breeding season extends from February 1 through August 31.

Although few ground squirrel burrows were identified during surveys of the study area and evidence of burrowing owls was not observed, debris scattered throughout the study area could provide artificial burrows for burrowing owl. The annual brome grassland/VPC provides suitable foraging habitat for the species. One documented CNDDB occurrence of burrowing owl is within five miles of the study area (see Figure 7-4). The occurrence (CNDDB Occurrence #339) is located approximately two miles northeast of the study area, along Phillip Way. The occurrence was most recently observed in May 2019, when two owls were observed using the same burrow and exhibiting nesting behavior. Based on the above, burrowing owl has *low* potential for occurrence within the study area.

Swainson's Hawk

Swainson's hawk (*Buteo swainsoni*) is a raptor species that is not federally listed, but is listed as threatened by CDFW. The raptor is also a PCCP Covered Species. Breeding pairs typically nest in tall trees associated with riparian corridors, and forage in grassland, irrigated pasture, and cropland with a high density of rodents. The Central Valley populations breed and nest in the late spring through early summer before migrating to Central and South America for the winter.

The annual brome grassland/VPC throughout the study area represents suitable foraging habitat for Swainson's hawk, and the trees within the study area provide suitable nesting habitat. Thirteen occurrences of Swainson's hawk have been documented within five miles of the study area in the CNDDB (see Figure 7-4). The nearest occurrence (CNDDB Occurrence #791) is located approximately 1.5 miles northeast of the study area, in the Roseville Public Golf Course. Based on the above, Swainson's hawk has *high* potential for occurrence within the study area.

Northern Harrier

The northern harrier *(Circus cyaneus)* is not listed, pursuant to either the FESA or CESA. The species is a CDFW Species of Special Concern. Northern harrier, a ground-nesting species, is known to nest within the Central Valley, along the Pacific Coast, and in northeastern California, typically nesting in emergent wetland/marsh, open grasslands, or savannah habitats. Foraging occurs within a variety of open habitats such as marshes, agricultural fields, and grasslands.

The annual brome grassland/VPC throughout the study area provides suitable nesting and foraging habitat for the species. Northern harrier has not been documented in the CNDDB within five miles of the study area. Based on the above, northern harrier has *low* potential for occurrence within the study area.

Olive-Sided Flycatcher

The olive-sided flycatcher (*Contopus cooperi*) is not listed or protected pursuant to either the FESA or CESA. The species is a CDFW Species of Special Concern. The olive-sided flycatcher breeds in conifer forests in the coastal and mountainous regions of California and other areas to the east and north, winters in Central and South America, and occurs in California's Central Valley as an uncommon spring and fall migrant. Olive-sided flycatchers are almost always associated with forests and woodlands, especially openings and edges.

Suitable foraging habitat is present in the VFRW within the study area. Olive-sided flycatcher has not been documented in the CNDDB within five miles of the study area. Based on the above, olive-sided flycatcher has *low* potential for occurrence within the study area.

White-Tailed Kite

White-tailed kite (*Elanus leucurus*) is not federally or State listed. The raptor is a CDFW Fully Protected species. White-tailed kite is a yearlong resident of the Central Valley and is primarily found in or near foraging areas, such as open grasslands, meadows, farmlands, savannahs, and emergent wetlands. White-tailed kites typically nest from March through June in trees within riparian, oak woodland, and savannah habitats of the Central Valley and Coast Range.

The annual brome grassland/VPC throughout the study area provide suitable foraging habitat for white-tailed kite, and the trees within the study area provide suitable nesting habitat. The CNDDB includes one documented occurrence of white-tailed kite nests within five miles of the study area, the nearest of which is approximately 2.6 miles northeast of the study area, near the Woodcreek Golf Club (CNDDB Occurrence #56) (see Figure 7-4). Based on the above, white-tailed kite has *high* potential for occurrence within the study area.

Loggerhead Shrike

The loggerhead shrike *(Lanius ludovicianus)* is not listed, pursuant to either the FESA or CESA. The species is a CDFW Species of Special Concern. Loggerhead shrikes nest in small trees and shrubs in woodland and savannah vegetation communities, and forage in open habitats throughout California. The nesting season ranges from March through June.

The trees and annual brome grassland/VPC within the study area provide suitable foraging and nesting habitat for loggerhead shrike. The species has not been documented in the CNDDB within five miles of the study area. Based on the above, loggerhead shrike has *high* potential for occurrence within the study area.

Yellow Warbler

The yellow warbler *(Setophaga petechia)* is not listed, pursuant to the FESA or CESA. The species is a CDFW Species of Special Concern. The yellow warbler is largely extirpated as a breeder in the Sacramento Valley, but the bird is a common migrant during the fall and winter months. Yellow warblers generally occupy riparian vegetation in close proximity to streams. The species' preferred habitat in northern California is dominated by willows (*Salix* spp.), cottonwoods (*Populus* spp.), and Oregon ash (*Fraxinus latifolia*).

Although the study area is outside the species' breeding range, a yellow warbler has been documented along Dry Creek near the off-site sewer lift station improvements area, and suitable winter foraging habitat is present in the VFRW within the study area. Based on the above, yellow warbler has *low* potential for occurrence within the study area.

Pallid Bat

Pallid bat (*Antrozous pallidus*) is not federally or State listed. The species is a CDFW Species of Special Concern and classified by the WBWG as a High priority species. Pallid bat favors roosting sites in crevices in rock outcrops, caves, abandoned mines, hollow trees, and manmade structures, such as barns, attics, and sheds. Though pallid bats are gregarious, the species tends to group in smaller colonies of 10 to 100 individuals. The bat is a nocturnal hunter and captures prey in flight, but unlike most American bats, the species has been observed foraging for flightless insects, which the bat seizes after landing.

Tree hollows and exfoliating bark on trees throughout the study area represent suitable day and maternity roosting habitat for pallid bat. Pallid bat has not been documented in the CNDDB within five miles of the study area. Based on the above, pallid bat has *high* potential for occurrence within the study area.

Silver-Haired Bat

Silver-haired bat (*Lasionycteris noctivagans*) is not federally or State listed. The species is classified by the WBWG as a Medium priority species. Primarily considered a coastal and montane forest species, the silver-haired bat occurs in more xeric environments during winter and seasonal migrations. The bat roosts in abandoned woodpecker holes, under bark, and occasionally in rock crevices. The insectivore's favored foraging sites include open wooded areas near water features.

Tree hollows and exfoliating bark on trees throughout the study area provide suitable day and maternity roosting habitat for silver-haired bat. The species has not been documented in the CNDDB within five miles of the study area. Based on the above, silver-haired bat has *high* potential for occurrence within the study area.

Western Red Bat

Western red bat (*Lasiurus blossevillii*) is not federally or State listed. The species is a CDFW Species of Special Concern and is classified by the WBWG as a High priority species. Western red bat is typically solitary, roosting primarily in the foliage of trees or shrubs. Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. The species may associate with intact riparian habitat, particularly willows, cottonwoods, and sycamores.

Trees within the VFRW represent suitable day and maternity roosting habitat for western red bat. The species has not been documented in the CNDDB within five miles of the study area. Based on the above, western red bat has *low* potential for occurrence within the study area.

Hoary Bat

The hoary bat (*Lasiurus cinereus*) is not federally or State listed. The species is classified by the WBWG as a Medium priority species. Hoary bat is considered to be one of the most widespread of all American bats, with a range extending from Canada to central Chile and Argentina, as well as Hawaii. Hoary bats are solitary and roost primarily in foliage of both coniferous and deciduous trees, near the ends of branches at the edge of a clearing. The species may also occasionally roost in caves, beneath a rock ledge, in a woodpecker hole, in a grey squirrel nest, under a wood plank, or clinging to the side of a building.

Trees within the VFRW represent suitable day and maternity roosting habitat for hoary bat. The species has not been documented in the CNDDB within five miles of the study area. Based on the above, hoary bat has *low* potential for occurrence within the study area.

Trees

As discussed further in the Impacts and Mitigation Measures section of this chapter under Impact 7-14, potential project impacts to native trees and woodlands within the PCCP plan area, which encompasses the entirety of the study area, are mitigated through payment of land cover conversion fees. Because potential impacts would be mitigated through the PCCP by way of payment of land conversion fees based on acreage of woodland converted, the BRA did not quantify the number of native trees within the study area. As discussed above, the project site contains approximately 3.8 acres of VFRW land cover.

7.3 REGULATORY CONTEXT

A number of federal, State, and local policies provide the regulatory framework that guides the protection of biological resources. The following discussion summarizes those laws that are most relevant to biological resources in the vicinity of the project site. A discussion of water quality control statutes, regulations, and local requirements relevant to stormwater discharges from the project site is presented in Section 12.3, Regulatory Setting, in Chapter 12, Hydrology and Water Quality, of this EIR.

Federal Regulations

The following are the federal environmental laws and policies relevant to biological resources.

Federal Endangered Species Act

The U.S. Congress passed the FESA in 1973 to protect species that are endangered or threatened with extinction. FESA is intended to operate in conjunction with the National Environmental Policy Act (NEPA) to help protect the ecosystems upon which endangered and threatened species depend. FESA prohibits the "take" of endangered or threatened wildlife species. "Take" is defined to include harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species or any attempt to engage in such conduct (FESA Section 3 [3], [19]). Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns (50 CFR Section 17.3). Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns (50 CFR Section 17.3). Actions that result in take can result in civil or criminal penalties.



FESA provides greater protection to fish and wildlife than to plants. The "take" prohibition in Section 9 of FESA, which applies to private parties, does not protect federally-listed endangered or threatened plants located on private land, except insofar as such plants are already protected by State law. (16 U.S.C. Section 1538(a)(2)(B) ["it is unlawful for any person subject to the jurisdiction of the United States to … remove and reduce to possession any such species from *areas under Federal jurisdiction*; maliciously damage or destroy any such species on any such area; or remove, cut, dig up, or damage or destroy any such species on any other area in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law"], italics added; *Northern California River Watch v. Wilcox* (9th Cir. 2011) 633 F.3d 766, 770 [the phrase, "areas under Federal jurisdiction," as used in ESA Section 9, does not apply to private land].)

When federal agencies are considering actions of their own and are consulting with either the USFWS or the NMFS pursuant to Section 7 of FESA, the consulting federal agencies shall insure that their proposed actions are not likely to jeopardize the continued existence of any endangered species or threatened species (including federally listed plants) or result in the destruction or adverse modification of the critical habitat of such species (including federally listed plants). (16 U.S.C. Section 1536(a)(2).)

For federally listed species covered under the PCCP, the Biological Opinions issued by the USFWS and NMFS for the PCCP provide incidental take coverage for covered projects under the PCCP that may impact federally listed species that are Covered Species under the PCCP. Further consultation is not required as long as the covered project complies with PCCP Avoidance, Minimization, and Mitigation Measures. For federally listed species that are not Covered Species under the PCCP, take coverage is required as outlined below.

In the context of the proposed project, FESA consultation with USFWS or the NMFS would be initiated if development resulted in take of a threatened or endangered species not covered under the PCCP or if issuance of a Section 404 permit or other federal agency action could result in take of an endangered species not covered under the PCCP or adversely modify critical habitat of such a species.

Migratory Bird Treaty Act

Raptors (birds of prey), migratory birds, and other avian species are protected by a number of State and federal laws. The federal Migratory Bird Treaty Act (MBTA) prohibits the killing, possessing, or trading of migratory birds except in accordance with regulations prescribed by the Secretary of Interior. Section 3503.5 of the California Fish and Game Code (CFGC) states, "It is unlawful to take, possess, or destroy any birds in the order *Falconiformes* or *Strigiformes* (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by the code or any regulation adopted pursuant thereto."

Clean Water Act

The USACE regulates discharge of dredged or fill material into waters of the U.S. under Section 404 of the Clean Water Act (CWA). "Discharge of fill material" is defined as the addition of fill material into waters of the U.S., including but not limited to the following: placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for the construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes and sub-aqueous utility lines (33 CFR Section 328.2[f]). In addition, Section 401 of the CWA (Title 33 of

U.S. Code [USC], Section 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the U.S. to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards.

Waters of the United States (WOTUS) include a range of wet environments such as lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, and wet meadows. Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR Section 328.3[b]).

Furthermore, jurisdictional waters of the U.S. can be defined by exhibiting a defined bed and bank and OHWM. The OHWM is defined by the USACE as "that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR Section 328.3[e]).

In May 2023, the United States Supreme Court interpreted the term "waters of the United States" as understood in wetland permitting in its decision in *Sackett v. Environmental Protection Agency*, 598 U.S. 651, 143 S.Ct. 1322 (2023). The Court's decision has been generally understood to contract the legal jurisdiction previously asserted by the USACE. In its opinion, the Court held that the "waters" protected under the CWA are limited to "geographic[al] features that are described in ordinary parlance as 'streams, oceans, rivers, and lakes'" and to adjacent wetlands that are "indistinguishable" from those bodies of water due to a continuous surface connection, though "temporary interruptions in surface connection may sometimes occur because of phenomena like low tides or dry spells."

On August 29, 2023, in response to the *Sackett* decision, USACE and the U.S. Environmental Protection Agency (EPA) issued a final rulemaking that revises the definition of WOTUS within USACE and EPA regulations. The adopted document is known as the WOTUS Rule. The WOTUS Rule defines "waters of the United States" to include the following:

- Traditional navigable waters, the territorial seas, and interstate waters (Jurisdictional Waters);
- Impoundments of Jurisdictional Waters (Jurisdictional Impoundments);
- Relatively permanent, standing or continuously flowing tributaries to either Jurisdictional Waters or Jurisdictional Impoundments (Jurisdictional Tributaries);
- Wetlands having a continuous surface connection to either Jurisdictional Waters, Jurisdictional Impoundments, or Jurisdictional Tributaries (Jurisdictional Wetlands); and
- Relatively permanent, standing or continuously flowing intrastate lakes and ponds with a continuous surface connection to (but are not themselves) a Jurisdictional Water, Jurisdictional Impoundment, Jurisdictional Tributary, or Jurisdictional Wetland.

For covered projects under the PCCP, impacts to Section 404 jurisdictional waters are addressed under the CARP, which allows a streamlined Section 404 permitting process for covered activities under the PCCP that will result in impacts to aquatic resources subject to Section 404 jurisdiction.

State Regulations

The following are the State environmental laws and policies relevant to biological resources.

California Department of Fish and Wildlife

CDFW administers a number of laws and programs designed to protect fish and wildlife resources under the CFGC, such as CESA (CFGC Section 2050, et seq.), Fully Protected Species (CFGC Section 3511) and the Lake or Streambed Alteration Agreement (LSAA) Program (CFGC Sections 1600 to 1616). Such regulations are summarized in the following sections.

California Endangered Species Act

The State of California enacted CESA in 1984. CESA is similar to the FESA but pertains to State-listed endangered and threatened species. Pursuant to CFGC Section 2080, no person or public agency shall "take" any species determined by the California Fish and Game Commission to be endangered or threatened, except as otherwise provided in the CESA, the Native Plant Protection Act (NPPA), or the California Desert Native Plants Act. Such incidental "take," however, can occur through a permit issued by CDFW under CFGC Section 2081. That statute empowers CDFW to issue a permit for lawful projects that otherwise be disallowed under the take prohibition found in Section 2080. Under the definition of "take" found in CFGC Section 86, which applies to Sections 2080 and 2081, "take" is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Under this definition, the concept of "take" extends to an activity that would directly or indirectly kill an individual of an endangered or threatened species, but does not include "harm" or "harass," as does the federal definition. As a result, the threshold for take is higher under CESA than under the FESA. Authorization for take of State-listed species can be obtained through a CFGC Section 2081 incidental take permit. As issued, such permits must ensure that the impacts of the authorized are minimized and fully mitigated. The measures required to meet this obligation shall be roughly proportional in extent to the impact of the authorized taking on the species. Where various measures are available to meet this obligation, the measures required shall maintain the applicant's objectives to the greatest extent possible. All required measures shall be capable of successful implementation.

As with FESA, for covered projects that may impact State-listed species under CESA that are also Covered Species under the PCCP, direct consultation with CDFW for State-listed take authorization is not required as long as the covered project complies with PCCP Avoidance, Minimization, and Mitigation Measures. For projects that may result in take of State-listed species that are not PCCP Covered Species, CESA directs agencies to consult with CDFW on projects or actions that could affect listed species, directs CDFW to determine whether jeopardy would occur and allows CDFW to identify "reasonable and prudent alternatives" to the project consistent with conserving the species. CESA allows CDFW to authorize exceptions to the State's prohibition against take of a listed species if the "take" of a listed species is incidental to carrying out an otherwise lawful project that has been approved under CEQA (CFGC Section 2081).

California Fish and Game Codes

A number of species have been designated "Fully Protected" species under Sections 5515, 5050, 3511, and 4700 of the CFGC, but are not listed as endangered (Section 2062) or threatened (Section 2067) species under CESA. Except for take related to scientific research or take undertaken pursuant to an adopted Natural Community Conservation Plan (NCCP), all take of Fully Protected species is prohibited. The CFGC defines take as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

Birds of prey are protected in California under provisions of the CFGC Section 3503.5 (1992), which states, "it is unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "taking" by CDFW.

Lake or Streambed Alteration Program

The CDFW is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the CFGC Section 1602, requires notification to CDFW of any proposed activity that may substantially modify a river, stream, or lake. Notification is required by any person, business, State or local government agency, or public utility that proposes an activity that will:

- substantially divert or obstruct the natural flow of any river, stream or lake;
- substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or
- deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

For the purposes of Section 1602, rivers, streams and lakes must flow at least intermittently through a bed or channel. If notification is required and CDFW believes the proposed activity is likely to result in adverse harm to the natural environment, the CDFW will require that the parties enter into a LSAA.

CDFW Species of Special Concern

In addition to formal listings under FESA and CESA, plant and wildlife species receive additional consideration during the CEQA process. Species that may be considered for review are included on a list of "Species of Special Concern" developed by CDFW. Species whose numbers, reproductive success, or habitat may be threatened are tracked by CDFW in California.

Natural Communities Conservation Planning Act

The Natural Communities Conservation Planning Act is set forth in CFGC Sections 2800–2835. The intent of the legislation is to provide for conservation planning as an officially recognized policy that can be used as a tool to eliminate conflicts between the protection of natural resources and the need for growth and development. In addition, the legislation promotes conservation planning as a means of coordination and cooperation among private interests, agencies, and landowners, and as a mechanism for multispecies and multi-habitat management and conservation. The development of NCCPs is an alternative to obtaining take authorization under Section 2081 of the CFGC. The PCCP is an example of an NCCP.

Native Plant Protection Act

The NPPA was enacted in 1977 and allows the Fish and Game Commission to designate plants as rare or endangered. Currently, 64 species, subspecies, and varieties of plants are protected as rare under the NPPA. The NPPA prohibits take of endangered or rare native plants, but includes some exceptions for agricultural and nursery operations, emergencies, and after properly notifying CDFW for vegetation removal from canals, roads, and other sites, changes in land use, and in certain other situations.

Regional Water Quality Control Board

The PCCP and CARP serve as a program covering waters under the State's Section 401 authority. The Regional Water Quality Control Board (RWQCB) issued a Programmatic Section 401 to the County for Covered Activities. The PCCP and CARP also serve as a Watershed Plan for the purposes of meeting the RWQCB's requirements.

Any action requiring a CWA Section 404 permit, or a Rivers and Harbors Act Section 10 permit, must also obtain a CWA Section 401 Water Quality Certification. The State of California Water Quality Certification (WQC) Program was formally initiated by the State Water Resources Control Board (SWRCB) in 1990 under the requirements stipulated by Section 401 of the federal CWA. Although the CWA is a federal law, Section 401 of the CWA recognizes that states have the primary authority and responsibility for setting water quality standards. In California, under Section 401, the SWRCB and RWQCBs are the authorities that certify that issuance of a federal license or permit does not violate California's water quality standards (i.e., that they do not violate Porter-Cologne and the Water Code). The WQC Program currently issues the WQC for discharges requiring USACE's permits for fill and dredge discharges within waters of the U.S., and also implements the State's wetland protection and hydromodification regulation program under the Porter Cologne Water Quality Control Act.

On April 2, 2019, the SWRCB adopted a State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (Procedures), for inclusion in the forthcoming Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California Plan. The Procedures consist of four major elements: (1) a wetland definition; (2) a framework for determining if a feature that meets the wetland definition is a water of the State; (3) wetland delineation procedures; and (4) procedures for the submittal, review, and approval of applications for WQCs and Waste Discharge Requirements (WDR) for dredge or fill activities. The State Office of Administrative Law (OAL) approved the Procedures on August 28, 2019, and the Procedures became effective May 28, 2020.

Under the Procedures and the State Water Code (Water Code Section 13050[e]), "waters of the State" are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state." Unless excluded by the Procedures, any activity that could result in discharge of dredged or fill material to waters of the State, which includes waters of the U.S. and non-federal waters of the State, requires filing of an application under the Procedures.

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act, Water Code Section 13000 et seq.) is California's statutory authority for the protection of water quality in conjunction with the federal CWA. The Porter-Cologne Act requires the SWRCB and RWQCBs under the CWA to adopt and periodically update water quality control plans, or basin plans. Basin plans are plans in which beneficial uses, water quality objectives, and implementation programs are established for each of the nine regions in California. The Porter-Cologne Act also requires dischargers of pollutants or dredged or fill material to notify the RWQCBs of such activities by filing Reports of Waste Discharge and authorizes the SWRCB and RWQCBs to issue and enforce waste discharge requirements, National Pollutant Discharge Elimination System (NPDES) permits, Section 401 water quality certifications, or other approvals.

Oak Woodlands Conservation Act

Section 21083.4 of the California Public Resources Code requires counties to determine if a project within their jurisdiction may result in conversion of oak woodlands that would have a

significant adverse effect on the environment. If the lead agency determines that a project would result in a significant adverse effect on oak woodlands, mitigation measures to reduce the significant adverse effect of converting oak woodlands to other land uses are required.

Section 21083.4(b) provides the following four mitigation options where a county finds that a project may have a significant effect on oak woodlands: (1) conserve oak woodlands, through the use of conservation easements; (2) plant an appropriate number of trees, including maintaining plantings and replacing dead or diseased trees; (3) contribute funds to the Oak Woodlands Conservation Fund; and (4) "[o]ther mitigation measures developed by the county." The second option – tree planting – is subject to the following limitations and opportunities: (a) "[t]he requirement to maintain trees … terminates seven years after the trees are planted"; (b) this mitigation strategy "shall not fulfill more than one-half of the mitigation requirement for the project"; and (c) replanting "may be used to restore former oak woodlands."

Local Regulations

The following are the local environmental laws and policies relevant to biological resources.

Placer County Conservation Program

On September 1, 2020, Placer County adopted the PCCP, which is a Habitat Conservation Plan (HCP) under the FESA and a NCCP under the California Natural Community Conservation Planning Act. The PCCP applies to all Covered Activities within Placer County north of PFE Road, but outside of certain non-participating municipalities. The entire study area is within the PCCP plan area. The PCCP covers both terrestrial and aquatic species.

The PCCP includes the CARP to provide programmatic permit coverage related to Sections 401-404 of the CWA and Waters of the County. The CARP has a number of additional conditions for work within the vicinity of named streams and unnamed drainages. Conditions that are relevant to the proposed project include:

- Avoid and minimize activities within the Stream System including any area subject to flooding in a 100-year event as defined by the Federal Emergency Management Agency (FEMA) (FEMA 2005) or as determined by hydrologic analysis based on an engineering site survey (whichever is more accurate), or the outermost limit of a variable-width buffer measured outward from the edge of the OHWM on streams mapped in the National Hydrography Dataset (NHD) (so-called blueline streams). The OHWM corresponds to the waterline of the full channel when in non-flood condition and is defined as "that line on the shore established by the fluctuations 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" (33 Code of Federal Regulations [CFR] 328.8(e)). When the criteria specified by 33 CFR 328.8(3) are not present in the field or conditions do not provide a clear demarcation of the OHWM, the location of the OHWM will be based upon the two-year event. The area within 50 feet of streams, as measured from the OHWM as described above, not named, but which are shown as "blueline" streams on United States Geological Survey (USGS) Quad maps as specified in California Public Resources Code Section 4528 and as located on the NHD.
- Disturbance within 50 feet of the edge of riparian vegetation shall be limited to exempt activities such as bridge crossings, recreational trails, and outfalls. The 50-foot restricted area is referred to throughout this chapter as the "Riparian Buffer".

- Structures are not permitted within 50 feet of intermittent streams or within 100 feet of perennial streams unless authorized through an approved variance processed by Placer County. In addition, Placer County Code (Chapter 17.54.145) identifies a Watercourse Setback within which structures are not permitted except as approved by the Planning Director. The "Placer County Watercourse Setback" is defined as designated buffers for various named drainages, and 50-foot buffers for all other drainages in NHD. Within the overall project site, this is a 300-foot setback from Dry Creek, and a 50-foot setback from all other drainages.

As a permittee under the PCCP, Placer County can transfer take authorization to private entities conducting activities covered by the plan and under their jurisdiction. Covered Activities are generally any actions undertaken in the PCCP plan area by or under the authority of the Permittees that may affect Covered Species or Covered Natural Communities. The area for permit coverage under the HCP/NCCP has two main parts and associated subcomponents: (1) Plan Area A, comprised of Valley and Foothill areas; and (2) Plan Area B, which consists of subcomponent areas B1 through B5. The project site is within Plan Area A, which is the main focus of the HCP/NCCP and where all future growth and most of the Covered Activities will take place. Plan Area A is covered by a comprehensive permit and is comprised of the City of Lincoln plus all unincorporated lands within western Placer County: approximately 210,000 acres, or roughly five-sixths of western Placer County.

The Valley portion of Plan Area A, within which the project site is located, comprises the City of Lincoln and unincorporated western Placer County below roughly 200 feet in elevation. VPCs and annual grasslands are the primary natural communities in the Valley.

The PCCP addresses 14 Covered Species and several Covered Natural Communities, and includes conservation measures to protect all 14 Covered Species and their habitats. Avoidance and minimization measures (AMMs) are set forth in Chapter 6 of the PCCP, and are intended to ensure that adverse effects on Covered Species and Covered Natural Communities are avoided and minimized.

Applicants are required to obtain a signed Certificate of PCCP Authorization from Placer County for potential impacts to terrestrial and aquatic habitats. During the local impact authorization process, impact fees are calculated utilizing land cover data. Fees include Land Conversion fees and may also include Aquatic/Wetland Special Habitat fees. To address disturbances to vegetation communities/land covers within the PCCP, including disturbances to oak woodland acreages and impacts to individual trees, development fees are applied for a development project's vegetation community impacts, in accordance with PCCP guidelines.

According to Chapter 1, Introduction, Section 1.5.5, California Environmental Quality Act, of the PCCP (page 1-31), "[i]t is expected that the conservation provided in this Plan will be sufficient to meet all CEQA mitigation standards for impacts on the special-status species and natural communities that are covered in this Plan. However, because circumstances may change, full CEQA coverage through the EIS/EIR prepared for this HCP/NCCP cannot be guaranteed. Barring major changes, it is expected that future CEQA documents for activities that receive take coverage under this Plan will incorporate the conservation measures in this Plan by reference to comply with CEQA for the Covered Species and natural communities addressed in this Plan. The Plan implements a conservation strategy designed to achieve a comprehensive set of biological goals and objectives. Furthermore, as an NCCP, the Plan provides for broad-based planning to preserve natural communities at the ecosystem scale. [¶] Many of the conservation measures in

the Plan will also benefit other special-status species (i.e., species not covered by the Plan); such measures may be sufficient to meet CEQA standards for other special-status species as well."

Placer County General Plan

The PCGP biological resource policies that are applicable to the proposed project are presented below:

Natural Resources Element

Goal 6.A To protect and enhance the natural qualities of Placer County's rivers, streams, creeks and groundwater.

Policy 6.A.1 The County shall require the provision of sensitive habitat buffers which shall, at a minimum, be measured as follows: 100 feet from the centerline of perennial streams, 50 feet from centerline of intermittent streams, and 50 feet from the edge of sensitive habitats to be protected, including riparian zones, wetlands, old growth woodlands, and the habitat of special status, threatened or endangered species (see discussion of sensitive habitat buffers in Part I of this Policy Document). Based on more detailed information supplied as a part of the review for a specific project or input from state or federal regulatory agency, the County may determine that such setbacks are not applicable in a particular instance or should be modified based on the new information provided. The County may, however, allow exceptions, such as in the following cases:

1. Reasonable use of the property would otherwise be denied;
2. The location is necessary to avoid or mitigate hazards to the public;
3. The location is necessary for the repair of roads, bridges, trails, or similar infrastructure; or
4. The location is necessary for the construction of new roads, bridges, trails, or similar infrastructure where the County determines there is no feasible alternative and the project has minimized environmental impacts through project design and infrastructure placement.

Policy 6.A.3 The County shall require development projects proposing to encroach into a stream zone or stream setback to do one or more of the following, in descending order of desirability:

a. Avoid the disturbance of riparian vegetation;
b. Replace all functions of the existing riparian vegetation (on-site, in-kind);
c. Restore another section of stream (in-kind); and/or
d. Pay a mitigation fee for in-kind restoration elsewhere (e.g., mitigation banks).

Policy 6.A.4 Where stream protection is required or proposed, the County should require public and private development to:

a. Preserve stream zones and stream setback areas through easements or dedications. Parcel lines (in the case of a subdivision) or easements (in the case of a subdivision or other development) shall be located to optimize resource protection. If a stream is proposed to be included within an open space parcel or easement, allowed uses and maintenance responsibilities within that parcel or easement should be clearly defined and conditioned prior to map or project approval;
b. Designate such easement or dedication areas (as described in a. above) as open space;
c. Protect stream zones and their habitat value by actions such as: 1) providing an adequate stream setback, 2) maintaining creek corridors in an essentially natural state, 3) employing stream restoration techniques where restoration is needed to achieve a natural stream zone, 4) utilizing riparian vegetation within stream zones, and where possible, within stream setback areas, 5) prohibiting the planting of invasive, non-native plants (such as Vinca major and eucalyptus) within stream zones or stream setbacks, and 6) avoiding tree removal within stream zones;
d. Provide recreation and public access near streams consistent with other General Plan policies;
e. Use design, construction, and maintenance techniques that ensure development near a creek will not cause or worsen natural hazards (such as erosion, sedimentation, flooding, or water pollution) and will include erosion and sediment control practices such as: 1) turbidity screens and other management practices, which shall be used as necessary to minimize siltation, sedimentation, and erosion, and shall be left in place until disturbed areas; and/or are stabilized with permanent vegetation that will prevent the transport of sediment off site; and 2) temporary vegetation sufficient to stabilize disturbed areas.
f. Provide for long-term stream zone maintenance by providing a guaranteed financial commitment to the County which accounts for all anticipated maintenance activities.

Policy 6.A.5 The County shall continue to require the use of feasible and practical best management practices (BMPs) to protect streams from the adverse effects of construction activities and urban runoff and to encourage the use of BMPs for agricultural activities.

Goal 6.B To protect wetland communities and related riparian areas throughout Placer County as valuable resources.

Policy 6.B.1 The County shall support the “no net loss” policy for wetland areas regulated by the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, and the California Department of Fish and Wildlife. Coordination with these agencies at all levels of project review shall



continue to ensure that appropriate mitigation measures and the concerns of these agencies are adequately addressed.

Policy 6.B.2 The County shall require new development to mitigate wetland loss in both federal jurisdictional and non-jurisdictional wetlands to achieve "no net loss" through any combination of the following, in descending order of desirability: (1) avoidance; (2) where avoidance is not possible, minimization of impacts on the resource; or (3) compensation, including use of a mitigation and conservation banking program that provides the opportunity to mitigate impacts to special status, threatened, and endangered species and/or the habitat which supports these species in wetland and riparian areas. Non-jurisdictional wetlands may include riparian areas that are not federal "waters of the United States" as defined by the Clean Water Act.

Policy 6.B.3 The County shall discourage direct runoff of pollutants and siltation into wetland areas from outfalls serving nearby urban development. Development shall be designed in such a manner that pollutants and siltation will not significantly adversely affect the value or function of wetlands.

Policy 6.B.4 The County shall strive to identify and conserve remaining upland habitat areas adjacent to wetlands and riparian areas that are critical to the survival and nesting of wetland and riparian species.

Policy 6.B.5 The County shall require development that may affect a wetland to employ avoidance, minimization, and/or compensatory mitigation techniques. In evaluating the level of compensation to be required with respect to any given project, (a) on-site mitigation shall be preferred to off-site, and in-kind mitigation shall be preferred to out-of-kind; (b) functional replacement ratios may vary to the extent necessary to incorporate a margin of safety reflecting the expected degree of success associated with the mitigation plan; and (c) acreage replacement ratios may vary depending on the relative functions and values of those wetlands being lost and those being supplied, including compensation for temporal losses. Consideration shall be given to out-of-kind compensatory mitigation for wetland impacts when larger landscape-level goals and objectives may be met by doing so. The County shall continue to implement and refine criteria for determining when an alteration to a wetland is considered a less-than significant impact under CEQA.

Goal 6.C To protect, restore, and enhance habitats that support fish and wildlife species so as to maintain populations at viable levels.

Policy 6.C.1 The County shall identify and protect significant ecological resource areas and other unique wildlife habitats critical to protecting and sustaining wildlife populations. Significant ecological resource areas include the following:



a. Wetland areas including vernal pools.
b. Stream zones.
c. Any habitat for special status, threatened, or endangered animals or plants.
d. Critical deer winter ranges (winter and summer), migratory routes and fawning habitat.
e. Large areas of non-fragmented natural habitat, including blue oak woodlands, valley foothill and montane riparian, valley oak woodlands, annual grasslands, and vernal pool/grassland complexes.
f. Identifiable wildlife movement zones, including but not limited to, non-fragmented stream environment zones, avian mammalian migratory routes, and known concentration areas of waterfowl within the Pacific Flyway.
g. Important spawning and rearing areas for anadromous fish.
h. Habitat necessary to protect and recover populations of the Covered Species identified in the Placer County Conservation Program.

Policy 6.C.2 The County shall require development in areas known to have particular value for wildlife to be carefully planned and, where possible, located so that the reasonable value of the habitat for wildlife is maintained.

Policy 6.C.3 The County shall encourage the control of residual pesticides to prevent potential damage to water quality, vegetation, fish, and wildlife.

Policy 6.C.4 The County shall encourage private landowners to adopt sound fish and wildlife habitat management practices, as recommended by California Department of Fish and Wildlife officials, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the U.S. Army Corps of Engineers, and the Placer County Resource Conservation District.

Policy 6.C.6 The County shall support programs that preserve the habitats of threatened, endangered, and/or other special status species including the implementation of the Placer County Conservation Program. Where County acquisition and maintenance is not practicable or feasible, federal and state agencies, as well as other resource conservation organizations, shall be encouraged to acquire and manage endangered species' habitats.

Policy 6.C.7 The County shall support the maintenance of suitable habitats for all indigenous species of wildlife, without preference to game or non-game species, through maintenance of habitat diversity.

Policy 6.C.9 The County shall require new private or public developments to preserve and enhance existing riparian habitat unless public safety concerns require removal of habitat for flood control or other essential public purposes (See Policy 6.A.1.). In cases where new

private or public development results in modification or destruction of riparian habitat the developers shall be responsible for acquiring, restoring, and enhancing at least an equivalent amount of like habitat within or near the project area.

Policy 6.C.11 Prior to approval of discretionary development permits involving parcels within a significant ecological resource area, the County shall require, as part of the environmental review process, a biotic resources evaluation of the sites by a wildlife biologist, the evaluation shall be based upon field reconnaissance performed at the appropriate time of year to determine the presence or absence of special status, threatened, or endangered species of plants or animals. Such evaluation will consider the potential for significant impact on these resources, and will identify feasible measures to mitigate such impacts or indicate why mitigation is not feasible. In approving any such discretionary development permit, the decision-making body shall determine the feasibility of the identified mitigation measures and whether the approval affects the viability of County, state or federal conservation programs that seek to protect the significant ecological resource areas.

Significant ecological resource areas shall, at a minimum, include the following:

a. Wetland areas including vernal pools.
b. Stream zones.
c. Any habitat for special status, threatened or endangered animals or plants.
d. Critical deer winter ranges (winter and summer), migratory routes and fawning habitat.
e. Large areas of non-fragmented natural habitat, including blue oak woodlands, valley foothill and montane riparian, valley oak woodlands, annual grasslands, vernal pool/grassland complexes habitat.
f. Identifiable wildlife movement zones, including but not limited to, non-fragmented stream environment zones, avian and mammalian migratory routes, and known concentration areas of waterfowl within the Pacific Flyway.
g. Important spawning and rearing areas for anadromous fish.
h. Habitat necessary to protect and recover populations of the Covered Species identified in the Placer County Conservation Program.

Policy 6.C.12 The County shall cooperate with, encourage, and support the plans of other public agencies to acquire fee title or conservation easements to privately-owned lands in order to preserve important wildlife corridors and to provide habitat protection of California Species of Concern and state or federally listed threatened, or endangered plant and animal species, or any species listed in an implementing agreement for a habitat conservation plan and natural

communities conservation plan such as the Placer County Conservation Program.

Policy 6.C.13 The County shall support and cooperate with efforts of other local, state, and federal agencies and private entities engaged in the preservation and protection of significant biological resources from incompatible land uses and development. Significant biological resources include endangered or threatened species and their habitats, wetland habitats, wildlife migration corridors, and locally important species/communities.

Goal 6.D To preserve and protect the valuable vegetation resources of Placer County.

Policy 6.D.1 The County shall encourage landowners and developers to preserve the integrity of existing terrain and natural vegetation in visually-sensitive areas such as hillsides, ridges, and along important transportation corridors.

Policy 6.D.2 The County shall require developers to use native and compatible non-native species, especially drought-resistant species, to the extent possible in fulfilling landscaping requirements imposed as conditions of discretionary permits or for project mitigation.

Policy 6.D.3 The County shall support the preservation of outstanding areas of natural vegetation, including, but not limited to, oak woodlands, riparian areas, vernal pools, and habitat necessary to protect and recover populations of the Covered Species identified in the Placer County Conservation Program.

Policy 6.D.4 The County shall ensure that landmark trees and major groves of native trees are preserved and protected. In order to maintain these areas in perpetuity, protected areas shall also include younger vegetation with suitable space for growth and reproduction.

Policy 6.D.5 The County shall require that new development preserve natural woodlands to the maximum extent possible.

Policy 6.D.6 The County shall ensure the conservation of sufficiently large, continuous expanses of vegetation that provides suitable habitat for maintaining abundant and diverse wildlife including habitat necessary to protect and recover populations of the Covered Species identified in the Placer County Conservation Program.

Policy 6.D.7 The County shall support the management of wetland and riparian plant communities for passive recreation, groundwater recharge, nutrient catchment, and wildlife habitats. Such communities shall be restored or expanded, where possible.

Policy 6.D.8 The County shall require that new development preserve natural woodlands to the maximum extent possible.

Policy 6.D.10 The County shall encourage the planting of native trees, shrubs, and grasslands in order to preserve the visual integrity of the landscape, provide habitat conditions suitable for native wildlife, and ensure that a maximum number and variety of well-adapted plants are maintained.

Policy 6.D.11 The County shall support the continued use of prescribed burning, mastication, chipping, and other methods to mimic the effects of natural fires to reduce fuel loads and associated fire hazard to human residents and to enhance the health of biotic communities.

Policy 6.D.14 The County shall require that new development avoid, as much as possible, ecologically-fragile areas (e.g., areas of rare or endangered species of plants, riparian areas). Where feasible, these areas should be protected through public acquisition of fee title or conservation easements to ensure protection.

Goal 6.E To preserve and enhance open space lands to maintain the natural resources of the County.

Policy 6.E.1 The County shall support the preservation and enhancement of natural land forms, natural vegetation, and natural resources as open space to the maximum extent feasible. The County shall permanently protect, as open space, areas of natural resource value, including wetlands, riparian corridors, unfragmented woodlands, and floodplains.

Policy 6.E.2 The County shall require that new development be designed and constructed to preserve the following types of areas and features as open space to the maximum extent feasible:

a. High erosion hazard areas;
b. Scenic and trail corridors;
c. Streams, riparian vegetation;
d. Wetlands;
e. Significant stands of vegetation;
f. Wildlife corridors; and
g. Any areas of special ecological significance.

Policy 6.E.3 The County shall support the maintenance of open space and natural areas that are interconnected and of sufficient size to protect biodiversity sustain viable populations, accommodate wildlife movement, and sustain ecosystems.

Dry Creek-West Placer Community Plan

The following goals and policies from the DCWPCP related to biological resources are applicable to the proposed project.

Community Development Element: The Land Use Plan

Goal 2 To preserve outstanding visual features, natural resources, and landmarks.

Policy 3 The retention of important open space features is critical to the future quality of life in the Plan area.

Policy 26 Encourage development activities in areas of least environmental sensitivity, and similarly, restrict from development activities those lands which are environmentally sensitive.

Community Development Element: Community Design Element

Policy 14 Where possible preserve native trees and support the use of native drought tolerant plant materials in all revegetation/landscaping projects.

Environmental Resources Management Element: Natural Resources

Goal 1 Provide for the protection of rare, threatened and endangered species and the habitat which supports those species.

Goal 2 Conserve the quality of all habitats which support the environment of fish and wildlife species so as to maintain populations at sustainable levels.

Goal 4 Safeguard and maintain natural waterways to ensure water quality, species diversity and unique habitat preservation.

Goal 6 Preserve outstanding areas of natural vegetation.

Policy 1 Any rare, significant, or endangered environmental features and conditions should be identified and programs designed to conserve or enhance their continued existence.

Policy 2 Preserve in their natural condition all stream environment zones, including flood plains, and riparian vegetation areas.

Policy 5 Identify all important fish and wildlife areas within the plan area and where feasible, protect these areas from urban/suburban encroachment.

Policy 6 Identify, preserve and protect areas of unique or significant natural vegetation, including but not limited to vernal pools, riparian areas and native oak groves.

Policy 8 Protect important spawning grounds, migratory routes, water-fowl resting areas, oak woodlands, and other unique wildlife habitats critical to protecting and sustaining wildlife populations.

Policy 12 Conservation of the natural landscape, including minimizing disturbance to natural terrain and vegetation, shall be an overriding consideration in the design of any subdivision or land development

project, paying particular attention to the protection and preservation of existing vegetation.

Policy 13 For landscaping which is part of site development where original vegetation has been removed or where additional plantings are included, the emphasis should be on drought tolerant, native species where possible.

Policy 14 No construction activities shall occur within the Dry Creek floodplain and only limited alteration of its tributaries shall be permitted except as part of the development of the floodplain as a recreational area, or for stream enhancement, or where work is done in accordance with the Placer County Flood Damage Prevention Ordinance, Department of Fish and Game Regulations, and Clean Water Act Provisions administered by the U.S. Corps of Engineers.

Policy 16 Require site specific studies, from qualified consultants, for projects which impact unique or significant fish, wildlife or vegetative resources.

Policy 17 Incorporate a mitigation monitoring program for all projects subject to environmental review where detrimental impacts to an area's natural resources have been identified.

Policy 18 Require field studies as part of project review where vernal pools are noted on the property. These studies shall document the possible occurrence of special status plant and wildlife species and provide a method of protecting, monitoring, replacing or otherwise mitigating development in and around these sensitive habitats.

Policy 19 Support the "no net loss" policy for wetland areas administered by the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service and the State Department of Fish and Game. Continue to coordinate with these agencies at all levels of project review to ensure that their concerns are adequately addressed.

Policy 24 Tracts of undisturbed oak woodlands and valley grasslands that have significant value as wildlife habitat shall be preserved as open space.

Environmental Resources Management Element: Open Space

Goal 1 To preserve and enhance open space lands to maintain the natural resources and rural characteristics of the area.

Goal 2 To protect and preserve open spaces vital for wildlife habitat and other areas of major or unique ecological significance.

Goal 3 To protect the natural beauty and minimize disturbance of the natural terrain and vegetation.

Goal 4 To conserve and enhance the unique natural environment and open space of the area and to minimize disturbance of the natural terrain because these are unique and valuable assets for the Dry Creek-West Placer Community Plan Area, Placer County and the counties that border the area.

Goal 5 Preserve outstanding areas of natural vegetation including, but not limited to, oak woodlands, riparian areas and vernal pools.

Goal 6 To conserve the visual resources of the community, including the important vistas and wooded area, and in particular, the riparian habitat of Dry Creek and its intermittent streams and natural drainage channels which are important in providing low cost natural flood control.

Goal 7 Provide for the protection of rare, threatened and endangered species and/or the habitat which supports these species.

Goal 10 To provide open space to shape and guide development and to enhance community identity.

Policy 1 Preserve in their natural condition all stream environment zones, including floodplains, and riparian vegetation areas.

Policy 4 Encourage both private and public ownership and maintenance of open space.

Policy 5 Protect natural areas along creeks and canals through the use of non-development setback with setback distances varying according to the significance of the area to be protected.

Policy 12 Development on private lands should be planned and designed to provide for preservation of open space.

Policy 13 Because the dominant features of the Planning Area contributing to the open quality are the natural land forms and vegetation, structures should be subordinated thereto. Only in the confines of individual sites should structures be allowed to be dominant.

Policy 17 Stream corridors shall be left in an open, natural condition, except for structures or uses which are compatible with stream corridors.

Policy 18 In the design and development of new subdivisions the following types of areas and features shall be preserved as open spaces to the maximum extent feasible: high hazard areas, scenic and trail corridors, streams, streamside vegetation, other significant stands of beneficial native vegetation, and any areas of special ecological significance.

Policy 21 Where impacts to stream environment zones or wetland are unavoidable, project specific mitigation shall include the identification and quantification of vegetation impacted, the

preparation or revegetation plans to assure no net loss of riparian or wetland acreage or values, and the specific monitoring of pans to assure compliance and satisfactory results.

7.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to biological resources. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with CEQA Guidelines Section 15065(a)(1) and Appendix G of the CEQA Guidelines, and Placer County's Environmental Checklist, a significant impact would occur if the proposed project would do any of the following:

- 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 CDFW or USFWS;
- 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 CDFW or USFWS;
- Have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- 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;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;
- Conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or State habitat conservation plan;
- Substantially reduce the habitat of a fish or wildlife species;
- Cause a fish or wildlife population to drop below self-sustaining levels;
- Threaten to eliminate a plant or animal community;
- Substantially reduce the number of or restrict the range of an endangered, rare, or threatened species; or
- Have a substantial adverse effect on the environment by converting oak woodlands.

Method of Analysis

The information contained in the analysis is primarily based on the BRA prepared by Madrone.

Biological Resources Assessment

The analyses within the BRA are based on a literature review and field surveys of the study area, which are detailed further below.

Literature Review

A list of special-status plant and wildlife species with potential to occur within the study area was developed as part of the BRA through queries of the following databases:

a) CNDDB query of the study area and all areas within five miles of the study area (see Figure 7-4);
b) USFWS Information for Planning and Conservation (IpaC) query of the study area (included as Attachment B of the BRA);
c) CNPS Rare and Endangered Plant Inventory query of the "Citrus Heights, California" U.S. Geological Survey topographic quadrangle and the eight surrounding quadrangles (included as Attachment C of the BRA); and
d) WBWG Species Matrix.

In addition, any special-status species that are known to occur in the project region, but that were not identified in any of the above database searches, were also analyzed for their potential to occur within the study area.

Field Surveys

Madrone conducted recent field surveys of various portions of the study area, as well as prior surveys conducted for previous proposals. Field surveys were conducted on September 3, 2015, March 15 and May 9, 2018, April 30 and May 16, 2024, March 4 and 31, April 8, May 8, June 9 and 26, and July 1, 2025, to map vegetation communities/land covers and assess the suitability of habitats on-site to support special-status species. Protocol-level special-status plant surveys were conducted within the project site on March 15 and May 9, 2018 and April 30 and May 16, 2025. Protocol-level VELB surveys were conducted throughout the study area concurrent with the 2018 special-status plant surveys and again on May 8, 2025. An aquatic resources delineation of the project site was conducted in accordance with USACE protocol on September 3, 2015, March 15 and May 9, 2018, and July 9, 2025. A protocol-level aquatic resources delineation, special-status plant survey, and VELB habitat survey of the off-site sewer lift station improvements area was conducted on June 9, 2025. Protocol-level Swainson's hawk nest surveys and tricolored blackbird nesting surveys were conducted for the project site and a 0.25-mile buffer area on March 31, April 4, 8, 15, and 30, and June 25, 2025. Protocol-level wet-season surveys for large branchiopods were conducted within the project site throughout the winter of 2024-2025. Meandering pedestrian surveys were performed on foot throughout the study area. Vegetation communities were classified in accordance with the PCCP land covers, and plant taxonomy was based on the nomenclature in the Jepson eFlora. A list of all wildlife species observed during the field surveys is included as Attachment D in the BRA (see Appendix D of this EIR).

The results of the protocol-level surveys described above were incorporated into and included as the following attachments to the BRA:

- Aquatic Resources Delineation Report for Placer Christian High School (Attachment E of the BRA);
- Aquatic Resources Delineation Report for Placer Creek Residential (Attachment E of the BRA);
- Special-Status Plant Survey Report for Fong Property (Attachment F of the BRA); and
- 90-Day Survey Report for 2024-25 Wet-Season Surveys for Listed Large Branchiopods for Estia Dry Creek (Attachment G of the BRA).

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts related to biological resources is based on implementation of the proposed project, as well as the two affordable housing options analyzed throughout this EIR, in comparison to existing conditions and the standards of significance presented above. In most

cases, potential environmental impacts associated with the proposed project and the 22 on-site ADUs would not differ. Thus, unless otherwise noted, the below analysis applies to both the proposed project and the on-site ADUs.

7-1 Impacts to special-status plant species either directly (e.g., threaten to eliminate a plant community) or through substantial habitat modifications. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could result in impacts to special-status plant species either directly or through substantial habitat modifications.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the biological and habitat conditions of the project site and off-site sewer lift station improvements area are similar, the potential for either component to result in impacts to special-status plant species, either directly or through substantial habitat modifications, would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

As detailed in Table 7-3, the special-status plant species with potential to occur within the study area, due to the presence of suitable habitat, include big-scale balsamroot, dwarf downingia, Bogg's Lake hedge-hyssop, Ahart's dwarf rush, legenere, pincushion navarretia, slender Orcutt grass, Sacramento Orcutt grass, and Sanford's arrowhead. The protocol-level special-status plant surveys conducted throughout the study area in 2024 and 2025 did not identify any of the aforementioned species that could occur within study area; however, given enough time, plants may become established in areas where suitable habitat exists. Various on-site vegetation communities proposed for disturbance, such as the annual brome grassland/VPC and VFRW, provide suitable habitat for a variety of special-status plant species. Therefore, special-status plants could become established within the foregoing vegetation communities in the interim between surveys/analysis and eventual construction, which could result in potential impacts during construction of the proposed project.

The PCCP contains objectives focused on protecting and restoring grasslands on a regional scale. Actions to meet such objectives would protect or restore habitat for many of the special-status plant species discussed above. As explained in Section 5.2.6.1 of the PCCP (pages 5-18 and 5-19), Objective VPCG-1.3 ("Protect Grasslands") is to "[p]rotect 2,740 acres of grassland natural community (i.e., non-vernal pool complex grassland), including 350 acres in the Valley [Reserve Acquisition Area] RAA and 2,390 acres in the Foothills RAA (Tables 5-3)."

The rationale for this objective is as follows: "In the Valley, grasslands are interspersed with vernal pool complexes (vernal pool complexes comprise vernal pool constituent habitats and upland grasslands; see Chapter 3, *Physical and Biological Resources*, for descriptions of communities) and other natural communities. Most grasslands

within the Valley have vernal pool constituent habitats interspersed within them, and will therefore be protected as vernal pool complexes. The grassland protection commitment, in conjunction with Objectives VPCG 1.1 and VPCG 1.2, is intended to connect vernal pool complexes within a large, interconnected Reserve System of grassland and vernal pool complexes that will support grassland-dependent Covered Species and other native species. Large, interconnected grasslands are expected to benefit Swainson's hawk, western burrowing owl, and tri-colored blackbird by providing foraging and nesting habitat, and giant garter snake and western pond turtle by providing habitat for aestivation, resting and nesting."

The PCCP also contains Objective VPCG-1.4 ("Restore Grasslands"), which provides that "[i]n addition to the protection of 2,740 acres of existing grassland natural community, restore 1,000 acres of grassland in the Reserve System in the Valley, independent of effects (Table 5-4)."

The rationale for this objective is as follows: "An extensive amount of grassland has been converted to agriculture and for urban and suburban development in western Placer County and throughout California, fragmenting remaining grasslands. The Plan will restore grasslands from existing agricultural lands. The grassland restoration commitment is intended to expand and connect existing grasslands and vernal pool complexes to reduce fragmentation and increase permeability across the grassland/vernal pool complex landscape. [¶] Grasslands will be restored to sustain important habitat functions such as foraging, dispersal, and shelter for Covered Species and other native species. Grassland restoration will increase the extent, connectivity, and quality of grassland habitat available for use by Covered Species and other native species and thus contribute to their conservation. Covered Species expected to benefit from restored grasslands include Swainson's hawk, western burrowing owl, tri-colored blackbird, giant garter snake, and western pond turtle. [¶] The restored grasslands will be planted with a mixture of native and naturalized grasses and forbs, and managed to encourage native biodiversity, but will not require a predominance of natives for the restored lands to contribute to the 1,000-acre restoration commitment. Creation and maintenance of large areas of native grassland can be very costly and often unsuccessful, and the Covered Species do not require grasslands dominated by native grasses and forbs to benefit from grassland restoration. Once grassland restoration sites are selected, restoration designs will include success criteria for the proportion of native species (e.g., in terms of biomass, percent cover, or other appropriate metrics) based on the site conditions and comparable reference sites, if available. Such success criteria will be identified in site-level restoration plans (Section 5.3.3.2.1, *Site-level Restoration Plans*). This objective is intended to be met Plan-wide; some restoration sites may only be able to maintain the same proportion of natives pre-restoration, while others will increase it. Management goals for the control of non-native invasive species on restored and protected grasslands will be established in the reserve unit management plans."

Based on the above, if construction activities commence during or following the spring of 2026, without additional field surveys, the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on a plant species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.

Off-Site Affordable Housing Parcel

As discussed within Chapter 3, Project Description, of this EIR, the potential future development of the off-site affordable housing parcel would require an amendment to the RVSP and a rezone of the parcel to the newly established zone of Residential Multifamily 30 (RM30), which could result in a maximum development potential of 120 affordable income-restricted units. Because the off-site affordable housing parcel is currently undeveloped, development of the site could result in impacts to special-status plant species beyond those identified within the BRA prepared for the proposed project. While the proposed project would include a Rezone to allow for development of the aforementioned units, the County has previously planned for buildout of the site, as evidenced by the site's previous designations of HDR and Commercial. As such, impacts related to special-status plant species have been previously addressed in the RVSP EIR. As part of the RVSP EIR, focused special-status plant surveys were conducted on parcels within the planning area, including the off-site affordable housing parcel, and special-status plant species were not documented. However, as discussed above, given enough time plants may become established where suitable habitat exists. Therefore, because approximately 20 years have passed since the RVSP EIR plant surveys were conducted, the potential exists that special-status plants have been established and are present on the off-site affordable housing parcel.

Based on the above, without additional surveys for special-status plant species, the potential future development of the off-site affordable housing parcel could have a substantial adverse effect, either directly or through habitat modifications, on a plant species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.

Conclusion

Based on the above, if construction activities commence during or following the spring of 2026, without additional field surveys, the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on a plant species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. In addition, given the substantial amount of time that has passed since a plant survey has been conducted on the off-site affordable housing parcel, without additional surveys for special-status plant species, the potential future development on the off-site affordable housing parcel could result in a significant direct loss, indirect loss, or habitat modification of plant species identified as candidate, sensitive, or special-status species. Thus, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure, understood against the backdrop of the PCCP objectives described above, would reduce the above potential impacts to a *less-than-significant* level by ensuring the avoidance of any net loss of individual special-status plants that could be affected by the proposed project. In addition, at such time the off-site affordable housing parcel gets developed, the future developer would be required to comply with the following mitigation measure prior to development of the parcel.

Proposed Project, Off-Site Sewer Lift Station Improvements Area, and Off-Site Affordable Housing Parcel

7-1 *If construction within the 97.4-acre study area analyzed in the BRA prepared for the proposed project has not commenced prior to March 15, 2027, a new round of special-status plant surveys shall be conducted in areas proposed for disturbance within three years prior to the commencement of construction.*

At such time the off-site affordable housing parcel gets developed, a new round of special-status plant surveys shall be conducted in areas proposed for disturbance, prior to the commencement of construction.

The surveys shall be conducted in accordance with the USFWS Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants, the CNPS Botanical Survey Guidelines of the California Native Plant Society, and Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities. The survey results shall be submitted to the Placer County Community Development Resource Agency prior to the commencement of construction activities. If special-status plant species are not found, further mitigation shall not be required.

If special-status plants are found within the proposed impact area and they are perennials, such as Sanford's arrowhead or big-scale balsamroot, then mitigation shall consist of a qualified biologist or botanist digging up the plants and transplanting them into a suitable avoided area (e.g., planned open space) on-site prior to construction. If the plant found is an annual such as dwarf downingia, then mitigation shall consist of collecting seed-bearing soil and spreading it into a suitable constructed wetland at a mitigation site. If special-status plants are impacted, a mitigation plan shall be developed and approved by the Placer County Community Development Resource Agency. The Mitigation Plan shall describe the proposed mitigation for impacts to the plant species, and include (at minimum) details regarding success criteria, monitoring, reporting, and contingency in case of failure. Mitigation for the transplantation/establishment of rare plants shall not result in the net loss of individual plants after a five-year monitoring period.

7-2 Impacts to Crotch's bumble bee either directly (e.g., cause a wildlife population to drop below self-sustaining levels or threaten to eliminate an animal community) or through substantial habitat modifications or substantial reduction in the number or range of the species. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could result in impacts to Crotch's bumble bee either directly or through substantial habitat modifications or substantial reduction in the number or range of the species.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the biological and habitat conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to result in impacts to Crotch's bumble bee, either directly or through substantial habitat modifications or substantial reduction in the number or range of the species, would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

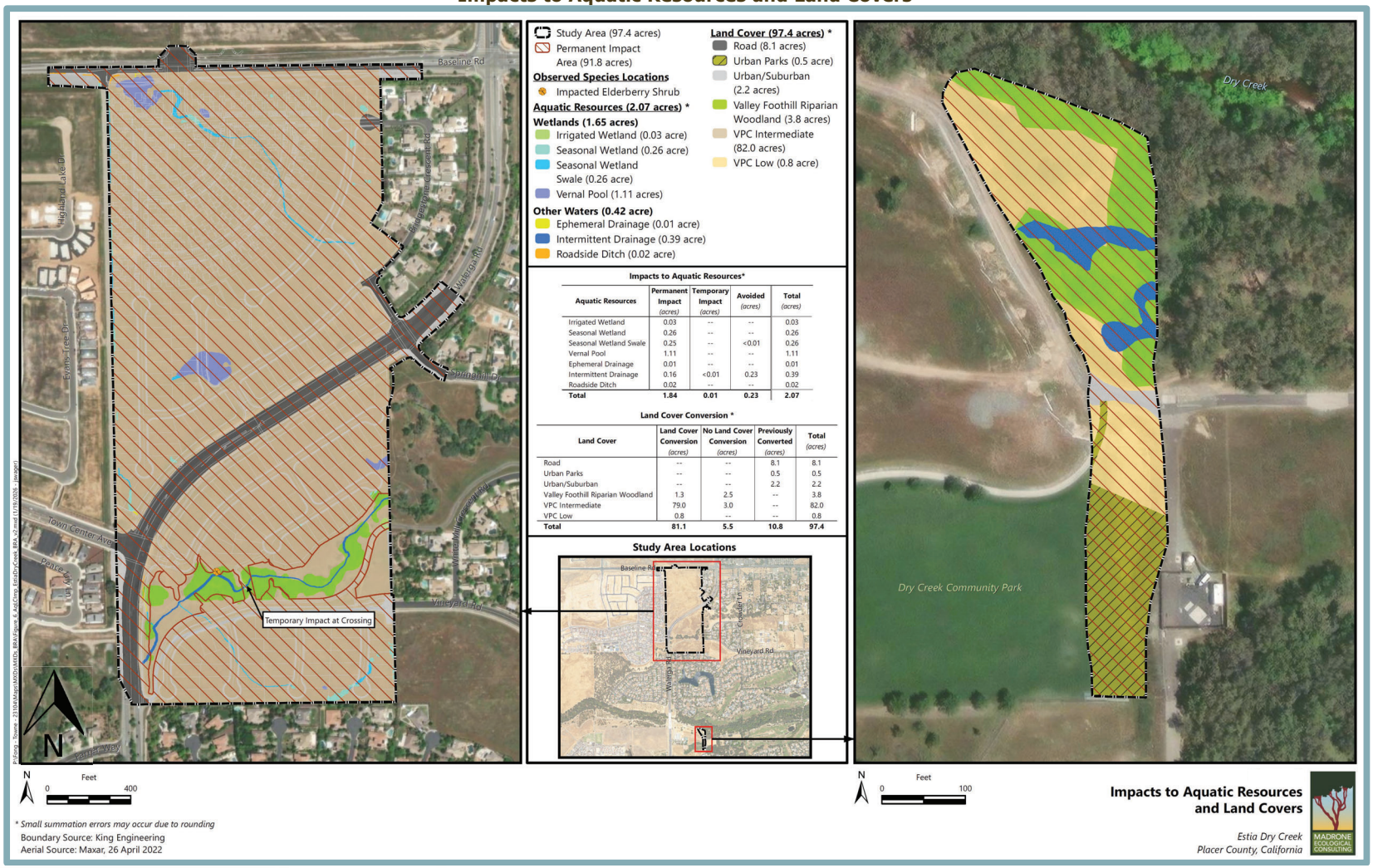
As discussed above, the annual brome grasslands/VPC within the study area represents suitable habitat for Crotch's bumble bee. Crotch's bumble bee is a candidate for listing under CESA. Although a decision on the listing has not yet been published, a decision could be published by the time that construction begins on the proposed project. Development of the proposed project would result in the permanent removal of approximately 79.8 acres of annual brome grasslands/VPC (see Figure 7-5). As such, the BRA concluded that removal of such habitat could result in a substantial adverse effect to Crotch's bumble bee.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel is currently undeveloped and, based on Figure 6-1a of the RVSP EIR, consists primarily of annual grasslands, which could represent suitable habitat for Crotch's bumble bee. Impacts to Crotch's bumble bee as a result of buildout of the RVSP were not addressed in the RVSP EIR, because the species was not yet being considered for listing at the time the RVSP EIR was drafted. Development of the site with a maximum of 120 affordable income-restricted units and associated improvements could result in impacts to Crotch's bumble bee either directly or through the removal of suitable habitat.

Based on the above, the potential future development of the off-site affordable housing parcel, could have a substantial adverse effect, either directly or through habitat modifications, on Crotch's bumble bee.

Figure 7-5
Impacts to Aquatic Resources and Land Covers



Impacts to Aquatic Resources*

Aquatic Resources	Permanent Impact (acres)	Temporary Impact (acres)	Avoided (acres)	Total (acres)
Irrigated Wetland	0.03	--	--	0.03
Seasonal Wetland	0.26	--	--	0.26
Seasonal Wetland Swale	0.25	--	<0.01	0.26
Vernal Pool	1.11	--	--	1.11
Ephemeral Drainage	0.01	--	--	0.01
Intermittent Drainage	0.16	<0.01	0.23	0.39
Roadside Ditch	0.02	--	--	0.02
Total	**1.84**	**0.01**	**0.23**	**2.07**

Land Cover Conversion *

Land Cover	Land Cover Conversion (acres)	No Land Cover Conversion (acres)	Previously Converted (acres)	Total (acres)
Road	--	--	8.1	8.1
Urban Parks	--	--	0.5	0.5
Urban/Suburban	--	--	2.2	2.2
Valley Foothill Riparian Woodland	1.3	2.5	--	3.8
VPC Intermediate	79.0	3.0	--	82.0
VPC Low	0.8	--	--	0.8
Total	**81.1**	**5.5**	**10.8**	**97.4**

* Figure not OCR Compatible

Conclusion

Based on the above, the proposed project, including potential future development of the off-site affordable housing parcel, could have a substantial adverse effect, either directly or through habitat modifications, on a wildlife species (Crotch's bumble bee) identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. Thus, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impacts to a *less-than-significant* level, as the measure would ensure that Crotch's bumble bee populations would not be eliminated completely or drop below self-sustaining levels and would preclude any substantial adverse effect on the species' habitat or any substantial reduction in the number or range of the species.

Proposed Project, Off-Site Sewer Lift Station Improvements Area, and Off-Site Affordable Housing Parcel

7-2 *Initial ground-disturbing activities associated with development of the 97.4-acre study area or at such time the off-site affordable housing parcel gets developed (e.g., grading, vegetation removal, staging) should take place between September 1 and March 31 (i.e., outside the colony active period) to avoid potential impacts on Crotch's bumble bee. If initial ground-disturbing activities do not occur between September 1 and March 31, then at a maximum of 14 days prior to the commencement of construction activities, a qualified biologist with 10 or more years of experience conducting biological resource surveys within California shall conduct a preconstruction survey for Crotch's bumble bee in the area(s) proposed for impact.*

The survey shall occur during the period from one hour after sunrise to two hours before sunset, with temperatures between 65 degrees Fahrenheit and 90 degrees Fahrenheit, with low wind and zero rain. If the timing of the start of construction makes the survey infeasible due to the temperature requirements, the surveying biologist shall select the most appropriate days based on the National Weather Service seven-day forecast and shall survey at a time of day that is closest to the temperature range stated above. The survey duration shall be commensurate with the physical extent of suitable floral resources (which represent foraging habitat) present within the area proposed for impact, and the level of effort shall be based on the metric of a minimum of one person-hour of searching per three acres of suitable floral resources/foraging habitat. A meandering pedestrian survey shall be conducted throughout the area proposed for impact in order to identify patches of suitable floral resources.

Suitable floral resources for Crotch's bumble bee include species in the following families: Apocynaceae, Asteraceae, Boraginaceae, Fabaceae, and Lamiaceae.



At a minimum, preconstruction survey methods shall include the following:

- *Search areas with floral resources for foraging bumble bees. Observed foraging activity may indicate a nest is nearby, and therefore, the survey duration shall be increased when foraging bumble bees are present;*
- *If Crotch's bumble bee are observed, watch any Crotch's bumble bees present and observe their flight patterns. Attempt to track their movements between foraging areas and the nest;*
- *Visually look for nest entrances. Observe burrows, any other underground cavities, logs, or other possible nesting habitat;*
- *If floral resources or other vegetation preclude observance of the nest, small areas of vegetation may be removed via hand removal, line trimming, or mowing to a height of a minimum of four inches to assist with locating the nest;*
- *Look for concentrated Crotch's bumble bee activity;*
- *Listen for the humming of a nest colony; and*
- *If bumble bees are observed, attempt to photograph the individual and identify it to species.*

The biologist conducting the survey shall record when the survey was conducted, a general description of any suitable foraging habitat/floral resources present, a description of observed bumble bee activity, a list of bumble bee species observed, a description of any vegetation removed to facilitate the survey, and their determination of if survey observations suggest a Crotch's bumble bee nest(s) may be present or if construction activities could result in take of special-status bumble bees. The report shall be submitted to the Placer County Community Development Resource Agency prior to the commencement of construction activities.

If bumble bees are not located during the preconstruction survey or the bumble bees located are definitively identified as a common species (i.e., not special-status species), then further mitigation or coordination with the California Department of Fish and Wildlife (CDFW) is not required.

If any sign(s) of a bumble bee nest is observed, and if the species present cannot be established as a common bumble bee, then construction shall not commence until either (1) the bumble bees present are positively identified as common (i.e., not a special-status species), or (2) the completion of coordination with CDFW to identify appropriate mitigation measures, which may include, but not be limited to, waiting until the colony active season ends, establishment of nest buffers, or obtaining an Incidental Take Permit (ITP) from CDFW.

If special-status bees are located, and after coordination with CDFW take of special-status bumble bees cannot be avoided, the project

applicant shall obtain an ITP from CDFW, and the applicant shall implement all conditions identified in the ITP.

Consistent with Fish and Game Code Section 2081, mitigation required by any ITP obtained from CDFW shall minimize and fully mitigate any impacts of the authorized take, be roughly proportional in extent to the impact of the take, be capable of successful implementation, and, where various alternative measures are available, maintain the applicant's objectives to the greatest extent possible. Specific required permit conditions may include, but not be limited to, the project applicant's qualified biologist translocating nesting substrate in accordance with the latest scientific research to another suitable location (i.e., a location that supports similar or better floral resources as the impact area), enhancing floral resources on areas of the project site that will remain appropriate habitat, worker awareness training, and/or other measures specified by CDFW.

7-3 Impacts to special-status branchiopods either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications or substantial reduction in the number or range of the species. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could result in impacts to special-status branchiopods either directly or through substantial habitat modifications or substantial reduction in the number or range of the species.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the biological and habitat conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to result in impacts to special-status branchiopods, either directly or through substantial habitat modifications or substantial reduction in the number or range of the species, would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

The identified special-status branchiopod species with the potential to occur within the study area include vernal pool fairy shrimp and vernal pool tadpole shrimp, which are both PCCP Covered Species. The vernal pool fairy shrimp is federally listed as threatened, while the vernal pool tadpole shrimp is federally listed as endangered. The project site contains approximately 1.11 acres of vernal pool that is considered potential habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp. The on-site vernal pool habitat would be permanently impacted by development of the proposed project (see Figure 7-5). However, protocol-level surveys have not identified the presence of vernal pool fairy shrimp or vernal pool tadpole shrimp in all suitable

habitat on-site. Therefore, the BRA concluded that construction of the proposed project would not result in potential impacts to the foregoing species. Although the BRA determined that special-status branchiopod species are not currently present within the project site, the proposed project would result in the loss of suitable habitat for such species.

PCCP section 5.4.11.3 (Conservation Strategy) at pages 5-149 and 5-150 explains that "[t]he Plan's conservation strategy for the vernal pool branchiopods provides protection of 17,000 acres of VPC, including at least 790 wetted acres of vernal pool constituent habitats (Objective VPCG-1.1, *Protect Vernal Pools*). Additionally, it provides restoration or creation of at least 3,000 acres of vernal pool complex in the Reserve System, including at least 900 wetted acres of vernal pools and seasonal wetland habitat for covered vernal pool branchiopods, and additional acres, in-kind, to meet a 1.5:1 ratio of restored to affected habitat (Objective VPCG-1.2, *Restore/Create Vernal Pools*). The Placer Conservation Authority (PCA) will manage and enhance vernal pool branchiopod habitat in the Reserve System through actions described in Conservation Measure 2, *Manage and Enhance the Reserve System*, to reduce non-native species, increase native species diversity, and enhance and maintain the natural hydrology of vernal pool complexes in the Reserve System (Objectives L-3.2, *Reduce Non-native Species and Increase Native Species,* and VPCG-2.1, *Enhance Vernal Pool Vegetation and Hydrology*). The Reserve System will include sufficient occupied vernal pool fairy shrimp and vernal pool tadpole shrimp habitat to ensure an occupancy rate that is equal to or greater than the occupancy rate of vernal pools lost as a result of Covered Activities, for each species (Objectives VPB-1.1, *Maintain Vernal Pool Fairy Shrimp Occupancy in the Reserve System*, and VPB-1.2, *Maintain Vernal Pool Tadpole Shrimp Occupancy in the Reserve System*). This will be accomplished through vernal pool acquisition and restoration/creation, as described in Conservation Measures 1, *Establish Reserve System*, and 3, *Restore and Create Natural Communities and Covered Species' Habitat.* The PCA will also protect two occurrences of Conservancy fairy shrimp for the first occurrence lost and three occurrences for each additional occurrence lost."

"The Plan's conservation strategy provides for the recovery needs of the vernal pool fairy shrimp and vernal pool tadpole shrimp in the Plan Area, consistent with the Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon (U.S. Fish and Wildlife Service 2005). The recovery plan has no conservation goals for Conservancy fairy shrimp in Placer County. The core recovery area for vernal pool fairy shrimp and vernal pool tadpole shrimp in western Placer County totals 31,078 acres, of which 25,526 acres are mapped as vernal pool complex. The vernal pool recovery plan sets a goal of 85 percent protection of suitable vernal pool fairy shrimp and vernal pool tadpole shrimp habitat in the western Placer County core recovery area."

"Combined with existing protected vernal pool complexes in the core recovery area (5,421 acres or 21 percent), implementation of the Plan will result in the protection of approximately 51 percent of vernal pool complexes in the western Placer County core recovery area. This falls short of the 85 percent protection goal identified for this area in the recovery plan. However, this core area is identified as a Zone 2 area, indicating that the recovery goals have greater flexibility than for Zone 1 core areas and that these goals may be modified on a case-by-case basis based on additional information,



particularly for more widespread species such as vernal pool fairy shrimp (U.S. Fish and Wildlife Service 2005, page III-6)."

"By the end of the permit term, 27,068 acres of vernal pool complexes will be protected and restored in the Plan Area, which is greater than the total core area acreage recommended for protection by the recovery plan for western Placer County (i.e., 85 percent of the suitable habitat in the core area, or approximately 26,420 acres)."

Notwithstanding the above, the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on a branchiopod species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel is currently undeveloped and, based on Figure 6-1a of the RVSP EIR, consists primarily of annual grasslands with seasonal wetlands located on the southeast portion of the parcel. The on-site seasonal wetlands could represent suitable habitat for special-status branchiopod species. As discussed under Impact 6-4 of the RVSP EIR, buildout of the RVSP could result in the loss of habitat that could be occupied by special-status branchiopod species. Thus, development of the site with a maximum of 120 affordable income-restricted units and associated improvements could result in impacts to special-status branchiopod species either directly or through the removal of suitable habitat. However, the RVSP EIR included Mitigation Measure 6-4a, which is intended to avoid and compensate for potential impacts to special-status branchiopods.

At such time the off-site affordable housing parcel gets developed, the future developer would be required by the County to implement the RVSP EIR Mitigation Measure 6-4a, which is incorporated into this EIR as Mitigation Measure 7-3(c). Mitigation Measure 6-4a of the certified RVSP EIR requires avoidance and compensation for potential impacts to special-status branchiopod species. As determined in the RVSP EIR, implementation of Mitigation Measure 6-4a would reduce potential impacts to special-status branchiopod species to a less-than-significant level.

Conclusion

Based on the above, implementation of RVSP EIR Mitigation Measure 6-4a would be required to ensure the potential future development of the off-site affordable housing parcel would result in a less-than-significant impact to special-status branchiopod species. In addition, development of the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on a branchiopod species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. Thus, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures, understood against the backdrop of the PCCP objectives described above, would reduce the above potential impacts to a *less-than-significant* level by ensuring the avoidance of any net loss of special-status branchiopod species that could be affected by the proposed project.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

7-3(a) *The Permittee shall apply for and be issued coverage under the PCCP to mitigate for all impacts to Covered Species, land cover, and sensitive natural communities. Prior to application approval, additional species surveys may be necessary, and prior to construction, land cover and special habitat fees shall be paid. The Permittee shall comply with the terms of the PCCP Coverage Certificate, including compliance with all avoidance, mitigation, and minimization measures, which may include pre-construction surveys, construction monitoring, and BMPs.*

> *PCCP General Condition 3: The proposed project shall pay a land conversion fee for the permanent conversion of natural land cover including VPC Low, VPC Intermediate, and Valley Foothill Riparian Woodland. The fees to be paid shall be those in effect at the time of ground disturbance authorization for each project phase and shall be based on the effect to modeled species habitat at the parcel scale.*
>
> *In addition to land conversion, the project would result in permanent direct effects and temporary effects to PCCP Special Habitats as estimated in Table 6 of the BRA prepared for the proposed project. The total special habitat fee obligation including temporary effect fees shall be paid prior to issuance of a land conversion authorization that allows ground disturbance.*

7-3(b) *PCCP Community Condition 1.1: Prior to land conversion authorization approval, the unavoidable effects to vernal pool type wetlands or their buffers shall be mitigated through payment of special habitat fees. The fees to be paid to the PCA shall be those in effect at the time of land conversion authorization issuance.*

Off-Site Affordable Housing Parcel

7-3(c) *Implement RVSP EIR Mitigation Measure 6-4a:*

> *The presence of listed vernal pool branchiopods shall be assumed on all parcels containing appropriate habitat where protocol-level surveys have not been conducted. Compensation described in this mitigation measure shall be implemented or USFWS-protocol surveys for special-status branchiopods shall be conducted to determine presence or absence. If vernal pool branchiopods are present, or if special-status vernal pool branchiopods are assumed to be present, the habitat shall be avoided to the extent feasible. If avoidance is not feasible, compensation shall be provided at a ratio of 3 acres for every 1 acre affected (3:1). This ratio will include creation of 1 acre of vernal pool habitat for every 1 acre impacted (1:1) and preservation of 2 acres of vernal pools for every 1 acre impacted (2:1), as described in the USFWS programmatic biological opinion issued to the Corps for small impacts to listed branchiopods (USFWS, 1996). Mitigation for impacts*

to listed branchiopods would be implemented according to one of the following three options, to be determined and completed prior to impact: (1) participation in a USFWS approved mitigation bank; (2) off-site mitigation at a non-bank location approved by the USFWS; or (3) contribution to the USFWS Species Fund. In the event that protocol level surveys demonstrate the absence of listed vernal pool branchiopods in these off-site features, mitigation would not be required.

7-4 Impacts to VELB either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could result in impacts to VELB either directly or through substantial habitat modifications.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

The BRA did not identify elderberry shrubs within the off-site sewer lift station improvements area. Therefore, VELB is not anticipated to occur within the off-site sewer lift station improvements area. However, the BRA identified one elderberry shrub within the project site, which could indicate the presence of VELB. As discussed above, VELB is completely dependent on its host plant, the elderberry shrub, which occurs in riparian and other woodland communities in the Central Valley and associated foothills. Female beetles lay their eggs in crevices on the stems or on the leaves of living elderberry plants. When the eggs hatch, larvae bore into the stems. The larval stages last for one to two years. The fifth instar larvae create emergence holes in the stems and then plug the holes and remain in the stems through pupation.

The on-site elderberry shrub has two stems that are approximately three inches in diameter, but exit holes typical of VELB were not observed during field surveys conducted in early May 2025. In addition, VELB has not been documented within five miles of the study area. As such, the BRA concluded that VELB has a low potential to occur within the study area. Based on the lack of evidence of VELB occupation of the existing on-site elderberry shrub, as well as the lack of documented VELB occurrences in the vicinity of the project site, the BRA determined that impacts to VELB are not anticipated as a result of the proposed project. In addition, the existing on-site elderberry shrub is anticipated to be avoided during construction of the proposed project. Nonetheless, given the proximity of the existing on-site elderberry shrub to the proposed grading limits, the shrub would be required to be monitored for VELB and may be required to be transplanted to a PCCP VELB mitigation area to ensure impacts do not occur. However, because the project site contains VFRW, riparian, and stream system habitat and is located below 650 feet in elevation, the project would be required to comply with PCCP Community Condition 8, which is incorporated into this EIR as

Mitigation Measure 7-4. PCCP Community Condition 8 requires that if construction activities associated with the proposed project would encroach upon the existing on-site elderberry shrub and take is authorized, the project applicant shall coordinate with the PCA to provide transplants within suitable habitat within the PCCP Reserve System. Compliance with PCCP Community Condition 8 would ensure that impacts to VELB associated with the proposed project do not occur.

Based on the above, the BRA concluded that the proposed project would not result in a substantial adverse effect to VELB.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel is currently undeveloped and, based on Figure 6-1a of the RVSP EIR, consists primarily of annual grasslands with seasonal wetlands located on the southeast portion of the parcel. As discussed under Impact 6-17 of the RVSP EIR, focused surveys for the host plant of VELB, elderberry shrubs, were conducted on parcels within the planning area, including the off-site affordable housing parcel. The surveys did not identify elderberry shrubs within the off-site affordable housing parcel. In addition, the RVSP EIR determined that elderberry shrubs are generally found in riparian areas. Within the RVSP planning area, riparian habitat is limited to the areas surrounding Dry Creek. The off-site affordable housing parcel is located approximately 0.3-mile south of Dry Creek and does not include riparian habitat. As such, suitable habitat for elderberry shrub is not anticipated to be present within the off-site affordable housing parcel.

Conclusion

Based on the above, because the off-site affordable housing parcel is not anticipated to support suitable habitat for VELB, the potential future development of the off-site affordable housing parcel would result in a less-than-significant impact to VELB. The proposed project is not anticipated to have a substantial adverse effect, either directly or through habitat modifications, on VELB. However, if construction activities occur in close proximity to the existing on-site elderberry shrub, development of the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on an invertebrate species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. Thus, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level by ensuring that, if the existing elderberry shrub would be impacted by development of the proposed project, the shrub is either relocated to suitable habitat of equivalent or greater value or protected from construction activities.

Proposed Project

7-4 *The project applicant shall apply avoidance and minimization measures as specified in the USFWS's Conservation Guidelines for the Valley Elderberry Longhorn Beetle (U.S. Fish and Wildlife Service 1999b) or the current Wildlife Agency–approved avoidance and minimization protocol. When take is authorized the project applicant shall coordinate*

with the PCA to provide transplants and seedlings or cuttings for planting in suitable habitat on the Reserve System consistent with the USFWS Guidelines/Framework. Project-by-project mitigation requirements for VELB cannot be applied to the PCCP restoration requirements for a project's associated riparian native trees/shrubs impacts to be planted as replacement habitat (i.e., mitigation for impacts to valley elderberry longhorn beetle [transplants and plantings of seedlings/cuttings] does not count as mitigation for impacts to riverine and riparian [restoration of riverine and riparian]).

Proof of compliance with appliable VELB avoidance and mitigation measures shall be submitted to the Placer County Community Development Resource Agency prior to the commencement of construction activities.

7-5 Impacts to western spadefoot either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could result in impacts to western spadefoot either directly or through substantial habitat modifications.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the biological and habitat conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to result in impacts to western spadefoot, either directly or through substantial habitat modifications, would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

Western spadefoot, which is proposed for federal listing and is a CDFW Species of Special Concern, is a nocturnal amphibian that forages in grassland, open chaparral, and pine-oak woodlands for a variety of invertebrates, such as insects and worms, and breeds in a variety of temporary wetlands, including creeks, pools in intermittent drainages, vernal pools, and seasonal wetlands, and other fish-free water features. The seasonal wetlands and vernal pools on-site represent suitable breeding habitat for the species and the surrounding annual brome grasslands/VCP within 300 feet of the seasonal wetlands and vernal pools represent suitable dry-season habitat. Construction of the proposed project would permanently disturb a total of approximately 1.37 acres of suitable breeding habitat and approximately 53.2 acres of suitable upland habitat (see Figure 7-5). As such, disturbance of the on-site seasonal wetlands, vernal pools, and annual brome grasslands/VPC associated with project buildout could result in a substantial adverse effect to western spadefoot.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel is currently undeveloped and, based on Figure 6-1a of the RVSP EIR, consists primarily of annual grasslands and seasonal wetlands, which could represent suitable habitat for western spadefoot. As discussed under Impact 6-7 of the RVSP EIR, buildout of the RVSP could result in the loss of suitable upland and wetland habitat for western spadefoot. The RVSP EIR included Mitigation Measures 6-1a and 6-1c, which are intended to avoid construction related impacts to wetlands, and compensate for the loss of wetland habitat.

At such time the off-site affordable housing parcel gets developed, the future developer would be required by the County to implement RVSP EIR Mitigation Measure 6-1c which has been incorporated into this EIR as Mitigation Measure 7-5(c). Mitigation Measure 6-1a of the certified RVSP EIR requires compensation for the loss of jurisdictional wetlands in accordance with USACE Section 404 Permit and RWQCB requirements. Through consultation with the USACE, this mitigation measure has been fulfilled by the RVSP through purchase of mitigation bank credits; thus, Mitigation Measure 6-1(a) is not included in the below list of mitigation measures. Mitigation Measure 6-1c requires implementation of best management practices (BMPs) to avoid wetland impacts during construction activities. As determined in the RVSP EIR, implementation of Mitigation Measures 6-1a and 6-1c would reduce potential impacts to western spadefoot to a less-than-significant level.

Conclusion

Based on the above, implementation of RVSP Mitigation Measure 6-1c would be required to ensure the potential future development of the off-site affordable housing parcel would result in a less-than-significant impact to western spadefoot. In addition, development of the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on a wildlife species (western spadefoot) identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. Thus, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impacts to a *less-than-significant* level by ensuring that, if individual western spadefoots are determined to be present on the project site, they are either relocated to suitable habitat of equivalent or greater value or are protected from construction activities.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

7-5(a) *Within two years prior to the commencement of construction activities, one nocturnal acoustic survey of all areas within 300 feet of vernal pools and seasonal wetlands shall be conducted during the end of the wet season, specifically March or April. The acoustic survey shall consist of walking through the area and listening for the distinctive snore-like call of the species. Timing and methodology for the acoustic survey shall be based on those described in Distribution of the Western Spadefoot (Spea hammondii) in the Northern Sacramento Valley of California, with Comments on Status and Survey Methodology. The results of the*

survey shall be submitted to the Placer County Community Development Resource Agency.

If the nocturnal acoustic survey is negative, further mitigation shall not be necessary. If western spadefoots are observed within aquatic habitat proposed for impact, the tadpoles shall be captured and relocated by the applicant's qualified biologist to an off-site open space preserve with suitable habitat of equivalent or greater value in the vicinity of the overall project site. If western spadefoots are observed within aquatic habitat proposed for avoidance, then the project applicant may either relocate the tadpoles to an off-site open space preserve with habitat of equivalent or greater value (e.g., vernal pools and seasonal wetlands in a grassland/woodland matrix) in the vicinity of the overall project site, or install silt fence along the edge of the proposed area of disturbance within 300 feet of the occupied aquatic habitat to prevent metamorphosed individuals from dispersing into the construction area.

Off-Site Affordable Housing Parcel

7-5(b) *Implement Mitigation Measure 7-5(a).*

7-5(c) *Implement RVSP EIR Mitigation Measure 6-1c:*

The following BMPs to avoid impacts to wetlands in the Plan Area shall be implemented for all construction related to the proposed project:

- *Four-foot-tall, brightly colored (yellow or orange), synthetic mesh material or chainlink fencing shall be installed at the edge of all avoided wetlands and a minimum of 50 feet from the edge of tributaries to Dry Creek prior to any construction equipment being moved on site or any construction activities taking place. Fencing shall be continuously maintained and shall be the responsibility of an onsite compliance officer designated by the developer. Fencing is to remain intact until construction is complete and may not be removed without the written consent of the County.*
- *Ground disturbance associated with construction, including vehicle operation/parking and construction material storage, shall be prohibited within wetlands or within 50 feet of the edge of tributaries to Dry Creek.*
- *Where working areas encroach on live or dry streams, lakes, or wetlands, RWQCB-approved physical barriers adequate to prevent the flow or discharge of sediment into these systems shall be constructed and maintained between working areas and streams, lakes and wetlands. Discharge of sediment into streams shall be held to a minimum during construction of the barriers. Discharge will be contained through the use RWQCB-approved measures that will keep sediment from entering jurisdictional waters beyond the project limits.*

- *Oily or greasy substances originating from the Contractor's operations shall not be allowed to enter or be placed where they will later enter a live or dry stream, pond, or wetland.*
- *Asphalt concrete shall not be allowed to enter a live or dry stream, pond, or wetland.*
- *All off-road construction equipment shall be cleaned of potential noxious weed sources (mud, vegetation) before entry into the site and after entering a potentially infested area before moving on to another area, to help ensure noxious weeds from outside of the Plan Area are not introduced into the Plan Area. The contractor shall employ whatever cleaning methods (typically the use of a high-pressure water hose) are necessary to ensure that equipment is free of noxious weeds. Equipment shall be considered free of soil, seeds, and other such debris when a visual inspection does not disclose such material. Disassembly of equipment components or specialized inspection tools is not required. Equipment washing stations shall be placed in areas that afford easy containment and monitoring and that do not drain into sensitive (riparian, wetland, etc.) areas.*
- *To further minimize the risk of introducing additional nonnative species into the area, only native plant species appropriate for the Plan Area will be used in any erosion control or revegetation seed mix or stock. No dry-farmed straw will be used, and certified weed-free straw shall be required where erosion control straw is to be used. In addition, any hydroseed mulch used for revegetation activities must also be certified weed-free.*
- *The Applicant will restore and revegetate all temporary construction disturbance areas. Temporary disturbance areas will be restored to the original topography and hydrology, disked to relieve compaction, and planted with an erosion control mix composed only of native species. The proposed restoration and revegetation measures shall be summarized in the storm water pollution prevention plan for the project and submitted to Placer County for approval prior to initiation of construction activities.*

7-6 Impacts to northwestern pond turtle either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could result in impacts to northwestern pond turtle either directly or through substantial habitat modifications.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the biological and habitat conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to result in impacts to northwestern pond turtle, either directly or through substantial habitat modifications, would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

The intermittent drainages within the study area provide marginally suitable aquatic habitat for northwestern pond turtle, which is proposed for listing as threatened under FESA and is a CDFW Species of Special Concern and a PCCP Covered Species. In addition, the VFRW adjacent to the intermittent drainages provides potential movement habitat. Approximately 1.3 acres of northwestern pond turtle movement habitat in adjacent woodlands, would be permanently disturbed by the proposed project. Additionally, approximately 0.16-acre of habitat within the intermittent drainages would be permanently impacted and less than 0.01-acre of habitat within the intermittent drainage would be temporarily disturbed (see Figure 7-5). Permanent impacts would be associated with construction of the off-site sewer lift station improvements, as well as the Walerga Road frontage and shoulder improvements. The temporary impacts would be associated with installation of the pedestrian bridge and sewer crossing. In the event that northwestern pond turtles or their nests are present in such areas during construction activities, individual turtles could be injured or killed, or nests could be destroyed.

Based on the above, the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on a wildlife species (northwestern pond turtle) identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel is currently undeveloped and, based on Figure 6-1a of the RVSP EIR, consists primarily of annual grasslands and seasonal wetlands, which do not represent suitable habitat for northwestern pond turtle. Therefore, suitable habitat for northwestern pond turtle is not present within the off-site affordable housing parcel.

Conclusion

Based on the above, the potential future development of the off-site affordable housing parcel would result in a less-than-significant impact to northwestern pond turtle. However, the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on a wildlife species (northwestern pond turtle) identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. Thus, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level by protecting water quality in aquatic habitat that might be occupied by northwestern pond turtle, by minimizing development within stream systems, by providing protective buffers adjacent to habitat during both

construction and operation, by requiring fee payments to offset impacts to habitat, and by providing for the relocation of affected individual members of the species pursuant to permit conditions imposed by USFWS or CDFW.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

7-6(a) Implement the following Mitigation Measure set forth in this EIR:

- *7-3(a) The Permittee shall apply for and be issued coverage under the PCCP to mitigate for all impacts to Covered Species, land cover, and sensitive natural communities. Prior to application approval, additional species surveys may be necessary, and prior to construction, land cover and special habitat fees shall be paid. The Permittee shall comply with the terms of the PCCP Coverage Certificate, including compliance with all avoidance, mitigation, and minimization measures, which may include pre-construction surveys, construction monitoring, and BMPs.*

  PCCP General Condition 3: The proposed project shall pay a land conversion fee for the permanent conversion of natural land cover including VPC Low, VPC Intermediate, and Valley Foothill Riparian Woodland. The fees to be paid shall be those in effect at the time of ground disturbance authorization for each project phase and shall be based on the effect to modeled species habitat at the parcel scale.

  In addition to land conversion, the project would result in permanent direct effects and temporary effects to PCCP Special Habitats as estimated in Table 6 of the Biological Resources Assessment (BRA) prepared for the proposed project. The total special habitat fee obligation including temporary effect fees shall be paid prior to issuance of a land conversion authorization that allows ground disturbance.

7-6(b) PCCP General Condition 1: Prior to improvement plan approval, the proposed project shall obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit Order 2009-0057-DWQ), including requirements to develop a project-based Storm Water Pollution Prevention Plan (SWPPP) and applicable NPDES program requirements as implemented by the County. Construction activity subject to this permit includes clearing, grading and disturbances to the ground such as stockpiling, or excavation.

The project shall comply with the West Placer Storm Water Quality Design Manual (Design Manual). The project shall implement the following BMPs. This list shall be included on the notes page of the improvement/grading plans and shall be shown on the plans:

1. *When possible, vehicles and equipment shall be parked on pavement, existing roads, and previously disturbed areas. When vehicle parking areas are to be established as a temporary facility, the site shall be recovered to pre-project or ecologically improved conditions within one year of start of groundbreaking to ensure effects are temporary (refer to Section 6.3.1.4, General Condition 4, Temporary Effects, for the process to demonstrate temporary effects).*
2. *Trash generated by Covered Activities shall be promptly and properly removed from the site.*
3. *Appropriate erosion control measures (e.g., fiber rolls, filter fences, vegetative buffer strips) shall be used on site to reduce siltation and runoff of contaminants into avoided wetlands, ponds, streams, or riparian vegetation.*

    (a) *Erosion control measures shall be of material that will not entrap wildlife (i.e., no plastic monofilament). Erosion control blankets shall be used as a last resort because of their tendency to biodegrade slowly and trap reptiles and amphibians.*
    (b) *Erosion control measures shall be placed between the area of disturbance and any avoided aquatic feature, within an area identified with highly visible markers (e.g., construction and erosion-control fencing, flagging, silt barriers) prior to commencement of construction activities. Such identification will be properly maintained until construction is completed and the soils have been stabilized.*
    (c) *Fiber rolls used for erosion control shall be certified by the California Department of Food and Agriculture or any agency that is a successor or receives delegated authority during the permit term as weed free.*
    (d) *Seed mixtures applied for erosion control shall not contain California Invasive Plant Council–designated invasive species (http://www.cal-ipc.org/paf/) but shall be composed of native species appropriate for the site or sterile non-native species. If sterile non-native species are used for temporary erosion control, native seed mixtures must be used in subsequent treatments to provide long-term erosion control and slow colonization by invasive non-natives.*

4. *If the runoff from the development will flow within 100 feet of a wetland or pond, vegetated storm water filtration features, such as rain gardens, grass swales, tree box filters, infiltration basins, or similar LID features to capture and treat flows, shall be installed consistent with local programs and ordinances.*

7-6(c) *PCCP Community Condition 2.2: Prior to land conversion authorization, the applicant shall coordinate with the PCA to determine which In-*

Stream and Stream System Best Management Practices (BMPs) from Table 7-1 of the User's Guide apply to the proposed project. The applicant shall identify the applicable BMPs on the project's improvement or grading plans. The selected BMPs shall be incorporated into the project's Land Conversion Authorization letter.

Prior to land conversion authorization approval, the unavoidable effects to riverine and riparian habitat or their buffers shall be mitigated through payment of special habitat fees. The fees to be paid shall be those in effect at the time of land conversion authorization.

7-6(d) *PCCP Stream System Condition 1: The project shall be designed to minimize development activities within the stream system to the maximum extent possible.*

7-6(e) *PCCP Stream System Condition 2: The project's development footprint is directly impacting the Stream System. The area of encroachment is subject to the Stream System Encroachment Special Habitats Fee as described in Chapter 5 of the PCCP User's Guide. Fees shall be paid to the PCA prior to the issuance of any permit or authorization that results in ground disturbance within the Stream System.*

7-6(f) *PCCP Community Condition 2.1: To the maximum extent possible, the proposed project shall not modify any area within a buffer that extends 50 feet outward from the outermost bounds of the riparian vegetation. The improvement or grading plans shall show the location of the riverine/riparian buffer.*

7-6(g) *A northwestern pond turtle survey shall be conducted by a qualified biologist within 48 hours prior to construction where construction activities overlap with Dry Creek, intermittent drainages, and woodlands within 150 feet of these aquatic resources. The results of the survey shall be submitted to the Placer County Community Development Resource Agency.*

If northwestern pond turtles or nests are not found, further mitigation is not necessary. If a northwestern pond turtle is observed within the proposed impact area, a qualified biologist shall relocate the individual to habitat of equivalent or greater value (e.g., riparian wetlands or riparian woodlands adjacent to a perennial creek or intermittent drainage) outside of the proposed impact area prior to construction. If a northwestern pond turtle nest is observed within the proposed impact area, the nest shall be fenced off and avoided until the eggs hatch. The exclusion fencing shall be placed at least 25 feet from the nest. A qualified biologist shall monitor the nest daily during construction to ensure that hatchlings do not disperse into the construction area. Relocation of hatchlings shall occur as stipulated above, if necessary.

7-7 Have a substantial adverse effect, either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications or substantial reduction in the number or range of the species, on Swainson's hawk. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could have a substantial adverse effect, either directly or through substantial habitat modifications or substantial reduction in the number or range of the species, on Swainson's hawk.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the biological and habitat conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to have a substantial adverse effect, either directly or through substantial habitat modifications or substantial reduction in the number or range of the species, on Swainson's hawk would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

The annual brome grassland/VPC throughout the study area provides suitable foraging habitat for Swainson's hawk, a State threatened species under CESA and a PCCP Covered Species. As such, removal of the foraging habitat could indirectly impact the species by reducing the availability of prey. Approximately 79.8 acres of annual brome grassland/VPC that currently provides Swainson's hawk foraging habitat would be permanently impacted by the proposed project (see Figure 7-5).

Additionally, the woodland habitats within the project site and proposed off-site improvements area provide suitable nesting habitat to accommodate Swainson's hawk. Should Swainson's hawk occur in areas proposed for disturbance, development of such locations could result in a significant impact to the aforementioned raptor species.

The land preservation and management objectives of the PCCP are intended to mitigate for the loss of Swainson's hawk nesting and foraging habitat within the Plan Area, including the project site. Section 5.4.1.3 of the PCCP (pages 5-135 and 5-136) explains that "[t]he biological goal for Swainson's hawk is habitat to provide for a sustained population of this species in the Plan Area. The Plan will result in protection and restoration of riverine/riparian and valley oak woodland natural communities, for a total of 1,268 acres of nesting habitat protected and 720 acres of riparian habitat restored (Table 5-6). Additionally, the Plan will result in the protection and restoration of grasslands and vernal pool complexes, for a total of 17,003 acres of foraging habitat protected and 3,920 acres of foraging habitat restored (Table 5-6). Swainson's hawk habitat will be provided in a large, interconnected Reserve System that accommodates the large home-range size for this species. The PCA will also protect at least four

active nest trees (Objective SWHA-1.1, Protect Swainson's Hawk Nest Trees), and will protect at least 741 acres of modeled foraging habitat surrounding each active nest tree protected (Objective SWHA-1.2, Protect Swainson's Hawk Foraging Habitat). The PCA will maintain or increase prey availability for Swainson's hawk by strategically planting shrubs or placing debris piles or other substrate that provides cover and refugia for prey, on at least four sites, each within a mile of one of the protected nest trees (Objective SWHA-1.3, Enhance Foraging Habitat). The PCA will also protect at least 20 isolated trees with the potential to be used as nesting sites for Swainson's hawk (Objective SWHA-1.4, Protect Isolated Trees). [¶] Although conservation strategies for nearby counties (e.g., San Joaquin, Yolo) rely on protection of cultivated lands such as alfalfa and row crops for Swainson's hawk foraging, the Plan focuses on grassland habitats in the Plan Area (e.g., vernal pool complex grassland, annual grassland) for Swainson's hawk. In the Plan Area, Swainson's hawk relies more on grassland habitats than agricultural land for foraging, because crops that provide valuable foraging habitat elsewhere in the Sacramento Valley are planted in small amounts in the Plan Area (e.g., approximately 176 acres are planted in alfalfa, less than 0.5 percent of the communities in the Valley)."

Notably, the number of breeding pairs of Swainson's hawk in California has grown rapidly in recent years. Bloom (1980) estimated that as many as 17,136 pairs of Swainson's hawks historically nested in California; in the same report, based on a 1979 survey, it was estimated that only 375 (±50) breeding pairs remained in California at that time. This demonstration of a 90 percent decline in the population prompted the listing of Swainson's hawk as a state threatened species in 1983. Estep (1989) estimated 430 breeding pairs in the Central Valley and 550 breeding pairs Statewide in 1988, and an estimate published by CDFW a decade later (CDFW 2007) showed a modest increase with an estimated number of breeding pairs Statewide at 1,893 in 2005 and in the Central Valley at 2,251 in 2006. In a recent study published by CDFW researchers in early 2022, Furnas et al (2022) concluded that California's Swainson's hawk summering population grew between 2005 and 2018 at the rapid rate of 13.9 percent per year and estimated the total Statewide population at 18,810 breeding pairs in 2018, which is within the range of the historical baseline that Dr. Bloom estimated in 1979. According to the Five-Year Status Review for Swainson's Hawk published by CDFW in 2016, habitat loss continues to be the primary threat to Swainson's hawk populations in California.

Notwithstanding the above, the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on a raptor species (Swainson's hawk) identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS, and could result in a substantial reduction in the number or range of the species.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel is currently undeveloped and, based on Figure 6-1a of the RVSP EIR, consists primarily of annual grasslands, which represent suitable foraging habitat for Swainson's hawk. In addition, the trees located along the northern and western boundaries of the off-site affordable housing parcel could represent suitable nesting habitat for Swainson's hawk. As discussed under Impact 6-10 of the RVSP EIR, buildout of the RVSP could result in the loss of potential foraging

habitat for Swainson's Hawk. The RVSP EIR included Mitigation Measure 6-10a, which is intended to compensate for the loss of any Swainson's hawk foraging habitat.

At such time the off-site affordable housing parcel gets developed, the future developer would be required by the County to implement the to implement RVSP EIR Mitigation Measure 6-10a, which is incorporated into this EIR as Mitigation Measure 7-7(c). Mitigation Measure 6-10a of the certified RVSP EIR requires consultation with CDFW regarding potential impacts to Swainson's hawk and compensation for the loss of Swainson's hawk foraging habitat. As determined in the RVSP EIR, implementation of Mitigation Measure 6-10a would reduce potential impacts to Swainson's hawk to a less-than-significant level.

Conclusion

Based on the above, implementation of RVSP Mitigation Measure 6-10a would be required to ensure the potential future development of the off-site affordable housing parcel would result in a less-than-significant impact to Swainson's hawk. In addition, the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on a raptor species (Swainson's hawk) identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS, and could result in a substantial reduction in the number or range of the species. Thus, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impacts to a *less-than-significant* level because the measures, combined with the features of the PCCP intended to mitigate for the loss of Swainson's hawk foraging habitat, ensure that the project would not result in a substantial reduction in the numbers or restriction in the range of the species or on-site habitat modifications that, viewed in a regional or Statewide context, are considered substantial.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

7-7(a) Implement the following Mitigation Measure set forth in this EIR:

- *7-3(a) The Permittee shall apply for and be issued coverage under the PCCP to mitigate for all impacts to Covered Species, land cover, and sensitive natural communities. Prior to application approval, additional species surveys may be necessary, and prior to construction, land cover and special habitat fees shall be paid. The Permittee shall comply with the terms of the PCCP Coverage Certificate, including compliance with all avoidance, mitigation, and minimization measures, which may include pre-construction surveys, construction monitoring, and BMPs.*

  PCCP General Condition 3: The proposed project shall pay a land conversion fee for the permanent conversion of natural land cover including VPC Low, VPC Intermediate, and Valley Foothill Riparian Woodland. The fees to be paid shall be those in effect at the time of ground disturbance

authorization for each project phase and shall be based on the effect to modeled species habitat at the parcel scale.

In addition to land conversion, the project would result in permanent direct effects and temporary effects to PCCP Special Habitats as estimated in Table 6 of the Biological Resources Assessment (BRA) prepared for the proposed project. The total special habitat fee obligation including temporary effect fees shall be paid prior to issuance of a land conversion authorization that allows ground disturbance.

7-7(b) *PCCP Species Condition 1: Planning-level Swainson's hawk surveys shall be required a year in advance of construction using the survey guidelines developed for the PCCP. Planning-level surveys are intended to identify nest trees to guide avoidance during project tree removal and construction.*

Additionally, the year of construction (starting in February) and pre-construction (no more than 15 days prior to ground disturbance) surveys shall be conducted within a 1,320-foot radius of the project. Surveys shall be conducted consistent with PCCP guidelines (based on Swainson's Hawk Technical Advisory Committee 2000). In instances where an adjacent parcel is not accessible to a survey, the qualified biologist shall scan all potential nest trees from the adjacent property, roadsides, or other safe, publicly accessible viewpoints, without trespassing, using binoculars and/or a spotting scope. Surveys are typically required from February 1 to September 15 (or sooner if it is determined that birds are nesting earlier in the year). The applicant shall contact the PCA for assistance with survey timing. If a Swainson's hawk nest is located and presence confirmed, only one follow-up visit is required.

During the nesting season (approximately February 1 to September 15 or sooner if it is determined that birds are nesting earlier in the year), ground-disturbing activities within 1,320 feet of occupied nests or nests under construction shall be prohibited to minimize the potential for nest abandonment. While the nest is occupied, activities outside the buffer can take place provided they do not stress the breeding pair.

If the active nest site is shielded from view and noise from the project site by other development, topography, or other features, the project applicant can apply to the PCA for a reduction in the buffer distance or waiver. A qualified biologist shall be required to monitor the nest and determine that the reduced buffer does not cause nest abandonment. A monitoring, reporting, and/or buffer reduction plan shall be developed in coordination with PCA and CDFW. If PCA and CDFW, based on a qualified biologist's observations, determine nestlings have fledged, PCCP Covered Activities can proceed normally.

Construction monitoring shall be conducted by a qualified biologist if work is to continue outside of the nest buffer, and shall focus on ensuring that activities do not occur within the buffer zone. The qualified biologist performing the construction monitoring shall ensure that effects on Swainson's hawks are minimized. If monitoring indicates that construction outside of the buffer is affecting nesting, the buffer shall be increased if space allows (e.g., move staging areas farther away). If space does not allow, all construction activities shall cease until the young have fledged from the nest (as confirmed by a qualified biologist).

The frequency of monitoring shall be approved by the PCA and based on the frequency and intensity of construction activities and the likelihood of disturbance of the active nest. In most cases, monitoring shall occur at least every other day, but in some cases, daily monitoring may be appropriate to ensure that direct effects on Swainson's hawks are minimized. The qualified biologist shall train construction personnel on the avoidance procedures and buffer zones.

Off-Site Affordable Housing Parcel

7-7(c) Implement RVSP EIR Mitigation Measure 6-10a:

The CDFG shall be consulted to determine appropriate mitigation for loss of Swainson's hawk foraging habitat. The Applicant shall submit to the County documentation of the mitigation plan for Swainson's hawks as approved by CDFG. Mitigation shall include any offsite impacts as determined by the Applicant and CDFG based upon the final design of the offsite project components. CDFG considers loss of foraging habitat within a 10-mile radius of any active nest as an impact to this species. Implementation of the following measures would reduce the impact on foraging habitat of this species to a less-than-significant level.

(i) Projects or related activities within 1 mile of an active nest tree shall provide mitigation as follows:

A. Preserve 1 acre of habitat management lands for each acre of development authorized (1:1 ratio). At least 10 percent of the habitat management land requirements shall be met by fee title acquisition or a conservation easement allowing for the active management of the habitat, with the remaining 90 percent of the habitat management lands protected by a conservation easement on agricultural lands or other suitable habitats, which provide foraging habitat.

or,

B. Preserve 0.5 acre of habitat management land for each acre of development authorized (0.5:1 ratio) with the

entire habitat management land requirement being met by fee title acquisition or with a conservation easement, which allows for the active management of the habitat for prey production.

or,

C. *Acquire Swainson's hawk foraging habitat credits from a CDFG-approved mitigation bank at the ratios.*

(ii) *Projects within 5 miles of an active nest tree but greater than 1 mile from the nest tree shall provide 0.75 acre of habitat management land for each acre of urban development authorized or purchase the equivalent area from a CDFG-approved habitat conservation bank.*

(iii) *Projects within 10 miles of an active nest tree but greater than 5 miles from an active nest tree shall provide 0.5 acre of habitat management land for each acre of urban development authorized (0.5:1 ratio) or purchase the equivalent area from a CDFG-approved habitat conservation bank.*

7-8 Impacts to burrowing owl either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could result in impacts to burrowing owl either directly or through substantial habitat modifications.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the biological and habitat conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to result in impacts to burrowing owl, either directly or through substantial habitat modifications, would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

The annual brome grassland/VPC throughout the study area provides suitable foraging habitat for burrowing owl, which is a candidate for State listing, a California Species of Special Concern, and a PCCP Covered Species. In addition, occasional ground-squirrel burrows and debris located throughout the study area provide marginally suitable burrow habitat. Approximately 79.8 acres of annual brome grassland/VPC that currently provides marginal habitat for burrowing owl would be permanently impacted by the proposed project (see Figure 7-5). If ground disturbance

occurs while burrowing owls are in burrows in such areas, individuals could be directly impacted, and a significant impact would occur.

In Section 5.4.3.2 (Effects Summary) (page 5-138), the PCCP explains that "[t]he Plan's conservation goal for western burrowing owl provides sufficient habitat for maintaining or increasing the population size of overwintering western burrowing owls within the Reserve System and sufficient habitat for promoting the expansion of a breeding population of burrowing owls within the Reserve System. Achieving the natural community goals and objectives will result in the protection of 17,129 acres and restoration of 4,126 acres of western burrowing owl habitat (Table 5-6). The PCA will prioritize protection in areas that support western burrowing owls or supported this species within the last 5 years (Section 5.3.1.6.3, *Western Burrowing* Owl). It will also result in creating conditions to increase ground squirrel populations on these Reserve System lands, providing prey and burrows for western burrowing owl (CM2 VPCG-2, *Ground Squirrel Population Enhancement*). The species-specific biological objective for this species (Objective BUOW-1.1, *Protect and Manage Ground Squirrel Colonies*) will provide at least three protected ground squirrel colonies that will provide nesting opportunities for western burrowing owl, and will provide artificial burrows if ground squirrel colonies are not available to protect."

Section 5.4.3.3 (Conclusion) goes on to state, on the same page, that "[t]he Plan's conservation strategy will mitigate for the loss of 16,444 acres of habitat and indirect effects resulting from Covered Activities. Although the Plan Area is not critical to the long-term survival and recovery of the western burrowing owl, the strategy will further provide for the conservation of the species by providing nesting opportunities for western burrowing owls in the Plan Area, potentially facilitating expansion of the western burrowing owl's breeding range into the Plan Area."

Notwithstanding the above, the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on a wildlife species (burrowing owl) identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel is currently undeveloped and, based on Figure 6-1a of the RVSP EIR, consists primarily of annual grasslands, which represent suitable foraging and nesting habitat for burrowing owl. As discussed under Impact 6-11 of the RVSP EIR, buildout of the RVSP could result in the potential loss or disturbance of burrowing owl burrows. However, the RVSP EIR included Mitigation Measure 6-11a, which is intended to avoid potential impacts to burrowing owl nesting and foraging habitat, as well as breeding burrowing owls.

At such time the off-site affordable housing parcel gets developed, the future developer would be required by the County to implement RVSP EIR Mitigation Measure 6-11a, which has been incorporated into this EIR as Mitigation Measure 7-8(c). Mitigation Measure 6-11a of the certified RVSP EIR requires preconstruction surveys to be conducted if construction is proposed during the burrowing owl breeding season, as well as the removal of any active nests that cannot be avoided by construction

activities. As determined in the RVSP EIR, implementation of Mitigation Measure 6-11a would reduce potential impacts to burrowing owl to a less-than-significant level.

Conclusion

Based on the above, implementation of RVSP EIR Mitigation Measure 6-11a would be required to ensure the potential future development of the off-site affordable housing parcel would result in a less-than-significant impact to burrowing owl. In addition, the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on a raptor species (burrowing owl) identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. Thus, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures, understood against the backdrop of the PCCP, would reduce the above potential impacts to a *less-than-significant* level by ensuring that the proposed project would not cause a burrowing owl population to drop below self-sustaining levels, threaten to eliminate a community of burrowing owls, or result in the substantial loss of burrowing owl habitat. In addition, at such time a future developer proceeds with development of the off-site affordable housing parcel, the future project applicant would be required to comply with Mitigation Measure 7-8(c) related to burrowing owl prior to development of the parcel.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

7-8(a) Implement the following Mitigation Measure set forth in this EIR:

- *7-3(a) The Permittee shall apply for and be issued coverage under the PCCP to mitigate for all impacts to Covered Species, land cover, and sensitive natural communities. Prior to application approval, additional species surveys may be necessary, and prior to construction, land cover and special habitat fees shall be paid. The Permittee shall comply with the terms of the PCCP Coverage Certificate, including compliance with all avoidance, mitigation, and minimization measures, which may include pre-construction surveys, construction monitoring, and BMPs.*

  PCCP General Condition 3: The proposed project shall pay a land conversion fee for the permanent conversion of natural land cover including VPC Low, VPC Intermediate, and Valley Foothill Riparian Woodland. The fees to be paid shall be those in effect at the time of ground disturbance authorization for each project phase and shall be based on the effect to modeled species habitat at the parcel scale.

  In addition to land conversion, the project would result in permanent direct effects and temporary effects to PCCP Special Habitats as estimated in Table 6 of the Biological Resources Assessment (BRA) prepared for the proposed project. The total special habitat fee obligation including

temporary effect fees shall be paid prior to issuance of a land conversion authorization that allows ground disturbance.

7-8(b) *PCCP Species Condition 3: Two surveys shall be conducted within 15 days prior to ground disturbance to establish the presence or absence of burrowing owls. The surveys shall be conducted at least seven days apart (if burrowing owls are detected on the first survey, a second survey is not needed) for both breeding and non-breeding season surveys. All burrowing owls observed shall be counted and mapped.*

During the breeding season (February 1 to August 31), surveys shall document whether burrowing owls are nesting in or within 250 feet of the project area.

During the non-breeding season (September 1 to January 31), surveys shall document whether burrowing owls are using habitat in or directly adjacent to any area to be disturbed. Survey results will be valid only for the season (breeding or non-breeding) during which the survey was conducted. The results of the burrowing owl surveys shall be submitted to the Placer County Community Development Resource Agency and PCA.

The qualified biologist shall survey the proposed footprint of disturbance and a 250-foot radius from the perimeter of the proposed footprint to determine the presence or absence of burrowing owls. The site shall be surveyed by walking line transects, spaced 20 to 60 feet apart, adjusting for vegetation height and density. At the start of each transect and, at least, every 300 feet, the surveyor, with use of binoculars, shall scan the entire visible project area for burrowing owls. During walking surveys, the surveyor shall record all potential burrows used by burrowing owls, as determined by the presence of one or more burrowing owls, pellets, prey remains, whitewash, or decoration. Some burrowing owls may be detected by their calls; therefore, observers shall also listen for burrowing owls while conducting the survey. Adjacent parcels under different land ownership shall be surveyed only if access is granted. If portions of the survey area are on adjacent sites for which access has not been granted, the qualified biologist shall get as close to the non-accessible area as possible, and use binoculars to look for burrowing owls.

The presence of burrowing owls or their sign anywhere on the site or within the 250-foot accessible radius around the site shall be recorded and mapped. Surveys shall map all burrows and occurrence of sign of burrowing owl on the project site. Surveys must begin one hour before sunrise and continue until two hours after sunrise (three hours total) or begin two hours before sunset and continue until one hour after sunset. Additional time may be required for large project sites.

If burrowing owls are found during the breeding season (approximately February 1 to August 31), the project applicant shall avoid all nest sites that could be disturbed by project construction during the remainder of the breeding season or while the nest is occupied by adults or young (occupation includes individuals or family groups foraging on or near the site following fledging). The applicant shall establish a 250-foot non-disturbance buffer zone around nests. The buffer zone shall be flagged or otherwise clearly marked. Should construction activities cause the nesting bird to vocalize, make defensive flights at intruders, or otherwise display agitated behavior, then the exclusionary buffer shall be increased such that activities are far enough from the nest so that the bird(s) no longer display this agitated behavior. The exclusionary buffer shall remain in place until the chicks have fledged or as otherwise determined by a qualified biologist in consultation with PCA. Construction may only occur within the 250-foot buffer zone during the breeding season if a qualified raptor biologist monitors the nest and determines that the activities do not disturb nesting behavior, or the birds have not begun egg-laying and incubation, or that the juveniles from the occupied burrows have fledged and moved off site, in consultation with PCA. Measures such as visual screens may be used to further reduce the buffer with CDFW approval and provided a biological monitor confirms that such measures do not cause agitated behavior.

If burrowing owls are found during the non-breeding season (approximately September 1 to January 31), the project applicant shall establish a 160-foot buffer zone around active burrows. The buffer zone shall be flagged or otherwise clearly marked. Measures such as visual screens may be used to further reduce the buffer with PCA and CDFW approval and provided a biological monitor confirms that such measures do not cause agitated behavior.

After all alternative avoidance and minimization measures are exhausted as confirmed by CDFW, a qualified biologist may passively exclude birds from those burrows during the non-breeding season. A burrowing owl exclusion plan shall be developed by a qualified biologist consistent with the most recent guidance from the USFWS and/or CDFW and submitted to and approved by the PCA and the USFWS and CDFW. Burrow exclusion shall be conducted for burrows located in the project footprint and within a 160-foot buffer zone as necessary.

A biological monitor shall be present on site daily to ensure that no Covered Activities occur within the buffer zone. The qualified biologist performing the construction monitoring shall ensure that effects on burrowing owls are minimized. If monitoring indicates that construction outside of the buffer is affecting nesting, the buffer shall be increased if space allows (e.g., move staging areas farther away). If space does not allow, construction shall cease until the young have fledged from all the nests in the colony (as confirmed by a qualified biologist) or until the end of the breeding season, whichever occurs first.



A biological monitor shall conduct training of construction personnel on the avoidance procedures, buffer zones, and protocols in the event a burrowing owl flies into an active construction zone.

Off-Site Affordable Housing Parcel

7-8(c) *Implement RVSP EIR Mitigation Measure 6-11a:*

If construction is proposed during the burrowing owl breeding season (February 1 through August 31), focused surveys for active burrows shall be conducted within 30 days prior to the beginning of the construction activities. Surveys shall be conducted by a qualified biologist. If active nests are found, no construction activities shall take place within 250 feet of the nest until the young have fledged. Burrows that cannot be avoided shall be removed during the nonbreeding season (September 1 to January 31) in accordance with CDFG protocols (CDFG, 1995). If no active nests are found during focused surveys, no further mitigation will be required.

If occupied burrows would be removed as a result of construction and there is suitable habitat in the Plan Area, onsite passive relocation shall be implemented. Owls will be excluded from the occupied burrows using one-way doors and allowed to occupy alternate natural or artificial burrows that are beyond 250 feet from the impact zone and that are within or contiguous to a minimum of 6.5 acres of potential foraging habitat for each pair of relocated owls. Relocation of owls should only be implemented during the nonbreeding season. Onsite preservation of foraging habitat adjacent to any relocated owls shall be protected in a conservation easement and managed to promote burrowing owl use of the site. CDFG approval would be required for the habitat conservation easement.

If there is not suitable habitat on site, burrowing owl habitat mitigation credits shall be purchased from a conservation bank approved by the CDFG. Offsite habitat must provide suitable burrowing owl habitat. Land shall be purchased and /or placed in a conservation easement in perpetuity and managed to main suitable habitat. Offsite mitigation shall use the following ratios:

- *(i) Replacement of occupied habitat with occupied habitat: 1.5 times 6.5 acres per pair or single bird (9.75 acres).*
- *(ii) Replacement of occupied habitat with habitat contiguous to currently occupied habitat: 2 times 6.5 acres per pair or single bird (13.0 acres).*
- *(iii) Replacement of occupied habitat with suitable unoccupied habitat: 3 times 6.5 acres per pair or single bird (19.5 acres).*

7-9 Impacts to other nesting birds and raptors protected under the MBTA and CFGC either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications or substantial reduction in the number or range of the species. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could result in impacts to nesting birds and raptors protected under the MBTA and CFGC either directly or through substantial habitat modifications or substantial reduction in the number or range of the species.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the biological and habitat conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to result in impacts to nesting birds and raptors protected under the MBTA and CFGC, either directly or through substantial habitat modifications, would be similar. Thus, the following discussion applies to both the proposed project, and the off-site sewer lift station improvements area.

Similar to the analysis under Impact 7-8 regarding Swainson's hawk, the vegetation communities within the study area provide suitable nesting and foraging habitat to accommodate nesting songbirds and raptors protected under the MBTA and CFGC. For example, the annual brome grassland/VPC throughout the study area could represent suitable foraging habitat for tricolored blackbird, golden eagle, and white-tailed kite, as well as both nesting and foraging habitat for northern harrier and loggerhead shrike. In addition, the VFRW within the study area provides suitable foraging habitat for olive-sided flycatcher and yellow warbler. Furthermore, the trees within the study area provide suitable nesting habitat for white-tailed kite. Should such species be nesting or foraging in areas proposed for disturbance as part of the proposed project, development of such locations could result in a significant impact to the species.

Based on the above, the project could have a substantial adverse effect, either directly or through habitat modifications, on other nesting songbirds and raptor species protected under the MBTA and CFGC.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel is currently undeveloped and, based on Figure 6-1a of the RVSP EIR, consists primarily of annual grasslands, which could represent suitable nesting habitat for northern harrier and loggerhead shrike. In addition, the trees located along the northern and western boundaries of the off-site affordable housing parcel could represent suitable nesting habitat for white-tailed kite. As discussed under Impact 6-12 of the RVSP EIR, buildout of the RVSP could result in

the mortality of nesting bird species protected under the MBTA. To address such impacts, the RVSP EIR included Mitigation Measure 6-12a, which is intended to prevent disturbance to nesting raptors. However, Mitigation Measure 6-12a only pertains to nesting raptors and does not specifically address impacts to other nesting birds protected under the MBTA and CFGC. At such time the off-site affordable housing parcel gets developed, the future developer would be required by the County to implement RVSP Mitigation Measure 6-12a, which has been incorporated into this EIR as Mitigation Measure 7-9(e). Mitigation Measure 6-12a of the certified RVSP EIR requires the project applicant conduct preconstruction surveys of the project site for nesting raptors and establishes avoidance buffers to be enforced should nesting raptors be identified during preconstruction surveys. As determined in the RVSP EIR, implementation of Mitigation Measure 6-12a would reduce potential impacts to nesting raptors to a less-than-significant level.

Although the RVSP EIR includes mitigation to reduce impacts to nesting birds, because Mitigation Measure 6-12a only pertains to nesting raptors, the potential future development of the off-site affordable housing parcel could have a substantial adverse effect, either directly or through habitat modifications, on other nesting songbirds. As such, additional project-specific mitigation measures would be required to ensure that potential impacts to nesting songbirds do not occur.

Conclusion

Based on the above, the project, including the potential future development of the off-site affordable housing parcel, could have a substantial adverse effect, either directly or through habitat modifications, on other nesting songbirds and raptor species protected under the MBTA and CFGC. Thus, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impacts to a *less-than-significant* level by ensuring that the proposed project would not cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community, result in the loss of substantial amounts of habitat, or result in substantial reduction in the number or range of the species. In addition, at such time a future developer proceeds with development of the off-site affordable housing parcel, the future project applicant would be required to comply with Mitigation Measures 7-9(b), 7-9(c), 7-9(d), and 7-9(e) related to nesting songbirds prior to development of the parcel.

Proposed Project, Off-Site Sewer Lift Station Improvements Area

7-9(a) Implement the following Mitigation Measure set forth in this EIR:

- *7-3(a) The Permittee shall apply for and be issued coverage under the PCCP to mitigate for all impacts to Covered Species, land cover, and sensitive natural communities. Prior to application approval, additional species surveys may be necessary, and prior to construction, land cover and special habitat fees shall be paid. The Permittee shall comply with the terms of the PCCP Coverage Certificate, including compliance with all avoidance, mitigation, minimization measures, which*

may include pre-construction surveys, construction monitoring, and BMPs.

> *PCCP General Condition 3: The proposed project shall pay a land conversion fee for the permanent conversion of natural land cover including VPC Low, VPC Intermediate, and Valley Foothill Riparian Woodland. The fees to be paid shall be those in effect at the time of ground disturbance authorization for each project phase and shall be based on the effect to modeled species habitat at the parcel scale.*
>
> *In addition to land conversion, the project would result in permanent direct effects and temporary effects to PCCP Special Habitats as estimated in Table 6 of the Biological Resources Assessment (BRA) prepared for the proposed project. The total special habitat fee obligation including temporary effect fees shall be paid prior to issuance of a land conversion authorization that allows ground disturbance.*

7-9(b) *PCCP Species Condition 4 (Tricolored Blackbird): Prior to initiation of PCCP Covered Activities associated with the proposed project, the qualified biologist(s) shall conduct preconstruction surveys to evaluate the presence of tricolored blackbird nesting colonies for each phase of the project. In instances where an adjacent parcel is not accessible to survey because the qualified biologist was not granted permission to enter, the qualified biologist shall scan all potential nest colony site(s) from the adjacent property, roadsides, or other safe, publicly accessible viewpoints, without trespassing, using binoculars and/or a spotting scope to look for tricolored blackbird nesting activity.*

Surveys shall be conducted at least twice, with at least one month between surveys, during the nesting season one year prior to initial ground disturbance for the Covered Activity (if feasible), and the year of ground disturbance for the Covered Activity (required). If Covered Activities will occur in the project work area during the nesting season, three surveys shall be conducted within 15 days prior to the Covered Activity, with one of the surveys occurring within five days prior to the start of the Covered Activity. The survey methods will be based on Kelsey (2008) or a similar protocol approved by the PCA and the USFWS and CDFW based on site-specific conditions.

If the first survey indicates that suitable nesting habitat is not present on the project site or within 1,300 feet of the project work area, additional surveys for nest colonies are not required.

If an active colony is known to occur within three miles of the project site, a qualified biologist shall conduct two surveys of foraging habitat within the project site and within a 1,300-foot radius around the project site to determine whether foraging habitat is being actively used by

foraging tricolored blackbirds. The qualified biologist shall map foraging habitat, as defined by the land cover types listed above, within a 1,300-foot radius around the project site to delineate foraging habitat that will be surveyed. The surveys shall be conducted approximately one week apart, with the second survey occurring no more than five calendar days prior to ground-disturbing activities.

Construction activity or other covered activities that may disturb an occupied nest colony site, as determined by a qualified biologist, shall be prohibited during the nesting season (March 15 through July 31) or until the chicks have fledged or the colony has been abandoned on its own) within a 1,300-foot buffer zone around the nest colony, to the extent practicable. The intent of this condition is to prevent disturbance to occupied nest colony sites on or near project sites so they can complete their nesting cycle. This condition is not intended to preserve suitable breeding habitat on project sites but to ensure impacts to active colony sites only take place once the site is no longer occupied by the nesting colony. The buffer shall be applied to extend beyond the nest colony site as follows: 1) if the colony is nesting in a wetland, the buffer must be established from the outer edge of all hydric vegetation associated with the colony, or 2) if the colony is nesting in non-wetland vegetation (e.g., Himalayan blackberry), the buffer must be established from the edge of the colony substrate. This buffer may be modified to a minimum of 300 feet, with written approval from the USFWS and CDFW, in areas with dense forest, buildings, or other features between the Covered Activities and the occupied active nest colony; where there is sufficient topographic relief to protect the colony from excessive noise or visual disturbance; where sound curtains have been installed; or other methods developed in consultation with the USFWS and CDFW where conditions warrant reduction of the buffer distance. If tricolored blackbirds colonize habitat adjacent to Covered Activities after the activities have been initiated, the project applicant shall reduce disturbance through establishment of buffers or noise reduction techniques or visual screens, as determined in consultation with the USFWS, CDFW, and PCA. The buffer must be clearly marked to prevent project-related activities from occurring within the buffer zone.

Active nesting colonies that occur within the non-disturbance buffer shall be monitored by the qualified biologist(s) to verify the Covered Activity is not disrupting the nesting behavior of the colony. The frequency of monitoring shall be approved by the PCA and based on the frequency and intensity of construction activities and the likelihood of disturbance of the active nest. In most cases, monitoring will occur at least every other day, but in some cases, daily monitoring may be appropriate to ensure that direct effects on tricolored blackbird are minimized. The biologist shall train construction personnel on the avoidance procedures and buffer zones.

If the qualified biologist(s) determines that the Covered Activity is disrupting nesting and/or foraging behavior, the qualified biologist(s)

shall notify the project applicant immediately, and the project applicant shall notify the PCA within 24 hours to determine additional protective measures that can be implemented. The qualified biologist(s) shall have the authority to stop Covered Activities until additional protective measures are implemented. Additional protective measures shall remain in place until the qualified biologist(s) determine(s) tricolored blackbird behavior has normalized. If additional protective measures are ineffective, the qualified biologist(s) shall have the authority to stop Covered Activities as needed until the additional protective measures are modified and nesting behavior of tricolored blackbird returns to normal.

Additional protective measures may include increasing the size of the buffer (within the constraints of the project site), delaying Covered Activities (or the portion of Covered Activities causing the disruption) until the colony is finished breeding and chicks have left the nest site, temporarily relocating staging areas, or temporarily rerouting access to the project work area. The project proponent shall notify the PCA and USFWS and CDFW within 24 hours if nests or nestlings are abandoned. If the nestlings are still alive, the qualified biologist(s) shall work with the USFWS and CDFW to determine appropriate actions for salvaging the eggs or nestlings. Notification to PCA and USFWS and CDFW shall be via telephone or email, followed by a written incident report. Notification shall include the date, time, location, and circumstances of the incident.

Foraging habitat within the buffer shall be monitored by the qualified biologist(s) to verify that the Covered Activity is not disrupting tricolored blackbird foraging behavior. The frequency of monitoring shall be approved by the PCA and based on the frequency and intensity of construction activities and the likelihood of disturbance of foraging tricolored blackbirds. In most cases, monitoring will occur at least every other day, but in some cases, daily monitoring may be appropriate to ensure that effects on tricolored blackbird are minimized. The biologist shall train construction personnel on the avoidance procedures and buffer zones.

If the qualified biologist(s) determines that the Covered Activity is disrupting foraging behavior, the qualified biologist(s) shall notify project applicant immediately, and the project applicant shall notify the PCA within 24 hours to determine additional protective measures that can be implemented. The qualified biologist(s) shall have the authority to stop Covered Activities until additional protective measures are implemented. Additional protective measures shall remain in place until the qualified biologist(s) determine(s) tricolored blackbird behavior has normalized. If additional protective measures are ineffective, the qualified biologist(s) shall have the authority to stop Covered Activities as needed until the additional protective measures are modified and foraging behavior of tricolored blackbird returns to normal. Additional protective measures may include increasing the size of the buffer

(within the constraints of the project site), temporarily relocating staging areas, or temporarily rerouting access to the project work area.

7-9(c) *A preconstruction nesting bird survey shall be conducted by the qualified biologist (project biologist) throughout the portions of the project site and off-site affordable housing parcel, if proposed for construction, as well as all accessible areas within a 500-foot radius of proposed construction areas for each phase, no more than three days prior to the initiation of construction. If there is a break in construction activity of more than three days, then subsequent surveys shall be conducted.*

A report summarizing the survey(s) shall be provided to the Placer County Community Development Resource Agency and the PCA within 30 days of the completed survey and is valid for one construction season, assuming that a break in construction activities of more than three days does not occur. If nests are not found, further mitigation is not required.

If an active raptor nest is found, construction activities shall not take place within 500 feet of the nest until the young have fledged. If active songbird nests are found, a 100-foot non-disturbance buffer shall be established. The non-disturbance buffers may be reduced if a smaller, sufficiently protective buffer is proposed by the project biologist and approved by the County after taking into consideration the natural history of the species of bird nesting, the proposed activity level adjacent to the nest, the nest occupants' habituation to existing or ongoing activity, and nest concealment (i.e., whether there are visual or acoustic barriers between the proposed activity and the nest). The project biologist can visit the nest as needed to determine when the young have fledged the nest and are independent of the site or the nest can be left undisturbed until the end of the nesting season.

7-9(d) *When it is determined that the size of the non-disturbance buffer requires the project biologist to monitor the nest, that monitoring shall include observations about the bird's behaviors relative to the construction activities. Should construction activities cause a nesting bird to do any of the following in a way that would be considered a result of construction activities, then the exclusionary buffer shall be increased such that activities are far enough from the nest to stop the following agitated behavior: vocalize, make defensive flights at intruders, get up from a brooding position, or fly off the nest. The revised non-disturbance buffer shall remain in place until the chicks have fledged or as otherwise determined by a qualified biologist in consultation with the County.*

Construction activities may only resume within the non-disturbance buffer after a follow-up survey by the project biologist has been conducted and a report has been prepared indicating that the nest (or nests) is no longer active, and that no new nests have been identified.

Off-Site Affordable Housing Parcel

7-9(e) *Implement RVSP EIR Mitigation Measure 6-12a below. Alternatively, the future affordable housing developer may choose to participate in the PCCP for Swainson's hawk.*

If project or program activities occur are proposed during the breeding period of the Swainson's hawk or other nesting raptors (March 1 to September 15), a qualified biologist shall conduct pre-construction surveys within a 0.5-mile radius of the project, not more than two weeks prior to construction. Surveys shall be conducted using the guideline established in the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley. If nesting Swainson's hawks or other raptors are found, project activities will be delayed within the following buffer distances until the young have fledged:

- *Swainson's hawks – 1,300 feet (0.25-mile)*
- *Other raptor species – 500 feet (0.10-mile)*

Swainson's hawk nest sites within 0.5-mile of active construction will be monitored by a qualified biologist to evaluate whether the construction activities are disturbing nesting hawks. If the nesting birds appear distressed, the monitor shall halt all construction activities within 0.5-mile of the nest site and CDFG will be contacted to identify appropriate contingency measures. These measures might include limitations on the activities that would be allowed within 0.5-mile of the nest site or termination of all work within 0.5-mile of the nest site. All CDFG recommendations shall be complied with. If construction activities occur over more than one year, surveys shall be conducted during each year of construction.

If active nests are not identified during the preconstruction survey or if construction activities are proposed to occur during the nonbreeding season (September 16 through February 28), preconstruction surveys or other mitigation measures for Swainson's hawk or other nesting raptors shall not be required.

7-10 Impacts to roosting bats either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could

result in impacts to roosting bats either directly or through substantial habitat modifications.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the biological and habitat conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to result in impacts to roosting bats either directly or through substantial habitat modifications would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

The pallid bat and western red bat are California Species of Special Concern but are not PCCP Covered Species. The silver-haired bat and hoary bat are not federally or State listed, nor are they PCCP Covered Species, but are classified as Medium priority species by the WBWG. Pursuant to the BRA, pallid bat and silver-haired bat have high potential to occur within the study area, and western red bat and hoary bat have low potential to occur. More specifically, the trees throughout the study area provide habitat for the foregoing special-status bats species. As such, if special-status bats were roosting in trees proposed for removal during project construction, the bats could be injured or killed.

Based on the above, the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on a bat species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel is currently undeveloped and, based on Figure 6-1a of the RVSP EIR, consists primarily of annual grasslands and seasonal wetlands, which do not represent suitable habitat for bat species. However, the existing trees located along the northern and western boundaries of the off-site affordable housing parcel could represent suitable roosting habitat for special-status bat species. As discussed under Impact 6-8 of the RVSP EIR, buildout of the RVSP could result in the removal of suitable roosting and nesting habitat for special-status bat species. Thus, development of the site with a maximum of 120 affordable income-restricted units and associated improvements could result in impacts to special-status bat species through the removal of suitable habitat. However, the RVSP EIR included Mitigation Measure 6-8a, which is intended to avoid and compensate for potential impacts to special-status bat species.

At such time the off-site affordable housing parcel gets developed, the future developer would be required by the County to implement RVSP EIR Mitigation Measure 6-8a, which has been incorporated into this EIR as Mitigation Measure 7-10(b). Mitigation Measure 6-8a of the certified RVSP EIR requires preconstruction surveys for special-status bat species, as well as avoidance and compensation for potential impacts to special-status bats. As determined in the RVSP EIR, implementation of Mitigation Measure 6-8a would reduce potential impacts to special-status bat species to a less-than-significant level.

Conclusion

Based on the above, implementation of RVSP EIR Mitigation Measure 6-8a would be required to ensure the reasonably foreseeable potential future development of the off-site affordable housing parcel would result in a less-than-significant impact to special-status bat species. In addition, development of the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on a bat species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. Thus, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impacts to a *less-than-significant* level by ensuring that construction activities do not result in bat mortality.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

7-10(a) *Prior to the commencement of construction activities, a qualified biologist shall conduct a bat habitat assessment of all potential roosting habitat features, including trees within the proposed impact footprint within the project vicinity. The habitat assessment shall identify all potentially suitable roosting habitat and may be conducted up to one year prior to the start of construction. The results of the assessment shall be submitted to the Placer County Community Development Resource Agency.*

- *If potential roosting habitat is identified (cavities in trees or potential roosts within structures) within the areas proposed for impact, the biologist shall survey the potential roosting habitat during the active season (generally April through October or from January through March on days with temperatures in excess of 50 degrees Fahrenheit) to determine the presence of roosting bats. The surveys are recommended to be conducted utilizing methods that are considered acceptable by bat experts after consultation with CDFW. Methods may include evening emergence surveys, acoustic surveys, inspecting potential roosting habitat with fiberoptic cameras, or a combination thereof.*
- *If roosting bats are identified within any of the trees planned for removal, or if presence is assumed, the trees shall be removed outside of pup season, only on days with temperatures in excess of 50 degrees Fahrenheit. Pup season is generally during the months of May through August. Two-step tree removal shall be utilized under the supervision of the qualified biologist. Two-step tree removal involves removal of all branches of the tree that do not provide roosting habitat on the first day, and then the next day cutting down the remaining portion of the tree.*
- *Additionally, it is recommended that all other tree removal shall be conducted from January through March on days with*

temperatures in excess of 50 degrees Fahrenheit to avoid potential impacts to foliage-roosting bat species.

- *If roosting bats are identified within any structures planned for removal, a bat exclusion plan shall be prepared by a qualified bat biologist describing the methods to be used to humanely exclude bats prior to disturbance. The plan shall be approved by the Placer County Community Development Resource Agency after consultation with CDFW and shall be implemented prior to the start of construction.*
- *The requirements for the bat expert and County to consult with CDFW prior to approving survey methods and a bat exclusion plan shall be satisfied either where CDFW responds to requests for consultation within 30 days of the requests or where the bat expert and County have attempted to consult with CDFW but CDFW has failed to respond to the request within 30 days of the placement of the request.*

Off-Site Affordable Housing Parcel

7-10(b) Implement RVSP EIR Mitigation Measure 6-8a:

Prior to construction, a qualified biologist shall survey any affected structures and trees for evidences of bat roosts (e.g., bat guano). If roosts are found, they shall be removed in April, September, or October in order to avoid the hibernation and maternity seasons. Appropriate exclusion methods will be used, as needed, during habitat removal. If bats must be excluded, the Applicant shall work with a qualified biologist to determine appropriate exclusion methods. If bats are found onsite and cannot be avoided, each Applicant/developer for construction projects within the Plan Area shall work with a qualified biologist to determine if additional mitigation, such as the construction of bat boxes, is appropriate. Determination of these additional measures will depend on the species present and their specific ecological preferences/requirements. Other steps could include improving other avoided bat habitat or designing new project elements such as bat-friendly road crossings. If no active bat roosts are found during focused surveys, no further mitigation will be required.

7-11 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 CDFW or USFWS. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could 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 CDFW or USFWS.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the biological and habitat conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to 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 CDFW or USFWS would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

One terrestrial cover mapped within the study area is considered to be a Sensitive Natural Community by CDFW: VFRW. The study area contains approximately 3.8 acres of VFRW, 1.3 acres of which would be permanently impacted by the proposed project (see Figure 7-6).

Impacts to Riparian land cover within the PCCP require payment of special habitat fees to mitigate impacts. The PCCP's Special Habitat Fee Schedule (subject to annual adjustments) sets fees for impacts to Riparian areas and a 50-foot buffer off the riparian at a fee per directly impacted acre. In addition, because the proposed project would disturb riparian habitat within the PCCP, the project would be required to comply with the CARP. Permanent and temporary impacts to PCCP special habitats, Stream System, and the CARP riparian buffer are detailed in Table 7-4.

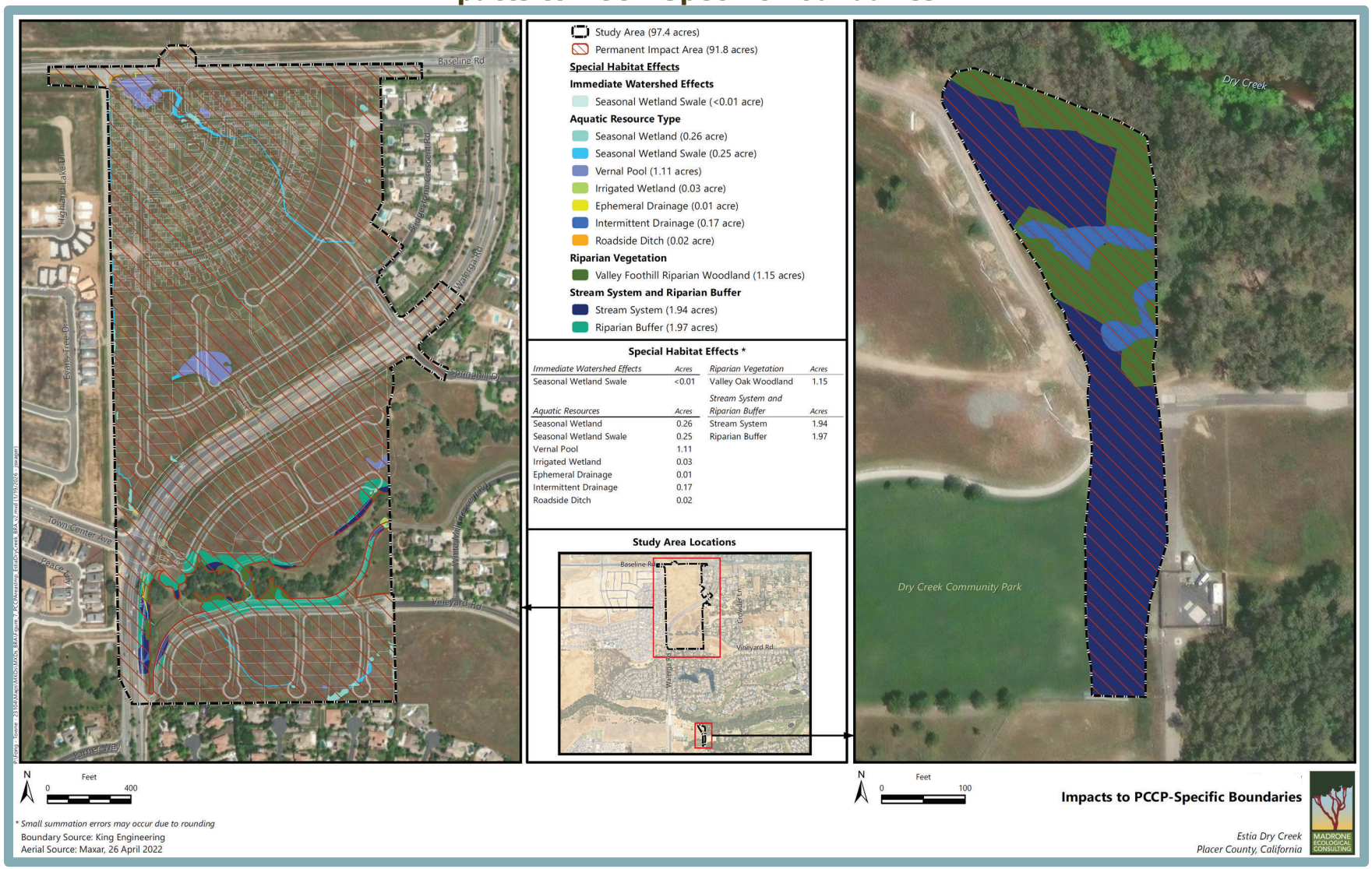
Table 7-4
Impacts to PCCP Special Habitats and CARP Setbacks within the Study Area

Special Habitat/Setback	Permanent Impacts	Temporary Impacts	Total
PCCP Special Habitats			
Vernal Pool Constituent Habitat Direct Effects[1]	1.62	--	**1.62**
Other Aquatic/Wetland	0.03	--	**0.03**
Riverine/Riparian	1.15	0.008[2]	**1.16**
Riverine/Riparian Buffer[3]	1.68	--	**1.68**
Stream System[3]	1.94	--	**1.94**
Salmonid Stream Channel	--	--	**--**
VP Immediate Watershed Effects	<0.01	--	**<0.01**
CARP Setbacks			
CARP Drainage Setback	1.94	--	**1.94**
Riparian Buffer	1.97	--	**1.97**

[1] Vernal pool constituent direct effects include impacts to seasonal wetlands, seasonal wetland swales, and vernal pools only and do not include impacts to irrigated wetlands. Irrigated wetland effects are included under Other Aquatic/Wetland in the following entry.
[2] This impact is a crossing of an intermittent drainage. Although the drainage may be temporarily impacted during construction of the crossing, the drainage itself will ultimately be avoided by the proposed project
[3] The stream system habitat excludes other special habitats that fall within the riverine/riparian and riparian buffer areas that would be subject to other special habitat fees.

Source: Madrone Ecological Consulting, 2026.

Figure 7-6
Impacts to PCCP-Specific Boundaries



* Figure not OCR Compatible

On page 5-24 of the PCCP, the text sets forth Objectives RAR-1.1 and RAR-1.2. Objective RAR-1.1 (*Protect Riverine/Riparian Complex*) is to "[p]rotect 2,200 acres of riverine/riparian complex natural community, which will include at least 1,410 acres of riparian constituent habitat (960 acres in the Valley and 451 acres in the Foothills). This portion of the Reserve System will include 88.6 linear miles of streams (riverine)."

Objective RAR-1.2 (*Protect Riverine Constituent Habitat*) is to "[p]rotect at least 88.6 linear stream miles of riverine within the riverine/riparian complex natural community."

The Rationale for Objectives RAR-1.1 and RAR-1.2 reads as follows: "The assembly of the Reserve System will substantially increase the amount of protected riverine and riparian constituent habitats in the Plan Area. The riverine and riparian protection commitments are large enough (with contribution from Objective RAR 1.3 to expand and connect fragmented patches of riparian community) to protect corridors for movement from the Valley floor to the Foothills, which will contribute to achieving Landscape Objective 2.3, *Establish East–West Corridors*.

"The protection commitments for the riverine and riparian constituent habitats are intended to be large enough to protect, along with enhancement and restoration (Objectives RAR 1.3, 1.4, 1.5, 1.6, and 1.7), functioning hydrologic systems that provide habitat value for native biota while continuing to meet urban requirements for flood control, drinking water, agriculture, and recreation. For western Placer County streams, this generally means providing the channel width and depth to convey most flood flows while maintaining both aquatic and terrestrial habitat complexity necessary to ensure water quality and suitable streambed conditions for all life stages of aquatic Covered Species.

"The riverine and riparian commitment is intended to be large enough to ensure that extensive amounts of high quality spawning, rearing, and migrating habitat are protected for the covered salmonids within the Raccoon Creek, Doty Ravine, and Auburn Ravine, and Dry Creek watersheds, consistent with the Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-run Chinook Salmon and Central Valley Spring-run Chinook Salmon and the Distinct Population Segment of California Central Valley Steelhead (National Marine Fisheries Service 2014).

"After restoration is successfully completed, at least 2,232 acres (and up to 3,625 acres if the proposed maximum allowable loss of riverine/riparian complex community occurs) of riverine/riparian communities will be protected and restored on the Reserve System. These protection and restoration commitments provide for the conservation and recovery of Covered Species in the Plan Area, in addition to mitigating indirect effects and the direct effects on 490 acres of the riverine/riparian complex natural community.

"The protection of 88.6 miles of streams in Plan Area A and B (see Section 5.3.1.3.4, *Conservation in Plan Area B*) and restoration of fish passage both upstream and downstream of existing barriers (Objective RAR 1.5) will provide for the conservation and recovery of riverine Covered Species in the Plan Area, in addition to mitigating direct and indirect effects on 551 miles of streams in the Plan Area. The protection of these streams will overlap the riverine/riparian complex community protected."

Objective RAR-1.3 (*Restore Riverine/Riparian Complex*), set forth on page 5-25 of the PCCP, states that "[a] minimum of 32 acres of riparian constituent habitat will be restored, independent of effects. In addition, impacts on riverine/riparian constituent habitat and the Stream System will be mitigated by restoration of riverine and riparian constituent habitat at ratio of 1.52:1. If the proposed maximum allowable effects on riverine/ riparian complex and the Stream System occur (490 acres and 426 acres, respectively, for a total estimated effect of 916 acres), up to an additional 1,425 acres of riverine/riparian complex will be restored. Of the 1,425 acres of riverine and riparian constituent habitat restoration, 1,250 acres must be restored as riparian constituent habitat. Also see Table 5-4. Effects on salmonid habitat (i.e., spawning or migrating) will be mitigated in kind. Other natural communities interspersed within riverine/riparian complex may be restored as part of riverine/riparian upland complex (e.g., valley oak woodland, fresh emergent wetlands)."

The Rationale for this objective, on pages 5-25 and 5-26, reads as follows: "Extensive amounts of riverine/riparian complex have been lost or degraded in the Plan Area, thereby fragmenting remaining habitat, particularly of riparian constituent habitat. Restoration of riverine/riparian complex will substantially increase the amount of this community in the Plan Area[.]

"This objective provides for the restoration of riverine/riparian complex as mitigation for the effects of Covered Activities on the Stream System (see Section 6.3.3.4, *Stream System Condition 3, Stream System Mitigation: Restoration,* for details), which includes direct effects on 490 acres of riverine/riparian complex and direct effects on another 426 acres of the Stream System. The effects on the Stream System (426 acres) will be determined when the Stream System boundary is assessed (see Section 6.3.3.1.1, *Stream System Boundary*). Where the affected Stream System includes constituent habitats, effects will be mitigated by restoration of those habitats. The Stream System also includes other communities, in addition to constituent habitats (e.g., grassland, valley oak woodland). Effects on other such communities within the Stream System will also be mitigated at a ratio of 1.52:1 by restoration of riverine/riparian constituent habitats to mitigate the irreversible loss of the valuable ecosystem services provided by land within the Stream System.

"The majority (over 74 percent) of riverine/riparian complex will be restored as constituent habitat. Riverine/riparian complex includes a diverse mosaic of riverine, riparian communities and other closely associated communities, including fresh emergent wetlands, seasonal wetlands, off-channel wetlands, and stands of valley oak woodland. This objective allows for up to 22 percent of riverine/riparian complex restoration to include these closely associated communities.

"The restoration of 32 acres of riparian vegetation independent of effect, and additional riparian vegetation dependent on effect, will be sited in spawning, rearing, and migrating habitat primarily along Raccoon Creek, Doty Ravine, and Auburn Ravine to optimize habitat values for covered fish species. Restoration of riverine/riparian complex dependent on effect will be implemented in-kind for effects on salmonid habitat. For example, if 20 acres of riverine/riparian complex are affected in spawning habitat on Raccoon Creek, 30.4 acres of riverine/riparian complex will be restored in spawning habitat on Raccoon Creek, with at least 74 percent restored as riparian vegetation.

"Riparian restoration will be focused on expanding and connecting existing fragments of riparian communities to restore corridors for movement in the Plan Area, which will contribute to achieving Landscape Objective 2.3, *Establish East–West Corridors.* "The riverine/riparian complex natural community provides important ecosystem functions. Achieving this objective will improve riparian-related ecosystem functions such as providing shade that moderates water temperatures in adjacent streams, slowing water velocities during flood events, reducing inputs of nutrients (e.g., nitrogen) and pollutants into streams, providing habitat for terrestrial and aquatic invertebrates, prey species for covered salmonids and native biota, and stabilizing banks against erosion.

"The riverine/riparian complex natural community provides important habitat for many Covered Species and other native species in the Plan Area. Riparian restoration, for example, will restore habitat for Swainson's hawk, valley elderberry longhorn beetle, western pond turtle, amphibians, and the covered salmonids. Swainson's hawk nests in riparian habitats in the Valley. Valley elderberry longhorn beetle occur almost entirely within riparian communities. For salmonids, the riparian vegetation provides shade that regulates water temperature and large woody material that provides cover and in-stream habitat complexity. Flooded riparian zones also provide rearing habitat for the covered salmonids."

PCCP Objective RAR-1.4 (*Enhance Riparian Vegetation*), set forth on page 5-26, is to "[e]nhance the cover, structural diversity, and native species diversity of the riparian constituent habitat in the Reserve System."

The Rationale for this objective, as stated on the same page, is as follows: **"**Riparian constituent habitat will be enhanced throughout the Reserve System. Achieving this objective will increase native biodiversity and relative cover of native plant species, increase structural diversity, and improve habitat function for Covered Species and native biota. High species diversity promotes natural community resilience, and native biodiversity in riparian systems generates structural diversity that constitutes habitat for many riparian wildlife species. Success criteria for individual enhancement sites will be developed within each reserve unit management plan."

Notwithstanding the above, without payment of applicable PCCP fees and compliance with the provisions of the CARP, the proposed project could have a substantial adverse effect on riparian habitat identified in local or regional plans, policies, regulations or by the CDFW or USFWS.

Off-Site Affordable Housing Parcel

Potential impacts to State- or federally protected wetlands are discussed further under Impact 7-12 of this EIR. The off-site affordable housing parcel is currently undeveloped and, based on Figure 6-1a of the RVSP EIR, consists primarily of annual grasslands with seasonal wetlands located on the southeast portion of the parcel, which are not identified as sensitive natural communities. As such, sensitive natural communities, including riparian habitat, are not present within the off-site affordable housing parcel. Therefore, at such time the off-site affordable housing parcel gets developed, impacts to riparian habitat identified in local or regional plans, policies, regulations or by the CDFW or USFWS would be less than significant.

Conclusion

Based on the above, the potential future development of the off-site affordable housing parcel would result in a less-than-significant impact to riparian habitat and other identified sensitive natural communities. However, without payment of applicable PCCP fees and compliance with the provisions of the CARP, the proposed project could have a substantial adverse effect on riparian habitat identified in local or regional plans, policies, regulations or by the CDFW or USFWS, and a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level by ensuring the avoidance of any substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

7-11(a) Implement the following Mitigation Measures set forth in this EIR:

- *7-3(a) The Permittee shall apply for and be issued coverage under the PCCP to mitigate for all impacts to Covered Species, land cover, and sensitive natural communities. Prior to application approval, additional species surveys may be necessary, and prior to construction, land cover and special habitat fees shall be paid. The Permittee shall comply with the terms of the PCCP Coverage Certificate, including compliance with all avoidance, mitigation, and minimization measures, which may include pre-construction surveys, construction monitoring, and BMPs.*

  PCCP General Condition 3: The proposed project shall pay a land conversion fee for the permanent conversion of natural land cover including VPC Low, VPC Intermediate, and Valley Foothill Riparian Woodland. The fees to be paid shall be those in effect at the time of ground disturbance authorization for each project phase and shall be based on the effect to modeled species habitat at the parcel scale.

  In addition to land conversion, the project would result in permanent direct effects and temporary effects to PCCP Special Habitats as estimated in Table 6 of the Biological Resources Assessment (BRA) prepared for the proposed project. The total special habitat fee obligation including temporary effect fees shall be paid prior to issuance of a land conversion authorization that allows ground disturbance of a special habitat.

- *7-4(c) PCCP Community Condition 2.2: Prior to land conversion authorization, the applicant shall coordinate with the PCA to determine which In-Stream and Stream System Best*

Management Practices (BMPs) from Table 7-1 of the Placer County Conservation Plan apply to the proposed project. The applicant shall identify the applicable BMPs on the project's improvement or grading plans. The selected BMPs shall be incorporated into the project's Land Conversion Authorization letter.

Prior to land conversion authorization approval, the unavoidable effects to riverine and riparian habitat or their buffers shall be mitigated through payment of special habitat fees. The fees to be paid shall be those in effect at the time of land conversion authorization.

- *7-6(b) PCCP Community Condition 2.1: To the maximum extent possible, the proposed project shall not modify any area within a buffer that extends 50 feet outward from the outermost bounds of the riparian vegetation. The improvement or grading plans shall show the location of the riverine/riparian buffer.*

7-11(b) *PCCP General Condition 4: The applicant shall restore all temporarily disturbed areas and, one year after project groundbreaking, provide the County with a written assessment of how the performance standards were met. The project would result in temporary effects to special habitats (riverine/riparian). Prior to issuance of land conversion authorization, the project shall pay a fee based on the acres of impact. The fee to be paid shall be that in effect at the time of land conversion authorization issuance. If it is determined by the County or the PCCP biologist that the effects remain one year after groundbreaking activities have commenced, the effects shall be considered permanent and the County project lead shall reassess fees based on those effects.*

7-11(c) *Prior to the commencement of ground-disturbing activities, the applicant shall apply for a Section 1600 Lake or Streambed Alteration Agreement from CDFW for the entire project or by phase as needed. The Lake and Streambed Alteration Agreement program is not fully integrated into the PCCP and must be applied for separate and apart from the PCCP. The information provided shall include a description of all activities associated with the project, not just those closely associated with the drainages and/or riparian vegetation. Impacts shall be outlined in the application and are expected to be in substantial conformance with the impacts to biological resources outlined in this document. Impacts for each activity shall be broken down by temporary and permanent, and a description of the proposed mitigation for biological resource impacts shall be outlined per activity and then by temporary and permanent. Information regarding project-specific drainage and hydrology changes resulting from project implementation shall be provided as well as a description of storm water treatment methods. Minimization and avoidance measures shall be proposed as appropriate and may include: preconstruction species surveys and reporting, protective fencing around avoided biological resources,*

worker environmental awareness training, seeding disturbed areas adjacent to open space areas with native seed, and installation of project-specific storm water BMPs. Mitigation shall be determined by CDFW and result in no net loss of riparian habitat.

7-12 Have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could have a substantial adverse effect on State- or federally protected wetlands through direct removal, filling, hydrological interruption, or other means.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the biological and habitat conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to have a substantial adverse effect on State- or federally protected wetlands through direct removal, filling, hydrological interruption, or other means would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

Wetlands are generally considered to be areas that are periodically or permanently inundated by surface or groundwater, and support vegetation adapted to life in saturated soil. Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and flood waters, and water recharge, filtration, and purification functions.

The USACE, CDFW, and RWQCB have jurisdiction over modifications to stream channels, river banks, lakes, and other wetland features. The USACE's jurisdiction is established through the provisions of Section 404 of the CWA, which prohibits the discharge of dredged or fill material into waters of the U.S. without a permit, including certain wetlands and unvegetated "other waters of the U.S." The jurisdictional authority of the RWQCB is established pursuant to Section 401 of the CWA, which typically requires a water quality certification when an individual or nationwide permit is issued by the USACE. The RWQCB also has jurisdiction over waters of the State under the Porter-Cologne Water Quality Control Act. Within the PCCP plan area, the CARP is a component of the PCCP that identifies, classifies, and protects County aquatic resources. The CARP requires implementation of avoidance, minimization, and compensatory mitigation measures for work in waters of the County, including discharges of fill material and alterations to the bed, bank, shoreline, or channel of County streams, lakes, and ponds.

A total of approximately 2.07 acres of aquatic resources has been mapped within the study area in accordance with the USACE Sacramento District's Minimum Standards

for Acceptance of Preliminary Wetlands Delineations. The aquatic resources within the study area that could be potentially affected as a result of the proposed project are shown in Figure 7-5 and summarized in Table 7-5. As shown therein, of the approximately 2.07 acres of aquatic resources mapped within the study area, approximately 1.84 acres would be permanently disturbed and less than 0.01-acre would be temporarily disturbed by the proposed project.

Table 7-5
Acres of Aquatic Resources Impacts within the Study Area

Aquatic Resources	Permanent Impacts[1]	Temporary Impacts[1]	Avoided[1]	Total[1]
Irrigated Wetland	0.03	--	--	0.03
Seasonal Wetland	0.26	--	--	0.26
Seasonal Wetland Swale	0.25	--	<0.01	0.26
Vernal Pool	1.11	--	--	1.11
Ephemeral Drainage	0.01	--	--	0.01
Intermittent Drainage	0.16	<0.01	0.23	0.39
Roadside Ditch	0.02	--	--	0.02
Total	**1.84**	**<0.01**	**0.23**	**2.07**

[1] The estimates within this table are preliminary and subject to change during the PCCP application and permitting process.

Source: Madrone Ecological Consulting, 2026.

The PCCP emphasizes minimization of aquatic resource impacts within the Stream System, which the proposed project would do to the maximum extent practicable. Permanent impacts to aquatic resources within the PCCP-defined Stream System would be limited to intermittent drainage, a portion of ephemeral drainage, and small areas of seasonal wetland and seasonal wetland swale. All impacts to vernal pools would occur outside of the Stream System.

The permanent and unavoidable impacts to intermittent drainage would include impacts associated with the Walerga Road shoulder improvements and detention basin outfalls within the project site and the Dry Creek floodwater expansion in the off-site sewer lift station improvements area. Temporary intermittent drainage impacts would be associated with the proposed sewer line and pedestrian bridge crossing within the intermittent drainage on the project site. The irrigated wetland within the study area would be impacted by trail construction. All other impacts to wetlands, roadside ditch, and ephemeral drainages would be associated with mass grading for development.

The PCCP includes the CARP to issue permits related to the CWA and the CFGC. Applicants are required to obtain a signed Certificate of PCCP Authorization form from Placer County for potential impacts to terrestrial and aquatic habitats. During the local impact authorization process, impact fees are calculated utilizing land cover data. Fees can include Land Conversion fees and Aquatic/Wetland Special Habitat fees. Special habitat fees would apply to the proposed project to mitigate impacts to the aquatic resources in the study area, including wetlands and other applicable resources.

The proposed project would impact aquatic resources that are considered to be special habitats by the PCCP. Permanent and temporary impacts to PCCP special habitats, CARP drainage setbacks, and the CARP riparian buffer are detailed in Table 7-4. The proposed project would be required to pay fees proportional to the amount of special habitat impacted.

The PCCP would result in the protection, enhancement, and management of vernal pool complexes as a specific wetland habitat type and in the protection, enhancement, and management of emergent marshes, seasonal wetlands, and lacustrine habitats (e.g., ponds), as well as riverine/riparian habitat, including streams.

PCCP Objective VPCG-1.1 (*Protect Existing Vernal Pool Complexes*), as set forth in Section 5.2.6.1 (Vernal Pool Complex and Grassland Natural Communities) on page 5-17 of the Plan, is to "[p]rotect 17,000 acres of existing vernal pool complex, including 790 wetted acres of vernal pool constituent habitat (Table 5-3), to build a vernal pool Reserve System in large, contiguous blocks based on reserve units (minimum size of 200 acres unless agreed to by the Wildlife Agencies), primarily in the Valley RAA, and provide for the conservation of the covered vernal pool branchiopods in the Plan Area."

The Rationale for this objective is set forth as follows: "The assembly of the Reserve System in the western portion of the Plan Area will substantially increase the amount of protected vernal pool complexes and constituent vernal pools and seasonal wetlands in the Plan Area, thereby reducing fragmentation that can disrupt hydrologic processes and gene flow. The vernal pool protection commitment is large enough to assemble a Reserve System of interconnected vernal pool complexes that spans the north-south axis of the Valley RAA. Protecting large, interconnected vernal pool landscapes will provide sufficient upland habitat for the protection of vernal pool plant pollinators, provide for dispersal of vernal pool plants and animals, and sustain important predators, such as raptors that prey on rodents and rabbits (U.S. Fish and Wildlife Service 2005).

"The proportion of vernal pools to seasonal wetlands that will be protected will be equal to or greater than this proportion within vernal pool complexes lost as a result of Covered Activities. After restoration and creation is successfully completed (VPCG-1.2), a total of at least 820 wetted acres (790 acres protected and 30 acres restored), and up to 1,690 wetted acres if the proposed maximum allowable loss of wetland and aquatic community occurs (790 acres protected and 900 acres restored), of vernal pool constituent habitats will be protected and restored on the Reserve System (Tables 5-3 and 5-4). The vernal pool complex acre commitment and vernal pool complex reserve design criteria (see Section 5.3.1.5.2, *Vernal Pool Complexes and Grassland Natural Communities*) are intended to be large enough to ensure that extensive amounts of vernal pools, seasonal wetlands, and swales are protected within an upland matrix to facilitate the conservation and recovery of covered vernal pool branchiopods within the Plan Area, consistent with the Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon (U.S. Fish and Wildlife Service 2005) and Section 2820 (a)(4)(C) of the NCCP Act. Section 5.2.6.1, *Vernal Pool Complex and Grassland Natural Communities*, describes how the Plan's conservation strategy for the vernal pool complex and grassland natural community is consistent with the recovery plan for these species."



PCCP Objective VPCG 1.2 (*Restore/Create Vernal Pool Complexes*), as set forth on pages 5-17 and 5-18, is as follows: "In addition to the protection of 17,000 acres of existing vernal pool complex, restore/create 3,000 acres of vernal pool complex in the Reserve System by Year 35, independent of effects. Within the 20,000 acres of protected and restored/created vernal pool complex, restore/create vernal pool constituent habitats to provide habitat for covered vernal pool branchiopods (Table 5-5). At least 30 wetted acres of vernal pools will be restored/created independent of effects (Table 5-4). Assuming all effects occur, an additional 870 acres of vernal pool constituent habitat will be restored as mitigation (Table 5-4). If the proposed maximum allowable effect occurs, restoration totals will be 900 acres of vernal pool constituent habitat, of which a minimum of 326 acres would be delineated as vernal pool wetlands (Table 5-4). At least 34 percent of all effects on vernal pool constituent habitat will be mitigated as vernal pool wetlands (up to 290 acres). The proportion of vernal pool wetlands to seasonal wetlands that will be restored/created will be equal to or greater than the proportion lost as a result of Covered Activities."

The Rationale for this objective, laid out on page 5-18, is as follows: "Vernal pool complexes have been degraded in western Placer County and throughout their range in southern Oregon and California by direct disturbance, invasion of non-native species, and by alteration of hydrological patterns. For many complexes, habitat restoration may be necessary to regain proper functioning of a vernal pool ecosystem (U.S. Fish and Wildlife Service 2005).

"The Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon (U.S. Fish and Wildlife Service 2005) recognizes that vernal pool restoration and creation may be valuable recovery tools for some vernal pool species. Although vernal pool fairy shrimp and vernal pool tadpole shrimp are known to occupy restored and created pools, data on long-term persistence of these species in restored and created pools are lacking. For this reason, the recovery plan states that the order of preference for recovery of vernal pool species is, first, protection of existing habitat, followed by restoration of former or degraded habitat, and lastly, creation of vernal pools if necessary to maintain the range of vernal pool habitat. The Plan therefore relies primarily on protection of existing vernal pool complexes, but includes a restoration and creation component to supplement the vernal pool complex protection and to expand and connect existing vernal pool complexes in the Plan Area.

"The acre commitment for restoration of vernal pool complex will support vernal pools at densities comparable to naturally occurring vernal pool complexes in the Plan Area. The result will be a substantial increase in the amount of interconnected vernal pool complexes in the Reserve System, thereby reducing landscape-level fragmentation and increasing permeability for Covered Species."

PCCP Objective VPCG-2.1 (*Enhance Vernal Pool Vegetation and Hydrology*), as stated on page 5-20 of the PCCP, is to "[e]nhance the vegetation and hydrology of degraded vernal pools and seasonal wetlands in the Reserve System to a self-sustaining natural hydroperiod (timing, frequency, and duration of inundation), and to sustain the vernal pool complex natural community, including associated covered vernal pool species."

The Rationale for this objective, laid out on the same page, is as follows: "Altered hydrology of vernal pool complexes can change the timing, frequency, and duration of vernal pool inundation, which can create conditions that render vernal pools unsuitable or less suitable for vernal pool species (U.S. Fish and Wildlife Service 2005, 2007). Vernal pool hydrology has been altered by hydrologic barriers such as roads or canals, and the diversion of urban runoff and agriculture. Diversion of urban runoff and agriculture can increase pond timing and duration, converting vernal pools to perennial ponds that are incapable of supporting vernal pool species. Many vernal pools in the Plan Area have become degraded as a result of past agricultural practices. This objective will provide for the enhancement of existing, degraded vernal pools and seasonal wetlands by rehabilitating them to the appropriate hydrological conditions for sustaining covered vernal pool species within the Reserve System. This objective will also provide for the enhancement of native vegetation within the vernal pools through control of invasive species and thatch build-up.

"Objective VPCG-1.1 requires the protection of at least 790 acres of vernal pool constituent habitats consisting of covered vernal pool branchiopod habitat, but this acreage may include vernal pools and seasonal wetlands that have been degraded and have low habitat value for covered vernal pool branchiopods (Tables 5-3). Objective VPCG-2.1 requires that degraded vernal pools and seasonal wetlands in the Reserve System be enhanced to increase their habitat value for the covered vernal pool branchiopods."

PCCP Objective AW-1.1 (*Protect Aquatic/Wetlands Complex Natural Community*), found in Section 5.2.6.2 (Aquatic/Wetlands Complex Natural Communities) on page 5-21, is to "[p]rotect 600 acres of aquatic/wetlands complex natural community (400 acres in the Valley and 200 acres in the Foothills). The 600 acres of aquatic/wetlands complex will include at least 586 acres of wetlands (e.g., fresh emergent marsh, lacustrine, non-vernal pool seasonal wetland), of which at least 256 acres will be fresh emergent marsh (Table 5-3)."

The Rationale for this Objective, on pages 5-21 and 5-22, is as follows: "The assembly of the Reserve System will substantially increase the amount of protected aquatic/wetlands complex natural community in the Plan Area. After restoration and creation is successfully completed (Table 5-4), a total of at least 606 wetted acres (and up to 989 wetted acres if the proposed maximum allowable effects on wetland and aquatic community occurs) of wetland and aquatic complex community will be protected and restored on the Reserve System. The protection and restoration commitments (Objectives AW-1.1 and AW-1.2) provide for the conservation and recovery of some of the Covered Species in the Plan Area, in addition to mitigating indirect effects and the direct effects on up to 260 acres of aquatic/wetland constituent habitats.

"The protection commitments for the wetland and aquatic natural community are intended to be large enough with commitments for each constituent habitat to protect the range of wetland and aquatic types in the Plan Area. The net effect will be an increase in acreage and ecological function of wetland and aquatic communities, which provides habitat for giant garter snake, western pond turtle, California red-legged frog, tricolored blackbird, California black rail, and a diversity of native species.



"Wetland and aquatic communities will be protected, restored, and created within a matrix of upland natural communities (e.g., grasslands and oak woodlands) to protect watershed integrity and to provide adjacent habitat for Covered Species necessary for nesting, migrating, dispersing, and aestivating."

PCCP Objective AW-1.2 (*Restore/Create Aquatic/Wetland Complex Natural Community*), found on page 5-22, reads as follows: "In addition to the protection of 600 acres of existing aquatic/wetland complex, restore and create aquatic/wetland natural community by restoring fresh emergent marsh, lacustrine, and non-vernal pool seasonal wetland constituent wetlands. At least 20 acres of fresh emergent marsh will be restored independent of effects. Additional restoration/creation will occur dependent on effect at a 1.5:1 ratio of restored/created to affected aquatic/wetland types. In the Valley, at least 40 percent of the restoration dependent on effects will be fresh emergent marsh. In the Foothills, at least 50 percent of the restoration dependent on effects will be fresh emergent marsh. The remaining 10 percent may occur in the Valley or the Foothills. Restoration dependent on effect may result in an additional 390 acres of aquatic/wetland type wetlands restored/created as mitigation. If the proposed maximum allowable effect on aquatic/wetland complex occurs, independent and dependent restoration will total 410 wetted acres of aquatic/wetland complex community of which a minimum of 196 acres would be delineated as fresh emergent marsh (Table 5-4)."

The Rational for this Objective, found on page 5-22, reads as follows: "The restoration and creation of at least 20 acres of fresh emergent wetland, and up to 410 additional acres of aquatic/wetland complex constituent habitats (fresh emergent marsh, lacustrine, and/or non-vernal pool seasonal wetland) if the proposed maximum allowable effects occur, will result in a net increase in the aquatic/wetland complex natural community in the Plan Area. Aquatic/wetland type wetlands will be restored and created to mitigate in-kind for affected habitat. Aquatic/wetland creation will occur when suitable land is not available for restoration.

"Aquatic/wetland complex natural communities will be restored and created to provide habitat (e.g., fresh emergent marshes and basking sites around the perimeter of ponds) for Covered Species, including giant garter snake, western pond turtle, California red-legged frog, tricolored blackbird, and California black rail. Aquatic/wetland complex communities will be restored and created within a matrix of upland natural communities (e.g., grasslands and oak woodlands) to protect watershed integrity and to provide adjacent habitat for Covered Species necessary for nesting, migrating, dispersing, and aestivating."

PCCP Objective AW-1.3 (*Maintain and Enhance Wetlands and Ponds*), found on pages 5-22 and 5-23, is to "[m]aintain and enhance hydrological functions, native biodiversity, and habitats for populations of Covered Species in all protected aquatic/wetland complexes within the Reserve System."

The Rationale for Objective AW-1.3, found on PCCP page 5-23, is as follows: "Wetlands and ponds will be maintained and enhanced throughout the Reserve System. Achieving this objective will ensure that appropriate hydrologic conditions and ecosystem functions are maintained and enhanced to support aquatic/wetland complex communities in the Reserve System, consistent with performance standards

as described in Conservation Measure 2, *Manage and Enhance the Reserve System*, and in Chapter 7, *Monitoring and Adaptive Management Program*. These hydrologic conditions include inundation regimes suitable to provide habitat for Covered Species. Ecosystem functions will be maintained and enhanced, for example, to provide suitable vegetation structure and composition in aquatic/wetland complex communities. Vegetation provides cover and basking sites for Covered Species and native species. However, excessive and invasive vegetation reduces the quality and extent of aquatic and open water habitats for Covered Species and other native species. Fencing of wetlands and ponds and rotational grazing are two methods that will be used to manage sustainable grazing in these habitats.

"Where predators such as bullfrog and bass are present, ponds may be drained to remove those aquatic predators. Plan Area ponds provide habitat for western pond turtle and California red-legged frog. These ponds are frequently dominated by non-native predators (e.g., bullfrog). Bullfrogs and several species of bass are known to prey upon the eggs and tadpoles of California red-legged frog, as well as western pond turtle hatchlings and juveniles (Moyle 1973; Holland 1991). Hatchlings of wood ducks, mallards, and even Canada geese often fall prey to largemouth bass."

Notwithstanding the above, without compliance with the CARP and CFGC, the proposed project could have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel is currently undeveloped and, based on Figure 6-1a of the RVSP EIR, consists primarily of annual grasslands with seasonal wetlands located on the southeast portion of the parcel. As discussed under Impact 6-1 of the RVSP EIR, buildout of the entire RVSP could result in the permanent loss of approximately 1.871 acres of wetlands or other waters of the Unites States, as well as 0.077-acre of non-jurisdictional wetland features. The RVSP EIR included Mitigation Measures 6-1a, 6-1c, and 6-1d, which are intended to prevent the loss of jurisdictional and potentially non-jurisdictional wetlands.

At such time the off-site affordable housing parcel gets developed, the future developer would be required by the County to implement RVSP EIR Mitigation Measures 6-1a, 6-1c, and 6-1d, which have been incorporated into this EIR as Mitigation Measures 7-5(b), 7-5(c), and 7-12(l). Mitigation Measure 6-1a of the certified RVSP EIR requires the project applicant mitigate and compensate for loss of jurisdictional and non-jurisdictional wetlands in accordance with USACE Section 404 Permit and RWQCB requirements. In addition, RVSP Mitigation Measure 6-1c establishes BMPs that would be required by the project applicant to avoid potential impacts to wetlands, and Mitigation Measure 6-1d requires the project applicant design final drainage master plan facilities to ensure that drainage features would avoid impacts to wetlands and other jurisdictional waters. As determined in the RVSP EIR, implementation of Mitigation Measures 6-1a, 6-1c, and 6-1d would reduce potential impacts to jurisdictional and potentially non-jurisdictional wetlands to a less-than-significant level.

Conclusion

Based on the above, implementation of RVSP EIR Mitigation Measures 6-1a, 6-1c, and 6-1d, would be required to ensure the potential future development of the off-site affordable housing parcel would result in a less-than-significant impact to wetland habitats. In addition, without compliance with the CARP and CFGC, the proposed project could have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. Therefore, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impacts to a *less-than-significant* level by ensuring that the proposed project would not have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. In addition, at such time the off-site affordable housing parcel gets developed, the future developer would be required to comply with Mitigation Measures 7-12(j) and 7-12(k) related to wetlands prior to development of the parcel.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

7-12(a) Implement the following Mitigation Measures set forth in this EIR:

- *7-3(a) The Permittee shall apply for and be issued coverage under the PCCP to mitigate for all impacts to Covered Species, land cover, and sensitive natural communities. Prior to application approval, additional species surveys may be necessary, and prior to construction, land cover and special habitat fees shall be paid. The Permittee shall comply with the terms of the PCCP Coverage Certificate, including compliance with all avoidance, mitigation, and minimization measures, which may include pre-construction surveys, construction monitoring, and BMPs.*

  PCCP General Condition 3: The proposed project shall pay a land conversion fee for the permanent conversion of natural land cover including VPC Low, VPC Intermediate, and Valley Foothill Riparian Woodland. The fees to be paid shall be those in effect at the time of ground disturbance authorization for each project phase and shall be based on the effect to modeled species habitat at the parcel scale.

  In addition to land conversion, the project would result in permanent direct effects and temporary effects to PCCP Special Habitats as estimated in Table 6 of the Biological Resources Assessment (BRA) prepared for the proposed project. The total special habitat fee obligation including temporary effect fees shall be paid prior to issuance of a

land conversion authorization that allows ground disturbance of a special habitat.

- *7-3(b) PCCP Community Condition 1.1: Prior to land conversion authorization approval, the unavoidable effects to vernal pool type wetlands or their buffers shall be mitigated through payment of special habitat fees. The fees to be paid to the PCA shall be those in effect at the time of land conversion authorization issuance.*

- *7-6(c) PCCP Community Condition 2.2: Prior to land conversion authorization, the applicant shall coordinate with the PCA to determine which In-Stream and Stream System Best Management Practices (BMPs) from Table 7-1 of the Placer County Conservation Plan apply to the proposed project. The applicant shall identify the applicable BMPs on the project's improvement or grading plans. The selected BMPs shall be incorporated into the project's Land Conversion Authorization letter.*

  Prior to land conversion authorization approval, the unavoidable effects to riverine and riparian habitat or their buffers shall be mitigated through payment of special habitat fees. The fees to be paid shall be those in effect at the time of land conversion authorization.

- *7-6(d) PCCP Stream System Condition 1: The project shall be designed to minimize development activities within the stream system to the maximum extent possible.*

- *7-6(e) PCCP Stream System Condition 2: The project's development footprint is directly impacting the Stream System. The area of encroachment is subject to the Stream System Encroachment Special Habitats Fee as described in Chapter 5 of the PCCP User's Guide. Fees shall be paid to the PCA prior to the issuance of any permit or authorization that results in ground disturbance within the Stream System.*

- *7-6(f) PCCP Community Condition 2.1: To the maximum extent possible, the proposed project shall not modify any area within a buffer that extends 50 feet outward from the outermost bounds of the riparian vegetation. The improvement or grading plans shall show the location of the riverine/riparian buffer.*

- *7-11(b) PCCP General Condition 4: The applicant shall restore all temporarily disturbed areas and, one year after project groundbreaking, provide the County with a written assessment of how the performance standards were met. The project would result in temporary effects to special habitats, including*

riverine/riparian, riverine/riparian buffer, and stream system (which includes blue oak woodland). Prior to issuance of land conversion authorization, the project shall pay a fee based on the acres of impact. The fee to be paid shall be that in effect at the time of land conversion authorization issuance. If it is determined by the County or the PCCP biologist that the effects remain one year after groundbreaking activities have commenced, the effects shall be considered permanent and the County project lead shall reassess fees based on those effects.

7-12(b) *PCCP Community Condition 1.2: Prior to land conversion authorization approval, the unavoidable effects to non-vernal pool wetlands or their buffers shall be mitigated through payment of special habitat fees. The fees to be paid to the PCA shall be those in effect at the time of land conversion authorization issuance.*

7-12(c) *PCCP Community Condition 1.3: Prior to land conversion authorization, the project shall demonstrate compliance with the following measures. These measures shall be included on the (improvement or grading) plans.*

1. *Personnel conducting ground-disturbing activities in or around other wetlands must be trained by a qualified biologist in these minimization measures and the permit obligations of project applicants working under the Plan.*
2. *Construction and maintenance vehicles or equipment cannot be refueled within the wetland or its buffer unless a bermed and lined refueling area is constructed and hazardous material absorbent pads are available in the event of a spill.*
3. *No equipment will be present in the wetted portion of the aquatic feature. Equipment may only enter the area when the aquatic feature is dry and there is no forecasted rain within 72 hours. Vehicles will be checked for leaks prior to entering or traveling around the aquatic feature.*
4. *All organic matter must be removed from nets, traps, boots, vehicle tires, and all other surfaces that have come into contact with aquatic features, or potentially contaminated sediments. Items shall be rinsed with clean water before leaving each study site (U.S. Fish and Wildlife Service 2005).*
5. *Measures to minimize the spread of disease and non-native species shall be implemented based on current Wildlife Agency protocols (e.g., Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog, Appendix B, Recommended Equipment Decontamination Procedures [U.S. Fish and Wildlife Service 2005]) and other best available science.*
6. *Used cleaning materials (e.g., liquids) must be disposed of safely and, if necessary, taken off site for proper disposal. Used disposable gloves shall be retained for safe disposal in sealed bags (U.S. Fish and Wildlife Service 2005).*

7. *Native vegetation (shrubs and small trees) must be planted between other wetlands and the development such that the line of sight between other wetlands and the development is shielded. This measure is only required when the reviewing Permittee deems it necessary to shield other wetlands from adjacent development or to avoid direct or indirect effects from the adjacent development (e.g., trespass).*
8. *The reviewing Permittee will make a determination if fencing shall be required on a case-by-case basis. If needed, the type of fencing will match the activity and impact types. For example, projects that have the potential to cause erosion will require erosion-control barriers, and projects that may bring more household pets to a site must have permanent fencing to exclude pets. The temporal requirements for fencing also depend on the activity and impact type. For example, fencing to minimize permanent effects will be permanent, and fencing to minimize short-term effects will be removed after the activity is completed. Permanent fencing will be installed after grading or other construction activities in the area have been completed. If installed, a party responsible for maintenance will be identified prior to construction.*

7-12(d) *PCCP Community Condition 1.4: Prior to ground disturbance, the applicant shall schedule grading and construction in coordination with the PCA to provide the PCA the opportunity to salvage topsoil from the vernal pool wetland if they choose to do so. The applicant shall notify the PCA of their construction schedule within 30 days of the construction start date to allow the PCA the opportunity to salvage soils while the pools are completely dry (generally July through September) and the PCA must make salvage plans sufficiently far in advance so as to not unreasonably impair construction.*

7-12(e) *PCCP Community Condition 2.3: Covered Activities that affect riverine or riparian constituent habitat shall contribute to restoration as mitigation to compensate for loss of riverine or riparian constituent habitat.*

Projects that affect riverine and riparian shall contribute to replacement of these resources. Riverine restoration measures shall be located in the same watershed and salmonid habitat type (e.g., spawning or migrating if the effects occur in a salmonid stream) in which the effects occur.

Generally, restoration and replacement actions shall be undertaken by the PCA and funded by additional fees imposed on projects. Riverine and riparian restoration to offset project effects may be implemented on-site to replace the functions of the riparian woodland degraded or lost to the Covered Activity. Riparian restoration implemented on-site will be credited to Plan restoration targets if the restoration helps to meet the biological goals and objectives of the Plan. When it is deemed

infeasible to implement restoration at the project site, in-kind restoration shall be required at an off-site location or through the payment of fees to the PCA. Stream enhancement shall be implemented in concert with Community Condition 2.2, Minimize Riverine and Riparian Effects.

7-12(f) *PCCP Community Condition 3: Irrigation shall be prohibited in and around the avoided Valley oak woodland. Alteration of onsite hydrology (including from onsite sewage disposal system installation) shall be designed to ensure the Valley oak woodland receives no additional water than pre-project conditions. The Landscape Plans shall demonstrate that irrigation is not placed within the critical root zone of protected trees. Unavoidable effects to individual Valley oak trees or Valley oak woodlands or their 50-foot buffers shall pay the Plan land conversion fee by quantifying impacts as described in Effects on Valley Oak Woodlands of the PCCP User's Guide.*

7-12(g) *Depending on the acreage of aquatic resources within the project area the USACE considers jurisdiction when project permitting occurs, the project applicant shall either apply for coverage under the streamlined PCCP Letter of Permission (LOP) process directly with the USACE using avoidance and minimization guidance from the CARP, a component of the PCCP, or the applicant shall utilize the Western Placer County HCP/NCCP Programmatic General Permit 18 in compliance with the CARP.*

7-12(h) *The applicant shall submit an application to the RWQCB for water quality certification of the PCCP LOP or utilize General Order R5-2020-0048, the Waste Discharge Requirements of the Clean Water Act Section 401 Water Quality Certification for the Western Placer County HCP/NCCP Programmatic General Permit, as applicable, and adhere to the certification conditions.*

7-12(i) *PCCP CARP Authorization Conditions: The project applicant shall comply with the PCCP CARP Authorization Conditions, which are as follows:*

- *CARP Condition 1a: All work within the PCCP plan area that impacts Aquatic Resources of Placer County shall be completed according to the plans and documents included in the CARP application, Water Quality Certification, and, if applicable, Waste Discharge Requirements (WDRs). All changes to those plans shall be reported to Placer County. Minor changes may require an amendment to the CARP Authorization, Water Quality Certification, and, if applicable, WDRs. Substantial changes may render the authorization, Water Quality Certification, and, if applicable, WDRs, void, and a new application may be required.*
- *CARP Condition 1b: All deviations from plans and documents provided with the application and approved by Placer County Community Development Resource Agency shall be reported*

to Placer County Community Development Resource Agency immediately.

- *CARP Condition 2: Any construction within the Stream System shall be implemented in a way to avoid and minimize impacts to vegetation outside the construction area. All preserved wetlands, other Aquatic Resources of Placer County, and the Stream Zone shall be protected with bright construction fencing. Temporary fencing shall be removed immediately upon completion of the project.*
- *CARP Condition 3: Erosion control measures shall be specified as part of the CARP application, and the application shall not be complete without them. All erosion control specified in the permit application shall be in place and functional before the beginning of the rainy season and shall remain in place until the end of the season. Site supervisors shall be aware of weather forecasts year-round and shall be prepared to establish erosion control on short notice for unusual rain events. Erosion control features shall be inspected and maintained after each rainfall period. Maintenance includes, but is not limited to, removal of accumulated silt and the replacement of damaged barriers and other features.*
- *CARP Condition 4: All required setbacks shall be implemented according to the Western Placer County HCP/NCCP Condition 4 (Western Placer County HCP/NCCP Section 6.1.2).*
- *CARP Condition 5: All work in aquatic resources within the Stream System shall be restricted to periods of low flow and dry weather between April 15 and October 15, unless otherwise permitted by the Placer County Community Development Resource Agency and approved by the appropriate State and federal regulatory agency. Work within aquatic resources in the Stream System outside of the specified periods may be permitted under some circumstances. The project applicant shall provide Placer County Community Development Resource Agency with the following information: a) the extent of work already completed; b) specific details about the work yet to be completed; and c) an estimate of the time needed to complete the work in the Stream System.*
- *CARP Condition 6: Weather forecasts should be monitored, and erosion control established before all storm events.*
- *CARP Condition 7: Following work in a stream channel, the low flow channel shall be returned to its natural state to the extent possible. The shape and gradient of the streambed shall be restored to the same gradient that existed before the work to the extent possible.*
- *CARP Condition 8: Except for site preparation for the installation and removal of dewatering structures, no excavation is allowed in flowing streams unless dredging WDRs are issued by the RWQCB. Detailed plans for dewatering must be part of the application.*

- *CARP Condition 9: Temporary crossings as described in the application shall be installed no earlier than April 15 and shall be removed no later than October 15, unless otherwise permitted by the Placer County Community Development Resource Agency and approved by the appropriate State and federal regulatory agency. This work window could be modified at the discretion of Placer County and the CDFW.*
- *CARP Condition 10: Vehicles other than necessary earthmoving and construction equipment shall not be allowed within the Stream System after the section of stream where work is performed is dewatered. The equipment and vehicles used in the Stream System shall be described in the application.*
- *CARP Condition 11: Staging areas for equipment, materials, fuels, lubricants, and solvents shall be located outside the stream channel and banks and away from all preserved aquatic resources. All stationary equipment operated within the Stream System shall be positioned over drip-pans. Equipment entering the Stream System shall be inspected daily for leaks that could introduce deleterious materials into aquatic resources. All discharges, unintentional or otherwise, shall be reported immediately to the Placer County Community Development Resource Agency. The Placer County Community Development Resource Agency shall then immediately notify the appropriate state and federal agencies.*
- *CARP Condition 12: Cement, concrete, washings, asphalt, paint, coating materials, oil, other petroleum products, and other materials that could be hazardous to aquatic life shall be prevented from reaching streams, lakes, or other water bodies. These materials shall be placed a minimum of 50 feet away from aquatic environments. All discharges, unintentional or otherwise, shall be reported immediately to the Placer County Community Development Resource Agency. The Placer County Community Development Resource Agency shall then immediately notify the appropriate State and federal agencies.*
- *CARP Condition 13: During construction, litter or construction debris shall not be dumped into water bodies or other aquatic resources, nor shall it be placed in a location where it might be moved by wind or water into aquatic resources. All construction debris shall be removed from the site upon completion of the project.*
- *CARP Condition 14: Only herbicides registered with the California Department of Pesticide Regulation shall be used in streams, ponds, and lakes, and shall be applied in accordance with label instructions. A list of all pesticides that may be used in the project area shall be submitted to the Placer County Community Development Resource Agency before use. The PCCP does not authorize the use of herbicides; herbicide application is not a Covered Activity.*

- *CARP Condition 15: Before beginning construction, the project applicant shall have a valid CARP authorization or waiver notice. In order to obtain a permit, the project applicant shall pay all mitigation fees or purchase appropriate credits from an agency-approved mitigation bank.*
- *CARP Condition 16: A copy of the CARP conditions and Water Quality Certification and WDRs shall be given to individuals responsible for activities on the site. Site personnel (employees, contractors, and subcontractors) shall be adequately informed and trained to implement all permit, Water Quality Certification, and WDR conditions and shall have a copy of all permits available on-site at all times for review by site personnel and agencies.*
- *CARP Condition 17: Work shall not disturb active bird nests until young birds have fledged. To avoid impacts to nesting birds, any disturbance shall occur between September 1 and February 1 prior to the nesting season. Tree removal, earthmoving or other disturbance at other times is at the Placer County Community Development Resource Agency's discretion and shall require surveys by a qualified biologist to determine the absence of nesting birds prior to the activity.*
- *CARP Condition 18: All trees marked for removal within the Stream System must be shown on maps included with the Application. Native trees over five inches diameter at breast height (DBH) shall not be removed without the consent of the Placer County Community Development Resource Agency.*
- *CARP Condition 19: The Placer County Community Development Resource Agency shall be notified immediately if threatened or endangered species that are not Covered Species are discovered during construction activities. Placer County Community Development Resource Agency shall suspend work and notify the USFWS, National Marine Fisheries Service (NMFS), and the CDFW for guidance.*
- *CARP Condition 20: Wildlife entering the construction site shall be allowed to leave the area unharmed or shall be flushed or herded humanely in a safe direction away from the site.*
- *CARP Condition 21: All pipe sections shall be capped or inspected for wildlife before being placed in a trench. Pipes within a trench shall be capped at the end of each day to prevent entry by wildlife, except for those pipes that are being used to divert stream flow.*
- *CARP Condition 22: At the end of each workday, all open trenches will be provided with a ramp of dirt or wood to allow trapped animals to escape.*
- *CARP Condition 23: If human remains or cultural artifacts are discovered during construction, the applicant shall stop work in the area and notify the Placer County Community Development Resource Agency immediately. Work shall not continue in the area until the County Coroner and a qualified archaeologist*

have evaluated the remains, conducted a survey, prepared an assessment, and required consultations are completed.

Off-Site Affordable Housing Parcel

7-12(j) Implement the following Mitigation Measure set forth in this EIR:

- *7-5(c) Implement RVSP EIR Mitigation Measure 6-1c:*

  The following BMPs to avoid impacts to wetlands in the Plan Area shall be implemented for all construction related to the proposed project:

  - *Four-foot-tall, brightly colored (yellow or orange), synthetic mesh material or chainlink fencing shall be installed at the edge of all avoided wetlands and a minimum of 50 feet from the edge of tributaries to Dry Creek prior to any construction equipment being moved on site or any construction activities taking place. Fencing shall be continuously maintained and shall be the responsibility of an onsite compliance officer designated by the developer. Fencing is to remain intact until construction is complete and may not be removed without the written consent of the County.*
  - *Ground disturbance associated with construction, including vehicle operation/parking and construction material storage, shall be prohibited within wetlands or within 50 feet of the edge of tributaries to Dry Creek.*
  - *Where working areas encroach on live or dry streams, lakes, or wetlands, RWQCB-approved physical barriers adequate to prevent the flow or discharge of sediment into these systems shall be constructed and maintained between working areas and streams, lakes and wetlands. Discharge of sediment into streams shall be held to a minimum during construction of the barriers. Discharge will be contained through the use RWQCB-approved measures that will keep sediment from entering jurisdictional waters beyond the project limits.*
  - *Oily or greasy substances originating from the Contractor's operations shall not be allowed to enter or be placed where they will later enter a live or dry stream, pond, or wetland.*
  - *Asphalt concrete shall not be allowed to enter a live or dry stream, pond, or wetland.*
  - *All off-road construction equipment shall be cleaned of potential noxious weed sources (mud, vegetation) before entry into the site and after entering a potentially infested area before moving on to another area, to help ensure noxious weeds from outside of the Plan Area are not introduced into the Plan Area. The contractor shall*

employ whatever cleaning methods (typically the use of a high-pressure water hose) are necessary to ensure that equipment is free of noxious weeds. Equipment shall be considered free of soil, seeds, and other such debris when a visual inspection does not disclose such material. Disassembly of equipment components or specialized inspection tools is not required. Equipment washing stations shall be placed in areas that afford easy containment and monitoring and that do not drain into sensitive (riparian, wetland, etc.) areas.

- *To further minimize the risk of introducing additional nonnative species into the area, only native plant species appropriate for the Plan Area will be used in any erosion control or revegetation seed mix or stock. No dry-farmed straw will be used, and certified weed-free straw shall be required where erosion control straw is to be used. In addition, any hydroseed mulch used for revegetation activities must also be certified weed-free.*
- *The Applicant will restore and revegetate all temporary construction disturbance areas. Temporary disturbance areas will be restored to the original topography and hydrology, disked to relieve compaction, and planted with an erosion control mix composed only of native species. The proposed restoration and revegetation measures shall be summarized in the storm water pollution prevention plan for the project and submitted to Placer County for approval prior to initiation of construction activities.*

7-12(k) *Implement RVSP EIR Mitigation Measure 6-1d:*

The final drainage master plan will be developed to ensure that the stormwater drainage facilities will avoid the excavation or placement of fill within jurisdictional Waters of the U.S.

7-13 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. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could 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.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the biological and habitat conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to 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 would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

Wildlife corridors link areas of suitable wildlife 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. Fragmentation also occurs when a portion of one or more habitats is converted into another habitat, such as when woodland or scrub habitat is altered or converted into grasslands after a disturbance, such as fire, mudslide, or grading activities. Wildlife corridors mitigate the effects of fragmentation by (1) allowing animals to move between remaining habitats, thereby permitting depleted populations to be replenished and promoting genetic exchange; (2) providing escape routes from fire, predators, and human disturbances, thereby reducing the risk of catastrophic events (such as fire or disease) on population or local species extinction; and (3) serving as travel routes for individual animals as they move within their home ranges in search of food, water, mates, and other needs.

The VFRW along either side of the intermittent drainage within the project site serves as a wildlife corridor for a wide variety of terrestrial wildlife. However, the wildlife corridor is planned to be preserved within an avoidance area that maintains the on-site VFRW, and that is similar in width to the adjacent preserved corridor along this drainage to the west. The only potential barrier to wildlife movement proposed along the intermittent drainage would be a creek crossing for a pedestrian trail. The creek crossing would be designed to be large enough to accommodate terrestrial wildlife movement under the pedestrian bridge. Additionally, the VFRW along Dry Creek in the northern portion of the off-site sewer lift station improvements area likely serves as a wildlife corridor for terrestrial wildlife. The proposed project would include excavation of the intermittent drainage in the area to expand Dry Creek floodwater storage (see Figure 7-6). Although some trees may need to be removed prior to excavation, relatively few trees would be removed, and following construction, the area would continue to provide habitat, and would not impede wildlife movement.

As such, the proposed project would not 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.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel is currently undeveloped and, based on Figure 6-1a of the RVSP EIR, consists primarily of annual grasslands with seasonal wetlands located on the southeast portion of the parcel. As discussed under Impact 6-15 of the RVSP EIR, the planning area is partly surrounded by arterial roads and residential development. The RVSP EIR determined that the only portion of the planning area

that provides a significant movement corridor for wildlife occurs along Dry Creek, which is planned to be developed with a multi-use trail and buried water and sewer pipelines, and does not include the off-site affordable housing parcel. As such, buildout of the planning area, including the off-site affordable housing parcel, is not expected to substantially impede or alter wildlife movement.

Conclusion

Based on the above, the proposed project would not 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. In addition, because the off-site affordable housing parcel is not included within the wildlife movement corridor identified along Dry Creek in the RVSP EIR, the potential future development of the off-site affordable housing parcel would not interfere substantially with the movement of any native wildlife species or with established migratory wildlife corridors. Therefore, a ***less-than-significant*** impact would occur. Compliance with Community Condition 2 would also require that a 50-foot buffer be established between construction activities and the outermost bounds of riparian vegetation, thus further ensuring that wildlife corridors would be preserved.

Mitigation Measure(s)

None required.

7-14 Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, or have a substantial adverse effect on the environment by converting oak woodlands or impacting individual trees. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, or have a substantial adverse effect on the environment by converting oak woodlands or impacting individual trees.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the biological and habitat conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, or have a substantial adverse effect on the environment by converting oak woodlands or impacting individual trees, would be similar. Thus, the following discussion applies to both the proposed project, and the off-site sewer lift station improvements area.

As detailed in the Existing Environmental Setting section of this chapter, the study area is comprised of a variety of vegetation communities/PCCP land covers, including

annual brome grassland/VPC land cover, VFRW, and urban areas. Table 7-6 provides the acreages of land covers/vegetation communities that would be permanently disturbed, temporarily disturbed, or avoided, as a result of the proposed project.

Table 7-6
Acres of Terrestrial Land Cover Impacts within the Study Area

Land Covers	Permanent Impacts[1]	Temporary Impacts[1]	No Land Cover Conversion[1]	Total[1]
VFRW	1.3	--	2.5	3.8
VPC Intermediate	79.0	--	3.0	82.0
VPC Low	0.8	--	--	0.8
Road	--	8.1	--	8.1
Urban Parks	--	0.5	--	0.5
Urban/Suburban	--	2.2	--	2.2
Total	**81.1**	**10.8**	**5.5**	**97.4**

[1] The estimates within this table are preliminary and subject to change during the PCCP application and permitting process.

Source: Madrone Ecological Consulting, 2026.

As detailed in Table 7-6, development of the proposed project would result in the permanent disturbance of approximately 81.1 acres of vegetation communities/land covers, including approximately 1.3 acres of VFRW, and temporary disturbances to approximately 10.8 acres. To address disturbances to the aforementioned vegetation communities/land covers, development fees would be applied for the proposed project's conversion of vegetation communities, in accordance with PCCP guidelines. According to the PCCP's Land Conversion Fee Schedule, the Plan Area A – Valley, Fee 1c for "All other development" applies to this project, as well as any applicable special habitat fees.

With respect to potential impacts to native trees and woodlands, as discussed above, the BRA did not quantify the number of native trees and woodlands within the study area. However, as previously discussed, the proposed project would result in permanent impacts to approximately 1.3 acres of VFRW. Project impacts to such resources would require payment of land cover conversion fees to the PCA, which would be used to set aside similar or better lands elsewhere.

CEQA mitigation for the loss of woodland habitat in counties is governed by Public Resources Code Section 21083.4, enacted in 2004 as part of the Oak Woodlands Conservation Act (Stats. 2004, c. 732, Section 1). The statute provides a framework by which counties shall mitigate under CEQA for any "conversion of oak woodlands that will have a significant effect on the environment." (Public Resources Code, Section 21083.4, subd. [b].) The statute authorizes conservation as a desired form of mitigation, which may be effectuated through two means: (i) "the use of conservation easements" on existing oaks woodlands or (ii) contributions into the State's "Oak Woodland Conservation Fund." (*Id*., subds. (b)(1), (b)(3).) Tree-planting and restoration of former oak woodlands are other available options, though tree-planting cannot be used to fulfil more than one-half of the mitigation requirements for an

individual project. (*Id.*, subds. (b)(2).) Because the PCCP includes mitigation requirements for oak woodland conversion that is a form of "conservation," such reliance is consistent with the approaches allowed under Section 21083.4. Reliance on an HCP/NCCP such as the PCCP is allowed under the statutory statement that mitigation for the loss of oak woodlands can be satisfied through "[o]ther mitigation measures developed by the county." (Section 21083.4, subd. (b)(4).) In addition, Section 21083.4(d)(1) provides that "Projects undertaken pursuant to an approved Natural Community Conservation Plan…that includes oaks as a covered species or that conserves oaks through natural community conservation preserve designation and implementation and mitigation measures that are consistent with this section…" are exempt from the requirements of Section 21083.4.

Based on the above, without compliance with requirements set forth by the PCCP to address tree impacts, the proposed project could conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Off-Site Affordable Housing Parcel

Several trees are present along the northern and western boundaries of the off-site affordable housing parcel. In addition, as discussed under Impact 6-13 of the RVSP EIR, the planning area contains approximately 700 native trees, the majority of which have protected status. As such, buildout of the RVSP could result in the significant loss of native tree species regulated under the Placer County Code. However, the RVSP EIR included Mitigation Measures 6-13a and 6-13b, which are intended to prevent the loss of protected native trees.

At such time the off-site affordable housing parcel gets developed, the future developer would be required by the County to implement RVSP EIR Mitigation Measures 6-13a and 6-13b, which have been incorporated into this EIR as Mitigation Measures 7-14(c) and 7-14(d). Mitigation Measure 6-13a of the certified RVSP EIR requires the project applicant to comply with Placer County Tree Preservation Ordinance. In addition, RVSP Mitigation Measure 6-13b would preserve and protect existing native trees not proposed for removal. As determined in the RVSP EIR, implementation of Mitigation Measures 6-13a and 6-13b would reduce potential impacts to native trees protected under the Placer County Tree Preservation Ordinance to a less-than-significant level.

Conclusion

Based on the above, implementation of RVSP Mitigation Measures 6-13a and 6-13b would be required to ensure the potential future development of the off-site affordable housing parcel would result in a less-than-significant impact to native trees protected under the Placer County Tree Preservation Ordinance. In addition, without compliance with requirements set forth by the PCCP to address tree impacts, the proposed project could conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. Therefore, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impacts to a *less-than-significant* level by ensuring compliance with local policies or ordinances

protecting biological resources, such as a tree preservation policy or ordinance, by avoiding a substantial loss of oak woodland habitat, and by limiting, and requiring mitigation for, impacts on individual trees.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

7-14(a) *Implement the following Mitigation Measure set forth in this EIR:*

- *7-3(a) The Permittee shall apply for and be issued coverage under the PCCP to mitigate for all impacts to Covered Species, land cover, and sensitive natural communities. Prior to application approval, additional species surveys may be necessary, and prior to construction, land cover and special habitat fees shall be paid. The Permittee shall comply with the terms of the PCCP Coverage Certificate, including compliance with all avoidance, mitigation, and minimization measures, which may include pre-construction surveys, construction monitoring, and BMPs.*

  PCCP General Condition 3: The proposed project shall pay a land conversion fee for the permanent conversion of natural land cover including VPC Low, VPC Intermediate, and Valley Foothill Riparian Woodland. The fees to be paid shall be those in effect at the time of ground disturbance authorization for each project phase and shall be based on the effect to modeled species habitat at the parcel scale.

  In addition to land conversion, the project would result in permanent direct effects and temporary effects to PCCP Special Habitats as estimated in Table 6 of the Biological Resources Assessment (BRA) prepared for the proposed project. The total special habitat fee obligation including temporary effect fees shall be paid prior to issuance of a land conversion authorization that allows ground disturbance.

7-14(b) *PCCP General Condition 5: Prior to initiation of construction activities, all project construction personnel shall participate in a Worker Environmental Training Program that will educate workers regarding the Covered Species and their habitats, the need to avoid impacts, state and federal protection, and the legal implications of violating environmental laws and regulations. At a minimum this training may be accomplished through tailgate presentations at the project site and the distribution of informational brochures, with descriptions of sensitive biological resources and regulatory protections, to construction personnel prior to initiation of construction work. The signed documentation of training completion by all construction workers shall be submitted to the Placer County Resource Development Agency and the PCA.*

Off-Site Affordable Housing Parcel

7-14(c) Implement RVSP EIR Mitigation Measure 6-13a:

Mitigation for the loss of native trees in the Plan Area shall follow the policies and mitigation guidelines set forth in The Placer County Tree Preservation Ordinance found in Chapter 12, Article 12.16 of the Placer County Code. See Article 12.16 for details on protection, replanting and mitigation for removed trees.

The replacement or replanting of trees for mitigation may occur within the open space areas of the Specific Plan area, with approval of the County. If a suitable area for replacement planting is not available, Placer County's Tree Preservation Ordinance allows mitigation in the form of a contribution to the Tree Preservation Fund. This contribution shall be in an amount sufficient to offset the costs of purchase, planting, and maintenance of all trees planted for mitigation as result of the project.

7-14(d) Implement RVSP EIR Mitigation Measure 6-13b:

Native trees that are not planned for removal shall be preserved and protected per the Placer County Tree Preservation Ordinance, particularly Section 12.16.070, Item "D".

7-15 Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the biological and habitat conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan, would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

As discussed above under the various analyses within this chapter, as the PCCP has been adopted, development fees would be applied for the proposed project's vegetation community impacts and aquatic resources impacts, in accordance with PCCP guidelines. The study area is within Plan Area A (A.1 Valley Potential Future

Growth), which is covered by a comprehensive permit. AMMs, set forth in Chapter 6 of the PCCP, are intended to ensure that adverse effects on Covered Species and natural communities are avoided and minimized. Applicants are required to obtain a signed Certificate of PCCP Authorization form from Placer County for potential impacts to terrestrial and aquatic habitats. During the local impact authorization process, impact fees are calculated utilizing land cover data. Fees include Land Conversion fees and Aquatic/Wetland Special Habitat fees, both of which are applicable to the project. The proposed project would participate in the PCCP for incidental take coverage and mitigation for effects to waters of the U.S. and State. Payment of all applicable development fees, as well as implementation of BMPs and AMMs pursuant to the PCCP, as required by the applicable mitigation measures in this chapter, would ensure the proposed project is in compliance with the provisions of the PCCP.

Off-Site Affordable Housing Parcel

Similar to the proposed project, the off-site affordable housing parcel is within PCCP Plan Area A, which is covered by a comprehensive permit. However, it should be noted that although the off-site affordable housing parcel is located within the boundaries of the PCCP, the potential future development of the off-site affordable housing parcel would not be required to participate in the PCCP for incidental take coverage of species and natural communities covered under the PCCP, given that the RVSP EIR was certified prior to adoption of the PCCP. The PCCP, which is an HCP under FESA and a NCCP under the California Natural Community Conservation Planning Act, was adopted by Placer County on September 1, 2020. In addition, the mitigation measures set forth by the RVSP EIR, to which future development of the off-site affordable housing parcel would be subject, provide equally effective mitigation to reduce potential project impacts to similar levels as those set forth by the PCCP. Thus, the potential future development of the off-site affordable housing parcel would not conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan.

Conclusion

Based on the above, through compliance with all applicable requirements set forth by the PCCP, as well as the mitigation measures included in the RVSP EIR, the proposed project and potential future development of the off-site affordable housing parcel would not conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or State habitat conservation plan, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required. The proposed project is required to participate in the PCCP through the avoidance, minimization, and mitigation measures set forth in this chapter, and for the off-site affordable housing parcel, should it be developed in the future, Mitigation Measure 7-9(e) provides the option for Swainson's hawk coverage through the PCCP.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the

change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

The geographic scope for the cumulative biological resources analysis generally includes buildout of the proposed project in conjunction with the DCWPCP. For more details regarding the cumulative setting, refer to Chapter 20, Statutorily Required Sections, of this EIR.

7-16 Cumulative loss of habitat for special-status species. Based on the analysis below, the project's incremental contribution to the significant cumulative impact is *less than cumulatively considerable*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could result in the cumulative loss of habitat for special-status species.

Proposed Project, Off-Site Sewer Lift Station Improvements Area, and Off-Site Affordable Housing Parcel

Because the biological and habitat conditions of the proposed project area, off-site sewer lift station improvements area, and off-site affordable housing parcel are similar, the potential for such components to result in the cumulative loss of habitat for special-status species would be similar. Thus, the following discussion applies to the proposed project, the off-site sewer lift station improvements area, and the off-site affordable housing parcel.

The DCWPCP includes several approved developments, including, but not limited to, the following: the under-construction Creekview Ranch Project, approximately 1.59 miles southeast of the project site; the under-construction Brady Vineyard Subdivision project, approximately 2.25 miles to the east of the project site down Vineyard Road; the under-construction Double S Ranch Subdivision Project, approximately 1.28 miles east of the project site; the Placer Vineyards Specific Plan (PVSP), portions of which are currently under construction west of the project site, across Walerga Road; the RVSP, currently under construction southeast of the PVSP; the approved Mill Creek Project, approximately 1.80 miles to the southeast of the project site; and the under-construction The Ranch Project, approximately 1.50 miles east of the project site. Implementation of the proposed project and potential future development of the off-site affordable housing parcel, in combination with other development within the DCWPCP area, would result in a significant cumulative impact related to the loss of special-status species habitat.

As discussed above, the study area contains a variety of vegetation communities/land covers, including annual brome grassland/VPC land cover, VFRW, and urban areas. In addition, the study area is comprised of aquatic resources, including irrigated wetland, seasonal wetland, seasonal wetland swale, vernal pools, ephemeral drainages, intermittent drainages, and roadside ditches. Development of the proposed on-site and off-site project components would result in potential impacts to portions of the foregoing areas. Such potential impacts are detailed in Table 7-6 above. Additionally, according to the RVSP EIR, the off-site affordable housing parcel is

comprised of annual grasslands and seasonal wetland. As discussed throughout this chapter, the above areas represent potential habitat for various special-status species listed in Table 7-3.

This chapter provides a wide range of mitigation to minimize potential adverse effects to habitat for special-status species. Mitigation measures have been set forth in this chapter to ensure that the proposed project complies with all applicable PCCP AMMs, including, but not limited to, AMMs to address potential impacts to PCCP Covered Species, such as northwestern pond turtle, Swainson's hawk, and burrowing owl, as well as AMMs for potential impacts to riparian woodlands and on-site wetlands. In addition, relevant mitigation measures from the RVSP EIR have been incorporated throughout this chapter to ensure that potential adverse effects to habitat for special-status species within the off-site affordable housing parcel, should the applicant proceed with development.

While the proposed project would result in the loss of a portion of the existing on-site habitat, the proposed parks, open space, and trails components would include a total of 12 acres of green space preserved on-site, consistent with DCWPCP Policy 5, which requires the identification of all important fish and wildlife areas within the DCWPCP plan area and protection of such areas from urban/suburban encroachment, where feasible. Such preservation would ensure that portions of the existing habitat within the project site remain undisturbed, following implementation of the proposed project.

The proposed project and the potential future development of the off-site affordable housing parcel would not include the conversion of any lands not previously identified for development and would include protection of portions of the project site within designated open space, as discussed above. Also notable is the PCCP's identification of the project site and off-site affordable housing parcel as areas of Valley Potential Future Growth Area (A1) (PCCP Volume 1, pg. 2-34), as well as the majority of the DCWPCP. The PCCP EIR/EIS concluded that impacts to biological resources related to future growth identified in the PCCP would be less-than-significant with implementation of the Plan's conservation strategy.[8] To ensure the preservation of special-status plant and wildlife species, sensitive habitats, and State and federally protected wetlands, the PCCP includes the establishment of a RAA, an area designated in the PCCP within which a connected Reserve System will be assembled. The conservation strategy would establish most of the Reserve System in the RAA.

The PCA, created to implement the HCP/NCCP and the CARP, will acquire approximately 47,300 acres for natural and semi-natural community protection and restoration over the 50-year permit term for the HCP/NCCP. On July 23, 2025, the PCA approved 4,245 acres of Prime farmland, open space, and streams, known as Racoon Creek Ranch, located north of the City of Lincoln within Placer County to be established as conservation easements under the PCCP Reserve System. Funding for the acquisition of conservation easements and the restoration of Racoon Creek Ranch comes from mitigation fees collected from development and public infrastructure projects in western Placer County that are covered by the PCCP, and is

[8] Placer County. *Placer County Conservation Program Final Environmental Impact Statement/Environmental Impact Report* [pg. 4.3-47]. May 2020.

being paid for over time as fees are collected. With the addition of Racoon Creek Ranch, approximately 9,100 total acres of habitat have been added to the PCCP Reserve System to be protected and restored since the program began implementation in 2021.

Overall, with incorporation of the mitigation measures set forth herein, the proposed project would be required to comply with all applicable AMMs and pay all applicable fees to address potential impacts to biological resources within the study area. Furthermore, at such time the off-site affordable housing parcel gets developed, the future developer would be required to comply with the RVSP mitigation measures included herein to address potential impacts to biological resources within the off-site affordable housing parcel. As such, the proposed project and potential future development of the off-site affordable housing parcel would not result in substantial adverse effects to biological resources protected by CEQA.

As further discussed in Chapter 20 of this EIR, CEQA Guidelines Section 15064, Subdivision (h)(5) states, "[…]the mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable." Therefore, even where cumulative impacts are significant, any level of incremental contribution is not necessarily deemed cumulatively considerable.

In addition, the courts have explicitly rejected the notion that a finding of significance is required simply because a proposed project would result in a net loss of habitat. "[M]itigation need not account for every square foot of impacted habitat to be adequate. What matters is that the unmitigated impact is no longer significant" (*Save Panoche Valley v. San Benito County* [2013] 217 Cal.App.4th 503, 528 (*Save Panoche*), quoting *Banning Ranch Conservancy v. City of Newport Beach* [2012] 211 Cal.App.4th 1209, 1233 [*Banning*)). Stated another way, "[t]he goal of mitigation measures is not to net out the impact of a proposed project, but to reduce the impact to insignificant levels" (*Save Panoche*, *supra*, 217 Cal.App.4th at p. 529, citing *Banning*, *supra*, 211 Cal.App.4th at p. 1233).

The above discussion provides substantial evidence that, while the combined effects on biological resources resulting from approved/planned development throughout the DCWPCP would be considered significant, the incremental contribution to the significant cumulative effect associated with the proposed project and off-site affordable housing parcel would be reduced with implementation of the mitigation measures required in this EIR.

Based on the above, although cumulative buildout of the DCWPCP plan area would result in a significant cumulative impact related to the loss of special-status species habitat, incorporation of the mitigation measures set forth herein would ensure that the incremental contribution of the proposed project and potential future development of the off-site affordable housing parcel to the significant impact would be ***less than cumulatively considerable***.

Mitigation Measure(s)

None required.

8. Cultural Resources

8. CULTURAL RESOURCES

8.1 INTRODUCTION

As discussed in Chapter 3, Project Description, of this EIR, the proposed project would include a total of 432 residential units and associated improvements, off-site sewer lift station improvements, and two options to meet the County's affordable housing regulations. The affordable housing options include the provision of a minimum of 22 Accessory Dwelling Units (ADUs) on lots proposed for development with single-family residential units, or an off-site proposal wherein Homes by Towne would rezone and transfer the fee title to the County for an approximately four-acre parcel off-site within the Riolo Vineyards Specific Plan (RVSP) which could develop a maximum of 120 affordable income-restricted units.

The Cultural Resources chapter of the EIR addresses known and unknown historic and precontact cultural resources in the vicinity of the project site and off-site sewer lift station improvements area, as well as the off-site affordable housing parcel. Cultural resources can be categorized into precontact or historic resources. Precontact resources are those sites and artifacts of or related to a time period generally prior to contact with people of European descent. Historic resources include structures, features, artifacts, and sites that date from Euro-American settlement of the region. The chapter summarizes the existing setting with respect to cultural resources, identifies thresholds of significance, evaluates project impacts to such resources, and sets forth mitigation measures. The impact discussions and mitigation measures presented in each technical section apply to both the project site and the off-site sewer lift station improvements area, unless otherwise noted; and applicable RVSP EIR mitigation measures are incorporated for the off-site affordable housing parcel.

Information presented in the chapter is primarily drawn from the Cultural and Paleontological Resources Assessment prepared by Natural Investigations Company,[1] as well as the Placer County General Plan (PCGP),[2] the PCGP EIR,[3] the RVSP EIR,[4] and the Dry Creek-West Placer Community Plan (DCWPCP).[5]

Potential impacts to tribal cultural resources are discussed and evaluated in Chapter 17, Tribal Cultural Resources, of this EIR.

8.2 EXISTING ENVIRONMENTAL SETTING

Placer County contains a rich cultural resource heritage that includes archeological and historical sites and resources. Given the rich heritage of the area, many archeological and historical sites and resources remain undiscovered. The following sections provide further details regarding the precontact overview, ethnographic overview, and historic overview of the project area, as well as

1 Natural Investigations Company. *Cultural and Paleontological Resources Assessment for the Estia Dry Creek & Placer Creek Residential Property Development Project, Placer County, California.* June 2025.
2 Placer County. *Countywide General Plan Policy Document*. August 1994 (updated May 2013).
3 Placer County. *Countywide General Plan EIR*. July 1994.
4 Placer County. *Riolo Vineyard Specific Plan Environmental Impact Report*. January 2008.
5 Placer County. *Dry Creek-West Placer Community Plan.* Amended May 12, 2009.

a description of any identified cultural resources associated with the project site, off-site sewer lift station improvements area, and off-site affordable housing parcel.

Precontact Overview

A three-part classification scheme for cultural change in California's Sacramento Valley, Sacramento–San Joaquin Delta, and San Joaquin Valley was developed as the result of efforts of many researchers since the 1930s and has been further refined over the succeeding decades. With the timeframes adjusted for modern calibration curves for radiocarbon dates, the chronological sequence for the Central Valley is: Paleo-Indian (11,500 – 8550 B.C.E.), Lower Archaic (8550 – 5550 B.C.E.), Middle Archaic (5550–550 B.C.E.), Upper Archaic (550 B.C.E. – 1100 C.E.), and Emergent or Late Prehistoric Period (1100 C.E. – Historic Contact).

Subsequent to the Paleo-Indian and Lower Archaic periods, the cultural framework within the greater study region is further divided into three regionally based "patterns." Specific to the Central Valley precontact era and the current study region, the regionally based patterns are the Windmiller, Berkeley, and Augustine. The patterns mark changes in distinct artifact types, subsistence orientation, and settlement patterns, which began circa 5550 B.C.E. and lasted until historic contact in the early 1800s. The patterns were initially identified at three archaeological sites: the Windmiller site near the Cosumnes River in Sacramento County; the West Berkeley site on the east side of the Bay in Alameda County; and the Augustine site in the Sacramento–San Joaquin Delta. In general, the patterns conform to three temporal divisions: Middle Archaic Period/Windmiller Pattern, Upper Archaic Period/Berkeley Pattern, and Late Prehistoric Period/Augustine Pattern.

Paleo-Indian and Lower Archaic Periods (11,500 – 5550 B.C.E.)

Little evidence exists of the Paleo-Indian and Lower Archaic periods in the Central Valley. As shown by geoarchaeological studies, large segments of the Late Pleistocene landscape throughout the central California lowlands have been buried or removed by periodic episodes of deposition or erosion. Periods of climate change and associated alluvial deposition occurred at the end of the Pleistocene (approximately 9050 B.C.E.) and at the beginning of the early Middle Holocene (approximately 5550 B.C.E.). Earlier studies had also estimated that Paleo-Indian and Lower Archaic sites along the lower stretch of the Sacramento River and San Joaquin River drainage systems had been buried by Holocene alluvium up to 33 feet thick that was deposited during the last 5,000 to 6,000 years. The formation of the Sacramento–San Joaquin Delta began during the early Middle Holocene. After approximately 1,000 B.C.E. during the Late Holocene, there were renewed episodes of alluvial fan and floodplain deposition.

The archaeological evidence that is available for the Paleo-Indian Period is comprised primarily of basally thinned, fluted projectile points. The points are morphologically similar to well-dated Clovis points found elsewhere in North America. In the Central Valley, fluted points have been recovered from remnant features of the Pleistocene landscape at only three archaeological localities, including Woolfsen Mound in Merced County, Tracey Lake in San Joaquin County, and Tulare Lake basin in Kings County.

In the Central Valley, the Lower Archaic Period is mainly represented by isolated finds, as the early landscape was buried by natural alluvial fan and floodplain deposition. The earliest confirmed archaeological evidence for habitation of the immediate Sacramento vicinity was recovered from below 10 feet of overburden and extending to a depth of 10 to 22 feet below current street level with dates for occupation on a stable paleo-sandbar at CA-SAC-38 from 8,500

to 3,000 years ago. At Lower Archaic foothill sites in eastern Contra Costa County and Calaveras County, abundant milling slabs and handstones have been recovered. On the ancient shoreline of Buena Vista Lake in Kern County, stratified cultural deposits have yielded a stemmed projectile point, chipped stone crescents, and the remains of fish, birds, and shellfish; however, milling tools or plant remains have not been discovered.

Middle Archaic Period/Windmiller Pattern (5550 - 550 B.C.E.)

For the first 3,000 years of the Middle Archaic, archaeological sites on the valley floor were relatively scarce, in part due to natural geomorphic processes, unlike the foothills where many of buried sites have been found. On the valley floor, sites are more common after 2550 cal. B.C.E. The archaeological record in the valley and foothills indicates the subsistence system during this period included a wide range of natural resources, including plants, small and large mammals, fish, and waterfowl, that indicate people followed a seasonal foraging strategy. Some researchers suggest populations may have occupied lower elevations during the winter and shifted to higher elevations in the summer. Others also suggest there was increasing residential stability along the Central Valley river corridors during the Middle Archaic.

Excavations at Windmiller Pattern sites have yielded abundant remains of terrestrial fauna (deer, tule elk, pronghorn, and rabbits) and fish (sturgeon, salmon, and smaller fishes). Projectile points with a triangular blade and contracting stems are common at Windmiller Pattern sites. A variety of fishing implements such as angling hooks, composite bone hooks, spears, and baked clay artifacts, which may have been used as net or line sinkers, are also relatively common. The points are classified within the Sierra Contracting Stem and Houx Contracting Stem series. The presence of milling implements, including grinding slabs, handstones, and mortar fragments, indicate acorns or seeds were an important part of the Middle Archaic diet. In the foothills, pine nut and acorn remains have been recovered from sites in Fresno and Calaveras counties.

The variety of artifacts recovered from Windmiller Pattern sites includes shell beads, ground and polished charmstones, and bone tools, as well as impressions of twined basketry. Baked clay items include pipes, discoids, and cooking “stones” as well as the net sinkers. Burials in cemetery areas, which were separate from habitation areas, were accompanied by a variety of grave goods. The presence of an established trade network is indicated by the recovery of Olivella shell beads, obsidian tools, and quartz crystals. Obsidian sources during the Middle Archaic included quarries in the North Coast Ranges, eastern Sierra, and Cascades.

Upper Archaic Period/Berkeley Pattern (550 B.C.E. - 1100 C.E.)

Better understood than any of the preceding periods, the Upper Archaic is characterized by a shift over 1,000 years to the more specialized, adaptive Berkeley Pattern. Excavated archaeological sites signal an increase in mortars and pestles, as well as archaeobotanical remains, accompanied by a decrease in slab milling stones and handstones. Archaeologists generally agree mortars and pestles are better suited to crushing and grinding acorns, while milling slabs and handstones may have been used primarily for grinding wild grass grains and seeds. The proportional change indicates a shift during the Berkeley Pattern to a greater reliance on acorns as a dietary staple. Innovations such as new types of shell beads, charmstones, bone tools, and ceremonial blades are additional evidence of the more specialized technology present during the Upper Archaic period.

The artifact assemblage in Berkeley Pattern sites demonstrates that populations continued to exploit a variety of natural resources. In addition to seeds and acorns, hunting persisted as an

important aspect of food procurement. Large, mounded villages that developed around 2,700 years ago in the Delta region included accumulations of habitation debris and features, such as hearths, house floors, rock-lined ovens, and burials. The remains of a variety of aquatic resources in the large shell midden/mounds that developed near salt or fresh water indicate exploitation of shellfish was relatively intensive.

Berkeley Pattern artifact assemblages are also characterized by Olivella shell beads, Haliotis ornaments, and a variety of bone tool types. Mortuary practices continue to be dominated by interment, although a few cremations have been discovered at sites dating to this period. Trade networks brought obsidian toolstone to the Central Valley from the North Coast Ranges and the east side of the Sierra Nevada Range.

Emergent Period/Augustine Pattern (1100 C.E. - Historic Contact)

The comprehensive archaeological record for the Emergent or Late Prehistoric Period in the Central Valley shows an increase in the number of archaeological sites associated with the Augustine Pattern in the lower Sacramento Valley/Delta region, as well as an increase in the number and diversity of artifacts. The Emergent Period was shaped by a number of cultural innovations, such as the bow and arrow and more elaborate and diverse fishing technology, as well as an elaborate social and ceremonial organization. Dart and atlatl technology was effectively replaced by the introduction of the bow and arrow. Additionally, the cultural patterns typical of the Augustine Pattern as viewed from the archaeological record are reflected in the cultural traditions known from historic period Native American groups.

The faunal and botanical remains recovered at Emergent Period archaeological sites indicate the occupants relied on a diverse assortment of mammals, fish, and plant parts, including acorns and pine nuts. Hopper mortars, shaped mortars and pestles, and bone awls used to produce coiled baskets are among the variety of artifacts recovered from Augustine Pattern sites. The toolkit during this period also included bone fishhooks, harpoons, and gorge hooks for fishing, as well as the bow and arrow for hunting. Small, Gunther barbed series projectile points have been found at sites dating to the early part of the period, while Desertside notched points appear later in the period. The Stockton serrated arrow point also appears in archaeological assemblages dating to this period and in some parts of the lower Sacramento Valley, Cosumnes Brownware is present. The appearance of ceramics during this period is likely a direct improvement on the prior baked clay industry.

During the Emergent Period, numerous villages, ranging in size from small to large, were established along the valley floor sloughs and river channels and along the foothills sidestreams. House floors or other structural remains have been preserved at some sites dating to this period. The increase in sedentism and population growth led to the development of social stratification, with an elaborate social and ceremonial organization. Examples of items associated with rituals and ceremonials include flanged tubular pipes and baked clay effigies representing animals and humans. Mortuary practices changed to include flexed burials, cremation of high-status individuals, and pre-interment burning of offerings in a burial pit. Currency, in the form of clamshell disk beads, also developed during this period together with extensive exchange networks.

Ethnographic Overview

The project area is located in lands historically occupied by the Nisenan (also known as the Southern Maidu). Prior to Euro-American contact, Nisenan territory included the southern extent of the Sacramento Valley, east of the Sacramento River between the North Fork Yuba River and

Cosumnes River on the north and south, respectively, and extended east into the foothills of the Sierra Nevada. For a more detailed ethnographic overview of the project area, see Chapter 17, Tribal Cultural Resources, of this EIR.

Historic Overview

The following sections provide an overview of California history, including the Spanish, Mexican, and American Periods, as well as local history associated with the project area.

California History

Post-contact history for the State of California is divided into the following three periods: the Spanish Period from 1769 to1822; the Mexican Period from 1822 to 1848; and the American Period from 1848 to present. Although brief visits by Spanish, Russian, and British explorers occurred from 1529 to 1769, the first significant settlement in California was established by the Spanish at San Diego in 1769. Between 1769 and 1823, 21 missions were built by the Spanish and the Franciscan Order along the coast between San Diego and San Francisco. The Spanish expeditions into the Central Valley in 1806 and 1808 led by Lieutenant Gabriel Moraga explored the main rivers, including the American, Calaveras, Cosumnes, Feather, Merced, Mokelumne, Sacramento, San Joaquin, and Stanislaus. Moraga is said to have named the lower Sacramento River and the valley region “Sacramento.”

In 1813, Moraga led another expedition in the lower portion of the Central Valley and gave the San Joaquin River its name. The abundance of wildlife, such as waterfowl, fish, and fur-bearing animals, within or along the banks of the rivers attracted immigrants to the region. The last Spanish expedition into California’s interior was led by Luis Arguello in 1817. He and his men traveled up the Sacramento River, past the future site of the City of Sacramento to the mouth of the Feather River, before returning to the coast.

The first American trapper to enter California during the Mexican Period was Jedediah Smith, who explored the Sierra Nevada in 1826 and 1827, entering the Sacramento Valley and traveling along the American and Cosumnes Rivers. In 1827, Smith also traveled through the San Joaquin Valley. Other trappers soon followed, including employees of the Hudson’s Bay Company in 1832. Between 1830 and 1833, and again in 1837, diseases were introduced by non-indigenous explorers, trappers, and settlers. The diseases, along with relocation to the missions, military raids, and settlement by non-native groups, decimated native Californian populations, communities, and tribes in the Sacramento and San Joaquin valleys.

The American Period was initiated in 1848 with the signing of the Treaty of Guadalupe Hidalgo, which ended the Mexican–American War (1846–1848) and incorporated California as a territory of the United States. Gold was discovered at John Sutter’s Mill on the American River in Coloma the same year, and by 1849, nearly 90,000 people had journeyed to the gold fields to share in the riches. In 1850, largely as a result of the Gold Rush, California became the thirty-first state. Four years later, the bustling boomtown of Sacramento became the state capital. In contrast to the economic boom and population growth that enabled statehood, the loss of land and territory (including traditional hunting and gathering locales), malnutrition, starvation, and violence contributed to the further decline of indigenous Californians from the Northern California coast to the Sierra Nevada foothills.

Placer County History

Placer County was formed in 1851 from portions of neighboring Sutter and Yuba counties. The principal economic activity in much of the County at that time was placer mining, from which the County later drew its name. The City of Auburn, one of the earliest mining towns in California, was designated the seat of justice when the County was created. Auburn continues to be the County seat today.

The earliest settlers in Placer County arrived in the late 1840s, as miners poured into the region in search of placer deposits. By the mid-1850s the area was sparsely settled and dotted with small-scale ranches. By the mid-1860s, the construction and development of the railroad industry played a significant role in the region's development. The Central Pacific Railroad (CPRR) was incorporated in 1861 to build the western portion of the First Transcontinental Railroad. The tracks of the CPRR (later Southern Pacific Railroad [SPRR]; now Union Pacific Railroad [UPRR]) reached Roseville, Rocklin, and Newcastle in 1864. A designated California Historical Landmark (No. 780), the First Transcontinental Railroad has a marker in Old Town Roseville. Roseville prospered as a principal rail head that provided the frontier towns with goods and services. When the SPRR moved its major locomotive terminal from Rocklin to Roseville in 1908, Roseville expanded to one of the largest railroad centers in the country.

The presence of the railroad also contributed to the growth of Placer County's agricultural industry, mainly fruits and nuts, because the rail line provided access to a large market east of the Sierra Nevada. Incorporated in 1906, the Pacific Fruit Express Company (PFE) was a joint SPRR and UPRR enterprise. The company operated a number of ice plants and docks, as well as car and repair shops throughout the west, and shipped produce in ice-refrigerated railcars. The first units of the Pacific Fruit Express Ice Plant were erected in 1909, and by 1920, the ice plant was known as the world's largest artificial ice plant. The name of present-day PFE Road, whose unnamed precedent is shown on the 1911 U.S. Geologic Survey (USGS) Antelope quadrangle, is derived from the company, which is now a UPRR subsidiary.

Project Site History and Current Uses

The project vicinity is a densely developed area, with residential housing to the east, west, and south of the project area and commercial uses to the north. However, the 92.2 gross-acre project site (Assessor's Parcel Numbers [APNs] 023-221-076 and 023-221-074) remains undeveloped and is not currently in use. The project site has historically been undeveloped and used for agricultural (such as grazing) purposes since at least 1947. Predominant vegetation on the property is primarily non-native grassland, with scattered seasonal wetlands on gently rolling terrain. Oak woodlands are found on both sides of a riparian corridor along an unnamed tributary to Dry Creek (named "Placer Creek" for this project), which flows east to west.

The two-acre off-site sewer lift station improvements area (APNs 023-221-045 and 023-221-052) is located approximately 0.53-mile south of the southern portion of the project site. Aerial imagery shows that the off-site sewer lift station improvements area was historically surrounded by agricultural land until more recent development of the area. The utility area in the off-site sewer lift station improvements area was developed between 1998 and 2002, and the area has remained largely unchanged since. Surrounding residential development can be seen beginning in 2005, and the Dry Creek Community Park was developed in 2013 to the west of the off-site sewer lift station improvements area.

Off-Site Affordable Housing Parcel

As discussed throughout this EIR, one of the options being evaluated in this EIR to satisfy the project's affordable housing requirements consists of transferring in fee title to the County an off-site vacant parcel under Homes by Towne ownership, within the RVSP. The off-site affordable housing parcel is approximately four acres in size and is located at the northeast corner of PFE Road and Watt Avenue (APN 023-200-056-000). Aerial imagery shows that the off-site affordable housing parcel has remained undeveloped since at least 1985. Center Preschool, located to the southwest of the off-site affordable housing parcel, has also been present since at least 1985. The surrounding residential development, notably south of the off-site affordable housing parcel, was developed between 1993 and 1998. The off-site affordable housing parcel is currently undeveloped and consists of grassy fields with rolling topography.

Known Cultural Resources

Background research was carried out as part of the Cultural and Paleontological Resources Assessment prepared by Natural Investigations Company for the proposed project and off-site sewer lift station improvements area, including a cultural and paleontological records search and an intensive field survey. The results of a records search and field survey for the project site and off-site sewer lift station improvements area are described below, with further details provided in the Method and Analysis subsection of this Chapter. In addition, relevant information from the RVSP EIR regarding the off-site affordable housing parcel is also presented below.

Project Site

The California Historical Resources Information System (CHRIS) identifies that two previous cultural resource studies have been conducted within the project site, and 16 previous cultural resource studies have been conducted within a 0.25-mile radius. The CHRIS records indicate that six previously recorded cultural resources, including four precontact resources and two historic resources, have been recorded within the 0.25-mile search radius. No cultural resources have been previously recorded within the project site. The intensive field survey conducted by Natural Investigations Company did not identify any new precontact sites, historic sites, features, or ethnographic resources within the project site.

Off-Site Sewer Lift Station Improvements Area

The CHRIS records indicate that eight previous cultural resource studies have been conducted within the off-site improvement area and 12 previous cultural resource studies have been conducted within a 0.25-mile radius. Four previously recorded cultural resources, two precontact and two historic, have been recorded within the 0.25-mile search radius. While cultural resources have not been previously recorded within the off-site improvement area, one previously recorded site (P-31-000203) is mapped as being directly adjacent to the off-site improvement area.

P-31-000203 is identified as a small precontact occupation site comprised of one white petrified wood projectile point, ochre, and manos. The site was first recorded in 1965 and was updated in 1991, during which one unifacial Greenstone flake with possible utilized chippage was identified; the update did not include mention of the previously found artifacts. A subsequent update of the site occurred in 1999, during which a fragment of a small andesitic cobble mano and a uniface metavolcanic cobble chopper were located. Further differences from the 1991 update were not noted. During the intensive pedestrian survey completed by Natural Investigations Company, the presence of P-31-000203 was not indicated and the location of the resource therefore could not be confirmed. In addition, the off-site improvement area is heavily utilized by recreational activities, with a Community Park adjacent to the west, and a previously landscaped grass area

adjacent to the south that was being regraded during the survey. The 1999 update of P-31-000203 mentioned that the site was disced regularly.

Natural Investigations Company determined that new cultural resources were not identified in the off-site sewer lift station improvements area.

Off-Site Affordable Housing Parcel

As part of the RVSP EIR, a record search for archaeological resources within the planning area was completed at the North Central Information Center (NCIC) and a request for information regarding potential cultural resources located in or near the planning area was submitted to the Native American Heritage Commission (NAHC). In their response, the NAHC stated that the Sacred Land Files did not indicate the presence of cultural resources in the RVSP planning area. The NCIC record search indicated that the majority of the study area has been previously inventoried for archaeological resources and identified archaeological resources CA-PLA-76 and -81 within the planning area and resources CA-PLA-69 and -77 outside of the RVSP. An archaeological reconnaissance for the RVSP was conducted in 1990. The archaeological reconnaissance was unsuccessful in locating archaeological resource CA-PLA-76 and identified a single artifact in the purported location of resource CA-PLA-81, as well as a historic era archaeological site referred to as I.F.1. Subsequent surveys of the area conducted in 2005 and 2006 successfully identified archaeological resource CA-PLA-69. Evidence of resource CA-PLA-77 was not observed. No new archaeological resources were observed during the 1990, 2005, or 2006 surveys of the planning area. The off-site affordable housing parcel was included in the records searches and pedestrian surveys conducted for the RVSP EIR. According to the RVSP EIR, known archaeological resources do not occur within the off-site affordable housing parcel.

8.3 REGULATORY CONTEXT

Federal, State, and local governments have developed laws and regulations designed to protect significant cultural resources that may be affected by actions that they undertake or regulate. The following section contains a summary of basic federal and State laws governing preservation of historic and archaeological resources of national, regional, State, and local significance.

Federal Regulations

The following are the federal environmental laws and policies relevant to cultural resources.

Section 106 for the National Historical Preservation Act of 1966

Federal regulations for cultural resources are governed primarily by Section 106 of the National Historical Preservation Act (NHPA) of 1966. Section 106 of NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and affords the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The Council's implementing regulations, "Protection of Historic Properties," are found in 36 Code of Federal Regulations (CFR) Part 800. The goal of the Section 106 review process is to offer a measure of protection to sites, which are determined eligible for listing on the National Register of Historic Places (NRHP). The criteria for determining NRHP eligibility are found in 36 CFR Part 60. Amendments to the Act (1986 and 1992) and subsequent revisions to the implementing regulations have, among other things, strengthened the provisions for Native American consultation and participation in the Section 106 review process. While federal agencies must follow federal regulations, most projects by private developers and landowners do not require this level of compliance. Federal regulations only come into play in the private sector if a project requires a federal permit or uses federal funding.

National Register of Historic Places

The NRHP is the nation's master inventory of known historic resources. The NRHP includes listings of resources, including: buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archaeological, or cultural significance at the national, State, or local level. Resources over 50 years of age could be listed on the NRHP. However, properties under 50 years of age that are of exceptional significance or are contributors to a district could also be included on the NRHP. Four criteria are used to determine if a potential resource may be considered significant and eligible for listing on the NRHP. The criteria include resources that:

A. Are associated with events that have made a significant contribution to the broad patterns of history; or
B. Are associated with the lives of persons significant in our past; or
C. Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D. Have yielded or may likely yield information important in prehistory or history.

A resource can be individually eligible for listing on the NRHP under any of the above four criteria, or can be listed as contributing to a group of resources that are listed on the NRHP.

A resource can be considered significant in American history, architecture, archaeology, engineering, or culture. Once a resource has been identified as significant and potentially eligible for the NRHP, the resource's historic integrity must be evaluated. Integrity is a function of seven factors: location, design, setting, materials, workmanship, feeling, and association. The factors closely relate to the resource's significance and must be intact for NRHP eligibility.

Historical buildings, structures, and objects are usually eligible under Criteria A, B, and C based on historical research and architectural or engineering characteristics. Archaeological sites are usually eligible under Criterion D, the potential to yield information important in precontact history or history. An archaeological test program may be necessary to determine whether the site has the potential to yield important data. The lead federal agency makes the determination of eligibility based on the results of the test program and seeks concurrence from the State Historic Preservation Officer (SHPO).

Effects to NRHP-eligible resources (historic properties) are adverse if the project may alter, directly or indirectly, any of the characteristics of an historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

State Regulations

The following are the State environmental laws and policies relevant to cultural resources.

California Environmental Quality Act and California Register of Historic Places

State historic preservation regulations affecting this project include the statutes and guidelines contained in CEQA (Public Resources Code [PRC] Sections 21083.2 and 21084.1 and Sections 15064.5 and 15126.4 (b) of the CEQA Guidelines). CEQA requires lead agencies to consider the potential effects of a project on historical resources and unique archaeological resources. A "historical resource" includes, but is not limited to, any object, building, structure, site, area, place,

record or manuscript that is historically or archaeologically significant (PRC Section 5020.1). Under Section 15064.5 of the CEQA Guidelines, a resource is considered to be an "historical resource," and thus presumptively worthy of protection where feasible, if one or more of the following California Register of Historic Resources (CRHR) criteria have been met:

1. The resource is associated with events that have made a significant contribution to the broad patterns of California history;
2. The resource is associated with the lives of important persons from our past;
3. The resource embodies the distinctive characteristics of a type, period, region or method of construction, or represents the work of an important creative individual or possesses high artistic values; or
4. The resource has yielded, or may be likely to yield, important information in prehistory or history.

In addition, the resource must retain integrity. Cultural resources determined eligible for the NRHP by a federal agency are automatically eligible for the CRHR.

CEQA requires preparation of an EIR if a proposed project would cause a "substantial adverse change" in the significance of an historical resource. A "substantial adverse change" would occur if a proposed project would result in physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired (CEQA Guidelines Section 15064.5[b][1]).

In addition to historical resources, which can include archeological resources that meet the criteria listed above, CEQA also requires consideration of "unique archaeological resources." If a site meets the definition of a unique archaeological resource, the site must be treated in accordance with the provisions of PRC Section 21083.2.

Under PRC Section 20183.2(g), an archaeological resource is considered "unique" if it:

1) Is associated with an event or person of recognized significance in California or American history or recognized scientific importance in prehistory;
2) Can provide information that is of demonstrable public interest and is useful in addressing scientifically consequential and reasonable research questions;
3) Has a special kind or particular quality such as oldest, best example, largest, or last surviving example of its kind;
4) Is at least 100 years old and possesses substantial stratigraphic integrity; or
5) Involves important research questions that can be answered only with archaeological methods.

CEQA also includes specific guidance regarding the accidental discovery of human remains. Specifically, CEQA Guidelines Section 15064.5(e) requires that if human remains are uncovered, excavation activities must be stopped and that the county coroner be contacted. If the county coroner determines that the remains are Native American, the coroner must contact the NAHC within 24 hours. The NAHC identifies the most likely descendant, and that individual or individuals can make recommendations for treatment of the human remains under the procedures set forth in Section 15064.5 of the CEQA Guidelines.

The SHPO maintains the CRHR. Properties that are listed on the NRHP are automatically listed on the CRHR, along with State Landmarks and Points of Interest. The CRHR can also include

properties designated under local ordinances or identified through local historical resource surveys.

Local Regulations

The following are the local government's environmental policies that are intended to protect cultural resources by mitigating the potential impacts of new development in areas containing important archaeological or historic resources.

Placer County General Plan

The PCGP goals and policies relating to the protection of cultural and historical resources that are applicable to the proposed project are presented below.

Recreation and Cultural Resources Element

Goal 5.D.1. To identify, protect, and enhance Placer County's important historical, archaeological, paleontological, and cultural sites and their contributing environment.

Policy 5.D.2 The County shall solicit the cooperation of the owners of cultural and paleontological resources, encourage those owners to treat these resources as assets rather than liabilities, and encourage the support of the general public for the preservation and enhancement of these resources.

Policy 5.D.3 The County shall solicit the views of the Native American Heritage Commission, State Office of Historic Preservation, North Central Information Center, and/or the local Native American community in cases where development may result in disturbance to sites containing evidence of Native American activity and/or to sites of cultural importance.

Policy 5.D.4 The County shall coordinate with the cities and municipal advisory councils in the County to promote the preservation and maintenance of Placer County's paleontological and archaeological resources.

Policy 5.D.6 The County shall require that discretionary development projects identify and protect from damage, destruction, and abuse, important historical, archaeological, paleontological, and cultural sites and their contributing environment. Such assessments shall be incorporated into a County-wide cultural resource database, to be maintained by the Division of Museums.

Policy 5.D.7 The County shall require that discretionary development projects are designed to avoid potential impacts to significant paleontological or cultural resources whenever possible. Unavoidable impacts, whenever possible, shall be reduced to a less than significant level and/or shall be mitigated by extracting maximum recoverable data. Determinations of impacts,

significance, and mitigation shall be made by qualified archaeological (in consultation with recognized local Native American groups), historical, or paleontological consultants, depending on the type of resource in question.

Policy 5.D.8 The County shall, within its power, maintain confidentiality regarding the locations of archaeological sites in order to preserve and protect these resources from vandalism and the unauthorized removal of artifacts.

Policy 5.D.10 The County will use existing legislation and propose local legislation for the identification and protection of cultural resources and their contributing environment.

Policy 5.D.11 The County shall support the registration of cultural resources in appropriate landmark designations (i.e., National Register of Historic Places, California Historical Landmarks, Points of Historical Interest, or Local Landmark). The County shall assist private citizens seeking these designations for their property.

Policy 5.D.12 The County shall consider acquisition programs (i.e. Placer Legacy Open Space and Agricultural Conservation Program) as a means of preserving significant cultural resources that are not suitable for private development. Organizations that could provide assistance in this area include, but are not limited to, the Archaeological Conservancy, the Native American community, and local land trusts.

Dry Creek-West Placer Community Plan

The following goals and policies from the Environmental Resources Management Element of the DCWPCP related to cultural resources are applicable to the proposed project.

Environmental Resources Management Element: Cultural Resources

Goal 1 Recognize that the Dry Creek West Placer Community Plan Area is a unique community, which should incorporate development standards that enhance the area's separate cultural, sociological and physical identity.

Goal 2 Preserve areas of outstanding historical, cultural, or archaeological significance.

Policy 1 Identify and protect from destruction and abuse all representative and unique historical, cultural and archaeological sites.

Policy 2 Require site specific studies for archaeological or historical sites in all instances where land development has the potential to have a detrimental impact on these sites.

Policy 8 Preserve outstanding visual features and landmarks.

8.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to cultural resources. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with PRC Sections 21083.2, 21084.1, and 21084.2, Section 15064.5 and Appendix G of the CEQA Guidelines, and Placer County's Environmental Checklist, an impact related to cultural resources is considered significant if the proposed project would:

- Cause a substantial adverse change in the significance of an historical resource pursuant to CEQA Guidelines Section 15064.5;
- Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to CEQA Guidelines Section 15064.5;
- Disturb any human remains, including those interred outside of dedicated cemeteries;
- Have the potential to cause a physical change which would affect unique ethnic cultural values; or
- Restrict existing religious or sacred uses within the potential impact area.

Method of Analysis

The impact analysis contained in this chapter is primarily based on the Cultural and Paleontological Resources Assessment prepared by Natural Investigations Company. Preparation of the Cultural and Paleontological Resources Assessment included a cultural resources records search, paleontological resource analysis, and intensive pedestrian survey of the project area. The Cultural and Paleontological Resources Assessment addresses the entire project area, which includes the project site and the off-site sewer lift station improvements area. Potential impacts related to cultural resources associated with development of the off-site affordable housing parcel were previously evaluated in the 2008 RVSP EIR. The methods of analysis are described in further detail below.

Records Search Methods

Cultural resource literature searches for the project area were completed at the NCIC of the CHRIS at California State University, Sacramento, on February 8, 2025 for the project site and on June 16, 2025 for the off-site sewer lift station improvements area. The record searches were conducted to determine the extent of previous surveys within a 0.25-mile radius of the project site and off-site sewer lift station improvements area, and whether previously documented pre-contact or historic archaeological sites, architectural resources, or traditional cultural properties exist within the project area.

In addition to the official records and maps for archaeological sites and surveys in Placer County, the following historic references were also reviewed:

- NRHR: listed properties;
- CRHR: listed resources;
- Historic Property Data File for Placer County;
- Archaeological Determinations of Eligibility;
- Built Environment Resources Directory;

- California Inventory of Historical Resources;
- California Historical Landmarks;
- California Points of Historical Interest; and
- Historical General Land Office (GLO) land plat maps.

Natural Investigations Company received a negative response from the NAHC on January 14, 2025, regarding the request to search the SLF for tribal cultural resources within or near the project site.

Field Survey Methods

Natural Investigations Company conducted an intensive pedestrian survey of the project site on January 1, 2025 and conducted an intensive pedestrian survey of the off-site sewer lift station improvements area on June 16, 2025. All portions of the project areas were surveyed intensively using transects spaced at 15 meters apart or less. During the pedestrian surveys, all visible ground surface within the project area was carefully examined for cultural material (e.g., flaked stone tools, toolmaking debris, stone milling tools, or fire-affected rock), soil discoloration that might indicate the presence of a cultural midden, soil depressions and features indicative of the former presence of structures or buildings (e.g., postholes, foundations), or historic-era debris (e.g., metal, glass, ceramics). Ground disturbances (e.g., animal burrows, drainages, dirt roads, etc.) were visually inspected. A digital camera was used to take photographs of the project area, a Munsell® Soil Color Chart was used to record soil color, and a handheld BE-3300-GPS global positioning system (GPS) unit with sub-meter accuracy was used to record locational data.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the proposed project and off-site sewer lift station improvements, as well as the two affordable housing options analyzed throughout this EIR, in comparison with the standards of significance identified above. In most cases, however, potential environmental impacts associated with the proposed project and the 22 on-site ADUs being considered for development to satisfy the County's affordable housing requirement would not differ. Thus, unless otherwise noted, the below analysis applies to both the proposed project and the potential on-site ADUs.

8-1 Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines, Section 15064.5. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to the potential for development of the proposed project and off-site sewer lift station improvements area, as well as potential future development of the off-site affordable housing parcel, to cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines, Section 15064.5.

Historical resources are features that are associated with the lives of historically important persons and/or historically significant events, that embody the distinctive characteristics of a type, period, region or method of construction, or that have yielded, or may be likely to yield, information important to the precontact history or history of the local area, California, or the nation. Examples of possible historical resources include, but are not

limited to, buildings, farmsteads, rail lines, bridges, and trash scatters containing objects such as colored glass and ceramics. The CEQA Guidelines sometimes refer to "historical resource[s] of an archaeological nature" as a subset of historical resources (see CEQA Guidelines Section 15126.4[b][3]). As previously noted above, cultural resources determined eligible for the NRHP by a federal agency are automatically eligible for the CRHR. The proposed project, off-site sewer lift station improvements area, and off-site affordable housing parcel are discussed below.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines, Section 15064.5 would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

The project site consists of approximately 92.2 gross acres and is bisected by Walerga Road, separating the site into northern and southern portions. The 52.3-acre northern portion of the project site is currently undeveloped, consists of non-native annual grassland with rolling topography, and is interspersed with seasonal wetlands and vernal pools. The 35.3-acre southern portion of the site consists of undeveloped annual grassland with rolling topography, interspersed with seasonal wetlands, vernal pools, and is bisected by Placer Creek. The project site does not contain any existing buildings or other structures. The Cultural and Paleontological Resources Assessment determined that known cultural resources are not present within the project site.

According to the Cultural and Paleontological Resources Assessment, the off-site sewer lift station improvements area is heavily utilized for recreational activities. The off-site sewer lift station improvements area does not contain any existing buildings or other structures that could be considered historic. While one previously recorded site (P-31-000203) was mapped as being directly adjacent to the off-site sewer lift station improvements area, Natural Investigations Company did not observe evidence of P-31-000203 within the off-site sewer lift station improvements area during the pedestrian survey. Thus, the Cultural and Paleontological Resources Assessment prepared for the proposed project concluded that evidence of historic or precontact cultural resources does not exist in the project site or the off-site sewer lift station improvements area.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel is approximately four acres in size and is located at the northeast corner of PFE Road and Watt Avenue. The off-site affordable housing parcel is undeveloped and consists of grassy fields with rolling topography. Similar to the project site and off-site sewer lift station improvements area, the off-site affordable housing parcel does not contain any existing buildings or other structures that could be considered historic. Furthermore, the off-site affordable housing parcel is located within the RVSP. As discussed on page eight of Chapter 7, Cultural Resources, of the RVSP EIR, historic architectural resources do not exist within the RVSP area. Therefore, the off-site affordable housing parcel does not contain any known historic resources.

Conclusion

Based on the above, the proposed project, including the off-site sewer lift station improvements area, as well as potential future development of the off-site affordable housing parcel, would not result in a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines, Section 15064.5, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

8-2 Cause a substantial adverse change in the significance of a unique archeological resource pursuant to CEQA Guidelines, Section 15064.5. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, as well as potential future development of the off-site affordable housing parcel, which could cause a substantial adverse change in the significance of a unique archeological resource pursuant to CEQA Guidelines, Section 15064.5.

According to CEQA Guidelines Section 21083.2(g), unique archaeological resources are archaeological artifacts, objects, or sites about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that the resource meets any of the criteria determined by CEQA to constitute a unique archaeological resource. The criteria outlined in CEQA Guidelines Section 21083.2(g) include that the resource contains information needed to answer important scientific research questions and that there is a demonstrable public interest in the information, has a special and particular quality such as being the oldest or the best available example of its type, or is directly associated with a scientifically recognized important precontact or historic event or person. The proposed project, off-site sewer lift station improvements area, and off-site affordable housing parcel are discussed below.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to cause a substantial adverse change in the significance of a unique archeological resource pursuant to CEQA Guidelines, Section 15064.5 would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

As previously discussed, one precontact site (P-31-000203) has been previously recorded directly adjacent to the off-site sewer lift station improvements area. However, the intensive pedestrian survey completed during the field survey by Natural Investigations Company determined that the presence of P-31-000203 was not indicated within the off-site sewer lift station improvements area. As such, development of the project site and off-site sewer lift station improvements area would not cause a substantial adverse change in the significance of a known archaeological resource.

However, while known archaeological resources have not been recorded within the project site, and the previously recorded site (P-31-000203) adjacent to the off-site sewer lift station improvements area was not located during the field survey conducted for the Cultural and Paleontological Resources Assessment, unknown archaeological resources could exist beneath the ground surface and have the potential to be uncovered during ground-disturbing activities associated with the proposed project, such as excavation associated with construction of the new residential buildings, associated internal roadways, and trenching for new utility lines. In addition, according to the Cultural and Paleontological Resources Assessment, the project area is comprised of soil formations that date back to periods of known human occupation. As such, the potential exists for the project area to contain buried archaeological deposits.

Off-Site Affordable Housing Parcel

One of the options being evaluated in this EIR to satisfy the project's affordable housing requirements consists of transferring in fee title to the County an off-site vacant parcel under Homes by Towne ownership, within the RVSP. While the proposed project would include a rezone to allow for development of the off-site affordable housing parcel, the County has previously planned for buildout of the site, as evidenced by the parcel's existing designations of High Density Residential (HDR) and Commercial. As such, impacts related to unique archeological resources have been previously addressed in the RVSP EIR. As discussed under Impact 7-1 of the RVSP EIR, previously recorded archaeological resources CA-PLA-69, -76, -77, and -81 may lie buried beneath flood-related deposits within the planning area. As such, the RVSP EIR determined that ground-disturbing activities associated with buildout of the RVSP within or adjacent to archaeological resources CA-PLA-69, -76, -77, and -81 could potentially damage unique archeological resources. Archaeological resources CA-PLA-69, -76, -77, and -81 are not located within or adjacent to the off-site affordable housing parcel. Thus, the potential future development of the off-site affordable housing parcel would not cause a substantial adverse change in the significance of a recorded unique archeological resource. Nonetheless, the RVSP EIR included Mitigation Measures 7-1a through 7-1c, which intend to avoid impacts to unique archeological resources, if found, by requiring soil capping, subsurface testing, and data recovery excavation.

At such time the off-site affordable housing parcel gets developed, the future developer would be required to comply with the RVSP Mitigation Measures 7-1a through 7-1c, which would reduce potential impacts to unique archeological resources to a less-than-significant level.

Conclusion

Based on the above, the Cultural and Paleontological Resources Assessment prepared for the proposed project and the RVSP EIR determined that known archaeological resources do not exist within the project site, the off-site sewer lift station improvements area, or the off-site affordable housing parcel. However, in the event that project ground-disturbing activities encounter previously unrecorded archaeological resources, the proposed project could cause a substantial adverse change in the significance of a unique archaeological resource pursuant to CEQA Guidelines Section 15064.5. Therefore, the proposed project could result in a ***significant*** impact. The referenced RVSP mitigation measures are incorporated into this EIR as Mitigation Measures 8-2(c) through 8-2(e) below.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level by ensuring the avoidance of substantial adverse changes in the significance of any unique archaeological resources or historical resources of an archaeological nature that might be encountered during construction or by ensuring the treatment of such resources in a manner that recovers any important scientific data contained within them.

Project Site and Off-Site Sewer Lift Station Improvements Area

8-2(a) *Prior to initiation of ground-disturbing activities, a qualified archaeologist shall conduct a short awareness training session for all construction workers and supervisory personnel. The course shall explain the importance of, and legal basis for, the protection of significant archaeological resources (i.e., unique archaeological resources and historical resources of an archaeological nature). Each worker shall also learn the proper procedures to follow in the event cultural resources or human remains/burials are uncovered during construction activities, including work curtailment or redirection and to immediately contact their supervisor and the archaeological monitor. The worker education session shall include visuals of artifacts (prehistoric and historic) that might be found in the project vicinity, and take place on the construction site immediately prior to the start of any construction activities including equipment staging, installation of fencing, and any project-related ground disturbance. All ground-disturbing equipment operators shall be required to receive the training and sign a form that acknowledges receipt of the training.*

8-2(b) *In the event that cultural resources are inadvertently discovered during project activities, work in the area must be halted within a 100-foot radius of the find and a qualified archaeologist (pursuant to the Standards at 36 CFR Part 61) and representative from the United Auburn Indian Community (if the resource is precontact) shall be notified immediately to evaluate the resource(s) encountered to determine whether they may be unique archaeological resources and/or historical resources. Notification of the resource for evaluation purposes shall also be provided immediately to the United Auburn Indian Community (UAIC) and Placer County. Construction activities may continue in other areas. If the qualified archaeologist determines that the discovery includes either unique archaeological resources or historical resources of an archaeological nature, the qualified archaeologist shall develop mitigation or treatment measures for consideration and approval by the Director of the Placer County Community Development Resource Agency or his or her designee in consultation with the project applicant. The Director may also consult with the State Historic Preservation Officer [SHPO] or any other regulatory agency that the Director believes may have informed and useful input to provide. Mitigation shall be developed and implemented in accordance with Public Resources Code Section 21083.2 and Section 15126.4 of the CEQA Guidelines, with a preference for preservation in place. Consistent with Section 15126.4(b)(3), preservation in place may be accomplished through*

one or more of the following: planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement. If approved by the Director, such measures shall be implemented and completed prior to commencing further work for which grading or building permits were issued, unless otherwise directed by the Director. Avoidance or preservation of unique archaeological resources or historical resources of an archaeological nature shall not be required where such avoidance or preservation in place is deemed infeasible, as determined by the Director in consultation with the project applicant. Where avoidance or preservation are not appropriate, the qualified archaeologist, in consultation with the Director, shall prepare a detailed treatment plan for consideration and approval by the Director, which may include data recovery for resources that are not considered Tribal Cultural Resources by the UAIC. If employed, data recovery strategies for unique archaeological resources that do not also qualify as historical resources of an archaeological nature shall follow the applicable requirements and limitations set forth in Public Resources Code Section 21083.2. Data recovery will normally consist of (but would not be limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim of recovering important scientific data contained within the unique archaeological resource or historical resource of an archaeological nature. The data recovery plan shall include provisions for analysis of data in a regional context, reporting of results within a timely manner, curation of artifacts and data at an approved facility, and dissemination of reports to local and State repositories, libraries, and interested professionals. If data recovery is determined by the Director to not be appropriate, then an equally effective treatment shall be proposed and implemented. Work may not resume within the no-work radius until the Director, in consultation with the qualified archaeologist and tribal representative, determines that the site either: 1) does not contain unique archaeological resources or historical resources of an archaeological nature; or 2) that the preservation and/or treatment measures have been completed to the Director's satisfaction. This determination shall be made in coordination with the project archaeologist and UAIC Representative if a Tribal Cultural Resource is involved.

Off-Site Affordable Housing Parcel

8-2(c) *Implement RVSP EIR Mitigation Measure 7-1a if culturally significant materials are discovered during construction:*

Potentially unique archaeological resources will be capped with soil prior to construction in the area except in locations in which such capping would be infeasible due to project design. An acceptable process of "capping" archaeological resources with soil must include the following elements:

- *The soils to be covered must not suffer serious compaction;*
- *The covering materials must not be chemically active;*
- *The site must be one in which the natural process of deterioration have been arrested; and*

- *The site must have been recorded, including the areal extent of subsurface deposits.*

8-2(d) *Implement RVSP EIR Mitigation Measure 7-1b if culturally significant materials are discovered during construction:*

A qualified professional archaeologist shall be retained to conduct subsurface testing at potentially important known archaeological sites. As it has not been determined if the known sites within the Specific Plan Area are eligible for inclusion to either the NRHP or CRHR, subsurface testing (i.e., resource evaluation) should be initiated for sites when construction is to occur within 100 feet of the resource and where Mitigation Measure 7-1a [incorporated as Mitigation Measure 8-2(c) of this EIR] proves infeasible. Subsurface testing should also be implemented if culturally significant materials (i.e., unique archaeological resources or historical resources) are inadvertently exposed during construction.

Subsurface testing procedures could involve shovel testing, augering, or other such techniques designed to identify and/or characterize subsurface archaeological deposits. If a resource is determined to be important under CEQA (i.e., because it is a unique archaeological resource or an historical resource), then Mitigation Measure 7-1c [incorporated as Mitigation Measure 8-2(e) of this EIR] must also be implemented.

8-2(e) *Implement RVSP EIR Mitigation Measure 7-1c if culturally significant materials are discovered during construction:*

A qualified professional archaeologist shall be retained to conduct data recovery excavation. This mitigation measure will be implemented as an alternative to Mitigation Measures 7-1a [incorporated as Mitigation Measure 8-2(c) of this EIR] at cultural resource sites determined to be eligible for inclusion in either the NRHP or CRHR.

In compliance with CEQA, implementation of this mitigation measure would entail preparation and adoption of a data recovery plan that makes provisions for adequately recovering the scientifically consequential information from and about the resource. The data recovery plan must be prepared and adopted prior to commencing any excavation activities.

8-3 Disturb any human remains, including those interred outside of dedicated cemeteries. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could disturb any human remains, including those interred outside of dedicated cemeteries.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to disturb any human remains, including those interred outside of dedicated cemeteries, would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

As discussed previously, the project site does not contain any known archaeological resources, as determined by the Cultural and Paleontological Resources Assessment prepared for the proposed project. While the off-site sewer lift station improvements area is heavily utilized by recreational activities, the project site is undeveloped and has been relatively undisturbed.

The project site and off-site sewer lift station improvements area are located in an area associated with the Nisenan culture, whose territory encompassed the project site and off-site sewer lift station improvements area. The field survey conducted as part of the Cultural and Paleontological Resources Assessment did not detect human remains. Nevertheless, the potential for human remains to be discovered during construction cannot be eliminated, given the known precontact occupation of the project vicinity by Native American tribes.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel is undeveloped and consists of grassy fields with rolling topography. As discussed under Impact 7-2 of the RVSP EIR, previously undiscovered cultural resources, including human remains, could be inadvertently exposed during grading or excavation activities associated with buildout of the RVSP. Thus, the potential future development of the off-site affordable housing parcel could disturb human remains, including those interred outside of dedicated cemeteries. However, the RVSP EIR included Mitigation Measures 7-1b, 7-1c, and 7-2a, which intend to avoid impacts to previously unknown cultural resources by requiring compliance with the recommendations of a qualified archaeologist, subsurface testing, and data recovery excavation.

At such time the off-site affordable housing parcel gets developed, the future developer would be required to comply with RVSP Mitigation Measures 7-1b, 7-1c, and 7-2a, which would reduce potential impacts related to disturbing human remains, including those interred outside of dedicated cemeteries, to a less-than-significant level.

Conclusion

Based on the above, ground-disturbing activities on the project site, off-site sewer lift station improvement areas, and off-site affordable housing parcel could disturb human remains, including those interred outside of dedicated cemeteries, and a ***significant*** impact could occur. The referenced RVSP mitigation measures are incorporated into this EIR as Mitigation Measures 8-2(d), 8-2(e), and 8-3(d).

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level by protecting unknown individual Native American remains that might be encountered during construction or by ensuring that such remains

are reinterred with appropriate dignity, with input from the Most Likely Descendant if such person can be found and consulted within the time frame contemplated by state law.

Project Site, Off-Site Sewer Lift Station Improvements Area, and Off-Site Affordable Housing Parcel

8-3(a) *The following language shall be noted on project Improvement Plans, subject to review and approval by the Placer County Community Development Resource Agency:*

If articulated or disarticulated human remains are encountered on the proposed project site, off-site improvement area, or off-site affordable housing parcel during construction activities, all work within 100 feet of the find must cease, and any necessary steps to ensure the integrity of the immediate area must be taken. The Placer County Coroner shall be immediately notified. If the Coroner determines the remains are of Native American origin, the Coroner shall notify the Native American Heritage Commission (NAHC) within 24 hours. The NAHC shall determine and notify a Most Likely Descendant (MLD). Further actions shall be determined, in part, by the desires of the MLD. The MLD shall be afforded 48 hours to make recommendations regarding the disposition of the remains following notification from the NAHC of the discovery. If the MLD does not make recommendations within 48 hours, the owner shall, with appropriate dignity, reinter the remains in an area of the property secure from further disturbance. Alternatively, if the owner does not accept the MLD's recommendations, the owner or the descendant may request mediation by the NAHC.

Off-Site Affordable Housing Parcel

8-3(b) *Implement the following Mitigation Measure set forth in this EIR if archeological or historical resources are discovered during construction:*

- *<u>8-2(d)</u> Implement RVSP EIR Mitigation Measure 7-1b:*

  A qualified professional archaeologist shall be retained to conduct subsurface testing at potentially important known archaeological sites. As it has not been determined if the known sites within the Specific Plan Area are eligible for inclusion to either the NRHP or CRHR, subsurface testing (i.e., resource evaluation) should be initiated for sites when construction is to occur within 100 feet of the resource and where Mitigation Measure 7-1a [incorporated as Mitigation Measure 8-2(c) of this EIR] proves infeasible. Subsurface testing should also be implemented if culturally significant materials (i.e., unique archaeological resources or historical resources) are inadvertently exposed during construction.

  Subsurface testing procedures could involve shovel testing, augering, or other such techniques designed to identify and/or characterize subsurface archaeological deposits. If a resource is determined to be important under CEQA (i.e., because it is a unique

archaeological resource or an historical resource), then Mitigation Measure 7-1c [incorporated as Mitigation Measure 8-2(e) of this EIR] must also be implemented.

8-3(c) *Implement the following Mitigation Measure set forth in this EIR if archeological or historical resources are discovered during construction:*

- *<u>8-2(e)</u> Implement RVSP EIR Mitigation Measure 7-1c:*

  A qualified professional archaeologist shall be retained to conduct data recovery excavation. This mitigation measure will be implemented as an alternative to Mitigation Measures 7-1a [incorporated as Mitigation Measure 8-2(c) of this EIR] at cultural resource sites determined to be eligible for inclusion in either the NRHP or CRHR.

  In compliance with CEQA, implementation of this mitigation measure would entail preparation and adoption of a data recovery plan that makes provisions for adequately recovering the scientifically consequential information from and about the resource. The data recovery plan must be prepared and adopted prior to commencing any excavation activities.

8-3(d) *Implement RVSP EIR Mitigation Measure 7-2a if archeological or historical resources are discovered during construction:*

In the event of the discovery of buried archaeological artifacts, exotic rock (non-native), or unusual amounts of shell or bone, it is recommended that project activities in the vicinity of the find be immediately stopped and a qualified professional archaeologist consulted to assess the resource and provide proper management recommendations. If the find is determined to be a historical or unique archaeological resource, contingency funding and a time allotment to allow for implementation of avoidance measures or appropriate mitigation shall be made available, as provided in Section 15064.5 of the CEQA Guidelines. In addition, the Placer County Planning Department and Department of Museums must also be contacted. Work in the area may only proceed after authorization is granted by the Placer County Planning Department. All construction and improvement plans for subsequent development within the Plan Area involving ground disturbance shall include these provisions. The archaeologist shall evaluate any potential effects on any historical resource or unique archaeological resource, and where such effects would be significant, shall recommend potential mitigation to the County for its consideration. The County will assess the feasibility of any proposed mitigation (e.g., avoidance of the historical resource) and impose the mitigation where feasible in light of factors such as the nature of the find, project design, costs, Specific Plan policies and land use assumptions, and other considerations. If avoidance is unnecessary or infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on

other parts of the project site while mitigation for paleontological resources is carried out.

8-4 Have the potential to cause a physical change which would affect unique ethnic cultural values, or restrict existing religious or sacred uses within the potential impact area. Based on the analysis below and with the implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, as well as potential future development of the off-site affordable housing parcel, which have the potential to cause a physical change which would affect unique ethnic cultural values, or restrict existing religious or sacred uses within the potential impact area.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to have the potential to cause a physical change which would affect unique ethnic cultural values, or restrict existing religious or sacred uses within the potential impact area, would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

Cultural resource site P-31-000203 was originally recorded as a small precontact occupation site, located adjacent to the off-site sewer lift station improvements area, containing one white petrified wood projectile point, ochre, and manos. The site was first recorded in 1965 and was updated in 1991, during which one unifacial Greenstone flake with possible utilized chippage was identified. The updated 1991 report did not include mention of the previously found artifacts. A subsequent update of the site occurred in 1999 during which a fragment of a small andesitic cobble mano and a uniface metavolcanic cobble chopper were located; further differences from the 1991 update were not noted. Natural Investigations Company completed a field survey that included the portion of P-31-000203 located in the off-site sewer lift station improvements area. The intensive pedestrian survey completed for the Cultural and Paleontological Resources Assessment determined that P-31-000203 was not located within the off-site sewer lift station improvements area. In addition, the off-site sewer lift station improvements area is heavily utilized by recreational activities; a Community Park is adjacent to the west, and a previously landscaped grass area adjacent to the south was being regraded during the survey. The 1999 update of P-31-000203 mentioned the site being disced regularly. Given the disturbance of the site and inability to locate any of the recorded artifacts, the site does not retain any integrity or further useful cultural information.

Nonetheless, given the project site's location within an area sensitive for precontact archaeological resources, including resources associated with the ancestral Nisenan culture, unknown sites that provide significant cultural value to Native American tribes culturally affiliated with the project area could be located on-site beneath the ground surface. In the event that project ground-disturbing activities encounter such sites, a significant impact could occur. Potential impacts to tribal cultural resources are evaluated in Chapter 17, Tribal Cultural Resources, of this EIR.

Off-Site Affordable Housing Parcel

As previously discussed, impacts related to cultural resources within the RVSP planning area have been previously addressed in the RVSP EIR. The RVSP EIR did not specifically analyze impacts related to physical changes which would affect unique ethnic cultural values, or restrict existing religious or sacred uses. As discussed under Impact 7-1 of the RVSP EIR, previously recorded archaeological resources CA-PLA-69, -76, -77, and -81 may lie buried beneath flood-related deposits within the planning area. As such, the RVSP EIR determined that ground-disturbing activities associated with buildout of the RVSP within or adjacent to archaeological resources CA-PLA-69, -76, -77, and -81 could potentially damage unique archeological resources. In addition, as discussed under Impact 7-2 of the RVSP EIR, previously undiscovered cultural resources could be inadvertently exposed during grading or excavation activities associated with buildout of the RVSP. Therefore, although the off-site affordable housing parcel is undeveloped and relatively undisturbed, development of the parcel could cause a physical change which would affect unique ethnic cultural values, or restrict existing religious or sacred uses within the potential impact area. However, the RVSP EIR included Mitigation Measures 7-1b, 7-1c, and 7-2a, which intend to avoid impacts to previously unknown cultural resources by requiring compliance with the recommendations of a qualified archaeologist, subsurface testing, and data recovery excavation.

At such time the off-site affordable housing parcel gets developed, the future developer would be required to comply with RVSP Mitigation Measures 7-1b, 7-1c, and 7-2a, which would reduce the potential to cause a physical change which would affect unique ethnic cultural values, or restrict existing religious or sacred uses within the potential impact area to a less-than-significant level.

Conclusion

Based on the above, ground-disturbing activities on the project site, off-site sewer lift station improvements area, and off-site affordable housing parcel could have the potential to cause a physical change which would affect unique ethnic cultural values, or restrict existing religious or sacred uses within the potential impact area, and a ***significant*** impact could occur. The referenced RVSP mitigation measures are incorporated into this EIR as Mitigation Measures 8-2(d), 8-2(e), and 8-3(d).

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level by ensuring the avoidance and preservation of any tribal cultural resources encountered during construction or by ensuring the reburial of any such resources that cannot be avoided and preserved in place (or, with written permission from a culturally affiliated Tribe, the curation of such resources).

Project Site and Off-Site Sewer Lift Station Improvements Area

8-4(a) Implement the following Mitigation Measures set forth in this EIR:

- *<u>17-1(a)</u> The following language shall be noted on project Improvement Plans, subject to review and approval by the Placer County Community Development Resource Agency:*

If any suspected Tribal Cultural Resources (TCRs) or resources of cultural significance to the UAIC, including, but not limited to, features, anthropogenic/cultural soils, cultural belongings or objects (artifacts), shell, bone, shaped stones or bone, or ash/charcoal deposits are discovered by any person during construction activities, including ground disturbing activities, all work shall pause immediately within 100 feet of the find, or an agreed upon distance based on the project area and nature of the find. Work shall cease in and within the immediate vicinity of the find regardless of whether the construction is being actively monitored by a Tribal Monitor, cultural resources specialist, or professional archaeologist.

A Tribal Representative and the Placer County Community Development Resource Agency shall be immediately notified, and the Tribal Representative, in coordination with the Placer County Community Development Resource Agency, shall determine if the find is a TCR (PRC Section 21074) and the Tribal Representative shall make recommendations for further evaluation and treatment as necessary.

Treatment and Documentation:

The culturally affiliated Tribe shall consult with the Placer County Community Development Resource Agency to (1) identify the boundaries of the new TCR and (2) if feasible, identify appropriate preservation in place and avoidance measures, including redesign or adjustments to the existing construction process, and long-term management, or 3) if avoidance is infeasible, identify a reburial location in proximity of the find where no future disturbance is anticipated. Permanent curation of TCRs shall not take place unless approved in writing by the culturally affiliated Tribe.

The construction contractor(s) shall provide secure, on-site storage for culturally sensitive soils or objects that are components of TCRs that are found or recovered during construction. Only Tribal Representatives shall have access to the storage. Storage size shall be determined by the nature of the TCR and can range from a small lock box to a conex box (shipping container). A secure (locked), fenced area can also provide adequate on-site storage if larger amounts of material must be stored.

The construction contractor(s) and Placer County shall facilitate the respectful reburial of the culturally sensitive soils or objects. This includes providing a reburial location that is consistent with the Tribe's preferences, excavation of the reburial location, and assisting with the reburial, upon request.

Any discoveries shall be documented on a Department of Parks and Recreation (DPR) 523 form within two weeks of the discovery and submitted to the appropriate CHRIS center in a timely manner. The

DPR 523 forms shall be completed and submitted to the CHRIS center by the project archaeologist. If the project does not require an archaeologist, the DPR forms shall be completed and submitted to the CHRIS by the UAIC. If completed by the project archaeologist, the UAIC shall have an opportunity to review the completed forms.

Work at the TCR discovery location shall not resume until authorization is granted by the Placer County in coordination with the culturally affiliated Tribe.

If articulated or disarticulated human remains, or human remains in any state of decomposition or skeletal completeness, are discovered during construction activities, the Placer County Coroner and the culturally affiliated Tribe shall be contacted immediately. Upon determination by the Placer County Coroner that the find is Native American in origin, the Native American Heritage Commission will assign the Most Likely Descendent who will work with the project proponent to define appropriate treatment and disposition of the burials.

- *17-1(b) The following language shall be noted on project Improvement Plans, subject to review and approval by the Placer County Community Development Resource Agency:*

  The project proponent or their construction contractor shall comply with the following measure to assist with identification of TCRs at the earliest possible time during project-related earthmoving activities:

  - *The project proponent shall contact the UAIC Tribal Historic Preservation Officer (THPO) (thpo@auburnrancheria.com) at least two months prior to project ground-disturbing activities to retain the services of a UAIC Certified Tribal Monitor(s). The duration of the construction schedule and Tribal Monitoring shall be determined at this time.*
  - *A contracted Tribal Monitor(s) shall monitor all ground disturbing activities (e.g., vegetation removal, grading, and/or other ground disturbing activities; note: fill activities are excluded from this requirement) in the mapped area and 50' buffer provided by the UAIC to the County on June 26, 2025 (confidential map provided to the County and subsequently to the applicant). All ground-disturbing activities in the mapped area provided by the UAIC to the County on June 26, 2025, shall be subject to Tribal Monitoring unless otherwise determined unnecessary by the UAIC.*

- *Specific to the off-site sewer lift station location, a contracted Tribal Monitor(s) shall monitor initial clearing and grubbing for the entire footprint of disturbance.*
- *Tribal Monitors or Tribal Representatives shall have the authority to direct that work be temporarily paused, diverted, or slowed within 100 feet of the immediate impact area if sites, cultural soils, or objects of potential significance are identified. The temporary pause/diversion shall be of an adequate duration for the Tribal Representative to examine the resource.*
- *Appropriate treatment of TCRs may include, but is not limited to:*

    A. *Recordation of the resource(s);*
    B. *Avoidance and preservation of the resource(s); and/or*
    C. *Recovery and reburial of the resource(s) onsite or in a feasible off-site location in a designated area subject to no future disturbance. The location of the reburial shall be acceptable to the UAIC.*

- *To track the implementation of this measure, the Tribal Monitor(s) shall document field-monitoring activities on a Tribal Monitor log.*
- *The Tribal Monitor(s) shall wear the appropriate safety equipment while on the construction site.*
- *The Tribal Monitor, in consultation with the UAIC THPO and the project proponent, shall determine a mutual end or reduction to the on-site monitoring if/when construction activities have a low potential for impacting TCRs.*
- *In the event the Tribal Monitor does not report to the job site at the scheduled time after receiving 24 hour business day notice, construction activities may proceed without tribal monitoring. At no time, regardless of the presence or absence of a Tribal Monitor, shall suspected TCRs be mishandled or disrespected.*
- *The County shall assist with resolution of disagreements between the project proponent/contractor and the Tribe if such occurs on the project.*

- *<u>17-1(c)</u> The following language shall be noted on Improvement Plans, subject to review and approval by the Placer County Community Development Resource Agency:*

    - *The Applicant/Contractor shall provide a Tribal Cultural Awareness and Sensitivity Training (training) for all personnel involved in project construction, including field consultants and construction workers, at their own expense. The training shall be developed in coordination with interested Native American Tribes.*

- *The training shall be conducted before any project-related construction activities begin at the project site. The training will include relevant information regarding sensitive cultural resources and tribal cultural resources, including applicable regulations, protocols for avoidance, and consequences of violating State laws and regulations. The training will also describe appropriate avoidance and impact minimization measures for cultural resources and tribal cultural resources that could be located at the project site and will outline what to do and who to contact if any potential cultural resources or tribal cultural resources are encountered. The training will emphasize the requirement for confidentiality and culturally appropriate treatment of any discovery of significance to Native Americans and will discuss appropriate behaviors and responsive actions, consistent with Native American tribal values. The training may be done in coordination with the project archaeologist.*
- *All ground-disturbing equipment operators shall be required to receive the training and sign a form that acknowledges receipt of the training.*

Off-Site Affordable Housing Parcel

8-4(b) Implement the following Mitigation Measure set forth in this EIR:

- *<u>8-2(d)</u> Implement RVSP EIR Mitigation Measure 7-1b if culturally significant materials are discovered during construction:*

  A qualified professional archaeologist shall be retained to conduct subsurface testing at potentially important known archaeological sites. As it has not been determined if the known sites within the Specific Plan Area are eligible for inclusion to either the NRHP or CRHR, subsurface testing (i.e., resource evaluation) should be initiated for sites when construction is to occur within 100 feet of the resource and where Mitigation Measure 7-1a [incorporated as Mitigation Measure 8-2(c) of this EIR] proves infeasible. Subsurface testing should also be implemented if culturally significant materials (i.e., unique archaeological resources or historical resources) are inadvertently exposed during construction.

  Subsurface testing procedures could involve shovel testing, augering, or other such techniques designed to identify and/or characterize subsurface archaeological deposits. If a resource is determined to be important under CEQA (i.e., because it is a unique archaeological resource or an historical resource), then Mitigation Measure 7-1c [incorporated as Mitigation Measure 8-2(e) of this EIR] must also be implemented.

8-4(c) Implement the following Mitigation Measure set forth in this EIR:

- *<u>8-2(e)</u> Implement RVSP EIR Mitigation Measure 7-1c if culturally significant materials are discovered during construction:*

  A qualified professional archaeologist shall be retained to conduct data recovery excavation. This mitigation measure will be implemented as an alternative to Mitigation Measures 7-1a [incorporated as Mitigation Measure 8-2(c) of this EIR] at cultural resource sites determined to be eligible for inclusion in either the NRHP or CRHR.

  In compliance with CEQA, implementation of this mitigation measure would entail preparation and adoption of a data recovery plan that makes provisions for adequately recovering the scientifically consequential information from and about the resource. The data recovery plan must be prepared and adopted prior to commencing any excavation activities.

8-4(d) *Implement the following Mitigation Measure set forth in this EIR:*

- *<u>8-3(d)</u> Implement RVSP EIR Mitigation Measure 7-2a if archeological or historical resources are discovered during construction:*

  In the event of the discovery of buried archaeological artifacts, exotic rock (non-native), or unusual amounts of shell or bone, it is recommended that project activities in the vicinity of the find be immediately stopped and a qualified professional archaeologist consulted to assess the resource and provide proper management recommendations. If the find is determined to be a historical or unique archaeological resource, contingency funding and a time allotment to allow for implementation of avoidance measures or appropriate mitigation shall be made available, as provided in Section 15064.5 of the CEQA Guidelines. In addition, the Placer County Planning Department and Department of Museums must also be contacted. Work in the area may only proceed after authorization is granted by the Placer County Planning Department. All construction and improvement plans for subsequent development within the Plan Area involving ground disturbance shall include these provisions. The archaeologist shall evaluate any potential effects on any historical resource or unique archaeological resource, and where such effects would be significant, shall recommend potential mitigation to the County for its consideration. The County will assess the feasibility of any proposed mitigation (e.g., avoidance of the historical resource) and impose the mitigation where feasible in light of factors such as the nature of the find, project design, costs, Specific Plan policies and land use assumptions, and other considerations. If avoidance is unnecessary or infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of

the project site while mitigation for paleontological resources is carried out.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

8-5 Cause a cumulative loss of cultural resources. Based on the analysis below, the cumulative impact is *less than significant*.

Generally, while some cultural resources may have regional significance, the resources themselves are site-specific, and impacts to them are project-specific. For example, impacts to a subsurface archeological find at one project site would not generally be made worse by impacts to a cultural resource at another site due to development of another project. Rather, the resources and the effects upon them are generally independent. A possible exception to the aforementioned general conditions would be where a cultural resource represents the last known example of its kind or is part of larger cultural resources such as a single building along an intact historic Main Street. For such a resource, cumulative impacts, and the contribution of a project to them, may be considered cumulatively significant.

As described throughout this chapter, one previously recorded site (P-31-000203) was mapped directly adjacent to the off-site sewer lift station improvements area. However, the intensive pedestrian survey completed for the Cultural and Paleontological Resources Assessment determined that P-31-000203 was not located within the off-site sewer lift station improvements area.

Furthermore, the project site does not contain known surface or subsurface cultural resources. Nevertheless, the possibility exists that previously unknown resources could be discovered within the project site, off-site sewer lift station improvements area, or the off-site affordable housing parcel during construction activities. Such subsurface cultural resources could prove after inspection and analysis to be either unique archaeological resources or historical resources of an archaeological nature, or both. However, implementation of the project-specific mitigation measures set forth in this EIR (Mitigation Measures 8-2[a] through 8-2[e], 8-3[a] and 8-3[b], and 8-4[a]) would ensure that any impacts to known and previously unknown subsurface resources that are discovered on the project site, off-site sewer lift station improvements area, and off-site affordable housing parcel during construction activities are reduced to less than significant.

Similar to the proposed project, future development projects within the DCWPCP would be required to implement project-specific mitigation to ensure any potential impacts to identified cultural resources are reduced to a less-than-significant level, where feasible. Therefore, given that cultural resource impacts are generally site-specific and each future project within the DCWPCP would be required to mitigate any significant impacts as

feasible, any potential impacts associated with cumulative buildout of the DCWPCP area would not combine to result in a significant cumulative impact.

Conclusion

Based on the above, the potential for impacts related to a cumulative loss of cultural resources, to which implementation of the proposed project might contribute, is ***less than significant.***

Mitigation Measure(s)

None required.

9. ENERGY

9. ENERGY

9.1 INTRODUCTION

As discussed in Chapter 3, Project Description, of this EIR, the proposed project would include a total of 432 residential units and associated improvements, off-site sewer lift station improvements, and two options to meet the County's affordable housing regulations. The affordable housing options include the provision of a minimum of 22 Accessory Dwelling Units (ADUs) on lots proposed for development with single-family residential units, or an off-site proposal wherein Homes by Towne would rezone and transfer the fee title to the County for an approximately four-acre parcel off-site within the Riolo Vineyards Specific Plan (RVSP), which could develop a maximum of 120 affordable income-restricted units.

The Energy chapter of the EIR describes the potential impacts of the proposed project and off-site sewer lift station improvements area, as well as the off-site affordable housing parcel, related to energy. The chapter includes a discussion of the existing energy setting and potential impacts associated with energy use. This chapter is based primarily on the Placer County General Plan[1] (PCGP) and associated EIR,[2] the Dry Creek-West Placer Community Plan (DCWPCP),[3] the Placer County Sustainability Plan (PCSP),[4] the RVSP,[5] and the RVSP EIR.[6]

9.2 EXISTING ENVIRONMENTAL SETTING

The following section provides background information regarding the evaluation of energy impacts under CEQA, as well as an overview of the existing environmental setting in relation to energy consumption within the project area.

Overview of Energy Analyses Under CEQA

Energy use refers to the consumption of electricity, natural gas, propane, coal, or other fuel types in order to perform work. Public Resources Code Section 21100(b)(3) requires that EIRs prepared by state lead agencies shall include "[m]itigation measures proposed to minimize significant effects on the environment, including, but not limited to, measures to reduce the wasteful, inefficient, and unnecessary consumption of energy." Based on this language, CEQA Guidelines Section 15126.4(a)(1)(D), which applies to all lead agencies, provides that "[e]nergy conservation measures, as well as other appropriate mitigation measures, shall be discussed when relevant. Examples of energy conservation measures are provided in Appendix F." Subdivision (c)(2) of the same section, which focuses on mitigation for greenhouse gas (GHG) emissions, states that such measures may include "[r]eductions in emissions resulting from a project through implementation of project features, project design, or other measures, such as those described in Appendix F[.]" Appendix F (Energy Conservation), in turn, states that:

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1 Placer County. *Countywide General Plan Policy Document*. August 1994 (updated May 21, 2013).
2 Placer County. *Countywide General Plan EIR*. July 1994.
3 Placer County. *Dry Creek-West Placer Community Plan*. Amended May 12, 2009.
4 Placer County. *Placer County Sustainability Plan: A Greenhouse Gas Emission Reduction Plan and Adaptation Strategy*. January 28, 2020.
5 Placer County. *Riolo Vineyard Specific Plan Update*. October 2015.
6 Placer County. *Riolo Vineyard Specific Plan Environmental Impact Report*. January 2008.

> The goal of conserving energy implies the wise and efficient use of energy. The means of achieving this goal include:
>
> 1) decreasing overall per capita energy consumption,
> 2) decreasing reliance on fossil fuels such as coal, natural gas and oil, and
> 3) increasing reliance on renewable energy sources.
>
> To assure that energy implications are considered in project decisions, the California Environmental Quality Act requires that EIRs include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy (see Public Resources Code Section 21100(b)(3)).

Accordingly, the fact that a proposed project uses energy resources would not necessarily result in a significant environmental impact. Rather, the question is whether the project would result in inefficient, wasteful, or unnecessary consumption of non-renewable energy resources.

The generation of electricity through non-renewable sources and the direct combustion of fuel is known to result in the emission of GHGs. As a result, energy use is closely related to GHGs and to automobile use. Refer to Chapter 6, Air Quality and Greenhouse Gas Emissions, and Chapter 16, Transportation, of this EIR for additional details related to GHG emissions and vehicle miles travelled (VMT). This chapter specifically focuses on the use of energy during construction (i.e., the use of diesel-fueled off-road equipment, emergency generators, heavy truck use for hauling materials, worker commutes, etc.) and operation of the proposed project (i.e., the combustion of natural gas for cooking appliances, fireplaces, and heating mechanisms, household electricity use, and energy use associated with resident vehicle trips). Natural gas use is typically considered in units of kilo-British thermal units (kBTU), and electricity use is typically referred to in units of kilowatt-hours (KWh).

Energy Use in California

California is one of the highest energy demanding states within the nation. According to the U.S. Department of Energy, the State consumes approximately 303,300 gigawatt-hours (GWh) of electricity per year.[7] Activities such as heating and cooling structures, lighting, the movement of goods, agricultural production, and other facets of daily life consume a variety of energy sources. However, despite California's overall high level of energy use, the State has one of the lowest per capita energy consumption levels in the U.S.

In 2024, California was the fourth-largest electricity producer in the nation.[8] Energy within the State is provided primarily to consumers through a mix of sources including natural gas, hydroelectric, non-hydroelectric renewable sources, nuclear, coal, and petroleum. California is the nation's top producer of electricity from solar, geothermal, and biomass energy. Renewable resources, including hydroelectric power and small-scale (less than one megawatt [MW]), customer-sited solar photovoltaic (PV) systems, accounted for 57 percent of California's in-state electricity generation; natural gas-fired power plants fueled another 35 percent of the State's energy generation, and nuclear power supplied almost all the rest.

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7 U.S. Department of Energy. *State of California Energy Sector Risk Profile*. March 2021.

8 U.S. Energy Information Administration. *California: State Profile and Energy Estimates*. Available at: https://www.eia.gov/state/index.php?sid=CA. Accessed December 2025.

Figure 9-1 presents the sources that are used to produce electricity in the State. As presented therein, energy is mostly generated from non-hydroelectric renewables (such as wind and solar), followed by natural gas combustion and hydroelectric. Figure 9-2 presents energy consumption within California for the most recent year for which data is available (2024).

As shown in the figure, transportation-related activity consumes the largest single share of energy within the State. The second largest consumer is the industrial sector, followed closely by the residential and commercial sectors.

Energy Use in Placer County

In the year 2024, Placer County consumed approximately 3,171 GWh, which constitutes approximately one percent of the total energy consumed within the State that year.[9] In 2020, the Placer County Board of Supervisors adopted the PCSP, which establishes goals and policies for energy efficiency.[10] As a result, the PCSP is considered the local plan for renewable energy and efficiency. However, the County first began programs to improve municipal building energy efficiency and resource conservation in 2005. For example, the Placer County Government Center Master Plan represents an effort to update the County's Dewitt Center. The Master Plan includes strategies for significant reductions in energy and water use, and efforts to reduce GHG emissions associated with commuting.

The Master Plan also calls for on-site housing and commercial uses, in addition to water efficiency improvements and efforts to reduce employee commute trips, and support for alternative fuel vehicles.

The County has also encouraged increases in electric vehicle (EV) infrastructure at four County buildings, supported greater use of battery electric and plug-in hybrid vehicles in the County fleet, and installed solar panels on County buildings in Auburn and Roseville. Placer County is also involved in the Middle Fork Project hydroelectric generations, which is discussed in further detail below.

Middle Fork Project

The Middle Fork Project is a multi-purpose water supply and hydro-generation project designed to conserve and control waters of the Middle Fork American River, the Rubicon River, and several associated tributary streams. The Middle Fork Project stores water from rain and snow during the fall and winter months and releases water all year to meet the water demands within western Placer County and to generate hydroelectric power for the California electrical grid.[11] The Placer County Water Agency, with Placer County as a partner, has operated the Middle Fork Project for over 50 years. Hydroelectric power from the Middle Fork Project has a combined generating capacity of approximately 224 MW, with an average of 1,030,000 MW-hours per year (MWh/yr).

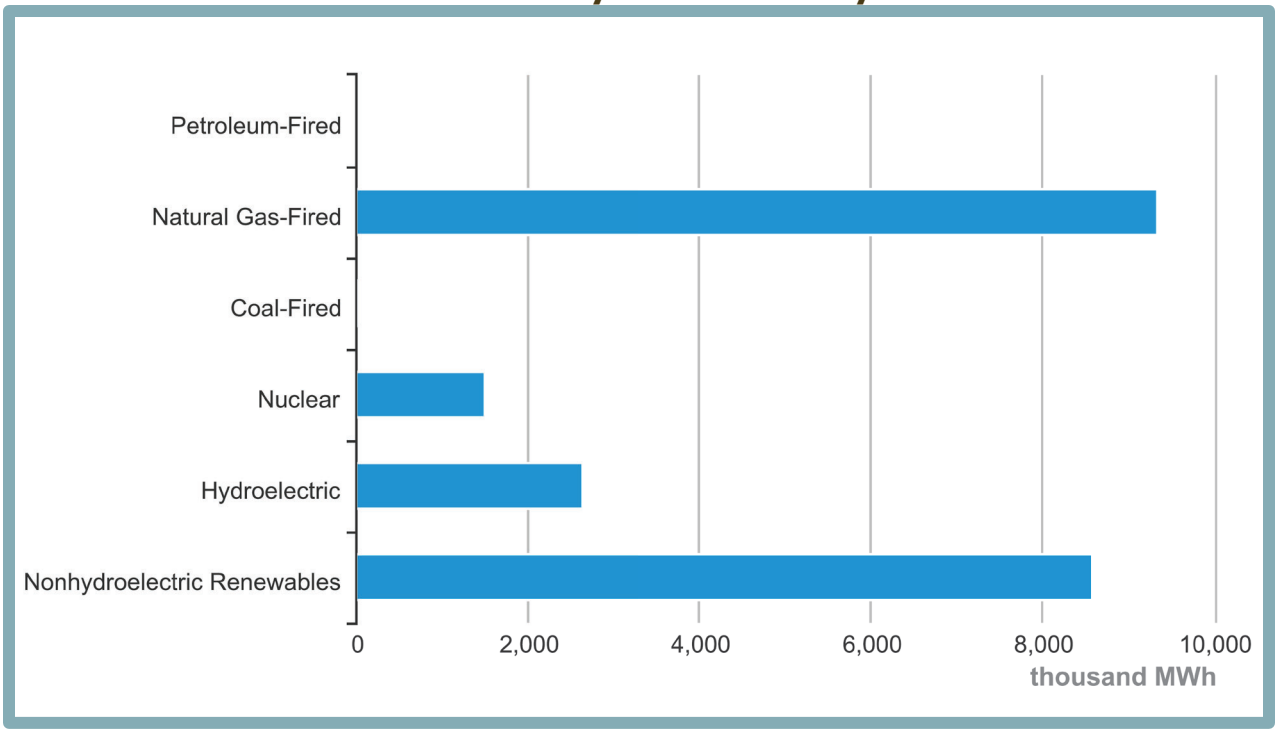
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9 California Energy Commission. *Electricity Consumption*. Available at: https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/california-energy-consumption-dashboards-0. Accessed November 2025.

10 Placer County Community Development Resource Agency. *Placer County Sustainability Plan: A Greenhouse Gas Emission Reduction Plan and Adaptation Strategy.* January 28, 2020.

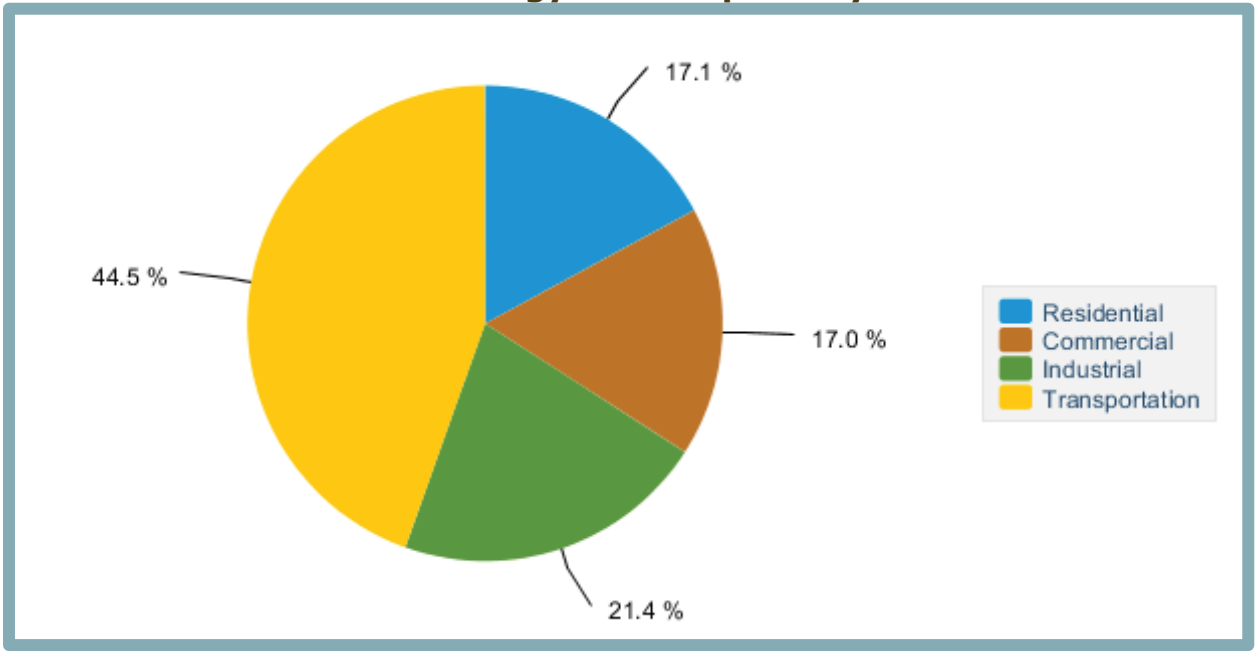
11 Placer County. *Middle Fork Project Finance Authority*. Available at: https://www.placer.ca.gov/5413/Middle-Fork-Project-Finance-Authority. Accessed July 2025.

Figure 9-1
California Electricity Generation by Source



Source: U.S. Energy Information Administration. California: State Profile and Energy Estimates. Available at: https://www.eia.gov/state/index.php?sid=CA. Accessed December 2025.

Figure 9-2
California Energy Consumption by Sector



Source: U.S. Energy Information Administration. California: State Profile and Energy Estimates. Available at: https://www.eia.gov/state/index.php?sid=CA. Accessed December 2025.

* Figures not OCR Compatible

Energy Use at the Project Site

Electricity in the project area is currently provided by the Sacramento Municipal Utility District (SMUD), and natural gas is provided by Pacific Gas and Electric (PG&E).

The project site is generally undeveloped, consisting mainly of annual grasslands, with trees scattered throughout. Walerga Road runs through the center of the project site and the southern portion of the site contains an existing paved bicycle trail. Additionally, the off-site affordable housing parcel is generally undeveloped and consists of annual grasslands. The only energy utilized within any of the project improvements areas is the limited energy use at the existing Dry Creek/West Placer Community Facilities District (CFD) #1 lift station. Thus, the existing energy demand associated with the project site, off-site affordable housing parcel, and off-site sewer lift station improvements area is generally little to null.

9.3 REGULATORY CONTEXT

Energy consumption and generation is monitored and regulated through the efforts of various international, federal, State, and local government agencies. The agencies responsible for monitoring or reducing energy consumption are discussed below.

Federal Regulations

The following are the federal regulations relevant to energy.

Energy Policy and Conservation Act

The Energy Policy and Conservation Act (EPCA) was originally enacted in 1975 with the intention of ensuring that all vehicles sold in the U.S. meet established fuel economy standards. Part A of Title III of the EPCA established the Corporate Average Fuel Economy (CAFÉ) standards for automobiles. Following congressional establishment of the original set of fuel economy standards the U.S. Department of Transportation was tasked with establishing additional on-road vehicle standards and making revisions to standards as necessary. Compliance with established standards is based on manufacturer fleet average fuel economy, which originally applied to both passenger cars and light trucks but did not apply to heavy-duty vehicles exceeding 8,500 pounds in gross vehicle weight. The fuel economy program implemented under the Energy Policy and Conservation Act is known as CAFE Standards. Updates to the CAFE standards since original implementation have increased fuel economy requirements and began regulation of medium- and heavy-duty vehicles.

Part B of Title III of the EPCA established the Energy Conservation Program gives the Department of Energy the "authority to develop, revise, and implement minimum energy conservation standards for appliances and equipment." In early 2024, the Ninth Circuit Court of Appeals, in *California Restaurant Association v. City of Berkeley*, 89 F.4th 1094, held that EPCA preempted an ordinance enacted by the City of Berkeley prohibiting natural gas connections in new construction. The court reasoned that the ban effectively regulates the energy usage of natural gas fired products, some of which are regulated under the EPCA, because those products' "energy usage" would be reduced to zero in buildings subject to Berkeley's gas ban. EPCA, the court concluded, disallowed such an outcome.

Energy Policy Act of 2005

The Energy Policy Act of 2005 addressed energy production in the U.S. from various sources. In particular, the Energy Policy Act of 2005 included tax credits, loans, and grants for the

implementation of energy systems that would reduce GHG emissions related to energy production.

State Regulations

The primary State regulatory agencies governing energy consumption are the California Energy Commission (CEC) and the California Public Utilities Commission (CPUC).

The CEC, created by the Legislature in 1974, has seven major responsibilities: forecasting future energy needs; promoting energy efficiency and conservation by setting the State's appliance and building energy efficiency standards; supporting energy research that advances energy science and technology through research, development, and demonstration projects; developing renewable energy resources; advancing alternative and renewable transportation fuels and technologies; certifying thermal power plants 50 MW and larger; and planning for and directing State response to energy emergencies.[12]

The CPUC regulates privately owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies. The CPUC is responsible for ensuring that customers have safe, reliable utility service and infrastructure at reasonable rates, regulating utility services, stimulating innovation, and promoting competitive markets.[13]

The State has adopted various regulations aimed at reducing energy consumption, increasing energy efficiency, and mandating sourcing requirements for electricity production. The following regulations are applicable to the proposed project and the off-site affordable housing parcel.

Building Energy

The following regulations relate to energy efficiency and energy use reductions in the built environment.

Title 24, Part 6

Title 24 of the California Code of Regulations (CCR), which is known as the California Building Standards Code (CBSC), was established in 1978 and serves to enhance and regulate California's building standards. While not initially promulgated to reduce GHG emissions, Part 6 of Title 24 specifically established Building Energy Efficiency Standards that are designed to ensure new and existing buildings in California achieve energy efficiency and preserve outdoor and indoor environmental quality. These energy efficiency standards are reviewed periodically, and revised if necessary, by the Building Standards Commission and CEC (Public Resources Code [PRC] Section 25402[b][1]). The regulations receive input from members of industry, as well as the public, with the goal of "reducing of wasteful, uneconomic, inefficient, or unnecessary consumption of energy" (PRC Section 25402). The regulations are scrutinized and analyzed for technological and economic feasibility (PRC Section 25402[d]) and cost effectiveness (PRC Sections 25402[b][2] and [b][3]). As a result, the standards save energy, increase electricity supply reliability, increase indoor comfort, avoid the need to construct new power plants, and help preserve the environment.

[12] California Energy Commission. *About the California Energy Commission*. Available at: http://www.energy.ca.gov/about. Accessed July 2025.
[13] California Public Utilities Commission. *California Public Utilities Commission*. Available at: https://www.cpuc.ca.gov/about-cpuc. Accessed July 2025.

The 2022 Title 24 standards are the applicable building energy efficiency standards and became effective on January 1, 2023. Compliance with the 2022 Title 24 Building Energy Efficiency Standards will reduce energy use and associated GHG emissions compared to structures built in compliance with the previous 2019 Title 24 standards.

Title 24, Part 11

In addition to the CEC's efforts, in 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11 of Title 24) is commonly referred to as CALGreen, and establishes minimum mandatory standards and voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality. The CALGreen standards took effect in January 2011 and instituted mandatory minimum environmental performance standards for all ground-up, new construction of commercial, low-rise residential and State-owned buildings and schools and hospitals. The original CALGreen standards have been updated several times. The CALGreen 2022 standards, which are the current standards, improved upon the 2019 CALGreen standards, and went into effect on January 1, 2023. The 2022 CALGreen Code focuses on four key areas in newly constructed homes and businesses:[14]

- Encouraging electric heat pump technology for space and water heating, which consumes less energy and produces fewer emissions than gas-powered units.
- Establishing electric-ready requirements for single-family homes to position owners to use cleaner electric heating, cooking and electric vehicle (EV) charging options whenever they choose to adopt those technologies.
- Expanding solar PV system and battery storage standards to make clean energy available onsite and complement the state's progress toward a 100 percent clean electricity grid.
- Strengthening ventilation standards to improve indoor air quality.

The CALGreen standards also include voluntary efficiency measures that are provided at two tiers and implemented at the discretion of local agencies and applicants. According to Section A4.602 of Appendix A4 of the CALGreen Code, CALGreen's Tier 1 standards call for a 15 percent improvement in energy requirements, stricter water conservation, 65 percent diversion of construction and demolition waste, 10 percent recycled content in building materials, 20 percent permeable paving, 20 percent cement reduction, and cool/solar-reflective roofs. CALGreen's more rigorous Tier 2 standards call for a 30 percent improvement in energy requirements, stricter water conservation, 80 percent diversion of construction and demolition waste, 15 percent recycled content in building materials, 30 percent permeable paving, 25 percent cement reduction, and cool/solar-reflective roofs.

It should also be noted that the CALGreen standards include what is commonly called California's 2020 Solar Mandate, which requires all newly built homes to install solar photovoltaic systems. The mandate applies to "all low-rise residential occupancies including single-family homes, duplexes, garden apartments, and other housing types with three or fewer habitable stories." The mandate includes multi-family housing such as apartment buildings as long as the buildings are under three stories. Sizing requirements are based on the floor area of the home and the climate

[14] California Energy Commission. *2022 Building Energy Efficiency Standards for Residential and Nonresidential Buildings: For the 2022 Building Energy Efficiency Standards Title 24, Part 6, and Associated Administrative Regulations in Part 1.* Available at: https://www.energy.ca.gov/publications/2022/2022-building-energy-efficiency-standards-residential-and-nonresidential. Accessed June 2025.

zone. The solar panel systems must be sized to provide for the full annual energy usage of the home. Effective in January 2023, California's Solar Mandate also requires that all single-family homes be electric-ready. The CALGreen standards also include guidance for installing battery storage systems. The battery portion of the mandate currently only applies to select businesses.

Title 20

Title 20 of the CCR requires manufacturers of appliances to meet State and federal standards for energy and water efficiency. The CEC certifies an appliance based on a manufacturer's demonstration that the appliance meets the standards. New appliances regulated under Title 20 include refrigerators, refrigerator-freezers, and freezers; room air conditioners and room air-conditioning heat pumps; central air conditioners; spot air conditioners; vented gas space heaters; gas pool heaters; plumbing fittings and plumbing fixtures; fluorescent lamp ballasts; lamps; emergency lighting; traffic signal modules; dishwaters; clothes washers and dryers; cooking products; electric motors; low-voltage dry-type distribution transformers; power supplies; televisions and consumer audio and video equipment; and battery charger systems. Title 20 presents protocols for testing each type of appliance covered under the regulations, and appliances must meet the standards for energy performance, energy design, water performance, and water design. Title 20 contains three types of standards for appliances: federal and State standards for federally regulated appliances, State standards for federally regulated appliances, and State standards for non-federally regulated appliances.

Assembly Bill 1109

Enacted in 2007, Assembly Bill (AB) 1109 required the CEC to adopt minimum energy efficiency standards for general-purpose lighting to reduce electricity consumption by 50 percent for indoor residential lighting and by 25 percent for indoor commercial lighting.

Climate Change Scoping Plan

In 2008, the California Air Resources Board (CARB) approved the first Scoping Plan related to the reduction of GHG emissions, which includes several measures related to energy efficiency. The Scoping Plan included a mix of recommended strategies that combined direct regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs calculated to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the State's long-range climate objectives. The key elements of the Scoping Plan related to building energy include the following:

1. Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
2. Achieving a statewide renewable energy mix of 33 percent;
3. Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85 percent of California's GHG emissions; and
4. Creating targeted fees, including a public goods charge on water use, fees on gases with a high global warming potential, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation.

In 2014, CARB approved the first update to the Scoping Plan. The *First Update to the Climate Change Scoping Plan: Building on the Framework* (First Update) defined the State's GHG emission reduction priorities for the next five years. The First Update recommended a mix of technologies in key economic sectors to reduce emissions through 2050, including energy

demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and the rapid market penetration of efficient and clean energy technologies.

In December 2017, CARB adopted California's *2017 Climate Change Scoping Plan* (2017 Scoping Plan). The 2017 Scoping Plan builds on the successful framework established in the initial Scoping Plan and First Update. Strategies within the 2017 Scoping Plan include implementing renewable energy and energy efficiency measures, increased stringency of the Low Carbon Fuel Standard (LCFS), measures identified in the Mobile Source and Freight Strategies, measures identified in the proposed Short-Lived Climate Pollutant Plan, and increased stringency of SB 375 targets (discussed in further detail below).

The most recent update to the Scoping Plan, the 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan Update) was adopted by the CARB in December 2022.[15] The 2022 Scoping Plan Update builds upon previous efforts to reduce GHG emissions and is designed to continue to shift the California economy away from dependence on fossil fuels. The 2022 Scoping Plan Update, the most comprehensive and far-reaching Scoping Plan developed to date, identifies a technologically feasible and cost-effective path to achieve carbon neutrality by 2045 while also assessing the progress California is making toward reducing its GHG emissions by at least 40 percent below 1990 levels by 2030, as called for in SB 32 and laid out in the 2017 Scoping Plan. The 2030 target is an interim but important step to the broader goal of deep decarbonization by 2045. The relatively longer path assessed in the Scoping Plan incorporates, coordinates, and leverages many existing and ongoing efforts to reduce GHGs and air pollution, while identifying new clean technologies and energy. Given the focus on carbon neutrality, the Scoping Plan also includes discussion for the first time of the Natural and Working Lands (NWL) sectors as both sources of emissions and carbon sinks.

The 2022 Scoping Plan Update lays out a path to achieve targets for carbon neutrality and reduce GHG emissions by 85 percent below 1990 levels by 2045, as directed by AB 1279. The actions and outcomes in the plan will achieve significant reductions in fossil fuel combustion by deploying clean technologies and fuels, further reductions in short-lived climate pollutants, support for sustainable development, increased action on NWL to reduce emissions and sequester carbon, and the capture and storage of carbon.

Transportation/Fuel Energy

The following regulations relate to fuel efficiency and energy use reductions in the transportation and motorized vehicle sector.

Assembly Bill 1493

In 2002 California adopted AB 1493, also known as the Pavley I standards, which required new passenger vehicles with model years 2009 to 2016 to meet more stringent fuel efficiency standards. Additional laws have extended these rules to cover vehicles from future model years.

Executive Order S-1-07

Executive Order (EO) S-1-07, otherwise known as the LCFS, was adopted in 2009 and requires transportation fuels such as gasoline and diesel sold within the state to be less carbon intensive.

[15] California Air Resources Board. *2022 Scoping Plan for Achieving Carbon Neutrality*. November 16, 2022.

These policies reduce emissions from on-road transportation and off-road equipment use in Placer County.

Executive Order B-16-12

EO B-16-12 (March 2012) required that State entities under the governor's direction and control support and facilitate the rapid commercialization of zero-emissions vehicles. The order directed CARB, CEC, CPUC, and other relevant agencies to work with the Plug-In Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve goals by 2015, 2020, and 2025. On a statewide basis, EO B-16-12 established a target reduction of GHG emissions from the transportation sector equaling 80 percent less than 1990 levels by 2050. EO B-16-12 did not apply to vehicles that have special performance requirements necessary for the protection of public safety and welfare.

Assembly Bill 1346

AB 1346 (October 2021) prohibits non-electric small off-road engines. Small off-road engines, which are used primarily in lawn and garden equipment, emit high levels of air pollutants and, in 2020, California daily criteria pollutant emissions from small off-road engines were higher than emissions from light-duty passenger cars. Thus, by January 1, 2024, regulations shall prohibit engine exhaust and evaporative emissions from new small off-road engines.

Executive Order N-79-20 and the Advanced Clean Cars II Program

EO N-79-20 (September 2020) directs the State to require that 100 percent of new passenger cars and light-duty trucks sold in California be zero-emission vehicles (ZEVs) by the year 2035. EO N-79-20 focuses on new vehicle sales for automakers, not existing cars and trucks already owned by California residents. The primary mechanism for achieving the ZEV target for passenger cars and light trucks is the Advanced Clean Cars II Program, which was approved by CARB in August 2022. The Advanced Clean Cars II Program (1) increased the stringency of the smog-causing criteria pollutant standards; (2) updated the ZEV regulation to require that 100 percent of new passenger vehicles meet zero-emission standards (including plug-in hybrids) by the 2035 model year, in compliance with EO N-79-20; and (3) established measures to ensure ZEV can provide enduring emission reductions. However, on May 22, 2025, the U.S. House of Representatives passed three Congressional Review Act (CRA) resolutions to rescind the U.S EPA's waiver for the Advanced Clean Cars II Program. The Senate passed all three resolutions on May 22, 2025, and President Donald Trump signed the CRA resolutions on June 12, 2025. Subsequently, a lawsuit has been filed by the State Attorney General on June 12, 2025 against the federal government's use of the CRA to upend California's clean vehicles program.[16] As such, the future enforceability of the Advanced Clean Cars II Program is currently unknown.

Senate Bill 500

SB 500 (September 2021) requires that, beginning January 1, 2030, to the extent allowed by federal law, any autonomous vehicle that is model year 2031 or later, has a gross vehicle weight rating of less than 8,501 pounds, and is equipped with Level 3, 4, or 5 automation (as defined by the International Society of Automotive Engineers) to be a zero-emission vehicle to be operated on California public roads.

[16] State of California Department of Justice. *California Will Not Waver in Defending Itself from Federal Overreach: Attorney General Bonta Sues Trump Administration for Attack on California's Clean Vehicles Program*. Available at: https://oag.ca.gov/news/press-releases/california-will-not-waver-defending-itself-federal-overreach-attorney-general. Accessed June 12, 2025.

Climate Change Scoping Plan

The key elements of CARB's 2022 Scoping Plan, as introduced above, related to transportation energy include the following:

1. Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets; and
2. Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the LCFS (17 CCR, Section 95480 et seq.).

Renewable Energy and Energy Procurement

The following regulation relates to the source of electricity provided to consumers within the State, as well as standards related to the generation of electricity within the State.

Renewable Portfolio Standard (RPS), Senate Bill 350, and Senate Bill 100

Established in 2002 under SB 1078, accelerated in 2006 under SB 107, and expanded in 2011 under SB 2, California's RPS is one of the most ambitious renewable energy standards in the country. The RPS program requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020.

Since the inception of the RPS program, the program has been extended and enhanced multiple times. In 2015, SB 350 extended the State's RPS program by requiring that publicly owned utilities procure 50 percent of their electricity from renewable energy sources by 2030. The requirements of SB 350 were expanded and intensified in 2018 through the adoption of SB 100, which mandated that all electricity generated within the State by publicly owned utilities be generated through carbon-free sources by 2045. In addition, SB 100 increased the previous renewable energy requirement for the year 2030 by 10 percent; thus, requiring that 60 percent of electricity generated by publicly owned utilities originate from renewable sources by the year 2030.

Local Regulations

The most prominent local regulations related to energy are established by the PCGP and the Placer County Sustainability Plan which are discussed in further detail below.

Placer County General Plan

The PCGP includes several goals that directly relate to energy efficiency. Some goals, however, have the indirect benefit of improving energy efficiency. For example, goals and policies related to the efficacy of the multi-modal transportation system would also affect fuel consumption and, thus, County-wide transportation energy resources. The following goals and policies related to energy, either directly or indirectly, are from the PCGP:

Natural Resources Element

Goal 6.F To protect and improve air quality in Placer County.

Policy 6.F.5 The County shall encourage project proponents to consult early in the planning process with the County regarding the applicability of Countywide indirect and areawide source programs and transportation control measures (TCM) programs. Project review

shall also address energy-efficient building and site designs and proper storage, use, and disposal of hazardous materials.

Goal 6.G To integrate air quality planning with the land use and transportation planning process.

Policy 6.G.3 The County shall encourage the use of alternative modes of transportation by incorporating public transit, bicycle, and pedestrian modes in County transportation planning and by requiring new development to provide adequate pedestrian and bikeway facilities.

Policy 6.G.5 The County shall endeavor to secure adequate funding for transit services so that transit is a viable transportation alternative. New development shall pay its fair share of the cost of transit equipment and facilities required to serve new projects.

Policy 6.G.6 The County shall require large new developments to dedicate land for and construct appropriate improvements for park-and-ride lots, if suitably located.

Transportation and Circulation Element

Goal 3.C To maximize the efficient use of transportation facilities so as to: 1) reduce travel demand on the County's roadway system; 2) reduce the amount of investment required in new or expanded facilities; 3) reduce the quantity of emissions of pollutants from automobiles; and 4) increase the energy-efficiency of the transportation system.

Policy 3.C.1 The County shall promote the use of transportation systems management (TSM) programs that divert automobile commute trips to transit, walking, and bicycling.

Policy 3.C.2 The County shall promote the use, by both the public and private sectors, of TSM programs that increase the average occupancy of vehicles.

Policy 3.C.3 The County shall work with other responsible agencies to develop other measures to reduce vehicular travel demand and meet air quality goals.

Policy 3.C.4 During the development review process, the County shall require that proposed projects meet adopted Trip Reduction Ordinance (TRO) requirements.

Goal 3.D To provide a safe, comprehensive, and integrated system of facilities for non-motorized transportation.

Policy 3.D.5 The County shall continue to require developers to finance and install pedestrian walkways, equestrian trails, and multi-purpose paths in new development, as appropriate.

Policy 3.D.9 Consider Complete Streets infrastructure and design features in street design and construction to create safe and inviting environments for all users consistent with the land uses to be served.

Dry Creek-West Placer Community Plan

The following goal and policies related to energy are from the Community Development Element of the DCWPCP:

Community Development Element: Population and Housing

Goal Provide safe, innovative and energy efficient residential developments.

Policy 3 Encourage the use of passive and direct solar collection and incorporate home design innovations which limit energy consumption.

Community Development Element: The Land Use Plan

Policy 27 Promote energy and resource conservation in any future land development project especially through consideration of alternative energy sources (i.e. passive solar collection) or state of the art energy and water conservation measures.

Placer County Sustainability Plan

The PCSP is a planning document that outlines the programs and policies that are recommended for implementation by the community and the County to achieve the most significant GHG emission reductions in unincorporated County. Implementation of the PCSP is intended to help achieve multiple community-wide goals, such as lowering energy costs, reducing air and water pollution, supporting local economic development, and improving public health and quality of life within Placer County. Strategies from the PCSP related to energy use that would apply to the proposed project and the off-site affordable housing parcel include the following:

Strategy E-1. Facilitate a transition to electricity as the primary energy source for residential, mixed-use, commercial, and office buildings.

Strategy E-4. Encourage new residential, office, and commercial development, as mitigation for discretionary projects exceeding applicable CEQA GHG thresholds, to implement CALGreen Tier 1 standards and accelerate Zero Net Energy (ZNE) in new construction.

Strategy E-15. Incentivize new homes to install renewable energy generation and energy storage systems that can fully supply the home's energy needs, in cases where the required size of the renewable energy system is insufficient to fully meet on-site demand.

Strategy E-18. Encourage electrical customers to participate in demand-reduction programs.

Strategy OR-1. Promote use of hybrid and alternative fuel construction equipment for new developments and significant retrofits.

Strategy OR-2. Encourage property owners and landscaping companies to adopt the use of hybrid and alternative-fuel landscaping equipment and promote the availability of incentive programs for new efficient landscaping equipment.

Strategy T-1. Facilitate the installation of public electric vehicle (EV) charging stations at existing and new residential and non-residential uses.

Strategy T-3. Encourage new development to provide a mix of land uses and to be located contiguous to existing developed areas and infrastructure to support connectivity and to reduce trip lengths.

Strategy T-10. Promote infill development that combines multiple land use types.

9.4 IMPACTS AND MITIGATION MEASURES

The standards of significance and methodology used to analyze and determine the proposed project's potential project-specific impacts related to energy are described below. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Based on Appendix G of the CEQA Guidelines, an impact related to energy is considered significant if the proposed project would:

- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or
- Conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

Method of Analysis

Quantitative thresholds for the analysis of potential impacts related to energy consumption have not been adopted by any local, regional, or statewide entities. Consequently, potential impacts of the project related to energy are determined based on whether the project would result in wasteful, inefficient, or unnecessary use of energy. In addition, the potential for the project to conflict with or obstruct a State or local plan for renewable energy generation or energy efficiency, such as the PCSP, is considered. The analysis of energy consumption includes consideration of energy demand during project construction and operations.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the proposed project and off-site sewer lift station improvements, as well as the two affordable housing options analyzed throughout this EIR, in comparison with the standards of significance identified above. In most cases, potential environmental impacts associated with the proposed project and the 22 on-site

accessory dwelling units (ADUs) would not differ. Thus, unless otherwise noted, the below analysis applies to both the proposed project and the on-site ADUs.

9-1 Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of the potential impacts related to the development of the proposed project, off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could potentially result in the wasteful, inefficient, or unnecessary consumption of energy resources during project construction.

Proposed Project, Off-Site Sewer Lift Station Improvements Area, and Off-Site Affordable Housing Parcel

Construction of the proposed project and the off-site sewer lift station improvements area, as well as the potential future development of the off-site affordable housing parcel would involve on-site energy demand and consumption related to use of oil in the form of gasoline and diesel fuel for construction worker vehicle trips, hauling and materials delivery truck trips, and operation of off-road construction equipment. In addition, diesel-fueled portable generators may be necessary to provide additional electricity demands for temporary on-site lighting, welding, and for supplying energy to areas of the site where energy supply cannot be met via a hookup to the existing electricity grid. As such, construction of the proposed project and the off-site affordable housing parcel would result in a temporary increase in energy consumption in the area. As the project site and the off-site affordable housing parcel develop, operational electricity demand would become the dominant demand source. Operational electricity demand would be much greater than construction, and is discussed further under Impact 9-2, below.

One of the primary energy-consuming activities associated with construction of the proposed project, off-site sewer lift station improvements, and potential future development of the off-site affordable housing parcel would be the soil hauling associated with properly grading and leveling the project site, off-site sewer lift station improvements area, and the off-site affordable housing parcel. However, site grading and leveling are required components of safe building practices and, thus, the energy consumption associated with such would not be considered wasteful or unnecessary. Even during the most intense period of construction, due to the different types of construction activities (e.g., site preparation, grading, building construction), only portions of the 92.2-acre project site, two-acre off-site sewer lift station improvements area, and four-acre off-site affordable housing parcel would be disturbed at a time, with operation of construction equipment occurring at different locations on each site, rather than a single location. In addition, the entire construction phase of the proposed project, including the off-site sewer lift station improvements, is anticipated to occur over approximately 10 years, and potential future construction of the off-site affordable housing parcel is anticipated to occur separately from the proposed project over approximately one year. As a result, the increased energy demand associated with construction would take place for a limited amount of time compared to the operational lifetime of the proposed project and the off-site affordable housing parcel. Additionally, construction equipment would be used

intermittently over the duration of the construction period, and equipment use would be restricted to the allowable hours set forth in Placer County Code Section 9.36.030(A)(7).

Specific considerations related to electricity and oil demand during construction of the proposed project, off-site sewer lift station improvements, and the off-site affordable housing parcel are discussed below.

Electricity Demand During Construction

Typically, at construction sites, electricity from the existing grid is used to power portable and temporary lights or office trailers. Because grid electricity would be used primarily for steady sources such as lighting, not sudden, intermittent sources such as welding or other hand-held tools, the increase in electricity usage at the project site, off-site sewer lift station improvements area, and off-site affordable housing parcel during construction would not be expected to cause any substantial peaks in demand. Construction of the proposed project, off-site sewer lift station improvements, and potential future development of the off-site affordable housing parcel would result in temporary increases in electricity demand and would not cause a permanent or substantial increase in demand that would exceed the SMUD's demand projections or exceed the ability of SMUD's existing infrastructure to handle such an increase. Therefore, construction of the proposed project, off-site sewer lift station improvements, and potential future development of the off-site affordable housing parcel would not result in any significant impacts on local or regional electricity supplies, the need for additional capacity, or on peak or base period electricity demands. In addition, standards or regulations specific to construction-related electricity usage do not currently exist.

Oil Demand During Construction

Based on the estimated number of off-road equipment used during construction activities, as well as the estimated number of hauling trips, worker trips, and vendor trips that would occur during project construction, the proposed project, including the off-site sewer lift station improvements, is anticipated to result in the use of approximately 191,682 gallons of diesel and 158,374 gallons of gasoline during construction activities.

In addition, construction associated with future potential development of the off-site affordable housing parcel is anticipated to result in a net increase of 2,460 gallons of diesel and 9,017 gallons of gasoline during construction activities. Therefore, the proposed project and the off-site affordable housing parcel would result in a combined total of 191,582 gallons of diesel and 162,015 gallons of gasoline during construction activities.

Nonetheless, all construction equipment and operation thereof would be regulated pursuant to the CARB In-Use Off-Road Diesel Vehicle Regulation. The In-Use Off-Road Diesel Vehicle Regulation is intended to reduce emissions from in-use, off-road, heavy-duty diesel vehicles in California by imposing a five-minute limit on idling, requiring all vehicles to be reported to CARB, restricting the addition of older vehicles into fleets, and requiring fleets to reduce emissions by retiring, replacing, or repowering older engines, or installing exhaust retrofits. Furthermore, as a means of reducing emissions, construction vehicles are required to become cleaner by using renewable energy resources. Engine tiers are used to describe the emissions intensity and efficiency of an engine. Construction equipment with Tier 0 or Tier 1 engines are the least efficient, and Tier 4 is the most efficient. In November 2021, the CARB began developing standards for Tier 5 engines.

All fleets are currently prohibited from adding Tier 0, Tier 1, or Tier 2 vehicles to the fleet. In addition, starting January 1, 2024, fleets with a total horsepower over 2,501, excluding non-profit training centers, may not add any Tier 3 or Tier 4 Interim vehicles.[17] The In-Use Off-Road Diesel Vehicle Regulation would, therefore, help to improve fuel efficiency for equipment used in construction of the proposed project, off-site sewer lift station improvements, and potential future development of the off-site affordable housing parcel.

The CARB enforces off-road equipment regulations through their reporting system, Diesel Off-road Online Reporting System (DOORS). Each construction fleet is required to update their DOORS account within 30 days of buying or selling a vehicle, and DOORS automatically calculates the fleet average index for each fleet. The fleet average index is an indicator of a fleet's overall emission rate, and is based on each vehicle's engine horsepower and model year, and whether it is equipped with a Verified Diesel Emission Control Strategy (VDECS). If a fleet cannot, or the entity or person who controls it does not want to, meet the fleet average target in a given year, the fleet operator may instead choose to comply with the Best Available Control Technology (BACT) requirements. A fleet may meet the BACT requirements each year by turning over or installing VDECS on a certain percentage of its total fleet horsepower. 'Turnover' means retiring a vehicle, designating a vehicle as permanent low-use (a vehicle used less than 200 hours per year), repowering a vehicle with a higher tier engine, or rebuilding the engine to a more stringent emission standard. By each compliance date (annually on January 1st), the fleet must either show that its fleet average index was less than or equal to the calculated fleet average target rate, or that the fleet has met the BACT requirements.[18] The proposed project, off-site sewer lift station improvements, and potential future development of the off-site affordable housing parcel would be required to comply with such regulations, which would ensure that construction equipment meets all State efficiency requirements.

Technological innovations and more stringent standards are being researched, such as multi-function equipment, hybrid equipment, or other design changes, which could help to further reduce demand on oil and limit emissions associated with construction. Over time, as technology progresses and more stringent emissions standards are put in place, construction equipment engines become increasingly efficient. Project construction would also be required to comply with all applicable Placer County Air Pollution Control District (PCAPCD) rules and regulations, which are indirectly related to energy efficiency, and would help to further reduce energy use associated with the proposed project, off-site sewer lift station improvements, and potential future development of the off-site affordable housing parcel. Refer to Chapter 6, Air Quality and Greenhouse Gas Emissions, for a complete list of the applicable PCAPCD rules and regulations.

Conclusion

Based on the above, the temporary increase in energy use occurring during construction of the proposed project, off-site sewer lift station improvements, and the potential future construction of the off-site affordable housing parcel would not result in a significant increase in peak or base demands or require additional capacity from local or regional energy supplies. In addition, the proposed project, off-site sewer lift station improvements,

[17] California Air Resources Board. *Amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulation*. August 29, 2023.

[18] California Air Resources Board. *Frequently Asked Questions, Regulation for In-Use Off-Road Diesel-Fueled Fleets (Off-Road Regulation)*. August 2014.

and the off-site affordable housing parcel would be required to comply with all applicable regulations related to energy conservation and fuel efficiency, as discussed above, which would help to reduce the temporary increase in demand. Therefore, construction of the proposed project, off-site sewer lift station improvements, and the potential future construction of the off-site affordable housing parcel would not result in wasteful, inefficient, or unnecessary consumption of energy resources, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

9-2 Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project operations. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of the potential impacts related to development of the proposed project and off-site sewer lift station improvements area, as well as potential future development of the off-site affordable housing parcel, which could result in the wasteful, inefficient, or unnecessary consumption of energy resources during project operations.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

The proposed off-site sewer lift station improvements are related to providing additional floodwater storage capacity, and would not result in a substantial increase in operational energy usage. Therefore, the below discussion focuses on operational energy usage associated with the proposed project.

Energy use associated with operation of the proposed project would be typical of residential uses, requiring electricity for interior and exterior building lighting, heating, ventilation, and air conditioning (HVAC) systems, electronic equipment, machinery, refrigeration, appliances, security systems, and more. Maintenance activities during operations, such as landscape maintenance, would involve the use of electric or gas-powered equipment. In addition to on-site energy use, the proposed project would result in transportation energy use associated with vehicle trips generated by the proposed single-family residences. Building energy use and transportation energy use for the proposed project are discussed separately below.

Building Energy Demand

The proposed project is required to comply with all applicable standards and regulations regarding energy conservation and fuel efficiency, including the CBSC and CARB standards, which would ensure that the future uses would be designed to be energy efficient to the maximum extent practicable. Adherence to the most recent CALGreen Code and the Building Energy Efficiency Standards would ensure that the proposed development would consume energy efficiently through the incorporation of such features as efficient water heating systems, high performance attics and walls, and high efficacy lighting. In addition, the 2022 CBSC requires that newly constructed residential buildings be developed to include a solar PV system. Therefore, a portion of the electricity demand associated with the proposed project would be met by on-site renewable energy.

State regulations promote the generation of renewable energy and encourage energy efficiency through requirements placed on utility providers and strict development standards. For instance, the RPS require utilities, including SMUD, to procure an increasing proportion of electricity from renewable sources. Ultimately the RPS requirements mandate that all electricity produced within the State be renewably sourced by the year 2045. Based on the air quality modeling prepared for the proposed project (refer to Chapter 6, Air Quality and Greenhouse Gas Emissions for additional detail), the proposed project is anticipated to result in increased electricity consumption of approximately 3.30 GWh annually during operations. Compared to the electricity consumption for all of Placer County, the proposed project's contribution would represent a 0.11 percent increase in electricity demand. Although the proposed project would increase electricity demand in the project area, the increased demand is not anticipated to conflict with SMUD's ability to meet the RPS requirements. In fact, SMUD intends to generate 100 percent of their electricity through renewable sources by 2030, which exceeds the requirements established by the RPS.

Natural gas would be provided to the proposed project by PG&E. The proposed project could include natural gas stovetops, heating mechanisms, and other appliances. Based on the air quality modeling prepared for the proposed project, the proposed project is anticipated to result in an annual natural gas consumption of approximately 12,062 million British Thermal Units (mBTU). However, increased energy and natural gas demand does not necessarily mean that a project would have an impact related to energy resources. Based on Appendix F of the CEQA Guidelines, a project would result in an impact related to energy resources if a project would result in the inefficient use or waste of energy. As stated above, any natural gas appliances would be required to comply with the efficiency standards set forth in the CBSC, and the provision of natural gas appliances would not conflict or obstruct with any State or local plans related to renewable energy. Notably, moreover, federal law does not permit the County, as ad hoc mitigation imposed on an individual development project, to prohibit the use of natural gas, as explained in the earlier discussion of the Energy Policy and Conservation Act (EPCA) and the Ninth Circuit Court of Appeal's decision *California Restaurant Association v. City of Berkeley,* 89 F.4th 1094. That court in that case explained that "EPCA preempts regulations that relate to 'the quantity of [natural gas] directly consumed by' certain consumer appliances at the place where those products are used. Right off the bat, we know that EPCA is concerned with the end-user's ability to use installed covered products at their intended final destinations. After all, a regulation that prohibits consumers from using appliances necessarily impacts the 'quantity of energy directly consumed by [the appliances] at point of use.' So, by its plain language, EPCA preempts Berkeley's regulation here because it prohibits the installation of necessary natural gas infrastructure on premises where covered natural gas appliances are used." (89 F.4th at pp. 1101-1102.)

With regard to landscaping and maintenance equipment, AB 1346 requires that all small off-road engines sold after January 1, 2024, be all-electric. By the time the proposed project is operational, a reasonable assumption can be made that at least a portion of the landscaping and maintenance equipment that would be used on-site would be electric. Given that electricity from SMUD is partially generated from renewable sources, the use of electric landscaping and maintenance equipment would be considered more energy efficient than diesel- or gas-powered landscaping and maintenance equipment.

Overall, the aforementioned requirements, especially including the requirement that new residential structures include on-site solar systems, would help to reduce building energy demand associated with the proposed project such that the proposed project would not result in wasteful, inefficient, or unnecessary consumption of energy resources during project operations associated with building energy demand.

Transportation Energy Demand

The average fuel economy for the U.S. passenger vehicle fleet was 24.7 miles per gallon (mpg) in 2023, the most recent year such data is available.[19] In addition, petroleum refineries in the U.S. typically produce approximately 20 gallons of gasoline from one 42-gallon barrel of crude oil. Using an average of 24.7 mpg and an annual VMT of approximately 8,701,491[20] for the proposed project, the proposed project is estimated to result in the consumption of approximately 17,403 barrels of petroleum a year related to gasoline. California is estimated to consume approximately 648 million barrels of petroleum per year.[21] Based on the annual consumption within the State, vehicle trips generated by the proposed project would result in an approximately 0.003 percent increase in the State's current consumption of gasoline.

The calculation above is likely an overestimate, as the estimate does not account for future project residents who already own vehicles and are currently driving, or the increasing ownership of electric vehicles. California leads the nation in registered alternatively-fueled and hybrid vehicles. In fact, under EO N-79-20 and the Advanced Clean Car II Program, the State has required that, to the extent allowed by federal law, all cars sold shall be zero-emission/electric vehicles starting in the year 2035. However, as discussed in the Regulatory Context section of this chapter, the future enforceability of the Advanced Clean Cars II Program is currently unknown as of the date of this EIR.

In addition, State-specific regulations encourage fuel efficiency and reduction of dependence on oil. Improvements in vehicle efficiency and fuel economy standards help to reduce consumption of gasoline and reduce the State's dependence on petroleum products. The 2022 CBSC also requires new developments to include the necessary electrical infrastructure for EV charging stations. Based on the above, the actual consumption of gasoline associated with the proposed project is anticipated to be even lower than the estimated 0.003 percent statewide contribution noted above.

Furthermore, a portion of the trips associated with the proposed project would not necessarily be new trips. Rather, some trips would be redistributed as residents from other areas relocate to the project site. As such, energy consumption associated with project VMT would not be unique to the proposed project.

The vehicles associated with the proposed project would be required to comply with all applicable regulations associated with vehicle efficiency and fuel economy. In addition, the proposed project would include off-site roadway improvements, such as the

[19] U.S. Energy Information Administration. *Total Energy, Table 1.8 Motor Vehicle Mileage, Fuel Consumption, and Fuel Economy*. Available at: https://www.eia.gov/totalenergy/data/browser/?tbl=T01.08#/?f=A&start=200001. Accessed July 2025.

[20] The annual VMT estimate presented herein is based on VMT data provided by Kimley-Horn who prepared the Estia Dry Creek and Placer Creek Residential Vehicle Miles Traveled (VMT) Analysis.

[21] U.S. Energy Information Administration. *California: State Profile and Energy Estimates*. Available at: https://www.eia.gov/state/index.php?sid=CA. Accessed December 2025.

reconfiguration of Walerga Road to include two, seven-foot-wide bike lanes and a Class I trail or sidewalk. The aforementioned improvements would provide pedestrian and bicycle connectivity within the project site and to existing off-site facilities, thereby helping to encourage walking and driving, and reduce vehicle trips and associated transportation energy demand.

Off-Site Affordable Housing Parcel

Similar to the proposed project, energy use associated with operation of the future potential multi-family units on the off-site affordable housing parcel would be typical of residential uses, requiring electricity for interior and exterior building lighting, HVAC systems, electronic equipment, machinery, refrigeration, appliances, security systems, and more. Maintenance activities during operations, such as landscape maintenance, would involve the use of electric or gas-powered equipment. In addition to on-site energy use, the future potential development of the off-site affordable housing parcel would result in transportation energy use associated with vehicle trips generated by the proposed multi-family residences. Building energy use and transportation energy use for the off-site affordable housing parcel are discussed separately below.

Building Energy Demand

The projected electric energy use for the entire RVSP at buildout was estimated to be approximately 7,077 MWH/yr, which SMUD anticipates would not result in supply issues during operation of the RVSP. Therefore, the RVSP EIR concluded that buildout of the RVSP would result in a less-than-significant impact to the demand for electrical supply.

Additionally, the estimated demand for natural gas at buildout of the RVSP was estimated to be approximately 56,754 cubic feet per hour. PG&E would provide the natural gas supply and did not anticipate any supply issues. Therefore, the RVSP EIR concluded that buildout of the RVSP would result in a less-than-significant impact on the demand for natural gas supply.

The off-site affordable housing parcel is anticipated to result in a net increase in electricity consumption of approximately 0.37 GWh annually during operations. The off-site affordable housing parcel would represent 5.23 percent of the overall electricity demand associated with the buildout of the RVSP. The proposed project and the potential future development of the off-site affordable housing parcel would result in a combined total increase in electricity consumption of approximately 3.48 GWh during operation. Compared to the electricity consumption for all of Placer County, the proposed project's contribution would represent a 0.13 percent increase in electricity demand. The off-site affordable housing parcel development would be required to comply with the CBSC standards and requirements.

The off-site affordable housing parcel is anticipated to result in a net annual natural gas consumption of approximately 999 mBTU. Therefore, the proposed project and the potential future development of the off-site affordable housing parcel could result in a combined total annual natural gas consumption of approximately 12,421 mBTU. As discussed above, a project would result in an impact related to energy resources if a project would result in the inefficient use or waste of energy.

At such time the off-site affordable housing parcel gets developed, development of the parcel would be required to comply with the CBSC standards and the AB 1346 requirements, which would reduce building energy demand. Therefore, the incorporation of the aforementioned standards and regulations would ensure that operation of the off-site affordable housing parcel would not result in a wasteful, inefficient, or unnecessary consumption of energy resources associated with building energy demand.

Transportation Energy Demand

According to the CalEEMod modeling conducted for the off-site affordable housing parcel, the off-site affordable housing parcel could result in a net increase of annual VMT of an estimated 1,598,136. Operation of the off-site affordable housing parcel is estimated to result in the consumption of approximately 3,196 barrels of petroleum a year related to gasoline. Thus, the proposed project and the off-site affordable housing parcel could result in a combined total consumption of approximately 20,599 barrels of petroleum a year related to gasoline. As discussed above, the calculations would likely be an overestimate, as the estimate does not account for future project residents who already own vehicles and are currently driving, or the increasing ownership of electric vehicles. Additionally, future development of the off-site affordable housing parcel would be required to comply with all applicable regulations associated with vehicle efficiency and fuel economy described above, which would reduce vehicle trips and associated transportation energy demand.

Conclusion

Based on the above, the proposed project and the off-site affordable housing parcel would not be considered to result in a wasteful, inefficient, or unnecessary use of energy, and impacts related to operational energy would be considered ***less than significant***.

Mitigation Measure(s)

None required.

9-3 Conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project, off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel which could conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

Proposed Project, Off-Site Sewer Lift Station Improvements Area, and Off-Site Affordable Housing Parcel

As stated previously, the proposed project and the off-site sewer lift station improvements area, as well as the potential future development of the off-site affordable housing parcel, would be required to comply with all applicable State regulations related to renewable energy and energy efficiency, including, but not limited to, Title 24 and Title 20 of the CBSC, SB 1 related to solar energy systems and AB 1109 related to lighting efficiency.

The PCSP is considered the local plan for renewable energy and efficiency. The PCSP contains community-wide and municipal energy efficiency and GHG mitigation strategies that can be applied to discretionary projects, as feasible. Energy reduction strategies, which are prefaced by an "E", cover the topics of energy efficiency, energy conservation, and renewable energy for both residential and nonresidential buildings. Most strategies focus on reducing electricity and natural gas use, but a few strategies reduce emissions from other fuel use. Table 9-1, below, evaluates the proposed project's and the off-site affordable housing parcel's consistency with the strategies from the PCSP, as applicable.

As shown in Table 9-1, the proposed project and the off-site affordable housing parcel would comply with the majority of the suggested measures. For others, compliance is uncertain or infeasible due to the residential nature of the proposed project and the off-site affordable housing parcel, and the location of the project site and the off-site affordable housing parcel. Some strategies included in the PSCP, such as OR-2 and T-10, are considered supportive strategies to improve energy efficiency and reduce GHG emissions, and do not result in quantifiable reductions in GHG emissions or energy consumption. Additionally, the strategies set forth in the PCSP are not required to be implemented. In fact, the PCSP strategies are specifically recommended for discretionary projects when the applicable project-level GHG emission thresholds are exceeded.

Table 9-1
Project Consistency with the PCSP

Strategy	Consistency Discussion
Strategy E-1: Facilitate a transition to electricity as the primary energy source for residential, mixed-use, commercial, and office buildings.	The proposed project would be required to comply with the applicable State and local standards and regulations related to energy, such as the 2022 CBSC and CALGreen Code. Electricity is anticipated to be the primary source of energy. However, as previously discussed, natural gas appliances (i.e., stovetops, water heaters, etc.) are also allowed in Placer County and are protected by the federal EPCA, as explained earlier (see *California Restaurant Association v. City of Berkeley*, 89 F.4th 1094). Thus, the proposed project and the off-site affordable housing parcel may consume both electricity and natural gas and would comply with this strategy to the extent permitted by federal law.
Strategy E-4: Encourage new residential, office, and commercial development, as mitigation for discretionary projects exceeding applicable CEQA GHG thresholds, to implement CALGreen Tier 1 standards and accelerate ZNE in new construction.	Placer County does not require CALGreen Tier 1 standards. New single-family residential structures that are constructed with all electric appliances are expected to achieve ZNE. However, as discussed previously, natural gas appliances (i.e., stovetops, water heaters, etc.) are also allowed in Placer County and are protected by the federal EPCA (see *California Restaurant Association v. City of Berkeley*, 89 F.4th 1094). The proposed project and the off-site affordable housing parcel would not exceed applicable CEQA GHG thresholds and, thus, this strategy is not directly applicable to the proposed project or the off-site affordable housing parcel.

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Table 9-1
Project Consistency with the PCSP

Strategy	Consistency Discussion
Strategy E-15: Incentivize new homes to install renewable energy generation and energy storage systems that can fully supply the home's energy needs, in cases where the required size of the renewable energy system is insufficient to fully meet on-site demand.	The 2022 Building Energy Efficiency Standards require that all new residential structures, including single-family residential structures and multi-family residential structures of any height, include on-site solar systems. Therefore, the proposed project and the off-site affordable housing parcel would comply with this strategy.
Strategy E-18: Encourage electrical customers to participate in demand-reduction programs.	This strategy focuses on implementation at a County-wide level and is not directly applicable to the proposed project or the off-site affordable housing parcel.
Strategy OR-1: Promote use of hybrid and alternative fuel construction equipment for new developments and significant retrofits.	The project applicant has not committed to the use of hybrid or alternative construction equipment. Therefore, compliance with this strategy is uncertain at this time.
Strategy OR-2: Encourage property owners and landscaping companies to adopt the use of hybrid and alternative-fuel landscaping equipment and promote the availability of incentive programs for new efficient landscaping equipment.	Consistent with AB 1346, landscaping equipment used by property owners and landscaping companies would be required to be electric by the time the proposed project and the off-site affordable housing parcel are operational. Thus, the proposed project and off-site affordable housing parcel would comply with this strategy.
Strategy T-1: Facilitate the installation of public electric vehicle (EV) charging stations at existing and new residential and non-residential uses.	The CBSC requires that all new residential unit garages be designed with wiring sufficient to provide future installation of electric vehicle charging infrastructure. All proposed garages within the Estia Dry Creek multi-family residential site, as well as each single-family residence within the Placer Creek Residential site, would be EV ready. Therefore, private EV charging stations could be accommodated within the proposed project, should the homeowners choose to install EV chargers. Additionally, three public level 3 fast EV chargers would be provided on-site, one of which would be located at the Community Center, and two of which would be located within the community. Thus, the proposed project would comply with this strategy.
Strategy T-3: Encourage new development to provide a mix of land uses and to be located contiguous to existing developed areas and infrastructure to support connectivity and to reduce trip lengths.	The project site was planned for residential development as part of the DCWPCP. Additionally, the off-site affordable housing parcel was planned as commercial development as part of the RVSP; however, the applicant intends to rezone the parcel from commercial to residential multi-family. Thus, the proposed project and the off-site affordable housing parcel would site new residences in an area that is generally contiguous with existing residential development to the east, west, and south. Commercial uses are located in the project vicinity as well, north of the site.

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Table 9-1
Project Consistency with the PCSP

Strategy	Consistency Discussion
	With regard to trip lengths, and as discussed in further detail in Chapter 16, Transportation, the proposed project and the potential future development of the off-site affordable housing parcel would generate VMT per resident that is below the Countywide average. Thus, impacts related to VMT were determined to be less-than-significant for the proposed project and the development of the off-site affordable housing parcel. Based on the above, the proposed project and the off-site affordable housing parcel would generally comply with the intent of this strategy. However, given the nature of the proposed project and the off-site affordable housing parcel, the proposed project and the potential future development of the off-site affordable housing parcel would not include any mixed land uses.
Strategy T-10: Promote infill development that combines multiple land use types.	Although the project site and the off-site affordable housing parcel are not considered infill locations, each site is generally adjacent to existing development. Additionally, the project site and the off-site affordable housing parcel have been planned for development in the DCWPCP and the RVSP. As noted above, the proposed project and the off-site affordable housing parcel would not include multiple land use types. Different land use types exist in the project area, such as commercial and school uses.

Source: Placer County. Placer County Sustainability Plan: A Greenhouse Gas Emission Reduction Plan and Adaptation Strategy. January 28, 2020.

Under the PCSP, the County uses the PCAPCD's GHG thresholds to determine whether PCSP emission reduction measures are required. Because the proposed project's and the off-site affordable housing parcel's total operational GHG emissions would be below the applicable GHG thresholds (refer to Chapter 6, Air Quality and Greenhouse Gas Emissions), implementation of the efficiency strategies included in the PCSP is not required. Most importantly, implementation of the proposed project and the potential future construction of the off-site affordable housing parcel would not interfere with the goals established in the PCSP nor preclude future projects from complying with the suggested strategies.

Conclusion

Based on the above, the proposed project and the off-site affordable housing parcel would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency, and the impact would be ***less than significant***.

Mitigation Measure(s)
None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

A project's impacts related to energy use may be individually limited, but cumulatively considerable when taken in combination with past, present, and future development projects. The geographic context for the cumulative energy analysis includes the DCWPCP area. Additional details regarding the cumulative project setting can be found in Chapter 20, Statutorily Required Sections, of this EIR.

9-4 Result in cumulative energy impacts. Based on the analysis below, the cumulative impact is *less than significant*.

Impacts 9-1, 9-2, and 9-3 discuss the consumption of energy on a project-level associated with the proposed project, off-site sewer lift station improvements area, and off-site affordable housing parcel within the context of existing State plans and regulations, as well as local plans. As discussed previously, the proposed project and off-site sewer lift station improvements, as well as the potential future development of the off-site affordable housing parcel would involve consumption of diesel, gasoline, natural gas, and electricity throughout construction and operations. However, all proposed structures would be built in compliance with existing statewide mandatory energy efficiency standards, such as those contained in the California Building Energy Efficiency Standards and the CALGreen Code. Compliance with the energy efficiency standards would reduce the amount of electricity consumed by the proposed development. The standards include requirements that new residential structures include on-site photovoltaic solar power. State regulations would also help to reduce the amount of energy consumed by on-road vehicles over time. For instance, State and federal emissions standards and fuel economy standards result in increased fuel efficiency for on-road vehicles. In addition, although not required, the proposed project, including the off-site sewer lift station improvements and future potential development of the off-site affordable housing parcel would generally comply with the efficiency strategies set forth in the PCSP. Overall, as concluded above, the project would result in a less-than-significant impact related to the inefficient or wasteful use of energy or conflicting with a State or local plan for renewable energy or energy efficiency.

Similar to the proposed project, off-site sewer lift station improvements area, and off-site affordable housing parcel, all future development within the DCWPCP and the RVSP would be required to comply with applicable State and local regulations related to energy efficiency. Increased efficiency would be ensured in the future as cumulative development occurs due to compliance with the State's robust energy efficiency requirements. For example, the 2022 CBSC and the 2022 Building Energy Efficiency Standards require that newly constructed residential and non-residential buildings,

including grocery stores, offices, financial institutions, unleased tenant space, retail space, schools, warehouses, auditoriums, convention centers, hotel/motels, libraries, medical office building/clinics, and theaters install a solar PV system. Additionally, all future projects that exceed the PCAPCD's GHG thresholds of significance would be required to comply with the efficiency strategies included in the PCSP. Furthermore, energy efficiency regulations have been progressively more stringent over time. Thus, as cumulative development occurs under the increasingly stringent regulations, the energy use associated with such cumulative development is anticipated to be increasingly energy efficient over time as well.

Conclusion

Based on the above, implementation of the proposed project, off-site sewer lift station improvements, and the off-site affordable housing parcel, in combination with other cumulative development, would not result in the wasteful or inefficient use of energy on a cumulative basis and a ***less-than-significant*** cumulative impact would occur.

Mitigation Measure(s)

None required.

10. Geology and Soils

10. GEOLOGY AND SOILS

10.1 INTRODUCTION

As discussed in Chapter 3, Project Description, of this EIR, the proposed project would include a total of 432 residential units and associated improvements, off-site sewer lift station improvements, and two options to meet the County's affordable housing regulations. The affordable housing options include the provision of a minimum of 22 Accessory Dwelling Units (ADUs) on lots proposed for development with single-family residential units, or an off-site proposal wherein Homes by Towne would rezone and transfer the fee title to the County for an approximately four-acre parcel off-site within the Riolo Vineyards Specific Plan (RVSP), which could develop a maximum of 120 affordable income-restricted units.

The Geology and Soils chapter of the EIR describes the geologic and soil characteristics of the project site and off-site sewer lift station improvements area, as well as the off-site affordable housing parcel. In addition, the Geology and Soils chapter evaluates the extent to which implementation of the proposed project and either affordable housing option could be affected by unstable earth conditions and various geologic and geomorphic hazards. The chapter also evaluates any potentially adverse impacts on paleontological resources. The impact discussions and mitigation measures presented in each technical section apply to both the project site and the off-site sewer lift station improvements area, unless otherwise stated.

Information in this chapter is primarily drawn from the Geotechnical Due Diligence Review prepared by ENGEO (see Appendix E)[1] and the Cultural and Paleontological Resources Assessment prepared by Natural Investigations Company (NIC).[2] In addition, information was sourced from the Placer County General Plan (PCGP),[3] the PCGP EIR,[4] the Dry Creek-West Placer Community Plan (DCWPCP),[5] the RVSP,[6] and the RVSP EIR.[7]

10.2 EXISTING ENVIRONMENTAL SETTING

Background setting information regarding the geology, soils, seismicity, and paleontological resources associated with the project site, the off-site sewer lift station improvements area, the off-site affordable housing parcel, and the surrounding region is provided below.

Regional Setting

The project site and the off-site affordable housing parcel are located within the boundaries of the DCWPCP in Placer County, California. In addition, the off-site affordable housing parcel is located within the within the RVSP area within the DCWPCP. The DCWPCP and RVSP areas lie within

1 ENGEO. *Estia Walerga, Walerga Road and Baseline Road, Placer County, California, Geotechnical Due Diligence Review.* December 26, 2023.
2 Natural Investigations Company. *Cultural and Paleontological Resources Assessment for the Estia Dry Creek & Placer Creek Residential Property Development Project, Placer County, California.* June 2025.
3 Placer County. *Countywide General Plan Policy Document.* August 1994 (updated May 2013).
4 Placer County. *Countywide General Plan EIR*. July 1994.
5 Placer County. *Dry Creek-West Placer Community Plan.* Amended May 12, 2009.
6 Placer County. *Riolo Vineyard Specific Plan Update.* October 2015.
7 Placer County. *Riolo Vineyard Specific Plan Environmental Impact Report.* January 2008.

the eastern portion of the Sacramento Valley, which extends from Redding in the north to the Sacramento-San Joaquin Delta region in the south. The Sacramento Valley is bordered by the Coast Ranges to the west and the Sierra Nevada foothills to the east. The DCWPCP and RVSP areas also lie within the Central Valley, a large north-westward trending, asymmetric structural trough with a long, gently sloping eastern shelf underlain by the subsurface extension of the Sierran granitic rocks and a shorter more steeply sloping western margin where the basin sediments have been upturned and dip eastward back toward the valley axis. The Central Valley has been filled with more than 30,000 feet of sediment in the San Joaquin Valley and more than 50,000 feet of sediment in the Sacramento Valley derived primarily from erosion of the adjacent Sierra Nevada and Coast Range Mountains. The sediment ranges in age from the Jurassic to recent (approximately 210 to 1.6 million years old), while bedrock underlying the sediment are predominantly marine deposits of siltstone, claystone, and sandstone. The following section describes the geology and seismicity of the project region.

Regional Geology

The geology of the DCWPCP area is generally categorized by sedimentary or metasedimentary rocks.[8] Such underlying rock formations are primarily composed of alluvium, an unconsolidated sediment of relatively recent geologic age deposited by flowing water. The three general types of rocks found within the DCWPCP area fall into the following categories:

- Riverbank Formation – Pleistocene deposits of alluvium;
- Turlock Lake Formation – Pleistocene deposits of partially consolidated sand, silt, and gravel derived primarily from Sierran granitic and metamorphic rocks, generally found outside the Dry Creek floodplain; and
- Modesto-Riverbank Formation – Pleistocene deposits of alluvium generally found within the Dry Creek floodplain.

Regional Seismicity

A fault is defined as a fracture or zone of closely associated fractures along which rocks on one side have been displaced with respect to those on the other side. A fault zone is a zone of related faults that is commonly braided and subparallel, but may be branching or divergent. Movement within a fault causes an earthquake. When movement occurs along a fault, the energy generated is released as waves that cause ground shaking. Ground shaking intensity varies with the magnitude of the earthquake, the distance from the epicenter, and the type of rock or sediment the seismic waves move through.

The potential risk of fault rupture is based on the concept of recency and recurrence. The more recently a particular fault has ruptured, the more likely the fault would rupture again. The California Geological Survey defines an “active fault” as one that has had surface displacement within the past 11,000 years (Holocene). Potentially active faults are defined as those that have ruptured between 11,000 and 1.6 million years before the present (Quaternary). Faults are generally considered inactive if evidence of displacement is not present during the Quaternary. According to the California Department of Conservation, potentially active faults with Holocene-epoch surface displacement are not known to exist within the project region.[9]

[8] Placer County. *Dry Creek-West Placer Community Plan* [pgs. 101-102]. Amended May 12, 2009.
[9] California Department of Conservation. *Fault Activity Map of California.* Available at: https://maps.conservation.ca.gov/cgs/fam/. Accessed November 2025.

According to the PCGP, Placer County lies within a seismically active area of the western U.S., but beyond the influence of the highly active faults found along California's coast. The South Placer area is classified by the California Department of Conservation as a low-severity earthquake zone.[10] The western portion and central portions of the County are generally characterized by low seismicity, while the eastern area of the County in the vicinity of Lake Tahoe has relatively higher seismicity.[11] The areas of Placer County with the largest ground shaking risk are in the vicinity of Stampede Valley and Tahoe faults in the Truckee-Tahoe area.

Project Site Characteristics

The project site, including the areas which could potentially be developed with the 22 ADUs, consists of approximately 92.2 acres of undeveloped annual grassland located south of Baseline Road, immediately east of the abandoned old Walerga Road right-of-way (ROW), west of the Fiddyment Road/Baseline Road/Walerga Road intersection and the western portion of Sun Valley Oaks residential subdivision, and north of the Morgan Creek residential subdivision, within the DCWPCP of unincorporated Placer County. The project site is bisected by Walerga Road which generally curves from northeast to southwest. The 52.3-acre northern portion of the project site generally consists of undeveloped annual grassland with gently rolling topography, interspersed with seasonal wetlands and vernal pools. The 35.3-acre southern portion of the site includes a paved bicycle trail, but generally consists of undeveloped annual grassland with gently rolling topography, interspersed with seasonal wetlands, vernal pools, and is bisected by an un-named tributary of Dry Creek (named "Placer Creek" for this project). The Federal Emergency Management Agency (FEMA) 100-year floodplain, containing approximately 4.7 acres, is located within the Placer Creek tributary area and a band of oak woodlands is located along the Placer Creek riparian corridor. The project site is bound by Baseline Road to the north and Walerga Road to the west. Single-family developments are located to the east and south.

As discussed in Chapter 3, Project Description, of this EIR, the proposed project would include frontage improvements for the six-lane reconfiguration of Walerga Road and Baseline Road, and limited off-site improvements at the intersection of Baseline Road at Crowder Lane. In addition, potential off-site emergency wastewater storage improvements could be constructed at the existing Community Facility District #1 Sewer Lift Station in Dry Creek Community Park. Generally, the off-site sewer lift station improvements area and frontage improvement areas have been largely subject to past development. However, as discussed in Chapter 7, Biological Resources, of this EIR, the portion of the off-site sewer lift station improvements area north of Dry Creek Community Park is comprised of undeveloped land containing valley foothill riparian woodland (VFRW) and portions of intermittent tributary drainages of Dry Creek.

If dedication of the off-site affordable housing parcel is used to satisfy the project's affordable housing obligations, the parcel would be rezoned to Residential Multifamily 30, combining Design Scenic Corridor (RM30-Dc) zone, which could result in a maximum development potential of 120 affordable income-restricted units located within the RVSP. Specifically, the off-site affordable housing parcel consists of approximately four acres of undeveloped land with grassy fields and gently rolling topography located at the northeast corner of PFE Road and Watt Avenue (Assessor's Parcel Number [APN] 023-200-056-000).

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[10] California Department of Conservation. *Regulatory Maps and Reports (Alquist-Priolo and Seismic Hazard Zones).* Available at: https://maps.conservation.ca.gov/cgs/informationwarehouse/regulatorymaps/. Accessed November 2025.

[11] Placer County. *Countywide General Plan EIR* [pg. 9-1]. July 1994.

The geologic conditions on the project site, off-site sewer lift station improvements area, and the off-site affordable housing parcel are discussed below in further detail, including descriptions of existing site geology, subsurface soil conditions, seismicity and ground shaking, potential for earthquake-induced liquefaction, expansive soils, and groundwater conditions. In addition, a description of known paleontological resources within the project area is included below.

Site Geology

The project site, off-site sewer lift station improvements area, and off-site affordable housing parcel are located within the Great Valley geomorphic province, which is an alluvial plain that drains by way of the Sacramento and San Joaquin rivers into the San Francisco Bay area. According to the Geotechnical Due Diligence Review, the majority of the project site, and the project site vicinity where the off-site improvements would be located, are underlain by the Turlock Lake Formation and the Modesto Formation. Similarly, according to the RVSP EIR, the overall RVSP area, where the off-site affordable housing parcel is located, is underlain by the Turlock Lake Formation and the Modesto Formation. The Turlock Lake Formation consists of deeply weathered gravel, sand, and silt derived from the western slopes of the Sierra Nevada. The lower member of the Modesto Formation consists of unconsolidated, slightly weathered, tan to light gray alluvium composed of gravel, sand, silt, and clay derived from surrounding mountains.

Subsurface Soil Conditions

As part of the Geotechnical Due Diligence Review, ENGEO conducted a site reconnaissance and field sampling of the site on December 8, 2023. ENGEO observed the excavation and sampling of seven shallow soil samples (SS-1 through SS-7) (see Figure 10-1). In addition, Figure 10-1 provides the location of 12 soil borings and seven bulk soil samples conducted previously in 2018.

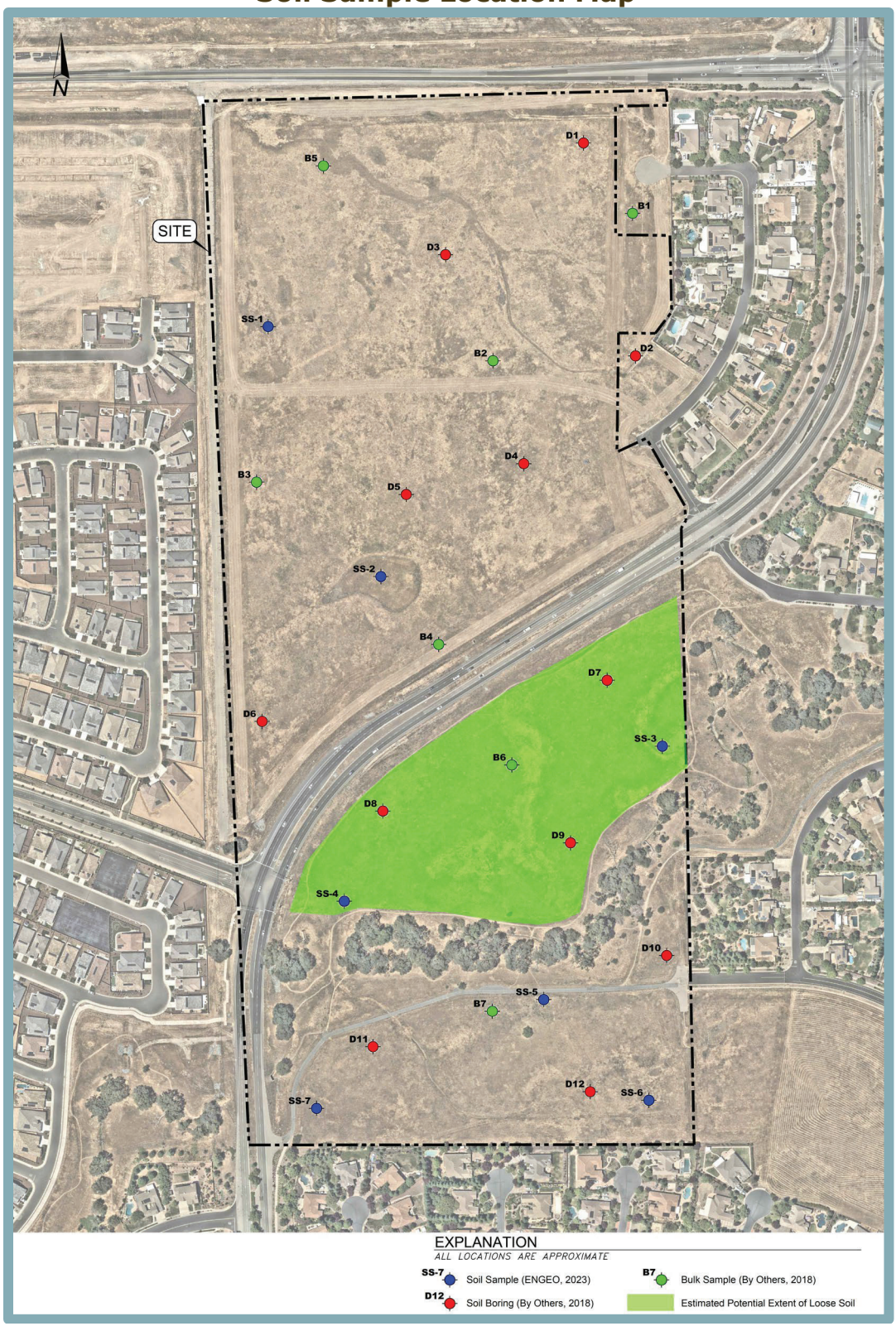
The shallow soil samples collected by ENGEO at the project site consisted of silty or clayey sand or sandy lean clay, which is generally consistent with the soil tests conducted during previous surveys. Subsurface soil conditions predominantly consist of silts, sands, and clays between four and eight feet in thickness underlain by medium dense to very dense sand and silty sand. Loose/disturbed clay, silt, and sand are present in the central portion of the site and the vicinity of Dry Creek, as discussed in further detail below.

According to the RVSP EIR, the RVSP area, including the off-site affordable housing parcel, is underlain by Fiddyment-Kaseberg loams. The Fiddyment soil is a well-drained soil that is moderately deep overlying a hardpan. The surface layer is composed of a light yellowish-brown loam and silt loam, which is about 12 inches thick. The subsoil is yellowish-brown and brown, dense clay loam. The Kaseberg soil is well-drained, shallow, and overlying a hardpan. The surface layer is light brownish-gray loam with yellowish-brown mottles and is about eight inches thick. The subsoil consists of light gray silt loam.[12]

According to the United States Department of Agriculture (USDA) Web Soil Survey, locations proposed for potential off-site improvements are similarly comprised of Fiddyment and Fiddyment-Kaseberg loams, as well as San Joaquin Cometa sandy loams, Cometa Ramona sandy loams, and Ramona sandy loam.[13] Furthermore, according to the DCWPCP EIR, the DCWPCP area consist of clay subsoils at shallow depths.

[12] Placer County. *Riolo Vineyard Specific Plan EIR* [pg. 12-9 and 12-10]. January 2008.
[13] U.S. Department of Agriculture, Natural Resources Conservation Service. *Web Soil Survey.* Available at: https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed November 2025.

Figure 10-1
Soil Sample Location Map



* Figure not OCR Compatible

Seismicity and Ground Shaking

Fault rupture hazards are important near active faults and tend to recur along the surface traces of previous fault movements. Known faults do not extend across the project site, off-site sewer lift station improvements area, or the off-site affordable housing parcel. Similarly, the site, off-site sewer lift station improvements area, and the off-site affordable housing parcel are not located within an Alquist-Priolo Special Studies Zone.[14] Therefore, the potential for fault rupture, damage from fault displacement, or fault movement directly below the site is considered low. However, the site and off-site affordable housing parcel are located within an area where shaking from earthquake generated ground motion waves are considered likely.

Liquefaction

Liquefaction occurs when saturated fine-grained sands and/or silts lose physical strength temporarily during earthquake-induced shaking and behave as a liquid due to the loss of point-to-point grain contact and transfer of normal stress to the pore water. Liquefaction potential varies with water level, soil type, material gradation, relative density, and probable intensity and duration of ground shaking. The California Geologic Survey (CGS) has designated certain areas within California as potential liquefaction hazard zones, which are areas considered at risk of liquefaction-related ground failure during a seismic event based upon mapped surficial deposits and the depth to the areal groundwater table. The project site, off-site sewer lift station improvements area, and off-site affordable housing parcel are not currently mapped for potential liquefaction hazard by the CGS.[15] According to the Geotechnical Due Diligence Review, groundwater levels at the project site occur at depths of approximately 100 to 120 feet below ground surface (bgs) dependent on fluctuations in rainfall, irrigation practice, and other factors. Due to the absence of permanently elevated groundwater table, and the relatively low seismicity of the area, ENGEO concluded that the potential for seismically-induced damage due to liquefaction at the project site is considered low.

Expansive Soils

Expansive soils are characterized by their ability to undergo significant volume change due to variation in moisture content. Compressible materials consisting of surficial organic material, loose soils, undocumented fills, debris, rubble, rubbish, etc., are considered unsuitable materials for support of proposed structures as such materials have the potential to differentially settle. Changes in soil moisture content have the potential to result from rainfall, landscape irrigation, utility leakage, roof drainage, perched groundwater, drought, or other factors and may cause unacceptable settlement of structures. ENGEO encountered potentially expansive lean clay and clayey sand at shallow depths within the project site during the site reconnaissance. Laboratory testing conducted by ENGEO and previous on-site soil studies identified low to moderate shrink-swell potential with variations in moisture content within soil samples. Thus, ENGEO concluded that expansive clay layers may occur discontinuously on the project site. Similarly, according to the RVSP EIR, the potential for expansive soils in the off-site affordable housing parcel area is moderate.[16] According to the USDA web soil survey, the Plasticity Index (PI) for areas proposed for potential off-site improvements range from 2.5 to five percent and, thus, the potential for expansive soil in such areas is low.[17]

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[14] California Department of Conservation. *California Earthquake Hazards Zone Application*. Available at: https://maps.conservation.ca.gov/cgs/EQZApp/app/. Accessed October 2025.

[15] *Ibid*.

[16] Placer County. *Riolo Vineyard Specific Plan EIR* [pg. 12-19]. January 2008.

[17] United States Department of Agriculture, Natural Resources Conservation Service. *Web Soil Survey*. Available at: https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed November 2025.

Loose Surficial Soils

According to ENGEO, portions of the site appear to have been disced and the upper approximately 0.5 to one foot of soil appears to consist of loose/disturbed clay, silt, and sand. In addition, previous soil explorations indicate that portions of the site are underlain by between approximately four and eight feet of loose soil. As shown in Figure 10-1 (green area), borings D7, D8, and D9 encountered such loose surficial soil horizons that were markedly less dense than at the other portions of the site.

Groundwater

According to ENGEO, groundwater has not been encountered during previous site studies. As part of the Geotechnical Due Diligence Review, ENGEO reviewed the Sustainable Groundwater Management Act (SGMA) Data Viewer Database to assess local groundwater levels. Groundwater levels at the project site occur at depths of approximately 100 to 120 feet bgs. Specifically, the SGMA Data Viewer plotted groundwater contours that indicated groundwater in the vicinity occurred at depths of 110 to 120 feet in fall 2021 and 100 to 110 feet in spring 2022. Fluctuations in the level of groundwater may occur due to variations in rainfall, irrigation practice, and other factors not evident at the time measurements were made. Similarly, according to the RVSP EIR, the depth to groundwater in the off-site affordable housing parcel area is approximately 100 feet bgs.[18] According to the DCWPCP EIR, the depth to groundwater throughout the DCWPCP area, including areas where off-site improvements would occur, is 70 to 90 feet bgs.

Paleontological Resources

Paleontological resources are limited, non-renewable resources of scientific, cultural, and educational value that are explicitly afforded protection by CEQA. A search of the paleontological records in the University of California Museum of Paleontology (UCMP) database was conducted by NIC on March 25, 2025, to locate potential fossils documented within the project site and the surrounding area.[19] The UCMP database indicates that four fossil localities recorded within Placer County have produced vertebrate fossils. A locality near Rocklin, approximately eight miles northeast of the proposed project, yielded a Pleistocene-age mastodon from the Mehrten Formation, while a locality near Lincoln, a City located approximately 6.68 miles northeast of the project site, produced three Tertiary-age vertebrates, a bony fish, a mammal, and a reptile. A cartilaginous fish from the Cretaceous was recovered from the third locality of the Chico Formation. The remaining localities in Placer County recorded in the UCMP database have produced plant and invertebrate specimens. According to NIC, the aforementioned geologic rock units do not occur in the project area and UCMP records did not identify paleontological resources from the Turlock Lake Formation in Placer County. Overall, NIC concluded that, based on Society of Vertebrate Paleontology (SVP) criteria, the sensitivity for paleontological resources on the project site is low. Because the off-site sewer lift station improvements area and off-site affordable housing parcel are located within two miles of the project site, and are underlain by similar soil formations, the sensitivity for paleontological resources on the off-site sewer lift station improvements area and off-site affordable housing parcel are also considered low. Furthermore, because the proposed off-site improvements would occur within existing ROWs and other previously developed areas, surface-level paleontological resources located in the off-site sewer lift station improvements area would likely have been previously encountered.

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18 Placer County. *Riolo Vineyard Specific Plan EIR* [pg. 12-14]. January 2008.

19 Natural Investigations Company. *Cultural and Paleontological Resources Assessment for the Estia Dry Creek & Placer Creek Residential Property Development Project, Placer County, California.* February 2025.

10.3 REGULATORY CONTEXT

The following section is a brief summary of the regulatory context under which soils, geology, seismic hazards, and paleontological resources are managed at the federal, State, and local levels.

Federal Regulations

The following are the federal environmental laws and policies relevant to soils, geology, seismic hazards, and paleontological resources.

Federal Earthquake Hazards Reduction Act

Passed by Congress in 1977, the Federal Earthquake Hazards Reduction Act is intended to reduce the risks to life and property from future earthquakes. The Federal Earthquake Hazards Reduction Act established the National Earthquake Hazards Reduction Program (NEHRP). The goals of NEHRP are to educate and improve the knowledge base for predicting seismic hazards, improve land use practices and building codes, and to reduce earthquake hazards through improved design and construction techniques.

International Building Code

The Uniform Building Code (UBC) was first published in 1927 by the International Council of Building Officials and is intended to promote public safety and provide standardized requirements for safe construction. The UBC was replaced in 2000 by the new International Building Code (IBC), published by the International Code Council (ICC), which is a merger of the International Council of Building Officials' UBC, Building Officials and Code Administrators International's National Building Code, and the Southern Building Code Congress International's Standard Building Code. The intention of the IBC is to provide consistent standards for safe construction and eliminate any differences between the three preceding codes. All State building standard codes are based on the federal building codes.

State Regulations

The following are the State environmental laws and policies relevant to soils, geology, seismic hazards, and paleontological resources. Please see Section 12.3 Regulatory Setting in Chapter 12, Hydrology and Water Quality, of this EIR for a discussion of water quality control statutes, regulations, and local requirements relevant to erosion control.

Alquist-Priolo Earthquake Fault Zoning Act

The 1972 Alquist-Priolo Earthquake Fault Zone Act was passed to prevent the new development of buildings and structures for human occupancy on the surface of active faults. The Alquist-Priolo Earthquake Fault Zone Act is directed at the hazards of surface fault rupture and does not address other forms of earthquake hazards. The locations of active faults are established into fault zones by the Alquist-Priolo Zone Act. Local agencies regulate any new developments within the appropriate zones in their jurisdiction. The Alquist-Priolo Zone Act regulates development near active faults so as to mitigate the hazard of surface fault rupture. The Alquist-Priolo Zone Act requires that the State Geologist (Chief of the California Department of Mines and Geology [CDMG]) delineate "special study zones" along known active faults in California. Cities and counties affected by the special study zones must regulate certain development projects within the special study zones. The Alquist-Priolo Zone Act prohibits the development of structures for human occupancy across the traces of active faults. According to the Alquist-Priolo Earthquake Fault Zone Act, active faults have experienced surface displacement during the last 11,000 years. Potentially active faults are those that show evidence of surface displacement during the last 1.6

million years. A fault may be presumed to be inactive based on satisfactory geologic evidence; however, the evidence necessary to prove inactivity sometimes is difficult to obtain and may not exist.

Seismic Hazards Mapping Act

The California Seismic Hazards Mapping Act of 1990 (California Public Resources Code [PRC] Section 1690-2699.6) addresses non-surface rupture earthquake hazards, including liquefaction, induced landslides, and subsidence. A mapping program is also established by this Act, which identifies areas within California that have the potential to be affected by such non-surface rupture hazards. The Seismic Hazards Mapping Act specifies that the lead agency for a project may withhold development permits until geologic or soils investigations are conducted for specific sites and mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils.

California Building Standards Code

The State of California regulates development within the State through a variety of tools that reduce or mitigate potential hazards from earthquakes or other geologic hazards. The 2022 California Building Standards Code (CBSC) (California Code of Regulations [CCR], Title 24) governs the design and construction of all building occupancies and associated facilities and equipment throughout California. In addition, the CBSC governs development in potentially seismically active areas and contains provisions to safeguard against major structural failures or loss of life caused by earthquakes or other geologic hazards. The California building standards include building standards in the national building code, building standards adapted from national codes to meet California conditions, and building standards adopted to address particular California concerns. The CBSC is updated on a triennial cycle.

Local Regulations

Relevant goals and policies from the PCGP and various other local guidelines and regulations related to soils, geology, seismic hazards, and paleontological resources.

Placer County General Plan

The following goals and policies from the PCGP are applicable to the proposed project.

Land Use Element

Goal 1.K To protect the visual and scenic resources of Placer County as important quality-of-life amenities for County residents and a principal asset in the promotion of recreation and tourism.

Policy 1.K.4 The County shall require that new development incorporates sound soil conservation practices and minimizes land alterations. Land alterations should comply with the following guidelines:

a. Limit cuts and fills;
b. Limit grading to the smallest practical area of land;
c. Limit land exposure to the shortest practical amount of time;
d. Replant graded areas to ensure establishment of plant cover before the next rainy season; and

e. Create grading contours that blend with the natural contours on site or with contours on property immediately adjacent to the area of development.

Recreation and Cultural Resources Element

Goal 5.D To identify, protect, and enhance Placer County's important historical, archaeological, paleontological, and cultural sites and their contributing environment.

Policy 5.D.2 The County shall solicit the cooperation of the owners of cultural and paleontological resources, encourage those owners to treat these resources as assets rather than liabilities, and encourage the support of the general public for the preservation and enhancement of these resources.

Policy 5.D.4 The County shall coordinate with the cities and municipal advisory councils in the County to promote the preservation and maintenance of Placer County's paleontological and archaeological resources.

Policy 5.D.6 The County shall require that discretionary development projects identify and protect from damage, destruction, and abuse, important historical, archaeological, paleontological, and cultural sites and their contributing environment. Such assessments shall be incorporated into a County-wide cultural resource database, to be maintained by the Division of Museums.

Policy 5.D.7 The County shall require that discretionary development projects are designed to avoid potential impacts to significant paleontological or cultural resources whenever possible. Unavoidable impacts, whenever possible, shall be reduced to a less than significant level and/or shall be mitigated by extracting maximum recoverable data. Determinations of impacts, significance, and mitigation shall be made by qualified archaeological (in consultation with recognized local Native American groups), historical, or paleontological consultants, depending on the type of resource in question.

Health and Safety Element

Goal 8.A To minimize the loss of life, injury, and property damage due to seismic and geological hazards.

Policy 8.A.1.1 The County shall require the preparation of a soils engineering and geologic-seismic analysis prior to permitting development in areas prone to geological or seismic hazards (e.g., ground shaking, landslides, liquefaction, critically expansive soils, avalanche), prepared

by a California registered civil engineer and based upon adequate test borings as needed.

Policy 8.A.1.2 The County shall require submission of a preliminary soils report, prepared by a California registered civil engineer and based upon adequate test borings, for every major subdivision and for each individual lot where critically expansive soils have been identified or are expected to exist.

Policy 8.A.1.3 The County shall prohibit the placement of habitable structures or individual sewage disposal systems on or in critically expansive soils unless suitable mitigation measures are incorporated to prevent the potential risks of these conditions.

Policy 8.A.1.5 The County shall require that the location, design, and construction of any new buildings, facilities, or other development in areas subject to seismic activity minimize exposure to danger from earthquake-induced liquefaction or fault rupture or creep.

Policy 8.A.1.6 In areas subject to severe ground shaking, the County shall require that new structures intended for human occupancy be designed and constructed to minimize risk to the safety of occupants.

Dry Creek-West Placer Community Plan

The following policy from the DCWPCP is applicable to the proposed project.

Environmental Resources Management Element: Natural Resources

Policy 23 Require the application of measures which mitigate soil erosion and air and water pollution from earth-disturbing activities related to land development.

Placer County Code

Articles 15.01, 15.48, and 15.65 of the Placer County Code are applicable to the proposed project and are summarized below.

California Building Codes

Article 15.01, California Building Codes, of the Placer County Code includes definitions, standards, and enforcement guidelines to ensure all new development comply with the latest version of the CBSC. Section 15.04.121 outlines the violations and penalties for any person who violates or fails to comply with any of the provisions in Article 15.01 of the Code.

Grading, Erosion and Sediment Control Ordinance

Article 15.48, Grading, Erosion and Sediment Control, of the Placer County Code, establishes regulations to limit the pollution of watercourses with hazardous materials, nutrients, sediments, and/or other earthen materials on or caused by surface runoff. Pursuant to Section 15.48.580, all drainage facilities must be designed and engineered consistent with the West Placer Storm Water

Quality Design Manual. Section 15.48.630 establishes erosion and sediment controls for grading operations, including, but not limited to, use of stabilization methods to control erosion, preservation of natural features, limiting of runoff discharged from the site, and limiting the transport of dust off the project site, off-site sewer lift station improvements area, and off-site affordable housing parcel or into any drainage course or body of water.

10.4 IMPACTS AND MITIGATION MEASURES

This section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to geology, soils, and paleontological resources. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines and in coordination with Placer County, a significant impact related to geology and soils would occur if the proposed project would do any of the following:

- Directly or indirectly cause 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 based on other substantial evidence of a known fault;
    - Strong seismic ground shaking;
    - Seismic-related ground failure, including liquefaction; and
    - Landslides.
- Result in substantial soil erosion or the loss of topsoil;
- 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 lateral spreading, subsidence, liquefaction or collapse;
- Be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property;
- Have soils incapable of supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water (see Chapter 19, Effects Not Found to be Significant);
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature;
- Result in significant disruptions, displacements, compaction or overcrowding of the soil;
- Result in substantial change in topography or ground surface relief features;
- Result in exposure of people or property to geologic and geomorphological (i.e., Avalanches) hazards, such as earthquakes, landslides, mudslides, seismic-related ground failure or similar hazards (see Chapter 19, Effects Not Found to be Significant);
- 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 (see Chapter 19, Effects Not Found to be Significant); and/or
- 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 (see Chapter 19, Effects Not Found to be Significant).

As noted above, issues related to whether the proposed project would result in any of the following impacts are discussed in Chapter 19, Effects Not Found To Be Significant, of this EIR:

- Have soils incapable of supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water;
- Result in exposure of people or property to geologic and geomorphological (i.e., Avalanches) hazards, such as earthquakes, landslides, mudslides, seismic-related ground failure or similar hazards;
- 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; and/or
- 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.

The analysis in this chapter takes account of the California Supreme Court's decision in *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369, 377-378, in which the court held that "agencies subject to CEQA generally are not required to analyze how existing environmental conditions will impact a project's future users or residents. But when a proposed project risks exacerbating those environmental hazards or conditions that already exist, an agency must analyze the potential impact of such hazards on future residents or users. In those specific instances, it is the project's impact on the environment—and not the environment's impact on the project—that compels an evaluation of how future residents or users could be affected by exacerbated conditions."

Under this precedent, CEQA does not consider the impact of the environment on a project (such as the impact of existing seismic ground shaking hazards on new project receptors) to be an impact requiring consideration under CEQA. Rather, CEQA is only concerned with the extent to which, if any, a proposed project would exacerbate an existing environmental hazard. Existing hazards are considered to be part of baseline conditions.

Method of Analysis

The analysis for the proposed project's geology and soils impacts is based primarily on the Geotechnical Due Diligence Review prepared by ENGEO for the proposed project. The analysis for the proposed project's impact to paleontological resources is based primarily on the Cultural and Paleontological Resources Assessment prepared by NIC for the proposed project. In addition, information from the Placer County General Plan and associated EIR, and the DCWPCP was used for analysis. Additional details about the Geotechnical Due Diligence Review are provided below.

Geotechnical Due Diligence Review Analysis

A Geotechnical Due Diligence Review was prepared by ENGEO (December 26, 2023), and relied on a number of analytical tasks, including the following:

- Review of relevant data from a Geotechnical Engineering Report for the Vineyard Christian School Project, prepared by Wallace Kuhl and Associates, and dated August 2, 2018;
- Review of geologic maps, historic aerial photographs, topographic maps, and other nearby geotechnical data;
- Site reconnaissance to observe the current surface conditions;

- Collection of seven near-surface soil samples, less than one foot deep, for visual classification and laboratory testing;
- Laboratory testing of a plasticity index and sieve analysis on representative soil samples; and
- Preparation of a geotechnical due diligence review letter with an overview of the geologic and geotechnical issues that may impact site development.

Cultural and Paleontological Resources Assessment Analyses

As part of the Cultural and Paleontological Resources Assessment prepared by NIC, a search of the paleontological records in the UCMP database was conducted by NIC on March 25, 2025, to locate potential fossils documented from within and surrounding the project site. In addition, as part of the Cultural and Paleontological Resources Assessment, NIC conducted a subsequent review of local, site-specific information for the project site and surrounding area to address impacts to paleontological resources during project construction.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts related to geology and soils is based on implementation of the proposed project and off-site sewer lift station improvements, as well as the two affordable housing options analyzed throughout this EIR, in comparison to existing conditions and the standards of significance presented above. In most cases, potential environmental impacts associated with the proposed project and the 22 on-site ADUs would not differ. Thus, unless otherwise noted, the below analysis applies to both the proposed project and the on-site ADUs.

10-1 Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, or seismic-related ground failure, including liquefaction, and landslides. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and the off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, and seismic-related ground failure.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the geological conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, or seismic-related ground failure, including liquefaction, and landslides would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

According to the PCGP, Placer County lies within a seismically active area of the western U.S., but beyond the influence of the highly active faults found along California's coast. The western portion of the County, in which the proposed project and off-site sewer lift station improvements area are located, is generally characterized by low seismicity, and is not in an area at risk for severe ground shaking associated with earthquakes.[20] As discussed above, the project site and off-site sewer lift station improvements area are not underlain by any active faults, nor are the areas located within an Alquist-Priolo Fault Special Studies Zone. While lower-intensity earthquakes could potentially occur throughout the development areas, the design of project structures would be required to adhere to the provisions of the 2022 CBSC. The 2022 CBSC contains provisions to safeguard against major structural failures or loss of life caused by earthquakes or other geologic hazards. Based on the above, the potential for seismically induced damage due to liquefaction, surface ruptures, and settlement at the project site and off-site sewer lift station improvements area is considered low.

Furthermore, according to the Geotechnical Due Diligence Review, the project site consists of low, hilly terrain. The off-site sewer lift station improvements area consist of previously graded and developed areas. Similar to the proposed project and off-site sewer lift station improvements area, the topography of the off-site affordable housing parcel consists of gently rolling terrain without any steep slopes. Thus, because the project site and off-site sewer lift station improvements area do not contain any steep slopes and are not located at or near any active or potentially active faults, the risk of landslide, liquefaction, and/or ground failure on the site would not be substantial. Nor would the proposed project include any features that would exacerbate any existing risks from on-site geological conditions.

Off-Site Affordable Housing Parcel

As discussed throughout this EIR, the proposed project includes an option to satisfy the project's affordable housing requirements by transferring in fee title to the County an off-site vacant parcel under Homes by Towne ownership, within the RVSP. Similar to the project site, the off-site affordable housing parcel is located in the western portion of Placer County, which is generally characterized by low seismicity, and is not in an area at risk for severe ground shaking associated with earthquakes. As discussed above, the off-site affordable housing parcel is not underlain by any active faults, nor is the off-site affordable housing parcel located within an Alquist-Priolo Fault Special Studies Zone. Furthermore, potential future development of the off-site affordable housing parcel would be required to adhere to the provisions of the 2022 CBSC. Thus, the potential for seismically induced damage due to landslide, liquefaction, and/or ground failure at the off-site affordable housing parcel is considered low.

Conclusion

Based on the above, the proposed project, including the off-site sewer lift station improvements area and the potential future development of the off-site affordable housing parcel, would not expose people or structures to the risk of loss, injury, or death involving rupture of an earthquake fault, strong ground shaking, ground failure, liquefaction, or landslides, and a ***less-than-significant*** impact would occur.

[20] Placer County. *Countywide General Plan EIR* [pg. 9-1]. July 1994.

Mitigation Measure(s)
None required.

10-2 Result in substantial soil erosion or the loss of topsoil. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could result in substantial soil erosion or the loss of topsoil.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the geological conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to result in substantial soil erosion or the loss of topsoil would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

Erosion refers to the removal of soil from exposed bedrock surfaces by wind or water. Although naturally occurring, erosion is often accelerated by human activities that disturb soil and vegetation. According to the Geotechnical Due Diligence Review, subsurface soils at the project site predominantly consist of silty or clayey sand or sandy lean clay between four and eight feet in thickness which is underlain by medium dense to very dense sand and silty sand. Portions of the site contain loose/disturbed clay, silt, and sand due to previous discing; borings D7, D8, and D9 encountered portions of the site which were underlain by between approximately four and eight feet of loose soil in the vicinity of Placer Creek, as shown in green in Figure 10-1. Such soil horizons were markedly less dense than at the other portions of the site.

Similarly, according to the DCWPCP EIR, the DCWPCP area consist of clay subsoils at shallow depths. Hazards related to erosion throughout the DCWPCP area, including the areas containing the off-site sewer lift station improvements area, are generally slight to moderate.

Due to the presence of loose surface soils on the project site, the proposed project could be susceptible to erosion. Furthermore, buildout of the project site and off-site sewer lift station improvements area would require grading, excavation, and other construction-related activities, which, during the early stages of construction, could cause topsoil to be exposed, potentially resulting in wind erosion or an accelerated rate of erosion during storm events. Specifically, as discussed in Chapter 12, Hydrology and Water Quality, of this EIR, limited fill would be placed within the floodplain fringes during project development, generally associated with the proposed pedestrian bridge over Placer Creek. However, upon development of the site with buildings and structures, and upon completion of the off-site improvements, the amount of exposed soil that may be lost due to wind or stormwater runoff would be minimized.

Improvement Plans provided to the County prior to authorization of construction would conform to provisions of the County Grading Ordinance (Article 15.48 of the Placer County

Code) and the Stormwater Quality Ordinance (Article 8.38 of the Placer County Code) that are in effect at the time of submittal. The preparation of and compliance with a stormwater pollution prevention plan (SWPPP) would be part of each project component's National Pollutant Discharge Elimination System (NPDES) construction stormwater quality permit, issued by the Central Valley Regional Water Quality Control Board (CVRWQCB). Before Improvement Plan approval, the Placer County Engineering and Surveying Division (ESD) would require evidence of the State-issued Waste Discharge Identification Number or filing of the Notice of Intent and fees. The SWPPP would include strategies to manage stormwater from the construction site, off-site sewer lift station improvements area, and off-site affordable housing parcel, and treat runoff before being discharged from the development areas. The site-specific SWPPP developed for the proposed project, off-site sewer lift station improvements area, and off-site affordable housing parcel, would have protocols to be followed and monitored during construction, including effective response actions if necessary. The SWPPP is considered a "living document" that could be modified as construction activities progress.

Off-Site Affordable Housing Parcel

According to the RVSP, the subsurface soils at the off-site affordable housing parcel consist of Fiddyment-Kaseberg loams. The Fiddyment soil is a well-drained soil that is moderately deep overlying a hardpan. The Kaseberg soil is well-drained, shallow, and overlying a hardpan. According to the RVSP, the permeability of the Fiddyment-Kaseberg loam is moderate, and the potential for erosion is considered slight to moderate.

Similar to the proposed project, potential future buildout of the off-site affordable housing parcel would require grading, excavation, and other construction-related activities, which could cause topsoil to be exposed, potentially resulting in wind erosion or an accelerated rate of erosion during storm events. At such a time when the off-site affordable housing parcel is developed with buildings or structures, the amount of exposed soil that may be lost due to wind exposure or stormwater runoff would be minimized. Therefore, to reduce potential impacts associated with soil erosion and the loss of topsoil, the potential future development of the off-site affordable housing parcel would require improvement plans to be provided to the County prior to authorization of construction; compliance with the provisions of the County Grading Ordinance and Stormwater Quality Ordinance in effect at the time of submittal; preparation of and compliance with a SWPPP; cooperation with the project's NPDES construction stormwater quality permit, issued by the CVRWQCB; and compliance with all provisions therein.

As discussed under Impact 12-3 of the RVSP EIR, buildout of the entire RVSP could result in erosion resulting from construction of residential developments, as well as both onsite and off-site infrastructure. As such, should development of the off-site affordable housing parcel occur, RVSP EIR Mitigation Measures 12-3a through 12-3d, which have been incorporated into this EIR as Mitigation Measures 10-2(d) through 10-2(g), would be required.

Pursuant to RVSP EIR Mitigation Measure 12-3a, the project applicant would be required to identify stockpiling and vehicle staging areas on all project Improvement Plans submitted to the Placer County ESD for review and approval. Mitigation Measure 12-3b and Mitigation Measure 12-3c of the certified RVSP EIR require projects to comply with NPDES requirements for construction and the NPDES Phase II requirements for

operational discharge of stormwater from small municipal separate storm sewer systems. Finally, Mitigation Measure 12-3d of the certified RVSP EIR requires all construction activities which would disturb over an acre of land to prepare a SWPPP for the construction phase of the project.

Conclusion

Although topsoil exposure would be temporary during early construction activities, and would cease once development of buildings and structures occurs, after grading and leveling and prior to overlaying the ground surface with structures and landscaping, the potential exists for erosion to occur, especially within areas of the project site and off-site sewer lift station improvements area which contain loose surficial soils, such as the proposed pedestrian bridge over Placer Creek. Compliance with Mitigation Measures 12-3a through 12-3d of the RVSP EIR would minimize potential impacts related to substantial soil erosion or the loss of topsoil resulting from the potential future development of the off-site affordable housing parcel. However, short-term, construction-related impacts associated with soil erosion and the loss of topsoil would be considered ***significant***. The referenced RVSP mitigation measures are incorporated into this EIR as Mitigation Measures 10-2(d) through 10-2(g) below.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level by ensuring compliance with all applicable State and local regulations and requirements and by avoiding or reducing erosion in a manner that preserves topsoil and avoids adverse effects on water quality.

Project Site, Off-Site Sewer Lift Station Improvements Area, and Off-Site Affordable Housing Parcel

10-2(a) *Prior to construction commencing, the applicant shall provide evidence to the ESD of a Waste Discharge Identification (WDID) number generated from the State Regional Water Quality Control Board's Stormwater Multiple Application & Reports Tracking System (SMARTS). This serves as the Regional Water Quality Control Board approval or permit under the National Pollutant Discharge Elimination System (NPDES) construction stormwater quality permit.*

10-2(b) *The applicant shall prepare and submit Improvement Plans, specifications and cost estimates (per the requirements of Section II of the Land Development Manual (LDM) that are in effect at the time of submittal) to the Engineering and Surveying Division (ESD) for review and approval of each project phase. The applicant shall pay plan check and inspection fees and Placer County Fire Department improvement plan review and inspection fees with the 1st Improvement Plan submittal. (NOTE: Prior to plan approval, all applicable recording and reproduction costs shall be paid).*

The Final Subdivision Map(s) shall not be submitted to the Engineering and Surveying Division (ESD) until the Improvement Plans are submitted for the second review. Final technical review of the Final Subdivision Map(s)

shall not conclude until after the Improvement Plans are approved by the ESD.

Any Building Permits associated with this project shall not be issued until, at a minimum, the Improvement Plans are approved by the Engineering and Surveying Division.

Prior to the County's final acceptance of the project's improvements, submit to the Engineering and Surveying Division one copy of the Record Drawings in digital format along with one blackline hardcopy (black print on bond paper) and one PDF copy.

10-2(c) *No grading, clearing, or tree disturbance shall occur until the Improvement Plans are approved and all temporary construction fencing has been installed and inspected by a member of the County.*

The Improvement Plan(s) shall identify the stockpiling and/or vehicle staging areas with locations as far as practical from existing dwellings and protected resources in the area. The applicant shall revegetate all disturbed areas. Revegetation, undertaken from April 1 to October 1, shall include regular watering to ensure adequate growth. A winterization plan shall be provided with project Improvement Plans.

The applicant shall submit to the ESD a letter of credit or cash deposit in the amount of 110 percent of an approved engineer's estimate using the County's current Plan Check and Inspection Fee Spreadsheet for winterization and permanent erosion control work prior to Improvement Plan approval. For an improvement plan with a calculated security that exceeds $100,000, a minimum of $100,000 shall be provided as letter of credit or cash security and the remainder can be bonded.

Off-Site Affordable Housing Parcel

10-2(d) *Implement RVSP EIR Mitigation Measure 12-3a:*

For each construction phase within the Plan Area, stockpiling and/or vehicle staging areas shall be identified on the Improvement Plans. These areas shall be located as far as practical from existing dwellings and protected resources in the area.

10-2(e) *Implement RVSP EIR Mitigation Measure 12-3b:*

This project is subject to construction-related stormwater permit requirements of the federal Clean Water Act NPDES program. Each applicant/developer for future construction projects within the Plan Area shall implement Mitigation Measure 13-1c [the standards of which are included as Mitigation Measure 10-2(g) of this EIR], which requires an applicant to submit a Notice of Intent (NOI) to comply with the NPDES General Permit for Stormwater Discharges associated with Construction Activities to the State Regional Water Quality Control Board if the specific

project would disturb 1 acre of land or more. The project applicant/developer shall provide to the ESD evidence of a state-issued Waste Discharge Identification (WDID) number or filing of a NOI and fees prior to start of construction, as required by the County's Sample Conditions and Improvement Plans, paragraph ip15 (Placer County Community Development Resource Agency, 2006).

10-2(f) *Implement RVSP EIR Mitigation Measure 12-3c:*

Development within the Plan Area must comply with the NPDES Phase II General Permit for the Discharge of Stormwater from small municipal separate storm sewer systems. Placer County is operating under the NPDES Phase II Rule permit, and as such, new development within the County must comply with the permit requirements. New development is subject to Attachment 4 Design Standards of the State Water Resource Control Board NPDES Phase II General Permit. These standards require that new development must be designed so as to minimize, to the maximum extent practicable, the introduction of pollutants of concern that may result in significant impacts, generated from site runoff of directly connected impervious areas, to the stormwater conveyance system as approved by the building official.

10-2(g) *Implement RVSP EIR Mitigation Measure 12-3d:*

For all construction activities that will disturb 1 or more acre of land, a stormwater pollution prevention plan (SWPPP) for the construction phase must be prepared and implemented.

The SWPPP will include development of site-specific structural and operational BMPs to prevent and control impacts to runoff quality, measures to be implemented before each storm event, inspection and maintenance of BMPs, and monitoring of runoff quality by visual and/or analytical means. The contents of the SWPPP are set forth in detail in the permit application package. BMPs shall be designed according to the California Stormwater Quality Association Stormwater Best Management Practice Handbooks for Construction (or other similar source as approved by the DPW). BMPs for the proposed project include, but are not limited to, silt fencing (Sediment Control SE -1), straw bale barriers (Sediment Control SE-9), fiber rolls (Sediment Control SE-5), storm drain inlet protection (Sediment Control SE-10), hydraulic mulch (Erosion Control EC-3), and stabilized construction entrance (Tracking Control TR-1). The SWPPP shall also include erosion control measures, to be implemented during construction, that conform to the NPDES, Storm Drain Standards, and local standards.

10-3 Be located on a geological 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 lateral spreading, subsidence, or collapse, or be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, as well as potential future development of the off-site affordable housing parcel, which could be located on a geological 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 lateral spreading, subsidence, or collapse, or be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code. Issues associated with unstable geologic units and/or soils, including expansive soil, loose surficial soil, lateral spreading, subsidence, and collapse are discussed below.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the geological conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to be located on a geological 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 lateral spreading, subsidence, or collapse, or be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code, would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

Expansive Soils

During the reconnaissance and soil sampling of the project site, including the collection of 12 test borings, ENGEO encountered periodic layers of plastic materials (clay soils) within the project site. Laboratory testing conducted by ENGEO and previous on-site studies of the soil samples collected on the project site identified low to moderate shrink-swell potential with variations in moisture content. According to ENGEO, selective grading and blending of the on-site soils would be necessary to create relatively low expansion potential surface conditions. As an alternative to selective grading, ENGEO recommends the use of properly designed post-tensioned mat foundations bearing on competent native soil or compacted fill to mitigate the effects of expansive soil.

Based on the above, ENGEO recommends that special design considerations for expansive soils, such as those located on the project site and off-site sewer lift station improvements area, be implemented as part of the proposed project. As such, if the recommendations provided by the final geotechnical report are not implemented, the potential exists for expansive soils to adversely affect the proposed project.

Loose Surficial Soils

Surface soil sampling of the project site encountered loose surficial soils in areas where discing has occurred on the site. According to ENGEO, portions of the site appear to have been disced and the upper approximately 0.5 to one foot of soil appears to consist of loose/disturbed clay, silt, and sand. In addition, previous explorations indicate that portions

of the site are underlain by approximately four to eight feet of loose soil. As shown in Figure 10-1, borings D7, D8, and D9 encountered such loose surficial soil horizons that were markedly less dense than at the other portions of the site. According to ENGEO, fill or loose soil horizons greater than one foot thick may need to be partially over-excavated and recompacted in areas to be developed.

Based on the above, ENGEO recommends that a design-level geotechnical exploration be performed to further evaluate the depth and extent of the loose soil to determine if specific engineering measures are necessary for development prior to project approval. As such, the potential exists for loose surficial soils to adversely affect the proposed project.

Lateral Spreading

Lateral spreading is associated with terrain near free faces such as excavations, channels, or open bodies of water. The project site and off-site affordable housing parcel are relatively level and consist of gently rolling terrain, with the exception of the Placer Creek riparian areas, which could be considered to include free faces. While minimal disturbance to Placer Creek may occur during construction of the proposed pedestrian bridge, the free faces of the creek channel would not be disturbed during construction of the span pedestrian bridge.

ENGEO did not observe any indications of slope instability at the project site, such as seeps or springs. Furthermore, groundwater levels at the project site occur at depths of approximately 100 to 120 feet bgs dependent on fluctuations in rainfall, irrigation practice, and other factors. Due to the absence of permanently elevated groundwater table, and the relatively low seismicity of the area, the potential for seismically-induced damage due to lateral spreading at the project site is considered low. Given that the proposed development area does not contain any steep slopes or free faces, the proposed project would not be subject to substantial risks related to lateral spreading.

Collapse

As discussed above, the design of the proposed project and off-site sewer lift station improvements area would be required to adhere to the provisions of the most recent version of the CBSC in effect at the time of building permit issuance. Additionally, the development of the proposed project and off-site sewer lift station improvements area would follow Article 15.04 of the Placer County Government Code. Structures built according to the seismic design provisions of current building codes would be able to resist major earthquakes without collapse, but with some structural, as well as non-structural damage. Given that the development of the proposed project and the off-site sewer lift station improvements would adhere to the CBSC requirements, the proposed project and off-site sewer lift station improvements area would not be subject to substantial risks associated with building collapse.

Off-Site Affordable Housing Parcel

As discussed in the Existing Environmental Setting section of this chapter, the proposed project site and the off-site affordable housing parcel are located in the same general vicinity and are underlain by similar soil types. In addition, according to the RVSP EIR, conditions on the off-site affordable housing parcel related to expansive soil, loose surficial soil, lateral spreading, subsidence, and collapse would be similar to the proposed project

site. The topography of the off-site affordable housing parcel is defined by gently rolling hills and does not contain any steep slopes. The potential for expansive soil in the off-site affordable housing parcel area is moderate, and the depth to groundwater is approximately 100 feet bgs. According to the RVSP EIR, provided that detailed, site-specific investigations are conducted at appropriate times and the recommendations of each investigation are followed, as required by RVSP EIR Mitigation Measure 12-5a, significant impacts related to soil stability would not occur. As such, should development of the off-site affordable housing parcel occur, RVSP EIR Mitigation Measure 12-5a, which has been incorporated into this EIR as Mitigation Measure 10-3(c), would be required.

Pursuant to Mitigation Measure 12-5a of the RVSP EIR, a final geotechnical engineering report produced by a California Registered Civil Engineer or Geotechnical Engineer shall be submitted to the ESD for review and approval for each construction project within the General Plan area. Such geotechnical engineering reports are required to make recommendations regarding road, pavement, and parking area design; structural foundations, including retaining wall design (if applicable); grading practices; erosion/winterization; special problems discovered on site (i.e., groundwater, expansive/unstable soils, etc.); and slope stability. If the soils report indicates the presence of potential soil hazards a certification of completion of the requirements of the soils report is be required prior to issuance of building permits.

Conclusion

Based on the above, the proposed project, off-site sewer lift station improvements, and potential future development of the off-site affordable housing parcel would not likely be subject to issues associated with lateral spreading, subsidence, or collapse, or being located on expansive soil. Nor would either component exacerbate the geological condition associated with such phenomena. However, expansive and loose soils were identified within the project site. Similarly, the potential for expansive soils in the off-site affordable housing parcel area is moderate. The Geotechnical Due Diligence Review includes recommendations to ensure adequate support of the proposed improvements, including recommendations related to expansive and loose soils. Such recommendations include, but are not limited to, selective grading and blending, use of properly designed post-tensioned mat foundations bearing on competent native soil or compacted fill, site clearing and stripping, over-excavation, compaction or re-compaction of subgrade soils, and provision of a design-level geotechnical exploration to further evaluate the depth and extent of loose soils in areas of proposed development. Because a final geotechnical engineering report has not yet been prepared for the proposed project, or the off-site affordable housing parcel pursuant to Mitigation Measure 12-5a of the RVSP EIR, a ***significant*** impact could occur. The referenced RVSP mitigation measure is incorporated into this EIR as Mitigation Measure 10-3(c) below.

Mitigation Measure(s)

Implementation of the following mitigation measures would ensure that the proposed project, off-site sewer lift station improvements, and potential future development of the off-site affordable housing parcel would not be subject to, or increase the risk of, an on- or off-site lateral spreading, subsidence, or collapse. Thus, the potential impact would be *less than significant*.

Project Site and Off-Site Sewer Lift Station Improvements Area

10-3(a) *The Improvement Plan submittal shall include a final geotechnical engineering report produced by a California Registered Civil Engineer or Geotechnical Engineer for ESD review and approval. The report shall address and make recommendations on the following:*

A. *Road, pavement, and parking area design;*
B. *Structural foundations, including retaining wall design (if applicable);*
C. *Grading practices;*
D. *Erosion/winterization;*
E. *Special problems discovered on-site, (i.e., groundwater, expansive/unstable soils, potential for smectite clays etc.); and*
F. *Slope stability.*

It is the responsibility of the developer to provide for engineering inspection and certification that earthwork has been performed in conformity with recommendations contained in the report.

If the geotechnical engineering report indicates the presence of critically expansive or other soil problems that, if not corrected, could lead to structural defects, a certification of completion of the requirements of the soils report shall be required for subdivisions, prior to issuance of Building Permits. This certification may be completed on a lot- by-lot basis or on a Tract basis. This shall be so noted on the Improvement Plans, in the Development Notebook (if required), in the Conditions, Covenants and Restrictions (CC&Rs), and on the Informational Sheet filed with the Final Subdivision Map(s).

10-3(b) *The Geotechnical Due Diligence Review prepared by ENGEO Incorporated, dated December 26, 2023, indicated the presence of expansive and loose soils, and/or other soil problems which, if not corrected, would lead to structural defects.*

- *For pad graded lots, prior to final acceptance of project improvements or consideration of early Building Permits and after the completion of the pad grading for all lots, the applicant shall submit to the ESD for review and approval, a soil investigation of each lot produced by a California Registered Civil or Geotechnical Engineer (Section 17953-17955 California Health and Safety Code).*

The soil investigations shall include recommended corrective action that is likely to prevent structural damage to each proposed dwelling. In addition, the applicant shall include in the Development Notebook the soil problems encountered on each specific lot as well as the recommended corrective actions. A note shall be included on the Improvement Plans, Conditions, Covenants and Restrictions (CC&Rs), and the Informational Sheet filed

with the Final Subdivision Map(s), which indicates the requirements of this condition.

Off-Site Affordable Housing Parcel

10-3(c) *Implement RVSP EIR Mitigation Measure 12-5a:*

For each development phase or construction project within the Plan Area, a geotechnical engineering report produced by a California Registered Civil Engineer or Geotechnical Engineer shall be submitted to the ESD for review and approval. The report shall address and make recommendations on the following:

- *Road, pavement, and parking area design;*
- *Structural foundations, including retaining wall design (if applicable);*
- *Grading practices;*
- *Erosion/winterization;*
- *Special problems discovered on site (i.e., groundwater, expansive/unstable soils, etc.); and*
- *Slope stability.*

When approved by the ESD, two copies of the final report shall be provided to the ESD and one copy to the Building Department for their use. If the soils report indicates the presence of critically expansive soils or other soils problems which, if not corrected, could lead to structural defects, a certification of completion of the requirements of the soils report will be required for subdivisions and other entitlements, prior to issuance of building permits. This certification may be completed on a lot by lot basis or on a tract basis, or other defined project basis. This shall be so noted in the Covenants, Conditions, and Restrictions and on the informational sheet filed with the final map(s). It is the responsibility of the developer to provide for engineering inspection and certification that earthwork has been performed in conformity with recommendations contained in the report.

10-4 Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. Based on the analysis below and with implementation of mitigation, the impact is *less than significant.*

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could result in directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the geological conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to directly or indirectly destroy a unique paleontological resource or site or unique geologic feature

would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

As previously discussed, the majority of the project site and off-site sewer lift station improvements area are underlain by the Turlock Lake Formation and the Modesto Formation. The Turlock Lake Formation consists of deeply weathered gravel, sand, and silt derived from the western slopes of the Sierra Nevada. The lower member of the Modesto Formation consists of unconsolidated, slightly weathered, tan to light gray alluvium composed of gravel, sand, silt, and clay derived from surrounding mountains.

A Cultural and Paleontological Resources Assessment was prepared for the proposed project by NIC in June 2025.[21] The Cultural and Paleontological Resources Assessment included an intensive field survey of the project site and a search of paleontological records in the University of California Museum of Paleontology (UCMP) database to determine the presence of paleontological resources on the project site and in the project site vicinity.

Paleontological resources were not identified during the field survey conducted on the project site. While results of the records search identified 64 fossil localities within Placer County, the Paleontological Resources Assessment determined that the types of rock units containing such paleontological resources do not occur in the project area. Furthermore, UCMP records do not show any paleontological resources from Quaternary alluvial deposits underlain with metavolcanic formations, such as the Turlock Lake and Modesto Lake Formations underlaying the project site, off-site sewer lift station improvements area, and off-site affordable housing parcel, in Placer County. Based on the foregoing information and the SVP criteria, the Paleontological Resources Assessment determined that the sensitivity for paleontological resources to occur on the project site is low. As discussed above, because the off-site sewer lift station improvements area and off-site affordable housing parcel are located within a two-mile radius of the project site, and are underlain by similar soil formations, the sensitivity for paleontological resources within such areas are similarly low.

Off-Site Affordable Housing Parcel

Because the off-site affordable housing parcel is located approximately 1.68 miles southwest of the project site and is underlain by similar soil formations, the sensitivity for paleontological resources on the off-site affordable housing parcel would be similar to that of the project site. Therefore, the sensitivity for paleontological resources or unique geologic features within the off-site affordable housing parcel is similarly low.

As discussed in the RVSP EIR, vertebrae paleontological sites are not known to exist within the RVSP area. However, previously undiscovered paleontological resources could be exposed through grading or excavation activities associated with construction of the RVSP. According to the RVSP EIR, the potential impact related to paleontological resources would be mitigated to a less-than-significant level by having a qualified professional paleontologist conduct periodic construction monitoring to identify, evaluate, and properly manage potentially exposed resources during grading activities, as required

[21] Natural Investigations Company. *Cultural and Paleontological Resources Assessment for the Estia Dry Creek & Placer Creek Residential Property Development Project, Placer County, California.* June 2025.

by RVSP EIR Mitigation Measures 7-3a and 7-3b. As such, should development of the off-site affordable housing parcel occur, RVSP EIR Mitigation Measures 7-3a and 7-3b, which have been incorporated into this EIR as Mitigation Measures 10-4(c) and 10-4(d), would be required.

Conclusion

Although the project site does not contain any known paleontological resources or unique geologic features, and the potential for the presence of paleontological resources on the project site, off-site sewer lift station improvements area, and off-site affordable housing parcel is low, the potential for unknown paleontological resources to be discovered in Placer County exists. As such, the potential exists that a unique paleontological resource or site could be unearthed during construction activities on the project site, off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel. Thus, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level by ensuring that, if any unique paleontological resources are encountered during construction, they shall be recovered and transported in a form that would allow scientific institutions to properly curate and preserve them for the benefit of current and future generations.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

10-4(a) *Prior to construction activities, the developer shall retain a qualified paleontologist to prepare a paleontological resources worker environmental awareness plan (WEAP). The WEAP shall be presented to all construction personnel on the first day of construction activities prior to ground disturbance. The WEAP shall serve to educate all personnel involved in the project, particularly construction personnel, of the protocols to be followed if fossils are found at the project site during ground-disturbing activities. A sign-in sheet shall be provided for all personnel in attendance at the WEAP presentation. The WEAP presentation shall be recorded for future use in the circumstance that new personnel start after the WEAP presentation occurs. The language of this mitigation measure shall be included on all future grading plans, utility plans, and improvement plans subject to approval by the Placer County ESD for the proposed project.*

10-4(b) *If paleontological resources are discovered during ground-disturbing activities, work shall be halted in the area within 50 feet of the find. The applicant shall notify the Placer County Community Development Resource Agency and retain a qualified paleontologist to inspect the discovery. If the find is deemed to contain unique paleontological resources under criteria established by the Society for Vertebrate Paleontology with respect to authenticity, completeness, preservation, and identification, the resource(s) shall then be salvaged and deposited in an accredited and permanent scientific institution (e.g., UCMP or Sierra College), where the discovery would be properly curated and preserved for the benefit of current and future generations. The language of this mitigation measure shall be included on any future grading plans, utility plans, and*

improvement plans approved by the Placer County ESD for the proposed project, where excavation work would be required. Construction may continue in areas outside of the buffer zone.

Off-Site Affordable Housing Parcel

10-4(c) Implement RVSP EIR Mitigation Measure 7-3a:

A professional paleontologist shall be retained to develop and implement a plan for managing paleontological resources and periodic monitoring of grading activities. The plan shall also include provisions for salvaging fossils, as necessary. The plan shall also include the timing and extent of monitoring needed. A copy of the plan shall be provided to the Placer County Planning Department prior to any grading occurring on site.

10-4(d) Implement RVSP EIR Mitigation Measure 7-3b:

If paleontological resources are identified at a particular site, the project manager shall cease operation until a qualified professional can provide an evaluation.

1. *Identify and evaluate paleontological resource by intense field survey where impacts are considered high;*
2. *Assess effects on identified sites;*
3. *Consult with the institutional/academic paleontologists conducting research investigations within the geological formations that are slated to be impacted;*
4. *Obtain comments from the researchers; and*
5. *Comply with researchers' recommendations to address any significant adverse effects where determined by the County to be feasible.*

In considering any suggested mitigation proposed by the consulting paleontologist, Placer County Planning Department staff shall determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, Specific Plan policies and land use assumptions, and other considerations. If avoidance is unnecessary or infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of the project site while mitigation for paleontological resources is carried out.

10-5 Result in significant disruptions, displacements, compaction or overcrowding of the soil, or substantial change in topography or ground surface relief features. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, as well as potential future development of the off-site affordable housing parcel, which could result

in significant disruptions, displacements, compaction or overcrowding of the soil, or substantial change in topography or ground surface relief features.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the geological conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to result in significant disruptions, displacements, compaction or overcrowding of the soil, or substantial change in topography or ground surface relief features. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

Distinct topographic features located on the project site include seasonal wetlands and vernal pools, as well as the un-named tributary of Dry Creek (named "Placer Creek" for this project) which flows east to west in the southern portion of the project site. Aside from the on-site aquatic features and the associated on-site tributaries to Dry Creek, the project site consists of undeveloped annual grassland with gently rolling topography. In addition, the portion of the off-site sewer lift station improvements area north of Dry Creek Community Park, where the off-site emergency wastewater storage improvements could potentially be constructed at the existing Community Facility District #1 Sewer Lift Station, is comprised of undeveloped land containing VFRW and portions of intermittent tributary drainages of Dry Creek. The proposed project would include removal of existing vegetation within the proposed development area, as well as grading for building pads, roads, and other associated on-site and off-site project improvements. However, as discussed in Chapter 3, Project Description, the Placer Creek riparian corridor and the immediate surrounding area would be retained and protected as open space.

Overall, the proposed project and off-site sewer lift station improvements area would include site preparation, grading, paving, utility placement, and various other construction activities which would disrupt on-site and off-site soils. As such, soils within such areas would be reworked as necessary to support the proposed development, potentially resulting in disruptions, displacements, compaction, or overcrowding of the soils.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel is approximately four acres in size, is undeveloped, and consists of grassy fields with gently rolling topography. As previously discussed, this affordable housing option would involve an amendment to the RVSP and a rezone of the proposed affordable housing parcel to the RM30 zone, which can result in a maximum development potential of 120 affordable income-restricted units on the off-site affordable housing parcel. Based on the existing topography of the off-site affordable housing parcel, future development of the off-site affordable housing parcel would be similar compared to the proposed project.

Conclusion

The proposed project, off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel would include site modifications that would alter the existing topography and ground surface relief features. Thus, significant disruptions, displacements, compaction or overcrowding of on-site and/or off-site soils, and/or substantial change in topography or ground surface relief features could occur, and could result in a ***significant*** impact.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level by ensuring the avoidance of any significant disruptions, displacements, compaction or overcrowding of the soil, or substantial change in topography or ground surface relief features.

Proposed Project, Off-Site Sewer Lift Station Improvements Area, and Off-Site Affordable Housing Parcel

10-5 Implement the following Mitigation Measures set forth in this EIR:

- *10-2(b) The applicant shall prepare and submit Improvement Plans, specifications and cost estimates (per the requirements of Section II of the Land Development Manual (LDM) that are in effect at the time of submittal) to the Engineering and Surveying Division (ESD) for review and approval of each project phase. The applicant shall pay plan check and inspection fees and Placer County Fire Department improvement plan review and inspection fees with the 1st Improvement Plan submittal. (NOTE: Prior to plan approval, all applicable recording and reproduction costs shall be paid).*

  The Final Subdivision Map(s) shall not be submitted to the Engineering and Surveying Division (ESD) until the Improvement Plans are submitted for the second review. Final technical review of the Final Subdivision Map(s) shall not conclude until after the Improvement Plans are approved by the ESD. Any Building Permits associated with this project shall not be issued until, at a minimum, the Improvement Plans are approved by the Engineering and Surveying Division.

  Prior to the County's final acceptance of the project's improvements, submit to the Engineering and Surveying Division one copy of the Record Drawings in digital format along with one blackline hardcopy (black print on bond paper) and one PDF copy.

- *10-2(c) No grading, clearing, or tree disturbance shall occur until the Improvement Plans are approved and all temporary construction fencing has been installed and inspected by a member of the County.*

  The Improvement Plan(s) shall identify the stockpiling and/or vehicle staging areas with locations as far as practical from existing dwellings and protected resources in the area. The applicant shall revegetate all disturbed areas. Revegetation, undertaken from April 1 to October 1, shall include regular watering to ensure adequate growth. A winterization plan shall be provided with project Improvement Plans.

  The applicant shall submit to the ESD a letter of credit or cash deposit in the amount of 110 percent of an approved engineer's

estimate using the County's current Plan Check and Inspection Fee Spreadsheet for winterization and permanent erosion control work prior to Improvement Plan approval. For an improvement plan with a calculated security that exceeds $100,000, a minimum of $100,000 shall be provided as letter of credit or cash security and the remainder can be bonded.

- *10-3(a) The Improvement Plan submittal shall include a final geotechnical engineering report produced by a California Registered Civil Engineer or Geotechnical Engineer for ESD review and approval. The report shall address and make recommendations on the following:*

    A. *Road, pavement, and parking area design;*
    B. *Structural foundations, including retaining wall design (if applicable);*
    C. *Grading practices;*
    D. *Erosion/winterization;*
    E. *Special problems discovered on-site, (i.e., groundwater, expansive/unstable soils, potential for smectite clays etc.); and*
    F. *Slope stability.*

    It is the responsibility of the developer to provide for engineering inspection and certification that earthwork has been performed in conformity with recommendations contained in the report.

    If the geotechnical engineering report indicates the presence of critically expansive or other soil problems that, if not corrected, could lead to structural defects, a certification of completion of the requirements of the soils report shall be required for subdivisions, prior to issuance of Building Permits. This certification may be completed on a lot- by-lot basis or on a Tract basis. This shall be so noted on the Improvement Plans, in the Development Notebook (if required), in the Conditions, Covenants and Restrictions (CC&Rs), and on the Informational Sheet filed with the Final Subdivision Map(s).

- *10-3(b)The Geotechnical Due Diligence Review prepared by ENGEO Incorporated, dated December 26, 2023, indicated the presence of expansive and loose soils, and or other soil problems which, if not corrected, would lead to structural defects.*

    - *For pad graded lots, prior to final acceptance of project improvements or consideration of early Building Permits and after the completion of the pad grading for all lots, the applicant shall submit to the ESD for review and approval, a soil investigation of each lot produced by a California*

Registered Civil or Geotechnical Engineer (Section 17953-17955 California Health and Safety Code).

The soil investigations shall include recommended corrective action that is likely to prevent structural damage to each proposed dwelling. In addition, the applicant shall include in the Development Notebook the soil problems encountered on each specific lot as well as the recommended corrective actions. A note shall be included on the Improvement Plans, Conditions, Covenants and Restrictions (CC&Rs), and the Informational Sheet filed with the Final Subdivision Map(s), which indicates the requirements of this condition.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Additional detail regarding the cumulative project setting is discussed in Chapter 20, Statutorily Required Sections, of this EIR.

10-6 Cumulative increase in the potential for geological related impacts and hazards. Based on the analysis below, the cumulative impact is *less than significant*.

A project's potential impacts related to geology and soils are individual and localized, depending on the project site and underlying soils. For those reasons, the cumulative geographic context for geology and soils is site-specific, and geologic impacts tend to be localized. Combined or additive cumulative impacts from multiple related or reasonably proximate projects do not exist, as each project has its own localized geologic impacts addressed by site-specific mitigation. Impacts to geology, soils, seismicity, and paleontological resources related to implementation of the proposed project, off-site sewer lift station improvements area, and the potential future development of the off-site affordable housing parcel are analyzed throughout this chapter. As discussed above, existing geological and soil conditions on the site would generally be adequate to support development of the proposed project, including the off-site sewer lift station improvements area and both affordable housing options. In addition, Mitigation Measure 10-3(a), which requires the preparation of a final geotechnical engineering report, would ensure the appropriate recommendations are implemented to reduce project-specific impacts related to geology and soils to a less-than-significant level.

While some geologic characteristics may affect regional construction practices, impacts and mitigation measures are primarily site-specific and project-specific. For example, impacts resulting from development on expansive soils at one project site are not worsened by impacts from development on expansive soils or undocumented fill at another project site. Rather, the soil conditions, and the implications of such conditions for each project, are independent.

As such, the potential for cumulative impacts related to geology, soils, and seismicity, to which implementation of the proposed project, including the off-site sewer lift station improvements area and both affordable housing options, might contribute, is ***less than significant***.

Mitigation Measure(s)

None required.

11. Hazards and Hazardous Materials

11. HAZARDS AND HAZARDOUS MATERIALS

11.1 INTRODUCTION

As discussed in Chapter 3, Project Description, of this EIR, the proposed project would include a total of 432 residential units and associated improvements, off-site sewer lift station improvements, and two options to meet the County's affordable housing regulations. The affordable housing options include the provision of a minimum of 22 Accessory Dwelling Units (ADUs) on lots proposed for development with single-family residential units, or an off-site proposal wherein Homes by Towne would rezone and transfer the fee title to the County an approximately four-acre parcel off-site within the Riolo Vineyards Specific Plan (RVSP), which could develop a maximum of 120 affordable income-restricted units.

The Hazards and Hazardous Materials chapter of the EIR describes existing and potentially occurring hazards and hazardous materials within the vicinity of the project site, off-site sewer lift station improvements area, and the off-site affordable housing parcel. The chapter includes a discussion of potential impacts posed by such hazards to the environment. In addition, surrounding land uses are discussed to provide an assessment of whether the project could impact surrounding land uses. However, the question of whether surrounding land uses could impact the project's future residents is not a question requiring analysis under CEQA.[1] The impact discussions and mitigation measures presented in each technical section apply to both the project site and the off-site sewer lift station improvements area, unless otherwise noted.

The Hazards and Hazardous Materials chapter is primarily based on information drawn from a Phase I Environmental Site Assessment (Phase I ESA) (see Appendix F of this EIR)[2] prepared for the proposed project by Environmental Risk Assessors, as well as the Placer County General Plan (PCGP)[3] and associated EIR,[4] RVSP EIR,[5] and the Dry Creek-West Placer Community Plan (DCWPCP).[6]

11.2 EXISTING ENVIRONMENTAL SETTING

The following section includes a definition of hazardous materials and descriptions of the existing conditions associated with the project site, off-site sewer lift station improvements area, and off-site affordable housing parcel related to hazards and hazardous materials.

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1 Pursuant to the *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369 (*CBIA*), the California Supreme Court held that "agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents. But when a proposed project risks exacerbating those environmental hazards or conditions that already exist, an agency must analyze the potential impact of such hazards on future residents or users. In those specific instances, it is the project's impact on the environment – and not the environment's impact on the project – that compels an evaluation of how future residents or users could be affected by exacerbated conditions." (*Id.* at pp. 377-378.).

2 Environmental Risk Assessors. *Phase I Environmental Site Assessment Report: Fong Property, Old Walerga Road and Baseline Road, Roseville, California 95747.* November 2023.

3 Placer County. *Countywide General Plan Policy Document*. August 1994 (updated May 2013).

4 Placer County. *Countywide General Plan EIR*. July 1994.

5 Placer County. *Riolo Vineyard Specific Plan Environmental Impact Report.* January 2008.

6 Placer County. *Dry Creek-West Placer Community Plan.* Amended May 12, 2009.

Hazardous Materials

The term hazardous substance refers to both hazardous materials and hazardous wastes. A material is defined as hazardous if the material appears on a list of hazardous materials prepared by a federal, State, or local regulatory agency or if the material has characteristics defined as hazardous by such an agency. The California Environmental Protection Agency (Cal-EPA), California Department of Toxic Substance Control (DTSC) defines hazardous waste, as found in the California Health and Safety Code Section 25141(b), as follows:

> […] its quantity, concentration, or physical, chemical, or infectious characteristics: (1) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; (2) pose a substantial present or potential hazard to human health or the environment, due to factors including, but not limited to, carcinogenicity, acute toxicity, chronic toxicity, bioaccumulative properties, or persistence in the environment, when improperly treated, stored, transported, or disposed of, or otherwise managed.

The following discussion focuses on the potential Recognized Environmental Conditions (RECs) associated with the project site, off-site sewer lift station improvements area, and off-site affordable housing parcel. A REC indicates the presence or likely presence of any hazardous substances in, on, or at a property due to any release into the environment, under conditions indicative of a release to the environment, or under conditions that pose a material threat of a future release to the environment.[7]

Project Area Conditions

As discussed in Chapter 3, Project Description, of this EIR, the project site consists of approximately 92.2 gross (87.6 net) acres and is located south of Baseline Road, immediately east of the abandoned old Walerga Road right-of-way, west of the Fiddyment Road/Baseline Road/Walerga Road intersection and the western portion of Sun Valley Oaks residential subdivision, and north of the Morgan Creek residential subdivision in the DCWPCP area of unincorporated Placer County. The project site is bisected by Walerga Road, which generally curves from northeast to southwest. The 52.3-acre northern portion of the site is bound by Baseline Road to the north and Walerga Road to the south. The northern portion of the site is undeveloped, consists of non-native annual grassland with gently rolling topography, and is interspersed with seasonal wetlands and vernal pools. The 35.3-acre southern portion of the site is bound by Walerga Road to the north and west. The southern portion of the site includes a paved bicycle trail which extends from Vineyard Road to the east and Walerga Road to the west. In addition, the southern portion of the site includes undeveloped annual grassland with gently rolling topography, interspersed with seasonal wetlands and vernal pools, and is bisected by an un-named tributary of Dry Creek (named “Placer Creek” for this project) which flows east to west. The Federal Emergency Management Agency (FEMA) 100-year floodplain, containing approximately 4.7 acres, is located within the Placer Creek tributary area, which bisects the southern portion of the project site. A band of oak woodlands is located along the Placer Creek riparian corridor.

The Phase I ESA identifies records dating back to as early as 1910 that show the site as undeveloped land. Walerga Road had been present along the project site’s western border since at least 1910, and was realigned to bisect the project site by 2006. In 1937 the project site

[7] ASTM International. *ASTM E1527, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.* 2013.

remained undeveloped with a dry pond on the central portion and a line of trees along the path of the creek that traverses the southern portion of the project site. Agricultural uses, specifically dryland farming, appear throughout the project site from 1947 until 1993, except in the area of the creek in the southern portion of the project site. In 1998 an unpaved walking pathway appears on the project site's southern portion. By 2006, the walking pathway appears to be paved with several underground utility covers visible along the pathway, and Walerga Road is under construction across the center of the project site. The project site appears as fallow land from 1998 to 2009 and remained undeveloped from 2009 to 2016. The northern portion of the project site was used for cattle grazing in 2018 and 2019. The area around the project site's northern border was graded by 2020, presumably associated with the widening of Baseline Road. The project site remains undeveloped in the most recent aerial photographs.

Site reconnaissance of the project site was conducted by Environmental Risk Assessors on November 9, 2023, in which small debris piles along Old Walerga Road and two large construction equipment sized vehicle tires on the project site's central portion were observed.

The two-acre off-site sewer lift station improvements area (Assessor's Parcel Numbers [APNs] 023-221-045 and 023-221-052) is located approximately 0.53-mile south of the southern portion of the project site. Aerial imagery shows that the off-site sewer lift station improvements area was historically surrounded by agricultural land until more recent development of the area. The utility area in the off-site sewer lift station improvements area was developed between 1998 and 2002, and has since remained largely unchanged. Surrounding residential development can be seen beginning in 2005, and the Dry Creek Community Park was developed in 2013 to the west of the off-site sewer lift station improvements area. The off-site sewer lift station improvements included in the proposed project would consist of building a third 47,000-gallon emergency storage tank set on concrete slurry below the existing paved access road. The tank would have a 48-inch access manhole from the paved road. In order to place the underground tank, the design would call for 530 cubic yards of cut to be replaced with 530 cubic yards of fill. In addition, the bottom of the storage tank trench would be 23 feet below grade. The Phase I ESA prepared for the proposed project did not evaluate the off-site sewer lift station improvements area.

As discussed throughout this EIR, one of the options the applicant is considering to satisfy the project's affordable housing requirements would involve transferring in fee title to the County an off-site vacant parcel under Homes by Towne ownership, within the Riolo Vineyards Specific Plan (RVSP). The off-site affordable housing parcel is approximately four acres in size and is located at the northeast corner of PFE Road and Watt Avenue (APN 023-200-056-000). Aerial imagery shows that the off-site affordable housing parcel has remained undeveloped since at least 1985. Center Preschool, located to the southwest of the affordable housing parcel, has also been present since at least 1985. The surrounding residential development, in particular to the south of the off-site affordable housing parcel, was developed between 1993 and 1998. The off-site affordable housing parcel is currently undeveloped and consists of grassy fields with gently rolling topography. The Phase I ESA prepared for the proposed project did not evaluate the off-site affordable housing parcel. However, as described further below, the off-site affordable housing parcel is located within the RVSP and was analyzed in the RVSP EIR. As part of the RVSP EIR, a Phase I ESA and subsequent Phase II ESA were conducted for the RVSP area.

The other option the applicant is considering to satisfy the project's affordable housing requirements would involve developing ADUs on-site as a part of the proposed project. According to Policy HE-C-3, included in the Housing Element of the County's General Plan, ADUs of less than 750 square feet (sf) are considered to be affordable by design and eligible to satisfy low-

income housing requirements in specific plans and new developments. The County's regulations require a minimum of 10 percent of the units within the proposed project be affordable housing; thus, the proposed project could provide a minimum of 22 ADUs on lots with single-family residential units. ADUs are allowed by-right, pursuant to State and County regulations, within the project site's proposed land use and zoning designations.

Potential On-Site Recognized Environmental Conditions

Based on the Phase I ESA prepared for the project site, Environmental Risk Assessors determined that the project site does not contain any RECs such as aboveground storage tanks (ASTs), underground storage tanks (USTs), septic systems/cesspools, or polychlorinated biphenyl (PCB) containing equipment. Nonetheless, the following potential environmental concerns were identified for the project site.

Dryland Farming

As mentioned above, historical aerial photographs show dryland farming throughout the project site from 1947 through 1993. According to the Phase I ESA, the DTSC determined that crops grown using dryland methods are generally not treated with agricultural chemicals, including environmentally persistent pesticides. Because of the non-irrigated nature of dryland farming, reliance on naturally occurring rainfall, and general lack of pesticide use, typical RECs associated with agricultural use, such as the use of organochlorine pesticides (OCPs), arsenic, and copper applied as termiticides, are unlikely to occur on the project site. Thus, the past agricultural use would not be considered a potential REC.

On-Site Soil Stockpile

The historical aerial photographs reviewed in the Phase I ESA identified a small stockpile of soil and gravel visible near the project site's northeastern corner in the 2020 photograph, which is not visible in the 2021 photograph. The soil and gravel stockpile appears to be related to grading activities along the project site's northern border. The Phase I ESA determined that evidence of chemical or fuel releases was not noted in the area, and the soil and gravel stockpile would not be considered a potential REC.

Vapor Encroachment Conditions

Exposure to vapor intruding from ground sources of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and volatile organic compounds such as mercury can lead to detrimental effects on human health. The Phase I ESA did not find evidence of a potential release of vapor encroachment contaminants of concern into the subsurface due to the current or past on-site operations of the project site. Considering evidence of a release was not found, Environmental Risk Assessors determined that a vapor encroachment condition due to on-site sources would be unlikely to exist. Thus, a vapor encroachment condition would not be considered a potential REC.

Radon

According to the U.S. Environmental Protection Agency (USEPA), radon is found in outdoor air and in the indoor air of buildings of all kinds. Exposure to radon can cause lung cancer in smokers and non-smokers.[8] Radon is the number one cause of lung cancer among non-smokers, according to USEPA estimates, and the second-leading cause, overall, of lung cancer. The

[8] U.S. Environmental Protection Agency. *Health Risk of Radon*. Available at: https://www.epa.gov/radon/health-risk-radon. Accessed October 2025.

USEPA has developed the EPA Map of Radon Zones to assist organizations in implementing radon-resistant building codes. The map assigns each county in the U.S. to one of three zones based on radon potential. The USEPA uses a continuous exposure level of 4.0 picocuries per liter (pCi/L) as an action level at which additional action is recommended. According to the Phase I ESA, the project site is located in a Zone 2-designated area, defined as an area of Moderate Potential, where the average indoor radon screening level is between two and four pCi/L. Such levels do not require action to be taken to reduce radon levels. Thus, radon would not be considered a potential REC.

Nearby RECs

A review of sites located near the project site that are listed in federal, State, and/or local databases of hazardous materials sites was completed as part of the Phase I ESA. The project site is not identified on any local, State, or federally published lists of sites that have had releases of hazardous substances. Based on the Phase I ESA, the only adjacent property surrounding the project site identified during the regulatory agency databases review, Rutan Environmental Safety Services Corporation, located approximately 640 feet to the east of the project site at 8575 Parkwood Court, was established to be a non-generator of hazardous waste in 2018. As chemical or fuel releases have not been reported at the property, Rutan Environmental Safety Services Corporation does not appear to present a significant environmental concern to the project site. Additionally, all sites of concern in the project vicinity, including orphan properties, have received regulatory closure, were determined to be of sufficient distance, and/or situated hydrologically cross- or down-gradient from the project site.

For further details regarding the identified facilities located near the project site that are listed in federal, State, and/or local databases of hazardous materials sites, please see Appendix D of the Phase I ESA (attached as Appendix F to this EIR). A listing on the aforementioned databases is not considered to be indicative of a release of a hazardous material or petroleum product at a property.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel is located within the RVSP and was analyzed in the RVSP EIR. As part of the RVSP EIR, a Phase I ESA and subsequent Phase II ESA were conducted for the RVSP area. While several RECs were identified in the parcels surrounding the off-site affordable housing parcel, including former farming facilities, a water tank, disturbance areas, and significant debris, RECs were not identified on the off-site affordable housing parcel. Testing was conducted in relation to the nearby RECs, including metal detector scans, test excavations, and soil sampling; the presence of RECs, such as pesticides, was not detected.

Nearest Airports

The closest public use airport to the project site is McClellan Airport, which is located approximately 4.6 miles southwest of the site. The project site is not located in the vicinity of any private airstrips. McClellan Airport was formerly known as the McClellan Air Force Base, and was operated for more than 60 years as an industrial military facility; however, the airport is currently part of a master-planned community consisting of more than 16 million sf of industrial, research and development, office, aviation, and mixed-use facilities. McClellan Airport's most recent Airport Land Use Compatibility Plan was updated in 1992, when the airport was still operated as an Air

Force base. According to the 1992 Comprehensive Land Use Plan for the McClellan Air Force Base, the project site is not located within an airport overflight zone.[9]

11.3 REGULATORY CONTEXT

The following discussion contains a summary of regulatory controls pertaining to hazardous substances, including federal, State, and local laws and ordinances.

Federal Regulations

Federal agencies that regulate hazardous materials include the USEPA, the Occupational Safety and Health Administration (OSHA), the Department of Transportation (DOT), and the National Institute of Health (NIH). Prior to August 1992, the principal agency at the federal level regulating the generation, transport, and disposal of hazardous waste was the USEPA under the authority of the Resource Conservation and Recovery Act (RCRA). As of August 1, 1992, however, the California DTSC was authorized to implement the State's hazardous waste management program for the USEPA. The USEPA continues to regulate hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). The following federal laws and related regulations govern hazardous materials.

Occupational Safety and Health Act

Congress passed the Occupational and Safety Health Act (29 U.S.C. Section 651 et seq. [1970]) to ensure worker and workplace safety. Their goal was to make sure employers provide their workers a place of employment free from recognized hazards to safety and health, such as exposure to toxic chemicals, excessive noise levels, mechanical dangers, heat or cold stress, or unsanitary conditions. In order to establish standards for workplace health and safety, the Act also created the National Institute for Occupational Safety and Health (NIOSH) as the research institution for OSHA. OSHA is a division of the U.S. Department of Labor that oversees the administration of the Act and enforces standards in all 50 states. OSHA requires 40 hours of training for hazardous materials operators, as well as an annual eight-hour refresher course, which includes training regarding personal safety, hazardous materials storage and handling, and emergency response.

Comprehensive Environmental Response, Compensation, and Liability Act

The CERCLA (42 U.S.C. Section 9601 et seq. [1980]) provides a federal "Superfund" to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Through CERCLA, the USEPA was given power to seek out those parties responsible for any release and assure their cooperation in the cleanup. The USEPA cleans up orphan sites when potentially responsible parties cannot be identified or located, or when they fail to act. Through various enforcement tools, USEPA obtains private party cleanup through orders, consent decrees, and other small party settlements. The USEPA also recovers costs from financially viable individuals and companies once a response action has been completed. The USEPA is authorized to implement the CERCLA in all 50 states and U.S. territories.

[9] Airport Land Use Commission. *McClellan Air Force Base Comprehensive Land Use Plan.* Amended December 1992.

Superfund Amendments and Reauthorization Act of 1986

The Superfund Amendments and Reauthorization Act (SARA) of 1986, (Title III; Section 305(a)) reauthorized CERCLA to continue cleanup activities around the country. Several site-specific amendments, definitions clarifications, and technical requirements were added to the legislation, including additional enforcement authorities. In addition, Title III of SARA authorized the Emergency Planning and Community Right-to-Know Act (EPCRA). SARA, Title III provides funding for training in emergency planning, preparedness, mitigation, response, and recovery capabilities associated with hazardous chemicals. Title III of SARA addresses concerns about emergency preparedness for hazardous chemicals, and emphasizes helping communities meet their responsibilities in preparing to handle chemical emergencies and increasing public knowledge and access to information on hazardous chemicals present in their communities.

Resource Conservation and Recovery Act

The RCRA (42 U.S.C. Section 6901 et seq. [1976]) gives USEPA the authority to control hazardous waste from the "cradle-to-grave," which includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled USEPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. The federal Hazardous and Solid Waste Amendments (HSWA) are the 1984 amendments to RCRA that focused on waste minimization and phasing out land disposal of hazardous waste as well as corrective action for releases. Some of the other mandates of this law include increased enforcement authority for USEPA, more stringent hazardous waste management standards, and a comprehensive UST program. States have the authority to implement individual hazardous waste programs in lieu of the RCRA as long as the state program is as stringent as federal RCRA requirements and is approved by the USEPA.

Toxic Substances Control Act

The Toxic Substances Control Act (TSCA) of 1976 (15 U.S.C. Section 2601 et seq. [1976]) provides USEPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. Certain substances are generally excluded from TSCA, including, among others, food, drugs, cosmetics and pesticides. TSCA addresses the production, importation, use, and disposal of specific chemicals including PCBs, asbestos, radon, and lead-based paint (LBP).

U.S. Department of Transportation

Transportation of hazardous materials is regulated by the DOT's Office of Hazardous Materials Safety. The office formulates, issues, and revises hazardous materials regulations under the Federal Hazardous Materials Transportation Law. The hazardous materials regulations cover hazardous materials definitions and classifications, hazard communications, shipper and carrier operations, training and security requirements, and packaging and container specifications. The hazardous materials transportation regulations are codified in 49 Code of Federal Regulations (CFR) Parts 100–185.

The hazardous materials transportation regulations require carriers transporting hazardous materials to receive required training in the handling and transportation of hazardous materials. Training requirements include pre-trip safety inspections, use of vehicle controls and equipment including emergency equipment, procedures for safe operation of the transport vehicle, training on the properties of the hazardous material being transported, and loading and unloading procedures. All drivers must possess a commercial driver's license as required by 49 CFR Part



383. Vehicles transporting hazardous materials must be properly placarded. In addition, the carrier is responsible for the safe unloading of hazardous materials at the site, and operators must follow specific procedures during unloading to minimize the potential for an accidental release of hazardous materials.

Asbestos Hazard Emergency Response Act

The 1986 Asbestos Hazard Emergency Response Act (AHERA) was signed into law as Title II of the TSCA, requiring the Asbestos Model Accreditation Plan (MAP) for accrediting individuals conducting asbestos inspection and corrective-action activities in schools and public and commercial buildings. The MAP provides guidance on the minimum training requirements for accrediting asbestos professionals such as, procedural entry, exit, sampling, and monitoring, safety hazards, and relevant federal, State, and local regulatory standards.

Lead-Based Paint Regulations

Lead pollutants are regulated by several laws administered by the USEPA, including the TSCA, the Residential Lead-Based Paint Hazard Reduction Act of 1992, the Clean Air Act (CAA), the Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), the RCRA, and CERCLA. The aforementioned regulations address lead in paint, dust and soil, lead in air and water, and the disposal of lead wastes. Regulations specific to LBP include, but are not limited to, the Lead Renovation Repair and Painting Program Rule, the Lead Abatement Program, the residential Lead-based Paint Disclosure Program, and Residential Hazards of Lead in Paint, Dust and Soil. Such regulations require risk assessments, inspections, and work practices that work to minimize exposure to lead hazards.

State Regulations

Cal-EPA and the State Water Resources Control Board (SWRCB) establish rules governing the use of hazardous materials and the management of hazardous waste. Within Cal-EPA, DTSC has primary regulatory responsibility, with delegation of enforcement to local jurisdictions that enter into agreements with the State agency, for the management of hazardous materials and the generation, transport, and disposal of hazardous waste under the authority of the Hazardous Waste Control Law (HWCL). The following discussion contains the applicable State laws.

Regional Water Quality Control Board

The Cal-EPA and the Office of Emergency Services (OES) establish regulations governing the use of hazardous materials in California. Within Cal-EPA, DTSC has primary regulatory responsibility for hazardous waste management. Enforcement of regulations can be delegated to local jurisdictions that enter into agreements with DTSC for the generation, transport, and disposal of hazardous materials under the authority of the HWCL. Along with the DTSC, the Regional Water Quality Control Board (RWQCB) is responsible for implementing regulations pertaining to management of soil and groundwater investigation and cleanup. The RWQCB's regulations are contained in Title 27 of the California Code of Regulations (CCR). The DTSC, RWQCB, and/or a local agency typically oversees investigation and cleanup of contaminated sites.

Department of Toxic Substances Control

The DTSC was established to protect California against threats to public health and degradation to the environment and to restore properties degraded by past environmental contamination. Through statutory mandates, DTSC cleans up existing contamination, regulates management of hazardous wastes, and prevents pollution by working with businesses to reduce hazardous waste and use of toxic materials in California. DTSC regulates the generation, transportation, treatment,

storage, and disposal of hazardous waste in California. In addition, DTSC's Site Mitigation and Brownfields Reuse Program oversees the cleanup of State Superfund sites. State Superfund sites are additionally known as Annual Workplan sites, listed sites, or Cortese List sites. Superfund sites demonstrate evidence of a hazardous substance release or releases that could pose a significant threat to public health and/or the environment. DTSC requires responsible parties to cleanup such sites. When responsible parties cannot be found or where they do not take proper and timely action, DTSC may use State funds to undertake the cleanup.

Cortese List

Pursuant to Government Code Section 65962.5(a), the DTSC shall compile and update as appropriate, but at least annually, and shall submit to the Secretary for Environmental Protection, a list of all of the following:

1. All hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code.
2. All land designated as hazardous waste property or border zone property pursuant to former Article 11 (commencing with Section 25220) of Chapter 6.5 of Division 20 of the Health and Safety Code.
3. All information received by the DTSC pursuant to Section 25242 of the Health and Safety Code on hazardous waste disposals on public land.
4. All sites listed pursuant to Section 25356 of the Health and Safety Code.

California Code of Regulations

Hazardous waste is characterized and defined in CCR, Title 22, Sections 66261.20-24. Soils that meet the descriptions of the characteristics of hazardous waste defined in Sections 66261.20-24 and contain contaminants above regulatory screening levels are considered hazardous waste and must be handled and disposed of as such. The CCR includes the California Health and Safety Code.

California Health and Safety Code

The handling and storage of hazardous materials is regulated at the federal level by the USEPA under CERCLA, as amended by the SARA. Under SARA Title III, a nationwide emergency planning and response program was established that imposed reporting requirements for businesses which store, handle, or produce significant quantities of hazardous or acutely toxic substances as defined under federal laws. SARA Title III required each state to implement a comprehensive system to inform federal authorities, local agencies, and the public when a significant quantity of hazardous, acutely toxic substances are stored or handled at a facility.

Ammonia is an example of an acutely hazardous material (AHM) that is regulated by the California OES under the California Accidental Release Program (CalARP), the USEPA under the Risk Management Program (40 CFR 68), and the OSHA under the Process Safety Management Program (OSHA 1910.119). The CalARP and Risk Management Program require that all facilities that store, handle, or use AHMs above a minimum quantity, known as the threshold planning quantity, are required to develop a plan and prepare supporting documentation that summarizes the facility's potential risk to the local community and identifies safety measures to reduce potential risks to the public.

The HWCL, Chapter 6.5 of the California Health and Safety Code, is administered by the Cal-EPA to regulate hazardous wastes. While the HWCL is generally more stringent than RCRA, until

the USEPA approves the California program, both the State and federal laws apply in California. The HWCL lists 791 chemicals and about 300 common materials that may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal and transportation; and identifies some wastes that cannot be disposed of in landfills.

In California, the underground storage of hazardous materials is regulated by Chapter 6.7 of the California Health and Safety Code, pursuant to the Underground Storage of Hazardous Substances Act. Under Section 25280, the USTs used for the storage of substances hazardous to public health and safety and to the environment are stored prior to use or disposal in thousands of underground locations in the State. The USTs used for storage are potential sources of contamination of the ground and underlying aquifers, and may pose other dangers to public health and the environment. Chapter 6.7 establishes orderly procedures that will ensure that newly constructed USTs meet appropriate standards and that existing tanks be properly maintained, inspected, tested, and upgraded so that the health, property, and resources of the people of the State will be protected.

California Vehicle Code Section 31303

The California Highway Patrol (CHP) and California Department of Transportation (Caltrans) are the enforcement agencies for hazardous materials transportation regulations. Hazardous materials and waste transporters are responsible for complying with all applicable packaging, labeling, and shipping regulations. California Vehicle Code Section 31303 regulates the transport of hazardous materials.

Emergency Response to Hazardous Materials Incidents

California has developed an emergency response plan to coordinate emergency services provided by federal, State, and local governments and private agencies. Response to hazardous material incidents is one part of this plan. The plan is managed by the Governor's OES, which coordinates the responses of other agencies, including Cal-EPA, CHP, California Department of Fish and Wildlife (CDFW), Central Valley RWQCB, and the Placer County Fire Department.

Unified Hazardous Materials Management Regulatory Program

On January 1, 1996, Cal-EPA adopted implementing regulations and implemented a unified hazardous waste and hazardous materials management regulatory program (Unified Program), to consolidate the administration of specified statutory requirements for the regulation of hazardous wastes and materials. The Unified Program is implemented at the local level by government agencies certified by the Secretary of Cal-EPA. The Certified Unified Program Agency (CUPA) is responsible for implementation of the Unified Program. CUPA is certified and responsible for oversight of the following consolidated programs: Hazardous Materials Release Response Plans and Inventories (Business Plans); California Accidental Release Program; Underground Storage Tank Program; Aboveground Petroleum Storage Act; Hazardous Waste Generator and Onsite Hazardous Waste Treatment (tiered permitting) Programs; and California Uniform Fire Code: Hazardous Materials Management Plans and Hazardous Material Inventory Statements.

Local Regulations

Relevant goals and policies from the PCGP and various other local guidelines and regulations related to hazards and hazardous materials are discussed below. The DCWPCP does not contain specific goals or policies related to hazards and hazardous materials.

Placer County General Plan

The Placer County Board of Supervisors adopted the 2021 Health and Safety Element Update on November 16, 2021 through adoption of Resolution 2021-359. The update includes refinements to the goals, policies, and implementation programs that address potential and existing hazards in the County. The following goals and policies from the 2021 Health and Safety Element Update, a component of the PCGP, are applicable to the proposed project.

Health and Safety Element

Goal 8.F To minimize the risk of loss of life, injury, serious illness, damage to property, and economic and social dislocations resulting from the use, transport, treatment, and disposal of hazardous materials and hazardous materials wastes.

Policy 8.F.1 The County shall review all proposed development projects that manufacture, use, or transport hazardous materials for compliance with the County's Hazardous Waste Management Plan (CHWMP). Such projects shall provide a buffer zone, to be determined by the County, between the installation and property boundaries sufficient to protect public safety.

Policy 8.F.2 The County shall discourage the development of residences or schools near known hazardous waste disposal or handling facilities.

Policy 8.F.3 The County shall require that applications for discretionary development projects that will generate hazardous wastes or utilize hazardous materials include detailed information on hazardous waste reduction, recycling, and storage.

Policy 8.F.5 The County shall strictly regulate the storage of hazardous materials and wastes and shall require secondary containment and period examination for all such materials.

Policy 8.F.8 The County shall ensure that the use and disposal of hazardous materials in the County complies with local, state, and federal safety standards.

Policy 8.F.11 The County shall work with local fire protection and other agencies to ensure an adequate Countywide response capability to hazardous materials emergencies.

Placer County Environmental Health Division

The Placer County Environmental Health Division (PCEHD) is the CUPA for local implementation of the California Accidental Release Prevention Program and several other hazardous materials and hazardous waste programs. The PCEHD is responsible for regulating hazardous materials business plans and chemical inventory, hazardous materials storage, hazardous materials management plans, and risk management plans. The hazardous materials business plan program requires businesses in Placer County to prepare business emergency response plans if

hazardous materials storage equals or exceeds 55 gallons of liquid, 500 pounds of solid, or 200 cubic feet of gas. The goal of PCEHD is to protect human health and the environment by ensuring that hazardous materials and hazardous waste are properly managed.

The PCEHD distributes the information in the hazardous materials business plans and business emergency response plans to emergency response agencies, such as fire departments and Hazardous Materials Response Teams. The PCEHD helps to facilitate the resources necessary for first responders to emergency incidents using emergency response plans and training responders for preparedness.

Placer County Local Hazard Mitigation Plan

The 2016 Local Hazard Mitigation Plan (LHMP) was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 so that Placer County would be eligible for the FEMA Pre-Disaster Mitigation and Hazard Mitigation Grant Programs, as well as lower flood insurance premiums. The LHMP is a multi-jurisdictional plan that geographically covers the entire area within Placer County's jurisdictional boundaries. The purpose of the LHMP is to guide hazard mitigation planning and to better protect the people and property of the County from the effects of hazard events. The LHMP demonstrates the community's commitment to reducing risks from hazards and serves as a tool to help decisionmakers direct mitigation activities and resources.

A draft Placer County 2021 LHMP Update was submitted for review to both California Governor's OES and FEMA at the end of June 2021. On September 3, 2021, FEMA transmitted an Approval Pending Adoption letter which stipulated that the Placer County 2021 LHMP Update met all the regulatory requirements and was eligible for final adoption. The Placer County Board of Supervisors adopted the Placer County 2021 LHMP on November 16, 2021. The goals of the 2021 LHMP are as follows:

- Goal 1: Minimize risk and vulnerability of Placer County to the impacts of natural hazards and protect lives and reduce damages and losses to property, economy, public health and safety, and the environment;
- Goal 2: Provide protection for critical facilities, infrastructure, utilities and services from hazard impacts;
- Goal 3: Improve public awareness, education, communication, and preparedness for all hazards;
- Goal 4: Increase communities' capabilities to mitigate losses and to be prepared for, respond to, and recover from a disaster event;
- Goal 5: Ensure a more resilient County that can adapt to the hazards created or exacerbated by Climate Change;
- Goal 6: Reduce fire severity and mitigate undesirable fire outcomes in Placer County; and
- Goal 7: Maintain FEMA Eligibility/Position the communities for grant funding.

Placer County and Placer Operational Area Emergency Operations Plan

The *Placer County and Placer Operational Area Emergency Operations Plan* (EOP) provides the guidelines needed for emergency response planning, preparation, training and execution throughout unincorporated Placer County.[10] The EOP is applicable to any natural disaster or

[10] Placer County Office of Emergency Services. *Placer County and Placer Operational Area Emergency Operations Plan.* Adopted December 14, 2010.

manmade emergency occurring in or in the proximity of Placer County that affects, or may affect, the unincorporated area of the County (or the entire operational area, should response require coordination of the emergency response efforts of multiple agencies or jurisdictions). Emergency events range from minor oil spills, brush fires and minor flooding to severe winter storms, floods, wildland fires, earthquakes to countywide public health emergencies all of which have potentially catastrophic long-term public safety, economic, social and political implications.

11.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to hazards and hazardous materials. A discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

In accordance with CEQA Guidelines Appendix G, an impact related to hazards and hazardous materials is considered significant if the proposed project would:

- Create a significant hazard to the public or the environment through the routine handling, transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment (see Chapter 19, Effects Not Found to be Significant);
- 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, result in a safety hazard or excessive noise for people residing or working in the project area (see Chapter 19, Effects Not Found to be Significant);
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; and/or
- Expose people or structures, either directly or indirectly, to the risk of loss, injury or death involving wildland fires.

As noted above, impacts related to the location of the proposed project on a site included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and safety hazards associated with airports and private airstrips are discussed in Chapter 19, Effects Not Found to be Significant, of this EIR.

Impacts related to wildland fires are addressed in detail in Chapter 18, Wildfire, of this EIR. Thus, further discussion related to exposure of people or structures, either directly or indirectly, to the risk of loss, injury or death involving wildland fires is not discussed in further detail in this chapter.

Method of Analysis

Environmental Risk Assessors prepared a Phase I ESA for the project site (see Appendix F of this EIR). The purpose of the Phase I ESA was to evaluate whether evidence of RECs exists that

may have impacted or could potentially impact the project site. The Phase I ESA was performed in general accordance with the American Society for Testing and Materials (ASTM) E1527-13 standard. The following tasks were performed as part of the Phase I ESA:

- Historical records such as aerial photographs, Sanborn Fire Insurance maps, historical topographic maps, city directories, and other readily-available historical sources were evaluated, as available, to research the history of the site and vicinity;
- Federal, State, and local environmental databases were reviewed to identify sites that use, store, or have released hazardous materials. The database search was performed by Environmental Data Resources, Inc. (EDR), an environmental database research firm. The EDR database report provides federal and State information intended to meet ASTM guidelines for Phase I ESAs. Regulatory files were reviewed for the identified sites, subject to the limitations of the ASTM guidance document;
- A reconnaissance-level site visit of the project site was conducted by Environmental Risk Assessors employees on November 9, 2023; and
- Persons with knowledge of the site were interviewed.

For further details regarding the methodology and results of the Phase I ESA prepared by Environmental Site Assessors for the project site, please see Appendix F of this EIR.

Project-Specific Impacts and Mitigation Measures

The project site conditions, as well as conditions at the off-site sewer lift station improvements area and the off-site affordable housing parcel, have been compared to the standards of significance presented above in order to determine the project's impact significance. If significant impacts are identified for the construction and operational phases of the proposed project, recommended mitigation measures have been included to reduce the identified impacts to less-than-significant levels. In most cases, potential environmental impacts associated with the proposed project and the 22 on-site ADUs would not differ. Thus, unless otherwise noted, the below analysis applies to both the proposed project and the on-site ADUs.

11-1 Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, as well as potential future development of the off-site affordable housing parcel, which could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Projects that involve the routine transport, use, or disposal of hazardous materials are typically industrial in nature. The proposed project, off-site sewer lift station improvements, and off-site affordable housing parcel do not include industrial development. As such, due to the similarities in the proposed uses of the project site and off-site affordable housing parcel, and the limited utility improvements to the off-site sewer lift station improvements area, all components of the project are discussed below.

Proposed Project, Off-Site Sewer Lift Station Improvements Area, and Off-Site Affordable Housing Parcel

The proposed project would not be industrial in nature. Operations of the proposed project, including 220 single-story multi-family units in the Estia Dry Creek development (Phase 1) and 212 single-family residential lots in the Placer Creek Residential development (Phases 2A, 2B, 3, and 4) would not include any activities that would involve the routine transport, use, disposal, or generation of substantial amounts of hazardous materials. In addition, as discussed throughout this EIR, one of the options the applicant is considering to satisfy the project's affordable housing requirements would involve transferring in fee title to the County an off-site vacant parcel under Homes by Towne ownership, within the RVSP. The proposed affordable housing parcel is approximately four acres, located at the northeast corner of PFE Road and Watt Avenue. The construction of the proposed affordable units does not include any site-specific development plans, designs, or proposals at this time. However, as discussed in Chapter 3, Project Description, of this EIR, the proposed RVSP amendment and rezone would result in a maximum development potential of 120 affordable income-restricted units. Thus, similar to the proposed project, the potential future development of the off-site affordable housing parcel would not be industrial in nature.

During operations of the proposed project and the off-site affordable housing parcel, hazardous material use would be limited to landscaping products such as fertilizer and pesticides, as well as typical commercial and maintenance products (cleaning agents, degreasers, paints, batteries, and motor oil). Proper handling and usage of such materials in accordance with label instructions would ensure that adverse impacts to human health or the environment would not occur. Thus, operations of the proposed project and the off-site affordable housing parcel would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Construction activities associated with implementation of the proposed project, including the off-site sewer lift station improvements area, and the off-site affordable housing parcel, would involve the use of heavy equipment, which would contain fuels and oils, and various other products such as concrete, paints, and adhesives. The project contractor is required to comply with all California Health and Safety Codes and local County ordinances regulating the handling, storage, and transportation of hazardous and toxic materials. Pursuant to California Health and Safety Code Section 25510(a), except as provided in subdivision (b),[11] the handler or an employee, authorized representative, agent, or designee of a handler, shall, upon discovery, immediately report any release or threatened release of a hazardous material to the unified program agency (in the case of the proposed project and off-site affordable housing parcel, PCEHD) in accordance with the regulations adopted pursuant to Section 25510(a). The handler or an employee, authorized representative, agent, or designee of the handler shall provide all State, city, or county fire or public health or safety personnel and emergency response personnel with access to the handler's facilities. In the case of the project site, off-site sewer lift station improvements area, and the off-site affordable housing parcel, the contractors are required to notify the PCEHD in the event of an accidental release of a hazardous material, who would then monitor the conditions and recommend appropriate remediation measures.

[11] Subdivision (a) does not apply to a person engaged in the transportation of a hazardous material on a highway that is subject to, and in compliance with, the requirements of Sections 2453 and 23112.5 of the Vehicle Code.

Conclusion

Based on the above, the proposed project would not create a significant hazard to the public or the environment through the routine handling, transport, use, or disposal of hazardous materials, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

11-2 Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, as well as potential future development of the off-site affordable housing parcel, which could create a significant hazard to the public or the environment through reasonably foreseeable upset or accident conditions involving the likely release of hazardous materials into the environment.

In *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369 (*CBIA*), the California Supreme Court held that "agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users. But when a proposed project risks exacerbating those environmental hazards or conditions that already exist, an agency must analyze the potential impact of such hazards on future users. In those specific instances, it is the impact of the project on the environment – and not the impact of the environment on the project – that compels an evaluation of how future residents or users could be affected by exacerbated conditions." (*Id.* at pp. 377-378.). Therefore, where existing hazardous conditions already occur on the project site or vicinity, the discussion below focuses on the proposed project's potential to exacerbate risks associated with such conditions. The proposed project, off-site sewer lift station improvements area, and off-site affordable housing parcel are discussed below.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to create a significant hazard to the public or the environment through reasonably foreseeable upset or accident conditions involving the likely release of hazardous materials into the environment would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

As presented above in the Existing Environmental Setting section of this chapter, the Phase I ESA did not identify RECs on or near the project site. The potential on-site RECs analyzed in the Phase I ESA are detailed below.

The Phase I ESA did not find evidence of a potential release of vapor encroachment contaminants of concern into the subsurface due to the current or past on-site operations of the project site. Considering that evidence of a release was not found, Environmental Risk Assessors determined that a vapor encroachment condition due to on-site sources would be unlikely to exist. With respect to radon, the USEPA uses a continuous exposure level of 4.0 pCi/L as an action level at which additional action is recommended. The project site is located in a Zone 2-designated area, defined as an area of Moderate Potential where the average indoor radon screening level is between two and four pCi/L, and the Phase I ESA did not identify radon levels as a potential REC. Therefore, the proposed ground-disturbing activities would not exacerbate existing hazards related to radon, and the proposed project would not create a significant hazard to the public or environment related to the release of radon.

Environmental Risk Assessors determined that historical resources showed that most of the project site was used for dry-land farming between 1910 and the early 1990s. However, according to the *Interim Guidance for Sampling Agricultural Properties (Third Revision)* dated August 7, 2008, by the DTSC, crops grown using dry-land methods are generally not treated with agricultural chemicals including environmentally persistent pesticides. During the site reconnaissance performed by Environmental Risk Assessors, a soil stockpile was observed near the northeastern corner of the project site and appeared to be related to grading activities along the project site's northern border. Evidence of chemical or fuel releases were not noted in the areas surrounding the soil stockpile. Therefore, the proposed ground-disturbing activities would not exacerbate existing hazards related to the previous dry-land farming on the project site, nor the existing soil stockpile.

The off-site sewer lift station improvements area was not included in the Phase I ESA prepared for the proposed project and, as such, was not evaluated for potential hazards. However, as further discussed in Chapter 15, Public Services and Utilities, of this EIR, the off-site sewer lift station improvements area was included in the Mariposa and Mason Trails at Riolo Vineyard development, in which emergency storage was built at the computational fluid dynamics (CFD) #1 lift station to accommodate the project. Thus, the recent utilities improvements conducted at the off-site sewer lift station improvements area would have detected and addressed any hazardous conditions, including leaks from the existing emergency storage tanks at the CFD #1 lift station. Therefore, it is reasonable to conclude that the proposed utility improvements at the off-site sewer lift station improvements area associated with the proposed project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel is located within the RVSP and was analyzed in the RVSP EIR. As part of the RVSP EIR, a Phase I ESA and subsequent Phase II ESA were conducted for the RVSP area. While several RECs were identified in the parcels surrounding the off-site affordable housing parcel, including former farming facilities, a water tank, disturbance areas, and significant debris, RECs were not identified on the off-site affordable housing parcel. Testing was conducted in relation to the nearby RECs, including metal detector scans, test excavations, and soil sampling; the presence of RECs,

such as pesticides, was not detected. Therefore, further action was determined unnecessary, and the potential future development of the off-site affordable housing parcel would not create a significant hazard to the public or environment related to the release of hazardous materials.

Conclusion

Based on the above, implementation of the proposed project, including the off-site sewer lift station improvements area and potential future development of the off-site affordable housing parcel, would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment. Therefore, the proposed project would result in a ***less-than-significant*** impact.

Mitigation Measure(s)

None required.

11-3 Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. Based on the analysis below, the impact would be *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, as well as potential future development of the off-site affordable housing parcel, which could emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

A significant hazard to the public or the environment could result from projects that emit emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. The proposed project, off-site improvement area, and off-site affordable housing parcel are discussed below.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

The project site is located approximately 0.25-mile to the southwest of Immersion Academy. Therefore, the proposed project would be located within one-quarter mile of an existing or proposed school. However, as discussed under Impact 11-1, projects that emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste are typically industrial in nature. The proposed project would not be industrial in nature and would, instead, consist of the development of a single-family residential community consisting of 432 residential units. In addition, as discussed under Impact 11-2, the Phase I ESA did not identify RECs on or near the project site. Therefore, implementation of the proposed project would not create a significant hazard to the public

or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment. Thus, operations of the proposed project would not result in a significant impact to Immersion Academy related to hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste.

As discussed in Chapter 3, Project Description, of this EIR, the proposed project would include off-site improvements within the City of Roseville. Such off-site improvements would be located within the existing rights-of-way (ROWs) along Walerga Road and at the intersections of Baseline Road at Crowder Lane, Walerga Road at the proposed project access and Springhill Drive, and Watt Avenue at PFE Road. The off-site improvement located at the intersection of Baseline Road and Crowder Lane would be located approximately 94 feet to the south of Immersion Academy. As such, the off-site improvement at the intersection of Baseline Road and Crowder Lane would be located within one-quarter mile of an existing or proposed school. However, as discussed above, projects that emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste are typically industrial in nature. As the off-site improvement would be limited to improvements within the existing ROW at the Baseline Road and Crowder Lane intersection, and would not include any further operations after construction, the off-site roadway improvement would not result in a significant impact to Immersion Academy related to hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste.

The off-site sewer lift station improvements area is not located within one-quarter mile of an existing or proposed school. The nearest school, Wilson C. Riles Middle School, is located approximately 0.55-mile southwest of the off-site sewer lift station improvements area. Development of the off-site sewer lift station improvements area would include utility improvements and would not involve the routine use or transport of substantial quantities of hazardous materials during operation. Therefore, the off-site sewer lift station improvements area would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel is located approximately 187 feet to the northeast of Center Preschool. Therefore, the off-site affordable housing parcel would be located within 0.25-mile of an existing school. However, as discussed under Impact 11-1, projects that emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste are typically industrial in nature. The potential future development of the off-site affordable housing parcel would not be industrial in nature and could, instead, result in a maximum development potential of 120 affordable income-restricted units. Furthermore, the off-site affordable housing parcel is located within the RVSP and was analyzed in the RVSP EIR. As part of the RVSP EIR, a Phase I ESA and subsequent Phase II ESA were conducted for the RVSP area, and RECs were not identified on the off-site affordable housing parcel. Thus, operations of the off-site affordable housing parcel would not result in a significant impact to Center Preschool related to hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste.

Conclusion

Based on the above information, the project site, off-site roadway improvements, and off-site affordable housing parcel are located within 0.25-mile of an existing school. However, future development of the components of the project would not result in substantial adverse effects related to hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste. Therefore, the project would result in a ***less-than-significant*** impact.

Mitigation Measure(s)

None required.

11-4 Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Based on the analysis below, the impact would be *less than significant.*

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, as well as potential future development of the off-site affordable housing parcel, which could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Placer County does not have an adopted emergency evacuation plan. However, as noted previously, the County maintains a LHMP, the purpose of which is to reduce or eliminate long-term risk to people and property from hazards consistent with the requirements of the Disaster Mitigation Act of 2000. The potential for the proposed project, off-site sewer lift station improvements area, and off-site affordable housing parcel to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan is discussed below.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

Currently, the project site is bisected by Walerga Road, which continues south of the project site and provides connection to Town Center Avenue to the southwest, to Springhill Drive to the west, and to Baseline Road to the northwest. Following project buildout, primary access to the Phase 1 development would be provided by a new driveway located along Baseline Road, to the north of the site. The proposed driveway would be aligned with the future six-lane, fully signalized Upland Drive along the north side of Baseline Road. Access to the Phase 2 development would be provided by a new roadway off of Walerga Road between Springhill Drive and Town Center Avenue, and new street extensions from Wellbrook Place and Bridgestone Crescent Road to the east. Access to the Phase 3 development would be from the eastern/fourth leg of the proposed signalized intersection/access to Walerga at Town Center Avenue. Access to the southern Phase 4 development would be from the western extension of Vineyard Road, which currently

terminates at the southern entry to the Sun Valley Oaks subdivision at White Mill Crescent Road.

An emergency vehicle access (EVA) connection would be developed as part of Phase 1 between Estia Dry Creek and the Phase 2 roadways connecting to Walerga Road. An EVA in Placer Creek Residential Phase 3 would be located from Walerga Road to M Street, opposite the new Phase 2 entrance/J Street. In Phase 4, an EVA would be located from Q Court to Walerga Road in the southwest corner of the project site.

During project construction, temporary lane closures on Baseline Road and Walerga Road may be required; however, any temporary lane closures would be coordinated with County emergency services, and are anticipated to occur at night during off-peak hours. In addition, during project operation, implementation of County emergency response plans would not be impaired and emergency access throughout the project site would be provided by internal circulation.

The off-site sewer lift station improvements area would include utility improvements and, unlike the proposed development of the project site, would not include residential development. Therefore, upon completion of the utilities improvements within the off-site sewer lift station improvements area, surrounding roadways would not be impacted and emergency response plans or evacuation plans would not be disrupted. During construction, temporary lane closures surrounding the off-site sewer lift station improvements area are unlikely due to the site's distance from any public streets.

Off-Site Affordable Housing Parcel

As discussed throughout this EIR, the construction of the proposed affordable units does not include any site-specific development plans, designs, or proposals at this time. However, the proposed RVSP amendment and rezone could result in a maximum development potential of 120 affordable income-restricted units. The roads adjacent to the off-site affordable housing parcel that would serve as primary evacuation routes during an emergency event are Watt Avenue to the west and PFE Road to the south.

Although specific site access plans are not currently available, Section 3.6.2 of the RVSP describes access to the off-site affordable housing parcel through an auxiliary lane and acceleration/deceleration tapers on the eastern side of Watt Avenue, as well as by a driveway near the southeastern corner of the parcel to facilitate right turns from westbound traffic on PFE Road. Whether or not the future access to the off-site affordable housing parcel would be consistent with what was anticipated in the RVSP, roadway construction and driveways would be designed compliant with applicable Placer County standards, which would be confirmed during improvement plan review. Therefore, the potential future development of the off-site affordable housing parcel would not interfere with or impair implementation of an adopted emergency response plan or emergency evacuation plan.

Conclusion

Based on the above, the proposed project, including the off-site sewer lift station improvements area and the potential future development of the off-site affordable housing parcel, would not interfere with or impair implementation of an adopted emergency response plan or emergency evacuation plan. Therefore, the project would result in a ***less-than-significant*** impact.

Mitigation Measure(s)
None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

For more details regarding the cumulative setting, refer to Chapter 20, Statutorily Required Sections, of this EIR.

11-5 Cumulative exposure to potential hazards, including wildfire, and increases in the transport, storage, and use of hazardous materials. Based on the analysis below, the cumulative impact is *less than significant*.

As discussed, project-specific impacts associated with hazardous materials related to implementation of the proposed project and the potential future development of the off-site affordable housing parcel were found to be less than significant. Hazardous materials and other public health and safety issues are generally site-specific and/or project-specific, and would not be significantly affected by other development within the project area. Combined or additive cumulative impacts from multiple related or reasonably proximate projects do not exist, as each project has its own localized hazards-related impacts addressed by site-specific mitigation. Cumulative development projects would be subject to the same federal, State, and local hazardous materials management requirements as would the proposed project, which would minimize potential risks associated with increased hazardous materials use in the community. Therefore, cumulative impacts associated with hazardous materials transport, storage, and use associated with implementation of past, present, and reasonably foreseeable future projects, as well as the proposed project, would be ***less than significant***.

Mitigation Measure(s)
None required.

12. Hydrology and Water Quality

12. HYDROLOGY AND WATER QUALITY

12.1 INTRODUCTION

As discussed in Chapter 3, Project Description, of this EIR, the proposed project would include a total of 432 residential units and associated improvements, off-site sewer lift station improvements, and two options to meet the County's affordable housing regulations. The affordable housing options include the provision of a minimum of 22 Accessory Dwelling Units (ADUs) on lots proposed for development with single-family residential units, or an off-site proposal wherein Homes by Towne would rezone and transfer the fee title to the County an approximately four-acre parcel offsite within the Riolo Vineyards Specific Plan (RVSP), which could develop a maximum of 120 affordable income-restricted units.

The Hydrology and Water Quality chapter of the EIR describes existing drainage patterns on the project site, current stormwater flows, and stormwater infrastructure. The impact discussions and mitigation measures presented in each technical section apply to both the project site and the off-site sewer lift station improvements area, unless otherwise stated. The chapter also evaluates potential impacts of the proposed project and potential future maximum development of the off-site affordable housing parcel with respect to increases in impervious surface area and associated stormwater flows, degradation of water quality, and increases in on- and off-site flooding.

Information used for the chapter was primarily drawn from Drainage Reports prepared for each phase of the proposed project by King Engineering (see Appendix G).[1] In addition, information was drawn from the Placer County General Plan (PCGP),[2] the PCGP EIR,[3] the Dry Creek-West Placer Community Plan (DCWPCP),[4] the RVSP EIR,[5] the Dry Creek Watershed Coordinated Resource Management Plan (DCWCRMP),[6] and the Update to the Dry Creek Watershed Flood Control Plan.[7] Water supply availability is addressed in Chapter 15, Public Services and Utilities, of this EIR.

12.2 EXISTING ENVIRONMENTAL SETTING

The section below describes regional hydrology, the existing drainage patterns within the project site, off-site sewer lift station improvement area, and off-site affordable housing parcel, including peak flows, existing water quality, and groundwater conditions.

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1 King Engineering. *Estia Dry Creek Phase 1 Drainage Report*. June 2026; King Engineering. *Estia Dry Creek – Phase 2 Preliminary Drainage Report*. June 2026; King Engineering. *Estia Dry Creek – Phase 3 Preliminary Drainage Report*. June 2026; King Engineering. *Estia Dry Creek – Phase 4 Preliminary Drainage Report*. June 2026; King Engineering. *Estia Dry Creek – Backbone Infrastructure Preliminary Drainage Report*. June 2026.

2 Placer County. *Countywide General Plan Policy Document.* August 1994 (updated May 2013).

3 Placer County. *Countywide General Plan EIR*. July 1994.

4 Placer County. *Dry Creek-West Placer Community Plan.* Amended May 12, 2009.

5 Placer County. *Riolo Vineyard Specific Plan Environmental Impact Report*. January 2008.

6 Placer and Sacramento Counties. *Dry Creek Watershed Coordinated Resource Management Plan.* December 31, 2003.

7 Placer County Flood Control and Water Conservation District. *Update to the Dry Creek Watershed Flood Control Plan.* November 2011.

Regional Hydrology

The project site, off-site sewer lift station improvement area, and off-site affordable housing parcel are located within the DCWPCP area within Placer County, California. According to the DCWPCP, the hydrologic characteristics in the plan area are largely affected by seasonal rainfall. The majority of the watercourses in the area are seasonal, and only support flows during the rainy season. However, Dry Creek, the largest water feature within the DCWPCP area, flows year-round. In all, the Dry Creek watershed drains approximately 101 square miles.[8] The watershed begins west of Auburn and drains into Steelhead Creek. Flows from Steelhead Creek discharge to the American River, and ultimately to the Sacramento River.

According to the DCWCRMP, higher peak flows and total storm flows are not being adequately conveyed through stream channels (and structures) within the Dry Creek watershed that were originally developed (or were modified) for conveyance of lower flows, which results in localized flooding. Additionally, several areas within the watershed have degrading/unstable banks, incising streams, and are experiencing sedimentation of the streambed due, in part, to the modified flow regime caused by increases in impervious surface area that have occurred as a result of development activities in the area.

Modification of watershed hydrology is also compounded by modification of the instream configuration by channelization, levees, dredging, structures (dams, bridges, other), and reduced floodplain area. Such modifications also result in altered stream flow where flow is faster in some areas, contributing to erosion and faster peak flow timing, but slower in other areas (behind dams and other impeding structures), contributing to flooding and sediment deposition.

Dry Creek has an extensive record of flooding and flood damage to areas within the lower portion of the creek's watershed. Historic flooding in the area occurred in 1986, 1995, and 1997. Flooding generally occurs from October through April, when soils become saturated during winter rain events followed by high intensity storm systems. The lower portion of Dry Creek is characterized by high peak flows of moderate duration. Flooding from cloudburst storms of high intensity can occur from late spring to early fall; however, runoff resulting from the summer storms tends to be significantly less in peak and volume. Though significant progress has been made towards reducing flood risks in the Dry Creek watershed through the implementation of local improvement projects, including bridge replacements, flow bypasses, building elevation projects and residential buyouts, numerous flood hazard areas and roadway stream crossings still do not have adequate capacity.[9]

Project Site and Surrounding Area Drainage

The project site is bisected by Walerga Road, which generally curves from northeast to southwest. The 52.3-acre northern portion of the site (APN 023-221-076) is bounded by Baseline Road to the north and Walerga Road to the south. The northern portion of the site is undeveloped, consists of non-native annual grassland with gently rolling topography, and is interspersed with seasonal wetlands and vernal pools. The 35.3-acre southern portion of the site (APN 023-221-074) is bounded by Walerga Road to the north and west. The southern portion of the site includes a paved bicycle trail which extends from Vineyard Road to the east and Walerga Road to the west. In addition, the southern portion of the site includes undeveloped annual grassland with gently

[8] Placer and Sacramento Counties. *Dry Creek Watershed Coordinated Resource Management Plan* [pg. 1]. December 31, 2003.

[9] Placer County Flood Control and Water Conservation District. *Update to the Dry Creek Watershed Flood Control Plan* [pg. ES-2]. November 2011.

rolling topography, interspersed with seasonal wetlands, vernal pools, and is bisected by an un-named tributary of Dry Creek (Placer Creek), which flows east to west.

The project site is located within the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panels 06061C0938H and 06061C1026H, effective November 2, 2018 (see Figure 12-1). Based on the FEMA FIRMs, the Placer Creek tributary area within the project site is within the existing 100-year floodplain and classified as Zone AE. The FEMA AE zone is defined as areas subject to inundation by the one percent annual chance flood event, and FEMA provides base flood elevations for such areas.

The off-site sewer lift station improvements area is located within the FEMA FIRM Panel 06061C1026H, effective November 2, 2018 (see Figure 12-2). Based on the FEMA FIRM, the off-site sewer lift station improvements area is located within the Zone AE regulatory floodway with a base flood elevation of 97 feet.

According to the Drainage Reports prepared for the proposed project, approximately 35.6 acres within the northern portion of the project site are located within the Curry Creek watershed, which is part of the greater Cross Canal watershed. As shown in Figure 12-3, the Dry Creek Walerga Road Tributary watershed spans a total of approximately 689.18 acres, and includes the majority of the project site, excluding 35.6 acres, as well as additional land in the project vicinity. Approximately 56.6 acres of the project site currently drains to Dry Creek.

The project site is predominantly undeveloped and characterized by rolling terrain. The soils throughout the site are identified generally as deeply weathered gravel, sand, and silt, and have infiltration rates ranging from moderate to very slow (high runoff potential) when thoroughly wet. The majority of the project site drains towards an un-named tributary of Dry Creek (named "Placer Creek" for this project), and contributes to Dry Creek, which drains overall to the west. Figure 12-4 shows the overall existing drainage shed for the project site and additional land in the project vicinity. Placer Creek flows southwest through an existing box culvert under Walerga Road, then along the northwestern edge of the Doyle Ranch community, into Dry Creek approximately 0.5-mile to the southwest. The stormwater runoff estimates for existing conditions on the project site are summarized in Table 12-1 below.

Table 12-1
On-Site Peak Flow Characteristics – Existing Conditions

Discharge Location[1]	Area (acres)	10-Year Peak Flow (cfs)[2]	100-Year Peak Flow (cfs)[2]
Point A	35.6	18.5	38.0
Point B	20.3	22.5	43.3
Point C	49.7	39.3	75.8
Total	**105.6**	**80.4**	**157.2**

[1] See Figure 12-4 for discharge point locations
[2] cfs = cubic feet per second
Source: King Engineering, 2026.

Point A currently discharges to Curry Creek through an existing 42-inch flared-end storm drain pipe. Point B consists of a 48-inch flared-end storm drain pipe with riprap, north of the on-site Placer Creek tributary, along the eastern edge of Walerga Road. Point C is the Placer Creek tributary, west of Walerga Road.

Figure 12-1
Project Site FEMA FIRMs 06061C0938H and 06061C1026H

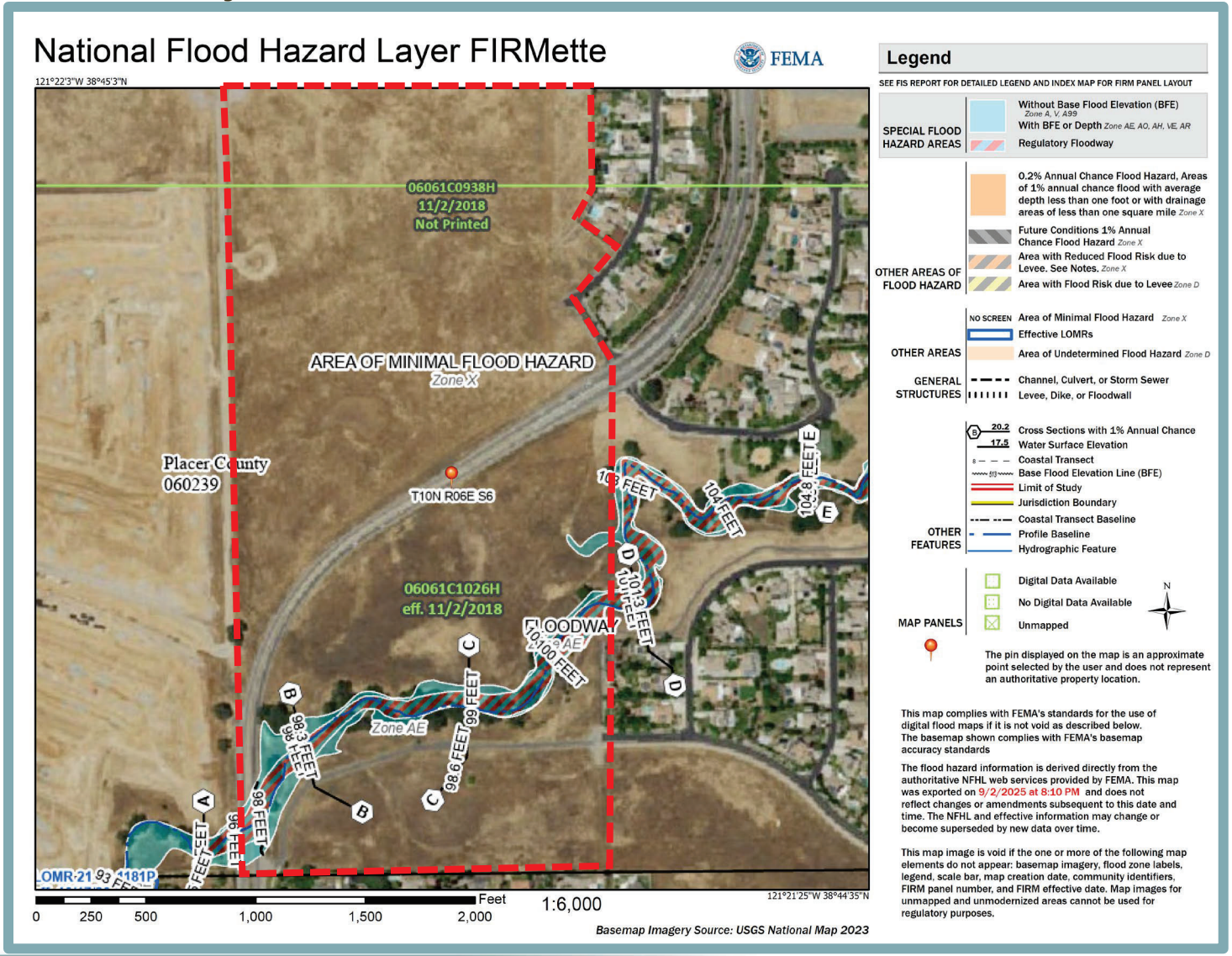


*Figure not OCR compatible.

Figure 12-2
Off-Site Sewer Lift Station Improvements Area FEMA FIRM 06061C1026H

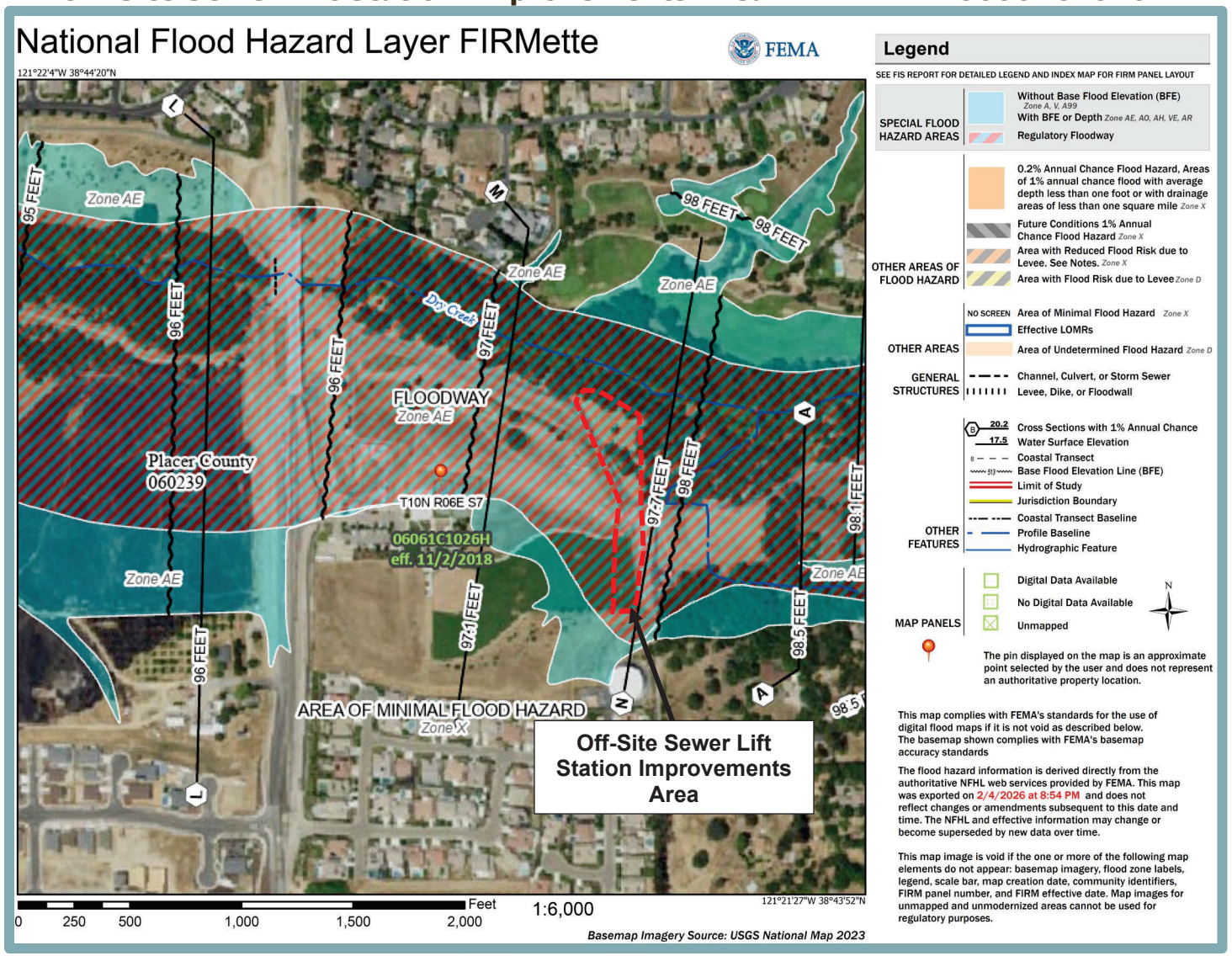


*Figure not OCR compatible.

Figure 12-3
Existing Dry Creek Walerga Road Tributary Watershed

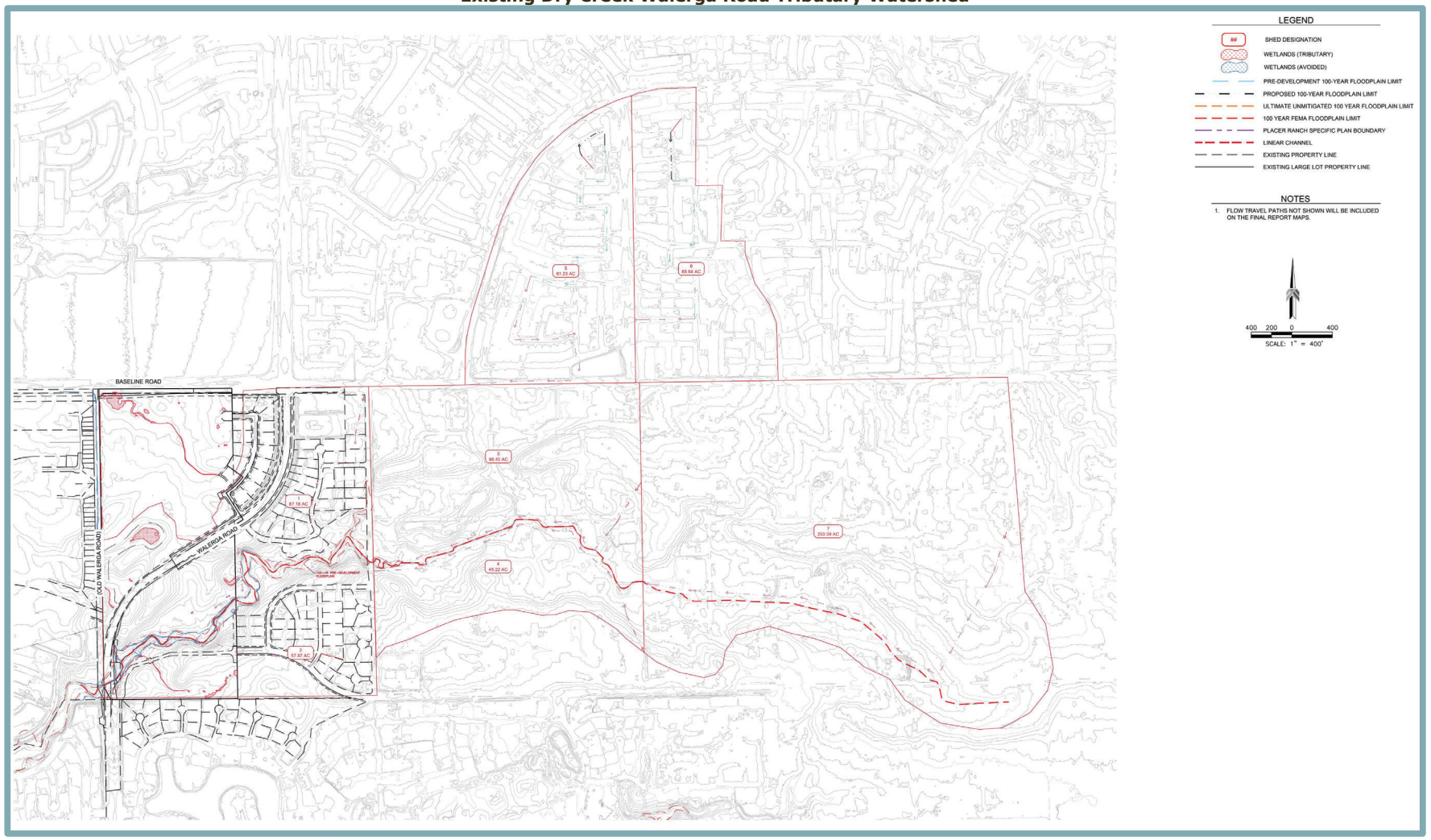


*Figure not OCR compatible.

Figure 12-4
Pre-Development Overall Drainage Shed Map

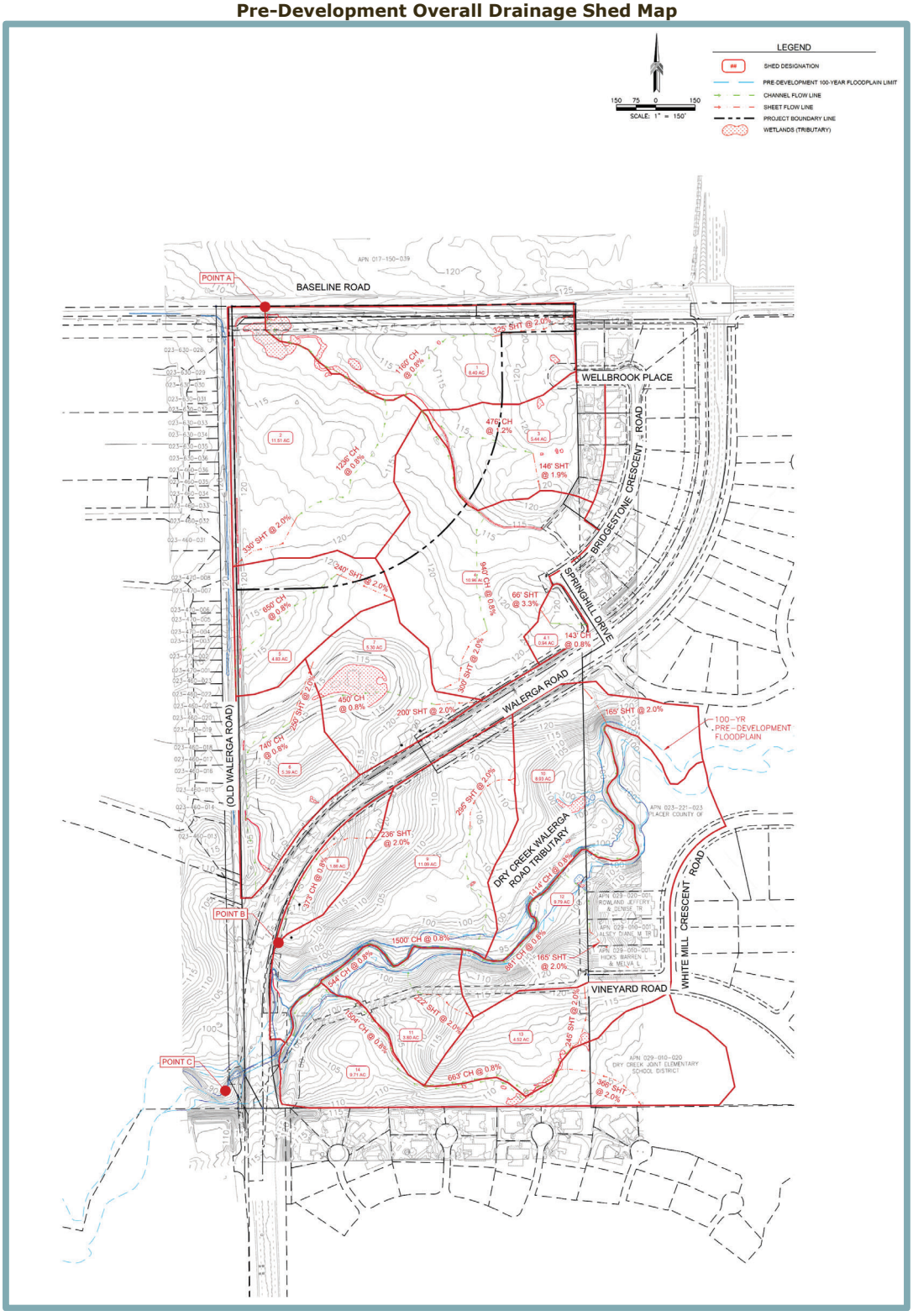


*Figure not OCR compatible.

The off-site affordable housing parcel consists of approximately four acres of undeveloped land with grassy fields and gently rolling topography located at the northeast corner of PFE Road and Watt Avenue. According to Figure 6-1a of the RVSP EIR, the off-site affordable housing parcel consists primarily of annual grasslands with seasonal wetland located on the southeast portion of the parcel. The off-site affordable housing parcel is located within the FEMA FIRM Panel 06061C1007H, effective November 2, 2018 (see Figure 12-5). Based on the FEMA FIRM, the off-site affordable housing parcel is not located within the existing 100-year floodplain.

The off-site affordable housing parcel is located within the Dry Creek watershed. According to Figure 13-2 of the RVSP EIR, the northern portion of the off-site affordable housing parcel drains to a southern tributary of Dry Creek, and the southern portion of the parcel drains southwest through culverts under PFE Road and ultimately drains into Dry Creek downstream of Watt Avenue.

Water Quality

Activities and/or conditions that have the potential to degrade water quality include but are not limited to, construction activities and urban stormwater runoff.

Construction activities have the potential to cause erosion and sedimentation associated with groundbreaking and clearing activities, which could cause unstabilized soil to be washed or wind-blown into nearby surface water. In addition, the use of heavy equipment during construction activities, especially during rainfall events, have the potential to cause petroleum products and other pollutants to enter nearby drainages.

Water quality degradation from urban stormwater runoff is primarily the result of runoff carrying pollutants from the land surface (e.g., streets, parking lots, etc.) to the receiving waters (e.g., streams and lakes). Pollutants typically found in urban runoff include facility maintenance and lawn-care/landscaping chemicals (insecticides, herbicides, fungicides and rodenticides), heavy metals (such as copper, zinc and cadmium), oils and greases from automobiles and other mechanical equipment, and nutrients (nitrogen and phosphorus).

Groundwater

The project site and off-site affordable housing parcel are located within the North American Subbasin and the jurisdiction of the West Placer Groundwater Sustainability Agency (WPGSA). The WPGSA was formed in 2017 as a partnership between Placer County, the cities of Roseville and Lincoln, the Placer County Water Agency, and the California American Water Company to comply with the requirements of the Sustainable Groundwater Management Act (SGMA). The goal of the WPGSA is to manage portions of the North American Subbasin by protecting against overdraft and creating sustainable water supplies.

Groundwater levels in southwestern Placer County and northern Sacramento County have generally decreased in recent history, with many wells experiencing declines at a rate of approximately 2.5 feet per year.[10] However, the North American Subbasin, within which the project site is located, is not identified by the California Department of Water Resources (DWR) as being in a state of overdraft.[11]

[10] California Department of Water Resources. *California's Groundwater, Bulletin 118, Update 2020* [pg. 7-48]. November 2021.
[11] California Department of Water Resources. *California's Critically Overdrafted Groundwater Basins.* January 2020.

Figure 12-5
Off-Site Affordable Housing Parcel FEMA FIRM 06061C1007H

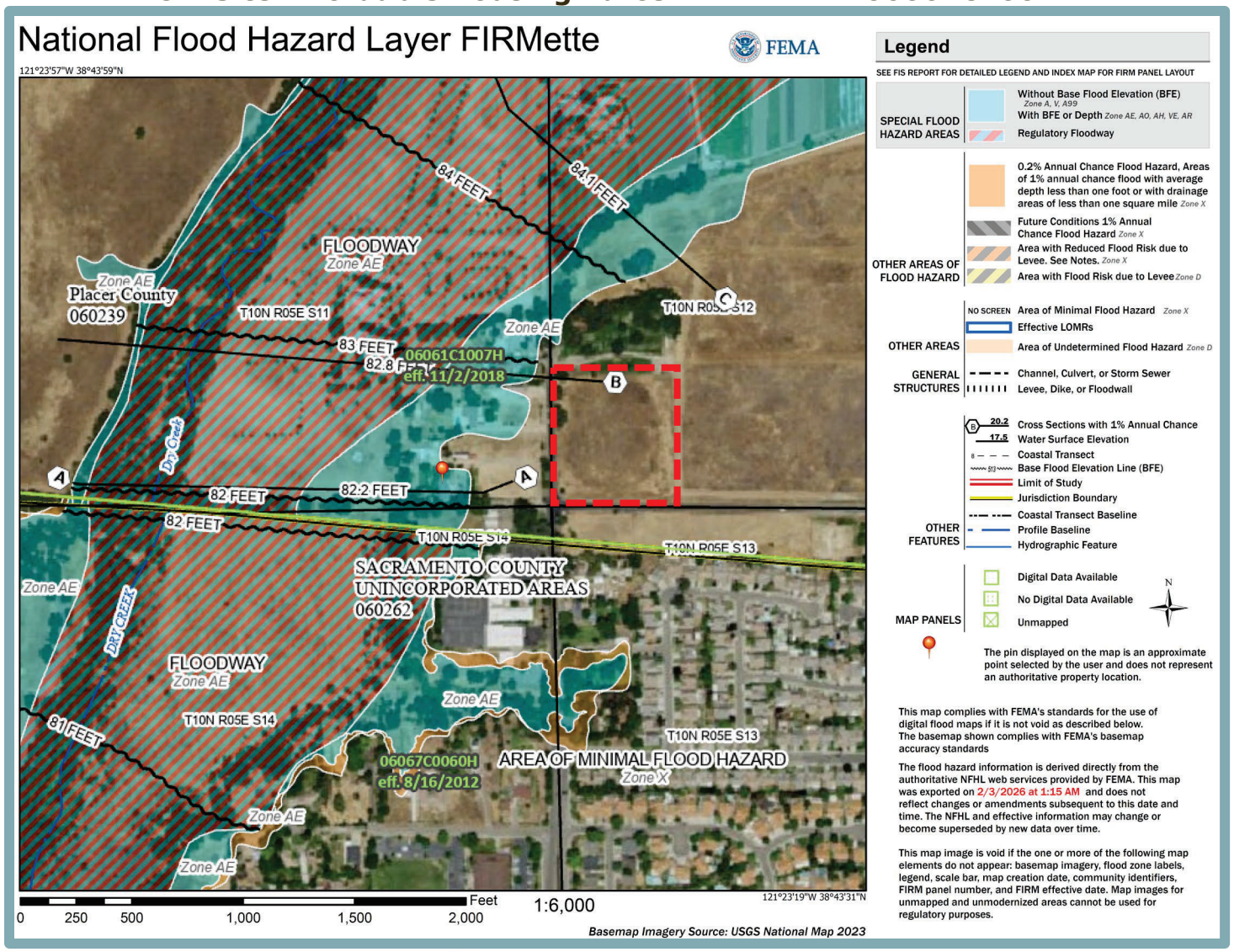


*Figure not OCR compatible.

Groundwater overdraft is a condition within a developed groundwater basin in which the amount of water pumped from the basin exceeds the sustainable yield of the basin over the long term.

According to the Geotechnical Due Diligence Review prepared for the proposed project by ENGEO (see Appendix E),[12] groundwater was not encountered during previous subsurface explorations. According to the SGMA Data Viewer, groundwater in the vicinity occurred at depths of 110 to 120 feet in fall 2021 and 100 to 110 feet in spring 2022. Fluctuations in the level of groundwater may occur due to variations in rainfall, irrigation practice, and other factors not evident at the time measurements were made.

12.3 REGULATORY CONTEXT

The following is a description of federal, State, and local environmental laws and policies that are relevant to the review of hydrology and water quality under the CEQA process.

Federal Regulations

The following section includes federal environmental goals and policies relevant to the CEQA review process pertaining to the hydrology and water quality aspects of the proposed project.

Federal Emergency Management Agency

FEMA is responsible for determining flood elevations and floodplain boundaries based on U.S. Army Corps of Engineers (USACE) studies. FEMA is also responsible for distributing the FIRMs, which are used in the National Flood Insurance Program (NFIP). The FIRMs identify the locations of special flood hazard areas, including the 100-year floodplains.

FEMA allows non-residential development in the floodplain; however, construction activities are restricted within flood hazard areas, depending upon the potential for flooding within each area. Federal regulations governing development in a floodplain are set forth in Title 44, Part 60 of the Code of Federal Regulations (CFR). These standards are implemented at the State level through construction codes and local ordinances; however, these regulations only apply to residential and non-residential structure improvements. Although roadway construction or modification is not explicitly addressed in the FEMA regulations, the California Department of Transportation (Caltrans) has also adopted criteria and standards for roadway drainage systems and projects situated within designated floodplains. Standards that apply to floodplain issues are based on federal regulations (Title 23, Part 650 of the CFR). At the State level, roadway design must comply with drainage standards included in Chapters 800-890 of the Caltrans Highway Design Manual. CFR Section 60.3(c)(10) restricts cumulative development from increasing the water surface elevation of the base flood by more than one foot within the floodplain.

Federal Clean Water Act

The National Pollutant Discharge Elimination System (NPDES) permit system was established in the federal Clean Water Act (CWA) to regulate municipal and industrial discharges to surface waters of the U.S. Each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits. Section 307 of the CWA describes the factors that the Environmental Protection Agency (EPA) must consider in setting effluent limits for priority pollutants.

[12] ENGEO. *Estia Walerga, Walerga Road and Baseline Road, Placer County, California, Geotechnical Due Diligence Review.* December 26, 2023.

Nonpoint sources are diffuse and originate over a wide area rather than from a definable point. Nonpoint pollution often enters receiving water in the form of surface runoff, but is not conveyed by way of pipelines or discrete conveyances. As defined in the federal regulations, such nonpoint sources are generally exempt from federal NPDES permit program requirements. However, two types of nonpoint source discharges are controlled by the NPDES program – nonpoint source discharge caused by general construction activities, and the general quality of stormwater in municipal stormwater systems. The 1987 amendments to the CWA directed the federal EPA to implement the stormwater program in two phases. Phase I addressed discharges from large (population 250,000 or above) and medium (population 100,000 to 250,000) municipalities and certain industrial activities. Phase II addresses all other discharges defined by EPA that are not included in Phase I.

Section 402 of the CWA mandates that certain types of construction activities comply with the requirements of the NPDES stormwater program. The Phase II Rule, issued in 1999, requires that construction activities that disturb land equal to or greater than one acre require permitting under the NPDES program. In California, permitting occurs under the General Permit for Stormwater Discharges Associated with Construction Activity, issued to the State Water Resources Control Board (SWRCB), implemented and enforced by the nine Regional Water Quality Control Boards (RWQCBs).

As of July 1, 2010, all dischargers with projects that include clearing, grading or stockpiling activities expected to disturb one or more acres of soil are required to obtain compliance under the NPDES Construction General Permit Order 2009-0009-DWQ. The General Permit requires all dischargers, where construction activity disturbs one or more acres, to take the following measures:

1. Develop and implement a Stormwater Pollution Prevention Plan (SWPPP) to include a site map(s) of existing and proposed building and roadway footprints, drainage patterns and stormwater collection and discharge points, and pre- and post- project topography;
2. Describe types and placement of Best Management Practices (BMPs) in the SWPPP that will be used to protect stormwater quality;
3. Provide a visual and chemical (if non-visible pollutants are expected) monitoring program for implementation upon BMP failure; and
4. Provide a sediment monitoring plan if the area discharges directly to a water body listed on the 303(d) list for sediment.

To obtain coverage, a SWPPP must be submitted to the RWQCB electronically and a copy of the SWPPP must be submitted to Placer County. When project construction is completed, the landowner must file a Notice of Termination (NOT).

State Regulations

The following section includes the State regulations relevant to the CEQA review process pertaining to the hydrology and water quality aspects of the proposed project.

State Water Resources Control Board

The SWRCB and the RWQCBs are responsible for ensuring implementation and compliance with the provisions of the federal CWA and California's Porter-Cologne Water Quality Control Act. The project site is situated within the jurisdictional boundaries of the Central Valley RWQCB (CVRWQCB) (Region 5). The CVRWQCB has the authority to implement water quality protection

standards through the issuance of permits for discharges to waters at locations within their jurisdiction.

Central Valley Regional Water Quality Control Board

As authorized by the Porter-Cologne Water Quality Control Act, the CVRWQCB's primary function is to protect the quality of the waters within its jurisdiction for all beneficial uses. State law defines beneficial uses of California's waters that may be protected against quality degradation to include, but not be limited to: domestic; municipal; agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.

The CVRWQCB implements water quality protection measures by formulating and adopting water quality control plans (referred to as basin plans, as discussed below) for specific groundwater and surface water basins, and by prescribing and enforcing requirements on all agricultural, domestic, and industrial waste discharges. The CVRWQCB oversees many programs to support and provide benefit to water quality, including the following major programs: Agricultural Regulatory; Above-Ground Tanks; Basin Planning; CALFED; Confined Animal Facilities; Landfills and Mining; Non-Point Source; Spills, Leaks, Investigations, and Cleanups (SLIC); Stormwater; Total Maximum Daily Load (TMDL); Underground Storage Tanks (UST), Wastewater Discharges (including the NPDES); Water Quality Certification; and Watershed Management.

The CVRWQCB is responsible for issuing permits for a number of varying activities. Activities subject to the CVRWQCB permitting requirements include stormwater, wastewater, and industrial water discharge, disturbance of wetlands, and dewatering. Permits issued and/or enforced by the CVRWQCB include, but are not limited to, the NPDES Construction General Permit, NPDES Municipal Stormwater Permits, Industrial Stormwater General Permits, Clean Water Act Section 401 and 404 Permits, and Dewatering Permits.

Basin Plans and Water Quality Objectives

The Porter-Cologne Water Quality Control Act provides for the development and periodic review of water quality control plans (basin plans) that are prepared by the regional water quality control boards. Basin plans designate beneficial uses of California's major rivers and groundwater basins, and establish narrative and numerical water quality objectives for those waters. Beneficial uses represent the services and qualities of a water body (i.e., the reasons why the water body is considered valuable), while water quality objectives represent the standards necessary to protect and support those beneficial uses. Basin plans are primarily implemented through the NPDES permitting system and by issuing waste discharge regulations to ensure that water quality objectives are met.

Basin plans provide the technical basis for determining waste discharge requirements and taking regulatory enforcement actions if deemed necessary. The project site is located within the jurisdiction of the CVRWQCB. A basin plan has been adopted for the Sacramento and San Joaquin River Basin (Basin Plan), which covers all of the project area.

The Basin Plan sets water quality objectives for the surface waters in its region for the following substances and parameters: ammonia, bacteria, biostimulatory substances, chemical constituents, color, dissolved oxygen, floating material, oil and grease, pH, radioactivity, salinity, sediment, settleable material, suspended material, taste and odor, temperature, toxicity, turbidity, and

pesticides. For groundwater, water quality objectives applicable to all groundwater have been set for bacteria, chemical constituents, radioactivity, taste, odors, and toxicity.

Senate Bill 5

In 2007, the State of California set the 200-year storm event as the Urban Level of Flood Protection (ULOP) for certain portions of the State through a series of laws included in Senate Bill (SB) 5. Along with other related legislation, SB 5 established a mandate for local governments to amend their general plans and zoning codes to be consistent with State law on floodplain management. Specifically, SB 5 requires all cities and counties within the Sacramento-San Joaquin Valley, as defined in California Government Code Sections 65007(h) and (j), to make findings related to an ULOP or the national FEMA standard of flood protection before: (1) entering into a development agreement for any property that is located within a flood hazard zone; (2) approving a discretionary permit or other discretionary entitlement, or a ministerial permit that would result in the construction of a new residence, for a project that is located within a flood hazard zone; or (3) approving a tentative map, or a parcel map for which a tentative map was not required, for any subdivision that is located within a flood hazard zone. The primary purpose of the law is to ensure that appropriate flood protection is provided in urban and urbanizing areas. Placer County has amended the County's flood management policies to bring the County into compliance with State law and provide for increased flood protection for urban areas, consistent with SB 5.

A project would be subject to the requirements of SB 5 if the project would meet all of the following five criteria:

1. Located within an urban area that is a developed area, as defined by CFR Title 44, Section 59.1, with 10,000 residents or more, or an urbanizing area that is a developed area or an area outside a developed area that is planned or anticipated to have 10,000 residents or more within the next 10 years.
2. Located within a flood hazard zone that is mapped as either a special hazard area or an area of moderate hazard on FEMA's official (i.e., effective) FIRM for the NFIP.
3. Located within the Sacramento-San Joaquin Valley.
4. Located within an area with a potential flood depth above 3.0 feet, from sources of flooding other than localized conditions that may occur anywhere in a community, such as localized rainfall, water from stormwater and drainage problems, and water from temporary water and wastewater distribution system failure.
5. Located within a watershed with a contributing area of more than 10 square miles.

With respect to Criteria 1, the project site is in an urban area. With respect to Criteria 2, according to the Drainage Report, the Placer Creek tributary area portion of the project site is located within the Zone AE floodplain, and the project site is also located within the Sacramento Valley, consistent with Criteria 3. However, with respect to Criteria 4 and Criteria 5, according to the Drainage Reports prepared for the proposed project, the project site is not located within an area with a potential flood depth above 3.0 feet, and the Dry Creek Walerga Road Tributary (i.e., the Placer Creek tributary) watershed area is approximately 1.3 square miles. As such, the project site does not meet the foregoing criteria and would not be subject to the SB 5 requirements. Nonetheless, the portions of the site along the Dry Creek Walerga Road Tributary would not be developed with residential uses.

Local Regulations

Relevant goals and policies from the PCGP and the DCWPCP, as well as various other local guidelines and regulations related to hydrology and water quality, are discussed below.

Placer County General Plan

The following policies from the PCGP related to hydrology and water quality are applicable to the proposed project:

Public Facilities and Services Element

Goal 4.E To collect and dispose of stormwater in a manner that least inconveniences the public, reduces potential water-related damage, and enhances the environment.

Policy 4.E.1 The County shall encourage the use of natural stormwater drainage systems to preserve and enhance natural features.

Policy 4.E.2 The County shall support efforts to acquire land or obtain easements for drainage and other public uses of floodplains where it is desirable to maintain drainage channels in a natural state.

Policy 4.E.4 The County shall ensure that new storm drainage systems are designed in conformance with the Placer County Flood Control and Water Conservation District's Stormwater Management Manual and the County Land Development Manual.

Policy 4.E.8 The County shall consider recreational opportunities and aesthetics in the design of stormwater ponds and conveyance facilities.

Policy 4.E.9 The County shall encourage good soil conservation practices in agricultural and urban areas and carefully examine the impact of proposed urban developments with regard to drainage courses.

Policy 4.E.10 The County shall strive to improve the quality of runoff from urban and suburban development through use of appropriate and feasible mitigation measures including, but not limited to, artificial wetlands, grassy swales, infiltration/sedimentation basins, riparian setbacks, oil/grit separators, and other best management practices (BMPs).

Policy 4.E.11 The County shall require new development to adequately mitigate increases in stormwater peak flows and/or volume. Mitigation measures should take into consideration impacts on adjoining lands in the unincorporated area and on properties in jurisdictions within and immediately adjacent to Placer County.

Policy 4.E.12 The County shall encourage project designs that minimize drainage concentrations and impervious coverage and maintain, to the extent feasible, natural site drainage conditions.

Policy 4.E.13 The County shall require that new development conforms with the applicable programs, policies, recommendations, and plans of the Placer County Flood Control and Water Conservation District.

Policy 4.E.14 The County shall require projects that have significant impacts on the quantity and quality of surface water runoff to allocate land as necessary for the purpose of detaining post-project flows and/or for the incorporation of mitigation measures for water quality impacts related to urban runoff.

Policy 4.E.15 The County shall identify and coordinate mitigation measures with responsible agencies for the control of storm sewers, monitoring of discharges, and implementation of measures to control pollutant loads in urban storm water runoff (e.g., California Regional Water Quality Control Board, Placer County Division of Environmental Health, Placer County Department of Public Works, Placer County Flood Control and Water Conservation District).

Goal 4.F To protect the lives and property of the citizens of Placer County from hazards associated with development in floodplains and manage floodplains for their natural resource values.

Policy 4.F.1 The County shall require that arterial roadways and expressways, residences, commercial and industrial uses and emergency facilities be protected, at a minimum, from a 100-year storm event.

Policy 4.F.4 The County shall require evaluation of potential flood hazards prior to approval of development projects. The County shall require proponents of new development to submit accurate topographic and flow characteristics information and depiction of the 100-year floodplain boundaries under fully-developed, unmitigated runoff conditions.

Policy 4.F.5 The County shall attempt to maintain natural conditions within the 100-year floodplain of all rivers and streams except under the following circumstances:

a. Where work is required to manage and maintain the stream's drainage characteristics and where such work is done in accordance with the Placer County Flood Damage Prevention Ordinance, California Department of Fish and Game regulations, and Clean Water Act

provisions administered by the U.S. Army Corps of Engineers.

Policy 4.F.14 The County shall ensure that new storm drainage systems are designed in conformance with the Placer County Flood Control and Water Conservation District's Stormwater Management Manual and the County's Land Development Manual.

Natural Resources Element

Goal 6.A To protect and enhance the natural qualities of Placer County's streams, creeks and groundwater.

Policy 6.A.2 The County shall require all development in the 100-year floodplain to comply with the provisions of the Placer County Flood Damage Prevention Ordinance.

Policy 6.A.4 Where stream protection is required or proposed, the County should require public and private development to:

a. Preserve creek corridors and creek setback areas through easements or dedication. Parcel lines (in the case of a subdivision) or easements (in the case of a subdivision or other development) shall be located to optimize resource protection. If a creek is proposed to be included within an open space parcel or easement, allowed uses and maintenance responsibilities within that parcel or easement should be clearly defined and conditioned prior to map or project approval;
b. Designate such easement or dedication acres (as described in a. above) as open space;
c. Protect creek corridors and their habitat value by actions such as: 1) providing an adequate creek setback, 2) maintaining creek corridors in an essentially natural state, 3) employing creek restoration techniques where restoration is needed to achieve a natural creek corridor, 4) utilizing riparian vegetation within creek corridors, and where possible, within creek setback areas, 5) prohibiting the planting of invasive, non-native plants (such as Vinca major and eucalyptus) within creek corridors or creek setbacks, and 6) avoiding tree removal within creek corridors;
d. Provide recreation and public access near creeks consistent with other General Plan policies;
e. Use design, construction, and maintenance techniques that ensure development near a creek will not cause or worsen natural hazards (such as erosion, sedimentation, flooding, or water pollution) and will include erosion and sediment control practices such as: 1) turbidity screens and other management practices,

which shall be used as necessary to minimize siltation, sedimentation, and erosion, and shall be left in place until disturbed areas; and/or are stabilized with permanent vegetation that will prevent the transport of sediment off site; and 2) temporary vegetation sufficient to stabilize disturbed areas.

f. Provide for long-term creek corridor maintenance by providing a guaranteed financial commitment to the County which accounts for all anticipated activities.

Policy 6.A.5 The County shall continue to require the use of feasible and practical best management practices (BMPs) to protect streams from the adverse effects of construction activities and urban runoff and to encourage the use of BMPs for agricultural activities.

Policy 6.A.6 The County shall require development projects to comply with the municipal and construction stormwater permit requirements of the Federal Clean Water Act National Pollutant Discharge Elimination System (NPDES) Phase I and II programs and the State General Municipal and Construction permits. Municipal requirements affecting project design and construction practices are enacted through the County's Stormwater Quality Ordinance. Separate construction permits may be required by and obtained through the State Water Resources Control Board.

Policy 6.A.7 All new development and redevelopment projects shall be designed so as to minimize the introduction of pollutants into stormwater runoff, to the maximum extent practicable, as well as minimize the amount of runoff through the incorporation of appropriate Best Management Practices.

Policy 6.A.8 The County shall support implementation of Low Impact Development site design and Watershed Process Management requirements for new and redevelopment projects in accordance with the NPDES Phase I and II programs, and applicable NPDES permits.

Policy 6.A.9 The County shall require that natural watercourses be integrated into new development in such a way that they are accessible to the public and provide a positive visual element.

Policy 6.A.10 The County shall discourage grading activities during the rainy season, unless adequately mitigated, to avoid sedimentation of creeks and damage to riparian habitat.

Policy 6.A.12 The County shall require that newly-created parcels include adequate space outside of watercourses' setback areas to ensure that property owners will not place improvements (e.g.,



pools, patios, and appurtenant structures), within areas that require protection.

Health and Safety Element

Goal 8.B.1 To minimize the risk of loss of life, injury, damage to property, and economic and social dislocations resulting from flood hazards year-round.

Policy 8.B.1.1 The County shall require flood proofing of new and substantially improved structures in areas subject to flooding to be built in accordance with the Flood Damage Prevention Ordinance (Placer County Code Chapter 15, Article 15.52).

Policy 8.B.1.2 The County shall prohibit the construction of projects, including public facilities and other facilities essential for emergencies and large public assembly, within the County's Regulatory Floodway, unless the structure and access to the structure is adequately protected from flood hazards, incorporates all required flood protection specific to that area in accordance with County ordinances and guidelines, and will not result in any significant adverse impacts.

Policy 8.B.1.3 The County shall require evaluation of potential flood hazards prior to approval of a discretionary or ministerial permit that would result in the construction or modification of structures, to determine whether the proposed project is consistent with the protection standards for the County Regulatory Floodplain. The County will not approve any discretionary project or any ministerial permit that would result in the construction or modification of structures for any property within the County Regulatory Floodplain, unless the required flood protection specific to that area has been demonstrated in accordance with County ordinances and guidelines.

Policy 8.B.1.4 New construction shall not be permitted within 100 feet of the centerline of permanent streams and within 50 feet of intermittent streams, or within the 100-year floodplain, whichever distance is greater.

Policy 8.B.1.6 The County shall ensure new development projects incorporate design strategies and features to reduce the area of impervious surfaces.

Goal 8.B.2 To ensure that natural systems and flood-control infrastructure can handle floodwater year-round and are adaptable to new and changing conditions. (Addresses California Government Code Section 65302(g)(4)(B)).

Policy 8.B.2.1 The County shall promote flood- control measures that maintain natural conditions within the County's Regulatory Floodplain of rivers and streams.

Policy 8.B.2.2 The County shall implement the adaptation strategies as contained in the Placer County Sustainability Plan necessary to ensure that natural systems and flood control infrastructure can handle floodwater year-round.

Policy 8.B.2.3 The County shall require that flood management programs avoid alteration of waterways and adjacent areas, whenever possible.

Dry Creek-West Placer Community Plan

The following goals and policies from the Community Development and Environmental Resources Management Elements of the DCWPCP related to hydrology and water quality are applicable to the proposed project:

Community Development Element: The Land Use Plan

Policy 25 Continue to implement zoning policies which minimize potential loss of property and threat to human life caused by flooding and prohibit the creation of new building sites within the floodplain.

Policy 29 Review proposed developments for their potential adverse affect on air and water quality.

Policy 30 Encourage application of measures to mitigate erosion and water pollution from earth disturbing activities such as grading and road construction.

Community Development Element: Public Services

Goal Flood Control: Protect the lives and property of the citizens of the Dry Creek West Placer area from unacceptable impacts from development in the Dry Creek drainage basin or other watershed in the Plan Area.

Policy 2 Evaluate potential flood hazards in an area prior to approval of any future development by requiring submittal of accurate topographic information and depiction of the 100-year floodplain boundaries.

Policy 4 Maintain natural conditions within the 100-year floodplain of all streams except where work is required to maintain the stream's drainage characteristics and where such work is done in accordance with the Placer County Flood Damage Prevention Ordinance, Department of Fish and Game regulations and Clean Water Act provisions administered by the U.S. Army Corps of Engineers, or when facilities for the treatment of urban runoff can be located in the floodplain providing that there is no destruction of riparian vegetation.

Policy 5 Designate the 100-year floodplain of Dry Creek, including the major tributaries as open space, and provide for some compatible use of these areas in order to encourage their preservation.

Policy 9 Provide storm drains which can collect water for appropriate conveyance to Dry Creek for developing areas with a higher density than Rural-Residential.

Policy 11 Require a water quality analysis for all projects which have a density in excess of one unit per acre and/or have the potential of contaminating surface waters or the aquifer.

Policy 12 Require a feasibility analysis of improving the water quality of urban run-off for all commercial and industrial projects and those residential projects with densities of 1 d.u./acre or greater before run-off enters the Dry Creek watercourse. Said analysis shall consider all feasible mitigation measures including, but not limited to, artificial wetlands, infiltration/sedimentation basins, riparian setbacks, oil/grit separators, or other effective means, where appropriate.

Policy 13 Require the allocation of land, when necessary, for all projects which have significant impacts on the quantity and quality of surface water runoff, for the purpose of detaining post project flows and/or for the incorporation of mitigation measures for water quality impacts related to urban runoff.

Policy 14 Identify and coordinate mitigation measures with responsible agencies for the control of storm sewers, monitoring of discharges and implementation of measures to control pollutant loads in urban storm water runoff (e.g., California Regional Water Quality Control Board, Placer County Division of Environmental Health, Placer County Department of Public Works, etc.).

Environmental Resources Management Element: Natural Resources

Goal 3 Manage the groundwater resource in such a way as to protect it from degradation and to maintain the water table.

Goal 4 Safeguard and maintain natural waterways to ensure water quality, species diversity, and unique habitat preservation.

Policy 2 Preserve in their natural condition all stream environment zones, including floodplains, and riparian vegetation areas.

Policy 3 Seek to maintain or improve the quality of water in the major creeks, especially Dry Creek and its tributaries.

Policy 4 Make every attempt to maintain the existing high quality of the groundwater and preserve aquifer recharge areas.

Policy 10 Improve water quality in the aquifer and the Dry Creek watershed by eliminating existing water pollution sources and by discouraging

activities which include the use of hazardous materials around wetland and recharge areas.

Policy 25 Intermittent streams often become permanent streams concurrent with the development of an area. Therefore, these waterways shall be protected from land development activities which have a potential for detrimental impacts (e.g., grading, channelization, etc.).

NPDES Small Municipal Separate Storm Sewer System (MS4) General Permit

The NPDES Municipal Stormwater Permitting Program regulates stormwater discharges from separate storm sewer systems. NPDES Municipal Stormwater Permits are issued in two phases. Phase I regulates stormwater discharges from large- and medium-sized municipal separate storm sewer systems (those serving more than 100,000 persons). Most Phase I permits are issued to a group of co-permittees encompassing an entire metropolitan area. Phase II provides coverage for smaller municipalities, including nontraditional small storm sewer systems, which include governmental facilities such as military bases, public campuses, and prison and hospital complexes. The NPDES Municipal Stormwater Permits require the discharger to develop and implement a Stormwater Management Plan/Program with the goal of reducing the discharge of pollutants to the maximum extent practicable.

The CVRWQCB issued the NPDES General Permit No. CAS000004 Waste Discharge Requirements for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems, which became effective on July 1, 2013. An “MS4” is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) designed or used for collecting or conveying stormwater; (ii) which is not a combined sewer; and (iii) which is not part of a Publicly Owned Treatment Works (POTW). Both Placer County and the City of Roseville are Phase II MS4 permittees. Projects subject to the requirements of the Phase II MS4 NPDES permit must submit the appropriate Post-Construction Stormwater Plan based on the project type/development category. Regulated Projects include projects that create or replace 5,000 square feet (sf) or more of impervious surface. Regulated Projects that create and/or replace one or more acres of impervious surface are considered regulated hydromodification management projects. The proposed project would create more than one acre of impervious area, and, thus, is considered a Regulated Hydromodification Management Project subject to Phase II MS4 NPDES permit post-construction stormwater treatment requirements.

Regulated Projects are required to divide the project area into Drainage Management Areas (DMAs) and implement and direct water to appropriately sized Site Design Measures (SDMs) and Baseline Hydromodification Measures to each DMA to the Maximum Extent Practicable (MEP). Regulated Projects must additionally include Source Control BMPs where possible. SDMs and Baseline Hydromodification Measures include, but are not limited to:

- Rooftop and impervious area disconnection;
- Porous pavement;
- Rain barrels and cisterns;
- Vegetated swales;
- Bio-retention facilities;

- Green roofs; or
- Other equivalent measures.

A detailed description of the requirements for Regulated Hydromodification Management Projects, such as the proposed project, is included in the *West Placer Storm Water Quality Design Manual.*[13]

Placer County Flood Control and Water Conservation District

Formed by SB 1312, the Placer County Flood Control and Water Conservation District (PCFCWCD) is responsible for regional strategies for flood control management. A Stormwater Management Manual (SWMM) was developed by the PCFCWCD to relate the policies, guidelines, and specific criteria for evaluating hydrologic conditions associated with new development projects. In 2011, the PCFCWCD published the *Update to the Dry Creek Watershed Flood Control Plan*, which identifies potential flooding issues associated with the Dry Creek watershed and provides recommendations for means to reduce future flood damages.[14]

Placer County Land Development Manual

Section 5 of the Placer County Land Development Manual (2023) provides supplemental design considerations for drainage facilities, and includes specific criteria used for preparation of drainage reports identical to those in the SWMM (as described above under Placer County Flood Control and Water Conservation District). The Land Development Manual states that in case of conflict with the SWMM, the most stringent requirement shall apply. The Land Development Manual also contains general information with regard to erosion control and BMPs for stormwater drainage.

Placer County Code

Chapter 15, Building and Development, of the Placer County Code includes ordinances associated with hydrology and water quality. The applicable ordinances are discussed in further detail below.

Stormwater Quality Ordinance

Article 8.28, Stormwater Quality Ordinance, is intended to ensure that Placer County is compliant with State and federal laws related to stormwater quality by enhancing and protecting the quality of waters of the State in Placer County through reducing pollutants in stormwater discharges to the maximum extent practicable and controlling non-stormwater discharges to the storm drain system. The Stormwater Quality Ordinance requires the use of BMPs to reduce adverse effects of polluted runoff discharges on waters of the State, and prohibits illicit discharges to the storm drain system. The Stormwater Quality Ordinance establishes the County's authority to adopt requirements for stormwater management, including source control requirements, to reduce pollution to the maximum extent practicable; requirements for development projects to reduce stormwater pollution and erosion both during construction and after the project is complete; and enable the County to implement and enforce any stormwater management plan adopted by the County.

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[13] Placer County, City of Roseville, City of Lincoln, City of Auburn, Town of Loomis. *West Placer Storm Water Quality Design Manual.* April 2016.

[14] Placer County Flood Control and Water Conservation District. *Update to the Dry Creek Watershed Flood Control Plan.* November 2011.

County Grading and Erosion Prevention Ordinance

Article 15.48, Grading, Erosion and Sediment Control, of the Placer County Code regulates grading on property within the unincorporated area of Placer County to safeguard life, limb, health, property and public welfare; to avoid pollution of watercourses with hazardous materials, nutrients, sediments, or other earthen materials generated on or caused by surface runoff on or across the permit area; and to ensure that the intended use of a graded site is consistent with the PCGP, any specific plans adopted thereto and applicable Placer County ordinances including the Zoning Ordinance, Flood Damage Prevention Ordinance (Article 15.52 of the Placer County Code), Environmental Review Ordinance (Chapter 18 of the Placer County Code), and applicable chapters of the California Building Code. In the event of conflict between applicable chapters and Article 15.48, the most restrictive shall prevail. Part 6 of Article 15.48 sets forth design standards for grading activities such as excavation, slopes, fill soil, setbacks, and drainage.

Dry Creek Watershed Drainage Improvement Zone

Placer County Code, Chapter 15, Article 15.32 (Dry Creek Watershed Drainage Improvement Zone) establishes a drainage improvement zone for the Dry Creek watershed. In addition, the Ordinance requires the payment of specified fees and annual assessments as a condition of new development within the watershed area; such fees and assessments are used for the installation and maintenance of roadway drainage and stormwater drainage improvements. Mitigation fees are required for new development, and the expansion of existing development, within portions of the Dry Creek watershed that impose a burden on the creeks and drainage infrastructure within the watershed by adding additional impervious surface and accelerating runoff, thereby increasing discharge rates.

Flood Damage Prevention Ordinance

Article 15.52, Flood Damage Prevention Ordinance, is intended to minimize public and private losses due to flood conditions in specific areas by provisions designed to protect human life and health; minimize the need for rescue and relief efforts associated with flooding; minimize prolonged business interruptions; minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets, and bridges located in areas of special flood hazard; provide for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas; ensure that potential buyers are notified that property is in an area of special flood hazard; and ensure that those who occupy areas of special flood hazard assume responsibility for their actions. The Flood Damage Prevention Ordinance provides methods for reducing flood losses, and sets forth standards for construction in all areas of special flood hazards.

12.4 IMPACTS AND MITIGATION MEASURES

This section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to hydrology and water quality. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, a significant impact would occur if the proposed project would do any of the following:

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality;

- Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin or conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
    - Result in substantial erosion or siltation on- or off-site;
    - Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; or
    - Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff either during construction or in the post-construction condition.
- Place housing or improvements within a 100-year flood hazard area either as mapped on a federal Flood Hazard boundary or Flood Insurance Rate Map or other flood hazard delineation map which would:
    - Impede or redirect flood flows;
    - Expose people or structures to risk of loss, injury or death involving flooding; or
    - risk release of pollutants due to project inundation; and/or
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

The proposed project's impacts associated with erosion or siltation on- or off-site are discussed in Chapter 10, Geology and Soils, of this EIR. In addition, water supply availability is addressed in Chapter 15, Public Services and Utilities, of this EIR.

Method of Analysis

The impacts analysis for this chapter is based primarily on the Drainage Reports prepared for each phase of the proposed project by King Engineering. The Drainage Reports included hydrologic modeling for the proposed project (both pre-project and post-project conditions) using the Hydraulic Engineering Center (HEC) computer program. In particular, King Engineering used a combination of the HEC-HMS and HEC River Analysis System (HEC-RAS) software. The HEC-HMS was used to calculate peak flows for individual drainage sheds for the pre-construction and post-construction conditions during the 10-year and 100-year storm events. The post-project hydraulic modeling included in the Drainage Reports represents existing flows, the proposed project flows, and flows associated with future buildout of the remaining Dry Creek Walerga Road Tributary shed area pursuant to DCWPCP land use designations. Detailed calculations are provided in the Drainage Reports prepared for the proposed project by King Engineering (see Appendix G). The river hydraulics and cross section profiles for the creek and tributaries provided in the Drainage Reports were derived from the GeoHECRAS software provided by CivilGeo. The Drainage Reports also evaluated both an on-site volumetric retention option for the Phase 1 development, as well as an option for potential regional retention for the Phase 1 development that flows north to the Curry Creek watershed.

To evaluate storm water quality and BMPs within the project limits, the West Placer Storm Water Quality Design Manual was referenced and used as a guideline for BMP locations.

As noted throughout this EIR, the potential future development of the off-site affordable housing parcel does not include any site-specific development plans, designs, or proposals at this time.

Therefore, impacts associated with the potential future development of the off-site affordable housing parcel were evaluated on a programmatic level with the assumption that a maximum of 120 multi-family residential units could be developed.

Project Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed project in comparison with the standards of significance identified above. The potential environmental impacts associated with the proposed project and the potential 22 on-site ADUs would not differ. Thus, the below analysis applies to both the proposed project and the on-site ADUs.

12-1 Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality during construction. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to violating any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality during construction of the proposed project and the off-site sewer lift station improvements area, and during potential construction of the off-site affordable housing parcel.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

The construction of the proposed project area and off-site sewer lift station improvements would include similar ground disturbing activities within floodplain areas, and, therefore, construction of either component could result in pollutants entering Dry Creek. Therefore, the potential for either component to violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality during construction would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

Construction of the proposed project would include grading, excavation, trenching for utilities, and other construction-related activities that could cause soil erosion at an accelerated rate during storm events. In addition, soil would be disturbed during construction of the proposed off-site sewer lift station improvements. All such activities have the potential to affect water quality and contribute to localized violations of water quality standards if impacted stormwater runoff from construction activities enters the Dry Creek tributaries in the project area, which eventually drain to Dry Creek.

Soils exposed by the aforementioned types of construction activities have the potential to affect water quality in two ways: 1) suspended soil particles and sediments transported through runoff; or 2) sediments transported as dust that eventually reach local water bodies. Spills or leaks from heavy equipment and machinery, staging areas, or building sites also have the potential to enter runoff. Typical pollutants include, but are not limited to, petroleum and heavy metals from equipment and products such as paints, solvents, and cleaning agents, which could contain hazardous constituents. Sediment from erosion of graded or excavated surface materials, leaks or spills from equipment, or inadvertent releases of building products could result in water quality degradation if runoff containing the sediment or contaminants should enter receiving waters in sufficient quantities.

Discharge of polluted stormwater or non-stormwater runoff could violate waste discharge requirements. However, impacts from construction-related activities would generally be short-term and of limited duration.

Because the proposed project would require construction activities that would result in a land disturbance greater than one acre, the State would require the project to comply with the most current Construction General Permit requirements. Pursuant to the requirements, a SWPPP would be prepared for the overall project, which would include the site map, drainage patterns and stormwater collection and discharge points, BMPs, and a monitoring and reporting framework for implementation of BMPs, as necessary. In addition, a Notice of Intent (NOI) would be filed with RWQCB. The SWPPP would include strategies to manage stormwater from the construction site and off-site sewer lift station improvements area, and treat runoff before being discharged from the development areas. The site-specific SWPPP developed for the proposed project and off-site sewer lift station improvements area would have protocols to be followed and monitored during construction, including effective response actions if necessary. The SWPPP is considered a "living document" that could be modified as construction activities progress.

As discussed in further depth in Chapter 10, Geology and Soils, of this EIR, the proposed project would be subject to State guidelines, Articles 8.28 and 15.48 of the Placer County Code, and Policy 6.A.5 of the PCGP, which require project implementation of BMPs designed to control erosion and other non-stormwater management and materials management BMPs. Implementation of BMPs to control erosion, and, thus, sediment related pollution, is further mandated by Mitigation Measures 10-2(c) and 10-2(d) within Chapter 10 of this EIR.

Non-stormwater management and material management controls reduce non-sediment-related pollutants from potentially leaving the construction site to the extent practicable. The Construction General Permit prohibits the discharge of materials other than stormwater and authorized non-stormwater discharges (such as irrigation and pipe flushing and testing). Non-stormwater BMPs tend to be management practices with the purpose of preventing stormwater from coming into contact with potential pollutants. Examples of non-stormwater BMPs include preventing illicit discharges, and implementing good practices for vehicle and equipment maintenance, cleaning, and fueling operations, such as using drip pans under vehicles. Waste and materials management BMPs include implementing practices and procedures to prevent pollution from materials used on construction sites. Examples of materials management BMPs include the following:

- Good housekeeping activities such as storing of materials covered and elevated off the ground, in a central location;
- Securely locating portable toilets away from the storm drainage system and performing routine maintenance;
- Providing a central location for concrete washout and performing routine maintenance;
- Providing several dumpsters and trash cans throughout the construction site for litter/floatable management; and
- Covering and/or containing stockpiled materials and overall good housekeeping on the site.

While the final materials management BMPs to be used during construction of the proposed project are currently unknown, as discussed below, the SWPPP for the project would likely include a combination of the BMP examples listed above. Final BMPs for the proposed project construction would be chosen in consultation with the applicable California Stormwater Quality Association Stormwater BMP Handbooks and implemented by the project contractor.

In accordance with the Construction General Permit, the project site would also be inspected during construction before and after storm events and every 24 hours during extended storm events to identify maintenance requirements for the implemented BMPs and to determine the effectiveness of the implemented BMPs. As a "living document", the site-specific SWPPP that would be prepared for the proposed project would be modified as construction activities progress. A Qualified SWPPP Practitioner (QSP) would ensure compliance with the SWPPP through regular monitoring and visual inspections during construction activities. The QSP for the project would amend the SWPPP and revise project BMPs, as determined necessary through field inspections, to protect against substantial erosion or siltation on- or off-site.

Off-Site Affordable Housing Parcel

Similar to the proposed project, buildout of the off-site affordable housing parcel would require grading, excavation, and other construction-related activities, which could cause topsoil to be exposed, potentially resulting in wind erosion or an accelerated rate of erosion during storm events. Upon development of the site with structures, the amount of exposed soil that may be lost due to wind or stormwater runoff would be minimized. As discussed in the RVSP EIR, to reduce potential impacts associated with soil erosion and the loss of topsoil, development within the RVSP area would be required to: provide improvement plans to the County prior to authorization of construction; comply with the provisions of the County Grading Ordinance and Stormwater Quality Ordinance in effect at the time of submittal; prepare and comply with a SWPPP; cooperate with the project's NPDES construction stormwater quality permit, issued by the CVRWQCB; and comply with all provisions therein. As such, should the off-site affordable housing parcel occur as part of the proposed project, construction activities related to such would be required to comply with the following applicable RVSP Mitigation Measures 12-1b, 12-3b, and 12-3d, which have been incorporated into this EIR as Mitigation Measures 12-1(b), 10-2(f), and 10-2(h), respectively. Mitigation Measure 12-1b would require compliance with the County Grading Ordinance; Mitigation Measure 12-3b would require compliance with NPDES requirements for construction; and Mitigation Measure 12-3d would require preparation and implementation of a SWPPP for construction.

Conclusion

Compliance with the State NPDES Construction General Permit and Articles 8.28 and 15.48 of the Placer County Code, as described above and required by Mitigation Measures 10-2(a) through 10-2(c) within Chapter 10, Geology and Soils, of this EIR, and Mitigation Measures 12-1b, 12-3b, and 12-3d of the RVSP EIR, which have been incorporated into this EIR as Mitigation Measures 12-1(b), 12-1(c), and 12-1(d), would minimize the potential degradation of stormwater quality and downstream surface water associated with construction of the proposed project, off-site sewer lift station improvements area, and off-site affordable housing parcel. In addition, BMPs would be required to be designed in accordance with the California Stormwater Quality Association

Stormwater Best Management Practice Handbooks for Construction and for New Development/Redevelopment (or other similar source as approved by the Engineering and Surveying Division). Therefore, with implementation of the following mitigation measures, the proposed project, off-site sewer lift station improvements area, and off-site affordable housing parcel would avoid a ***significant*** impact related to short-term construction-related water quality.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level by ensuring compliance with federal, State, and County regulatory requirements intended to reduce pollution and erosion from stormwater during the construction phase of the project and off-site affordable housing parcel.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

12-1(a) Implement the following Mitigation Measures set forth in this EIR:

- *10-2(a) Prior to construction commencing, the applicant shall provide evidence to the ESD of a Waste Discharge Identification (WDID) number generated from the State Regional Water Quality Control Board's Stormwater Multiple Application & Reports Tracking System (SMARTS). This serves as the Regional Water Quality Control Board approval or permit under the National Pollutant Discharge Elimination System (NPDES) construction stormwater quality permit.*

- *10-2(b) The applicant shall prepare and submit Improvement Plans, specifications and cost estimates (per the requirements of Section II of the Land Development Manual (LDM) that are in effect at the time of submittal) to the Engineering and Surveying Division (ESD) for review and approval of each project phase. The applicant shall pay plan check and inspection fees and Placer County Fire Department improvement plan review and inspection fees with the 1st Improvement Plan submittal. (NOTE: Prior to plan approval, all applicable recording and reproduction costs shall be paid).*

  The Final Subdivision Map(s) shall not be submitted to the Engineering and Surveying Division (ESD) until the Improvement Plans are submitted for the second review. Final technical review of the Final Subdivision Map(s) shall not conclude until after the Improvement Plans are approved by the ESD.

  Any Building Permits associated with this project shall not be issued until, at a minimum, the Improvement Plans are approved by the Engineering and Surveying Division.

  Prior to the County's final acceptance of the project's improvements, submit to the Engineering and Surveying Division one copy of the Record Drawings in digital format along with one blackline hardcopy (black print on bond paper) and one PDF copy.

- *10-2(c) No grading, clearing, or tree disturbance shall occur until the Improvement Plans are approved and all temporary construction fencing has been installed and inspected by a member of the County.*

  The Improvement Plan(s) shall identify the stockpiling and/or vehicle staging areas with locations as far as practical from existing dwellings and protected resources in the area. The applicant shall revegetate all disturbed areas. Revegetation, undertaken from April 1 to October 1, shall include regular watering to ensure adequate growth. A winterization plan shall be provided with project Improvement Plans.

  The applicant shall submit to the ESD a letter of credit or cash deposit in the amount of 110 percent of an approved engineer's estimate using the County's current Plan Check and Inspection Fee Spreadsheet for winterization and permanent erosion control work prior to Improvement Plan approval. For an improvement plan with a calculated security that exceeds $100,000, a minimum of $100,000 shall be provided as letter of credit or cash security and the remainder can be bonded.

Off-Site Affordable Housing Parcel

12-1(b) Implement RVSP EIR Mitigation Measure 12-1b:

All proposed grading, drainage improvements, vegetation, and tree removal shall be shown on the proposed project's Improvement Plans, and all work shall conform to provisions of the County Grading Ordinance (Ref. Article 15.48, Placer County Code) that is in effect at the time of submittal. No grading, clearing, or tree disturbance shall occur until the Improvement Plans are approved and all temporary construction fencing has been installed and inspected by a member of the DRC. All cut/fill slopes shall be at a maximum of 2:1 (horizontal:vertical) unless a soils report supports a steeper slope and the ESD concurs with said recommendation.

The Applicant shall revegetate all disturbed areas. Revegetation undertaken from April 1 to October 1 shall include regular watering to ensure adequate growth. A winterization plan shall be provided with project Improvement Plans. It will be the Applicant's responsibility to ensure proper installation and maintenance of erosion control/winterization during project construction. Where soil stockpiling or borrow areas are to remain for more than one construction season, proper erosion control measures shall be applied as specified in the Improvement Plans/Grading Plans. Where roadside drainage is off of the pavement, erosion control shall be provided for to the satisfaction of the ESD.

The Applicant shall submit to the ESD a letter of credit or cash deposit in the amount of 110 percent of an approved engineer's estimate for

winterization and permanent erosion control work, prior to Improvement Plan approval, to guarantee protection against erosion and improper grading practices. Upon the County's acceptance of improvements and satisfactory completion of a one-year maintenance period, unused portions of this deposit will be refunded to the Applicant or authorized agent.

If at any time during construction a field review by County personnel indicates a significant deviation from the proposed grading shown on the Improvement Plans, specifically with regard to slope heights, slope ratios, erosion control, winterization, tree disturbance, and/or pad elevations and configurations, the plans shall be reviewed by the DRC/ESD for a determination of substantial conformance to the project approvals prior to any further work proceeding. Failure of the DRC/ESD to make a determination of substantial conformance may serve as grounds for the revocation/modification of the project approval by the appropriate hearing body (Placer County Community Development Resource Agency, 2006).

The project's erosion control plan shall indicate that proper control of siltation, sedimentation, and other pollutants will be implemented in accordance with National Pollutant Discharge and Elimination System (NPDES) permit requirements and County ordinance standards. The plan shall propose best management practices (BMPs) to reduce erosion and water quality degradation during construction to the maximum extent practicable.

12-1(c) *Implement the following Mitigation Measure set forth in this EIR:*

- *<u>10-2(e)</u> Implement RVSP EIR Mitigation Measure 12-3b:*

  This project is subject to construction-related stormwater permit requirements of the federal Clean Water Act NPDES program. Each applicant/developer for future construction projects within the Plan Area shall implement Mitigation Measure 13-1c [the standards of which are included as Mitigation Measure 10-2(g) of this EIR], which requires an applicant to submit a Notice of Intent (NOI) to comply with the NPDES General Permit for Stormwater Discharges associated with Construction Activities to the State Regional Water Quality Control Board if the specific project would disturb 1 acre of land or more. The project applicant/developer shall provide to the ESD evidence of a state-issued Waste Discharge Identification (WDID) number or filing of a NOI and fees prior to start of construction, as required by the County's Sample Conditions and Improvement Plans, paragraph ip15 (Placer County Community Development Resource Agency, 2006).

12-1(d) *Implement the following Mitigation Measure set forth in this EIR:*

- *<u>10-2(g)</u> Implement RVSP EIR Mitigation Measure 12-3d:*

For all construction activities that will disturb 1 or more acre of land, a stormwater pollution prevention plan (SWPPP) for the construction phase must be prepared and implemented.

The SWPPP will include development of site-specific structural and operational BMPs to prevent and control impacts to runoff quality, measures to be implemented before each storm event, inspection and maintenance of BMPs, and monitoring of runoff quality by visual and/or analytical means. The contents of the SWPPP are set forth in detail in the permit application package. BMPs shall be designed according to the California Stormwater Quality Association Stormwater Best Management Practice Handbooks for Construction (or other similar source as approved by the DPW). BMPs for the proposed project include, but are not limited to, silt fencing (Sediment Control SE -1), straw bale barriers (Sediment Control SE-9), fiber rolls (Sediment Control SE-5), storm drain inlet protection (Sediment Control SE-10), hydraulic mulch (Erosion Control EC-3), and stabilized construction entrance (Tracking Control TR-1). The SWPPP shall also include erosion control measures, to be implemented during construction, that conform to the NPDES, Storm Drain Standards, and local standards.

12-2 Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality during operations. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to violating any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality during operation of the proposed project and during potential operation of the off-site affordable housing parcel. Because development of the off-site sewer lift station improvements area would be limited to upgrades to the existing underground storage tanks, the operation of the improvements area would not result in new stormwater pollutants introduced to the area. As such, water quality impacts during operation of the off-site sewer lift station improvements area are not discussed further herein.

Proposed Project

Development of the proposed project would result in the conversion of an undeveloped area to single-family and multi-family residential uses and associated amenities, such as parks and landscaping. Such new land uses could result in new stormwater pollutants being introduced to the project area. Pollutants associated with the operational phase of the proposed project could include nutrients, oil and grease, metals, organics, pesticides, bacteria, sediment, trash, and other debris. Nutrients that could be present in post-construction stormwater include nitrogen and phosphorous resulting from fertilizers applied to landscaping. Excess nutrients could affect water quality by promoting excessive and/or a rapid growth of aquatic vegetation, which reduces water clarity and results in oxygen depletion. Pesticides, which are toxic to aquatic organisms and can bioaccumulate

in larger species, such as birds and fish, can potentially enter stormwater after application to landscaped areas within the project site. Oil and grease could enter stormwater from vehicle leaks, traffic, and maintenance activities. Metals could enter stormwater as surfaces corrode, decay, or leach. Clippings associated with landscape maintenance and street litter could be carried into storm drainage systems. Pathogens (from pets, wildlife, and human activities) have the potential to affect downstream water quality.

Development of the proposed project could also increase polluted non-stormwater runoff (e.g., car wash water, other wash water, and landscape irrigation runoff). Such non-stormwater runoff could flow down sidewalks, parking areas, and streets, and pick up additional pollutants deposited on impervious surfaces prior to discharge into the storm drain system and surface waters. Discharge of polluted stormwater or non-stormwater runoff could violate waste discharge requirements.

Phase II MS4 Permit Requirements

As discussed previously, the proposed project is located within the permit area covered by Placer County's MS4 Permit (NPDES General Permit No. CAS000004, Order No. 2013-0001-DWQ), pursuant to the NPDES Phase II program. Project-related stormwater discharges are subject to all applicable requirements of said permit. Specifically, as noted above, regulated projects are required to divide the project area into DMAs and implement and direct water to appropriately sized SDMs and Baseline Hydromodification Measures to each DMA. Source control measures must be designed for pollutant-generating activities or sources consistent with recommendations from the California Stormwater Quality Association (CASQA) Stormwater BMP Handbook for New Development and Redevelopment, or equivalent manual, and must be shown on the Improvement Plans. Additional details related to hydromodification management requirements associated with the Phase II MS4 permit are discussed under Impact 12-4 below.

Proposed Storm Drain System

The proposed project would include an on-site storm drain system composed of Low Impact Development (LID) components. LID components refer to systems and practices that use or mimic natural processes that result in the infiltration, evapotranspiration or use of stormwater to protect water quality and associated aquatic habitat. The majority of the project site is currently located within the Dry Creek watershed (56.6 acres), with the northern portion of the project site located within the Curry Creek watershed (35.6 acres). The project proposes a shed shift of approximately 25.7 acres (portions of Phases 1 and 2) from the Curry Creek watershed to the Dry Creek watershed due to design constraints and adjacent project drainage analysis assumptions, as discussed further under Impact 12-4 below. The re-directed flows would be routed to Basin B in the southern portion of Phase 1 and Basin C at the southwest corner of Phase 2 for treatment and infiltration prior to discharging into "Placer Creek".

Impervious surfaces proposed as part of the project include building roofs, driveways, parking and circulation areas, roadways, and sidewalks. Consistent with MS4 permit requirements and the *West Placer Storm Water Quality Design Manual*, the project site would be divided into seven DMAs for stormwater quality treatment (see Figure 12-6). The seven DMAs include the portions of the project site that would be developed. The Estia Dry Creek portion of the project site (i.e., Phase 1) is divided into two DMAs: A and B.

Figure 12-6
Drainage Management Areas

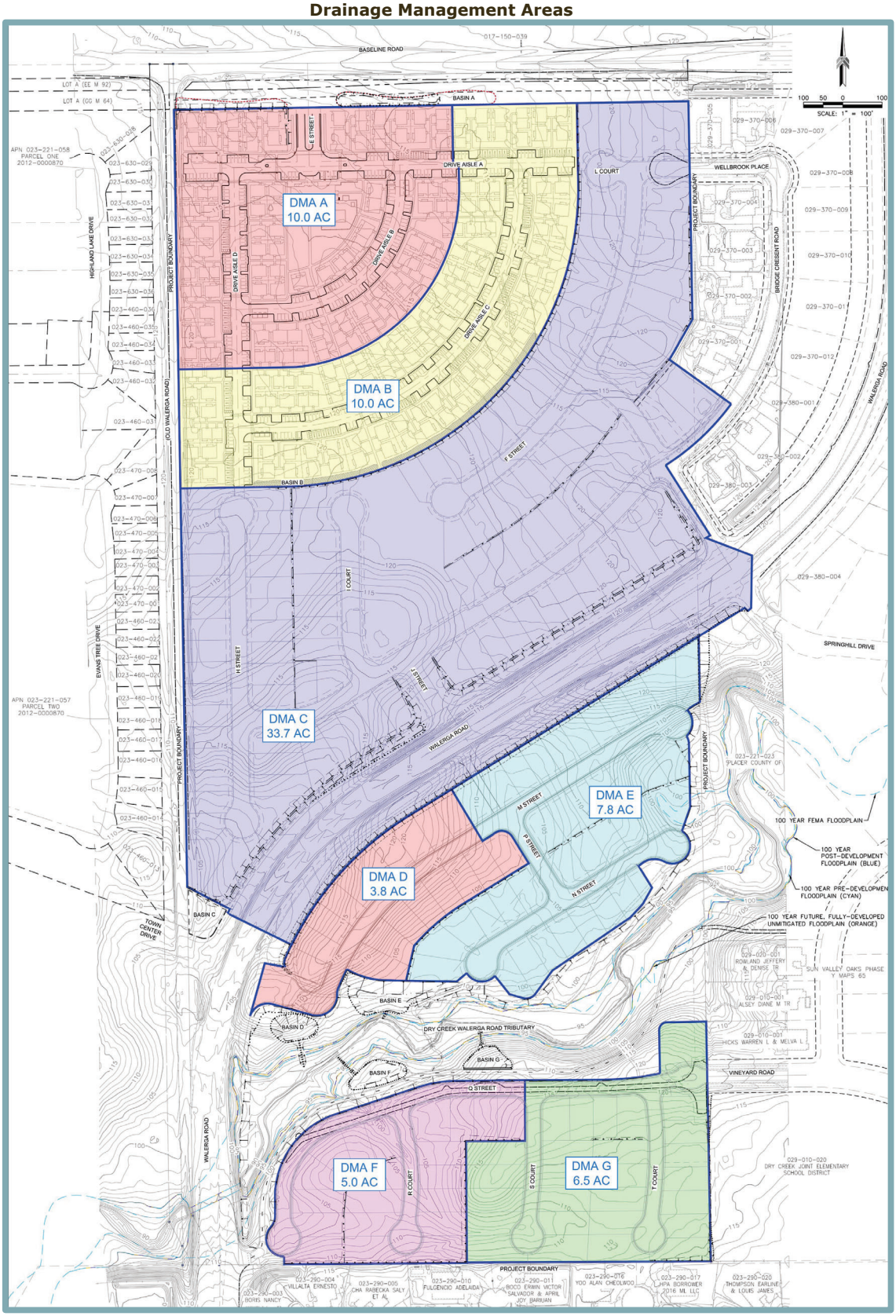


*Figure not OCR compatible

Both DMAs would provide stormwater quality treatment through bioretention basins at the north and south boundaries of the Estia Dry Creek portion of the project site.

Runoff within Phase 2 of Placer Creek Residential would be routed to a new storm drain pipe within Walerga Road, which would discharge into proposed Basin C in the southwest portion of the Phase 2 area. Additional flows from Walerga Road would also be directed toward underground infiltration Basin C. During large storm events, excess runoff that does not infiltrate within Basin C would discharge into a new 24-inch storm drain pipe that would connect to an existing 48-inch pipe in Walerga Road that currently outfalls into the on-site "Placer Creek" tributary between Phases 3 and 4. The existing 48-inch outfall would be extended to accommodate the Walerga Road improvements to be completed as part of the proposed project. In addition, the existing box culvert underneath Walerga Road would be extended.

The "Placer Creek" tributary to Dry Creek is located between the Placer Creek Residential Phases 3 and 4 residential neighborhoods and flows southwest to Dry Creek. Development of the project site would require installation of on-site drainage facilities and alteration of site topography to accommodate the proposed land uses. Phase 3 and Phase 4 would include water quality Basins D through F, which would each outfall to the Placer Creek tributary through 24-inch and 18-inch storm drains during large storm events.

Stormwater Quality Plans (SWQPs) prepared for proposed projects should specify source control measures to be implemented for each potential pollutant-generating activity or source present on the project site.

The source control measures may include, but are not limited to, measures related to proper storage of all project materials, use of environmentally friendly materials for indoor and structural pest control, and compliance with manufacturer recommendations and regulations related to pesticide use. The source control measures should be designed consistent with the recommendations from the CASQA Stormwater BMP Handbook for New Development and Redevelopment, or from another equivalent manual.

The proposed stormwater basins would be sized to treat the runoff from the 85th percentile, 24-hour storm event, which includes a majority of the larger pollutants (sand, soil, silt, grease and trash) as well as smaller pollutants (sediment, nutrient, metals, pesticides and organics). Thus, project runoff entering the Dry Creek tributary or Curry Creek would be properly treated, and would not pollute downstream waterways.

Maintenance and Inspection

To ensure continued operation of the proposed stormwater basins, the SWQP must include detailed, site-specific inspection and maintenance procedures to be implemented by the project applicant. For example, plants and vegetation within the stormwater basins should be inspected monthly, and the basins should be inspected for the presence of standing water 72 hours after rain events.

Required maintenance activity should include, but not necessarily be limited to, removal of debris from stormwater basins and removal of debris from outlets of stormwater basins. Without implementation of such measures, the stormwater basins could fail to ensure that

polluted runoff would not enter downstream water bodies during the continued operation of the project.

Off-Site Affordable Housing Parcel

As discussed throughout this EIR, the construction of the proposed affordable units does not include any site-specific development plans, designs, or proposals at this time. However, similar to the proposed project, the potential residential development could result in new stormwater pollutants being introduced to the project area.

As discussed above, Placer County is covered by a MS4 Permit (NPDES General Permit No. CAS000004, Order No. 2013-0001-DWQ), pursuant to the NPDES Phase II program. As such, stormwater discharges associated with the potential future residential development of the off-site affordable housing parcel are subject to all applicable requirements of said permit. Specifically, regulated projects are required to divide the project area into DMAs and implement and direct water to appropriately sized SDMs and Baseline Hydromodification Measures to each DMA. Source control measures must be designed for pollutant-generating activities or sources consistent with recommendations from the CASQA Stormwater BMP Handbook for New Development and Redevelopment, or equivalent manual, and must be shown on the Improvement Plans. In addition, all future residential development associated with the proposed project would be required to comply with all requirements of the PCSWMM and the RWQCB.

Compliance with all stormwater discharge requirements of the County's MS4 Permit, PCSWMM, and the RWQCB, as described above, would minimize the potential degradation of stormwater quality and downstream surface water associated with construction and operation of future on-site development. In addition, BMPs designed in accordance with the California Stormwater Quality Association Stormwater Best Management Practice Handbooks for Construction and for New Development/Redevelopment would further reduce the potential for degradation of stormwater quality and downstream surface water in the project vicinity.

Should development of the off-site affordable housing parcel occur, RVSP Mitigation Measures 12-3c, 13-4b, 13-4c, and 14-4a would be required in order to ensure source control and water quality treatment of runoff from paved and other developed areas is included prior to discharge into the swales and streams that ultimately discharge into Dry Creek. Mitigation Measure 12-3c would require compliance with NPDES Phase II requirements; Mitigation Measure 13-4b would require preparation of a site-specific BMP plan; Mitigation Measure 13-4c would require maintenance of BMPs; and Mitigation Measure 14-4a would require on-site and off-site pipelines to have watertight joints in accordance with Placer County standards. The aforementioned RVSP EIR mitigation measures have been applied in this EIR as Mitigation Measures 10-2(g), and 12-2(d) through 12-2(h), respectively.

Conclusion

Based on the above, the proposed project includes site design measures to ensure that stormwater runoff is properly treated prior to discharge to the Curry Creek watershed and Dry Creek tributary. Thus, urban pollutants entering and potentially degrading local water quality would not be expected to occur as a result of the project. However, because a final SWQP has not been prepared, ongoing maintenance of the proposed stormwater basins

and the incorporation of proper source control measures cannot be ensured. In addition, pursuant to RVSP EIR mitigation measures, the potential future development of the off-site affordable housing parcel would require compliance with NPDES Phase II requirements, preparation of a site-specific BMP plan, maintenance of BMPs, and watertight joints in accordance with Placer County standards.

Should the project applicant fail to prepare and implement such documentation and comply with such measures, the proposed project could result in a ***significant*** impact related to a violation of water quality standards or waste discharge requirements or otherwise substantial degradation of surface or ground water quality during operations.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level by ensuring that storm drainage shall be collected and routed through source control measures to avoid or reduce water quality degradation before stormwater enters the landscape. In addition, the following mitigation measures would ensure compliance with mitigation measures included in the RVSP EIR related to water quality during operations of the off-site affordable housing parcel.

Proposed Project

12-2(a) *This project is located within the permit area covered by Placer County's Small Municipal Separate Storm Sewer System (MS4) Permit (State Water Resources Control Board National Pollutant Discharge Elimination System (NPDES)). Project-related storm water discharges are subject to all applicable requirements of said permit. The project shall implement permanent and operational source control measures and Low Impact Development (LID) standards designed to reduce runoff, treat storm water, and provide baseline hydromodification management. Water quality measures shall be designed for pollutant generating activities or sources consistent with recommendations from the West Placer Storm Water Quality Design Manual and shall be shown on the Improvement Plans.*

Storm drainage from on- and off-site impervious surfaces (including roads) shall be collected and routed through specially designed facilities, as approved by the Engineering and Surveying Division (ESD). No water quality facility construction shall be permitted within any identified wetlands area, floodplain, right-of-way, or Multi-Purpose easement, except as authorized by project approvals.

All permanent BMPs shall be maintained as required to ensure effectiveness. The applicant shall provide for the establishment of vegetation, where specified, by means of proper irrigation. The project owners/permittees shall provide maintenance of these facilities and annually report a certification of completed maintenance to the County DPW Stormwater Coordinator. (For Phase 1, Contractual evidence of a monthly parking lot sweeping and vacuuming, and catch basin cleaning program is required.) Prior to Improvement Plan approval or Final Subdivision Map recordation, easements shall be created and offered for

dedication to the County for maintenance and access to these facilities in anticipation of possible County maintenance.

Per the State of California NPDES Phase II MS4 Permit, this project creates and/or replaces 2,500 square feet or more of impervious surface. A final Storm Water Quality Plan (SWQP) shall be submitted, either within the final Drainage Report or as a separate document that identifies how this project will meet the Phase II MS4 permit obligations.

12-2(b) *The Improvement Plans shall include the message details, placement, and locations showing that all storm drain inlets and catch basins within the project area shall be permanently marked/embossed with prohibitive language such as "No Dumping! Flows to Creek." or other language /graphical icons to discourage illegal dumping as approved by the Engineering and Surveying Division (ESD). ESD-approved signs and prohibitive language and/or graphical icons, which prohibit illegal dumping, shall be posted at public access points along channels and creeks within the project area. The Homeowners'/Property Owners' association is responsible for maintaining the legibility of stamped messages and signs.*

Off-Site Affordable Housing Parcel

12-2(c) *Implement the following Mitigation Measure set forth in this EIR:*

- *<u>10-2(f)</u> Implement RVSP EIR Mitigation Measure 12-3c:*

  Development within the Plan Area must comply with the NPDES Phase II General Permit for the Discharge of Stormwater from small municipal separate storm sewer systems. Placer County is operating under the NPDES Phase II Rule permit, and as such, new development within the County must comply with the permit requirements. New development is subject to Attachment 4 Design Standards of the State Water Resource Control Board NPDES Phase II General Permit. These standards require that new development must be designed so as to minimize, to the maximum extent practicable, the introduction of pollutants of concern that may result in significant impacts, generated from site runoff of directly connected impervious areas, to the stormwater conveyance system as approved by the building official.

12-2(d) *Implement RVSP EIR Mitigation Measure 13-4b:*

Each applicant/developer for each construction phase within the Plan Area shall submit a project-specific BMP Plan with the project improvement plans showing the onsite locations and effectiveness of the BMP facilities proposed for long-term water quality impact reduction during the Subsequent Conformity Review process and prior to Improvement Plan approval. The plan shall include a method for financing the long-term maintenance of the proposed project-specific facilities.

All BMPs for water quality protection, source control, and treatment control shall be developed in accordance with the California Stormwater Quality Association Stormwater Best Management Practice Handbook for New Development/Redevelopment (or other similar source approved by the Engineering and Surveying Division) for the applicable type of development and/or improvement. BMPs shall be designed to mitigate (minimize, infiltrate, filter, or treat) stormwater runoff. Flow or volume based post-construction BMPs shall be designed at a minimum in accordance with the Placer County Guidance Document for Volume and Flow-Based Sizing of Permanent Post-Construction Best Management Practices for Stormwater Quality Protection. Provisions shall be included for long-term maintenance of BMPs. BMPs shall reflect improvements in techniques and opportunities made available over time and shall reflect site-specific limitations. The County shall make the final determinations as to the appropriateness of the BMPs proposed for each project.

Source control BMPs should be incorporated into the design of each future construction project within the Plan Area. These BMPs emphasize reducing or eliminating pollutant in stormwater runoff at their source through runoff reduction and by segregating pollutants from stormwater runoff. Examples of source control BMPs that should be evaluated during design and could be incorporated into the project-specific BMP Plan as feasible include the following:

- *Incorporate landscaping into the design, including planting of native and drought-tolerant plants to maximize natural water storage and infiltration opportunities and protect slopes and channels (Source Control SD-10);*
- *Direct roof runoff to grassy areas and away from paved areas or storm drains to promote overland flow of stormwater runoff and reduce velocities and peak flow rates (Source Control SD-11);*
- *Incorporate pervious pavement to promote infiltration and reduce runoff (Source Control SD-20);*
- *Provide enclosed commercial trash areas to avoid contact with stormwater runoff (Source Control SD-32);*
- *Design parking lots to direct storm water to storm drain inlets and away from garbage disposal areas (Source Control SD-32);*
- *Perform street and parking lot cleaning to remove potential debris and pollutants that could be picked up and conveyed by storm water;*
- *Where practical, install drip and low-flow irrigation systems to provide efficient irrigation and minimize runoff of excess irrigation water (Source Control SD-12); and*
- *Select building materials that do not introduce sources of pollutants (Source Control SD-21).*

In addition, storm drainage from onsite and offsite impervious surfaces (including roads) shall be collected and routed through specially designed

water quality treatment facilities (i.e., treatment control BMPs) for removal of pollutants of concern (i.e., sediment, oil/grease, etc.), as approved by the County's Engineering and Surveying Division. Treatment control BMPs should be integrated into and throughout the site to enhance the removal of pollutants that have entered the stormwater runoff. Examples of treatment control BMPs that should be evaluated during design include the following:

- *Provide vegetative swale or buffer areas, which could be incorporated into landscaped areas, to slow down runoff velocities and allow sediments and other pollutants to settle (Treatment Control TC-30, TC-31);*
- *Install water quality inlets (e.g., oil/water separators) to remove "first flush" pollutants, including oil and grease (Treatment Control TC-50); and*
- *Incorporate biofiltration facilities to capture stormwater runoff from impervious areas and remove pollutants (Source Control TC-32).*

With the Improvement Plans, the applicant/developer for the construction project shall verify that proposed BMPs are appropriate to treat the pollutants of concern from the project. The applicant/developer shall provide for the establishment of vegetation, where specified, by means of proper irrigation, for effective performance of BMPs. No water quality facility construction shall be permitted within any identified wetlands area, floodplain, or right-of-way except as authorized by the project approvals or subsequent amendments approved by the County.

12-2(e) *Implement RVSP EIR Mitigation Measure 13-4c:*

Storm drainage from impervious surfaces proposed with the project shall be collected and routed through specially designed catchbasins, vegetated swales, vaults, infiltration basins, water quality basins, filters, etc., for entrapment of sediment, debris, and oils/greases or other identified pollutants, as approved by the Placer County ESD. The Applicant shall provide for the establishment of vegetation, where specified, by means of proper irrigation, for effective performance of BMPs. Contractual evidence of a monthly parking lot sweeping and vacuuming, and catch basin cleaning program shall be provided to ESD upon request. Failure to do so will be grounds for discretionary permit revocation. Maintenance of BMP facilities shall be provided by the project owners/permittees for each future construction project within the Plan Area unless, and until, a County Service Area is created and said facilities are accepted by the County for maintenance. Prior to approval of improvement plans, final maps shall show easements to be created and offered for dedication to the County for maintenance and access to these facilities in anticipation of possible County maintenance. No water quality facility construction shall be permitted within any identified wetlands area, floodplain, or right-of-way,

except as authorized by project approval or subsequent amendments approved by the County.

12-2(f) Implement RVSP EIR Mitigation Measure 14-4a:

To reduce the potential for any of the proposed water or recycled water supply or wastewater transmission pipelines to leak and affect service and environmental conditions of surrounding areas, Placer County standards specify material type; wall thicknesses; connection methods, including coupling information; backfill material type and placement methods; and installation location relative to other utilities. Adhering to these standards will reduce the likelihood that the project pipelines would affect adjacent or sensitive areas. However, in areas where the groundwater table is close to the pipeline, additional measures may be needed to protect groundwater quality, including more robust pipe joint details, use of fusible C-900/905 pipe sections, pipe wrap, or cathodic protection.

12-3 Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin or conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to the proposed project, off-site sewer lift station improvements area, and the potential future development of the off-site affordable housing parcel substantially decreasing groundwater supplies or interfering substantially with groundwater recharge.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

The proposed project would result in an increase in on-site impervious surfaces, which would reduce the infiltration of groundwater as compared to existing conditions. Because the off-site sewer lift station improvements would be limited to the expansion of underground emergency sewer storage capacity, such improvements would not include additional impervious surfaces that would reduce the infiltration of groundwater. Groundwater relies on annual rainfall and percolation through pervious soils to recharge the system. As shown in the Web Soil Survey results included in the Drainage Reports, soils throughout most of the site have very slow infiltration rates with high runoff potential during storm events. Thus, the project site would not be considered an area of substantial contribution to groundwater recharge in the region. Furthermore, the proposed project would not include any development within the Dry Creek tributary on-site; thus, infiltration of water moving through the tributaries would continue to occur and contribute to groundwater recharge.

Given the limited recharge potential of the portion of the project site that would be developed with impervious surfaces, the proposed project would not interfere substantially with groundwater recharge. Furthermore, the groundwater subbasin within which the project site is located is not currently in a state of overdraft. As further discussed in Chapter

15, Public Services and Utilities, of this EIR, the water supply for the proposed project would not be derived from groundwater sources. Considering that the project site is not considered an important groundwater recharge area, stormwater from the project site would continue to replenish groundwater through percolation into soils within the Placer Creek tributary and on-site stormwater infiltration basins, and that the project would not involve increased demand on groundwater supplies within an area in a state of overdraft, the proposed project would not create a conflict with, or impede the implementation of, a sustainable groundwater plan.

Off-Site Affordable Housing Parcel

As discussed in the RVSP EIR, while development and urbanization of the RVSP area could reduce pervious area, which in turn would limit the percolation process and reduce groundwater recharge, Type D soils, which have slow infiltration rates with high runoff potential, are present in the off-site affordable housing parcel. As such, similar to the project site, the off-site affordable housing parcel would not be considered an important groundwater recharge area, and development of residential uses would not interfere substantially with groundwater recharge. Furthermore, the potential future development of the off-site affordable housing parcel similarly would not involve increased demand on groundwater supplies within an area in a state of overdraft.

Conclusion

Based on the above, the proposed project and the potential future development of the off-site affordable housing parcel would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin or conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan, and impacts related to groundwater would be ***less than significant***.

Mitigation Measure(s)

None required.

12-4 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; or create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff either during construction or in the post-construction condition. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to the proposed project, off-site sewer lift station improvements area, and the off-site affordable housing parcel substantially altering the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of

impervious surfaces, in a manner which would: substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; or create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff either during construction or in the post-construction condition.

Proposed Project

The only impervious surfaces that currently exist within the project site are those related to Walerga Road. Implementation of the proposed project would result in a substantial increase in the amount of impervious surfaces related to roofs, driveways, and roadways. As such, the project has the potential to substantially alter the existing drainage pattern of the site and increase runoff water.

The potential for the proposed project to result in substantial additional sources of polluted runoff, including erosion, is addressed under Impacts 12-1 and 12-2 above. Further discussion regarding erosion is provided in Chapter 10, Geology and Soils, of this EIR.

Peak Flows and Volumes

Increases to peak runoff flows or volumes resulting from alterations to the existing drainage pattern of the site have the potential to result in the exceedance of existing or planned stormwater drainage systems or flooding on- or off-site.

The design of the proposed project divides the site into seven DMAs where development would occur (see Figure 12-6 above). Within the DMAs that encompass areas of the site proposed for development, stormwater runoff would be directed to 15- to 30-inch storm drains located within the internal roadway system. The storm drains within each DMA would then convey runoff to the DMA's associated stormwater basin. Storm drain inlets and manholes would also be developed within the on-site stormwater drainage system to capture on-site runoff. If the proposed project does not participate in a regional retention program for the portion of Phase 1 flows that are directed to the Curry Creek watershed, underground volumetric retention would be required for the runoff within DMA A in order to mitigate impacts from the eight-day, 100-year storm event based on the potential downstream impacts on the Curry Creek Cross Canal watershed. The conceptual design of the underground retention system is shown below in Figure 12-7.

The project proposes a shed shift of approximately 25.7 acres (for portions of Phases 1 and 2) from the Curry Creek watershed to the Dry Creek watershed due to design constraints and adjacent project drainage analysis assumptions, as described in the preliminary Drainage Reports prepared by King Engineering. The shed shift would increase flows in the Dry Creek watershed by approximately 30.7 cfs for the 10-year storm event and approximately 64.5 cfs for the 100-year storm event. The re-directed flows would be routed to Basin B in the southern portion of the Phase 1 and Basin C at the southwest corner of Phase 2 for treatment and infiltration prior to discharging into "Placer Creek".

Other drainage options were considered to maintain the existing shed boundaries, but ultimately determined to be impractical. The proposed project is required to direct sewage to the south where the existing Placer County sewer facilities are located.

Figure 12-7
Phase 1 Underground Volumetric Retention Option

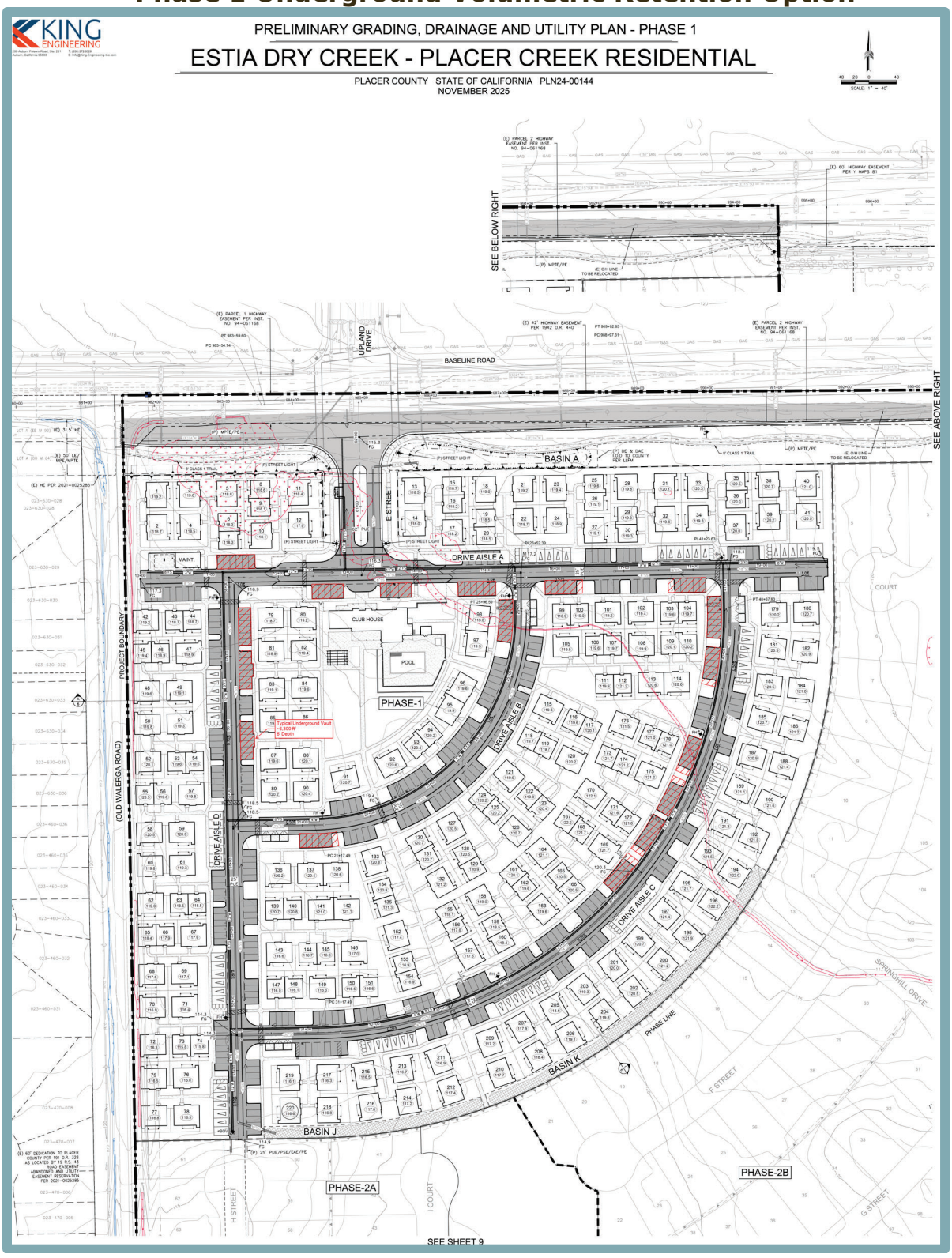


*Figure not OCR compatible.

Maintaining stormwater drainage to the north to the existing Curry Creek watershed would raise some areas of the project site by as much as 10 feet. Raising the project site would require a significant import of material, approximately 240,000 cubic yards. Transporting such large import quantities could result in significant air quality impacts, and would also result in steep road grades and potential noncompliance with Americans with Disabilities Act (ADA) regulations.

Another drainage option evaluated was a permanent storm drain pump facility. The pump facility would pump drainage from the existing shed boundary north toward the Baseline Road storm drain system. Long-term maintenance requirements and electricity demands are higher with pump systems. Performance and reliability of such types of pump facilities over time can also be problematic, requiring special equipment and ongoing maintenance to function properly. Section 5-11(J) of the Placer County Land Development Manual states “The use of drainage pumps shall be avoided if at all possible, and is allowed only with approval of the Engineer.” The Placer County Flood Control and Water Conservation District Stormwater Management Manual (SWMM) also states in Section VI-4, Drainage Systems, “Underground drainage systems shall be designed for ease of maintenance and repair.” Therefore, the use of a permanent storm drain pump facility was determined to be impractical for the proposed project.

The County requires "compelling justification" to allow a shed shift, with supporting documentation and confirmation that the project does not negatively impact upstream or downstream drainage facilities. This project has coordinated with the County and Flood Control District for approval of this unique exception to SWMM policies (Section II(C)(3); Section IV(B)(3); Section VI(B)(1)(a)).

To assess the changes in runoff volumes from the project site that could occur due to the proposed project, King Engineering calculated the pre- and post-construction peak flows and volumes for on-site drainage sheds under cumulative buildout conditions within the greater watershed boundaries. Pre-construction and post-construction peak flows are presented in Table 12-2. The locations of the post-development discharge locations and sheds are shown below in Figure 12-8 through Figure 12-13. The proposed Dry Creek Walerga Road Tributary Watershed, including the proposed shed shift, is shown in Figure 12-14.

Point A is the existing Baseline Road flared-end storm drain. Phases 1 and 2 of the proposed project would split the existing 35.6-acre shed that currently directs flow north to Curry Creek and would direct the majority of the flow south to Point B. Upon development, only 10 acres of the Phase 1 area would direct flows north to Curry Creek and the remainder of the project site would direct flows south to the Dry Creek watershed. As such, peak flows at the existing Point A would be reduced with implementation of the proposed project. Point B would be the new 48-inch flared-end storm drain pipe that would connect to an existing pipe in Walerga Road that currently outfalls into the on-site “Placer Creek” tributary. Point C, associated with Phases 3 and 4 of the proposed project, represents a portion of the Placer Creek tributary, west of Walerga Road.

Table 12-2
Peak Flow Characteristics: Pre- and Post-Construction Peak Flows

Pre-Development					Post-Development					
Discharge Location[1]	**Sheds[1]**	**Area (acres)**	**10-Year Peak Flow (cfs)[2]**	**100-Year Peak Flow (cfs)[2]**	**Discharge Location[3]**	**Sheds[3]**	**Area (acres)**	**10-Year Peak Flow (cfs)[2]**	**100-Year Peak Flow (cfs)[2]**	**Notes**
Point A	1-4	35.6	18.5	38.0	Point A	12-13, 24-30	9.9	13.4	25.5	Runoff towards infiltration basin and existing storm drain per Segment 1, Upland Drive
Point A Pre-Development Total		**35.6**	**18.5**	**38.0**	**Point A Post-Development Total**		**9.9[4]**	**13.4**	**25.5**	**Discharge towards existing storm drain at Baseline Road; Curry Creek**
Point B	5-7	20.3	22.5	43.3	Phase 1 Discharge	1-11, 14-23, 31-32	10.0	13.4	25.3	Infiltration Basin B at Phase 1; Runoff towards Point B
					Phase 2 Discharge	1-32	28.6	36.3	68.4	Phase 2 Runoff
					Backbone to Point B	105-120	7.3	7.8	15.1	Walerga Road Runoff
Point B Pre-Development Total		**20.3**	**22.5**	**43.3**	**Point B Post-Development Total**		**45.9[4]**	**57.5**	**108.7**	**Overall runoff from Phases 1, 2, and Backbone Infrastructure (Walerga Road)**
Point C	8-14	49.7	39.3	75.8	To Phase 3 Discharge 1	64-67	5.4	4.1	7.8	Infiltration Basin D at Phase 3
					To Phase 3 Discharge 2	68-81	15.0	13.1	25.5	Infiltration Basin E at Phase 3
					To Phase 4 Discharge 1	82-88	7.3	5.8	11.0	Infiltration Basin 4 at Phase 4
					To Phase 4 Discharge 2	89-96	22.2	22.9	45.1	Infiltration Basin G at Phase 4
Point C Pre-Development Total		**49.7**	**39.3**	**75.8**	**Point C Post-Development Total**		**49.8**	**45.9**	**89.4**	**Overall runoff from Phases 3 and 4**
Point D Pre-Development Total		**70.0**	**61.8**	**119.2**	**Point D Post-Development Total**		**95.7**	**103.4**	**198.2**	**Point D = Point B + Point C at Walerga Road Tributary**
Overall Pre-Development Total		**105.6**	**80.4**	**157.2**	**Overall Post-Development Total**		**105.6**	**116.8**	**223.6**	**Total Overall Project**

[1] See Figure 12-4 for pre-development discharge point and shed locations
[2] cfs = cubic feet per second
[3] See Figure 12-8 through Figure 12-13 for post-development discharge point and shed locations
[4] 25.7 acres are proposed to be shifted from the Curry Creek watershed to the Dry Creek watershed from Point A to Point B. The associated 100-year flows from this shed shift are 25.3 cfs from Phase 1 and 39.2 cfs from Phase 2. The associated 10-year flows from this shed shift are 13.4 cfs from Phase 1 and 17.3 cfs from Phase 2.

Source: King Engineering, 2026.

Figure 12-8
Phase 1 Post-Development Drainage Shed Map

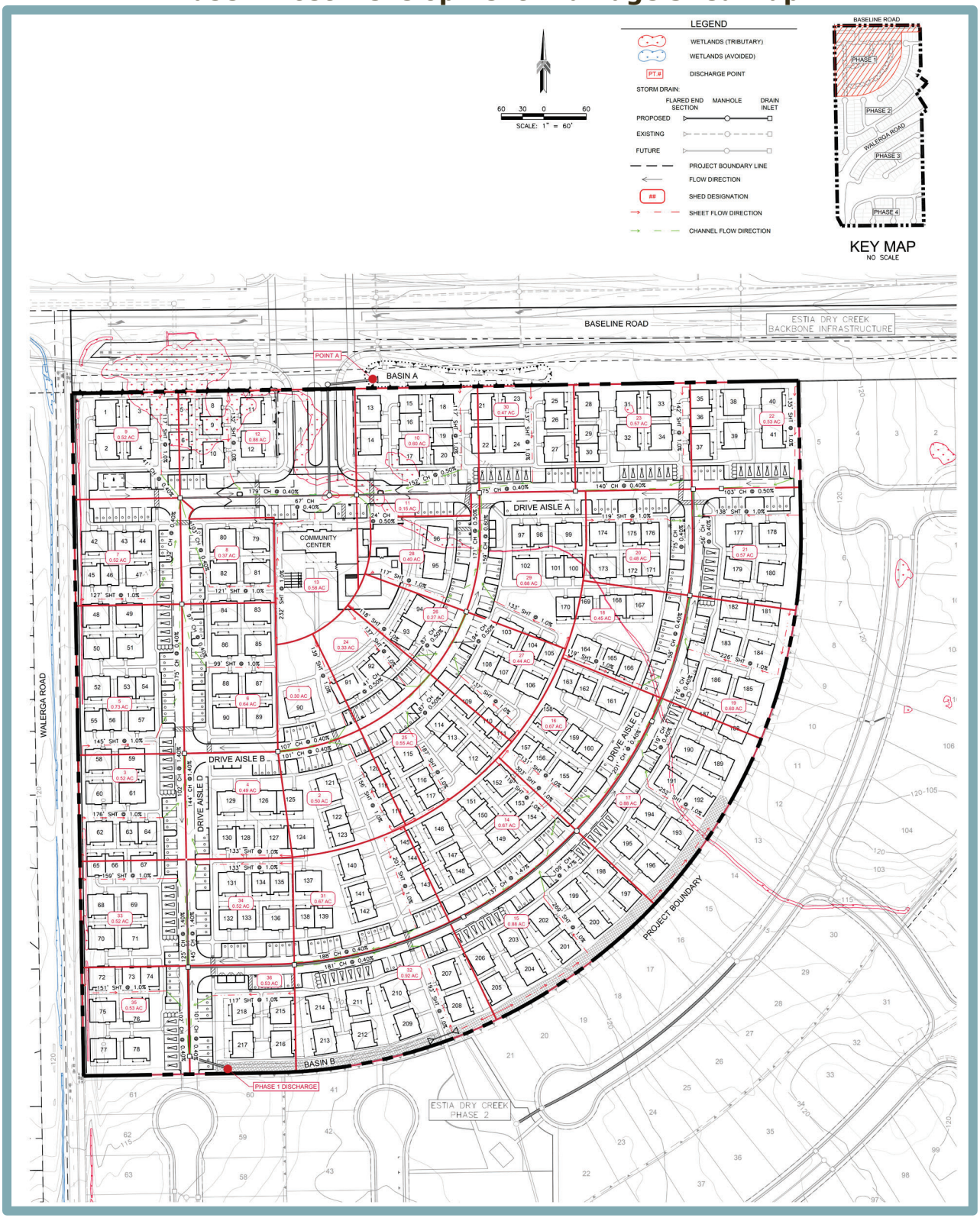


*Figure not OCR compatible.

Figure 12-9
Phase 2 Post-Development Drainage Shed Map

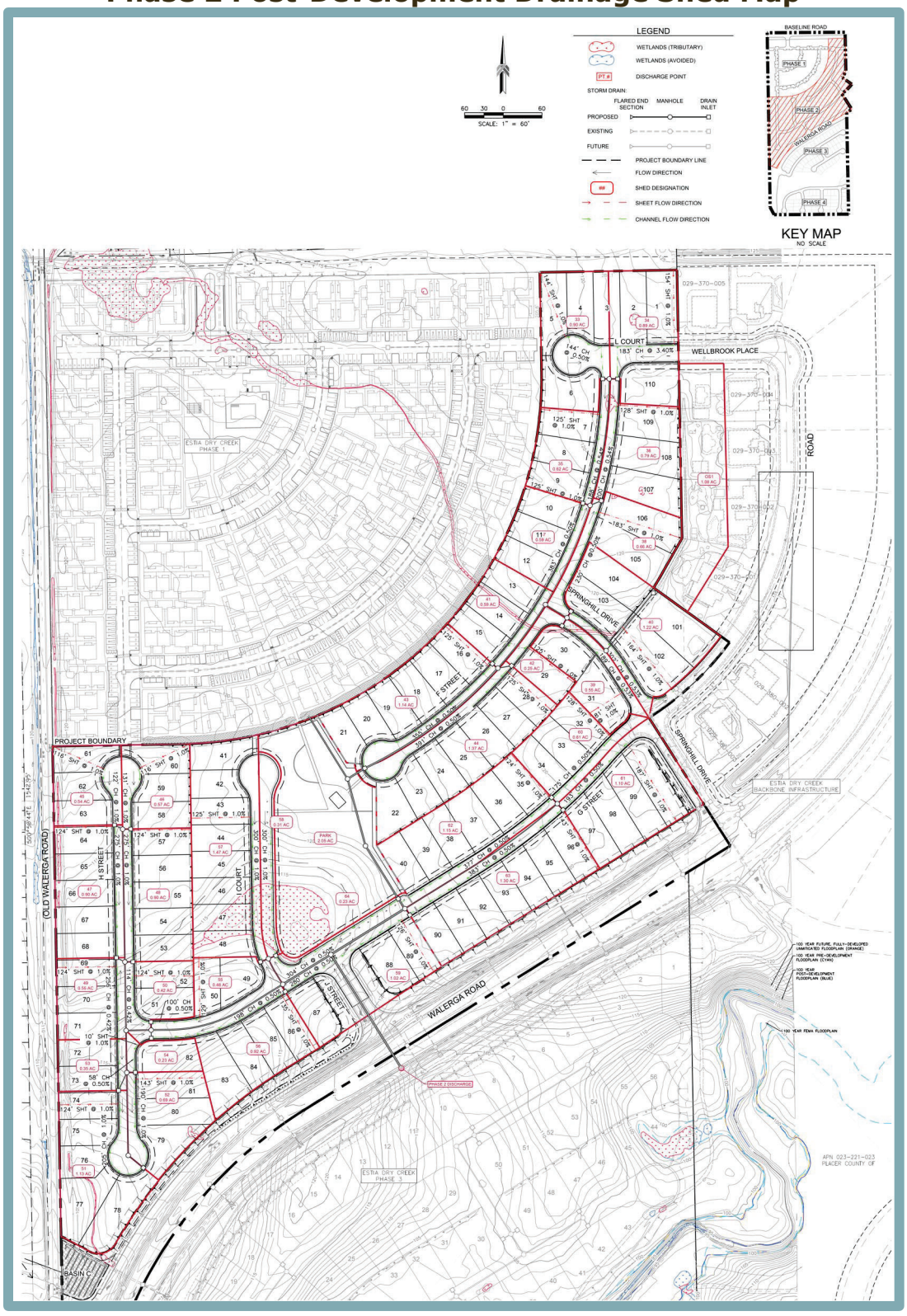


*Figure not OCR compatible.

Figure 12-10
Phase 3 Post-Development Drainage Shed Map

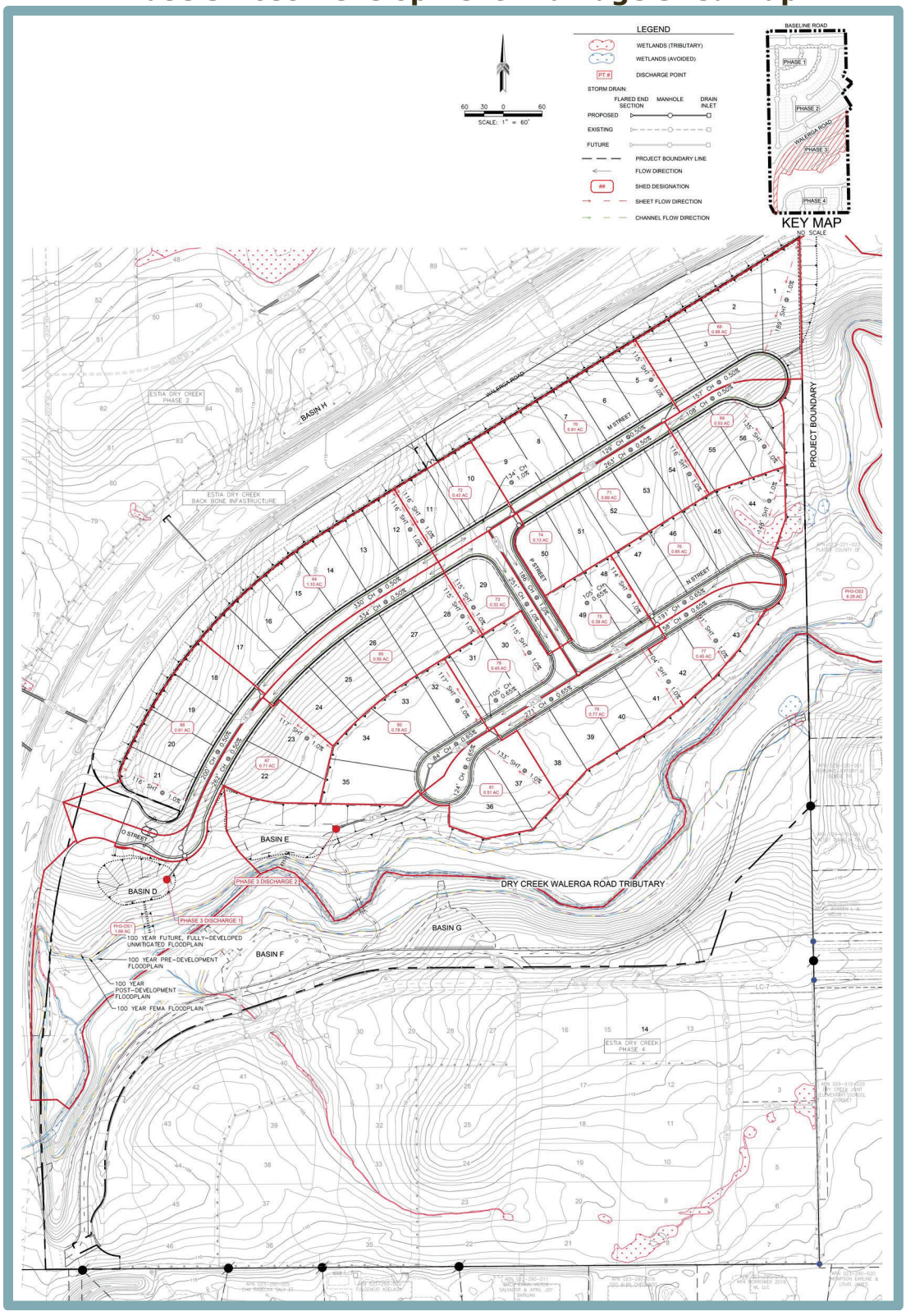


*Figure not OCR compatible.

Figure 12-11
Phase 4 Post-Development Drainage Shed Map

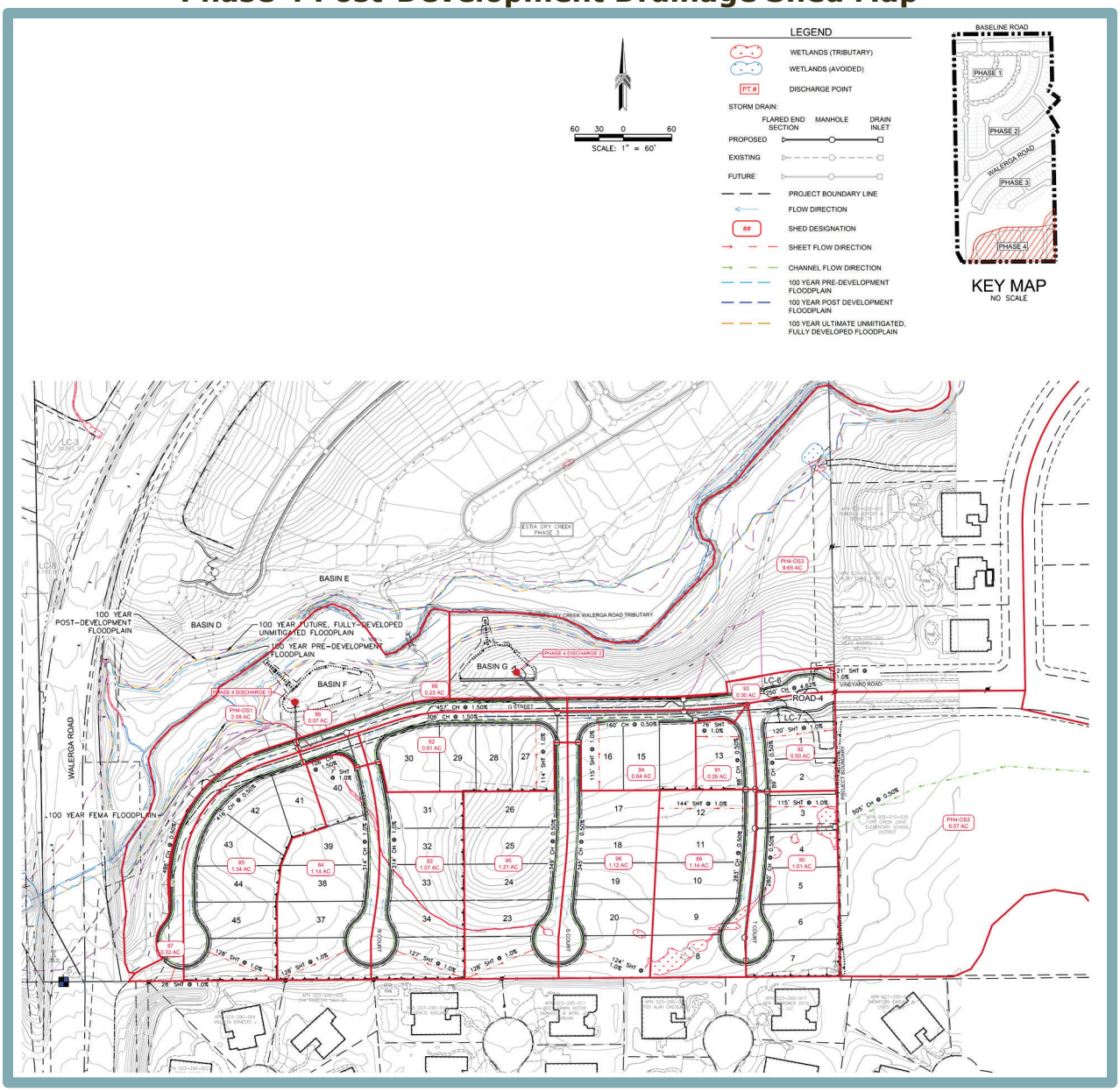


*Figure not OCR compatible.

Figure 12-12
Baseline Road Backbone Infrastructure Post-Development Drainage Shed Map

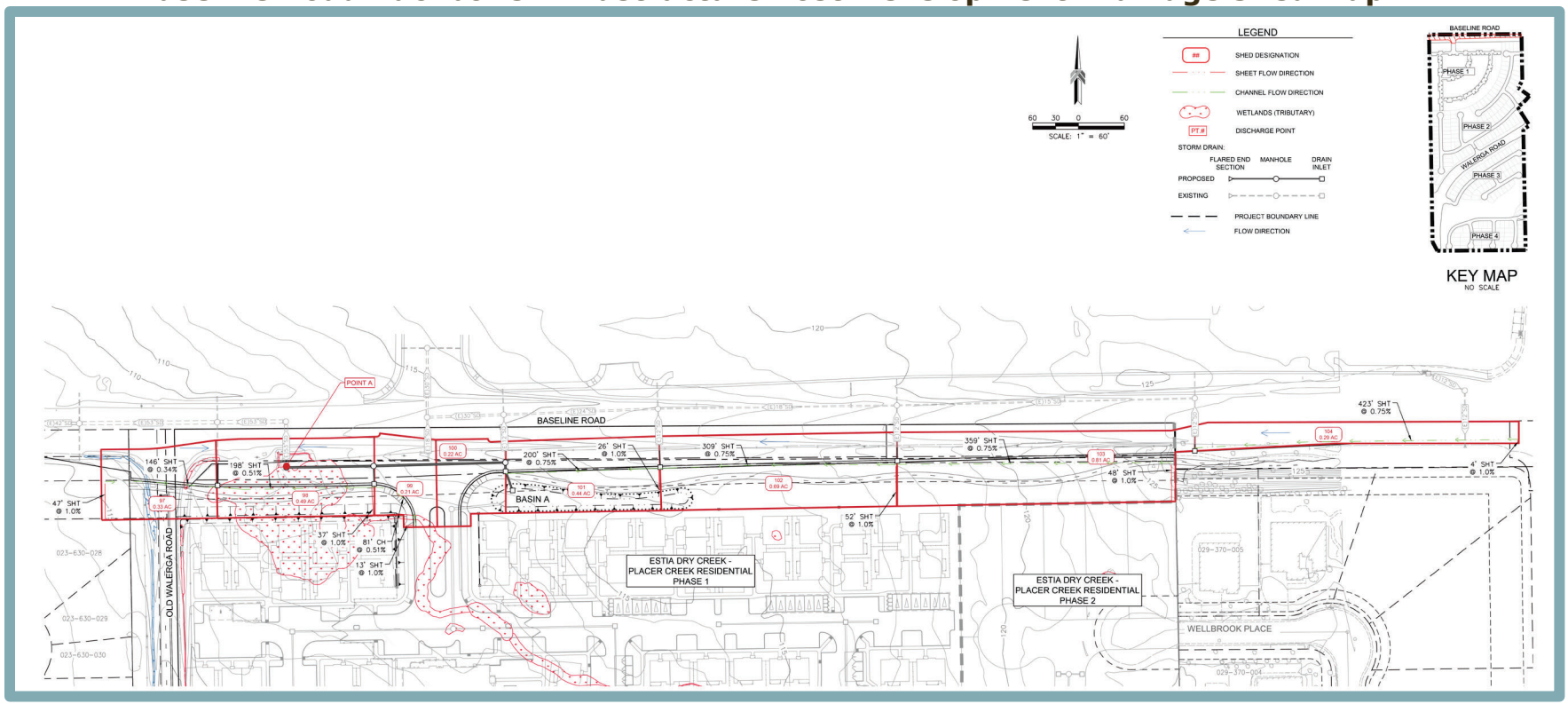


*Figure not OCR compatible.

Figure 12-13
Walerga Road Backbone Infrastructure Post-Development Drainage Shed Map

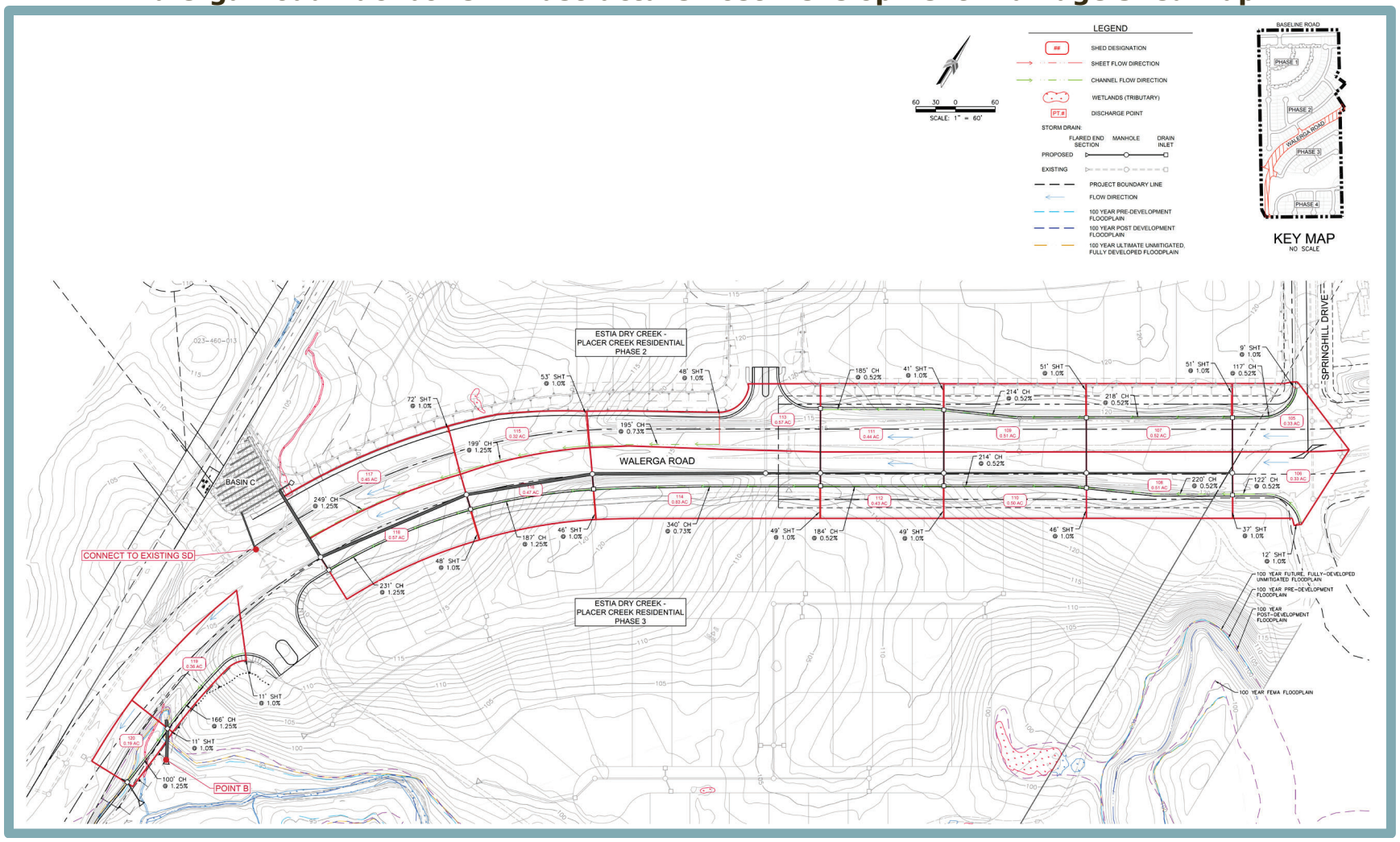


*Figure not OCR compatible.

Figure 12-14
Proposed Dry Creek Walerga Road Tributary Watershed

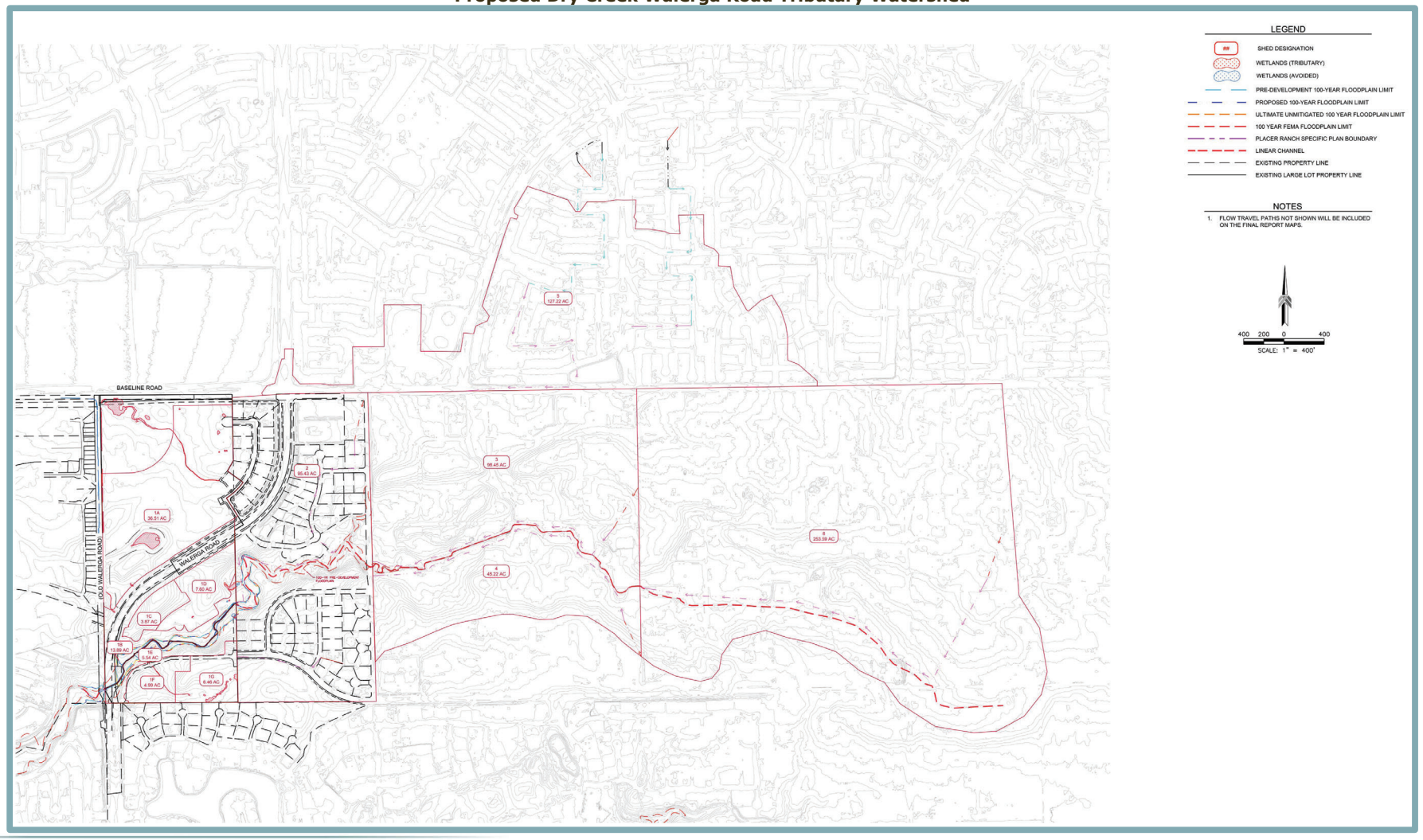


*Figure not OCR compatible.

As shown above in Table 12-2, implementation of the proposed project would result in an increase in peak flows at the Walerga Road discharge point. However, projects within the Dry Creek watershed are not required to detain peak flow runoff to pre-development levels. The Dry Creek Watershed Flood Control Plan notes that the use of local detention basins to limit peak runoff has the potential to result in higher overall peak flows within Dry Creek, which could result in off-site flooding.[15]

Specifically, detaining flows in the lower portion of the Dry Creek watershed, within which the project site is located, could delay the time when the peak flow in lower portions of the Dry Creek watershed occurs such that the peak flow would coincide with the arrival of peak flows from the upper portion of the watershed. Thus, the proposed project would not include detention of on-site stormwater runoff, unless otherwise determined to be necessary by the Flood Control District during the final design and the analysis provided with the Final Drainage Report.

Nonetheless, the proposed project would be required to comply with Placer County's Dry Creek Watershed Drainage Improvement Ordinance, which requires new development that increases impervious surface areas within the Dry Creek watershed to pay fees to fund regional flood control and future drainage improvement projects within the watershed. District flood control projects include the Miners Ravine Off-Chanel Detention Basin and Antelope Creek Flood Control Project. These regional flood control projects were constructed to mitigate increased runoff associated with development within the Dry Creek watershed.

The fees include a one-time fee that is paid prior to start of construction and an annual fee that is included in the parcel's property tax. There are no currently applicable Placer County fees for the Curry Creek Watershed.

Downstream Conveyance Capacity

King Engineering analyzed the potential for the proposed project to result in impacts related to increases in water surface elevation (WSE) within the Dry Creek Walerga Road Tributary Watershed. As shown above in Figure 12-3, the existing Dry Creek Walerga Road Tributary Watershed spans a total of approximately 689.18 acres, and includes the entirety of the project site, as well as additional land in the project vicinity.

According to King Engineering and as discussed below, any minor shed shift from Curry Creek to Dry Creek would not impact Dry Creek and any downstream properties. The shed shift would include approximately 25.7 acres towards Walerga Tributary/Dry Creek, with 10.0 acres toward Curry Creek at the master planned location in Baseline Road. Table 12-3 presents the WSEs, measured in feet, for the Dry Creek Walerga Road Tributary (i.e., Placer Creek) stations, which represent a stream cross section.

As shown in Table 12-3, King Engineering determined based on preliminary modeling that, during a 100-year storm event, the WSEs within the Dry Creek Walerga Road Tributary (Placer Creek) would be raised at most up to 0.09 feet within the project area. Pursuant to Mitigation Measure 12-4(e), final modeling completed with the final drainage report will

[15] Placer County Flood Control and Water Conservation District. *Update to the Dry Creek Watershed Flood Control Plan* [pg. 66]. November 2011.

be required to demonstrate that no increases in upstream or downstream water surface elevations would occur as a result of the proposed project.

The peak flood wave in the Dry Creek Walerga Road Tributary (Placer Creek) would occur at approximately 13 hours into the 100-year, 24-hour storm, well ahead of the Dry Creek regional flood wave at approximately 17 hours. Thus, downstream properties would not experience impacts to the base flood elevation as a result of the proposed project. In the post-development condition, the Phase 2, Phase 3, and Phase 4 areas would discharge to the Dry Creek watershed; therefore, detention and retention are not required. Detention and retention are only required for projects draining to the Curry Creek watershed.

Table 12-3
Flows and WSE from HEC-RAS

Tributary Station	100-Year Pre-Construction WSE (feet)	100-Year Post-Construction WSE (feet)	Delta (feet)
Dry Creek Walerga Road Tributary – Off-Site			
6640	100.51	100.57	0.06
6545	100.54	100.62	0.08
6400	100.23	100.31	0.08
6276	100.04	100.1	0.06
6275	100.05	100.09	0.04
6201	99.93	99.99	0.06
6200	99.73	99.8	0.07
6100	99.5	99.57	0.07
6000	99.46	99.53	0.07
5922.73	99.21	99.27	0.06
5900	99.03	99.09	0.06
5825	98.84	98.9	0.06
3851	95.02	95.02	0.0
3850	95.02	95.02	0.0
3769.99	95.01	95.01	0.0
3710	95	95	0.0
Dry Creek Walerga Road Tributary – On-Site			
5700	98.43	98.5	0.07
5600	98.18	98.24	0.06
5500	97.54	97.63	0.09
5400	97.17	97.23	0.06
5300	97	97.07	0.07
5200	96.88	86.95	0.07
5100	96.57	96.63	0.06
5062.01	96.43	96.49	0.06
5000	96.2	96.25	0.05
4900	96.11	96.15	0.04
4846	96	96.04	0.04
4835	95.97	96.01	0.04
4831.21	PEDESTRIAN BRIDGE	PEDESTRIAN BRIDGE	N/A
4825	95.94	95.98	0.04
4800	95.93	95.96	0.03
4700	95.82	95.84	0.02

(Continued on next page)

Table 12-3
Flows and WSE from HEC-RAS

Tributary Station	100-Year Pre-Construction WSE (feet)	100-Year Post-Construction WSE (feet)	Delta (feet)
4600	95.64	95.64	0.0
4500	95.5	95.49	-0.01
4400	95.51	95.51	0.0
4350	95.48	95.47	-0.01
4300	95.47	95.46	-0.01
4250	95.47	95.45	-0.02
4101	95.43	95.42	-0.01
4100	95.36	95.33	-0.03
3975.67	CULVERT	CULVERT	N/A

Source: King Engineering, 2026.

Overall, King Engineering has confirmed that while the proposed project would alter the existing hydrology of the project area and include a shed shift from the Curry Creek watershed to the Dry Creek watershed, the post-construction 100-year increases would be contained in the natural channels of the tributary, and several vertical feet of freeboard (the vertical distance between the flood level and the top of the embankment) would be maintained for existing structures, as well as provided for the proposed building pads. Furthermore, King Engineering has confirmed that the anticipated increase in flows on-site would be contained within a relatively deep channel, and would not impact on- or off-site development. In addition, Figure 12-15 shows water surface cross sections for tributary stations 4100, 3975.67, and 3851. As shown therein, adequate capacity for post-development project flows exist through the culvert under Walerga Road, and upsizing would not be required.

As discussed above, if the proposed project does not participate in the regional retention basin, underground volumetric retention would be required for the runoff within DMA A in order to mitigate impacts from the eight-day, 100-year storm event based on the potential downstream impacts on the Curry Creek Cross Canal watershed.

The estimated retention required is 69,220 cubic feet. The underground retention option would provide approximately 100,800 cubic feet of possible retention with capacity on-site for additional retention. The final retention volumes would be provided and analyzed with the improvement plans.

Based on the above, the proposed project is not anticipated to substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site or create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems.

Figure 12-15
Walerga Tributary Profile and Walerga Road Culvert Cross Section

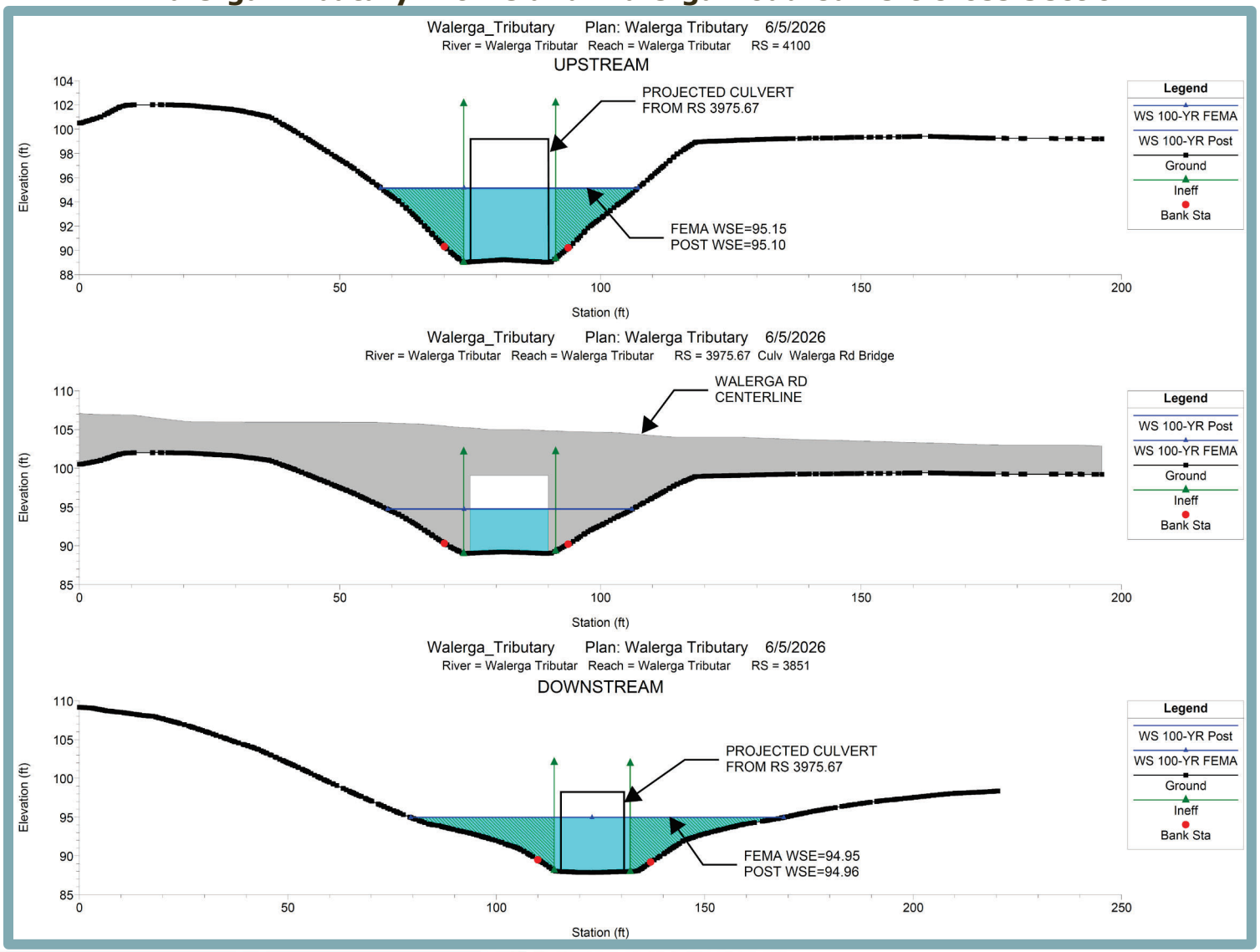


*Figure not OCR compatible.

Off-Site Sewer Lift Station Improvements Area

As discussed in Chapter 15, Public Services and Utilities, the proposed project would require an emergency storage upgrade to the existing Dry Creek/West Placer CFD #1 lift station, located east of Walerga Road and south of Dry Creek within Dry Creek Community Park, approximately 0.53-mile to the south. As part of the emergency storage upgrade, additional grading would be required in the floodplain, which would result in compensatory cut in the floodplain. As shown in Table 12-4, the HEC-RAS analysis determined that such improvements would result in a No Rise condition at the lift station. Thus, the off-site sewer lift station improvements and associated cut in the floodplain would not substantially alter the existing drainage pattern of the site or area.

Table 12-4
CFD #1 WSE from HEC-RAS

Cross Section	Existing 100-Year WSE (feet)	Proposed 100-Year WSE (feet)	Delta (feet)
Dry Creek Walerga Road Tributary			
14565 P	97.11	96.98	-0.13
13755 O	95.9	95.72	-0.18
13200	95.06	95.06	0.00
13115 N	95.04	95.04	0.00
13000	94.96	94.96	0.00
12495 M	94.44	94.44	0.00
11670	93.9	93.9	0.00

Source: King Engineering, 2026.

Off-Site Affordable Housing Parcel

As discussed throughout this EIR, the construction of the proposed affordable units does not include any site-specific development plans, designs, or proposals at this time. However, similar to the proposed project, the potential residential development and the associated impervious surfaces could result in increased rate and volume of stormwater runoff downstream.

The RVSP EIR analyzed the potential for buildout of the RVSP with 30 percent impervious surfaces to increase the runoff rate and volume downstream of the plan area. With development of the site and its associated increase in impervious surfaces, peak flows and runoff volumes from the plan area would increase. However, the additional runoff from the plan area would be relatively small compared to the flows in Dry Creek. A slight increase of approximately less than one percent would occur in mitigated post-RVSP flows compared with pre-RVSP flows, which would not result in any significant increase in the 100-year water surface elevations in Dry Creek. Similar to the proposed project, the RVSP plan area is located within the lower portion of the Dry Creek watershed, where detention is not recommended. Detaining flows in the lower portion of the watershed could delay the time when the peak flow occurs such that the peak flow would coincide with the arrival of peak flows from the upper portion of the watershed.

As discussed on page 13-7 of the RVSP EIR, a portion of the off-site affordable housing parcel currently drains south toward PFE Road through culverts under the road, and ultimately discharges to Dry Creek downstream of Watt Avenue. In order to meet the County's street encroachment requirements at PFE Road and because of downstream

flow constrictions, development of the parcel would include on-site detention to reduce post-project flow rates to less than pre-project flow rates. On-site detention would be developed during design of the development and included in project-specific drainage studies that would be prepared in accordance with the County's SWMM and submitted to ESD for review and approval. On-site detention would be provided using a combination of above ground detention, parking area storage, and below ground vault and pipe storage.

Similar to the proposed project, the off-site affordable parcel would be required to comply with the Placer County's Dry Creek Watershed Drainage Improvement ordinance, including payment of a one-time fee prior to start of construction and an annual fee included in the parcel's property tax. Both fees are based on the amount of impervious area created by the proposed development.

Should development of the off-site affordable housing parcel occur, RVSP Mitigation Measures 13-2a, 13-2b, 13-2c, and 13-2d would be required in order to ensure runoff rate and volume do not exceed existing limits, and payment of required fees. Mitigation Measure 13-2a would require a project-specific drainage report; Mitigation Measure 13-2b would require evaluation of downstream off-site drainage facilities; Mitigation Measure 13-2c would require payment of a one-time Dry Creek watershed drainage improvement fee; and Mitigation Measure 13-2d would require payment of an annual Dry Creek watershed drainage improvement fee. The aforementioned RVSP EIR mitigation measures have been applied in this EIR as Mitigation Measures 12-4(g) through 12-4(j).

Conclusion

Based on the above, the off-site sewer lift station improvements would not substantially alter the existing drainage pattern of the site or area. Although the proposed project would result in an increase in on- and off-site peak runoff flows as well as an increase in WSEs within the Dry Creek Walerga Road Tributary (Placer Creek) relative to existing conditions during a 100-year storm event, the post-construction 100-year increases would be contained in the natural channel on-site, and off-site floodplain limits within Dry Creek would not be increased. Several vertical feet of freeboard would be maintained for existing structures on-site, and provided for the proposed building pads. The potential future development of the off-site affordable housing parcel and its associated increase in impervious surfaces, peak flows and runoff volumes would be relatively small compared to the flows in Dry Creek, and detention is not recommended. In addition, the project applicant would be required to pay fees in accordance with the Dry Creek Watershed Drainage Improvement Ordinance. Payment of such fees would help to fund regional flood control and future drainage facility improvement projects within the Dry Creek watershed. Nevertheless, a final drainage report would be required with the project Improvement Plans to substantiate the preliminary drainage design. Without approval of a final drainage report for the proposed project and the off-site affordable housing parcel, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level by ensuring that increased on- and off-site peak runoff flows resulting from the project will not result in flooding on- or off-site, will not create or contribute runoff water that would exceed the capacity of existing or planned stormwater

drainage systems, and will not provide substantial additional sources of polluted runoff either during construction or in the post-construction condition.

Proposed Project

12-4(a) *As part of the Improvement Plan submittal process, the preliminary Drainage Report provided during environmental review shall be submitted in final format in conformance with the requirements of the Land Development Manual and the Placer County Stormwater Management Manual that are in effect at the time of submittal. The final Drainage Report may require more detail than that provided in the preliminary report and will be reviewed in concert with the Improvement Plans to confirm conformity between the two.*

12-4(b) *This project is subject to the one-time payment of drainage improvement and flood control fees pursuant to the "Dry Creek Watershed Interim Drainage Improvement Ordinance" (Ref. Article 15.32, Placer County Code). Fees shall be made payable to the Engineering and Surveying Division (ESD) prior to Building Permit issuance. The fees to be paid shall be based on the fee program in effect at the time that the Building Permit is issued.*

12-4(c) *This project is subject to payment of annual drainage improvement and flood control fees pursuant to the "Dry Creek Watershed Interim Drainage Improvement Ordinance" (Ref. Chapter 15, Article 15.32, Placer County Code). Prior to Building Permit issuance, the applicant shall cause the subject property to become a participant in the existing Dry Creek Watershed County Service Area for purposes of collecting such annual assessments.*

12-4(d) *On the Improvement Plans and Informational Sheet(s) filed with the appropriate Final Subdivision Map(s), show:*

- *A) The limits of the future, unmitigated, fully developed, 100-year floodplain (after grading) for the Dry Creek Walerga Road Tributary Reach and designate same as a building setback line unless greater setbacks are required by other conditions contained herein. The Improvement Plans shall also show the limits of the future, unmitigated, fully developed, 100-year floodplain for the existing project site conditions.*
- *B) That finished house pad elevations for Tentative Map all Lot's for all lots along the floodplain shall be a minimum of two feet above the 100-year floodplain line (or finished floor -three feet above the 100-year floodplain line). The final pad elevation shall be certified by a California registered civil engineer or licensed land surveyor and submitted to the Engineering and Surveying Division. This certification shall be done prior to construction of the foundation or at the completion of final grading, whichever comes first. No building construction is allowed until the certification has been received by the Engineering and Surveying Division.*

12-4(e) *The final Drainage Report shall demonstrate that the proposed project will not increase the limits or water surface elevation of the off-site 100 year floodplain upstream and downstream of the project site, on both sides, to the satisfaction of the Engineering and Surveying Department and Placer County Flood Control District.*

Off-Site Affordable Housing Parcel

12-4(f) *Implement RVSP EIR Mitigation Measure 13-2a:*

Each applicant/developer for future construction projects within the Plan Area shall prepare and submit with their project Improvement Plans a project-specific drainage report in conformance with the requirements of Section 5 of the Land Development Manual and the Placer County Stormwater Management Manual (SWMM) that are in effect at the time of submittal, to the Placer County ESD for review and approval. The project-specific drainage reports shall be consistent with the Drainage Master Plan and Development Standards for Plan Area. The report shall be prepared by a Registered Civil Engineer and shall, at a minimum, include:

- *Written text describing existing conditions and proposed improvements,*
- *The effects of the improvements,*
- *All appropriate calculations,*
- *A watershed map,*
- *Increases in downstream flows, and*
- *Proposed onsite and offsite improvements and drainage easements to accommodate flows from the project.*

The report shall identify water quality protection features and methods to be used both during construction and for long-term post-construction water quality protection. "Best Management Practice" (BMP) measures shall be provided to reduce erosion, water quality degradation, and prevent the discharge of pollutants to stormwater to the maximum extent practicable.

No construction shall be permitted within any identified wetlands area, floodplain, or right-of-way, except as authorized by project approvals. The project-specific drainage report shall demonstrate compliance with all relevant mitigation measures included in this Draft EIR.

12-4(g) *Implement RVSP EIR Mitigation Measure 13-2b:*

The project-specific drainage reports prepared for each future construction project within the Plan Area shall evaluate offsite drainage facilities for conditions and capacity and shall be upgraded, replaced, or mitigated as specified by the Placer County ESD. Each future construction project shall upgrade or replace drainage facilities, or mitigate drainage impacts in other ways as needed and as specified by Placer County ESD. This includes any existing drainage facilities located immediately downstream of the project

that would receive drainage and would be changed by the proposed project. The analysis must include any existing roadside ditches and/or culverts along Walerga Road, PFE Road, and Watt Avenue. While the Plan Area is within the Dry Creek watershed and as such onsite detention is not required to reduce peak flow rates due to development, onsite detention may be required in order to comply with the County's requirements regarding road encroachments. In accordance with the SWMM, all travel lanes of Watt Avenue, PFE Road, and Walerga Road may be required to remain clear of stormwater flow for all storm events, including the 100-year event. In addition, the Applicant will be required to mitigate peak flow rates to pre-development levels for 10- and 100-year storm events (per the Placer County Stormwater Management Manual) for only the portion of the Riolo Vineyards Plan Area that drains south towards PFE Road.

12-4(h) *Implement RVSP EIR Mitigation Measure 13-2c:*

New development in the Plan Area shall be subject to the one-time payment of drainage improvement and flood control fees pursuant to the Dry Creek Watershed Interim Drainage Improvements Ordinance (Ref. Article 15.32, formerly Chapter 4, Subchapter 20, Placer County Code). This fee is used to fund installation and maintenance of roadway drainage and stormwater drainage improvements within the watershed. The actual fees to be paid will be those in effect at the time the payment occurs and are assessed on the amount of development area. Each developer will be responsible for submitting the appropriate fee for the specific land development project to the Placer County ESD. The one-time fee shall be paid prior to issuance of the building permit or approval of improvement plans.

12-4(i) *Implement RVSP EIR Mitigation Measure 13-2d:*

New development in the Plan Area shall be subject to payment of annual drainage improvement and flood control fees pursuant to the Dry Creek Watershed Interim Drainage Improvements Ordinance (Ref. Article 15.32, formerly Chapter 4, Subchapter 20, Placer County Code). These fees are used to fund installation and maintenance of roadway drainage and stormwater drainage improvements within the watershed. The Applicant will be required to form a County Service Area zone, if one currently does not cover the Plan Area, for collecting the annual special assessment. The actual fees to be paid will be those in effect at the time the payment occurs and are assessed on the basis of the new development acreage. The annual fee is a yearly charge and will be included on a parcel's property tax bill.

12-5 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows or expose people or structures to risk of loss, injury or death involving flooding through the placement of housing in a flood hazard area, or risk release of pollutants due to project inundation. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to the proposed project, off-site sewer lift station improvements area, and the off-site affordable housing parcel substantially altering the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows or expose people or structures to risk of loss, injury or death involving flooding through the placement of housing in a flood hazard area, or risk release of pollutants due to project inundation.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

As shown in Figure 12-1, the majority of the project site is within FEMA zone X, which is outside of a floodplain. However, the Placer Creek tributary area portion of the project site is within a FEMA mapped AE floodplain zone. In addition, the off-site sewer lift station improvements area is located within Zone AE. The FEMA AE zone is defined as being areas subject to inundation by the one percent annual chance flood event, and FEMA provides base flood elevations for such areas. The proposed project would not place housing within the future, fully developed, unmitigated 100-year floodplain.

Limited fill would be placed within the floodplain fringes during project development, generally associated with the proposed pedestrian bridge over Placer Creek. The limited fill has been accounted for in the hydraulic model for the proposed project and is reflected in the values presented in Table 12-3. In addition, as part of the emergency storage upgrade at the off-site sewer lift station improvements area, additional grading would be required in the floodplain, which would result in compensatory cut in the floodplain. The cut in the floodplain has been accounted for in the hydraulic model for the proposed project and is reflected in the values presented in Table 12-4. As a result of the proposed limited fill, cut in the floodplain, and proposed changes in hydrology, a Conditional Letter of Map Revision (CLOMR) would be required to be submitted to FEMA to update the floodplain information to reflect the proposed conditions.

Furthermore, as discussed in the Regulatory Context section of this chapter, the proposed project would not meet all five criteria to be subject to SB 5 and would not place residences within a 200-year floodplain with a potential flood depth above three feet; all such on-site areas would be contained within the open space corridors. As such, the proposed project would not be subject to the requirements of the ULOP, and the 200-year storm event level of flood protection would not be required. In addition, all of the proposed improvements would be subject to Article 15.52, Flood Damage Prevention Regulations, of the Placer County Code, which is intended to minimize public and private losses due to flood

conditions, including where public facilities and utilities are located within areas of special flood hazard. The Flood Damage Prevention Regulations provide methods for reducing flood losses and sets forth standards for construction in all areas of special flood hazards.

With respect to risking release of pollutants due to project inundation, residential projects do not involve the storage of large amounts of pollutants, and all stormwater exiting the project site would be directed to on-site stormwater quality features to ensure that any pollutants entrained within stormwater from the project site are removed prior to discharge.

Off-Site Affordable Housing Parcel

As shown in Figure 13-3 of the RVSP EIR, the off-site affordable housing parcel is not located with the 100-year floodplain, and fill is not proposed within the development area. Therefore, people or structures associated with the off-site affordable housing parcel would not be exposed to flood hazards. As such, the off-site affordable housing parcel would not result in the impediment or redirection of flood flows such that on- or off-site structures would be exposed to flood risk, and Mitigation Measures 13-5a, 13-5b, 13-5c, 13-5d, 13-5e, and 13-5f included in the RVSP EIR would not be required.

Conclusion

Considering the above, the proposed project is not anticipated to result in the impediment or redirection of flood flows such that on- or off-site structures would be exposed to flood risk. However, a CLOMR would be required prior to Improvement Plan approval in order to ensure the project's compliance with existing regulations. Therefore, in the absence of a CLOMR submitted to FEMA, a ***significant*** impact could occur related to alteration of the existing drainage pattern of the site or area, including through alteration of a course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level by ensuring that the project complies with all regulations needed to ensure that new impervious surfaces created by the project do not impede or redirect flood flows.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

12-5(a) *Prior to Improvement Plan approval, if required by the Federal Emergency Management Agency (FEMA), the Placer County Flood Control District, or the County Floodplain Administrator, the applicant shall obtain from FEMA, a Conditional Letter of Map Revision (CLOMR) or Conditional Letter of Map Revision based on Fill (CLOMR-F) for fill within a Special Flood Hazard Area. A copy of the letter shall be provided to the Engineering and Surveying Division. A Letter of Map Revision (LOMR), or a Letter of Map Revision based on Fill (LOMR-F) from FEMA shall be provided to the Engineering and Surveying Division (ESD) prior to acceptance of project improvements as complete.*

12-5(b) *Implement the following Mitigation Measure set forth in this EIR:*

- *12-4(d) On the Improvement Plans and Informational Sheet(s) filed with the appropriate Final Subdivision Map(s), show:*

  A) The limits of the future, unmitigated, fully developed, 100-year floodplain (after grading) for the Dry Creek Walerga Road Tributary Reach and designate same as a building setback line unless greater setbacks are required by other conditions contained herein. The Improvement Plans shall also show the limits of the future, unmitigated, fully developed, 100-year floodplain for the existing project site conditions.

  B) That finished house pad elevations for Tentative Map all Lot's for all lots along the floodplain shall be a minimum of two feet above the 100-year floodplain line (or finished floor -three feet above the 100-year floodplain line). The final pad elevation shall be certified by a California registered civil engineer or licensed land surveyor and submitted to the Engineering and Surveying Division. This certification shall be done prior to construction of the foundation or at the completion of final grading, whichever comes first. No building construction is allowed until the certification has been received by the Engineering and Surveying Division.

12-5(c) Implement the following Mitigation Measure set forth in this EIR:

- *12-4(e) The final Drainage Report shall demonstrate that the proposed project will not increase the limits or water surface elevation of the off-site 100 year floodplain upstream and downstream of the project site, on both sides, to the satisfaction of the Engineering and Surveying Department and Placer County Flood Control District.*

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

The cumulative setting for impacts related to hydrology and water quality encompasses the Dry Creek Walerga Road Tributary drainage shed, which, as discussed above, spans a total of approximately 689.18 acres, and includes the entirety of the project site, as well as additional land in the project vicinity.

12-6 Cumulative impacts related to the violation of water quality standards or waste discharge requirements, groundwater quality, management, and recharge, and impacts resulting from the alteration of existing drainage patterns. Based on the analysis below, the project's incremental contribution to this significant cumulative impact is *less than cumulatively considerable*.

Impacts of the proposed project, off-site sewer lift station improvements, and off-site affordable housing parcel related to stormwater quality, groundwater, and drainage patterns are discussed below.

Stormwater Quality

Construction activities have the potential to affect water quality and contribute to localized violations of water quality standards if stormwater runoff from construction activities enters receiving waters. Runoff from additional construction sites within the project area could carry sediment from erosion of graded or excavated surface materials, leaks or spills from equipment, or inadvertent releases of building products, which could result in water quality degradation if runoff containing such sediment or contaminants should enter receiving waters in sufficient quantities. Thus, construction activities associated with the proposed project, off-site sewer lift station improvements, and off-site affordable housing parcel, in combination with construction activities associated with other reasonably foreseeable projects in the Dry Creek watershed, could result in cumulative impacts related to water quality. However, all construction projects resulting in disturbance of more than one acre of land are required to comply with the most current Construction General Permit requirements. Conformance with the Construction General Permit would require preparation of SWPPPs for all such projects, and subsequent implementation of BMPs to prevent the discharge of pollutants. Considering the existing permitting requirements for construction activity in the project area, cumulative construction within the Dry Creek watershed would be heavily regulated and impacts related to the degradation of water quality would be minimized.

Similar to the proposed project, off-site sewer lift station improvements, and off-site affordable housing parcel, cumulative development within the DCWPCP would be subject to Phase II MS4 stormwater requirements, including source control and treatment control features. Specifically, regulated projects are required to divide the project area into DMAs and implement and direct water to appropriately sized SDMs and Baseline Hydromodification Measures to each DMA. Source control measures must be designed for pollutant-generating activities or sources consistent with recommendations from the CASQA Stormwater BMP Handbook for New Development and Redevelopment, or equivalent manual, and must be shown on improvement plans.

Based on the conceptual stormwater design, during operations, the stormwater runoff would be properly treated prior to discharge from the site. Thus, urban pollutants entering and potentially polluting the local drainage system would not be expected to occur as a result of the project. A final drainage report for the proposed project, off-site sewer lift station improvements, and the off-site affordable housing parcel would be required with submittal of the Improvement Plans for County review and approval to substantiate the

preliminary report's LID sizing calculations. In addition, pursuant to Phase II MS4 requirements, a Post Construction Stormwater Control Plan would be required for the proposed project. The project, off-site sewer lift station improvements, and the off-site affordable housing parcel would be subject to NPDES Construction General Permit requirements, including implementation of BMPs and preparation of a site-specific SWPPP. Cumulative development projects within the project area would also be subject to Phase II MS4 stormwater requirements, as well as all County requirements related to stormwater treatment and control. Compliance with the foregoing regulations would ensure that impacts related to the alteration of drainage patterns, the discharge of pollutants, and flooding are minimized.

Groundwater

Cumulative development within the project region would result in increased amounts of impervious surface, which would reduce the infiltration of groundwater within the project region. Although cumulative development would increase the number of impervious surfaces in the project region, stormwater would continue to be discharged to the Dry Creek Walerga Road Tributary (Placer Creek), and other local waterways, where stormwater could infiltrate into the soil and recharge groundwater. In addition, regulations require installation of stormwater infiltration BMPs to moderate impact to surface/groundwater flows for all projects by infiltrating stormwater into the soil and recharging groundwater. Furthermore, the project site, off-site sewer lift station improvements area, and the off-site affordable housing parcel themselves are not considered a site of substantial groundwater recharge; thus, development of the project and the off-site affordable housing parcel would not result in a significant cumulative loss of groundwater recharge.

Groundwater in the project region is managed on a subbasin level. The North American Subbasin, within which the project is located, is not in a state of overdraft, and the WPGSA will continue to manage groundwater in the region.

Because groundwater is managed on a subbasin level, and the project would not result in a substantial site-specific loss of groundwater recharge, the proposed project, off-site sewer lift station improvements, and the off-site affordable housing parcel, in combination with cumulative development within the region, would not result in a significant cumulative impact to groundwater recharge.

Drainage Patterns

Concurrent implementation of the proposed project, the off-site affordable housing parcel, and cumulative development within the Dry Creek Walerga Road Tributary drainage shed area would result in the conversion of pervious surfaces to impervious surfaces. The hydraulic analysis prepared for the proposed project by King Engineering, as discussed in Impact 12-4 above, assessed cumulative conditions (i.e., buildout of properties within the watershed area consistent with DCWPCP land use designations). This was done to assess the potential worst-case impact of the proposed project's incremental effects on future peak flows and WSEs in the cumulative setting. As such, the analysis presented above reflects existing flows, the proposed project flows, and flows associated with future buildout of the remaining Dry Creek Walerga Road Tributary shed area (as shown in Figure 12-3) pursuant to DCWPCP land use designations.

King Engineering determined that although the post-construction peak flows during the 100-year storm event, as well as the peak WSEs, would increase relative to existing conditions, such increases would be contained in the natural channels of the tributary on-site, several vertical feet of freeboard would be maintained to existing structures, as well as provided to all new pads, and the project would not increase floodplain limits or WSEs upstream or downstream of the project.

Therefore, as described above, the ultimate buildout flows would not result in inundation of any on- or off-site structures or improvements. Consequently, the proposed project, off-site sewer lift station improvements, and off-site affordable housing parcel would not result in a cumulatively significant impact to drainage patterns in the drainage shed.

Conclusion

As discussed throughout this chapter, implementation of the proposed project, off-site sewer lift station improvements, and off-site affordable housing parcel would include LIDs and BMPs to minimize the potential for the proposed project to result in impacts related to hydrology and water quality. Moreover, King Engineering estimated drainage conditions under cumulative conditions for the Dry Creek Walerga Road Tributary (Placer Creek) and concluded that implementation of the proposed project would not result in a significant incremental contribution to cumulative impacts related to peak flows or flooding due to changes in drainage patterns at the project site.

Given the analysis presented in this chapter, the conclusions reached by King Engineering, and the highly regulated nature of cumulative development in the project region, the project's incremental contribution to the significant cumulative impact would be ***less than cumulatively considerable***.

Mitigation Measure(s)

None required.

13. Land Use and Planning / Population and Housing

13. LAND USE AND PLANNING/ POPULATION AND HOUSING

13.1 INTRODUCTION

As discussed in Chapter 3, Project Description, of this EIR, the proposed project would include a total of 432 residential units and associated improvements, off-site sewer lift station improvements, and two options to meet the County's affordable housing regulations. The affordable housing options include the provision of a minimum of 22 Accessory Dwelling Units (ADUs) on lots proposed for development with single-family residential units, or an off-site proposal wherein Homes by Towne would rezone and transfer the fee title to the County for an approximately four-acre parcel offsite within the Riolo Vineyards Specific Plan (RVSP), which could develop a maximum of 120 affordable income-restricted units.

The purpose of the Land Use and Planning/Population and Housing chapter of the EIR is to examine the proposed project's compatibility with existing land uses in the area and identify any incompatibilities with applicable land use plans, policies and regulations adopted by the County for the purpose of avoiding or mitigating environmental effects, including the Placer County General Plan (PCGP)[1] and the Dry Creek-West Placer Community Plan (DCWPCP).[2] Furthermore, the chapter includes discussion of the potential for the project to induce substantial population growth in the project area, either directly or indirectly. The reader is referred to the various environmental resource evaluations presented in the other technical chapters of this EIR for a discussion of potential physical/environmental effects that may result from the proposed land use changes.

In addition, the proposed project would include improvements to the off-site Community Facilities District #1 Sewer Lift Station, which would also require embankment work to raise the access and maintenance areas out of the adjacent Dry Creek 100-year floodplain. However, because the proposed improvements to the existing lift station within the off-site sewer lift station improvements area would not result in land use changes or additional population in the DCWPCP area, impacts related to such are not discussed further herein.

The primary documents referenced to prepare this chapter include the PCGP, the PCGP EIR,[3] the Placer County Housing Element 2021-2029,[4] the RVSP[5] and associated EIR,[6] and the DCWPCP.

13.2 EXISTING ENVIRONMENTAL SETTING

This section describes the existing land uses on the project site and off-site affordable housing parcel, as well as within the surrounding area. In addition, the existing plans and policies that guide the development of the project site and off-site affordable housing parcel are discussed

1 Placer County. *Countywide General Plan Policy Document*. August 1994 (updated May 2013).
2 Placer County. *Dry Creek-West Placer Community Plan.* Amended May 12, 2009.
3 Placer County. *Countywide General Plan EIR*. July 1994.
4 Placer County. *Placer County Housing Element 2021-2029.* Adopted May 11, 2021.
5 Placer County. *Riolo Vineyard Specific Plan Update*. October 2015.
6 Placer County. *Riolo Vineyard Specific Plan Environmental Impact Report*. January 2008.

below. Lastly, the Existing Environmental Setting section describes current population and housing trends in the project region.

Project Site Characteristics and Surrounding Land Uses

The project site consists of approximately 92.2 gross acres located in the DCWPCP area of unincorporated Placer County. The project site is bisected by Walerga Road, which generally curves from northeast to southwest. The 52.3-acre northern portion of the site (APN 023-221-076) is bounded by Baseline Road to the north and Walerga Road to the south. The northern portion of the site is undeveloped, consists of non-native annual grassland with gently rolling topography, and is interspersed with seasonal wetlands and vernal pools. The 35.3-acre southern portion of the site (APN 023-221-074) is bounded by Walerga Road to the north and west. The southern portion of the site includes a paved bicycle trail which extends from Vineyard Road to the east and Walerga Road to the west. In addition, the southern portion of the site includes undeveloped annual grassland with gently rolling topography, interspersed with seasonal wetlands, vernal pools, and is bisected by an un-named tributary of Dry Creek (named "Placer Creek" for this project) which flows east to west.

Roadways in the immediate project vicinity include Baseline Road to the north, Walerga Road bisecting the project site from the southwest to the northeast, Town Center Avenue to the west, and Vineyard Road to the southeast. Additionally, the northern boundary of the project site is adjacent to the Roseville City Limits, and the southern boundary of the project site is located approximately 1.2 miles from the Placer County/Sacramento County line.

Surrounding existing land uses for the project site include the under-construction Baseline Marketplace to the north, across Baseline Road; single-family residences associated with the Sun Valley Oaks residential neighborhood and Dry Creek tributaries to the east; single-family residences associated with the Morgan Creek residential neighborhood to the south; and the under-construction Property 1A of the Placer Vineyards Specific Plan (PVSP), which will include 1,285 residential units to the west.

Off-Site Affordable Housing Parcel Characteristics and Surrounding Uses

As discussed above, one option for the project to meet the County's affordable housing regulations includes an off-site proposal wherein Homes by Towne would rezone and transfer the fee title to the County for the off-site affordable housing parcel, which could result in the potential future development of a maximum of 120 affordable income-restricted units. The off-site affordable housing parcel consists of approximately four acres of undeveloped land with grassy fields and gently rolling topography located at the northeast corner of PFE Road and Watt Avenue (Assessor's Parcel Number [APN] 023-200-056-000) within the RVSP. Several trees are present along the northern and western boundaries of the off-site affordable housing parcel. The southern boundary of the project site is located approximately 160 feet from the Placer County/Sacramento County line.

Surrounding existing land uses for the site include the Union Cemetery to the north, vacant land designated by the RVSP as Medium Density Residential (MDR) to the east; single-family residences and the Creekside Meadows wedding service business to the west; and vacant land designated by the PCGP/DCWPCP as Commercial (C) to the south, across PFE Road, with single-family residences further south, within Sacramento County.

Land Use Designations and Zoning Districts

The PCGP/DCWPCP land use designations for the project site are Rural-Low Density Residential (1-2.3 acre minimum) (RLDR), and Greenbelt and Open Space (OS). The site is zoned Residential Single-Family, combining Agriculture, combining a minimum Building Site of 40,000 square feet, combining Planned Residential Development of one dwelling unit per acre (RS-AG-B-40 PD=1) and Open Space, combining Planned Residential Development of one dwelling unit per acre (O PD=1). (see Figure 13-1). While the areas to the east, west, and south of the site are located within the DCWPCP area in unincorporated Placer County, the land uses to the north of the site are located within the City of Roseville. Table 13-1 provides a summary of the current DCWPCP and the City of Roseville land use designations and zoning districts of the properties surrounding the project site, as applicable.

Table 13-1
Summary of Adjacent Community Plan Land Use Designations and Zoning Districts

Relationship to Project Site	Present Land Use	Land Use Designation	Zoning District
North of the Project Site	Baseline Road, Under-Construction Baseline Marketplace	City of Roseville: Community Commercial (CC)	City of Roseville: General Commercial (GC)
South of the Project Site	Single-Family Residential	Placer County: RLDR	Placer County: RS-AG-B-40 PD=1
East of the Project Site	Single-Family Residential	Placer County: RLDR	Placer County: RS-AG-B-40 PD=1, O PD=1
West of the Project Site	Under-Construction Single-Family Residential	Placer County: Specific Plan, PVSP	Placer County: Specific Plan, Placer Vineyards Specific Plan (SPL-PVSP)

Off-Site Affordable Housing Parcel Land Use Designation and Zoning

The PCGP/DCWPCP land use designation for the off-site affordable housing parcel is RVSP, and the parcel is zoned Specific Plan, Riolo Vineyard Specific Plan (SPL-RVSP). In addition, the RVSP designation for the off-site affordable housing parcel is Commercial (CO). The areas immediately surrounding the parcel are located within the DCWPCP area in unincorporated Placer County, and the land uses to the north and east of the parcel are also located within the RVSP. Table 13-2 provides a summary of the current DCWPCP and RVSP land use designations and zoning districts of the properties surrounding the off-site affordable housing parcel, as applicable.

Land Use Designation Definitions

The following sections provide definitions of the land use designations noted above, as summarized from the PCGP/DCWPCP, the City of Roseville General Plan, and the RVSP.

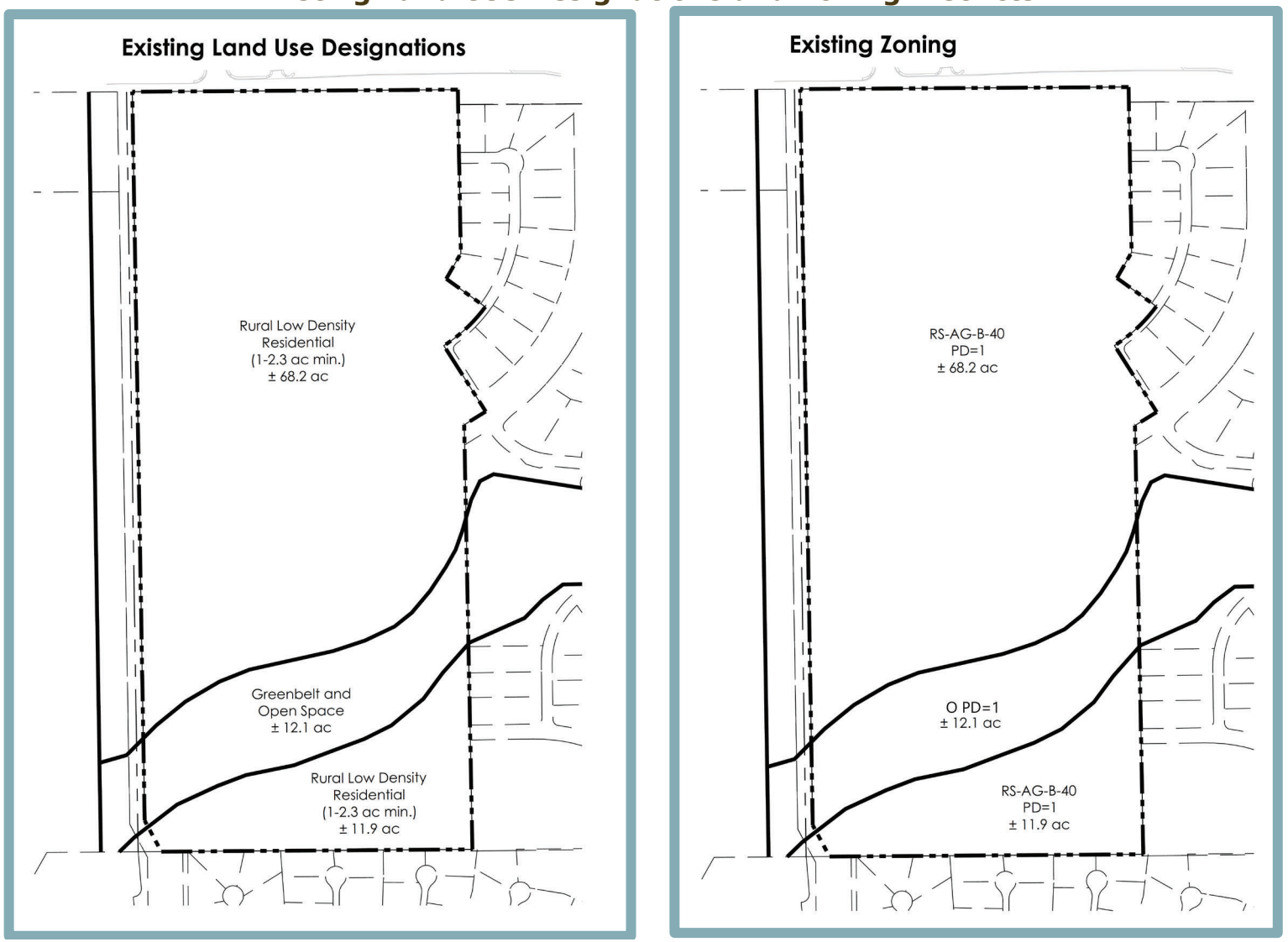
PCGP/DCWPCP

The DCWPCP definitions of the RLDR, OS, C, and P land use designations noted above are summarized as follows:

Rural-Low Density Residential (RLDR)

The RLDR land use designation is intended to allow additional development in the DCWPCP area without introducing a density which is incompatible with the existing development.

Figure 13-1
Existing Land Use Designations and Zoning Districts



* Figure not OCR Compatible

Table 13-2
Off-Site Affordable Housing Parcel Summary of Adjacent Community Plan Land Use Designations and Zoning Districts

Relationship to Project Site	Present Land Use	Land Use Designation	Zoning District
North of the Project Site	Union Cemetery	DCWPCP: Specific Plan, RVSP RVSP: Public or Quasi Public (PQP) (Cemetery)	Residential Single-Family, combining Agriculture, combining a minimum Building Site of 20,000 square feet, combining Development Reserve, combining Planned Residential Development of two dwelling units per acre (RS-AG-B-20-DR PD=2)
South of the Project Site	PFE Road, Vacant Land	DCWPCP: Commercial (C)	Neighborhood Commercial, combining Design Scenic Corridor (C1-Dc)
East of the Project Site	Vacant Land	DCWPCP: RVSP RVSP: MDR	SPL-RVSP
West of the Project Site	Single-Family Residential, Creekside Meadows Wedding Service Business	DCWPCP: Professional Office (P)	Office and Professional, combining Design Scenic Corridor (OP-Dc)

The RLDR land use designation also allows the rural character of the DCWPCP area to be maintained while also making the provision of necessary public services feasible. The RLDR land use designation allows for a range of densities from one to 2.3 acres per dwelling unit, and thus could permit a total of up to 1,400 dwelling units within the DCWPCP area. The RLDR allows for the development of a housing type at a density which is not found in the new developments occurring in Roseville and the Antelope areas.

Greenbelt and Open Space (OS)

The OS land use designation is generally identified as the approximate 100-year floodplain of Dry Creek and the creek's tributaries. The OS-designated areas within the DCWPCP area are often heavily wooded, and are intended to improve the design of subdivisions adjoining such areas. The OS land use designation is also compatible with certain public and private recreation facilities, in some areas.

Commercial (C)

The C land use designation is identified in five different and distinct places within the DCWPCP, strategically located to provide commercial services to the existing and future residents of the DCWPCP area and in some cases, to those using the major transportation corridors which pass through the area.

Professional Office (P)

Two P areas have been designated within the DCWPCP area in order to allow an opportunity for small office-park developments which could meet the service needs of the area and in some cases to provide buffers of less intense uses between commercial and residential properties.

City of Roseville General Plan

The City of Roseville General Plan definition of the CC land use designation noted above is summarized as follows:

Community Commercial (CC)

The CC land use designation provides for a broader range of goods and services to an expanded service area. Primary uses within the CC designation include retail stores and businesses selling a full range of goods and services including auto sales and repair, and commercial child care facilities, and secondary uses include professional office uses. Typically, acreages of lots within the CC land use designation range from five to 25 acres, the square footage ranges from 50,000 to 250,000 square feet (sf), and the floor area ratio ranges from 20 percent to 40 percent.

Riolo Vineyard Specific Plan

The RVSP definitions of the CO, PQP and MDR land use designations noted above are summarized as follows:

Commercial (CO)

The CO designation is intended to provide village retail, restaurants, services, and/or business-professional uses, which support the needs of residents within the RVSP area.

Public or Quasi Public (PQP)

The PQP land use designation is intended to define sites devoted to public use, including the existing Union Cemetery. Cemetery land is property that may be designed as cemetery lots and sold for burial purposes.

Medium Density Residential (MDR)

The MDR designation allows for a variety of detached and attached housing products on lot sizes of 2,000 to 5,499 sf. MDR villages will provide a denser approach than Low Density Residential (LDR) areas. A variety of housing types will give the MDR areas a distinctive character, and alternative housing products and designs (duplex units, shallow-wide lots, and angled lots) are encouraged. The allowable density range within the MDR land use designation is 5-10 dwelling units per acre (du/ac). Agricultural use of lands designated as MDR may continue as interim use until development occurs, pursuant to the RVSP.

Zoning District Definitions

The following sections provide definitions of the zoning designations noted above, as summarized from the Placer County Zoning Ordinance (Title 17 of the Placer County Code) and the City of Roseville Zoning Ordinance (Title 19 of the City's Municipal Code).

Placer County Zoning Ordinance

The County defines the RS-AG-B, -PD, O, SPL, C1, OP, -DR, and -Dc zoning designations as follows:

Residential Single-Family (RS)

The RS zoning district is intended to provide areas for residential development characterized by detached single-family homes in standard subdivision form. Minimum lot areas within the RS zoning district are typically 10,000 sf but may be smaller with a -B combining district overlay.

Agriculture (-AG)
The purpose of the -AG combining district is to identify residential areas where parcel sizes and neighborhood conditions are suitable for the raising and keeping of a variety of farm and exotic animals, in addition to household pets, without compatibility problems with surrounding residential uses.

Minimum Building Site Size (-B)
The purpose of the -B combining district is to provide for different parcel sizes in new subdivisions than would otherwise be required by an applicable zoning district, based upon special characteristics of the site or area to which the combining district is applied, including but not limited to sensitive environmental characteristics, limited resource capacities, and community character.

Open Space (O)
The purpose of the O zoning district is to protect important open space lands within Placer County by limiting allowable land uses to low intensity agricultural and public recreational uses, with structural development being restricted to accessory structures necessary to support the primary allowed uses, and critical public facilities.

Planned Residential Development (-PD)
The purpose of the -PD combining district is to identify areas where development can occur within the context of a planned development and where a residential density for the planned unit development must be determined by the County to guide the design of a proposed project pursuant to the requirements and standards of Placer County Code Section 17.54.080 (Planned residential developments). The number following “PD” shall mean the maximum number of dwelling units per acre allowed in the area so designated on the zoning maps.

Specific Plan (SPL)
The purpose of the SPL district is to allow unique zone districts to be established consistent with an adopted specific plan, providing more flexibility in the designation of allowable uses, development standards, and other regulations than would be possible through application of other base and combining zone districts. Development within the SPL district shall be authorized only through the approval of a specific plan as set forth in Placer County Code Section 17.58.200 and in California Government Code Section 66450 et seq. The specific plan (and/or companion documents thereto) shall contain the zoning regulations for properties within the specific plan area. The specific plan shall specify all permitted uses and land use permit requirements for the SPL district.

Neighborhood Commercial (C1)
The purpose of the C1 district is to provide areas for small-scale, day-to-day convenience shopping and services for residents of the immediate neighborhood, which encourages pedestrian and bicycle access, and which is planned and designed to be compatible with surrounding residential areas.

Office and Professional (OP)
The OP district is intended primarily for the development and operation of professional and administrative offices and personal services, rather than retail trade. New development in such areas is intended to be planned and designed so as to be relatively compatible with residential uses.

Development Reserve (DR)

The purpose of the development reserve (-DR) combining district is to provide for the future development of limited residential, commercial or industrial uses in areas that are identified by the General Plan or a community plan.

Design Scenic Corridor (-Dc)

The purpose of the design review (-Dc, -Dh, -Ds) combining districts is to provide special regulations to protect and enhance the aesthetic character of lands and buildings within public view; to protect historic buildings; to minimize any adverse impacts of conflicting land uses; to enhance tourism through the protection of lands and buildings having unique aesthetic characteristics; and to provide special project review procedures for lands and uses which by their nature require special attention to architectural design and massing, landscaping, circulation, and/or energy conservation. The Dc designation shall be applied only to areas of special natural beauty and aesthetic interest that constitute a basic resource in the county economy, the preservation of which in its most nearly natural state would enhance tourism; or areas, places, sites, structures or uses, including multi-family and mixed-use projects where application of the design review combining district will serve to carry out the other purposes of the design review combining district.

City of Roseville Zoning Ordinance

The City of Roseville defines the GC zoning designation as follows:

General Commercial (GC)

The GC zoning district is intended to serve the entire community by providing areas for commercial facilities that are more of a service or heavy commercial character than are permitted in the community commercial district, and may involve outdoor display, storage or activity areas.

Population and Housing

Population growth assumptions, average household sizes, and vacancy rates for Placer County and the DCWPCP area are discussed below.

Historical and Current Population

The DCWPCP included population projections for the DCWPCP area until the plan horizon year of 2010. Population projections for the DCWPCP were based on three different growth rates. The lowest growth rate was assumed to be three percent, which was the growth rate throughout Placer County at the time that the DCWPCP was prepared, in 1990. The mid-range growth rate was based on the growth rate experienced by the City of Roseville between 1980 and 1988, which was six percent. Finally, the highest growth rate used in the DCWPCP was assumed to be the 10 percent growth rate that was occurring in the City of Roseville at the time that the DCWPCP was prepared. The three growth rates resulted in a range of projected populations as shown in Table 13-3.

Table 13-3
DCWPCP Projected 2010 Population

Growth Rate (%)	Projected 2010 Population (residents)
3	3,400
6	5,550
10	9,836

Source: Placer County. Dry Creek-West Placer Community Plan. Amended May 12, 2009.

As shown in Table 13-4, the DCWPCP area's observed population more than tripled between 1980 and 2010, adding approximately 3,647 new residents and 955 households. Compared to Placer County as a whole, from 1980 to 2010 the population of the DCWPCP area grew much more slowly than the County in general, which experienced a 50 percent increase in population during the same period.[7]

The observed population change within the DCWPCP, presented in Table 13-4, falls within the range of growth anticipated by the DCWPCP. In fact, the actual 2010 population of 4,602 residents within the DCWPCP area was close, but slightly below, the mid-range six percent growth rate scenario projected in the DCWPCP. Growth continued during the 15-year period including 2010 and 2025, when 3,750 new residents and 1,361 households were added to the DCWPCP area, which represents a 81.48 percent increase in population over that period.[8] The DCWPCP area's population in 2025 was 8,352, which is above the DCWPCP's mid-range projection for the area's population in 2010, but within the maximum growth scenario estimate of the DCWPCP for 2010. Therefore, while significant growth in the DCWPCP area has occurred since approval of the Plan, the area's actual 2025 population is in line with buildout assumptions for horizon year 2010.

Table 13-4
DCWPCP Area Population and Household Growth

Year	Population	Households	Persons Per Households
1980	1,378	700	1.97
2000	1,516	554	2.74
2010	4,602	1,478	3.11
2025	8,352	2,839	2.94

Sources:
- ***ESRI Business Analyst. Housing Profile, DCWPCP Area. January 2026.***
- ***Placer County. Dry Creek-West Placer Community Plan. Amended May 12, 2009.***

Projected Population and Housing Growth

As seen in Table 13-3, the population of the DCWPCP area was anticipated to experience a maximum growth scenario of 9,836 residents by 2010. While Table 13-4 demonstrates that growth within the DCWPCP did not reach the maximum growth scenario by 2010, the population within the DCWPCP is anticipated to continue to grow with buildout of the DCWPCP area, in particular, due to the growth within the approved PVSP, RVSP, and various subdivisions completed, under construction, or approved yet unbuilt. The Sacramento Area Council of Governments (SACOG) has anticipated growth within the six-county Sacramento region through the 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS).[9]

The MTP/SCS identifies the portion of the DCWPCP area, not including the PVSP and RVSP, as one of the Established Communities within the MTP/SCS study area. As of 2020, Established Communities within Placer County included 21,440 housing units, and such communities are anticipated to grow to 24,200 units by 2035, 24,600 units by 2040, and 30,650 housing units at buildout.[10] Buildout of the DCWPCP, including the project site, was included in the foregoing MTP/SCS growth estimates.

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7 Placer County. *Placer County Housing Element 2021-2029*. Adopted May 11, 2021.
8 ESRI Business Analyst. *Family Profile, DCWPCP Area*. October 2024.
9 Sacramento Area Council of Governments. *2020 Metropolitan Transportation Plan/Sustainable Communities Strategy*. Adopted November 18, 2019.
10 *Ibid.*

Average Household Size

The average size of households is a function of the number of residents living in households within a given area divided by the number of occupied housing units within the given area. As shown in Table 13-5, average household sizes in California slightly decreased between 2010 and 2025 by approximately 0.11 persons/household. Concurrently, the average household size within Placer County decreased by 0.12 persons/household. Within the DCWPCP area, the average household size decreased by 0.17 persons/household.

Table 13-5
Average Household Size (Persons Per Household)

Area	2010	2025
California	2.87	2.76
Placer County	2.63	2.51
DCWPCP	3.11	2.94

Sources:

- ***ESRI Business Analyst. Family Profile, DCWPCP Area. January 2026.***
- ***California Department of Finance. Report E-5: Population and Housing Estimates for Cities Counties and the State, January 1, 2021-2025, with 2020 Benchmark. Released May 1, 2025.***

Vacancy Rate

In 2010, Placer County experienced an overall vacancy rate of 13.1 percent, which was higher than the statewide average of 8.1 percent.[11] While the County's overall vacancy rate of 13.1 percent is relatively high, the countywide vacancy rate includes units held vacant for seasonal or recreational uses, which are generally not open for long-term residential occupancy. Excluding the units held for seasonal or recreational uses, unincorporated portions of the County experienced a vacancy rate of 5.24 percent for units classified as for rent, for sale, or already rented or sold but not occupied. The PCGP Housing Element considers a six percent vacancy rate for rental units and a two percent vacancy rate for owner-occupied units generally sufficient to keep prices down and ensure availability of units for new or relocating residents.[12]

The California Department of Finance reports that the overall vacancy rate within the County has decreased since 2010 to approximately 11.5 percent.[13] In 2025, 3,007 housing units existed within the DCWPCP area and approximately 168 units were vacant, representing a vacancy rate of approximately 5.6 percent.[14]

Regional Housing Needs Plan

The Regional Housing Needs Allocation (RHNA) is a minimum projection of additional housing units needed to accommodate projected household growth of all income levels by the end of the housing element's statutory planning period. Based on the adopted RHNA, each city and county must update the housing element of their General Plan to demonstrate how the jurisdiction will meet the expected growth in housing need over the planning period.

According to the U.S. Department of Housing and Urban Development (HUD), housing is classified as "affordable" if households do not pay more than 30 percent of income for payment

11 ESRI Business Analyst. *Comparison Reports, Placer County, CA*. April 2023.
12 Placer County. *Placer County Housing Element 2021-2029*. Adopted May 11, 2021.
13 California Department of Finance. *Report E-5: Population and Housing Estimates for Cities Counties and the State, January 1, 2021-2025, with 2020 Benchmark*. Released May 1, 2025.
14 ESRI Business Analyst. *Housing Profile, DCWPCP Area*. January 2026.

of rent (including utilities) or monthly homeownership costs (including mortgage payments, taxes, and insurance). SACOG adopted their RHNP on March 20, 2020, which officially assigns the allocations to cities and counties in the six-county Sacramento region. SACOG's RHNA covers the planning period from 2021 to 2029, and defines the lower income unit categories as follows:

- Very Low-Income Unit: is one that is affordable to a household whose combined gross household income is at or lower than 50 percent of the Placer County median income.
- Low-Income Unit: is one that is affordable to a household whose combined gross household income is at or between 50 and 80 percent of the Placer County median income.
- Moderate Income Unit: is one that is affordable to a household whose combined gross household income is at or between 81 and 120 percent of the Placer County median income.
- Above Moderate Income Unit: is one that is affordable to a housing whose combined gross household income is at or greater than 120 percent of the Placer County median income.

In 2024, the median household income for Placer County was $115,442.[15] Within the DCWPCP area, the median household income was $157,363.[16] According to SACOG's RHNP, Placer County's RHNA number for combined low- and very-low-income levels is 15,372 dwelling units (see Table 13-6).[17]

Table 13-6
Placer County Regional Housing Needs Allocations (2021-2029)

Jurisdiction	Total Units[1]	Very Low Income		Low Income		Moderate		Above Moderate		Combined Low and Very Low	
		#	%	#	%	#	%	#	%	#	%
Placer County Unincorporated Areas[2]	7,419	2,017	27.9	1,215	16.4	1,242	16.7	2,945	39.7	3,232	43.6
Placer County Total	31,460	9,591	30.5	5,781	18.4	4,773	15.2	11,315	36	15,372	48.9

1. Total number of units based on proportion of growth in SACOG's adopted 2020 MTP/SCS.
2. Unincorporated areas presented in this table do not include the unincorporated areas within the Tahoe Basin.

Source: Sacramento Area Council of Governments, Regional Housing Needs Plan, 2020.

13.3 REGULATORY CONTEXT

Federal laws or regulations pertaining to land use and planning or population and housing are not applicable for this analysis. However, the existing State and local laws and regulations are listed below, as applicable.

State Regulations

The following are applicable State regulations related to land use and planning, and population and housing.

[15] U.S. Census Bureau. *Placer County, California Income and Poverty*. Available at: https://data.census.gov/all?q=placer+county&t=Income+and+Poverty. Accessed October 2025.
[16] ESRI Business Analyst. *Family Profile, DCWPCP Area*. October 2024.
[17] Sacramento Area Council of Governments. *Regional Housing Needs Plan 2021-2029*. Adopted March 2020.

Title 14 California Code of Regulations Section 15131

Title 14, California Code of Regulations (CCR) Section 15131, provides that economic or social information may be included in an EIR, but those economic or social effects shall not be considered significant effects on the environment. In an EIR, the lead agency is responsible for researching economic or social changes resulting from a project, which may eventually lead to physical changes in the environment. Such economic or social changes can be used to determine the significance of physical changes on the environment.

Regional Housing Needs Plan

California General Plan law requires each city and county to have land zoned to accommodate a fair share of the regional housing need. The share is known as RHNA and is based on a RHNP developed by councils of government. The State-mandated RHNA process (Government Code Sections 65580 et seq.) requires SACOG to develop a methodology that determines how to divide and distribute an overall allocation that the region receives from the State.

Local Regulations

The following are the local regulations and standards relevant to the CEQA review process with respect to land use and planning, and population and housing. The most relevant local regulations and standards related to land use, planning, population, and housing are the goals and policies set forth within the PCGP, including the County's Housing Element 2021-2029, and DCWPCP. Specific goals and policies from the PCGP, including the County's Housing Element 2021-2029, and DCWPCP are listed in Table 13-7 at the end of this chapter. Local regulations and standards relevant to the CEQA review process and related to land use, planning, population, and housing for the off-site affordable housing parcel are set forth in the RVSP. Consistency with such RVSP policies is discussed below under Impact 13-2.

Sacramento Area Council of Governments

SACOG is responsible for the preparation of, and updates to, the MTP/SCS for the region and the corresponding Metropolitan Transportation Improvement Program (MTIP). The MTIP identifies short-term projects (seven-year horizon) in more detail.

Metropolitan Transportation Plan/Sustainable Communities Strategy

The 2020 MTP/SCS was adopted by the SACOG board on November 18, 2019.[18] The MTP/SCS is a long-range plan for transportation improvements in the region and provides a 20-year transportation vision and corresponding list of projects. The plan is based on projections for growth in population, housing, and jobs. SACOG determines the regional growth projections by evaluating baseline data (existing housing units and employees, jobs/housing ratio, and percent of regional growth share for housing units and employees), historic reference data (based upon five- and ten-year residential building permit averages and historic county-level employment statistics), capacity data (General Plan data for each jurisdiction), and current MTIP data about assumptions used in the most recent MTP/SCS. SACOG staff then meets with each jurisdiction to discuss and incorporate more subjective considerations about planned growth for each area. Finally, SACOG makes a regional growth forecast for new homes and new jobs, based upon an economic analysis provided by a recognized expert in order to estimate regional growth potential based on market analysis and related economic data, which is incorporated into the MTP/SCS.

[18] Sacramento Area Council of Governments. *2020 Metropolitan Transportation Plan/Sustainable Communities Strategy*. Adopted November 18, 2019.

Placer County Code

Pursuant to Placer County Code Section 15.65.060(A), if a residential project exceeds 100 units, at least 10 percent of all dwelling units included must be affordable, as set forth in Placer County Code Sections 15.65.070 and 15.65.080, as applicable. Such dwelling units must include a regulatory agreement recorded on title, requiring that each dwelling unit be affordable for at least 55 years. For fractions of affordable units, the owner of the property must construct the next higher whole number of affordable units or perform an alternative action, pursuant to Placer County Code Section 15.65.120. Placer County Code 15.65.080 sets forth the County's inclusionary housing requirements for residential for-sale affordable units. As set forth by subsection (B), at least 10 percent of all for-sale units must be affordable to very low-, low-, and moderate-income households.

The Estia Dry Creek development is exempt from the Placer County Inclusionary Housing Ordinance (County Code 15.65.050.B.16) due to the unit sizes averaging less than 1,600 sf. According to General Plan Policy HE-C-3, included in the Housing Element of the County's General Plan, ADUs of less than 750 sf are considered to be affordable by design and eligible to satisfy low-income housing requirements in specific plans and new developments. Thus, the potential development of ADUs on lots with single-family residential units would count toward the County's affordable housing requirements for the 212 single-family units.

Riolo Vineyard Specific Plan

The off-site affordable housing parcel is located within the RVSP Plan Area, which is comprised of approximately 525.8 acres located in the southern portion of Placer County, within the DCWPCP. The DCWPCP requires Specific Plans to address a variety of issues related to development. The RVSP includes discussions related to land use, circulation, green space, resource management, public facilities, and implementation. The primary objective of the RVSP is to establish a framework for logical and sensitive growth, and the RVSP provides a comprehensive set of goals and policies to ensure the development of a fully integrated community that respects and enhances the site's natural features. The RVSP is a comprehensive and definitive guideline for the ultimate development of the Plan Area.

13.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to land use and planning, and population and housing. A discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines and Placer County's Initial Study Checklist, an impact related to land use and planning and/or population and housing is considered significant if the proposed project would:

- Physically divide an established community;
- Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect;
- Result in the development of incompatible uses and/or the creation of land use conflicts;
- Cause economic or social changes that would result in significant adverse physical changes to the environment such as urban decay or deterioration (see Chapter 19, Effects Not Found to be Significant);

- Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure); or
- Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere (see Chapter 19, Effects Not Found to be Significant).

As noted above, issues related to whether the proposed project would result in any of the following impacts are discussed in Chapter 19, Effects Not Found to be Significant, of this EIR:

- Cause economic or social changes that would result in significant adverse physical changes to the environment such as urban decay or deterioration; and/or
- Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

Method of Analysis

The following section describes the method of analysis used to evaluate potential impacts of the proposed project related to land use and planning, and population and housing.

One option the project is considering to satisfy the project's affordable housing requirements is by transferring in fee title to the County an off-site vacant parcel under Homes by Towne ownership, within the RVSP. If this option is chosen, the project applicant would seek an amendment to the RVSP and a rezone of the proposed off-site affordable housing parcel to Residential Multifamily 30, combining Design Scenic Corridor (RM30-Dc) zone, which can result in a maximum development potential of 120 affordable income-restricted units.

This EIR also evaluates an alternative means by which the proposed project can meet the County's affordable housing regulations. In addition to the 212 single-family residential units and 220 multi-family units included in the proposed project, the Project Description chapter of this EIR recognizes that 22 ADUs could be included in the project in order to meet the County's affordable housing requirements. However, the total number of residential lots would remain unchanged, as would the overall disturbance area associated with the project. The 22 ADUs are anticipated to include a smaller household size (less than 750 square feet) relative to standard market-rate single-family units. Therefore, the inclusion of an additional 22 units on-site would not result in new impacts or substantially more severe impacts beyond the analysis presented herein.

Land Use and Planning

This chapter analyzes the compatibility of the proposed project with surrounding land uses and compliance of the proposed project with adopted plans and policies adopted for the purpose of avoiding or mitigating an environmental effect. Environmental impacts resulting from the proposed project are discussed in the respective environmental categories. This discussion complies with Section 15125(d) of the CEQA Guidelines, which requires that EIRs discuss inconsistencies with adopted local plans as part of the environmental setting. The ultimate determination of consistency rests with the Placer County Board of Supervisors.

Compatibility with Existing Uses

The proposed project is evaluated for compatibility with the existing land uses adjacent to the project site and off-site affordable housing parcel. The evaluation considers the existing type and intensity of uses in the project vicinity and those proposed for the project site and the off-site affordable housing parcel. The analysis assumes the construction and implementation of the

proposed project within the existing environment to determine if the project is compatible with those existing uses surrounding the project site.

Consistency with the Applicable Land Use Regulations

The proposed project is examined for consistency with the PCGP and the DCWPCP based on the relevant policies adopted for the purpose of avoiding or mitigating an environmental effect contained within both documents. The project's consistency with the Placer County Zoning Ordinance is also discussed. Potential future development of the off-site affordable housing parcel is examined for consistency with the RVSP based on the relevant policies adopted for the purpose of avoiding or mitigating an environmental effect contained within the RVSP. Chapter 5, Agricultural Resources, and Chapter 7, Biological Resources, of this EIR examine the proposed project's consistency with the Placer County Conservation Program (PCCP).

Population and Housing

The level of significance of the impacts related to population and housing is determined by evaluating whether the proposed project, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure), would induce substantial unplanned population growth in the project area.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the proposed project, as well as the two affordable housing options analyzed throughout this EIR, in comparison with the existing conditions and standards of significance identified above. In most cases, potential environmental impacts associated with the proposed project and the 22 on-site ADUs would not differ. Thus, unless otherwise noted, the below analysis applies to both the proposed project and the on-site ADUs.

13-1 Physically divide an established community. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of the potential for the proposed project and potential future development of the off-site affordable housing parcel to result in impacts related to physically dividing an established community.

Proposed Project

A project risks dividing an established community if the project would introduce infrastructure or alter land use so as to change the land use conditions in the surrounding community or isolate an existing land use. The proposed project would involve the construction of a residential development with 432 units and potentially 22 ADUs on a site that is currently undeveloped with non-native annual grassland, seasonal wetlands, vernal pools, and a Dry Creek tributary. Development of the proposed project would also require various associated improvements, including, but not limited to parks, trails, landscaping, and utility installation. Surrounding uses in the project site vicinity include the under-construction Baseline Marketplace to the north, across Baseline Road; single-family residences associated with the Sun Valley Oaks residential neighborhood and Dry Creek tributaries to the east; single-family residences associated with the Morgan Creek residential neighborhood to the south; and the under-construction Property 1A of the PVSP, which will include 1,285 residential units, to the west.

Development of the proposed residential uses would essentially serve as an extension of the existing community in the project area within the DCWPCP. Furthermore, within the DCWPCP, the County previously anticipated development of the project site, albeit at a lower residential density. Nevertheless, the DCWPCP's planned development of the site is indicative that the site has been envisioned as an extension of the existing community. Thus, development of the proposed project would not physically divide an established community.

Off-Site Affordable Housing Parcel

The potential future development of the off-site affordable housing parcel could result in a maximum of 120 affordable income-restricted units on a four-acre parcel. While the off-site affordable housing parcel is currently designated for commercial uses due to a 2015 RVSP Amendment, and the project applicant has 39 density reserve units available towards the off-site affordable housing parcel, the RVSP EIR assumed development of the site with 60 HDR units. Development of the affordable residential uses would essentially serve as an extension of the existing community in the project area within the RVSP and the DCWPCP. Furthermore, within the DCWPCP, as well as the RVSP, the County previously anticipated residential development of the off-site affordable housing parcel. The affordable residential development would differ in density from what was originally planned for the project site. Nevertheless, the RVSP and the DCWPCP's planned development of the off-site affordable housing parcel is indicative that the site has been envisioned as an extension of the existing community. Thus, the potential future development of the off-site affordable housing parcel would not physically divide an established community.

Conclusion

Based on the above, the proposed project and the potential future development of the off-site affordable housing parcel would not physically divide an established community. Thus, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

13-2 Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of the potential for the proposed project and potential future development of the off-site affordable housing parcel to cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

Proposed Project

The General Plan Guidelines published by the State Office of Land Use and Climate Innovation (LCI) define consistency as follows, "An action, program, or project is consistent with the general plan if, considering all its aspects, it will further the objectives and policies of the general plan and not obstruct their attainment." Therefore, the standard

for analysis used in this EIR is in general agreement with the policy language and furtherance of the policy intent (as determined by a review of the policy context).

The determination that the project is consistent or inconsistent with the PCGP policies or other County plans and policies is ultimately the decision of the Placer County Board of Supervisors. Furthermore, although CEQA analysis may identify some areas of general consistency with County policies, the County has the ability to impose additional requirements or conditions of approval on a project, at the time of its approval, to bring a project into more complete conformance with existing policies. A discussion of the project's general agreement with policy language and furtherance of policy intent is provided in further detail below.

The DCWPCP and the County's Zoning Ordinance carry out the policies of the PCGP by classifying and regulating the uses of land and structures within the unincorporated County, consistent with the PCGP. As noted previously, the project site is currently designated RLDR (80.1 acres) and OS (12.1 acres). The project site is currently zoned RS-AG-B-40 PD=1 (80.1 acres) and O PD=1 (12.1 acres). The proposed project would include a PCGP/DCWPCP Land Use Map Amendment to change the site's land use designations to High Density Residential (HDR) (23.2 acres), Medium Density Residential (MDR) (57.8 acres), and OS (11.2 acres) (see Figure 13-2).

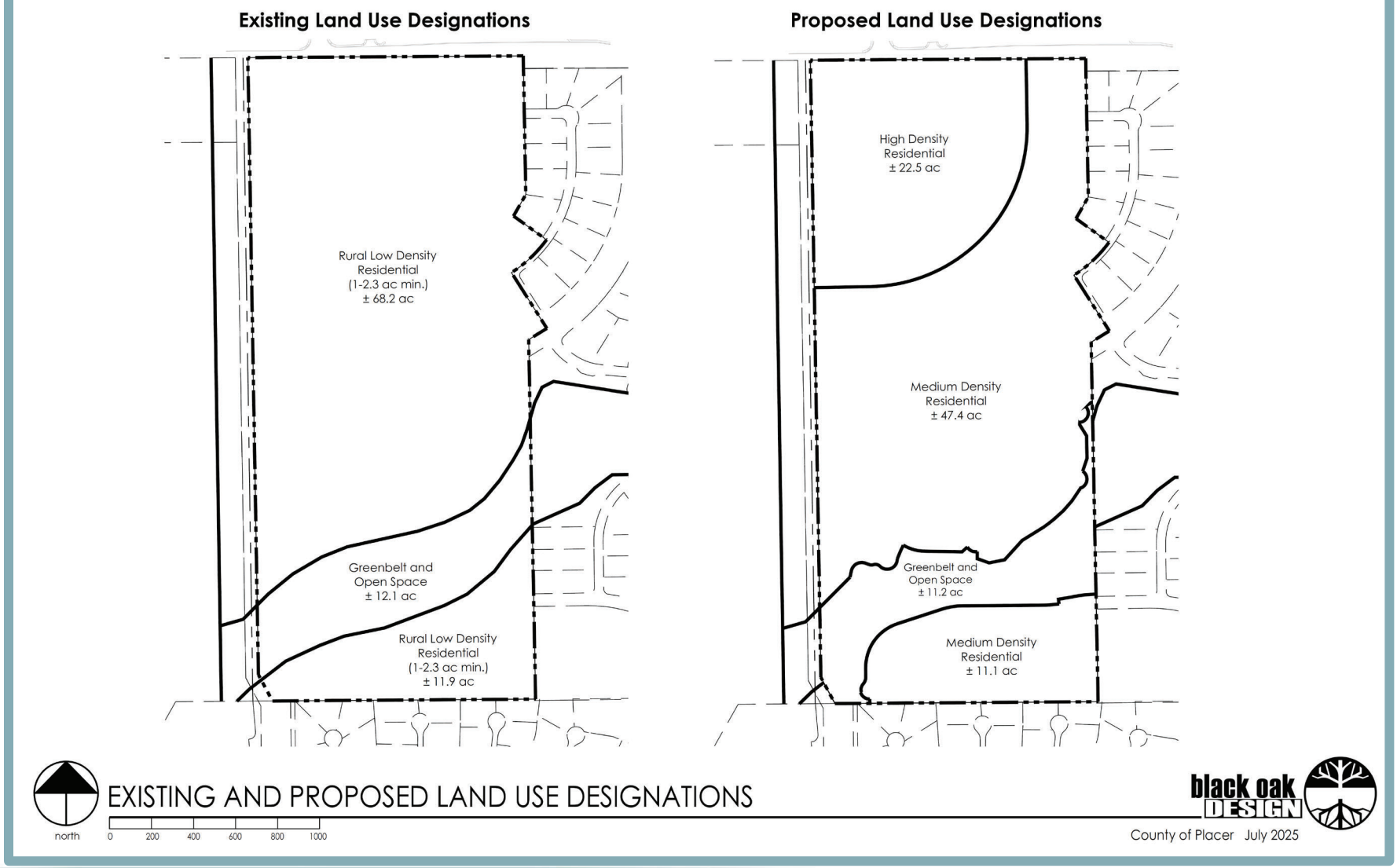
The HDR designation allows for residential neighborhoods of grouped or clustered single-family dwellings, duplexes, apartments, and other multiple-family attached dwellings such as condominiums at a density up to 10 du/ac. The HDR designation is applied within urban areas where residential development will be near transportation corridors, downtowns, village centers, other major commercial centers, schools and community services. Typical land uses allowed include detached and attached single-family dwellings, secondary dwellings, all types of multi-family dwellings (e.g., duplexes, apartments, senior housing projects, etc.), and residential accessory uses; churches, schools, parks, golf courses, childcare facilities; and necessary public utility and safety facilities.

The MDR designation allows for moderate-density housing, either as attached or detached units, at a density range of two to four du/ac. It may include a range and mix of dwelling types, including single-family detached houses and multi-family residential development, such as duplexes. The primary intent of the MDR designation is to provide for residential neighborhood development in an efficient urban pattern of well-connected streets and at greater dwelling unit density than the LDR designation.

As discussed above, the OS land use designation is generally identified as the approximate 100-year floodplain of Dry Creek and the creek's tributaries. The OS-designated areas within the DCWPCP area are often heavily wooded, and are intended to improve the design of subdivisions adjoining such areas. The OS land use designation is also compatible with certain public and private recreation facilities, in some areas.

In addition, the proposed project would require a Rezone, Vesting Large Lot Tentative Subdivision Map, Vesting Phased Small Lot Tentative Subdivision Map, and County approval of a Design Review for the Estia Dry Creek portion of the project.

Figure 13-2
Existing and Proposed PCGP/DCWPCP Land Use Designations



* Figure not OCR Compatible

The proposed project would also require approval of annexation into Placer County Service Area 28, Zone 173 for sanitary sewer service; annexation into Placer County Service Area 28, Zone 169 for ongoing maintenance of public parks, trails and open space recreation amenities within the Dry Creek community; and annexation into the Dry Creek Fire Zone of Benefit (County Service Area 28, Zone of Benefit 165) for provision of fire protection services. Approval of the aforementioned entitlements would allow for the development of the proposed project.

As shown in Table 13-7 at the end of this chapter, County staff and its environmental consultant, Raney Planning and Management, Inc., have concluded that the project would be generally consistent with the applicable policies outlined in the PCGP and DCWPCP. Furthermore, the project is generally consistent with and implements all other applicable plans and policies. The conclusions expressed in Table 13-7 reflect the best judgment of County staff and the County's consultant.

As noted above, the ultimate question of the meaning of particular General Plan policies, and thus the proposed project's consistency with them, lies with the Board of Supervisors. It is worth noting, however, that the language found in general plans is sometimes susceptible to varying interpretations, and reasonable minds may differ as to the meaning of particular policies and how to apply them to proposed projects. Case law interpreting the Planning and Zoning Law (Gov. Code, § 65000 et seq.) makes it clear that: (i) the ultimate meaning of such policies is to be determined by the elected legislative body or a lower tier decision-making body such as a planning commission, as opposed to County staff and EIR consultants, applicants, or members of the public; and (ii) the decision-making body's interpretations of such policies will prevail in court (if challenged) if the interpretations are "reasonable," even though other reasonable interpretations are also possible (see *No Oil, Inc. v. City of Los Angeles* (1987) 196 Cal.App.3d 223, 245-246, 249). Courts also have recognized that, because general plans often contain numerous policies adopted to address differing or competing legislative goals, a development project may be "consistent" with a general plan, taken as a whole, even though the project appears to be inconsistent or is arguably inconsistent with some specific policies within a given general plan (*Sequoyah Hills Homeowners Association v. City of Oakland* (1993) 23 Cal.App.4th 704, 719). Furthermore, courts strive to "reconcile" or harmonize seemingly disparate general plan policies to the extent reasonably possible (*No Oil*, *supra*, 196 Cal.App.3d at p. 244). Agencies should do the same.

Some policies, in fact, may be irreconcilable. As the courts have said, "it is beyond cavil that no project could completely satisfy every policy stated in the [General Plan], and that state law does not impose such a requirement" (*Sequoyah, supra*, 23 Cal.App.4th 704, 719, citing *Greenebaum v. City of Los Angeles* (1984) 153 Cal.App.3d 391, 406-407 and 59 Ops.Cal.Atty.Gen. 129, 131 (1976)). "A general plan must try to accommodate a wide range of competing interests—including those of developers, neighboring homeowners, prospective homebuyers, environmentalists, current and prospective business owners, jobseekers, taxpayers, and providers and recipients of all types of city-provided services—and to present a clear and comprehensive set of principles to guide development decisions. Once a general plan is in place, it is the province of elected [county] officials to examine the specifics of a proposed project to determine whether it would be 'in harmony' with the policies stated in the plan" (*Sequoyah*, *supra*, 23 Cal.App.4th at p. 719, citing *Greenebaum*, *supra*, 153 Cal.App.3d at p. 406). Nevertheless, proposed projects are required to be consistent with all General Plan policies that are "fundamental, mandatory,

and clear" (*Families Unafraid to Uphold Rural El Dorado County v. El Dorado County Bd. of Supervisors* (1998) 62 Cal.App.4th 1332, 1341-1342; *Endangered Habitats League, Inc. v. County of Orange* (2005) 131 Cal.App.4th 777, 782 ["[a] project is inconsistent if it conflicts with a general plan policy that is fundamental, mandatory, and clear"]).

Should the Board of Supervisors choose to approve the proposed project, the Board may rely on the analysis in Table 13-7 as support for the conclusion that the project, which includes proposed PCGP amendments (see below), is consistent with the PCGP as amended. Certification of the Final EIR will be indicative of agreement with the conclusions in the table.

The project would also require approval of a Rezone to change the site's zoning designations from RS-AG-B-40 PD=1 (80.1 acres) and O PD=1 (12.1 acres), to Residential Multifamily, combining Design Scenic Corridor (RM-Dc) (23.2 acres), Residential Single Family, combining minimum Building Site of 6,000 sf (RS-B-6) (57.8 acres), and Open Space (O) (11.2 acres) (see Figure 13-3).

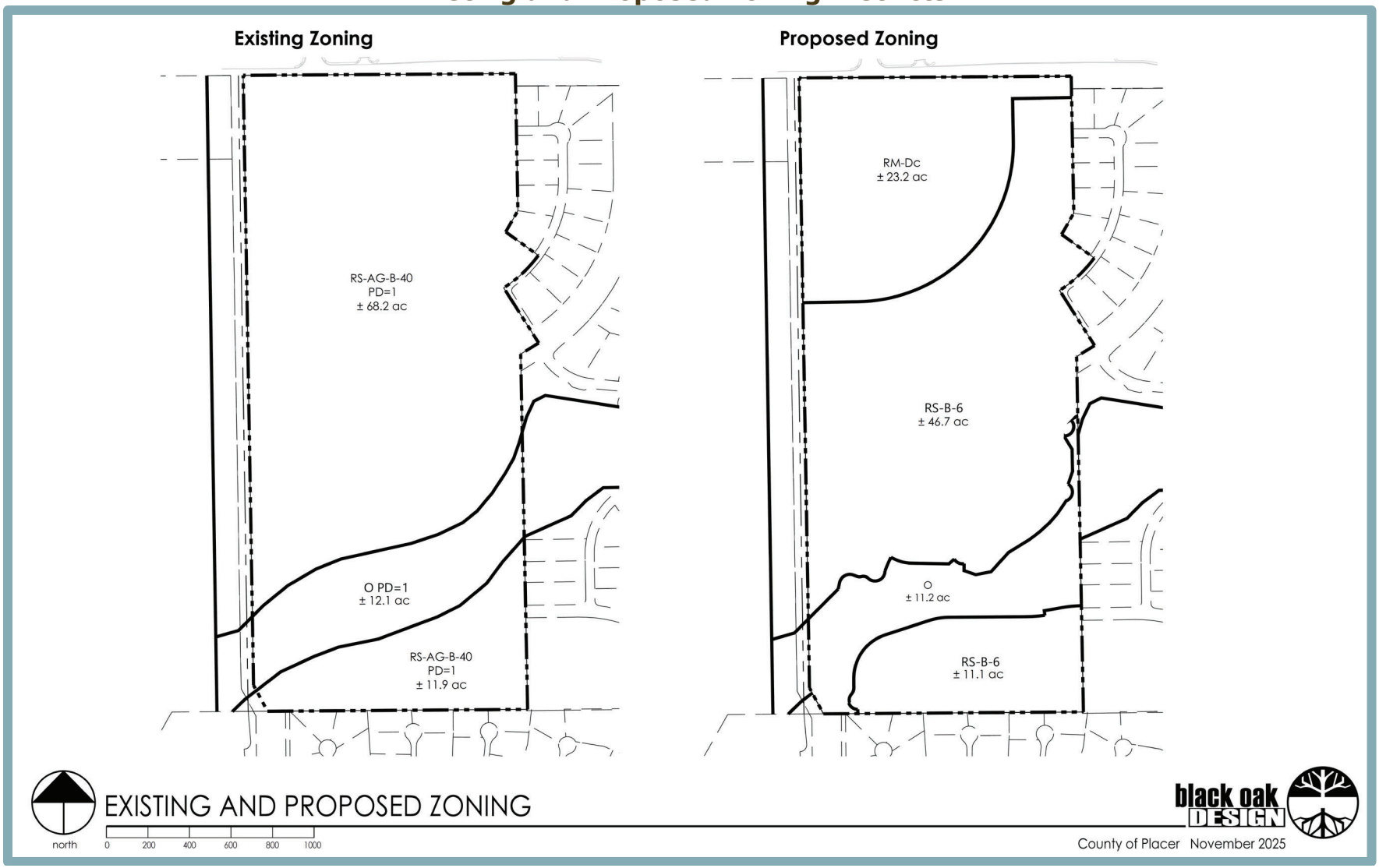
While an inconsistency may indicate a significant physical impact, the inconsistency is not itself an impact. The physical impacts of the project are analyzed in Chapters 4 through 18 of this EIR.

Approval of the aforementioned entitlements for the proposed project are discretionary actions subject to approval by the Placer County Board of Supervisors. Should the Placer County Board of Supervisors approve the requested entitlements, the project would be rendered consistent with the County's DCWPCP and the County's Zoning Ordinance.

From a policy perspective, Table 13-7 at the end of this chapter sets forth the reasoning for County staff's determination that the proposed project would be generally consistent with the applicable policies in the PCGP and the DCWPCP adopted for the purpose of avoiding or mitigating an environmental effect.

Furthermore, pursuant to Placer County Code Section 15.65.060(A), if a residential project exceeds 100 units, at least 10 percent of all dwelling units included must be affordable, as set forth in Placer County Code Sections 15.65.070 and 15.65.080, as applicable. The 220 multi-family residential units associated with the Estia Dry Creek development would be exempt from the Placer County Inclusionary Housing Ordinance (County Code 15.65.050.B.16) due to the unit sizes averaging less than 1,600 sf. Accordingly, 10 percent of the 212 single-family residential units included as part of the Placer Creek Residential development would be 22 units. As noted previously, the project could include 22 ADUs on-site in order to meet the County's affordable housing requirements. Construction of the ADUs could occur within any phase of development. According to Placer County's Housing Element Policy HE-C-3, the County considers ADUs of less than 750 sf to be affordable by design and eligible to satisfy low-income housing requirements in specific plans and new developments. The 22 ADUs would be 750 sf or less. Therefore, the ADUs would meet the County's affordable housing requirements. The off-site affordable housing parcel option's consistency with applicable land use plans, policies, or regulations is discussed below.

Figure 13-3
Existing and Proposed Zoning Districts



* Figure not OCR Compatible

Based on the above, the proposed project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

Off-Site Affordable Housing Parcel

One option for the project to meet the County's affordable housing regulations includes an amendment to the RVSP and a rezone of the proposed affordable housing parcel to Residential Multifamily 30, combining Design Scenic Corridor (RM30-Dc) zone, which could result in a maximum development potential of 120 affordable income-restricted units. Development of the off-site affordable housing parcel would implement the Placer County Inclusionary Housing Ordinance (County Code 15.65.050.B.16).

As stated in the RM30 zoning district regulations, all new development in the RM30 zone, except where otherwise provided by Articles 17.54 (General Development Standards) or 17.56 (Specific Use Requirements) for a particular use or situation shall meet the requirements established in the Multifamily and Mixed Use Design Manual for lot area, site width, setbacks, floor area ratio, and height limit and other applicable standards. Compliance with these standards (e.g., exterior lighting, landscaping and drainage, EV charging, etc.) would help ensure that potential impacts associated with future residential development on the off-site affordable housing parcel would be minimized.

Similar to the proposed project, the determination that development of the off-site affordable housing parcel is consistent or inconsistent with the PCGP policies or other County plans and policies is ultimately the decision of the County Board of Supervisors. Furthermore, although CEQA analysis may identify some areas of general consistency with County policies, the County has the ability to impose additional requirements or conditions of approval on a project, at the time of its approval, to bring a project into more complete conformance with existing policies. Appendix G of the CEQA Guidelines explicitly focuses on environmental policies and plans, asking if the project would "cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect."

As discussed in the RSVP EIR, the RVSP is generally consistent with the PCGP and the DCWPCP. Therefore, the RVSP policies were determined to be consistent with the goals of the PCGP and DCWPCP. Table 13-7 below is focused on proposed project consistency with the PCGP and DCWPCP policies, and the following discussion of the off-site affordable housing parcel appropriately focuses on consistency with the RVSP policies adopted for the purpose of avoiding or mitigating environmental effects.

With respect to Circulation Policy 3 and Resource Management Policies 18 and 23 of the RVSP related to establishing a network for alternative modes of transportation, the County would require the future developer to construct frontage improvements, including any planned bicycle and/or pedestrian facility improvements, upon development of the off-site affordable housing parcel. With respect to policies related to preserving wetlands, native trees, and sensitive habitats, including Green Space Policy 7, and Resource Management Policies 1, 3, 6, 7, and 8, the future development of the off-site affordable housing parcel would be subject to Mitigation Measures 7-1 and 7-2, and RVSP EIR Mitigation Measures 6-4a, 6-8a, 6-10a, 6-11a, 6-12a, which require pre-construction surveys for special-status plant and wildlife species, applicable avoidance measures, and compensation for the loss

of habitat. In addition, the future developer would be required by the County to implement the adopted RVSP EIR Mitigation Measures 6-1a, 6-1c, and 6-1d, which are intended to prevent the loss of jurisdictional and potentially non-jurisdictional wetlands, and RVSP EIR Mitigation Measures 6-13a and 6-13b, which are intended to prevent the loss of protected native trees.

Future development of the off-site affordable housing parcel would be consistent with Resource Management Policies 8, 10,11, and 13 related to erosion control and water quality, pursuant to compliance with RVSP EIR Mitigation Measures 12-1b, 12-3b, 12-3c, 12-3d, 13-2a, 13-4b, 13-4c, which require compliance with the County Grading Ordinance and National Pollutant Discharge Elimination System (NPDES) requirements, preparation and implementation of a stormwater pollution prevention plan, preparation of a project-specific drainage report, and implementation of Best Management Practices (BMPs). In addition, consistent with Resource Management Policies 14 and 16 related to water conservation in landscaping, future development of the off-site affordable housing parcel would comply with the County's Water Efficient Landscape Ordinance (WELO), which would be ensured during the design review process through submission of a landscape package to the County for review and approval. The landscape package would include water budget calculations, a soil management report, landscape design plan, irrigation design plan, and other documents related to the proposed landscaping, irrigation, and grading plans. Consistent with Resource Management Policy 14 related to indoor water conservation, future development of the off-site affordable housing parcel would be subject to all applicable California Green Building Standards Code (CALGreen) requirements related to low-flow fixtures.

With respect to Resource Management Policies 19 and 20 related to energy efficiency, future development of the off-site affordable housing parcel would be required to comply with the requirements of the California Building Standards Code (CBSC) and Assembly Bill (AB) 1346. With respect to Resource Management Policy 21 related to restrictive lighting measures, pursuant to Section 17.54.070(A)(2)(i) of the Placer County Code, future development of the off-site affordable housing parcel would be subject to compliance with the applicable sections of the Placer County Design Guidelines related to light pollution, including, but not limited to, shielding of fixtures such that direct rays do not pass property lines. The off-site affordable housing parcel would also be required to comply with the lighting policies of the RVSP Design Guidelines, which requires the following: that street lighting standards shall be spaced according to County requirements; lighting shall be provided to ensure a safe environment, but shall not result in excessive light or glare; that lighting shall be sensitive to adjacent land uses and viewsheds; and that fixtures that provide down-lighting shall be shielded from adjacent uses where feasible. With respect to Resource Management Policy 25 related to noise impacts on sensitive uses, the future potential development of the off-site affordable housing parcel is not anticipated to contribute any excessive operational noise level increases to the existing ambient noise environment at any sensitive receptor locations.

Lastly, with respect to Public Services and Utilities Policies 1, 2, 3, and 4 related utility infrastructure, recycled water, solid waste, and public services, future development of the off-site affordable housing parcel would be subject to RVSP EIR Mitigation Measures 14-1a, 14-1b, 14-5a, 14-13a, and 14-14a, which require payment of applicable development impact fees, water connection fees, and a written certification from the water service provider and wastewater treatment provider that either existing services are available for

the off-site affordable housing parcel or that needed improvements will be in place prior to occupancy. In addition, the project applicant would be required to pay sewer connection fees, the Traffic Impact Fee, and the Public Facilities Impact Fee. The future residential uses associated with the off-site affordable housing parcel would also be subject to all applicable recycling regulations, including Senate Bill (SB) 1383.

Based on the above, developing the off-site affordable housing parcel with an additional 60 HDR units as compared to what was assumed for the parcel in the RVSP EIR would not result in an inconsistency with the RVSP policies adopted for the purpose of avoiding or mitigating environmental effects.

Conclusion

Based on the above, the proposed project and potential future development of the off-site affordable housing parcel would not cause a significant environmental impact due to conflicts with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect (including the policies discussed in Table 13-7), and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

13-3 Result in the development of incompatible uses and/or the creation of land use conflicts. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of the potential for the proposed project and potential future development of the off-site affordable housing parcel to result in the development of incompatible uses and/or the creation of land use conflicts.

Proposed Project

The determination of compatibility of land uses typically relies on a general discussion of the types of adjacent uses to a proposed project and whether any sensitive receptors are located either on the adjacent properties or associated with the proposed project. Surrounding existing land uses consist of the following:

North:	Under-construction Baseline Marketplace across Baseline Road
South:	Single-family residences
East:	Single-family residences and Dry Creek tributaries
West:	Under-construction Property 1A of the PVSP, which will include single-family residential uses

The proposed project would involve construction of 432 residential units, including 212 single-family lots and 220 multi-family units, and, potentially, an additional 22 ADUs. As noted above, some of the areas surrounding the project site consist of residential development. The proposed project's residential uses would be compatible with the existing and approved residential development within the project area; thus, the following discussion focuses on the limited areas where the proposed residences would be juxtaposed with non-residential uses, such as the Baseline Marketplace to the north, across Baseline Road, and Dry Creek tributaries to the east.

The PCGP includes additional buffer requirements for sensitive habitat areas such as the Dry Creek tributaries within and to the east of the site. Consistency with the County's sensitive habitat buffers is discussed in Chapter 7, Biological Resources, of this EIR. The PCGP also requires that new non-agricultural development immediately adjacent to agricultural lands be designed to provide a buffer in the form of a setback of sufficient distance to avoid land use conflicts between urban/suburban and agricultural areas. As discussed in Chapter 5, Agricultural Resources, of this EIR, the surrounding existing uses do not include agricultural operations.

While the project would introduce more intensive uses when compared to existing conditions, the proposed project would be generally compatible with the uses and intensity of the surrounding development, and would be required to comply with all applicable County design standards. The ultimate Baseline Road configuration from improvements associated with the Baseline Marketplace and the PVSP would be 96 feet wide, which would separate the project site from the Baseline Marketplace to the north. The project frontage on the south side of Baseline Road would include a landscaped corridor with a six-foot tall concrete masonry unit (CMU) wall, which would help screen the proposed development from surrounding areas, including the Baseline Marketplace to the north, across Baseline Road. The proposed project would also include landscaping with native vegetation at the Phase 1 and Phase 2 entries on Baseline Road and Walerga Road. The landscaping would include materials consistent with the DCWPCP and the Placer County Landscape Guidelines. Trees and shrubs would also be planted along both sides of Walerga Road within the project site. A six-foot tall tubular open view fence would also be located along the western boundary of the Estia Dry Creek development, and a six-foot tall privacy fence along the southern boundary. In addition to landscaping, an approximately 1,300-foot-long Class I meandering trail would be located along the Baseline Road frontage, and an approximately 2,300-foot-long Class I meandering trail would be located along the southern/eastern Walerga Road frontage. Together, the landscaped trail, sidewalk, and CMU wall would provide screening between the residences adjacent to the roadways and the commercial uses to the north of the project site.

In addition, the Old Walerga Road corridor separates the proposed Estia and Phase 2 portions of the project from the existing residential community to the west within the broader Placer Vineyards area. The proposed project aims to implement minor enhancements within the abandoned road corridor. The corridor is privately-owned and encumbered by existing public utility easements; accordingly, any proposed enhancements would be subject to landowner consent. Proposed enhancements would be limited to areas previously disturbed by the former roadway and may include linkages on the north side to the planned Class I trail along Baseline Road and on the south side to Town Center Drive, limited pavement surface treatments (such as slurry seal or comparable non-structural applications), signage, and striping to accommodate pedestrians and bicyclists. If implemented, the improvements to the Old Walerga Road corridor would enhance connectivity of local residents to nearby retail and commercial centers, provide additional safety for pedestrians and cyclists, support multimodal access, and contribute to the overall functionality and integration of the local trail network.

During construction activities, the proposed project would retain and protect existing native trees within the project site where possible. Where new plantings are proposed, the project would use native plants that are indigenous and adapted to the region. As a Condition of

Approval, the project architecture would be designed to be compatible with the existing residential character of the area. As discussed in Chapter 14, Noise, of this EIR, the project would not introduce a substantial permanent increase in ambient noise levels in the project vicinity above levels occurring under the existing conditions.

Therefore, the project would not introduce an incompatible use to the project area or create land use conflicts, and would not result in any adverse environmental effects associated with such development.

Off-Site Affordable Housing Parcel

As discussed previously, one option for the project to meet the County's affordable housing regulations includes an amendment to the RVSP and a rezone of the off-site affordable housing parcel to the RM30 zone, which would result in a maximum development potential of 120 affordable income-restricted units. While the proposed project would include a Rezone to allow for development of the aforementioned units, the County has previously planned for buildout of the site, as evidenced by the site's previous designations of HDR and Commercial, pursuant to the RVSP. Rezoning of the off-site affordable housing parcel does not include any site-specific development plans, designs, or proposals at this time. However, future development of the off-site affordable housing parcel would be subject to County review and compliance with the applicable development standards for the RM30 zoning district included in Article 17.49 of the Placer County Code. As discussed therein, any residential multi-family development within the RM30 zone district is required to be developed at a minimum density of 20 units per acre and maximum density of 30 units per acre, and would be subject to the requirements established in the Multifamily and Mixed Use Design Manual (June 2021) for lot area, site width, setbacks, floor area ratio, height limit, and other applicable standards.

With respect to the uses surrounding the off-site affordable housing parcel, an existing cemetery is located to the north of the parcel, and future MDR uses associated with the approved 120-lot Frisvold Subdivision would be located to the east of the parcel. The areas to the west and south of the off-site affordable housing parcel are located outside of the RVSP. Single-family residential uses are located to west of the off-site affordable housing parcel, and to the south of the parcel, within Sacramento County and south of PFE Road and vacant land. According to the RVSP EIR, the uses in the RVSP area, including the HDR uses assumed for the off-site affordable housing parcel, would be compatible with the aforementioned surrounding land uses.

Conclusion

Based on the above, the proposed project and the potential future development of the off-site affordable housing parcel would not result in the development of incompatible uses and/or the creation of land use conflicts, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

13-4 Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure). Based on the analysis below, the impact is *less than significant*.

Growth can be induced in a number of ways, including through the elimination of obstacles to growth or through the stimulation of economic activity within the region. Examples of projects likely to have growth-inducing impacts include extensions or expansions of infrastructure systems beyond what is needed to serve project-specific demand, and development of new residential subdivisions or office complexes in areas that are currently only sparsely developed or are undeveloped. The following sections describe potential effects related to direct and indirect population growth associated with implementation of the proposed project and potential future development of the off-site affordable housing parcel.

Direct Population Growth

The following sections describe potential effects related to direct population growth associated with implementation of the proposed project and potential future development of the off-site affordable housing parcel.

Proposed Project

The proposed 432-unit single-family and multi-family development would increase the available housing within the DCWPCP area, which would be expected to increase population in the area. Using the 2.94 persons/household average household size for the DCWPCP area (see Table 13-5), the proposed 432 residential units could house an estimated 1,270 residents.

Residential development is allowed within the 80.1-acre portion of the project site designated as RLDR. The maximum density for single-family dwellings in the RLDR designation is one du/ac. Under the current RLDR designation for the 80.1-acre portion of the project site, up to 80 single-family residences could be built, resulting in a population increase of approximately 235 residents (80 units x 2.94 persons per household). Thus, development of the proposed project could result in a net increase of approximately 352 units, or 1,035 residents beyond what is currently anticipated for the site.

As noted previously, the project could potentially include 22 ADUs on-site in order to meet the County's affordable housing requirements. Because the 22 ADUs are anticipated to be smaller than the proposed 212 single-family units, a lower person per household rate of 1.91 persons per household is applied to the ADUs. Thus, development of 22 ADUs would likely result in approximately 42 additional residents (22 units x 1.91 persons per household) within the project site. The total population of the project site with 432 units and 22 ADUs would be an estimated 1,312 residents, or 1,077 residents beyond what is currently estimated for the site based on current land use designations.

Development of 432 residential units and 22 ADUs, and the associated addition of approximately 1,312 residents would increase the total current population of the DCWPCP area from 8,352 to approximately 9,664, or a 15.7 percent increase. However, as discussed in the Existing Environmental Setting section of this chapter, the DCWPCP

projected that the area's population could grow to as much as 9,836 residents by buildout. Thus, the increase in population that could be generated by the proposed project would still be within the range of growth projections assumed in the DCWPCP. Impacts associated with the growth anticipated in the DCWPCP area were analyzed in the EIR for the adopted DCWPCP.

While the anticipated population growth resulting from the proposed project would be within the maximum growth anticipated by the DCWPCP buildout, the 2010 growth estimates within the DCWPCP do not include more recent projects approved in the DCWPCP, namely the RVSP and the PVSP. In addition, several new residential subdivisions have been completed, are underway, or approved within the Plan area. Growth related to buildout of the project in conjunction with the foregoing Specific Plans is considered in further depth within Impact 13-6 below.

In addition to the growth anticipated in the DCWPCP, SACOG also anticipates growth within Established Communities, including the DCWPCP area. As discussed within the Existing Environmental Setting section of this chapter, Established Communities throughout the unincorporated area of Placer County are anticipated to grow by 2,760 units between 2020 and 2035.[19] The 432 units included in the proposed project, as well as the 22 ADUs that could be included in the project to meet the County's affordable housing requirements, would be within SACOG's growth estimates for Established Communities within Placer County by 2035. Additionally, growth in the DCWPCP area and other unincorporated areas of Placer County was anticipated by the Placer County Housing Element. As shown in Table 13-6, the County's Housing Element includes allocation for market-rate and below market-rate units within unincorporated portions of the County. The proposed 212 single-family units would be within the Housing Elements' allocation of market-rate units for the County.

Therefore, the population growth generated by the proposed project would be within the buildout and growth projections for the DCWPCP area, as well as unincorporated areas within Placer County.

Off-Site Affordable Housing Parcel

As discussed previously, one option for the project to meet the County's affordable housing regulations includes an amendment to the RVSP and a rezone of the off-site affordable housing parcel to the RM30 zone, which would result in a maximum development potential of 120 affordable income-restricted units. While the proposed project would include a Rezone to allow for development of the aforementioned units, the County has previously planned for buildout of the site, as evidenced by the site's previous designations of HDR and Commercial. The RVSP EIR evaluated development of the off-site affordable housing parcel with 60 HDR units, and determined that such development would result in 120 residents, which would not be an introduction of substantial new population.

Using the same estimated number of persons by household used within the RVSP EIR, a doubling in HDR units within the off-site affordable housing parcel could result in a total of 240 future residents associated with the potential future development of the off-site

[19] Sacramento Area Council of Governments. *2020 Metropolitan Transportation Plan/Sustainable Communities Strategy* [Appendix C, pg. 8]. Adopted November 18, 2019.

affordable housing parcel. Nonetheless, similar to the proposed project, the increase in population that could be generated by development of the off-site affordable housing parcel would still be within the range of growth projections assumed in the DCWPCP and by SACOG.

Indirect Population Growth

The following sections describe potential effects related to indirect population growth associated with implementation of the proposed project and potential future development of the off-site affordable housing parcel.

Proposed Project and Off-Site Affordable Housing Parcel

The proposed project could result in an increase of the permanent population on the project site by an estimated 1,312 residents, and the potential future development of the off-site affordable housing parcel could result in a permanent population increase of approximately 240 residents. The new residential population would likely support local businesses and services in the area, fostering economic growth. While development of the proposed project and off-site affordable housing parcel would result in increased employment opportunities in the construction field, employment patterns of construction workers are such that construction workers would not likely, to any significant degree, relocate their households as a result of the construction-related employment opportunities associated with the proposed project and off-site affordable housing parcel. As a result, permanent jobs would not be directly created by the proposed project or off-site affordable housing parcel and the project would not result in long-term employment growth in the area.

The residential population generated by the proposed project and off-site affordable housing parcel would also result in an increased demand for public services. However, as discussed in Chapter 15, Public Services and Utilities, the increase in population associated with development of the proposed project and off-site affordable housing parcel and associated demand for utility services could be accommodated by existing services and would not create a need for new or altered governmental facilities. In addition, the proposed project would be annexed into the Dry Creek Zone of Benefit (County Service Area 28, Zone 165) for provision of fire protection services to the project site. The proposed project would also require annexation into Placer County Service Area 28, Zone 169, for ongoing maintenance and the generation of funds for public parks, trails, and open space recreation amenities within the Dry Creek community.

The DCWPCP included measures to ensure that adequate utilities and services were provided for development within the DCWPCP area. Consistent with the DCWPCP, the project would be annexed into Placer County Service Area 28, Zone 173, for sanitary sewer service. Underground infrastructure improvements for the proposed project would include new water mains on-site, as well as on-site gravity sanitary sewer and storm drain collection systems. Development of the project site would also require installation of on-site drainage facilities and alteration of site topography to accommodate the proposed land uses. The proposed project would connect to an existing eight-inch sewer line to the south of the project site.

Given that the majority of the project site is currently anticipated for development with residential uses according to the DCWPCP, such utilities have been designed to

accommodate additional demand associated with buildout of the site pursuant to the approved DCWPCP land use designations. In addition, the proposed project would include improvements to the existing lift station located approximately 0.53-mile south of the project site, including increasing the emergency storage capacity. The improvements and upgrades to be conducted at the lift station would support the proposed project and future development within the sewer shed. The proposed upgrades to the existing lift station would occur once the existing capacity is reached to ensure adequate capacity for the proposed project.

Furthermore, the infrastructure included in the potential future development of the off-site affordable housing parcel would be sized to accommodate only the associated residential uses and would not add capacity beyond what is needed to serve the site. The utility improvements included in the potential future development of the off-site affordable housing parcel would be designed to serve the proposed residences only, and would not induce any significant indirect population growth within the DCWPCP area.

Conclusion

Considering the above, the proposed project and potential future development of the off-site affordable housing parcel would include development that would result in direct on-site population growth. Population growth resulting from the proposed project would be within the DCWPCP, SACOG, and Placer County growth estimates for the project area. Furthermore, the infrastructure included in the proposed project would be sized to accommodate the development of the proposed project and the improvements to the existing lift station would support the proposed project and future approved and planned development within the sewer shed. As a result, the proposed project would not be considered to induce substantial unplanned population growth, and a ***less-than-significant*** impact would result. Potential impacts related to growth inducement are discussed further within Chapter 20, Statutorily Required Sections, of this EIR, consistent with Section 15126.2(d) of the CEQA Guidelines.

Mitigation Measure(s)

None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, “cumulative impacts” refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Additional detail regarding the cumulative setting is included in Chapter 20, Statutorily Required Sections, of this EIR.

13-5 Cause a significant cumulative environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Based on the analysis below, the cumulative impact is *less than significant*.

A cumulative analysis of land use is not included because land use plans or policies and zoning generally do not combine to result in cumulative impacts. The determination of significance for impacts related to such issues is whether the project or the off-site affordable housing parcel would cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Such a conflict is site-specific, and, thus, is only addressed on a project-by-project basis. As shown in Table 13-7 of this chapter, the proposed project would be generally consistent with relevant policies in the PCGP and the DCWPCP. In addition, as discussed in the RSVP EIR, the RVSP is generally consistent with the PCGP and the DCWPCP. Developing the off-site affordable housing parcel with an additional 60 HDR units as compared to what was assumed for the parcel in the RVSP EIR would not result in an inconsistency with the applicable policies and plans adopted for the purpose of avoiding or mitigating an environmental effect. As discussed throughout this EIR, the potential future development of the off-site affordable housing parcel would be generally consistent with RVSP policies adopted for the purpose of avoiding or mitigating environmental effects. Therefore, the proposed project would not cause or contribute to a significant cumulative environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect, and the cumulative impact would be ***less than significant***.

Mitigation Measure(s)

None required.

13-6 Cumulative unplanned population growth. Based on the analysis below, the cumulative impact is *less than significant*.

Buildout of the DCWPCP was anticipated to result in population growth within the plan area through the buildout of urban and rural developments throughout the DCWPCP, including the project site. Since approval of the DCWPCP, the Placer Vineyard Specific Plan and RVSP have been approved, which have increased the amount of land designated for urban development within the DCWPCP area. In addition, several new residential subdivisions including the Creekview Ranch Project, the Double S Ranch Project, The Ranch Project, and the Mill Creek Project have been completed, are underway, or approved within the Plan area. The MTP/SCS, prepared by the SACOG, provides regional growth projections for the six-county Sacramento region, including the DCWPCP.

The MTP/SCS identifies the portions of the DCWPCP, excluding the RVSP and PVSP areas, as Established Communities. As discussed within Impact 13-4 above, the population growth related to implementation of the proposed project and off-site affordable housing parcel has been anticipated for the region by the MTP/SCS. Concurrently, the MTP/SCS explicitly anticipates growth within the Developing Communities of Placer

Vineyards and Riolo Vineyard within the total growth anticipated for Placer County.[20] Thus, the DCWPCP anticipated cumulative growth of the plan area, and increased urbanization within the DCWPCP area has been anticipated by regional planning such as the MTP/SCS. Because development of the project site, off-site affordable housing parcel, and buildout of the DCWPCP area has been anticipated in regional development forecasts, buildout of the proposed project and off-site affordable housing parcel in combination with other approved developments within the project area would not result in a cumulatively considerable incremental contribution to population growth within the project area or region.

Population growth itself does not constitute a significant physical environmental effect. Rather, the determination of significance is based on whether population growth associated with a project has been previously planned for, and whether such growth could result in indirect impacts from associated development. As such, the cumulative analysis within each technical chapter of this EIR evaluates the physical environmental impacts of cumulative development.

Considering the above, implementation of the proposed project, in combination with future development occurring under buildout of the DCWPCP, would result in a ***less-than-significant*** cumulative impact related to substantial unplanned population growth.

Mitigation Measure(s)

None required.

[20] Sacramento Area Council of Governments. *2020 Metropolitan Transportation Plan/Sustainable Communities Strategy* [Appendix C, pg. 8]. Adopted November 18, 2019.

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
PCGP		
Land Use		
1.B.1	The County shall promote the concentration of new residential development in higher density residential areas located along major transportation corridors and transit routes.	The project site is located along Baseline Road, which provides a major point of connection between the southern boundary of the City of Roseville and the northern boundary of the DCWPCP area. The project site is also bisected by Walerga Road, which provides north to south access between the City of Roseville and the DCWPCP area. Furthermore, Roseville Transit services Route D with a stop approximately 0.70-mile from the project site at Baseline Road and Woodcreek Oaks Boulevard. Route D traverses the western neighborhoods of the City of Roseville and connects to the Civic Center Junction, which provides connections to commuter buses. While the project site is not located within a high-density residential area, the proposed project would be generally consistent with existing and approved residential development trends in the project vicinity.
1.B.5	The County shall require residential project design to reflect and consider natural features, noise exposure of residents, visibility of structures, circulation, access, and the relationship of the project to surrounding uses. Residential densities and lot patterns will be determined by these and other factors. As a result, the maximum density specified by General Plan designations or zoning for a given parcel of land may not be realized.	The project site includes various natural features, including wetlands, vernal pools, Placer Creek, and a band of oak woodlands located along the Placer Creek riparian corridor. The proposed project would preserve the Placer Creek riparian corridor as open space. Pursuant to Mitigation Measure 14-1(a) within this EIR, temporary sound walls would be constructed during project construction to reduce noise exposure. The other components of this policy are design-related and not focused on the physical environment.
1.K.4	The County shall require that new development incorporates sound soil conservation practices and minimizes land alterations. Land alterations should comply with the following guidelines: a. Limit cuts and fills; b. Limit grading to the smallest practical area of land; c. Limit land exposure to the shortest practical amount of time; d. Replant graded areas to ensure establishment of plant cover before the next rainy season; and e. Create grading contours that blend with the natural contours on site or with contours on property immediately adjacent to the area of development; and	Mitigation Measure 10-2(c) of this EIR requires that all proposed grading, drainage improvements, and vegetation and tree removal shall conform to provisions of the County Grading Ordinance (Ref. Article 15.48, Placer County Code) and Stormwater Quality Ordinance (Ref. Article 8.28, Placer County Code) that are in effect at the time of Improvement Plan submittal. Any grading, clearing, or tree disturbance shall not occur until the Improvement Plans are approved and all temporary construction fencing has been installed and inspected by the County. All cut/fill slopes shall be at a maximum of 2:1 (horizontal: vertical) unless a soils report supports a steeper slope and the Engineering and Surveying Division (ESD) concurs with said recommendation.

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
	f. Provide and maintain site-specific construction Best Management Practices (BMPs).	Pursuant to the mitigation requirements, the applicant must also revegetate all disturbed areas. Revegetation, undertaken from April 1 to October 1, shall include regular watering to ensure adequate growth. A winterization plan shall be provided with project Improvement Plans.
1.O.9	The County shall discourage the use of outdoor lighting that shines unnecessarily onto adjacent properties or into the night sky.	The proposed project would be subject to Mitigation Measure 4-3(a), which requires the project applicant to submit a lighting plan for the project to Placer County for review and approval, demonstrating that proposed lighting is Dark-Sky compliant as specified by the International Dark-Sky Association.
Transportation and Circulation		
3.A.11	The County shall require an analysis of the effects of traffic from all land development projects. Each such project shall construct or fund improvements necessary to mitigate the effects of traffic from the project consistent with Policy 3.A.7. Such improvements may include a fair share of improvements that provide benefits to others.	A Vehicle Miles Traveled (VMT) Memorandum (VMT Memorandum) (see Appendix K of this EIR) and a Local Transportation Analysis (LTA) (see Appendix L) were prepared for the proposed project. The VMT Memorandum was used for analysis of impacts related to transportation pursuant to CEQA requirements, and the LTA includes an analysis of level of service (LOS) to address consistency with PCGP goals and policies, including PCGP Policy 3.A.7. The analysis in Chapter 16, Transportation, of this EIR is based on the technical reports, and includes an assessment of the proposed project's impacts related to transportation during construction activities and operations. As discussed therein, impacts related to transportation were determined to be less-than-significant, with the exception of short-term construction related traffic, which would be mitigated to less-than-significant with implementation of Mitigation Measure 16-1(a). The County would condition the project to comply with all recommended improvements and/or payment of fair share fees towards improvements identified in the LTA.
3.A.13	The County shall assess fees on new development sufficient to cover the fair share portion of that development's impacts on the local and regional transportation system. Exceptions may be made when new development generates significant public benefits (e.g., low income housing, needed health facilities) and	See response to PCGP Policy 3.A.11 above.

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
	when alternative sources of funding can be identified to offset foregone revenues.	
3.C.1	The County shall promote the use of transportation systems management (TSM) programs that divert automobile commute trips to transit, walking, and bicycling.	As discussed in Chapter 16, Transportation, of this EIR, impacts related to VMT would be less than significant, and the proposed project would not be required to implement measures to reduce project vehicle trips. The proposed project would improve bicycle access in the project vicinity. Such improvements would include the construction of a seven-foot Class II bike lane on the south side of Baseline Road. In addition, the proposed project would also include frontage improvements for the six-lane reconfiguration of Walerga Road. Frontage improvements would include the development of two, seven-foot-wide bike lanes and an approximately 2,300-foot-long Class I meandering trail along the southern/eastern Walerga Road frontage. The proposed project would also include the construction of an approximately 1,300-foot-long Class I meandering trail along the Baseline Road frontage. Placer Creek Residential Phase 4 would also include an approximately 1,600-foot-long extension of the existing trail within the open space portion of the project site. Furthermore, if implemented, the minor enhancements to the Old Walerga Road corridor would improve the connectivity of local residents to nearby retail and commercial centers, provide additional safety for pedestrians and cyclists, support multimodal access, and contribute to the overall functionality and integration of the local trail network. The proposed project would also include installation of sidewalks adjacent to all internal roadways. Thus, the proposed project would be expected to promote walking and bicycling. In addition, Roseville Transit Route D includes a stop approximately 0.70-mile from the project site along Junction Boulevard near Baseline Road.
3.C.2	The County shall promote the use, by both the public and private sectors, of TSM programs that increase the average occupancy of vehicles.	See response to PCGP Policy 3.C.1.
3.D.1	The County shall promote the development of a comprehensive and safe system of recreational and commuter bicycle routes that provides connections between the County's major employment and housing areas and between its existing and planned bikeways.	See response to PCGP Policy 3.C.1.



Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
3.D.5	The County shall continue to require developers to finance and install pedestrian walkways, equestrian trails, and multi-purpose paths in new development, as appropriate.	See response to PCGP Policy 3.C.1.
3.D.7	The County shall, where appropriate, require new development to provide sheltered public transit stops, with turnouts.	As discussed under Impact 16-2 within Chapter 16, Transportation, the proposed project is not anticipated to conflict with the goals, policies, and objectives of the Placer County Transportation Planning Agency (PCTPA). Additionally, the proposed project would not include features that would conflict with existing or planned transit services. Therefore, development and operation of the proposed project would not adversely affect transit service and facilities, such that new public transit stops would be required.
3.D.8.	The CDRA Engineering and Surveying Division and the Department of Public Works shall view all transportation improvements as opportunities to improve safety, access, and mobility for all travelers and recognize cycling, pedestrian, and transit modes as integral elements of the transportation system.	The project site's Baseline Road entrance would be aligned with the future six-lane, fully signalized Upland Drive. The proposed project would also widen Walerga Road to include two, seven-foot-wide bike lanes, three 12-foot-wide travel lanes in each direction, a Class I trail or sidewalk, and a 13- to 24-foot-wide center landscaped median. The proposed improvements are intended to provide safe pedestrian and cyclist circulation in the project area, thereby reducing potential hazards related to vehicle safety and reducing speeds. All internal roadways and frontage improvements would be designed consistent with applicable Placer County standards, which would be confirmed during improvement plan review. As discussed above in response to PCGP Policy 3.C.1, the proposed project would include a number of pedestrian and bicycle infrastructure improvements.
3.D.9	Consider Complete Streets infrastructure and design features in street design and construction to create safe and inviting environments for all users consistent with the land uses to be served.	See response to PCGP Policy 3.D.8.
3.D.11	The County shall work to achieve equality of convenience and choice among all modes of transportation – pedestrian, cycling, transit and motor vehicles, through a balanced and interconnected transportation system.	See response to PCGP Policy 3.C.1.
Public Facilities and Services		
4.A.1	Where new development requires the construction of new public facilities, the new development shall fund its fair share of the	As discussed in Chapter 15, Public Services and Utilities, the proposed project would be subject to payment of applicable fees used to fund the provision of fire protection services, sheriff protection services, and other

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
	construction. The County shall require dedication of land within newly developing areas for public facilities, where necessary.	public services. In addition, the project would be subject to California American Water Company (CAL-AM) fees, sewer connection fees, and monthly sewer services fees used to fund ongoing maintenance of existing water and sewer infrastructure. As discussed throughout this EIR, the proposed project would also include improvements to the existing Community Facilities District #1 Sewer Lift Station to provide for the proposed project's fair share portion of emergency wastewater storage at the lift station. All emergency wastewater storage improvements required to serve the proposed project would be funded by the project applicant.
4.A.2	The County shall ensure through the development review process that adequate public facilities and services are available to serve new development. The County shall not approve new development where existing facilities are inadequate unless the following conditions are met: a. The applicant can demonstrate that all necessary public facilities will be installed or adequately financed (through fees or other means); b. The facilities improvements are consistent with applicable facility plans approved by the County or with agency plans where the County is a participant; and c. The facilities improvements are designed and built to the current standards of the agency providing service.	As discussed in Chapter 15, Public Services and Utilities, of this EIR, adequate public services and utilities would be available to serve the proposed development.
4.B.1	The County shall require that new development pay its fair share of the cost of all existing facilities it uses based on the demand for these facilities attributable to the new development; exceptions may be made when new development generates significant public benefits (e.g., low income housing, needed health facilities) and when alternative sources of funding can be identified to offset foregone revenues.	See response to PCGP Policy 4.A.1.
4.B.2	The County shall require that new development pay the cost of upgrading existing public facilities or construction of new facilities that are needed to serve the new development; exceptions may be made when new development generates significant public benefits (e.g., low income housing, needed health facilities) and	See response to PCGP Policy 4.A.1. Furthermore, as discussed in Chapter 15, Public Services and Utilities, of this EIR, while the proposed project would be subject to payment of applicable fair share fees and in lieu of fees to fund public services and

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
	when alternative sources of funding can be identified to offset foregone revenues.	utilities, the proposed project would not increase the population such that new or altered facilities for fire protection services, police protection services, other government services and/or facilities would be required. In addition, the proposed project would not require or result in the relocation or construction of new or expanded water, storm water drainage, electric power, natural gas, or telecommunications facilities. All emergency wastewater storage improvements to the existing Community Facilities District #1 Sewer Lift Station required to serve the proposed project would be funded by the project applicant.
4.C.1	The County shall require proponents of new development to demonstrate the availability of a long-term, reliable water supply. The County shall require written certification from the service provider that either existing services are available or needed improvements will be made prior to occupancy. Where the County will approve groundwater as the domestic water source, test wells, appropriate testing, and/or report(s) from qualified professionals will be required substantiating the long-term availability of suitable groundwater.	As discussed under Impact 15-7 included in Chapter 15, Public Services and Utilities, of this EIR, based on the water supply and demand projections included in the Placer County Water Agency (PCWA) 2020 Urban Water Management Plan (UWMP) and the CAL-AM 2020 UWMP, implementation of the proposed project could be accommodated by the 604 AFY surplus anticipated by PCWA for the West Placer Service Area. By the year 2040, the surplus is anticipated to increase to approximately 5,356 AFY. Based on the historic pattern by which PCWA, as a wholesaler, has been able to supply CAL-AM, as a retailer, with the water that CAL-AM needs in its West Placer Service Area, the County concludes that sufficient water supplies would be available to available to serve the proposed project through its buildout in addition to other relevant reasonably foreseeable future development during normal, dry, and multiple dry years. During droughts, CAL-AM will have the opportunity to reduce demand through voluntary and mandatory cutbacks, which will substantially reduce demand. Furthermore, CAL-AM has provided a conditional Will Serve Letter for the proposed project, indicating that water supply would be provided for the proposed project. Lastly, the proposed project is not anticipated to use groundwater as a water source.
4.C.2	The County shall approve new development based on the following guidelines for water supply: a. Urban and suburban development should rely on public water systems using surface supply. b. Rural communities should rely on public water systems. In cases where parcels are larger than those defined as	See response to PCGP Policy 4.C.1.

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
	suburban and no public water system exists or can be extended to the property, individual wells may be permitted. c. Agricultural areas should rely on public water systems where available, otherwise individual water wells are acceptable.	
4.C.6	The County shall promote efficient water use and reduced water demand by: a. Requiring water-conserving design and equipment in new construction; b. Encouraging water-conserving landscaping and other conservation measures; c. Encouraging retrofitting existing development with water-conserving devices; and, d. Encouraging water-conserving agricultural irrigation practices.	As discussed in Chapter 15, Public Services and Utilities, of this EIR, the proposed project would comply with the County's WELO, which would be ensured during the design review process through submission of a landscape package to the County for review and approval. The landscape package would include water budget calculations, a soil management report, landscape design plan, irrigation design plan, and other documents related to the proposed landscaping, irrigation, and grading plans. Compliance with the County's WELO would ensure that irrigation water consumption is minimized and occurs in compliance with the County's standards.
4.D.2	The County shall require developments outside of an existing sewer service area and needing new connections to public conveyance and treatment facilities to be annexed into the sewer service area providing service.	As discussed in Chapter 3, Project Description, of this EIR, the project site would be annexed into Placer County Service Area 28, Zone 173 for sanitary sewer service. Annexation of the project site into Placer County Service Area 28, Zone 173 for sanitary sewer service would be subject to County approval.
4.D.4	The County shall require developments needing new connections to construct wastewater conveyance facilities which are sized and located to provide sewer service based on permitted densities and applicable sewer shed area. Wastewater conveyance systems shall be designed for gravity flow. Where gravity conveyance systems are not feasible, the agency providing service may approve pumping service where a site specific engineering analysis demonstrates the long-term cost effectiveness of pumped facilities.	As discussed under Impact 15-6 included in Chapter 15, Public Services and Utilities, of this EIR, the proposed project would be served by the Dry Creek WWTP. Flows from the project site would be conveyed through existing eight-inch "Sewer B" gravity lines within Walerga Road to the Dry Creek WWTP. The proposed project would include the development of an eight-inch sewer line extending across Placer Creek. Eight-inch sanitary sewer lines would be included throughout the project site and would connect to an existing eight-inch sewer line to the south of the project site. The existing Community Facility District #1 Sewer Lift Station is located east of Walerga Road and south of Dry Creek, approximately 0.53-mile to the south at the Dry Creek Community Park. The Emergency Wastewater Storage Plan prepared for the proposed project would include a third 47,000-gallon underground tank adjacent to the existing lift station to be

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
		developed, either as part of the proposed project or another future development. Should another future development construct the third tank, the proposed project would be responsible for developing a 47,000-gallon portion of an additional future planned tank in order to accommodate the emergency storage required to serve the proposed project. All sewer improvements would be consistent with the South Placer Regional Wastewater and Recycled Water Systems Evaluation. Pumped sewer lots are not proposed as part of the multi-family Estia Dry Creek development, as the lots would have gravity sewer service.
4.D.6	The County shall promote efficient water use and reduced wastewater system demand by: a. Requiring water-conserving design and equipment in new construction as required in California law (AB 1881); b. Encouraging retrofitting with water-conserving devices; and c. Designing wastewater systems to minimize inflow and infiltration.	The proposed project would be subject to all applicable water conservation requirements, including those pursuant to AB 1881, and the proposed wastewater system would be designed in accordance with the Placer County Land Development Manual sanitary sewer requirements.
4.D.10	The County shall require all public wastewater facilities to be designed and built to the current standards of the agency providing service.	According to the Wastewater Report prepared for the proposed project, the emergency storage required for the proposed project would be 46,267 gallons. The proposed project would either include a third 47,000 gallon underground tank adjacent to the existing Community Facility District #1 Sewer Lift Station, or, should another future development construct the third tank, the proposed project would be responsible for developing a 47,000-gallon portion of an additional future planned tank in order to accommodate the emergency storage required to serve the proposed project. Therefore, all proposed wastewater improvements would be designed to serve only the project, and all improvements would be consistent with the South Placer Regional Wastewater and Recycled Water Systems Evaluation.
4.E.1	The County shall encourage the use of natural stormwater drainage systems to preserve and enhance natural features.	The majority of the project site would drain to the existing on-site Placer Creek tributary after treatment of stormwater.
4.E.2	The County shall support efforts to acquire land or obtain easements for drainage and other public uses of floodplains	Portions of the project site are located within the existing 100-year floodplain. In addition, the Placer Creek tributary area is classified as Zone AE. The Federal Emergency Management Agency's (FEMA) AE zone is



Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
	where it is desirable to maintain drainage channels in a natural state.	defined as areas subject to inundation by the one percent annual chance flood event, and FEMA provides base flood elevations for such areas. The proposed project would include approximately 9.9 acres of open space bisected by Placer Creek and situated between the Placer Creek Residential Phases 3 and 4 neighborhoods (Lot 5/Lot OS-1). The open space area would be preserved as natural open space by virtue of the underlying zoning and an open space easement to be recorded with the final map. Placer Creek Residential parks, trails and open space would be open to the public.
4.E.4	The County shall ensure that new storm drainage systems are designed in conformance with the Placer County Flood Control and Water Conservation District's Stormwater Management Manual and the County Land Development Manual.	Mitigation Measure 12-4(a) requires that final drainage reports be prepared to finalize the project's drainage system design in a manner that conforms with the requirements of the Placer County Flood Control and Water Conservation District's Stormwater Management Manual and the County Land Development Manual.
4.E.9	The County shall encourage good soil conservation practices in agricultural and urban areas and carefully examine the impact of proposed urban developments with regard to drainage courses.	The impact of the proposed project on existing drainage courses is evaluated in detail within Chapter 12, Hydrology and Water Quality, of this EIR. As discussed therein, with preparation and implementation of a final drainage report and a Conditional Letter of Map Revision (CLOMR), the proposed project would not substantially alter the existing drainage pattern of the site or area in a manner that could: result in flooding on- or off-site; create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems; provide substantial additional sources of polluted runoff either during construction or in the post-construction condition; impede or redirect flood flows; expose people or structures to risk of loss, injury or death involving flooding through the placement of housing in a flood hazard area; or risk release of pollutants due to project inundation. In addition, see response to PCGP Policy 1.K.4.
4.E.10	The County shall strive to improve the quality of runoff from urban and suburban development through use of appropriate and feasible mitigation measures including, but not limited to, artificial wetlands, grassy swales, infiltration/sedimentation basins, riparian setbacks, oil/grit separators, and other best management practices (BMPs).	As discussed under Impacts 12-1 and 12-2 of Chapter 12, Hydrology and Water Quality of this EIR, with implementation of mitigation, the proposed project would not result in significant impacts related to a violation of water quality standards or waste discharge requirements or otherwise substantial degradation of surface or ground water quality during construction or operations. Specifically, Mitigation Measure 12-1 would require Improvement Plans provided to the County prior to authorization of construction; compliance with the provisions of the County Grading

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
		Ordinance and Stormwater Quality Ordinance; and preparation of and compliance with a Stormwater Pollution Prevention Plan (SWPPP). Mitigation Measures 12-2(a) through 12-2(d) require the proposed project to incorporate BMPs designed according to the guidance of the California Stormwater Quality Association Stormwater Best Management Practice Handbooks for Construction, for New Development/Redevelopment, and for Industrial and Commercial, as well as require the preparation of a final Stormwater Quality Plan designed in compliance with Placer County's Small Municipal Separate Storm Sewer System (MS4) Permit (State Water Resources Control Board [SWRCB] NPDES).
4.E.11	The County shall require new development to adequately mitigate increases in stormwater peak flows and/or volume. Mitigation measures should take into consideration impacts on adjoining lands in the unincorporated area and on properties in jurisdictions within and immediately adjacent to Placer County.	As discussed in Impact 12-4 of the Hydrology and Water Quality chapter, although the proposed project would result in an increase in on- and off-site peak runoff flows, as well as an increase in on-site water surface elevations (WSEs) within the Dry Creek Walerga Road Tributary relative to existing conditions during a 100-year storm event, such an increase is acceptable for the Dry Creek watershed. The post-construction 100-year increases would be contained in the natural channels of the tributary on-site, and several vertical feet of freeboard would be maintained for existing structures, and provided for the proposed building pads. Mitigation Measure 12-4(h) requires that the final Drainage Report demonstrate that the proposed project will not induce off-site flooding, to the satisfaction of the Engineering and Surveying Department and Placer County Flood Control District. Therefore, the proposed project is not anticipated to substantially increase the rate or amount of surface runoff water which would exceed the capacity of existing or planned stormwater drainage systems. Nonetheless, as required by Mitigation Measure 12-4(a), submittal of a final drainage report would be required to substantiate the preliminary drainage design. Additionally, as required by Mitigation Measures 12-4(d) and 12-4(e), the proposed project would be required to comply with Placer County's Dry Creek Watershed Drainage Improvement Ordinance, which requires new development that increases impervious surface areas within the Dry Creek Watershed to pay fees to fund future regional flood control and future drainage improvement projects within the watershed. District

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
		flood control projects include the Miners Ravine Off-Chanel Detention Basin and Antelope Creek Flood Control Project, which were constructed to mitigate for increased runoff associated with development within the Dry Creek watershed. Payment of such fees would help to fund regional flood control and future drainage facility improvement projects within the Dry Creek watershed.
4.E.12	The County shall encourage project designs that minimize drainage concentrations and impervious coverage and maintain, to the extent feasible, natural site drainage conditions.	While the proposed project would alter the existing hydrology of the project area and include a shed shift from the Curry Creek watershed to the Dry Creek watershed, the post-construction 100-year increases would be contained in the natural channel of Placer Creek on-site, and several vertical feet of freeboard (the vertical distance between the flood level and the top of the embankment) would be maintained for existing structures, as well as provided for the proposed building pads. Furthermore, the project design would maintain the on-site Dry Creek tributaries in their natural condition and would not increase floodplain limits off-site.
4.E.14	The County shall require projects that have significant impacts on the quantity and quality of surface water runoff to allocate land as necessary for the purpose of detaining post-project flows and/or for the incorporation of mitigation measures for water quality impacts related to urban runoff.	See responses to PCGP Policies 4.E.10 and 4.E.11.
4.F.1	The County shall require that arterial roadways and expressways, residences, commercial and industrial uses and emergency facilities be protected, at a minimum, from a 100-year storm event.	See response to PCGP Policy 4.E.11.
4.F.4	The County shall require evaluation of potential flood hazards prior to approval of development projects. The County shall require proponents of new development to submit accurate topographic and flow characteristics information and depiction of the 100-year floodplain boundaries under fully-developed, unmitigated runoff conditions.	Potential flood hazards are evaluated in detail in Impact 12-5 of the Hydrology and Water Quality chapter. Mitigation Measure 12-5 requires the project applicant to submit an application for, and subsequently obtain, a Conditional Letter of Map Revision (CLOMR) or Conditional Letter of Map Revision based on Fill (CLOMR-F) from FEMA for the placement of fill within a Special Flood Hazard Area. In addition, consistent with Policy 4.F.4, Mitigation Measure 12-4(f) requires that Improvement Plans show the limits of the future, unmitigated, fully developed, 100-year flood plain (after grading) for the Dry Creek Walerga Road Tributary Reach and the FEMA floodplain. Mitigation Measure 12-4(f) further requires that the Improvement Plans show the finished house pad elevations for all lots

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
		along the floodplain to be a minimum of two feet above the 100-year flood plain line (or finished floor -three feet above the 100-year floodplain line). Mitigation Measure 12-4(g) requires that off-site floodplain limits do not exceed the existing condition.
4.F.5	The County shall attempt to maintain natural conditions within the 100-year floodplain of all rivers and streams except under the following circumstances: a. Where work is required to manage and maintain the stream's drainage characteristics and where such work is done in accordance with the Placer County Flood Damage Prevention Ordinance, California Department of Fish and Game regulations, and Clean Water Act provisions administered by the U.S. Army Corps of Engineers.	See response to PCGP Policies 4.E.2 and 6.B.1.
4.G.2	The County shall promote maximum use of solid waste source reduction, recycling, composting, and environmentally-safe transformation of wastes.	The CALGreen Code requires at least 65 percent diversion of construction waste for projects permitted after January 1, 2017. As discussed in Chapter 15, Public Services and Utilities, of this EIR, a minimum of approximately 1,093 tons of waste would be diverted away from landfill disposal during construction of the proposed project.
4.H.2	The County Sheriff shall strive to maintain the following average response times for emergency calls for service: a. 6 minutes in urban areas b. 8 minutes in suburban areas c. 15 minutes in rural areas d. 20 minutes in remote areas	As discussed under Impact 15-2 in Chapter 15, Public Services and Utilities, of this EIR, although response times are dependent upon the location of patrol officers at the time of the emergency call, on average, response times to the project site would be anticipated to be within the PCGP's eight-minute response time standard for suburban areas with development of the new West Placer Sheriff's Station.
4.I.2	The County shall encourage local fire protection agencies in the County to maintain the following standards (expressed as average response times to emergency calls): a. 4 minutes in urban areas b. 6 minutes in suburban areas c. 10 minutes in rural areas	As discussed under Impact 15-1 of Chapter 15, Public Services and Utilities, of this EIR, fire protection services for the project site would be provided by way of Station 100, located at 8350 Cook Riolo Road. Station 100 is located approximately 1.8 miles from the project site. Given the proximity of the project site to Station 100, the response time to the project site would be within the achievable response time goal. In addition, two new fire stations are proposed as part of the PVSP, to the west across Walerga Road.



Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
4.I.9	The County shall ensure that all proposed developments are reviewed for compliance with fire safety standards by responsible local fire agencies per the Uniform Fire Code and other County and local ordinances.	As discussed under Impact 15-1 of Chapter 15, Public Services and Utilities, of this EIR, all structures included in the proposed project would be constructed consistent with the CBSC and California Fire Code (CFC). In compliance with the CBSC (specifically Section 903.2.1.3, Group A-3), the design of the residences would include the installation and use of automatic fire sprinklers, and fire alarm systems would be incorporated pursuant to CFC requirements. Such features would reduce the potential for fires to occur within the proposed structures, which would reduce the demand for fire protection services from the project site. Development within the project site, as well as other future development throughout Placer County and the DCWPCP area, would be required to comply with all applicable regulations imposed by the Placer County Fire Department (PCFD) and the CFC, as adopted by Section 15.04.510 of the Placer County Code.
Recreation and Cultural Resources		
5.A.1	The County shall strive to achieve and maintain a standard of 10 acres of improved parkland per 1,000 population. The standard shall be comprised of the following: • 5 acres of improved active parkland per 1,000 population • 5 acres of passive recreation area or open space per 1,000 population	The proposed project would include development of a public, 2.1-acre neighborhood park in the Placer Creek Residential Phase 2 development (Lot PARK-1). Additional park areas would be provided in pockets along Placer Creek. The proposed project would include approximately 9.9 acres of open space bisected by "Placer Creek" and situated between the Placer Creek Residential Phase 3 and 4 neighborhoods (Lot 5/Lot OS-1). As discussed under Impact 15-4 in Chapter 15, Public Services and Utilities, of this EIR, the proposed project would be required to provide a minimum of approximately 5.36 acres of parkland (0.005 acres/resident X 1,072 estimated residents), and with the inclusion of 22 ADUs, would require a total of 5.64 acres of parkland. Thus, by providing 2.1 acres of neighborhood park area, the proposed project would not meet the park requirements and payment of an in-lieu fee would be required. In addition, a minimum of approximately 5.64 acres of passive recreation area or open space would be required for the proposed project. Because the project would include approximately 9.9 acres of open space areas, the project would comply with PCGP Policy 5.A.1 related to the provision of passive recreation area or open space.
5.A.3	The County shall require new development to provide a minimum of 5 acres of improved parkland and 5 acres of passive recreation	See response to PCGP Policy 5.A.1 above.

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
	area or open space for every 1,000 new residents of the area covered by the development. The park classification system shown in Table 5-1 should be used as a guide to the type of the facilities to be developed in achieving these standards.	
5.A.4	The County shall consider the use of the following open space areas as passive parks to be applied to the requirement for 5 acres of passive park area for every 1,000 residents. • Floodways • Protected riparian corridors and stream environment zones • Protected wildlife corridors • Greenways with the potential for trail development • Open water (e.g., ponds, lakes, and reservoirs) • Protected woodland areas • Protected sensitive habitat areas providing that interpretive displays are provided (e.g., wetlands and habitat for rare, threatened or endangered species) Buffer areas are not considered as passive park areas if such areas are delineated by setbacks within private property. Where such areas are delineated by public easements or are held as common areas with homeowner/property owner access or public access, they will be considered as passive park areas provided that there are opportunities for passive recreational use.	See response to PCGP Policy 5.A.1 above.
5.D.2	The County shall solicit the cooperation of the owners of cultural and paleontological resources, encourage those owners to treat these resources as assets rather than liabilities, and encourage the support of the general public for the preservation and enhancement of these resources.	As discussed in Chapter 8, Cultural Resources, of this EIR, unknown archaeological resources could exist beneath the ground surface of the site and have the potential to be uncovered during ground-disturbing activities of the proposed project or development of the off-site sewer lift station improvements area. Therefore, implementation of Mitigation Measures 8-2(a) and 8-2(b) would be required to account for unanticipated discoveries of potential subsurface archaeological resources during all elements of project construction.



Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
		As discussed under Impact 10-4 of Chapter 10, Geology and Soils of this EIR, geologic rock units known to produce paleontological resources do not occur in the project area and that, based on Society of Vertebrate Paleontology (SVP) criteria, the sensitivity for paleontological resources on the project site is low. Mitigation Measure 10-4(b) of this EIR requires that in the event that paleontological resources are discovered during ground-disturbing activities associated with the proposed project, the applicant shall notify the Placer County Community Development Resource Agency and retain a qualified paleontologist to inspect the discovery. If the find is deemed to contain unique paleontological resources under criteria the resource(s) shall then be salvaged and deposited in an accredited and permanent scientific institution. The aforementioned mitigation measures are required to be included on any future grading plans, utility plans, and improvement plans subject to approval by the Placer County ESD for the proposed project, where excavation work would be required.
5.D.3	The County shall solicit the views of the Native American Heritage Commission, State Office of Historic Preservation, North Central Information Center, and/or the local Native American community in cases where development may result in disturbance to sites containing evidence of Native American activity and/or to sites of cultural importance.	As discussed in Chapter 17, Tribal Cultural Resources, pursuant to Assembly Bill (AB) 52 and Senate Bill (SB) 18, invitations to consult were sent to tribes who requested notification of proposed projects within the geographic area on January 22, 2025. Specifically, AB 52 notification letters were sent to the Ione Band of Miwok Indians, United Auburn Indian Community (UAIC), Washoe Tribe of Nevada and California, Colfax-Todds Valley Consolidated Tribe, Shingle Springs Band of Miwok Indians, T'Si-Akim Maidu, and Wilton Rancheria. In addition, SB 18 notification letters were sent to the Shingle Springs Band of Miwok Indians, T'Si-Akim Maidu, and Wilton Rancheria. A response was received from the UAIC on February 4, 2025. The UAIC provided a sensitivity map to the County showing where the tribe would like to monitor during on-site construction. This monitoring requirement has been incorporated into Chapter 17 as mitigation. On May 7, 2026, Placer County initiated tribal consultation pursuant to AB 52 and SB 18 specifically for the off-site sewer lift station improvements area and the off-site affordable housing parcel. The UAIC requested site-

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
		specific mitigation measures for the off-site sewer lift station location. The tribal cultural awareness training and inadvertent discoveries measure requested for the off-site sewer lift station improvements area have been incorporated into Chapter 17 as mitigation. No site visit nor any additional mitigation for the off-site affordable housing parcel was requested. In addition, a Cultural and Paleontological Resources Assessment was prepared for the proposed project by Natural Investigations Company and included a cultural resources literature search at the North Central Information Center (NCIC); archival research; consultation with the Native American Heritage Commission (NAHC), including a Sacred Lands File (SLF) search; and a field survey of the approximately 88-acre development area and two-acre off-site sewer lift station improvements area. Furthermore, as discussed in Chapter 17, Tribal Cultural Resources, of this EIR, unknown subsurface tribal cultural resources could potentially be identified in the project site during project construction activities. Therefore, implementation of Mitigation Measures 17-1(a) and 17-1(b) would be required to account for unanticipated discoveries of potential, subsurface tribal cultural resources during project construction.
5.D.6	The County shall require that discretionary development projects identify and protect from damage, destruction, and abuse, important historical, archaeological, paleontological, and cultural sites and their contributing environment. Such assessments shall be incorporated into a County-wide cultural resource database, to be maintained by the Division of Museums.	A Cultural and Paleontological Resources Assessment was prepared by Natural Investigations Company for the proposed project, which included recommendations for the treatment of historical, archaeological, and cultural resources. The results of the report are incorporated into Chapter 8, Cultural Resources, of this EIR. As discussed therein, impacts related to historic resources are addressed under Impact 8-1 and were determined to be less-than-significant. Impacts related to archaeological resources and human remains associated with the proposed project and off-site sewer lift station improvements area are addressed under Impacts 8-2 and 8-3, respectively, and were determined to be less-than-significant with implementation of Mitigation Measures 8-2(a), 8-2(b), and 8-3(a), which include avoidance and preservation measures should cultural, archaeological, or tribal cultural resources be inadvertently discovered during construction activities. Furthermore, as discussed in Chapter 10, Geology and Soils, of this EIR, impacts related to paleontological resources

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
		were determined to be less-than-significant with implementation of Mitigation Measures 10-4(a) and 10-4(b), which require preparation of a WEAP, as well as avoidance and preservation measures should paleontological resources be inadvertently discovered during construction activities.
5.D.7	The County shall require that discretionary development projects are designed to avoid potential impacts to significant paleontological or cultural resources whenever possible. Unavoidable impacts, whenever possible, shall be reduced to a less than significant level and/or shall be mitigated by extracting maximum recoverable data. Determinations of impacts, significance, and mitigation shall be made by qualified archaeological (in consultation with recognized local Native American groups), historical, or paleontological consultants, depending on the type of resource in question.	See responses to PCGP Policies 5.D.2, 5.D.3, and 5.D.6.
Natural Resources		
6.A.1	The County shall require the provision of sensitive habitat buffers which shall, at a minimum, be measured as follows: 100 feet from the centerline of perennial streams, 50 feet from centerline of intermittent streams, and 50 feet from the edge of sensitive habitats to be protected, including riparian zones, wetlands, old growth woodlands, and the habitat of special status, threatened or endangered species (see discussion of sensitive habitat buffers in Part I of this Policy Document). Based on more detailed information supplied as a part of the review for a specific project or input from state or federal regulatory agency, the County may determine that such setbacks are not applicable in a particular instance or should be modified based on the new information provided. The County may, however, allow exceptions, such as in the following cases: 1. Reasonable use of the property would otherwise be denied; 2. The location is necessary to avoid or mitigate hazards to the public;	The project site is located within the PCCP area. Therefore, impacts to PCCP special habitats located within the project site are allowed within the County Aquatic Resources Program (CARP) Drainage Setbacks and Riparian Buffer, but those impacts must be associated with certain allowable facilities. Although the proposed project would result in permanent impacts within the CARP Drainage Setbacks and Riparian Buffer, all of the impacts in such areas are associated with a sewer line and trail creek crossing, water quality purposes, storm drainage outfalls, and roadway impacts that cannot be avoided. As some of the impacts are associated with a creek crossing and outfalls, some of the work occurs immediately adjacent to the drainage. Furthermore, Chapter 7 includes mitigation measures that require species-specific buffers for the avoidance of potential impacts to special-status species. Finally, the mitigation measures set forth in Chapter 7 require the proposed project to comply with all applicable PCCP Avoidance and Minimization Measures (AMMs) and payment of all applicable fees to address potential impacts to biological resources within the project site.

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
	3. The location is necessary for the repair of roads, bridges, trails, or similar infrastructure; or, 4. The location is necessary for the construction of new roads, bridges, trails, or similar infrastructure where the County determines there is no feasible alternative and the project has minimized environmental impacts through project design and infrastructure placement.	
6.A.2	The County shall require all development in the 100-year floodplain to comply with the provisions of the Placer County Flood Damage Prevention Ordinance.	As discussed in Chapter 12, Hydrology and Water Quality, of this EIR, all of the proposed project's open space area would be located along the Dry Creek tributary, and the placement of any structures within the 100-year floodplain would not occur. The proposed project would not include development of habitable structures within a flood hazard zone; as such, the proposed residential structures would not conflict with the Placer County Flood Damage Prevention Ordinance. See response to Policy 4.F.4 above regarding development within the 100-year floodplain.
6.A.3	The County shall require development projects proposing to encroach into a stream zone or stream setback to do one or more of the following, in descending order of desirability: a. Avoid the disturbance of riparian vegetation; b. Replace all functions of the existing riparian vegetation (on-site, in-kind); c. Restore another section of stream (in-kind); and/or d. Pay a mitigation fee for in-kind restoration elsewhere (e.g., mitigation banks).	See response to PCGP Policy 6.A.1.
6.A.4	Where stream protection is required or proposed, the County should require public and private development to: a. Preserve stream zones and stream setback areas through easements or dedications. Parcel lines (in the case of a subdivision) or easements (in the case of a subdivision or other development) shall be located to optimize resource protection. If a stream is proposed to be included within an open space parcel or easement, allowed uses and maintenance responsibilities within	See response to PCGP Policies 4.E.10 and 6.A.1.

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
	that parcel or easement should be clearly defined and conditioned prior to map or project approval; b. Designate such easement or dedication areas (as described in a. above) as open space; c. Protect stream zones and their habitat value by actions such as: 1) providing an adequate stream setback, 2) maintaining creek corridors in an essentially natural state, 3) employing stream restoration techniques where restoration is needed to achieve a natural stream zone, 4) utilizing riparian vegetation within stream zones, and where possible, within stream setback areas, 5) prohibiting the planting of invasive, non-native plants (such as Vinca major and eucalyptus) within stream zones or stream setbacks, and 6) avoiding tree removal within stream zones; d. Provide recreation and public access near streams consistent with other PCGP policies; e. Use design, construction, and maintenance techniques that ensure development near a creek will not cause or worsen natural hazards (such as erosion, sedimentation, flooding, or water pollution) and will include erosion and sediment control practices such as: 1) turbidity screens and other management practices, which shall be used as necessary to minimize siltation, sedimentation, and erosion, and shall be left in place until disturbed areas; and/or are stabilized with permanent vegetation that will prevent the transport of sediment off site; and 2) temporary vegetation sufficient to stabilize disturbed areas. f. Provide for long-term stream zone maintenance by providing a guaranteed financial commitment to the County which accounts for all anticipated maintenance activities.	
6.A.5	The County shall continue to require the use of feasible and practical best management practices (BMPs) to protect streams	BMPs to protect the on-site tributary of Dry Creek (i.e., Placer Creek) during construction and from urban pollutants will be required through

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
	from the adverse effects of construction activities and urban runoff and to encourage the use of BMPs for agricultural activities.	Mitigation Measures 7-11(a) through 7-11(c), 7-12(a) through 7-12(h), 10-2(a) through 10-2(d) and 12-2(a) through 12-2(d).
6.A.6	The County shall require development projects to comply with the municipal and construction stormwater permit requirements of the Federal Clean Water Act National Pollutant Discharge Elimination System (NPDES) Phase I and II programs and the State General Municipal and Construction permits. Municipal requirements affecting project design and construction practices are enacted through the County's Stormwater Quality Ordinance. Separate construction permits may be required by and obtained through the State Water Resources Control Board.	See response to PCGP Policy 4.E.10.
6.A.7	All new development and redevelopment projects shall be designed so as to minimize the introduction of pollutants into stormwater runoff, to the maximum extent practicable, as well as minimize the amount of runoff through the incorporation of appropriate Best Management Practices.	See response to PCGP Policy 4.E.10.
6.A.8	The County shall support implementation of Low Impact Development site design and Watershed Process Management requirements for new and redevelopment projects in accordance with the NPDES Phase I and II programs, and applicable NPDES permits.	See response to PCGP Policy 4.E.10.
6.A.9	The County shall require that natural watercourses be integrated into new development in such a way that they are accessible to the public and provide a positive visual element.	The southern portion of the site is bisected by Placer Creek which flows east to west. The Placer Creek riparian corridor would separate the Phase 3 and 4 developments. Phase 4 would include the development of 46 single-family lots and the western extension of Vineyard Road, which would provide site access, along with trails and the seven-acre oak woodlands area along the Placer Creek riparian corridor, which would be preserved as open space by virtue of the underlying zoning and an open space easement to be recorded with the final map. Additional park areas would be provided in pockets along Placer Creek. Placer Creek Residential parks, trails and open space would be open to the public.
6.A.10	The County shall discourage grading activities during the rainy season, unless adequately mitigated, to avoid sedimentation of creeks and damage to riparian habitat.	Mitigation Measure 7-12(h) would require implementation of PCCP CARP Authorization Conditions, which requires that all work in aquatic resources within the Stream System be restricted to periods of low flow and dry

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
		weather between April 15 and October 15, unless otherwise permitted by the Placer County Community Development Resource Agency and approved by the appropriate State and federal regulatory agency.
6.A.12	The County shall require that newly-created parcels include adequate space outside of watercourses' setback areas to ensure that property owners will not place improvements (e.g., pools, patios, and appurtenant structures), within areas that require protection.	See response to PCGP Policy 6.A.1.
6.B.1	The County shall support the "no net loss" policy for wetland areas regulated by the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, and the California Department of Fish and Wildlife. Coordination with these agencies at all levels of project review shall continue to ensure that appropriate mitigation measures and the concerns of these agencies are adequately addressed.	As discussed under Impact 7-12 in Chapter 7, Biological Resources, of this EIR, a total of 2.07 acres of aquatic resources have been mapped within the study area, 1.84 acres of which would be permanently impacted by the proposed project. The PCCP would result in the protection, enhancement, and management of vernal pool complexes as a specific wetland habitat type and in the protection, enhancement, and management of emergent marshes, seasonal wetlands, and lacustrine habitats (e.g., ponds), as well as riverine/riparian habitat, including streams. For covered projects under the PCCP, impacts to Section 404 jurisdictional waters are addressed under the CARP, which allows a streamlined Section 404 permitting process for covered activities under the PCCP that will result in impacts to aquatic resources subject to Section 404 jurisdiction. Mitigation Measure 7-11(c) requires the project applicant to apply for a Section 1600 Lake or Streambed Alteration Agreement from CDFW and to implement mitigation to result in no net loss of habitat. Mitigation Measures 7-12(a) through 7-12(f) and 7-12(i) require project compliance with PCCP conditions related to wetlands. More specifically, Mitigation Measure 7-12(b) requires payment of fees for non-vernal pool wetlands or their buffers affected by the proposed project. In addition, Mitigation Measure 7-12(c) requires construction of the proposed project to avoid disturbance of wetlands to the maximum extent possible. Mitigation Measure 7-12(d) would allow the Placer Conservation Authority (PCA) to salvage topsoil from on-site vernal pool wetland. Furthermore, Mitigation Measure 7-12(g) requires that, depending on the acreage of aquatic resources within the project area the USACE considers

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
		jurisdiction when project permitting occurs, the project applicant shall either apply for coverage under the streamlined PCCP LOP process, or the applicant shall use the Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP) Programmatic General Permit 18 in compliance with the CARP7-12(h) require coverage under the streamlined PCCP Letter of Permission (LOP) process. Mitigation Measure 7-12(h) requires application to the RWQCB for water quality certification of the PCCP LOP or use of General Order R5-2020-0048, the Waste Discharge Requirements of the Clean Water Act Section 401 Water Quality Certification for the Western Placer County HCP/NCCP Programmatic General Permit, as applicable. Mitigation Measure 7-12(i) would require compliance with the PCCP CARP Authorization conditions.
6.B.2.	The County shall require new development to mitigate wetland loss in both federal jurisdictional and non-jurisdictional wetlands to achieve "no net loss" through any combination of the following, in descending order of desirability: (1) avoidance; (2) where avoidance is not possible, minimization of impacts on the resource; or (3) compensation, including use of a mitigation and conservation banking program that provides the opportunity to mitigate impacts to special status, threatened, and endangered species and/or the habitat which supports these species in wetland and riparian areas. Non-jurisdictional wetlands may include riparian areas that are not federal “waters of the United States” as defined by the Clean Water Act.	See response to PCGP Policy 6.B.1.
6.B.4	The County shall strive to identify and conserve remaining upland habitat areas adjacent to wetlands and riparian areas that are critical to the survival and nesting of wetland and riparian species.	See responses to PCGP Policies 6.A.1 and 6.B.1.
6.B.5	The County shall require development that may affect a wetland to employ avoidance, minimization, and/or compensatory mitigation techniques. In evaluating the level of compensation to be required with respect to any given project, (a) on-site mitigation shall be preferred to off-site, and in-kind mitigation shall be preferred to out-of-kind; (b) functional replacement ratios may vary to the extent necessary to incorporate a margin of	See response to PCGP Policy 6.B.1

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
	safety reflecting the expected degree of success associated with the mitigation plan; and (c) acreage replacement ratios may vary depending on the relative functions and values of those wetlands being lost and those being supplied, including compensation for temporal losses. Consideration shall be given to out-of-kind compensatory mitigation for wetland impacts when larger landscape-level goals and objectives may be met by doing so. The County shall continue to implement and refine criteria for determining when an alteration to a wetland is considered a less-than significant impact under CEQA.	
6.C.1	The County shall identify and protect significant ecological resource areas and other unique wildlife habitats critical to protecting and sustaining wildlife populations. Significant ecological resource areas include the following: a. Wetland areas including vernal pools. b. Stream zones. c. Any habitat for special status, threatened, or endangered animals or plants. d. Critical deer winter ranges (winter and summer), migratory routes and fawning habitat. e. Large areas of non-fragmented natural habitat, including blue oak woodlands, valley foothill and montane riparian, valley oak woodlands, annual grasslands, and vernal pool/grassland complexes. f. Identifiable wildlife movement zones, including but not limited to, non-fragmented stream environment zones, avian mammalian migratory routes, and known concentration areas of waterfowl within the Pacific Flyway. g. Important spawning and rearing areas for anadromous fish. h. Habitat necessary to protect and recover populations of the Covered Species identified in the Placer County Conservation Program.	See responses to PCGP Policies 6.A.1 and 6.B.1. The BRA prepared for the proposed project by Madrone Ecological Consulting delineated the vegetation communities, PCCP land covers, and aquatic resources on-site. Development of the proposed project would result in potential impacts to approximately 1.2 acres of valley foothill riparian woodland (VFRW), whereas 2.6 acres of VFRW would be fully avoided. In order to reduce the project's potential impact on riparian habitat to a less-than-significant level, the proposed project would be required to comply with the provisions of CARP and California Fish and Game Code (CFGC) Section 1600, et seq, as well as implement Mitigation Measures 7-11(a) though 7-11(c).

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
6.C.2	The County shall require development in areas known to have particular value for wildlife to be carefully planned and, where possible, located so that the reasonable value of the habitat for wildlife is maintained.	See response to PCGP Policy 6.A.1 above.
6.C.6	The County shall support programs that preserve the habitats of threatened, endangered, and/or other special status species including the implementation of the Placer County Conservation Program. Where County acquisition and maintenance is not practicable or feasible, federal and state agencies, as well as other resource conservation organizations, shall be encouraged to acquire and manage endangered species' habitats.	The project site is located within the PCCP area. As such, the mitigation measures set forth in Chapter 7, Biological Resources, of this EIR require the proposed project to comply with all applicable PCCP Avoidance and Minimization Measures (AMMs) and pay all applicable fees to address potential impacts to biological resources within the project site.
6.C.7	The County shall support the maintenance of suitable habitats for all indigenous species of wildlife, without preference to game or non-game species, through maintenance of habitat diversity.	See responses to PCGP Policies 6.C.1 and 6.C.6 above.
6.C.9	The County shall require new private or public developments to preserve and enhance existing riparian habitat unless public safety concerns require removal of habitat for flood control or other essential public purposes (See Policy 6.A.1.). In cases where new private or public development results in modification or destruction of riparian habitat the developers shall be responsible for acquiring, restoring, and enhancing at least an equivalent amount of like habitat within or near the project area.	See response to PCGP Policy 6.A.1. Consistent with PCCP Community Condition 2.1, Mitigation Measure 7-6(f) requires the proposed project to not modify any area within a buffer that extends 50 feet outward from the outermost bounds of riparian vegetation. In addition, consistent with PCCP Community Condition 2.2, Mitigation Measure 7-6(c) requires the project applicant to pay special habitat fees proportional to the 2.83 acres of riparian habitat that would be permanently impacted by project buildout.
6.D.2	The County shall require developers to use native and compatible non-native species, especially drought-resistant species, to the extent possible in fulfilling landscaping requirements imposed as conditions of discretionary permits or for project mitigation.	The proposed project would be required to comply with all applicable standards established in the Placer County Landscape Design Guidelines, as well as the landscaping standards established by the DCWPCP. As discussed in Chapter 15, Public Services and Utilities, of this EIR, the proposed landscaping would be designed in compliance with the County's WELO, including the species planted on-site.
6.D.3	The County shall support the preservation of outstanding areas of natural vegetation, including, but not limited to, oak woodlands, riparian areas, vernal pools, and habitat necessary to protect and recover populations of the Covered Species identified in the Placer County Conservation Program.	As discussed under Impact 7-3, impacts related to vernal pool fairy shrimp and vernal pool tadpole shrimp, which are both PCCP Covered Species, would be less than significant with implementation of Mitigation Measures 7-3(a) and 7-3(b), which require implementation of PCCP General Condition 3 and Community Condition 1.1. Such conditions would require payment of land conversion and special habitat fees.



Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
		As discussed under Impact 7-4, impacts related to valley elderberry longhorn beetle, a PCCP Covered Species, would be less than significant with implementation of Mitigation Measure 7-4, which requires avoidance and minimization measures. As discussed under Impact 7-6, impacts related to northwestern pond turtle, a PCCP Covered Species, would be less than significant with implementation of Mitigation Measures 7-6(a) through 7-6(g), which require preconstruction surveys and PCCP conditions related to land conversion, erosion control, avoidance of riparian vegetation, and avoiding the stream system. As discussed under Impacts 7-7, 7-8, and 7-8, impacts related to Swainson's hawk, burrowing owl, and tricolored blackbird, all PCCP Covered Species, would be less than significant with implementation of Mitigation Measures 7-7(a), 7-7(b), 7-8(a), 7-8(b), and 7-9(a) through 7-9(d). The mitigation measures require implementation of PCCP General Condition 3 and Species Conditions 1, 3, and 4. Such conditions would require payment of land conversion fees, preconstruction surveys, and monitoring and avoidance during construction activities. As discussed under Impact 7-11, impacts related to riparian habitat would be less than significant with implementation of Mitigation Measures 7-11(a) through 7-11(d), which require payment of applicable PCCP fees, compliance with the provisions of the CARP, and a Section 1600 Lake or Streambed Alteration Agreement from CDFW. In addition, with respect to vernal pools specifically, as discussed under Impact 7-12, impacts related to aquatic resources would be less than significant. PCCP Community Condition 1.1 would require payment of special habitat fees for unavoidable effects to vernal pools and their buffers.
6.D.8	The County shall require that new development preserve natural woodlands to the maximum extent possible.	Development of the proposed project would result in potential impacts to approximately 1.3 acres of VFRW, whereas 2.5 acres of VFRW would be fully avoided. In order to reduce the project's potential impact on riparian habitat to a less-than-significant level, the proposed project would be required to comply with the provisions of CARP and California Fish and

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
		Game Code (CFGC) Section 1600, et seq, as well as implement Mitigation Measures 7-11(a) though 7-11(c). These impacts are balanced against the need for housing and a backdrop that the majority of the site has a RS-AG-B-40 PD=1 zoning designation. As previously discussed, the purpose of the -PD combining district is to identify areas where development can occur within the context of a planned development. The -PD zoning designation is a planning tool to ensure that development occurs in a logical, organized pattern, which increases the ability for public services and infrastructure to be provided to new development with the greatest efficiency possible.
6.E.1	The County shall support the preservation and enhancement of natural land forms, natural vegetation, and natural resources as open space to the maximum extent feasible. The County shall permanently protect, as open space, areas of natural resource value, including wetlands, riparian corridors, unfragmented woodlands, and floodplains.	See responses to PCGP Policies 6.A.1 and 6.C.9.
6.E.3	The County shall support the maintenance of open space and natural areas that are interconnected and of sufficient size to protect biodiversity sustain viable populations, accommodate wildlife movement, and sustain ecosystems	As discussed under Impact 7-13 in Chapter 7, Biological Resources, of this EIR, the proposed project would not 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. In addition, the proposed project would be required to comply with PCCP Community Condition 2, which requires a 50-foot buffer be established between construction activities and the outermost bounds of riparian vegetation, thus further ensuring that interconnected wildlife corridors would be preserved.
6.F.2	The County shall develop mitigation measures to minimize stationary source and area source emissions.	See response to PCGP Policy 6.F.6 below.
6.F.5	The County shall encourage project proponents to consult early in the planning process with the County regarding the applicability of Countywide indirect and areawide source programs and transportation control measures (TCM) programs. Project review shall also address energy-efficient building and site designs and proper storage, use, and disposal of hazardous materials.	See response to PCGP Policies 3.A.11 and 8.F.1. In addition, as discussed in Chapter 9, Energy, of this EIR, the proposed project is required to comply with all applicable standards and regulations regarding energy conservation and fuel efficiency, including the CBSC and CARB standards, which would ensure that the future uses would be designed to be energy efficient to the maximum extent practicable. Adherence to the most recent CALGreen Code and the Building Energy Efficiency Standards would

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
		ensure that the proposed development would consume energy efficiently through the incorporation of such features as efficient water heating systems, high performance attics and walls, and high efficacy lighting. In addition, the 2022 CBSC requires that newly constructed residential buildings be developed to include a solar photovoltaic system.
6.F.6.	The County shall require project-level environmental review to include identification of potential air quality impacts and designation of design and other appropriate mitigation measures or offset fees to reduce impacts. The County shall dedicate staff to work with project proponents and other agencies in identifying, ensuring the implementation of, and monitoring the success of mitigation measures.	An analysis of environmental air quality impacts is provided in Chapter 6, Air Quality and Greenhouse Gas Emissions, of this EIR. As presented in Table 6-8 of Chapter 6, the project's total maximum daily construction-related emissions would be below the applicable PCAPCD thresholds of significance for reactive organic gases (ROG), oxides of nitrogen (NO_X), and particulate matter 10 micrometers in diameter or smaller (PM_{10}). As presented in Table 6-11 of Chapter 6, the maximum unmitigated operational emissions associated with the proposed project would be below the PCAPCD thresholds of significance for ROG, NO_X, and PM_{10}. As such, the proposed project would result in a less-than-significant impact associated with criteria pollutant emissions during construction and operations. All other impacts related to air quality, including impacts associated with localized carbon monoxide (CO), toxic air contaminants (TACs), and odors, were also determined to be less than significant. Therefore, the proposed project would not require any mitigation measures to reduce impacts associated with air quality.
6.F.7	The County shall encourage development to be located and designed to minimize direct and indirect air pollutants.	See response to PCGP Policy 6.F.6.
6.F.9	In reviewing project applications, the County shall consider alternatives or amendments that reduce emissions of air pollutants.	As discussed in Chapter 21, Alternatives Analysis, of this EIR, reasonable alternatives to the project must be capable of reducing the magnitude of, or avoiding, identified significant environmental impacts of the proposed project. This EIR determined that the proposed project would result in less-than-significant impacts for all issues related to air quality and greenhouse gas (GHG) emissions, including cumulative impacts. Because the proposed project would not result in significant impacts related to air quality and GHG emissions, a comparison of potential impacts associated with such as a result of project alternatives versus the proposed project is not warranted, and, thus, is not provided in this EIR. Rather, the Alternatives Analysis chapter focuses on the resource areas and specific impacts listed therein that have been identified for the proposed project as requiring



Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
		mitigation to reduce significant impacts to less than significant, or have been found to remain significant and unavoidable. Nevertheless, impacts related to air quality and GHG emissions would be reduced under the Alternatives evaluated in this EIR because development under the Alternatives would result in fewer residential units.
6.F.10	The County may require new development projects to submit an air quality analysis for review and approval. Based on this analysis, the County shall require appropriate mitigation measures consistent with the PCAPCD's 1991 Air Quality Attainment Plan (or updated edition).	See response to PCGP Policy 6.F.6.
6.G.3	The County shall encourage the use of alternative modes of transportation by incorporating public transit, bicycle, and pedestrian modes in County transportation planning and by requiring new development to provide adequate pedestrian and bikeway facilities.	See response to PCGP Policy 3.D.8.
6.G.5	The County shall endeavor to secure adequate funding for transit services so that transit is a viable transportation alternative. New development shall pay its fair share of the cost of transit equipment and facilities required to serve new projects.	As discussed within Chapter 16, Transportation, of this EIR, the Placer County Board of Supervisors adopted the Countywide Traffic Impact Fee Program, which requires new development within the County to reduce impacts on the roadway system by paying traffic impact fees. Additionally, the County's Capital Improvement Program (CIP) and City-County Traffic Fee ensure adequate funding for roadway improvements and transit services. Payment of such applicable fees would be required for the proposed project.
Health and Safety		
8.A.1.1	The County shall require the preparation of a soils engineering and geologic-seismic analysis prior to permitting development in areas prone to geological or seismic hazards (e.g., ground shaking, landslides, liquefaction, critically expansive soils, avalanche), prepared by a California registered civil engineer and based upon adequate test borings as needed.	A Geotechnical Due Diligence Review was prepared for the proposed project by ENGEO on December 26, 2023. The Geotechnical Due Diligence Review included review of data from 12 soil borings and seven bulk soil samples conducted previously for the project site. As discussed under Impact 10-3 in Chapter 10, Geology and Soils, of this EIR, development of the proposed project and off-site sewer lift station improvements area would not likely be subject to issues associated with lateral spreading, subsidence, liquefaction, or collapse, and the proposed project would not exacerbate the geological condition associated with such phenomena. However, expansive and loose soils were identified within the project site. As such, Mitigation Measures 10-3(a) and 10-3(b) require

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
		preparation of a final geotechnical engineering report and compliance with all engineering recommendations related to expansive soils.
8.A.1.2	The County shall require submission of a preliminary soils report, prepared by a California registered civil engineer and based upon adequate test borings, for every major subdivision and for each individual lot where critically expansive soils have been identified or are expected to exist.	See response to PCGP Policy 8.A.1.1.
8.A.1.5	The County shall require that the location, design, and construction of any new buildings, facilities, or other development in areas subject to seismic activity minimize exposure to danger from earthquake-induced liquefaction or fault rupture or creep.	As discussed under Impact 10-1 in Chapter 10, Geology and Soils, of this EIR, while lower-intensity earthquakes could potentially occur throughout the development areas, the design of project structures would be required to adhere to the provisions of the 2022 CBSC. The 2022 CBSC contains provisions to safeguard against major structural failures or loss of life caused by earthquakes or other geologic hazards. Thus, the potential for seismically induced damage due to liquefaction, surface ruptures, and settlement at the project site and off-site sewer lift station improvements area is considered low.
8.A.1.6	In areas subject to severe ground shaking, the County shall require that new structures intended for human occupancy be designed and constructed to minimize risk to the safety of occupants.	The western portion of the County, in which the proposed project and off-site sewer lift station improvements area are located, is generally characterized by low seismicity, and is not in an area at risk for severe ground shaking associated with earthquakes. See response to PCGP Policy 8.A.1.5.
8.B.1.1	The County shall require flood proofing of new and substantially improved structures in areas subject to flooding to be built in accordance with the Flood Damage Prevention Ordinance (Placer County Code Chapter 15, Article 15.52).	See response to PCGP Policy 6.A.2. The proposed project would not include new and substantially improved structures in areas subject to flooding.
8.B.1.2	The County shall prohibit the construction of projects, including public facilities and other facilities essential for emergencies and large public assembly, within the County's Regulatory Floodway, unless the structure and access to the structure is adequately protected from flood hazards, incorporates all required flood protection specific to that area in accordance with County ordinances and guidelines, and will not result in any significant adverse impacts.	The proposed project would not place housing within the future, fully-developed, unmitigated 100-year floodplain. In addition, public facilities and other facilities essential for emergencies and large public assembly are not proposed as part of the project.
8.B.1.3	The County shall require evaluation of potential flood hazards prior to approval of a discretionary or ministerial permit that	As discussed under Impact 12-5 in Chapter 12, Hydrology and Water Quality, of this EIR, the majority of the project site is within FEMA zone X,



Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
	would result in the construction or modification of structures, to determine whether the proposed project is consistent with the protection standards for the County Regulatory Floodplain. The County will not approve any discretionary project or any ministerial permit that would result in the construction or modification of structures for any property within the County Regulatory Floodplain, unless the required flood protection specific to that area has been demonstrated in accordance with County ordinances and guidelines.	which is outside of a floodplain. However, a portion of the project site is within a FEMA mapped AE floodplain zone. The FEMA AE zone is defined as being areas subject to inundation by the one percent annual chance flood event, and FEMA provides base flood elevations for such areas. The proposed project would not place housing within the future, fully developed, unmitigated 100-year floodplain. However, limited fill would be placed within the floodplain fringes during project development, generally associated with the proposed pedestrian bridge over Placer Creek, as well as the proposed changes in hydrology. Thus, a CLOMR would be required prior to Improvement Plan approval to ensure the project's compliance with existing regulations and to update the floodplain information to reflect the proposed conditions. In addition, see response to PCGP Policies 4.E.11 and 6.A.2.
8.B.1.6	The County shall ensure new development projects incorporate design strategies and features to reduce the area of impervious surfaces.	Although the proposed project would result in an increase in on-site impervious surfaces, the proposed project would include pervious surfaces throughout the site, such as landscaping throughout the project site and on the project frontage on the south side of Baseline Road. A 2.1-acre neighborhood park would be included in the Placer Creek Residential Phase 2 development, which would include landscaping throughout, and approximately 9.9 acres of open space, bisected by Placer Creek, would be maintained as part of the proposed project.
8.B.2.1	The County shall promote flood-control measures that maintain natural conditions within the County's Regulatory Floodplain of rivers and streams.	See responses to PCGP Policy 6.A.1.
8.B.2.2	The County shall implement the adaptation strategies as contained in the Placer County Sustainability Plan necessary to ensure that natural systems and flood control infrastructure can handle floodwater year-round.	See response to PCGP Policy 4.E.11 above.
8.C.1.1	The County shall require that new development meet State, County, and local fire district standards for fire protection, including the California Building Standards Code, the International Wildland-Urban Interface Code, and the Placer County Municipal Code as applicable.	See response to PCGP Policy 4.I.9.

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
8.C.1.2	The County shall refer applicants of development projects in the unincorporated county to the appropriate local fire agencies for review for compliance with fire safety standards. If dual responsibility exists, then both agencies shall review and comment relative to their area of responsibility. If standards are different or conflicting, the more stringent standards shall be applied. All development in high fire hazard areas shall be designed and constructed to minimize the risk from fire hazards.	See response to PCGP Policy 4.I.9.
8.C.1.6	The County shall continue to implement State fire safety standards through enforcement of the applicable standards contained in the Placer County Land Development Manual.	See response to PCGP Policy 4.I.9 above. The proposed project would be subject to the applicable standards contained in the Placer County Land Development Manual.
Noise		
9.A.1	New development of noise-sensitive uses shall not be permitted where the noise level due to non-transportation noise sources will exceed the noise level standards of Table 9-1 as measured immediately within the property line of the new development, unless effective noise mitigation measures have been incorporated into the development design to achieve the standards specified in Table 9-1.	As discussed in Chapter 3, Project Description, of this EIR, surrounding existing land uses for the project site include the under-construction Baseline Marketplace to the north, across Baseline Road; single-family residences associated with the Sun Valley Oaks residential neighborhood and Dry Creek tributaries to the east; single-family residences associated with the Morgan Creek residential neighborhood to the south; and the under-construction Property 1A of the PVSP, which will include 1,285 residential units, to the west, across Walerga Road. Therefore, the proposed project would not be anticipated to be subject to noise levels due to non-transportation noise sources exceeding the 50 L_{dn} noise level standards for residential uses included in Table 9-1 of the PCGP.
9.A.2	Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of Table 9-1 as measured immediately within the property line of lands designated for noise-sensitive uses: provided, however, the noise created by occasional events occurring within a stadium on land zoned for university purposes may temporarily exceed these standards as provided in an approved Specific Plan.	As demonstrated in Chapter 14, Noise, of this EIR, the proposed project would not result in the generation of a substantial permanent increase in ambient noise at existing residences located within the immediate project vicinity or along project area roadways.
9.A.5	Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of Table 9-1 at existing or planned noise-sensitive uses, the County shall require submission of an acoustical analysis as part of the	Chapter 14, Noise, of the Draft EIR is primarily based on the Noise Technical Report (Noise Report) prepared for the proposed project by RCH Group Planning and Environmental Consulting (RCH) (see Appendix H of this EIR). The Noise Report included an acoustical analysis for anticipated

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
	environmental review process so that noise mitigation may be included in the project design.	noise sources that could impact sensitive receptors in the project site vicinity. Regarding the potential noise impacts of non-residential land uses such as the proposed pickleball courts, the estimated noise levels generated by the two pickleball counts included as part of the Phase 2 outdoor recreation facilities would be well below the County's daytime outdoor noise level threshold of 70 dB L_{max}.
9.A.6	The feasibility of proposed projects with respect to existing and future transportation noise levels shall be evaluated by comparison to Table 9-3.	The Noise Report prepared for the proposed project determined that the increase in traffic noise levels at existing sensitive receptors due to the proposed project would be considered less than significant. In addition, while not a CEQA concern, the County shall condition the project to construct noise barriers to reduce the existing and future transportation noise levels at the proposed residential areas in closest proximity to Baseline Road and Walerga Road.
9.A.8	New development of noise-sensitive land uses shall not be permitted in areas exposed to existing or projected levels of noise from transportation noise sources, including airports, which exceed the levels specified in Table 9-3, unless the project design includes effective mitigation measures to reduce noise in outdoor activity areas and interior spaces to the levels specified in Table 9-3.	See response to PCGP Policy 9.A.6. In addition, as discussed in Chapter 19, Effects Not Found to be Significant, of this EIR, the proposed project is not located within the vicinity of a private airstrip or an airport land use plan or within two miles of a public airport or public use, and as such would not be exposed to excessive noise levels from such transportation sources.
9.A.9	Noise created by new transportation noise sources, including roadway improvement projects, shall be mitigated so as not to exceed the levels specified in Table 9-3 or the performance standards in Table 9-3 at outdoor activity areas or interior spaces of existing noise sensitive land uses.	See responses to PCGP Policies 9.A.6 and 9.A.8.
9.A.12	Where noise mitigation measures are required to achieve the standards of Tables 9-1 and 9-3, the emphasis of such measure shall be placed upon site planning and project design. The use of noise barriers shall be considered as a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project.	See response to PCGP Policies 9.A.2 and 9.A.6 above.
Placer County Housing Element 2021-2029		
New Residential Construction		
HE-A-5	**Infill Development.** The County shall promote and maintain balanced growth by encouraging compatible residential	The proposed project would involve construction of 432 residential units, which includes 212 single-family units and 220 multi-family units, as well

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
	development on infill sites within established communities where urban services are in place.	as the potential 22 on-site ADUs. The project site is surrounded by existing and planned development, including the under-construction Baseline Marketplace to the north, across Baseline Road; single-family residences associated with the Sun Valley Oaks residential neighborhood and Dry Creek tributaries to the east; single-family residences associated with the Morgan Creek residential neighborhood to the south; and the under-construction Property 1A of the PVSP, which will include 1,285 residential units, to the west, across Walerga Road. The proposed project's residential uses would be compatible with the existing residential development within the project area. Furthermore, the proposed project is located within an established community where urban services are in place. The proposed project would require annexation into the Placer County Service Area 28, Zone 173, for sanitary sewer service, subject to approval by the County Board of Supervisors. The proposed project would also require annexation into the Placer County Service Area 28, Zone 169, for ongoing maintenance and the generation of funds for public parks, trails, and open space recreation amenities within the Dry Creek community, and annexation into the Dry Creek Fire Zone of Benefit (County Service Area 28, Zone of Benefit 165) for provision of fire protection services, subject to Placer County approval.
Affordable Housing		
HE-B-13	**Affordable Housing Requirement for New Development.** The County shall require all new discretionary residential development projects to provide for at least 10 percent of the total approved units to accommodate housing needs that are affordable to very-low-, low-, and moderate-income households.	One option the project is considering to satisfy the project's affordable housing requirements is by transferring in fee title to the County an off-site vacant parcel under Homes by Towne ownership, within the RVSP. If this option is chosen, the project applicant would seek an amendment to the RVSP and a rezone of the proposed off-site affordable housing parcel to the RM30 zone, which can result in a maximum development potential of 120 affordable income-restricted units. This EIR also evaluates an alternative means by which the proposed project can meet the County's affordable housing regulations. According to Policy HE-C-3, included in the Housing Element of the County's PCGP, ADUs of less than 750 sf are considered to be affordable by design and eligible to satisfy low-income housing requirements in specific plans and new developments. The County's regulations require a minimum of 10 percent of the units within the proposed project be affordable housing; thus, the proposed project

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
		could provide a minimum of 22 ADUs on lots with single-family residential units.
	Innovative Housing Types	
HE-C-3	**Accessory Dwelling Units Affordable by Design.** The County shall consider ADUs of less than 750 square feet to be affordable by design and eligible to satisfy low-income housing requirements in specific plans and new developments alike.	See response to Housing Element Policy HE-B-13.
	DCWPCP	
	Community Development: Population and Housing	
1	Encourage residential development in areas which provide an adequate and accessible transportation network and which reduce commuting distances to areas of employment.	As discussed in Chapter 16, Transportation, of this EIR, according to the results of the Placer County VMT Estimation Tool, the VMT per capita for the proposed project would be 18.98 VMT per capita, which is below the 25.86 VMT per capita threshold for Western Placer County. The comparatively low VMT for the proposed project would occur because the project site is located closer to major employment/retail centers in the Sacramento and South Placer County areas, as compared to most of unincorporated Placer County.
3	Encourage the use of passive and direct solar collection and incorporate home design innovations which limit energy consumption.	As discussed in Chapter 9, Energy, of this EIR, the proposed project would comply with the provisions of the CBSC, which would require all new residential structures to include on-site solar systems, reducing building energy demand.
	Community Development: Land Use Plan	
8	Residential areas should be located where a full range of services and facilities can be provided most efficiently and economically.	The project site is located in the vicinity of existing development in the City of Roseville and unincorporated Placer County, and as a result, existing water and sewer infrastructure exists in surrounding roadways. In addition, the proposed project would include upgrades to the existing Community Facilities District #1 Sewer Lift Station. The proposed project would not increase population such that governmental services and/or facilities, such as fire protection services, law enforcement, schools, recreational facilities, and public facilities would require new or altered facilities. Thus, the project would not result in the inefficient extension of utility infrastructure or public services. Additional information related to the provision of utilities and public services is provided in Chapter 15, Public Services and Utilities, of this EIR.

Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
27	Promote energy and resource conservation in any future land development project especially through consideration of alternative energy sources (i.e. passive solar collection) or state of the art energy and water conservation measures.	See response to DCWPCP Policy 3 (Community Development: Population and Housing).
28	Continue to monitor and control existing land uses that could deteriorate air and water quality.	See responses to PCGP Policies 4.E.10 and 6.F.3.
29	Review proposed developments for their potential adverse effect on air and water quality.	See responses to PCGP Policies 4.E.10 and 6.F.3.
30	Encourage application of measures to mitigate erosion and water pollution from earth disturbing activities such as grading and road construction.	See responses to PCGP Policies 1.K.4 and 4.E.10.
43	To allow for continued increased commercial and residential development only where all public services can be provided in an adequate and timely manner.	See response to DCWPCP Policy 4 (Community Development: Land Use Plan).
44	The rate of development and location of projects shall not exceed the capacity of the community, special districts and utility companies to provide all needed services and facilities in an orderly and economic manner.	See response to DCWPCP Policy 4 (Community Development: Land Use Plan).
Community Development: Community Design		
1	Wherever possible, natural features should be retained as buffers between different, potentially incompatible uses. Where natural features are not available, landscaped buffer yards shall be provided to minimize the adverse effects of higher intensity uses upon lower intensity uses.	See response to PCGP Policy 1.B.5.
3	Preservation of natural features, noise exposure, road access, and relationship to the surrounding properties shall be considered in preparing subdivision designs. Subdivision density, or total number of lots, will ultimately be determined by these factors. The development of the maximum number of lots permitted by the zoning will not be possible in most cases due to these and other design considerations required by this Plan.	See response to PCGP Policy 1.B.5.
14	Where possible preserve native trees and support the use of native drought tolerant plant materials in all revegetation/landscaping projects.	See responses to PCGP Policies 6.D.2 and 6.D.4.



Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
15	In place of sound wall construction, require, wherever possible, the use of greater setbacks to provide a scenic corridor for all parcels fronting on all the major circulation routes (2, 4, or 6 lanes of traffic). Long expanses of sound walls are not consistent with the desired character of the Plan area and the use of open space setbacks and landscaping instead, will be a major difference between this area and surrounding areas to the north and south.	See response to PCGP Policy 1.B.5. The County shall condition the project to construct noise barriers, including a six-foot-tall sound wall between the northern lots of Phase 1 and Baseline Road; 12-foot-tall sound wall between the southern lots of Phase 2 and Walerga Road; and a nine-foot-tall sound wall between the northern lots of Phase 3 and Walerga Road. The noise barriers could take the form of masonry wall, earthen berm, or a combination of the two.
18	Utility lines shall be installed underground to ensure minimum disruption to the environment and as little disturbance as possible to vegetation, particularly in scenic corridors.	See response to PCGP Policy 1.K.5.
Environmental Resources Management: Natural Resources		
12	Conservation of the natural landscape, including minimizing disturbance to natural terrain and vegetation, shall be an overriding consideration in the design of any subdivision or land development project, paying particular attention to the protection and preservation of existing vegetation.	See responses to PCGP Policies 1.B.10, 6.A.9, 6.B.1, 6.C.1, and 6.D.4.
14	No construction activities shall occur within the Dry Creek floodplain and only limited alteration of its tributaries shall be permitted except as part of the development of the floodplain as a recreational area, or for stream enhancement, or where work is done in accordance with the Placer County Flood Damage Prevention Ordinance, Department of Fish and Game Regulations, and Clean Water Act Provisions administered by the U.S. Army Corps of Engineers.	See responses to PCGP Policies 4.E.11 and 6.B.1.
19	Support the “no net loss” policy for wetland areas administered by the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service and the State Department of Fish and Game. Continue to coordinate with these agencies at all levels of project review to ensure that their concerns are adequately addressed.	See response to PCGP Policy 6.B.1.
25	Intermittent streams often become permanent streams concurrent with the development of an area. Therefore, these waterways shall be protected from land development activities which have a potential for detrimental impacts (e.g., grading, channelization, etc.).	See response to PCGP Policy 6.A.1.



Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
Environmental Resources Management: Open Space		
5	Protect natural areas along creeks and canals through the use of non-development setback with setback distances varying according to the significance of the area to be protected.	See response to PCGP Policy 6.A.1.
11	Open spaces should be linked visually and physically to form a system of open spaces. Where appropriate, trails shall connect open space areas. Dedication of easements shall be encouraged and in many cases required as lands are developed and built.	See responses to PCGP Policies 3.C.1 and 5.A.1.
12	Development on private lands should be planned and designed to provide for preservation of open space.	See response to PCGP Policy 1.B.10.
17	Stream corridors shall be left in an open, natural condition, except for structures or uses which are compatible with stream corridors.	See response to PCGP Policy 6.A.1.
18	In the design and development of new subdivisions the following types of areas and features shall be preserved as open spaces to the maximum extent feasible: high hazard areas, scenic and trail corridors, streams, streamside vegetation, other significant stands of beneficial native vegetation, and any areas of special ecological significance.	See responses to PCGP Policies 6.A.1 and 6.C.9.
21	Where impacts to stream environment zones or wetland are unavoidable, project specific mitigation shall include the identification and quantification of vegetation impacted, the preparation or revegetation plans to assure no net loss of riparian or wetland acreage or values, and the specific monitoring of pans to assure compliance and satisfactory results.	See responses to PCGP Policies 6.A.1 and 6.C.9.
Transportation and Circulation		
6	The rights-of-way for roads shall be wide enough to accommodate roadways, trails, bikeways, drainage, public utilities, landscaping/vegetation, and suitable separation between facilities. Minimum right-of-way widths are shown in the following table for roadways within the Community Plan area. The County may modify these right-of-way standards at their discretion, and may elect to exclude landscaped areas, sidewalks, utilities, and other roadway appurtenances from the	See responses to PCGP Policies 3.C.1 and 3.D.8..



Table 13-7
PCGP and DCWPCP Policy Discussion

Policy		Project Consistency
	defined public right-of-way.	
13	Community Plan area roadways shall be designed and maintained to encourage safe, alternative forms of transportation that contribute to a rural atmosphere (such as walking, biking, horseback riding, etc.). Roadways which provide access to the linear "parkway" along Dry Creek and residential areas shall be designed to discourage through traffic. Alignment, width, signage, etc., shall all be appropriate for a minor residential street rather than a major arterial.	See response to PCGP Policy 3.D.8.
14	As development of the Community Plan area occurs, public dedication of rights-of-way shall be required for the roads, trails, and bikeways identified in this Community Plan. Construction of such roads, trails, and bikeways shall be required as conditions of approval placed on land development project approvals.	See response to PCGP Policy 3.C.1.
18	Land development projects shall be designed to minimize the number of access points onto major roadways.	The most major roadways in the project area are Baseline Road and Walerga Road. The project site would add one entrance along Baseline Road to the Phase 1 area, and two along Walerga Road to the Phase 2 and Phase 3 areas. One existing access onto Walerga Road from the project site is provided by Springhill Drive.
19	Adequate safety precautions shall be provided at major intersections. Such precautions may include crossing guards, signalization, and other measures to improve the safety for pedestrians and reduce the risk of accidents.	See responses to PCGP Policies 3.A.1 and 3.D.8.



14. Noise

14. NOISE

14.1 INTRODUCTION

As discussed in Chapter 3, Project Description, of this EIR, the proposed project would include a total of 432 residential units and associated improvements, off-site sewer lift station improvements, and two options to meet the County's affordable housing regulations. The affordable housing options include the provision of a minimum of 22 Accessory Dwelling Units (ADUs) on lots proposed for development with single-family residential units, or an off-site proposal wherein Homes by Towne would rezone and transfer the fee title to the County for an approximately four-acre parcel off-site within the Riolo Vineyards Specific Plan (RVSP), which could develop a maximum of 120 affordable income-restricted units.

The Noise chapter of the EIR describes the existing noise environment in the project vicinity and identifies potential impacts and mitigation measures related to noise and vibration associated with construction and operation of the proposed project, including the off-site sewer lift station improvements area and potential future development of the off-site affordable housing parcel. The method by which the potential impacts are analyzed is discussed, followed by the identification of potential impacts and the recommended mitigation measures designed to reduce significant noise and vibration impacts to less-than-significant levels, if required. The Noise chapter is primarily based on the Noise Technical Report (Noise Report) prepared for the proposed project by RCH Group Planning and Environmental Consulting (RCH) (see Appendix H of this EIR).[1] Other sources of information used in this chapter include the Placer County General Plan (PCGP),[2] PCGP EIR,[3] the RVSP EIR,[4] and the Dry Creek-West Placer Community Plan (DCWPCP).[5]

14.2 EXISTING ENVIRONMENTAL SETTING

The Existing Environmental Setting section provides background information on noise and vibration, a discussion of acoustical terminology and the effects of noise on people, existing sensitive receptors in the project vicinity, existing sources and noise levels in the project vicinity, and groundborne vibration.

Fundamentals of Noise

Sound is mechanical energy transmitted by pressure waves through a medium, such as air. Sound pressure level has become the most common descriptor used to characterize the "loudness" of an ambient sound level. Sound pressure level is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. Decibels are measured using different scales, and the A-weighting of sound levels best reflects the human ear's reduced sensitivity to low frequencies and correlates well with human perceptions of the annoying aspects of noise. The use of A-weighted

1 RCH Group Planning and Environmental Consulting. *Placer County Estia Dry Creek and Placer Creek Residential Project Noise Technical Report*. October 2025.
2 Placer County. *Countywide General Plan Policy Document.* August 1994 (updated May 2013).
3 Placer County. *Countywide General Plan EIR*. July 1994.
4 Placer County. *Riolo Vineyard Specific Plan Environmental Impact Report*. January 2008.
5 Placer County. *Dry Creek-West Placer Community Plan.* Amended May 12, 2009.

sound level, expressed as dBA, has become the standard tool of environmental noise assessments. Noise levels associated with common noise sources are provided in Table 14-1.

Table 14-1
Typical Noise Levels

Noise Level (dB)	Outdoor Activity	Indoor Activity
90+	Gas lawn mower at three feet, jet flyover at 1,000 feet	Rock band
80-90	Diesel truck at 50 feet	Loud television at three feet
70-80	Gas lawn mower at 100 feet, noisy urban area	Garbage disposal at three feet, vacuum cleaner at 10 feet
60-70	Commercial area	–
40-60	Quiet urban daytime, traffic at 300 feet	Large business office, dishwasher in next room
20-40	Quiet rural, suburban nighttime	Concert hall in background, library, bedroom at night
10-20	–	Broadcast/recording studio
0	Lowest threshold of human hearing	Lowest threshold of human hearing

Source: RCH, October 2025.

Several time-averaged scales represent noise environments and consequences of human activities. The most commonly used noise descriptors are the average, or equivalent, A-weighted sound level over a given time period (L_{eq}); the average day-night 24-hour sound level (L_{dn}) with an increase of 10 dB to account for increased sensitivity to noise during the nighttime hours as compared to daytime hours (10:00 PM to 7:00 AM); and community noise equivalent level (CNEL), a weighted average noise level over 24 hours. Finally, the highest root-mean-square (RMS) sound level measured over a given period of time is expressed as L_{max}. With regard to increases in A-weighted noise level, the following relationships occur:

- Under controlled conditions in an acoustics laboratory, the trained healthy human ear is able to discern changes in sound levels of 1.0 dB;
- Outside of such controlled conditions, the trained ear can detect changes of 2.0 dB in normal environmental noise;
- It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of 3.0 dB;
- A change in level of 5.0 dB is a readily perceptible increase in noise level; and
- A 10-dB change is recognized as twice as loud as the original source.

Stationary sources of noise, including construction equipment, attenuate at a rate of six to 7.5 dB per doubling of distance from the source depending on ground absorption. Physical barriers located between a noise source and the noise receptor, such as berms or sound walls, increase the efficacy of noise attenuation that occurs by distance alone. According to the Noise Report, noise from large construction sites would have characteristics of both “point” and “line” sources, so attenuation would likely range between 4.5 and 7.5 dB per doubling of distance.

Existing Sensitive Receptors

Noise-sensitive land uses are generally defined as locations where people reside or where the presence of unwanted sound could adversely affect the primary intended use of the land. Places where people live, sleep, recreate, worship, and study are generally considered to be sensitive to noise, because intrusive noise can be disruptive to such activities. Sensitivity to ambient noise

levels is also related to the amount of noise exposure (in terms of both exposure time and shielding from noise sources). Noise-sensitive land uses typically include residences, schools, child care centers, hospitals, long-term health care facilities, convalescent centers, retirement homes, and recreation areas.

The nearest sensitive land uses to the project site are the single-family residences to the east, west, and south. The nearest of the surrounding single-family residences would be located directly east of the proposed Phase 2 lots (along Wellbrook Place and Bridgestone Crescent Road) and directly south of the proposed Phase 4 lots (along French Creek Court, Eagle Creek Court, Marsh Creek Court, and Rockporte Court).

Existing Ambient Noise Environment

The existing ambient noise environment at the project site is defined primarily by noise from traffic on Baseline Road along the northern project site boundary and Walerga Road, which bisects the site from the southwest to the northeast.

In order to quantify existing ambient noise levels within the project site vicinity, RCH conducted three long-term (72-hour) and four short-term (10-minute) noise level measurements at three locations from June 24 to June 27, 2024. The equipment and approach used to evaluate existing noise levels are discussed in the Method of Analysis section of this chapter. The noise survey locations are shown on Figure 14-1. The results of the ambient noise survey are summarized in Table 14-2. As shown in the table, 24-hour noise levels at the project site ranged from 67 to 74 dB CNEL. The main source of noise was traffic noise from Baseline Road and Walerga Road.

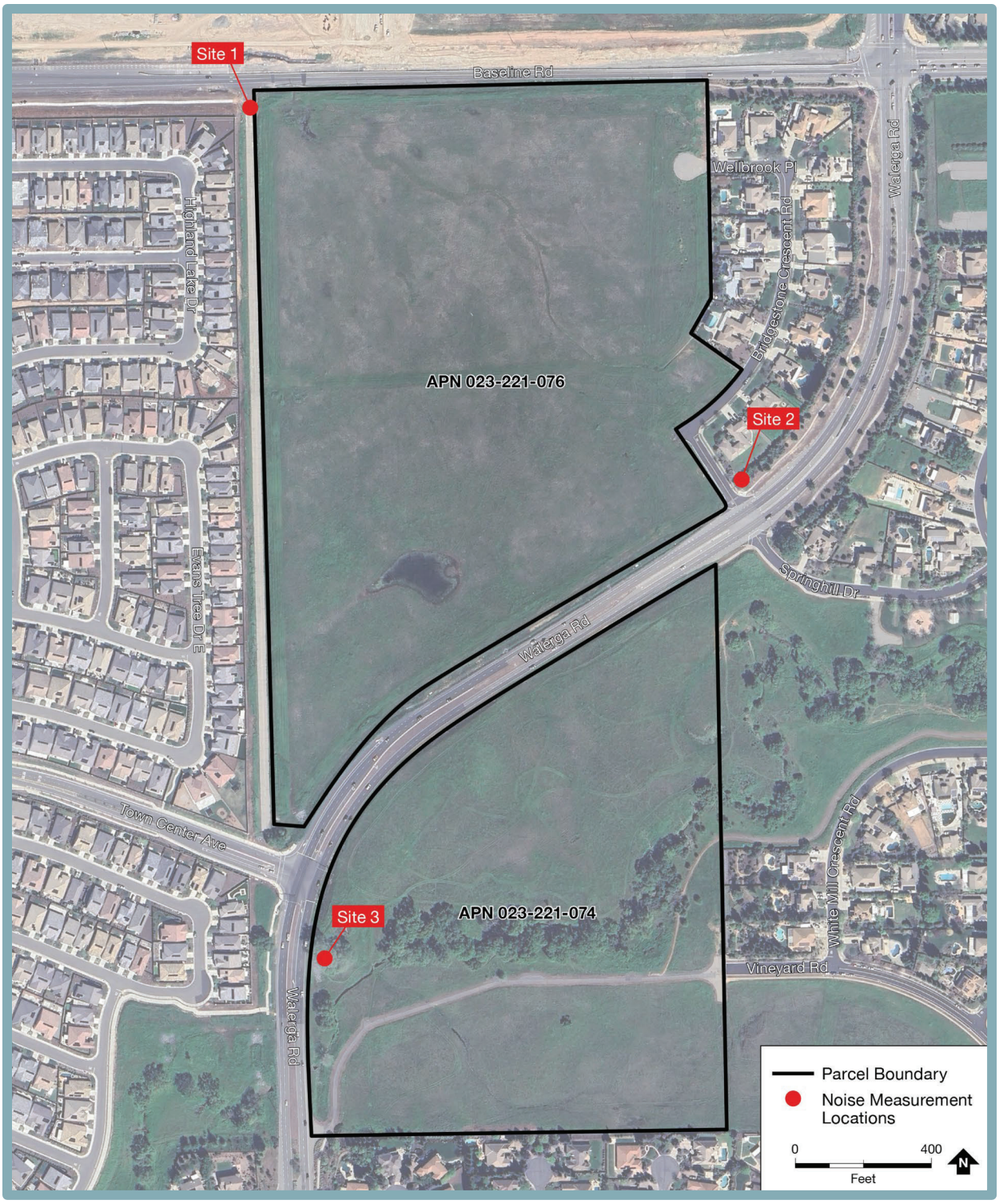
Table 14-2
Existing Noise Survey Results[1]

Location	Time Period	Noise Levels (dB)	Noise Sources
Site 1: Northwest corner of the site, approximately 100 feet south of the Baseline Road centerline	June 25, 12:00 AM through June 27, 11:59 PM, 2024 (72-hour measurement)	Daytime L_{eq} ranged from 61 to 65 Nighttime L_{eq} ranged from 54 to 65 CNELs: 67, 68, 68	Unattended noise measurements do not specifically identify noise sources
	June 24, 2024 9:11 AM to 9:21 AM	Five-minute L_{eq}: 58, 59	Traffic on Baseline Road (58 to 71 dB)
Site 2: Walerga Road/ Springhill Drive intersection, approximately 70 feet north of the Walerga Road centerline	June 25, 12:00 AM through June 27, 11:59 PM, 2024 (72-hour measurement)	Daytime L_{eq} ranged from 69 to 73 Nighttime L_{eq} ranged from 59 to 71 CNELs: 73, 74, 74	Unattended noise measurements do not specifically identify noise sources
	June 24, 2024 9:33 AM to 9:43 AM	Five-minute L_{eq}: 69, 70	Traffic on Walerga Road (65 to 80 dB)
Site 3: Approximately 100 feet east of the Walerga Road centerline	June 25, 12:00 AM through June 27, 11:59 PM, 2024 (72-hour measurement)	Daytime L_{eq} ranged from 67 to 70 Nighttime L_{eq} ranged from 58 to 71 CNELs: 72, 72, 73	Unattended noise measurements do not specifically identify noise sources
	June 24, 2024 9:53 AM to 10:03 AM	Five-minute L_{eq}: 66, 71	Traffic on Walerga Road (65 to 86 dB)

[1] Detailed summaries of the noise monitoring results are provided in the Noise Appendix of the Noise Report.

Source: RCH, October 2025.

Figure 14-1
Noise Measurement Locations



* Figure not OCR Compatible

Existing Traffic Noise Levels

The Federal Highway Administration (FHWA) Traffic Noise Model (FHWA-RD-77-108) was used to develop existing noise contours, expressed in CNEL, for major roadways within the project vicinity. The approach used to evaluate existing traffic noise levels is discussed in the Method of Analysis section of this chapter. Table 14-3 summarizes the existing AM/PM peak hour traffic noise levels along roadways in the project vicinity. As shown in the table, traffic noise levels in the vicinity range from 41.1 to 71.3 dBA CNEL.

Table 14-3
Existing AM/PM Peak Hour Traffic Noise Levels Along Roadways in the Project Vicinity

Roadway	Segment	Hour	Existing Noise Level (dBA CNEL)
Baseline Road	East of Santucci Boulevard/Watt Avenue	AM	67.5
		PM	68.9
Baseline Road	East of Westbrook Boulevard	AM	67.4
		PM	69.0
Westbrook Boulevard	North of Baseline Road	AM	60.4
		PM	60.0
Market Street	North of Baseline Road	AM	62.4
		PM	62.5
Baseline Road	West of Upland Drive	AM	67.0
		PM	69.8
Baseline Road	East of Upland Drive	AM	67.0
		PM	70.3
Fiddyment Road	North of Baseline Road	AM	71.3
		PM	70.4
Crowder Lane	South of Baseline Road	AM	55.2
		PM	53.9
Vineyard Road	West of Crowder Lane	AM	49.0
		PM	51.4
Crowder Lane	North of Vineyard Road	AM	55.6
		PM	54.4
Walerga Road	South of Springhill Drive	AM	68.9
		PM	68.8
Springhill Drive	West of Walerga Road	AM	41.1
		PM	39.5
Springhill Drive	East of Walerga Road	AM	44.1
		PM	43.7
Town Center Avenue	West of Walerga Road	AM	57.8
		PM	57.0
PFE Road	East of Walerga Road	AM	63.3
		PM	63.3
PFE Road	West of Walerga Road	AM	63.2
		PM	62.7

Source: RCH, October 2025.

Off-Site Affordable Housing Parcel

The nearest sensitive receptors to the off-site affordable housing parcel are the single-family residences to the west, across Watt Avenue. The existing ambient noise environment at the off-

site affordable housing parcel is defined primarily by noise from traffic along Watt Avenue and PFE Road.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Several different methods are used to quantify vibration, including peak particle velocity (PPV), defined as the maximum instantaneous peak of the vibration signal and is typically expressed in units of inches per second (in/sec). PPV is most frequently used to describe vibration impacts on buildings. Common sources of ground-borne vibration include trains, heavy trucks traveling on rough roads, and construction activities such as blasting, pile driving, and operation of heavy earthmoving equipment.

14.3 REGULATORY CONTEXT

In order to limit exposure to physically and/or psychologically damaging noise levels, the State of California, various county governments, and most municipalities in the State have established standards and ordinances to control noise. Applicable federal laws or regulations pertaining to noise or vibration that would directly apply to the proposed project do not exist. The following provides a general overview of the existing State and local regulations that are relevant to the proposed project.

State Regulations

The following are the State environmental laws and policies relevant to noise and vibration.

California Building Code

The California Building Code (Title 24, Part 2 of the California Code of Regulations [CCR]) establishes uniform minimum noise insulation performance standards to protect persons within new buildings that house people, including hotels, motels, dormitories, apartment houses, and dwellings other than single-family dwellings.

Title 24 mandates that interior noise levels attributable to exterior sources shall not exceed 45 dB L_{dn} or CNEL in any habitable room. Title 24 also requires that for structures containing noise-sensitive uses to be located where the L_{dn} or CNEL exceeds 60 dB, an acoustical analysis must be prepared to identify mechanisms for limiting exterior noise to the prescribed allowable interior levels. If the interior allowable noise levels are met by requiring that windows be kept closed, the design for the structure must also specify a ventilation or air conditioning system to provide a habitable interior environment.

Local Regulations

The following are the local environmental goals and policies relevant to noise and vibration.

Placer County General Plan

The relevant goals and policies from the PCGP related to noise and vibration are presented below.

Noise Element

Goal 9.A To protect County residents from the harmful and annoying effects of exposure to excessive noise.

Policy 9.A.1 The County shall not allow development of new noise-sensitive uses where the noise level due to non-transportation noise sources will exceed the noise level standards of Table 9-1 (see Table 14-4) as measured immediately within the property line of the new development, unless effective noise mitigation measures have been incorporated into the development design to achieve the standards specified in Table 9-1 (see Table 14-4).

Table 14-4
Allowable L_{dn} Noise Levels Within Specified Zone Districts Applicable to New Projects Affected by or Including Non-Transportation Noise Sources[1]

Zone District of Receptor	Property Line of Receiving Use (L_{dn}, dB)	Interior Spaces[2]
Residential Adjacent to Industrial[3]	60	45
Other Residential[4]	50	45
Office/Professional	70	45
Transient Lodging	65	45
Neighborhood Commercial	70	45
General Commercial	70	45
Heavy Commercial	75	45
Limited Industrial	75	45
Highway Service	75	45
Shopping Center	70	45
Industrial	---	45
Industrial Park	75	45
Industrial Reserve	---	---
Airport	---	45
Unclassified	---	---
Farm	---[6]	---
Agriculture Exclusive	---[6]	---
Forestry	---	---
Timberland Preserve	---	---
Recreation & Forestry	70	---
Open Space	---	---
Mineral Reserve	---	---

Notes:

- Except where noted otherwise, noise exposures will be those which occur at the property line of the receiving use.
- Where existing transportation noise levels exceed the standards of this table, the allowable L_{dn} shall be raised to the same level as that of the ambient level.
- If the noise source generated by, or affecting, the uses shown above consists primarily of speech or music, or if the noise source is impulsive in nature, the noise standards shown above shall be decreased by 5 dB.
- Where a use permit has established noise level standards for an existing use, those standards shall supersede the levels specified in Table 9-1 and Table 9-3 (see Table 14-4 and see Table 14-5). Similarly, where an existing use which is not subject to a use permit causes noise in excess of the allowable levels in Tables 9-1 and 9-3 (see Table 14-4 and see Table 14-5), said excess noise shall be considered the allowable level. If a new development is proposed which will be affected by noise from such an existing use, it will ordinarily be assumed that the noise levels already existing or those levels allowed by the existing use permit, whichever are greater, are those levels actually produced by the existing use.

(Continues on next page)

Table 14-4
Allowable L_{dn} Noise Levels Within Specified Zone Districts Applicable to New Projects Affected by or Including Non-Transportation Noise Sources[1]

- Existing industry located in industrial zones will be given the benefit of the doubt in being allowed to emit increased noise consistent with the state of the art[5] at the time of expansion. In no case will expansion of an existing industrial operation because to decrease allowable noise emission limits. Increased emissions above those normally allowable should be limited to a one-time 5 dB increase at the discretion of the decision-making body.
- The noise level standards applicable to land uses containing incidental residential uses, such as caretaker dwellings at industrial facilities and homes on agriculturally zoned land, shall be the standards applicable to the zone district, not those applicable to residential uses.
- Where no noise level standards have been provided for a specific zone district, it is assumed that the interior and/or exterior spaces of these uses are effectively insensitive to noise.

1 Overriding policy on interpretation of allowable noise levels: Industrial-zoned properties are confined to unique areas of the County, and are irreplaceable. Industries which provide primary wage-earner jobs in the County, if forced to relocate, will likely be forced to leave the County. For this reason, industries operating upon industrial zoned properties must be afforded reasonable opportunity to exercise the rights/privileges conferred upon them be their zoning. Whenever the allowable noise levels herein fall subject to interpretation relative to industrial activities, the benefit of the doubt shall be afforded to the industrial use.

Where an industrial use is subject to infrequent and unplanned upset or breakdown of operations resulting in increased noise emissions, where such upsets and breakdowns are reasonable considering the type of industry, and where the industrial use exercises due diligence in preventing as well as correcting such upsets and breakdowns, noise generated during such upsets and breakdowns shall not be included in calculations to determine conformance with allowable noise levels.

2 Interior spaces are defined as any locations where some degree of noise-sensitivity exists. Examples include all habitable rooms of residences, and areas where communication and speech intelligibility are essential, such as classrooms and offices.

3 Noise from industrial operations may be difficult to mitigate in a cost-effective manner. In recognition of this fact, the exterior noise standards for residential zone districts immediately adjacent to industrial, limited industrial, industrial park, and industrial reserve zone districts have been increased by 10 dB as compared to residential districts adjacent to other land uses.

For purposes of the Noise Element, residential zone districts are defined to include the following zoning classifications: AR, R-1, R-2, R-3, FR, RP, TR-1, TR-2, TR-3, and TR-4.

4 Where a residential zone district is located within an -SP combining district, the exterior noise level standards are applied at the outer boundary of the -SP district. If an existing industrial operation within an -SP district is expanded or modified, the noise level standards at the outer boundary of the -SP district may be increased as described above in these standards.

Where a new residential use is proposed in an -SP zone, an Administrative Review Permit is required, which may require mitigation measures at the residence for noise levels existing and/or allowed by use permit as described under "NOTES," above, in these standards.

5 State of the art should include the use of modern equipment with lower noise emissions, site design, and plant orientation to mitigate offsite noise impacts, and similar methodology.

6 Normally, agricultural uses are noise insensitive and will be treated in this way. However, conflicts with agricultural noise emissions can occur where single-family residences exist within agricultural zone districts. Therefore, where effects of agricultural noise upon residences located in these agricultural zones is a concern, an L_{dn} of 70 dBA will be considered acceptable outdoor exposure at a residence.

Source: Placer County General Plan, 2013.

Policy 9.A.2 Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of Table 9-1 (see Table 14-4) as measured immediately within the property line of lands designated for noise-sensitive uses: provided, however, the noise created by occasional events occurring within a stadium on land zoned for university purposes may temporarily exceed these standards as provided in an approved Specific Plan.

Policy 9.A.6 The feasibility of proposed projects with respect to existing and future transportation noise levels shall be evaluated by comparison to Table 9-3 (see Table 14-5).

Table 14-5
Maximum Allowable Noise Exposure for Transportation Noise Sources

Noise-Sensitive Land Uses	Outdoor Activity Area[1]	Interior Spaces	
	L_{dn}, dB	L_{dn}/CNEL, dB	L_{eq}, dB[2]
Residential	60[3]	45	--
Transient Lodging	60[3]	45	--
Hospitals, Nursing Homes	60[3]	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Churches, Meeting Halls	60[3]	--	40
Office Buildings	--	--	45
Schools, Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

1 Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.
2 As determined for a typical worst-case hour during periods of use.
3 Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dn}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Source: Placer County General Plan, 2013.

Policy 9.A.8 New development of noise-sensitive land uses shall not be permitted in areas exposed to existing or projected levels of noise from transportation noise sources, including airports, which exceed the levels specified in Table 9-3 (see Table 14-5), unless the project design includes effective mitigation measures to reduce noise in outdoor activity areas and interior spaces to the levels specified in Table 9-3 (see Table 14-5).

Policy 9.A.9 Noise created by new transportation noise sources, including roadway improvement projects, shall be mitigated so as not to exceed the levels specified in Table 9-3 (see Table 14-5) or the performance standards in Table 9-3 (see Table 14-5) at outdoor activity areas or interior spaces of existing noise sensitive land uses.

Policy 9.A.11 The County shall require one or more of the following mitigation measures where existing noise levels significantly impact existing noise-sensitive land uses, or where the cumulative increase in noise levels resulting from new development significantly impacts noise-sensitive land uses:

a. Rerouting traffic onto streets that have available traffic capacity and that do not adjoin noise-sensitive land uses;
b. Lowering speed limits, if feasible and practical;
c. Programs to pay for noise mitigation such as low cost loans to owners of noise-impacted property or establishment of developer fees;
d. Acoustical treatment of buildings; or,
e. Construction of noise barriers.

Policy 9.A.12 Where noise mitigation measures are required to achieve the standards of Tables 9-1 and 9-3 (see Table 14-4 and Table 14-5), the emphasis of such measure shall be placed upon site planning and project design. The use of noise barriers shall be considered as a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project.

Dry Creek-West Placer Community Plan

The relevant goals and policies from the DCWPCP related to noise and vibration are presented below.

Community Development Element: The Land Use Plan

Goal 4 To locate noise sensitive land uses within areas of acceptable noise levels.

Policy 5 Encourage the use of greenbelts or landscaped areas along roadways as a design feature of any development in order to mitigate noise impacts and provide valuable open space.

Community Development Element: Community Design Element

Goal 2 It is a goal of the Plan to encourage and support projects which exemplify good design characteristics when judged against the goals and policies of this Plan as well as other applicable design and landscape guidelines.

Policy 15 In place of sound wall construction, require, wherever possible, the use of greater setbacks to provide a scenic corridor for all parcels fronting on all the major circulation routes (2, 4, or 6 lanes of traffic). Long expanses of sound walls are not consistent with the desired character of the Plan area and the use of open space setbacks and

landscaping instead, will be a major difference between this area and surrounding areas to the north and south.

Community Development Element: Noise

Goal 1 To protect the health, safety, and welfare of the Dry Creek-West Placer Area residents by providing a livable environment free from excessive noise.

Goal 2 Locate noise-sensitive land uses within areas of acceptable community noise equivalent levels (CNEL).

Goal 3 Correlate noise concerns with community design, land use, and circulation and open space.

Policy 1 Encourage the use of green belts or natural areas along roadways as a design feature of any development in order to mitigate noise impacts.

Policy 2 Continue a program of monitoring noise sources to assure conformance with noise standards adopted in the Placer County Noise Element.

Policy 3 Avoid the interface of noise-producing and noise-sensitive land uses.

Policy 4 Require implementation of noise abatement techniques within new projects where warranted.

Policy 6 Require project specific noise studies for most commercial, office, public, institutional and residential projects.

Policy 7 Limit construction activities to daytime hours (7:00 a.m. to 7:00 p.m. Monday through Friday).

Policy 8 Where noise levels have a potential to be in excess of normally acceptable CNEL levels, landscaped setbacks should be considered versus sound walls for noise mitigation.

Policy 11 Protect existing residential areas from excessive noise levels generated by the development of the Plan Area.

Policy 12 The burden of noise mitigation measures shall be borne by project proponents whenever the temporary and permanent effects of land development should cause noise levels to be in excess of normally acceptable levels for surrounding uses.

Policy 13 The location and design of transportation facilities shall be developed in a manner which minimizes the effects of noise on adjacent land uses.

Placer County Noise Ordinance

Section 9.36.060 of the Placer County Code establishes non-transportation noise level standards for noise-sensitive receptors. The purpose of the Noise Ordinance is to implement the noise level standards identified in the PCGP.

The specific language of Section 9.36.060 is provided below:

A. It is unlawful for any person at any location to create any sound, or to allow the creation of any sound, on property owned, leased, occupied or otherwise controlled by such person that:

1. Causes the exterior sound levels when measured at the property line of any affected sensitive receptor to exceed the ambient sound level by five dBA; or

2. Exceeds the sound level standards as set forth in Table 1 (see Table 14-6), whichever is the greater.

Table 14-6
Noise Level Standards for Non-Transportation Noise Sources

Sound Level Descriptor	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly L_{eq}, dB	55	45
L_{max}, dB	70	65

Source*: *Placer County Noise Ordinance.

B. Each of the sound level standards specified in Table 1 (see Table 14-6) shall be reduced by five dB for simple tone noises, consisting of speech and music. However, in no case shall the sound level standard be lower than the ambient sound level plus five dB.

C. If the intruding sound source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient sound level can be measured, the sound level measured while the source is in operation shall be compared directly to the sound level standards of Table 1 (see Table 14-6).

Pursuant to Section 9.36.030 of the Placer County Code (Exemptions), sound or noise emanating from construction activities between the hours of 6:00 AM and 8:00 PM Monday through Friday, and between the hours of 8:00 AM and 8:00 PM Saturday and Sunday, is exempt from Section 9.36.060 of the Placer County Code Noise Ordinance, provided that all construction equipment is fitted with factory installed muffling devices and that all construction equipment is maintained in good working order.

With regard to exceptions for non-construction noise sources, Section 9.36.080 of the Placer County Code states the following:

A. An exception may be requested from any provision of this article. Requests for exceptions shall be made on forms provided by the county. Notice of the request for exception must be given to all the surrounding properties that would be impacted by the exception, i.e., those properties that would experience a noise level at their property line that exceeds Table 1 of Section 9.36.060.

B. If the applicant can show to the county that a diligent investigation of available sound suppression techniques for construction-related noise indicates that immediate compliance with the requirements of this article would be impractical or unreasonable, due to the temporary nature or short duration of the exception, a permit to allow exception from the provisions contained in all or a portion of this article may be issued. Factors that the approving authority must consider for construction related exceptions shall include but not be limited to the following:

1. Conformance with the intent of this article;
2. Uses of property and existence of sensitive receptors within the area affected by sound;
3. Factors related to initiating and completing all remedial work;
4. The time of the day or night the exception will occur;
5. The duration of the exception; and
6. The general public interest, welfare and safety.

C. If the applicant can show to the county that the characteristics of a special event indicate that immediate compliance with the requirements of this article would be impractical due to the type of event or unreasonable due to its temporary nature or short duration, a permit allowing an exception from the provisions of this article may be issued. Factors considered for special events related exceptions shall include but not be limited to the following:

1. Conformance with the intent of this article;
2. Uses of property and existence of sensitive receptors within the area affected by sound;
3. Hardship to the applicant, or community of not granting the exception;
4. The time of the day or night the exception will occur;
5. The duration of the exception; and
6. The general public interest, welfare and safety.

D. If the applicant can show to the County, or his or her designee that immediate compliance with the requirements of this chapter would not result in a hazardous condition or nuisance, and strict compliance would be unreasonable due to the circumstances of the requested exception, a permit to allow exception from the provisions contained in all or a portion of this chapter may be issued. Factors considered for all requests for exceptions, other than construction or special events, shall include but not be limited to the following:

1. Conformance with the intent of this chapter and General Plan Policies;
2. Uses of property and existence of sensitive receptors within the area affected by sound;
3. Factors related to initiating and completing all remedial work;
4. Age and useful life of the existing sound source;
5. Hardship to the applicant, or community of not granting the exception;
6. The time of day or night the exception will occur;
7. The duration of the exception; and
8. The general public interest, welfare, and safety.



14.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to noise and vibration. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Impacts of the environment on a project (as opposed to impacts of a project on the environment) are beyond the scope of required California Environmental Quality Act (CEQA) review, with some exceptions. "[T]he purpose of an EIR is to identify the significant effects of a project on the environment, not the significant effects of the environment on the project." (*Ballona Wetlands Land Trust v. City of Los Angeles,* [2011] 201 Cal.App.4th 455, 473 [*Ballona*]). The California Supreme Court has held that "CEQA does not generally require an agency to consider the effects of existing environmental conditions on a proposed project's future users or residents. What CEQA does mandate… is an analysis of how a project might exacerbate existing environmental hazards." (*California Building Industry Assn. v. Bay Area Air Quality Management Dist.* [2015] 62 Cal.4th 369, 392; see also *Mission Bay Alliance v. Office of Community Investment & Infrastructure* [2016] 6 Cal.App.5th 160, 197 ["identifying the effects on the project and its users of locating the project in a particular environmental setting is neither consistent with CEQA's legislative purpose nor required by the CEQA statutes"], quoting *Ballona*, *supra*, 201 Cal.App.4th at p. 474).

The Supreme Court also recognized that the Legislature, by statute, has made a small number of exceptions to the above general principles. One of the exceptions relates to land use planning in areas influenced by airport-generated noise. As the Court explained, Public Resources Code Section (PRC) 21096 "requires a lead agency to use certain technical resources when addressing airport-related safety hazards and noise problems in EIRs for projects near airports (PRC Section 21096[a]), and prohibits a lead agency from adopting a negative declaration without considering 'whether the project will result in a safety hazard or noise problem for persons using the airport or for persons residing or working in the project area'" (62 Cal.4th at p. 391). This exception is not relevant to the proposed project, as discussed below.

Therefore, for the purposes of the CEQA analysis, the relevant inquiry is not whether the proposed project's future residents will be exposed to pre-existing environmental noise-related hazards, but instead whether, and the extent to which, project-generated noise would exacerbate the pre-existing conditions. Nonetheless, for informational purposes, this chapter considers both the proposed project's contribution to on- and off-site noise levels, as well as exposure of future residents of the proposed project to potential hazards associated with the preexisting noise environment, in order to demonstrate General Plan compliance.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, the PCGP and the County's Noise Ordinance, and professional judgment, the effects of a project are evaluated to determine if they would result in a significant adverse impact on the environment. For the purposes of this EIR, an impact is considered significant if the proposed project would result in any of the following:

- 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;

- Generation of a substantial temporary or permanent increase in ambient noise levels in noise-sensitive locations in the vicinity of the project;
- Generation of excessive groundborne vibration or groundborne noise levels; or
- 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, expose people residing or working in the project area to excessive noise levels (see Chapter 19, Effects Not Found to be Significant).

As noted above, issues related to whether the proposed project would result in the following are discussed in Chapter 19, Effects Not Found to be Significant, of this EIR:

- 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, expose people residing or working in the project area to excessive noise levels.

Summary of Applicable Noise Standards

Applicable noise level standards from the PCGP and the County Code are summarized below.

Construction Noise Criteria

Pursuant to Placer County Code Section 9.36.030(A)(7), noise-generating construction activities that occur between 6:00 AM and 8:00 PM, Monday through Friday, and 8:00 AM to 8:00 PM on Saturdays and Sundays, are exempt from the regulations established by the Placer County Code Noise Ordinance, provided that all construction equipment has factory installed muffling devices and that all construction equipment is maintained in good working order. A five dB standard is used as a substantial noise increase criteria for the purposes of assessing construction noise, which is discussed further below.

Transportation Noise Criteria

The Placer County General Plan Noise Element applies 60 dB L_{dn}/CNEL exterior and 45 dB L_{dn}/CNEL interior noise level standards for residential uses affected by transportation noise sources. The County may conditionally allow exterior noise levels between 60 and 65 dB L_{dn} for residential uses, provided that practical noise reduction measures have been implemented and interior noise levels remain in compliance with the 45 dB L_{dn} interior standard.

Substantial Increase Criteria

Generally, a project may have a significant effect on the environment if it substantially increases the ambient noise levels for adjoining areas or exposes people to measurably severe noise levels. In practice, a noise impact may be considered significant if it would generate noise that would conflict with local project criteria or ordinances, or substantially increase existing noise levels at noise-sensitive land uses, even if resulting noise levels are permissible under local criteria or ordinances. The potential increase in transportation noise associated with the proposed project is a factor in determining significance.

Placer County, like many jurisdictions, does not have an adopted policy regarding significant increases in ambient noise. A common practice in many jurisdictions is to use a three to five dB increase as a threshold of significance. However, a limitation of using a single noise level increase value to evaluate noise impacts is that it fails to account for pre-project noise conditions.

The following table was developed by the Federal Interagency Committee on Noise (FICON) as a means of developing thresholds for identifying project-related noise level increases. The rationale for the graduated scales is that test subjects' reactions to increases in noise levels varied depending on the starting level of noise. Specifically, with lower ambient noise environments, such as those below 60 dB L_{dn}, a larger increase in noise levels was required to achieve a negative reaction than was necessary in environments where noise levels were already elevated. Therefore, because the County does not have defined thresholds for what would be considered a substantial increase in traffic noise levels, information from Table 14-7 is used.

Table 14-7
Significance of Changes in Cumulative Noise Exposure (dB DNL)

Ambient Noise Level Without Project	Increase Required for Significant Impact
<60	+5.0 or more
60 to 65	+3.0 or more
>65	+1.5 or more

Source: Federal Interagency Committee on Noise.

The approach to assessing the significance of increases in off-site traffic noise is consistent with other recent Placer County EIRs and the industry-standard approach in general. The use of the FICON standards is considered conservative relative to thresholds used by other agencies in the State. For example, Caltrans requires a project-related traffic noise level increase of 12 dB for a finding of significance, and the California Energy Commission (CEC) considers project-related noise level increases between five to 10 dB significant, depending on local factors. Therefore, the use of the FICON standards, which set the threshold for finding of significant noise impacts as low as 1.5 dB, provides a conservative approach to impact assessment for the proposed project.

Vibration Criteria

Placer County does not have specific policies or standards pertaining to vibration levels. However, vibration levels associated with construction activities and project operations are addressed as potential vibration impacts associated with project implementation. Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events.

Construction operations have the potential to result in varying degrees of temporary ground vibration depending on the specific construction equipment used and operations involved. A significant impact would be identified if project construction activities or proposed on-site operations would expose sensitive receptors to excessive groundborne vibration levels. Specifically, an impact would be identified if groundborne vibration levels due to such sources would exceed the vibration impact criteria established by the Federal Transit Administration (FTA) of 0.5 PPV in/sec for damage to residential and commercial structures.

Method of Analysis

Below are descriptions of the methodologies used in the Noise Report (see Appendix H of this EIR) to measure background and ambient noise and to estimate construction noise and vibration, future traffic noise, pickleball noise, and on-site stationary noise generated from heating, ventilation, and air conditioning (HVAC) equipment. Further modeling details and calculations are provided in Appendix H of this EIR. The results of the noise and vibration impact analyses were compared to the standards of significance discussed above in order to determine the associated level of impact.

On-Site Existing Ambient Noise Levels

To quantify existing ambient noise levels within the project site, RCH conducted three long-term (72-hour) and three short-term (10-minute) noise level measurements at three locations (see Figure 14-1) from June 24 to June 27, 2024. Metrosonics db308 precision and Larson Davis Laboratories (LDL) Soundtrack LxT integrating sound level meters were used to complete the long-term and short-term noise level measurements, respectively. Both sound level meters were calibrated immediately before and after use to ensure the accuracy of the measurements. The results of the noise level measurements are shown numerically and graphically in the Noise Appendix to the Noise Report and are summarized in Table 14-2 above.

Project Construction Noise and Vibration Levels

Construction noise and vibration were analyzed using data compiled for various pieces of construction equipment at distances of 50 feet, as well as at the nearest sensitive receptor, based on equipment noise data published by the FHWA. The FHWA Roadway Construction Noise Model (RCNM), Version 1.1, was used due to the robust inventory of off-road equipment and reference noise levels common to large-scale construction projects. Estimates of noise from construction of the proposed project were based on the maximum amount of equipment used on a given day. Therefore, the noise level associated with the equipment is based on general noise levels typical of the type of equipment and not based on any specific make or model. Construction noise is discussed relative to the applicable policies and standards presented above.

For daytime construction, the grading phase was assumed to be the loudest construction phase. Cumulative daytime construction noise levels were modeled at 50, 200, 400, 600, and 800 feet. For nighttime construction, underground work and aboveground work would both occur, the latter of which would be the loudest phase of nighttime work. Distances for nighttime construction were modeled at 50, 150, and 300 feet. In order to provide a conservative analysis, the RCNM conducted as part of the Noise Report assumed that all equipment used during both daytime and nighttime construction activities would be present and operating simultaneously.

Project Traffic Noise Level Increases

The FHWA-RD-77-108 traffic noise model was used to develop existing noise contours, expressed in CNEL, for major roadways within the project vicinity (i.e., Baseline Road and Walerga Road). Traffic data in the form of AM and PM peak hour intersection turning movements for existing and cumulative conditions were obtained from the project traffic consultant, Kimley-Horn. Existing and cumulative traffic noise levels were calculated using the aforementioned data and the FHWA Model. A complete listing of the traffic noise level inputs are provided in the Noise Appendix of the Noise Report (see Appendix H of this EIR).

The proposed project could also develop up to 22 ADUs to satisfy affordable housing requirements. Because the number of ADUs to be developed is currently unknown, the additional traffic volume that could be generated by the ADUs was not included in the traffic noise modeling. However, according to the Noise Report, the addition of 22 ADUs would increase project trip generation by less than five percent and the resulting traffic noise contribution distributed throughout the analyzed roadway segments would be negligible.

Pickleball Noise

In order to analyze potential outdoor noise impacts from the proposed pickleball courts, which would be located within a neighborhood park in the Placer Creek Residential Phase 2 development, short-term measurements were conducted during a two-player pickleball gameplay

event on September 30, 2025, at the Oasis Park Pickleball Courts in Elk Grove, California. The short-term noise measurements were taken at 50 feet from the center of the court. The primary source of noise originated from the contact between the paddle and the ball, and ranged from 52 to 61 dB, L_{max} at 50 feet. The secondary source of noise was player conversation, which ranged from 50 to 54 dB, L_{max} at 50 feet.

On-Site Stationary Noise

For the purposes of noise modeling, the proposed HVAC equipment was assumed by the Noise Report to be rooftop mounted at the Estia Dry Creek multi-family apartment units and ground-level at the Placer Creek Residential single-family residential lots. RCH observed noise from a typical residential single-stage HVAC unit operating at full capacity, which produced a constant noise level of 54 dB at 15 feet.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the proposed project and off-site sewer lift station improvements, as well as the two affordable housing options analyzed throughout this EIR, in comparison with the baseline and standards of significance identified above. In most cases, potential environmental impacts associated with the proposed project and the 22 on-site ADUs would not differ. Thus, unless otherwise noted, the below analysis applies to both the proposed project and the on-site ADUs.

14-1 Generation of a substantial temporary increase in ambient noise levels in noise-sensitive locations in the vicinity of the project or a substantial temporary increase in ambient noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Based on the analysis below and even with implementation of mitigation, the impact is *significant and unavoidable.*

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, as well as potential future development of the off-site affordable housing parcel, which could generate a substantial temporary increase in ambient noise levels in noise-sensitive locations in the vicinity of the project or in excess of applicable standards.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Construction activities associated with the proposed project, including off-site roadway improvements, would require the use of numerous pieces of noise-generating equipment, such as excavating machinery (e.g., backhoes, bulldozers, excavators, front loaders) and other construction equipment (e.g., compactors, scrapers, graders). Construction worker traffic and construction-related material haul trips would raise ambient noise levels along local haul routes. Noise levels would vary depending on the type and operation of equipment and how well the equipment is maintained. Noise exposure at any single point outside the project site would also vary depending on the distance from the source.

The nearest existing noise-sensitive uses to the project site are the single-family residences surrounding the site to the east, west, and south. Table 14-8 includes the typical noise levels (L_{eq}) for equipment commonly used in general residential construction

projects at full-power operation at a distance of 50 feet. As shown in the table, average noise levels generated by construction equipment that could be used for the proposed project would range from 73 to 83 dB L_{eq} at 50 feet.

Table 14-8
Typical Noise Levels from Construction Equipment

Equipment Description	Noise Level at 50 Feet (dB L_{eq})
Backhoe	74
Dozer	78
Forklift	77
Crane	73
Excavator	77
Dump Truck	73
Paver	74
Air compressor	74
Generator	78
Roller	73
Concrete Mixer Truck	75
Front End Loader	75
Tractor	80
Concrete Saw	83

Source: RCH, October 2025.

Placer County Code Section 9.36.030(A)(7) exempts noise sources associated with construction activities, provided that such activities occur between the hours of 6:00 AM and 8:00 PM, Monday through Friday and 8:00 AM to 8:00 PM on Saturdays and Sundays. However, the exemption is provided on the basis that all construction equipment is fitted with factory-installed muffling devices and maintained in good working order. In addition, DCWPCP Noise Policy 7 restricts construction activities within the DCWPCP area to daytime 7:00 AM to 7:00 PM, Monday through Friday.

All noise-generating project construction equipment and activities would operate in accordance with Placer County Code Section 9.36.030(A)(7) and DCWPCP Noise Policy 7, thereby gaining exemption from the applicable noise level criteria. Nevertheless, Appendix G of the CEQA Guidelines (Section XIII, question ‘a’) requires a lead agency to determine if a project would result in the generation of a substantial temporary increase in ambient noise levels. Despite the exemption, in terms of determining the temporary noise increase due to project-related construction activities, an impact would occur if construction activity would noticeably increase ambient noise levels above background levels. The threshold of perception of the human ear is approximately three to five dB with a five dB change being clearly noticeable. Therefore, for the purposes of this analysis, a noticeable increase in existing ambient noise levels is assumed to occur when noise levels increase by five dB or more; therefore, an increase in noise levels of five dB or more equates to a significant impact.

The construction noise analysis assumes that Phases 1 through 4 would occur separately and not simultaneously. The equipment and activities required for construction of the proposed project would be typical of large-scale residential construction projects, and no noise-generating heavy equipment, such as pile drivers, would be used. Table 14-9 shows the predicted daytime construction noise impacts from grading activities, which would be

the loudest construction phase. As shown in the table, daytime grading activities occurring near existing residences adjacent to Phases 3 and 4 would increase the exterior noise level by approximately three to 10 dB L_{eq}. Figure 14-2 through Figure 14-4 show the average noise contours for daytime construction noise levels for Phases 1 through 4.

Other non-grading construction activities would occur closer to nearby existing sensitive receptors (e.g., homes along Wellbrook Place and Bridgestone Crescent Road, and along French Creek Court, Eagle Creek Court, Marsh Creek Court, and Rockporte Court) and, thus, would expose such receptors to increased noise levels. Specifically, Phases 2 and 4 would require work directly adjacent to existing sensitive receptors; even though construction noise is anticipated by the Noise Report to be less than the noise generated by grading activities (as shown in Table 14-9), other construction phases (e.g., foundations, framing, and post-construction finishing) could also exceed the exterior noise increase threshold of 5.0 dB, depending on the activity being performed and the duration of the construction phase.

The off-site sewer lift station improvements area at the existing Community Facility District #1 Sewer Lift Station in Dry Creek Community Park is located approximately 300 feet from the nearest single-family residence, which is located to the southeast. Based on the limited nature of the improvements, the distance to the closest sensitive receptor, and the tree buffer between the improvement site and the nearest receptor, significant construction noise impacts associated with the off-site sewer lift station improvements are not anticipated to occur.

According to the Noise Report, the proposed project would likely require nighttime work, subject to County approval, for the construction of roadway improvements at three different locations to minimize daytime traffic circulation impacts on Walerga Road and Baseline Road, as the roads have a high volume of traffic during the daytime.

Nighttime work would be short-term and is expected to last approximately one to two weeks at each location and would occur at varying times. Similarly to daytime construction noise level increases, nighttime construction activities would result in a potentially significant impact if such activities would result in an increase of five dB or more over existing exterior noise levels at the nearest sensitive receptors. In addition, a significant impact would occur if nighttime construction exposed nearby sensitive receptors to noise levels exceeding an interior noise level of 45 dB L_{dn}. Table 14-10 shows the predicted exterior and interior noise levels from nighttime construction activities. As shown in the table, nighttime construction activities at Location 1 could result in exterior noise level increases greater than five dB and interior noise levels above 45 dB. According to the Noise Report, any noise-sensitive receptor within 600 feet of the center of Location 1 during nighttime aboveground work could experience noise level increases greater than the five dB exterior noise threshold.
a
In addition, any noise-sensitive receptor within 300 feet of the center of Location 1 during nighttime aboveground work could experience noise levels greater than the interior noise level threshold of 45 dB. Figure 14-5 shows the homes within 300 feet and 600 feet of the center of nighttime construction Location 1.

Table 14-9
Predicted Daytime Construction Noise Levels from Grading Activities (dB, L_{eq})

Phase	Construction Noise Level (at 50 feet)	Construction Noise Level (at Nearest Receptor)	Existing Daytime Exterior Noise Level	Change from Existing Noise Levels	Results in Five dB L_{eq} Increase or More?
1	84	52[1]	61 to 65[2]	0	No[1]
2	84	64[3]	69 to 73[4]	0	No
3	84	65[5]	58 to 62[6]	3 to 7	Yes
4	84	70[7]	60 to 64[8]	6 to 10	Yes

1 Distance is assumed to be 600 feet between the center of the Phase 1 construction site and the nearest home to the west on Highland Lake Drive. The resulting noise level would be 62 dB, L_{eq}. However, there is an existing masonry sound wall atop of an earthen berm that would significantly reduce nighttime construction noise levels reaching the nearest homes on Highland Lake Drive. This existing masonry sound wall is approximately 10-12 feet above the grade of Baseline Road and would block the line of sight between the construction footprint and the nearest homes on Highland Lake Drive; therefore, a conservative 10 dB reduction can be applied. Thus, the resulting noise levels would be approximately 52 dB, L_{eq}.

2 See Table 14-2, Site 1 for daytime hourly L_{eq}'s which were taken nearby the nearest homes to the west of Phase 1 construction.

3 Distance was assumed to be 500 feet between the center of the Phase 2 site and the nearest residence to the east on Bridgestone Crescent Road.

4 See Table 14-2, Site 2 for daytime hourly L_{eq}'s which were taken nearby the homes adjacent to Walerga Road and west of Phase 2 construction.

5 Distance was assumed to be 450 feet between the center of the Phase 3 site and the nearest residence to the east on White Mill Crescent Road.

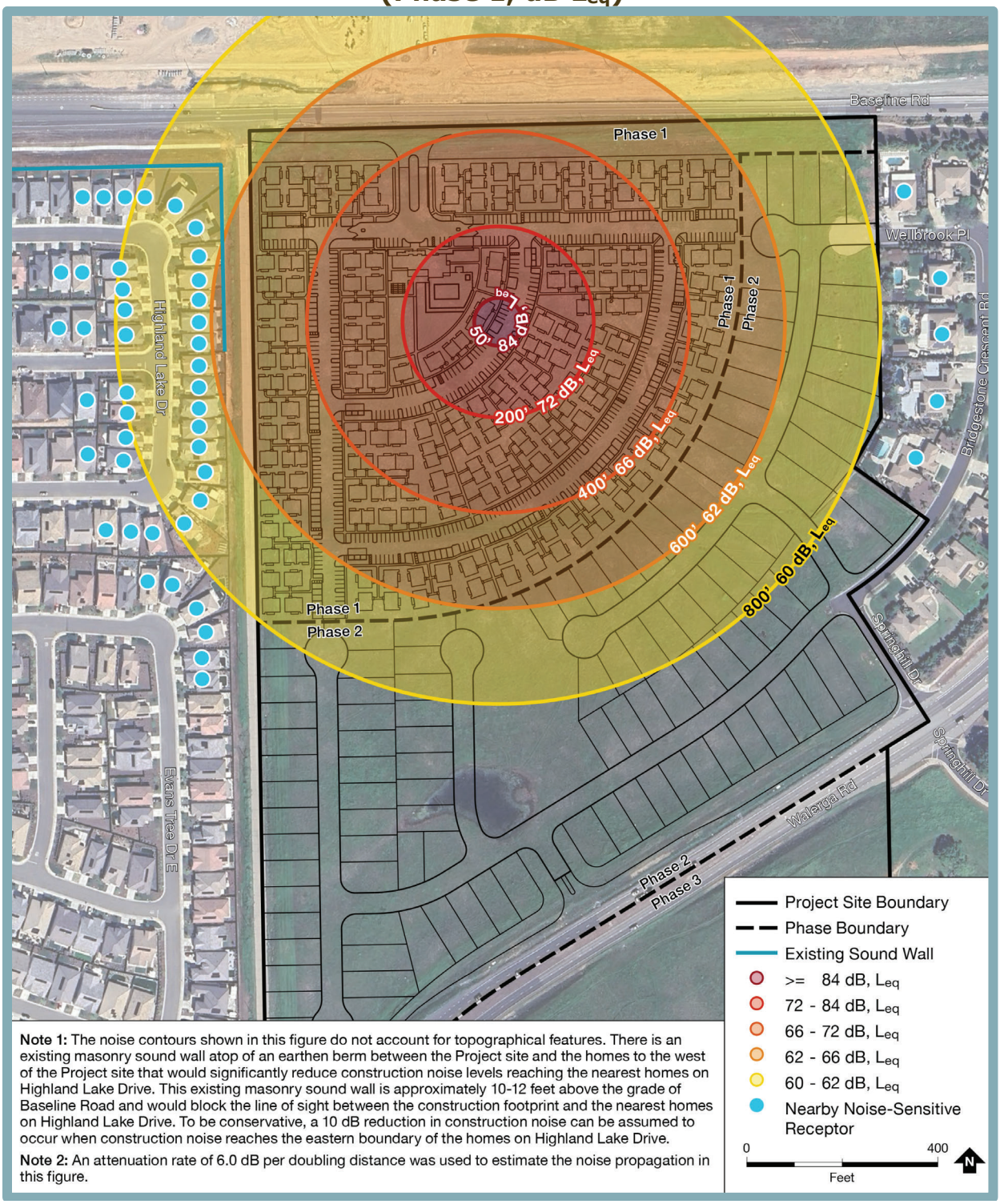
6 Daytime hourly L_{eq}'s were estimated based on the daytime hourly L_{eq}'s taken at Site 3. These noise levels were attenuated to the nearest home to the east on White Mill Crescent Road located closest to Phase 3 construction.

7 Distance was assumed to be 250 feet between the center of the Phase 4 site and the nearest residence to the south on Marsh Creek Court.

8 Daytime hourly L_{eq}'s were estimated based on the daytime hourly L_{eq}'s taken at Site 3. These noise levels were attenuated to the nearest home to the east on Marsh Creek Court located closest to Phase 4 construction.

Source: RCH, October 2025.

Figure 14-2
Average Noise Contours for Daytime Construction Noise Levels (Phase 1, dB L_{eq})

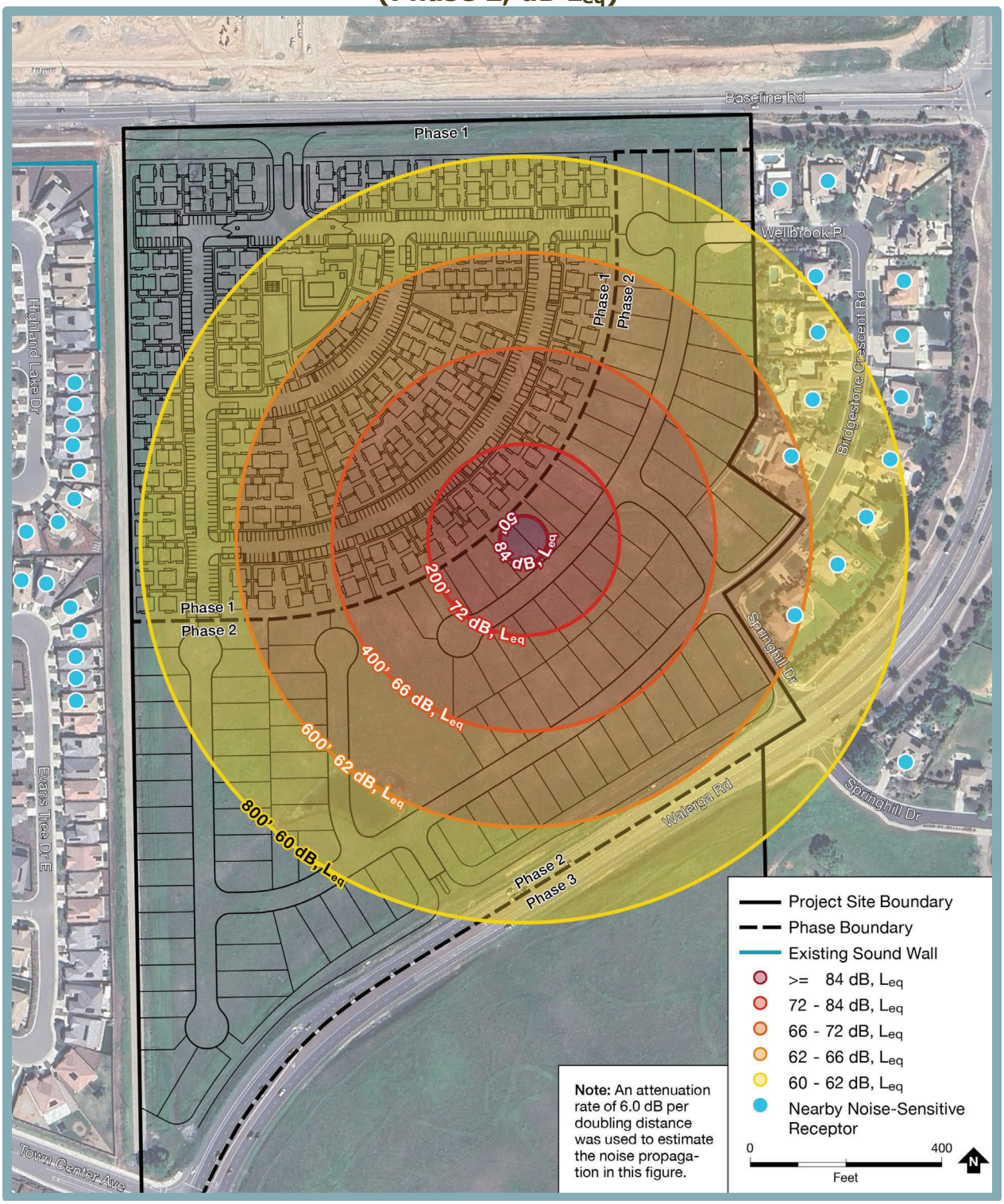


Note 1: The noise contours shown in this figure do not account for topographical features. There is an existing masonry sound wall atop of an earthen berm between the Project site and the homes to the west of the Project site that would significantly reduce construction noise levels reaching the nearest homes on Highland Lake Drive. This existing masonry sound wall is approximately 10-12 feet above the grade of Baseline Road and would block the line of sight between the construction footprint and the nearest homes on Highland Lake Drive. To be conservative, a 10 dB reduction in construction noise can be assumed to occur when construction noise reaches the eastern boundary of the homes on Highland Lake Drive.

Note 2: An attenuation rate of 6.0 dB per doubling distance was used to estimate the noise propagation in this figure.

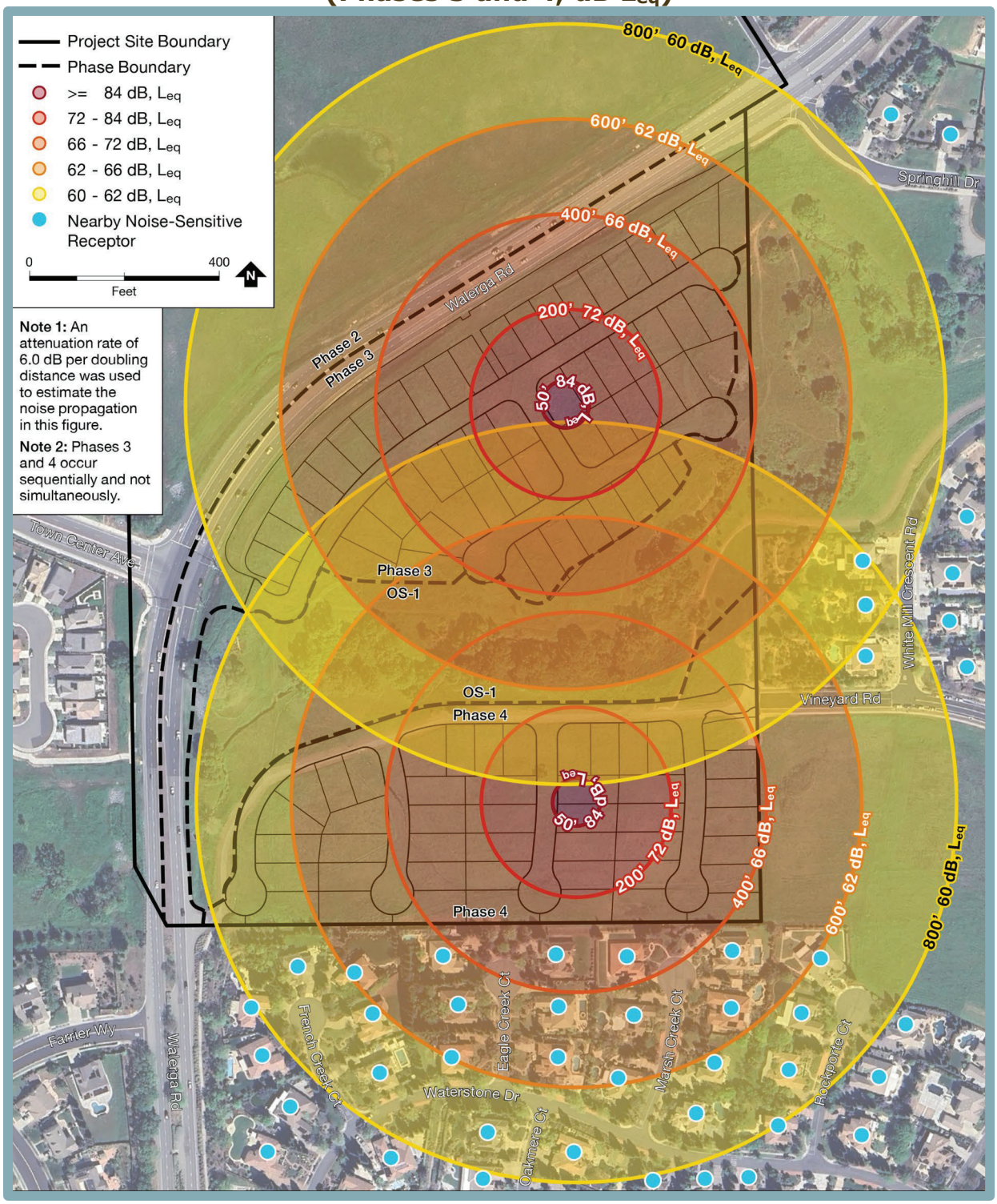
* Figure not OCR Compatible

Figure 14-3
Average Noise Contours for Daytime Construction Noise Levels (Phase 2, dB L_{eq})



* Figure not OCR Compatible

Figure 14-4
Average Noise Contours for Daytime Construction Noise Levels (Phases 3 and 4, dB L_{eq})



* Figure not OCR Compatible

Table 14-10
Predicted Nighttime Construction Noise Levels (dB, L_{eq})

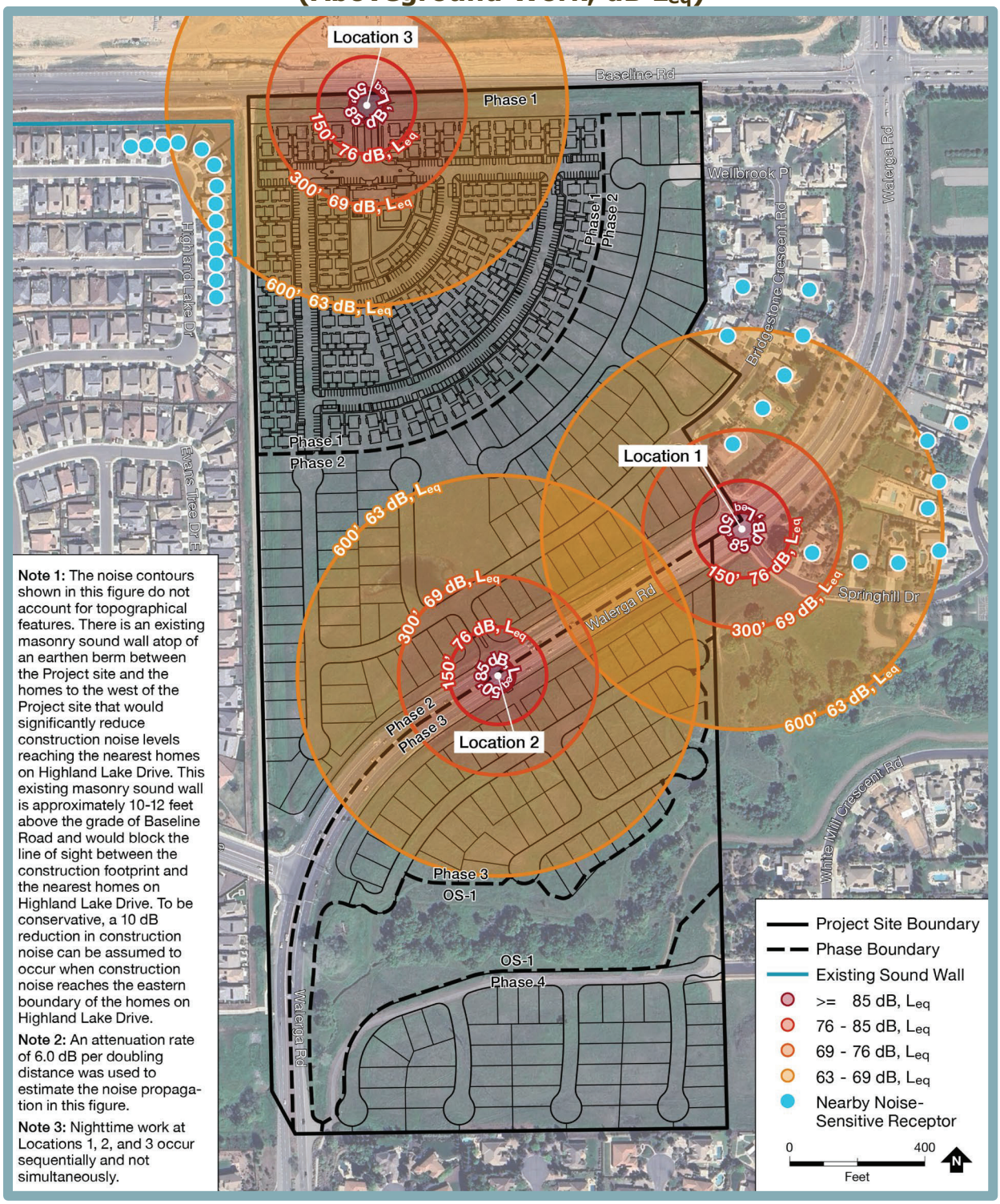
Exterior Noise Levels for Aboveground Work					
Location	**Construction Noise Level (at 50 feet)**	**Construction Noise Level (at Nearest Receptor)**	**Existing Nighttime Exterior Noise Level**	**Change from Existing Noise Levels**	**Results in Five dB L_{eq} Increase or More?**
1	85	76[1]	59 to 71[2]	5 to 17	Yes
2	85	61[3]	59 to 71[2]	0 to 2	No
3	85	56[4]	54 to 65[6]	0 to 2	No[4]

Interior Noise Levels				
Location	**Construction Noise Level (at 50 feet)**	**Construction Noise Level (at Nearest Receptor)**	**Predicted Interior Noise Level at the Nearest Receptor**	**Results in Noise Levels Over 45 dB L_{dn}?**
1	85	76[1]	46 to 51[6]	Yes
2	85	61[3]	31 to 36[6]	No
3	85	56[7]	26 to 31[6]	No

1 Distance is assumed to be 150 feet between the center of nighttime construction Location 1 and the nearest home to the north on Springhill Drive and Walerga Road.
2 See Table 14-2, Site 2 for nighttime hourly L_{eq}'s which were taken nearby the nearest homes to the north of Walerga Road on Springhill Drive.
3 Distance is assumed to be 800 feet between the center of nighttime construction Location 2 and the nearest home to the northeast on Springhill Drive.
4 Distance is assumed to be 450 feet between the center of nighttime construction Location 3 and the nearest home to the southwest on Highland Lake Drive. The resulting noise level would be 66 dB, L_{eq}. However, there is an existing masonry sound wall atop of an earthen berm that would significantly reduce nighttime construction noise levels reaching the nearest homes on Highland Lake Drive. This existing masonry sound wall is approximately 10-12 feet above the grade of Baseline Road and would block the line of sight between the construction footprint and the nearest homes on Highland Lake Drive; therefore, a conservative 10 dB reduction can be applied. Thus, the resulting noise levels would be approximately 56 dB, L_{eq}.
5 See Table 14-2, Site 1 for nighttime hourly L_{eq}'s which were taken nearby the nearest homes on Highland Lake Drive.
6 Noise reductions afforded by building construction can vary depending on construction materials and techniques. Standard construction practices typically provide approximately 25 to 30 dB exterior-to-interior reduction (with windows and doors closed). The nearest noise-sensitive receptors to nighttime construction are assumed to be built with materials that would provide a 25 to 30 dB exterior-to-interior noise reduction (with windows and doors closed).
7 Distance is assumed to be 450 feet between the center of nighttime construction Location 3 and the nearest home to the southwest on Highland Lake Drive. The resulting noise level would be 66 dB, L_{eq}. However, there is an existing masonry sound wall atop of an earthen berm that would significantly reduce nighttime construction noise levels reaching the nearest homes on Highland Lake Drive. This existing masonry sound wall is approximately 10-12 feet above the grade of Baseline Road, therefore, a conservative 10 dB reduction can be applied. Thus, the resulting noise levels would be approximately 56 dB, L_{eq}.

Source: RCH, October 2025.

Figure 14-5
Average Noise Contours for Nighttime Construction Noise Levels (Aboveground Work, dB L_{eq})



* Figure not OCR Compatible

Based on the above, project construction noise levels associated with on-site and off-site construction activities could result in a significant noise level increase at the nearest sensitive receptor(s).

Off-Site Affordable Housing Parcel

During future construction activities within the off-site affordable housing parcel, heavy equipment could be used for grading, excavation, paving, and structure construction, all of which would temporarily increase ambient noise levels when in use. Noise levels would vary depending on the type and operation of equipment and how well the equipment is maintained. Noise exposure at any single point outside the project site would also vary depending on the distance from the source. As shown in Table 14-8, activities involved in typical residential construction would generate noise levels ranging from 73 to 83 dB at a distance of 50 feet. The nearest sensitive receptor to the off-site affordable housing parcel is located approximately 100 feet from the parcel to the west, across Watt Avenue.

Construction activities would be temporary in nature and are anticipated to occur during normal daytime working hours. Noise would also be generated during the construction phase by increased truck traffic on area roadways associated with transport of heavy materials and equipment to and from the construction site. Placer County Code Section 9.36.030(A)(7) exempts noise sources associated with construction activities, provided that such activities occur between applicable hours and that construction equipment is fitted with muffling devices and maintained in good working order. All noise-generating project construction equipment and activities are reasonably assumed to comply and would, thereby, be exempt from the applicable noise level criteria. Nonetheless, at such time the off-site affordable housing parcel gets developed, RVSP EIR Mitigation Measure 11-1a, which has been incorporated into this EIR as Mitigation Measure 14-1(c), would be required.

Conclusion

Based on the above, the proposed project and the off-site affordable housing component could generate a substantial temporary 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. Thus, a ***significant*** impact could occur.

Mitigation Measure(s)

According to the Noise Report, implementation of Mitigation Measure 14-1(a) would reduce daytime construction noise impacts at the single-family residences east of the proposed Phase 2 lots (along Wellbrook Place and Bridgestone Crescent Road) to a less-than-significant level. However, even with the implementation of Mitigation Measure 14-1(a), daytime construction noise levels reaching nearby sensitive receptors south of the Phase 4 lots (along French Creek Court, Eagle Creek Court, Marsh Creek Court, and Rockporte Court) would still exceed the exterior noise increase threshold of five dB L_{eq}.

With respect to nighttime noise, Mitigation Measure 14-1(a) would reduce nighttime construction noise levels at nearby noise-sensitive locations. However, the Noise Report concluded that constructing temporary sound walls along the existing single-family residences on Springhill Drive, though helpful to reduce nighttime construction noise impacts, would not be feasible due to the existing topography. Implementation of Mitigation Measure 14-1(b) is intended to reduce interior noise levels at nearby receptors.

However, according to the Noise Report, nighttime construction noise at nearby sensitive receptors would likely still exceed the exterior noise increase threshold of five dB L_{eq} (i.e., a readily perceptible increase) and the interior noise level threshold of 45 dB L_{dn} CNEL.

Furthermore, as previously discussed, potential future development within the off-site affordable housing parcel would be required to comply with Mitigation Measure 11-1a from the RVSP EIR, which requires the development and implementation of a construction noise abatement program, and is incorporated into this EIR as Mitigation Measure 14-1(c) below. However, the RVSP EIR concluded that implementation of Mitigation Measure 11-1a would not reduce the identified short-term significant impact related to noise level increases associated with construction equipment to a less-than-significant level.

Based on the above, the proposed project and off-site affordable housing parcel could generate a substantial temporary increase in ambient noise levels in noise-sensitive locations in the vicinity of the project. Therefore, the impact would remain *significant and unavoidable*.

Proposed Project

14-1(a) *Prior to commencement of on-site construction activities (including tree removal), the project applicant shall implement the following construction noise reduction measures, subject to review and approval by the Community Development Resource Agency Director:*

- *Noise-generating construction activities (e.g., construction, alteration, or repair activities) shall be limited to the hours exempted/required by Placer County Code Section 9.36.030(A)(7) and DCWPCP Noise Policy 7.*
- *All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, State, or local agency shall comply with such regulations while in the course of project activity.*
- *Electrically powered equipment shall be used instead of pneumatic or internal combustion-powered equipment, where feasible.*
- *Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive receptors.*
- *Construction site and access road speed limits shall be established and enforced during the construction period.*
- *A six-foot-tall temporary sound wall shall be constructed on the eastern site boundary of the proposed Phase 2 lots along the fenceline of the existing single-family residences on Wellbrook Place and Bridgestone Crescent Road to the east.*
- *A six-foot-tall temporary sound wall shall be constructed on the southern site boundary of the proposed Phase 4 lots along the fenceline of the single-family residences on French Creek Court, Eagle Creek Court, Marsh Creek Court, and Rockporte Court to the south.*
- *The sound wall fencing shall consist of 0.5-inch plywood or minimum Sound Transmission Class (STC) 27 sound curtains placed to shield nearby noise-sensitive receptors from construction*

noise. The plywood barrier shall be free from gaps, openings, or penetrations to ensure maximum performance. The temporary construction sound wall shall be constructed prior to any tree removal or other ground-disturbing activities associated with project construction.

- *The Construction Contractor shall designate a "Construction Noise Coordinator" to be responsible for responding to any local complaints about construction noise. The Construction Noise Coordinator shall determine the cause of the complaint and shall require implementation of reasonable measures to correct the problem. The telephone number for the Construction Noise Coordinator shall be conspicuously posted at the construction site.*
- *At least three weeks prior to the start of construction activities, the Construction Contractor shall provide written notification to residences within 500 feet of the construction site informing them of the estimated start date and duration of construction activities, the role of the Construction Noise Coordinator, and how to contact the Construction Noise Coordinator.*
- *All construction equipment shall be properly maintained and in good working order.*
- *Staging areas shall be located at the greatest feasible distances away from nearby noise-sensitive receptors.*
- *Noise-reducing enclosures or acoustic barriers shall be used around stationary noise-generating equipment (e.g., generators, air compressors).*
- *All construction equipment powered by gasoline or diesel engines shall be fitted with sound control devices (i.e., mufflers) that are at least as effective as those originally provided by the manufacturer and all equipment shall be operated and maintained to minimize noise generation.*
- *Heavy-duty construction equipment shall be operated at the lowest operating power possible.*

14-1(b) *At least two weeks prior to any project-related nighttime construction, the Construction Contractor shall provide written notification to residences within 600 feet of the nighttime construction footprint. The written notification shall provide the estimated start time and duration of the nighttime construction, recommendations to these residences to keep windows and doors closed during nighttime construction events, the role of the Construction Noise Coordinator, and how to contact the Construction Noise Coordinator. Proof of compliance with the foregoing measure shall be submitted to the Placer County Community Development Resource Agency.*

Off-Site Affordable Housing Parcel

14-1(c) *Implement RVSP EIR Mitigation Measure 11-1a:*

Prior to construction plan approval, the Department of Public Works (DPW) will develop and implement a construction noise abatement program

acceptable to Placer County Division of Environmental Health (DEH) and conforming to Minute Order 98-08. The plan shall require that:

- *All construction vehicles or equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers;*
- *Stockpiling and/or vehicle staging areas shall be identified on the improvement plans and shall be located as far as is practical from existing occupied dwellings;*
- *Construction noise emanating from any construction activities for which a Grading or Building Permit is required is prohibited on Sundays and federal holidays, and shall only occur during the following times:*
    - *Monday through Friday, 6:00 a.m. to 8:00 p.m. (during daylight savings)*
    - *Monday through Friday, 7:00 a.m. to 8:00 p.m. (during standard time)*
    - *Saturdays, 8:00 a.m. to 6:00 p.m.*

These parameters are standard construction times set by the County's Planning Commission.

- *Specific noise-control measures shall be identified that will reduce the hourly noise level to 70 dBA or lower at all schools during periods when schools are in session;*
- *Specific noise-control measures shall be identified that will reduce the hourly average noise level to 70 dBA or lower at other noise-sensitive receptors where feasible. The construction contractor shall consider implementation of the following measures in the construction noise control plan:*
    1. *Select equipment capable of performing the necessary tasks with the lowest noise-emission level and the lowest possible height for the acoustic center of noise emissions.*
    2. *Noise barriers may be required to block the line of sight from noise sources to noise-sensitive receivers of concern or to further reduce noise levels beyond that provided by line-of-sight breaks afforded by topographical features. The noise barriers could be constructed using either plywood sheets or other solid material that provides sufficient mass per unit surface area (perhaps approaching 4 pounds per square foot) and has minimal openings between the top of barrier and ground surface (perhaps as little as 1 percent). Noise barriers of a given height are generally most effective when placed as close as possible to either the source or receiver, and perhaps at two such separate locations. The least desirable location is generally at a middle distance between sources and receptors. The plan shall identify the proper height, location, and effectiveness of a noise barrier in terms*

of the expected hourly average noise level due to construction activity at noise-sensitive receivers of concern, with the objective of reducing contributions from construction activity to an hourly average of 70 dBA or less.

14-2 Generation of a substantial permanent increase in ambient noise levels in noise-sensitive locations in the vicinity of the project or generation of a substantial permanent increase in ambient noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Based on the analysis below, the impact is *less than significant.*

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, as well as the off-site affordable housing parcel, which could generate a substantial permanent increase in ambient noise levels in noise-sensitive locations in the vicinity of the project or in excess of standards.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Given the residential nature of the proposed project, noise sources associated with operation of the proposed project would primarily consist of noise from project-generated traffic along roadways in the project vicinity, as well as on-site stationary noise generated from HVAC equipment and the proposed pickleball courts within the Phase 2 park lot. Potential impacts related to project-generated traffic noise, pickleball court noise, and stationary noise from HVAC equipment at existing sensitive receptors are discussed separately below. The proposed off-site sewer lift station improvements are related to providing additional underground emergency sewer storage capacity, and would not result in operational noise. Therefore, the below discussion focuses on operational noise sources associated with the proposed project.

In addition, as discussed previously, CEQA does not require an analysis of the environment's impact on the proposed project; however, effects to future residents of the project due to traffic noise along local roadways are evaluated for the purposes of considering the project's consistency with noise-related policies in the Placer County General Plan. While not an environmental issue required for analysis under CEQA, the County would condition the proposed project to address identified noise effects on future residents of the project as part of project approval.

Traffic Noise at Existing Noise-Sensitive Receptors

Using the methodology described above in the Method of Analysis section, traffic noise levels under Existing Plus Project conditions were estimated as part of the Noise Report and are shown in Table 14-11, in comparison to existing conditions.

Table 14-11
Estimated AM/PM Peak Hour Traffic Noise Levels Along Roadways in the Project Vicinity (dB CNEL)

Roadway	Segment	Hour	Existing	Existing + Project	Incremental Increase	Significance Threshold[1]	Threshold Exceeded?
Baseline Road	East of Santucci Boulevard/Watt Avenue	AM	67.5	67.9	0.4	+1.5	No
		PM	68.9	69.2	0.3	+1.5	No
Baseline Road	East of Westbrook Boulevard	AM	67.4	67.6	0.2	+1.5	No
		PM	69.0	69.2	0.2	+1.5	No
Westbrook Boulevard	North of Baseline Road	AM	60.4	60.4	0.0	+3.0	No
		PM	60.0	60.0	0.0	+3.0	No
Market Street	North of Baseline Road	AM	62.4	62.4	0.0	+3.0	No
		PM	62.5	62.5	0.0	+3.0	No
Baseline Road	West of Upland Drive	AM	67.0	67.2	0.2	+1.5	No
		PM	69.8	69.9	0.1	+1.5	No
Baseline Road	East of Upland Drive	AM	67.0	67.3	0.3	+1.5	No
		PM	70.3	70.5	0.2	+1.5	No
Fiddyment Road	North of Baseline Road	AM	71.3	71.4	0.1	+1.5	No
		PM	70.4	71.5	1.1	+1.5	No
Crowder Lane	South of Baseline Road	AM	55.2	56.3	1.1	+5.0	No
		PM	53.9	55.7	1.8	+5.0	No
Vineyard Road	West of Crowder Lane	AM	49.0	52.7	3.7	+5.0	No
		PM	51.4	53.3	1.9	+5.0	No
Crowder Lane	North of Vineyard Road	AM	55.6	56.5	0.9	+5.0	No
		PM	54.4	55.3	0.9	+5.0	No
Walerga Road	South of Springhill Drive	AM	68.9	69.1	0.2	+1.5	No
		PM	68.8	69.1	0.3	+1.5	No
Springhill Drive	West of Walerga Road	AM	41.1	49.0	7.9	+5.0	Yes
		PM	39.5	46.2	6.7	+5.0	Yes
Springhill Drive	East of Walerga Road	AM	44.1	44.1	0.0	+5.0	No
		PM	43.7	44.3	0.6	+5.0	No
Town Center Avenue	West of Walerga Road	AM	57.8	57.8	0.0	+5.0	No
		PM	57.0	57.0	0.0	+5.0	No
PFE Road	East of Walerga Road	AM	63.3	63.6	0.3	+3.0	No
		PM	63.3	63.7	0.4	+3.0	No
PFE Road	West of Walerga Road	AM	63.2	63.6	0.4	+3.0	No
		PM	62.7	63.3	0.6	+3.0	No

[1] Significance thresholds established by FICON shown in Table 14-7.

Source: RCH, October 2025.

The estimated noise levels are provided in terms of CNEL at distances representing the nearest noise-sensitive land uses to the project vicinity roadways. The table evaluates the traffic noise level increases against the thresholds summarized in Table 14-7. As shown within the table, the majority of the traffic noise level increases attributable to the proposed project would be below the FICON increase significance criteria. The modeled results for the Springhill Drive roadway segment west of Walerga Road indicate a 7.9 dB CNEL increase for the Existing plus Project AM peak hour and a 6.7 dB CNEL increase for Existing plus Project PM peak hour. Such traffic noise level increases exceed the five dB increase threshold (see Table 14-7). However, the roadway segment is only approximately 230 feet long before intersecting with Bridgestone Crescent Road to the north, and only one existing single-family residence is located along the roadway (north of the corner of Walerga Road and Springhill Drive).

The noise modeling conducted for the Noise Report indicates that the maximum noise level on the roadway segment would be 50.0 dB CNEL under cumulative buildout conditions. A noise level of 50 dB CNEL is well below the existing traffic noise on Walerga Road (approximately 73 to 74 dB CNEL), which already reaches the existing sensitive receptor. Therefore, according to the Noise Report, the maximum 50 dB CNEL noise level at the roadway segment would be completely masked by the traffic noise that already exists on Walerga Road and the noise level increase would be negligible compared to the existing traffic noise.

Based on the above, the increase in traffic noise levels at existing sensitive receptors due to the proposed project would be considered less than significant.

Pickleball Noise at Existing Noise-Sensitive Receptors

The proposed project would include two pickleball courts as part of the Phase 2 outdoor recreation amenities. Noise generated by pickleball gameplay would be required to comply with Section 9.36.060 of the County Code for daytime noise levels, which establishes a maximum daytime (7:00 AM to 10:00 PM) outdoor noise level of 70 dB L_{max} when measured from the nearest property line.

The nearest off-site residential property line is located approximately 500 feet away from the proposed pickleball courts. Based on the representative measurements taken during a pickleball gameplay event, pickleball gameplay noise would be expected to range between 25 to 36 dB L_{max} at the nearest off-site residential property line. The estimated noise levels would be well below the County's daytime outdoor noise level threshold of 70 dB L_{max} and would likely not be perceptible over other outdoor noise sources. Therefore, the Noise Report concluded that noise from pickleball gameplay would be less than significant.

On-Site Stationary Noise

According to the Noise Report, rooftop-mounted HVAC equipment could be as close as 130 feet from the nearest existing residential property line. At such a distance, noise levels associated with the rooftop-mounted HVAC equipment would attenuate to approximately 35 dB. Ground-level HVAC equipment could be as close as 50 feet from the nearest existing residential property line, which would attenuate to approximately 44 dB. The foregoing noise levels would not exceed the 45 dB hourly L_{eq} nighttime threshold.

Therefore, noise from mechanical HVAC equipment would result in a less-than-significant impact.

Traffic Noise at Proposed Noise-Sensitive Receptors

Using the methodology described above in the Method of Analysis section, future traffic noise levels were estimated at the proposed residential backyard areas. The future Cumulative Plus Project noise modeling showed that the exterior areas closest to Baseline Road would have a noise level of approximately 72 dB CNEL, and that the exterior areas closest to Walerga Road would have a noise level of approximately 78 dB CNEL. Therefore, future traffic noise level exposure is predicted to exceed the County's conditionally acceptable 65 dB L_{dn} exterior noise level standard at the nearest proposed backyard areas to the road without the inclusion of noise-reducing features.

According to the Noise Report, sound walls would reduce the existing and future transportation noise levels at the proposed residential areas in closest proximity to Baseline Road and Walerga Road. Current project plans include sound walls between the northern lots of Phase 1 and Baseline Road, between the southern lots of Phase 2 and Walerga Road, and between the northern lots of Phase 3 and Walerga Road. Table 14-12 summarizes the results of noise attenuation analysis of various sound wall heights.

As previously discussed, such noise effects are not environmental issues required for analysis under CEQA. In order to comply with the Placer County 65 dB DNL conditionally acceptable exterior noise level standard, the proposed project, at a minimum, would require construction of sound walls. As such, the County shall condition the project to construct noise barriers, as set forth in the project conditions of approval below:

- The project applicant shall construct a six-foot-tall sound wall between the northern lots of Phase 1 and Baseline Road. The noise barrier could take the form of masonry wall, earthen berm, or a combination of the two.
- The project applicant shall construct a 12-foot-tall sound wall between the southern lots of Phase 2 and Walerga Road. The noise barriers could take the form of masonry wall, earthen berm, or a combination of the two.
- The project applicant shall construct a nine-foot-tall sound wall between the northern lots of Phase 3 and Walerga Road. The noise barriers could take the form of masonry wall, earthen berm, or a combination of the two.

The construction of the abovementioned sound walls would ensure traffic noise levels at exterior areas associated with the residences proposed closest to the project area roadways would meet the County's 65 dB L_{dn} conditionally acceptable threshold. With respect to the residential interiors, building facades typically provide a minimum exterior-to-interior noise reduction of 25 to 30 dB with windows closed. Because the exterior noise levels are all estimated to be 65 dB or below in the future (with construction of the sound walls), the additional 25 dB noise reduction would reduce interior noise levels below 40 dB CNEL.

Therefore, interior noise levels at the proposed residences would be less than the County's 45 dB CNEL noise standard, and additional noise control measures are not required to reduce interior noise to acceptable levels.

Table 14-12
Noise Modeling for Project Area Roadway Traffic Noise (dB CNEL)

Sound Wall Height	Existing Noise Level	Future Noise Level	Meets County Exterior Noise Standard?
Baseline Road Traffic Noise (Phase 1 Lots)[1,2]			
No wall	68	72	No
5 feet	63	67	No
6 feet	61	65	Yes
Walerga Road Traffic Noise (Phase 2 Lots)[1,3]			
No wall	74	78	No
5 feet	69	73	No
6 feet	67	71	No
7 feet	66	70	No
8 feet	65	69	No
9 feet	64	68	No
10 feet	64	68	No
11 feet	63	67	No
12 feet	61	65	Yes
Walerga Road Traffic Noise (Phase 3 Lots)[3,4]			
No wall	74	78	No
5 feet	65	69	No
6 feet	64	68	No
7 feet	63	67	No
8 feet	62	66	No
9 feet	61	65	Yes

Notes: Sound walls less than five feet tall were not estimated because they would not break the line of sight between vehicles and backyards. Noise levels were rounded to nearest dB.

1 The modeled sound walls assumed flat site conditions where elevations, base of wall elevations, and building pad elevations are approximately equivalent.
2 Outdoor activity area noise levels were modeled in the center of the backyards of the proposed Phase 1 Lots closest to the sound wall, closest backyards to Baseline Road.
3 The modeled sound walls assumed that the building pad elevations along the Phase 3 lots are an average of four feet below the grade of Walerga Road.
4 Outdoor activity area noise levels were modeled in the center of the backyards of the proposed Phase 2 lots closest to the sound wall, closest backyards to Walerga Road.

Source: RCH, October 2025.

Off-Site Affordable Housing Parcel

The RVSP included traffic noise level calculations at nearby sensitive receptors to the RVSP planning area, including existing levels and existing plus project conditions. The closest receptors to the off-site affordable housing parcel are receptors NP1/ST3, located approximately 150 feet south of the parcel's southern site boundary, and NP8, within the cemetery north of the parcel (see Figure 14-6).

As noted in Table 11-6 of the RVSP, the existing noise level calculations at both locations are 56 dBA L_{dn}, largely from traffic noise on surrounding roads (i.e., PFE Road and Watt Avenue). Exterior noise level increases were calculated to be one dBA for the Existing Plus Project condition, both with and without six-foot masonry walls. Therefore, the RVSP notes under Impact 11-2 that noise levels under Existing Plus Project conditions would not exceed the County's noise threshold of 60 dBA L_{dn}. In addition, due to the nature of the affordable housing units and relatively small size of the parcel, new trips associated with the affordable housing units are not anticipated to double traffic volumes (generally required to increase traffic noise levels by five dB).

Residences are not typically associated with the generation of substantial noise. Operation of the off-site affordable housing parcel would include typical residential noise, which would be compatible with the existing residential uses in the area. The off-site affordable housing units are not anticipated to contribute a measurable operational noise level increase to the existing ambient noise environment at any sensitive receptor locations.

Conclusion

Based on the above, the proposed project, off-site sewer lift improvements, and the off-site affordable housing parcel would not result in the generation of a substantial permanent increase in ambient noise at existing residences located within the immediate project vicinity or the generation of a substantial permanent increase in ambient noise levels in excess of applicable standards. Therefore, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

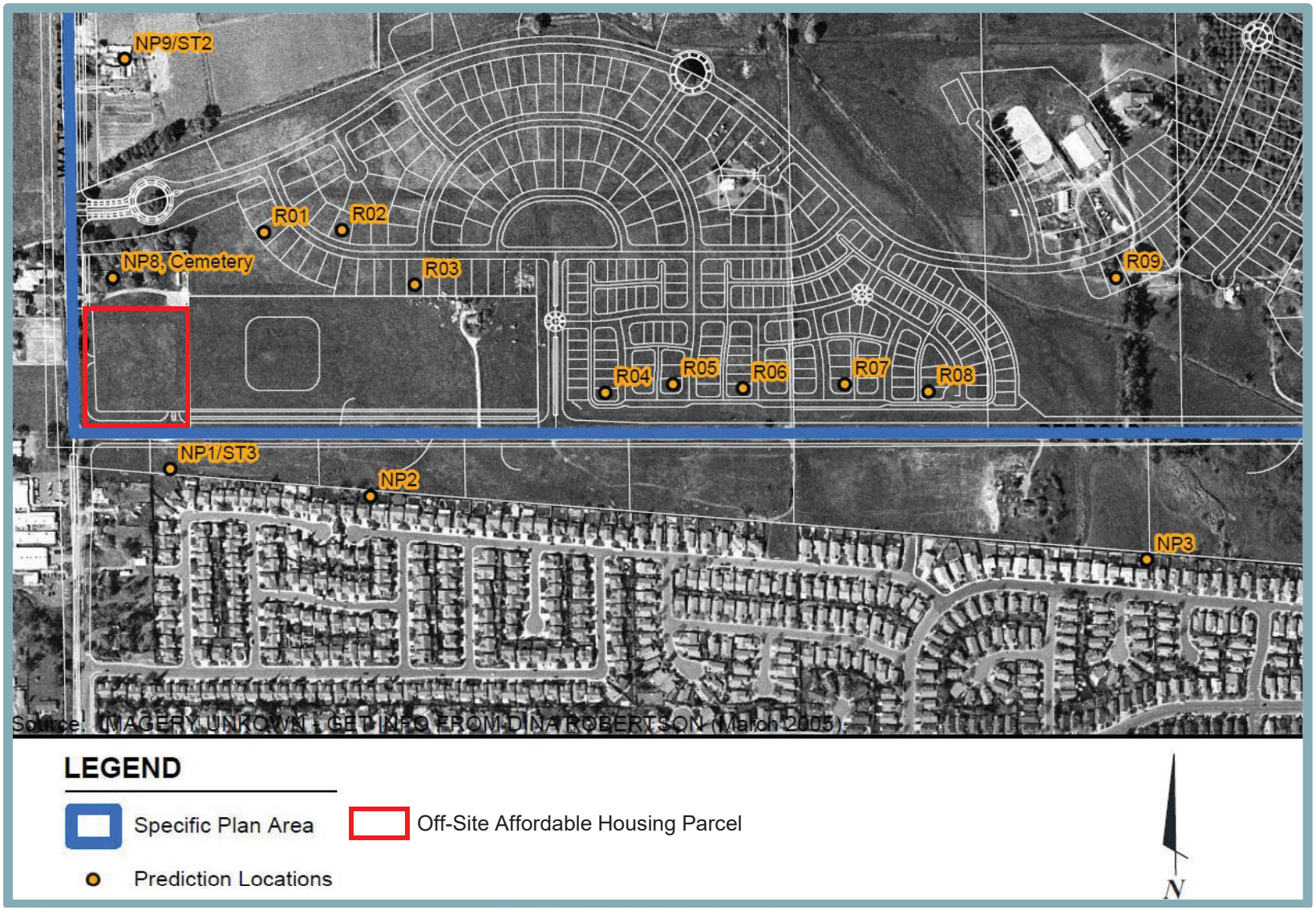
14-3 Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, as well as the off-site affordable housing parcel, which could expose people to or generate excessive groundborne vibration or noise levels.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

The proposed project would consist of a residential community and the proposed off-site sewer lift station improvements would provide additional underground emergency sewer storage capacity. Such uses do not typically involve equipment that generates appreciable vibration. Overall, operations associated with the proposed project and off-site sewer lift station improvements would not result in the generation of excessive groundborne vibration or groundborne noise levels.

Figure 14-6
RVSP Noise Prediction Locations



* Figure not OCR Compatible

However, construction activities associated with the proposed project would have the potential to result in varying degrees of temporary ground vibration depending on the specific construction equipment used and operations involved. Accordingly, the analysis below focuses on construction vibration only.

During on-site project construction, heavy equipment would be used for grading, excavation, paving, and building construction. Use of heavy equipment associated with the aforementioned construction activities would generate localized vibration in the immediate vicinity of the project site. Sensitive receptors are not located near the off-site sewer lift station improvements area. The nearest existing sensitive receptors (east of the Phase 2 lots and south of the Phase 4 lots) are located as closely as 25 feet from where vibration-generating activities could occur. Table 14-13 presents the estimated vibration levels in PPV for equipment commonly used in residential construction projects at a distance of 25 feet.

Table 14-13
Vibration Levels During Construction (PPV)

Construction Equipment	PPV at 25 Feet	Exceeds 0.5 in/sec Threshold?
Roller	0.210	No
Excavator	0.175	No
Loaded Trucks	0.076	No
Backhoe	0.028	No
Loader	0.026	No

Source: RCH, October 2025.

As shown in Table 14-13, vibration levels generated by on-site construction activities at the nearest sensitive receptors would be well below the applicable thresholds for damage to structures of 0.5 in/sec PPV. Therefore, project construction would not result in excessive groundborne vibration levels at nearby existing receptors.

Off-Site Affordable Housing Parcel

Due to the residential nature of the proposed project, reasonably foreseeable operational activities that would result in the generation of substantial groundborne vibration do not exist. However, construction activity associated with the potential future affordable housing units would have the potential to result in varying degrees of temporary ground vibration depending on the specific construction equipment used and operations involved. Construction would use typical construction equipment and would not require significant sources of vibration such as pile driving or blasting. The vibration levels generated by construction equipment shown in Table 14-13 would also represent the typical vibration levels produced during construction of the off-site affordable housing units. As previously discussed, the nearest sensitive receptor to the off-site affordable housing parcel is located approximately 100 feet from the parcel to the west, across Watt Avenue. Therefore, future construction of the off-site affordable housing units would not result in excessive groundborne vibration levels at nearby existing receptors.

Conclusion

Based on the above, construction and operation of the proposed project, off-site sewer lift station improvements, and the off-site affordable housing parcel would not result in the

generation of excessive groundborne vibration or groundborne noise levels. As such, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)
None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Given the short-term nature of construction activities, noise-level increases generated during project construction would be site-specific and would not contribute to ambient noise level increases in conjunction with cumulative development in the DCWPCP. For this reason, the following analysis evaluates project-related traffic noise level increases under cumulative conditions.

For further detail related to the cumulative setting of the proposed project, refer to Chapter 20, Statutorily Required Sections, of this EIR.

14-4 Generation of a substantial permanent increase in ambient noise levels associated with cumulative development of the proposed project in combination with future buildout of the DCWPCP. Based on the analysis below, the cumulative impact is *less than significant*.

Future development projects within the DCWPCP area, including the proposed project, would incrementally affect the future cumulative ambient noise environment. Given the residential nature of the proposed project, the primary project component that could combine with noise impacts from surrounding development in the project region would be associated with vehicle traffic generated by the project and other planned development projects, which together, could potentially result in a significant cumulative impact related to transportation noise.

Using the methodology described above in the Method of Analysis section, traffic noise levels under Cumulative (No Project) and Cumulative Plus Project conditions were estimated as part of the Noise Report and are shown in Table 14-14. The modeled results for the Springhill Drive roadway segment west of Walerga Road indicate a five dB CNEL increase for the Cumulative Plus Project AM peak hour and a 5.1 dB CNEL increase for Cumulative Plus Project PM peak hour. Such traffic noise level increases would meet or exceed the five dB increase threshold (see Table 14-7). However, as previously discussed, the roadway segment is only approximately 230 feet long and only one existing single-family residence is located along the roadway. As shown in Table 14-14, the maximum noise level on the roadway segment would be 50 dB CNEL under cumulative buildout conditions, which is well below the existing traffic noise on Walerga Road (approximately 73 to 74 dB CNEL). Therefore, according to the Noise Report, the maximum 50 dB CNEL noise level at the roadway segment would be completely masked by the traffic noise that already exists on Walerga Road.

Table 14-14
Estimated AM/PM Cumulative Peak Hour Traffic Noise Levels Along Roadways in the Project Vicinity (dB CNEL)

Roadway	Segment	Hour	Cumulative 2044 Buildout (No Project)	Cumulative 2044 Buildout Plus Project	Incremental Increase	Significance Threshold	Significant?	Cumulatively Considerable?
Baseline Road	East of Santucci Boulevard/Watt Avenue	AM	69.7	69.8	0.1	+1.5	No	No
		PM	70.4	70.5	0.1	+1.5	No	No
Baseline Road	East of Westbrook Boulevard	AM	70.1	70.2	0.1	+1.5	No	No
		PM	71.1	71.2	0.1	+1.5	No	No
Westbrook Boulevard	North of Baseline Road	AM	69.1	69.1	0.0	+1.5	No	No
		PM	70.2	70.2	0.0	+1.5	No	No
Market Street	North of Baseline Road	AM	65.9	65.9	0.0	+1.5	No	No
		PM	67.0	67.0	0.0	+1.5	No	No
Baseline Road	West of Upland Drive	AM	70.0	70.2	0.2	+1.5	No	No
		PM	71.0	71.1	0.1	+1.5	No	No
Baseline Road	East of Upland Drive	AM	70.6	70.7	0.1	+1.5	No	No
		PM	71.5	71.6	0.1	+1.5	No	No
Fiddyment Road	North of Baseline Road	AM	73.1	73.1	0.0	+1.5	No	No
		PM	76.3	73.3	0.0	+1.5	No	No
Crowder Lane	South of Baseline Road	AM	57.2	58.0	0.8	+5.0	No	No
		PM	57.2	58.1	0.9	+5.0	No	No
Vineyard Road	West of Crowder Lane	AM	51.4	54.6	3.2	+5.0	No	No
		PM	51.4	55.0	3.6	+5.0	No	No
Crowder Lane	North of Vineyard Road	AM	57.2	58.0	0.8	+5.0	No	No
		PM	56.9	57.9	1.0	+5.0	No	No
Walerga Road	South of Springhill Drive	AM	72.1	72.1	0.0	+1.5	No	No
		PM	72.3	72.4	0.1	+1.5	No	No
Springhill Drive	West of Walerga Road	AM	45.0	50.0	5.0	+5.0	Yes	No
		PM	42.9	48.0	5.1	+5.0	Yes	No
Springhill Drive	East of Walerga Road	AM	46.3	46.3	0.0	+5.0	No	No
		PM	45.0	45.0	0.0	+5.0	No	No
Town Center Avenue	West of Walerga Road	AM	58.1	58.1	0.0	+5.0	No	No
		PM	57.2	57.2	0.0	+5.0	No	No
PFE Road	East of Walerga Road	AM	64.2	64.4	0.2	+3.0	No	No
		PM	64.6	64.9	0.3	+3.0	No	No
PFE Road	West of Walerga Road	AM	64.2	64.4	0.2	+3.0	No	No
		PM	67.1	67.3	0.2	+1.5	No	No

[1] Significance thresholds established by FICON shown in Table 14-7.

Source: RCH, October 2025.

Based on the above, under Cumulative Plus Project conditions, the proposed project would not result in a substantial 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. Therefore, overall, the cumulative impact associated with the proposed project, in conjunction with cumulative development in the region, would be ***less than significant***.

Mitigation Measure(s)

None required.

15. Public Services and Utilities

15. PUBLIC SERVICES AND UTILITIES

15.1 INTRODUCTION

As discussed in Chapter 3, Project Description, of this EIR, the proposed project would include a total of 432 residential units and associated improvements, off-site sewer lift station improvements, and two options to meet the County's affordable housing regulations. The affordable housing options include the provision of a minimum of 22 Accessory Dwelling Units (ADUs) on lots proposed for development with single-family residential units, or an off-site proposal wherein Homes by Towne would rezone and transfer the fee title to the County an approximately four-acre parcel off-site within the Riolo Vineyards Specific Plan (RVSP), which could develop a maximum of 120 affordable income-restricted units.

In addition, the proposed project would include improvements to the off-site Community Facilities District #1 Sewer Lift Station, which would also require embankment work to raise the access and maintenance areas out of the adjacent Dry Creek 100-year floodplain. However, because the proposed improvements to the existing lift station within the off-site sewer list station improvements area would not result in increased demand for public services or utilities in the DCWPCP area, impacts related to such are not discussed further herein. However, a discussion of the required improvements necessary to serve the proposed project is included under Impact 15-6 related to wastewater infrastructure.

The Public Services and Utilities chapter of the EIR summarizes the setting information and identifies potential new demands resulting from the proposed project, off-site affordable housing parcel, and potential 22 ADUs on fire and law enforcement protection services, schools, parks, recreation facilities, and other public facilities such as libraries. The chapter also evaluates the sufficiency of water supplies to meet the water demand associated with all components of the project and assesses the adequacy of the wastewater system, solid waste disposal, and gas, electric, and telecommunication utilities required to serve all components of the project. Potential impacts to public services are identified if any component of the proposed project would require the development of new facilities or expansion of existing facilities, the construction of which could have adverse physical effects on the environment. Information for the Public Services and Utilities chapter was drawn from the following documents:

- Placer County General Plan (PCGP);[1]
- PCGP EIR;[2]
- Dry Creek-West Placer Community Plan (DCWPCP);[3]
- RVSP EIR;[4]
- Placer County Local Agency Formation Commission (LAFCo) Municipal Service Review for Fire and Emergency Services;[5]

1 Placer County. *Countywide General Plan Policy Document.* August 1994 (updated May 2013).
2 Placer County. *Countywide General Plan EIR*. July 1994.
3 Placer County. *Dry Creek-West Placer Community Plan.* Amended May 12, 2009.
4 Placer County. *Riolo Vineyard Specific Plan Environmental Impact Report*. January 2008.
5 Placer County Local Agency Formation Commission. *Municipal Service Review for Fire and Emergency Services West Placer County Area Draft Final.* May 25, 2017.

- California American Water Company's Northern Division Sacramento District 2020 Urban Water Management Plan (UWMP);[6]
- Project-specific Preliminary Water Report prepared by King Engineering (see Appendix I);[7]
- Project-specific Wastewater Report prepared by King Engineering (see Appendix J);[8]
- Various will-serve letters provided for the proposed project.

15.2 EXISTING ENVIRONMENTAL SETTING

The following section describes the existing public services in the area, including fire and law enforcement protection services, schools, parks, and recreation facilities, as well as the existing utilities and service systems in the project area, including water supply, wastewater conveyance and treatment, solid waste, and gas, electric, and telecommunication infrastructure. The project site is located to the south of the City of Roseville limits and is within the DCWPCP area. The off-site affordable housing parcel is located approximately 1.75 miles to the southwest of the project site at the northeast corner of PFE Road and Watt Avenue, within the RVSP area.

Fire Protection Services

The Placer County Fire Department (PCFD) services are administered by the County Office of Emergency Services, and the PCFD is responsible for fire protection and rescue and emergency response services for approximately 475 square miles of unincorporated area in Placer County. The territory served by the PCFD is consistent with the boundaries of County Service Area (CSA) 28, which is used as a means to fund the services offered by the PCFD, and the nearest Zone of Benefit to the project site and the off-site affordable housing parcel is Zone 165 (see Figure 15-1). However, the project site is located outside of existing CSA 28, Zone 165 boundaries. Thus, the entitlements for the proposed project include a request for annexation into the Dry Creek Fire Zone of Benefit (CSA 28, Zone 165) for the provision of fire protection services, subject to approval by the Placer County Board of Supervisors. Therefore, the sections below discuss the fire protection and rescue and emergency response services currently provided by the PCFD within the project area.

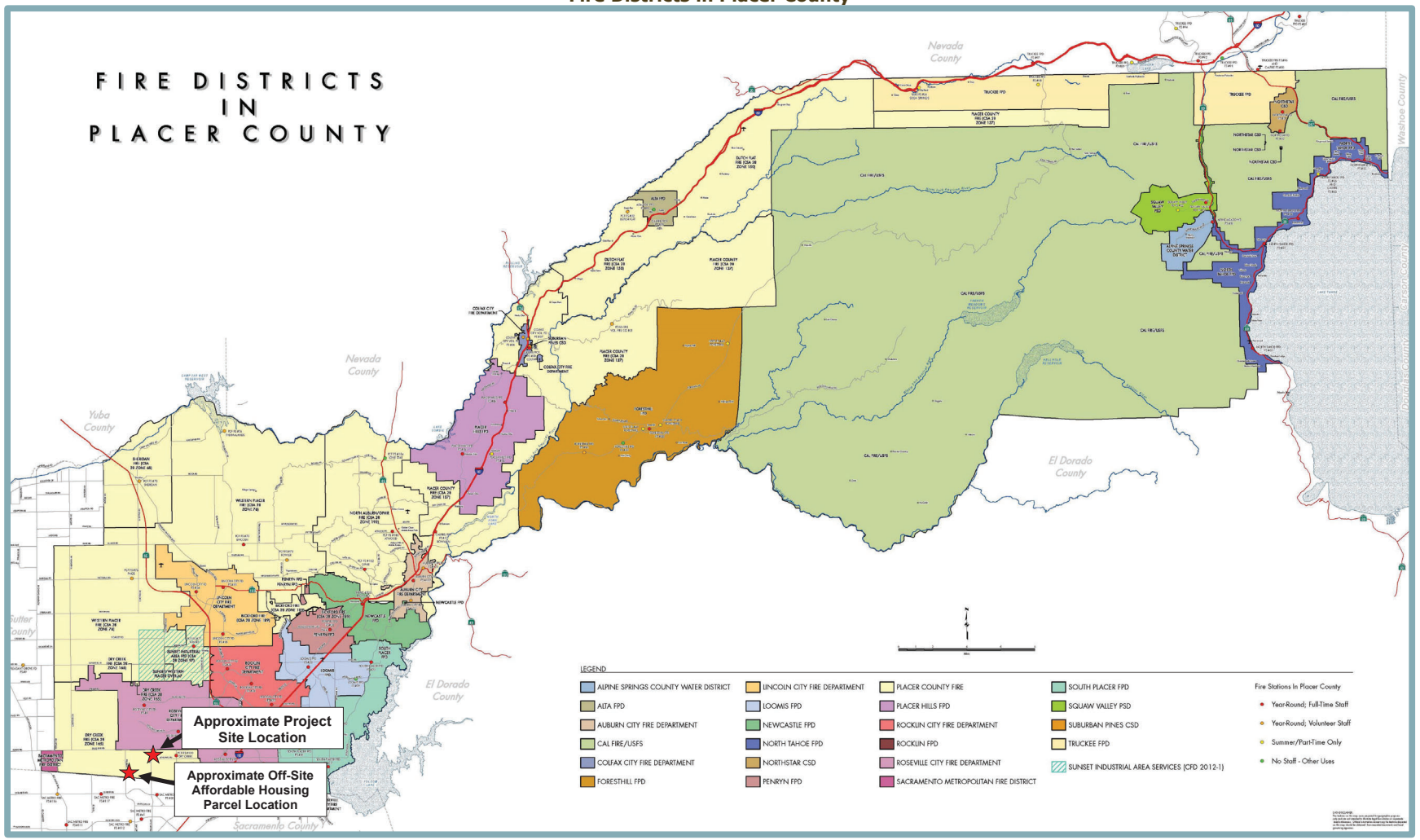
The various zones of benefit within CSA 28 represent areas previously served by independent fire districts that were dissolved at some point in the past with services transferred to the County, as well as areas originally served by the County. The zones of benefit are intended to fill the services funding gap between general County services and special services. Zone 165 covers approximately 19,800 acres and was established in September of 2001, at which point Placer County assumed responsibility for providing fire protection and emergency medical services within the area.[9] Fire prevention and protection in areas of Placer County not served by independent fire protection districts or municipal fire departments are provided by a combination of a contract with the California Department of Forestry and Fire Protection (CAL FIRE) and eight volunteer companies, all operated by CAL FIRE under the name PCFD.

Services provided include fire suppression, emergency medical, fire prevention, and rescue, among others. Additionally, PCFD, by way of its contract with CAL FIRE, conducts fire inspections and assists with land development functions within the PCFD service area.

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6 California American Water Company, Sacramento Main District. *2020 Urban Water Management Plan*. June 2021.
7 King Engineering. *Preliminary Water Report.* August 2025.
8 King Engineering. *Wastewater Report.* June 2026.
9 Placer County. *Approve a Resolution imposing a charge for fire protection and emergency medical services for parcels in the Morgan Creek Residential Parcel Map.* July 11, 2017.

Figure 15-1
Fire Districts in Placer County



* Figure not OCR Compatible

All fire agencies within Placer County, including within the cities, operate under a mutual aid system, defined as a pre-arranged plan and contract between agencies for reciprocal assistance upon request by the first-response agency.

The nearest CAL FIRE station to the project site is the Dry Creek Fire Station (Station 100), located approximately 1.8 miles east of the proposed eastern site entry point at 8350 Cook Riolo Road. Station 100 is a full-time staffed station and would provide fire protection services to the proposed project. According to the RVSP EIR, Station 100 provides service to the RVSP plan area, including the off-site affordable housing parcel, which is located approximately four miles southwest of the station.

PCFD collects a development impact fee specific to fire services for each sub area within the PCFD service area. The development impact fee is calculated based on a "fair share portion" of anticipated capital needs through 2060. Currently, the PCFD's Fire Facilities Fee is $1.05 per square foot (sf) of residential development. The fee was last updated April 15, 2025.[10]

Sheriff Protection Services

The Placer County Sheriff's Office (PCSO) provides law enforcement services to the unincorporated areas of Placer County, including the areas in the vicinity of the project site and off-site affordable housing parcel. In addition, the California Highway Patrol provides traffic enforcement and accident investigations along the Interstate 80 (I-80) corridor to the east of the project site and off-site affordable housing parcel.

The Auburn Justice Center (AJC), located at 2929 Richardson Drive, is the main office for the PCSO's operations and is located approximately 25 miles northeast of the project site and off-site affordable housing parcel. The PCSO has continued to work with the West Roseville community to provide increased law enforcement presence in the DCWPCP/West Roseville area. In May 2016, the Dry Creek Joint Elementary School District (DCJESD) and PCSO identified an opportunity to locate a community service station within the former Dry Creek Elementary School site at the corner of PFE Road and Cook Riolo Road, southeast of the project site. To allow this, the DCJESD provided the PCSO with a License Agreement (License) authorizing the use of approximately 2,030 sf within the former school offices. The premises are used by PCSO deputies and volunteers and as a general service center functioning as an extended office to write reports, meet with citizens, take reports, and provide a more easily identifiable law enforcement presence within the DCWPCP/West Roseville community as a whole. The former school office site was recently sold by the DCJESD to a private party; however, subsequent to the sale, PCSO entered into a lease agreement with the private party, and the operations at the community service station remain unchanged.

According to the PCGP, the PCSO is organized into five divisions: patrol services, investigations/coroner, corrections, marshal, and a Tahoe sub-station. Patrol and investigation services operate in the Placer County Government Center and various substations in Loomis, Foresthill, and near Lake Tahoe.

The nearest existing PCSO station is the West Placer Sheriff's Station, located at 5750 West Oaks Boulevard in Rocklin, approximately eight miles to the northwest of the project site and 12 miles to the northwest of the off-site affordable housing parcel. The West Placer Sheriff's Station

[10] Placer County Executive Office Land Development Division. *FY 2025-26 Fire Facilities Impact Fee Annual Capital Improvement Plan and Inflationary Adjustment*. April 15, 2025.

operates a limited number of patrols, enhancing patrol response times, and limited County services will be available in early 2026, with plans to expand.[11] In addition, the South Placer Substation, located in Loomis at the intersection of Horseshoe Bar Road and I-80, is approximately 14 miles to the northeast of the project site and 17 miles to the northeast of the off-site affordable housing parcel. Staffing of the substation includes 34 patrol positions, three detectives, six patrol sergeants, a community services/school safety sergeant, eight school resource deputies, one field community services officer, six community services officers, and numerous volunteers and other professional staff.[12] Policies 4.H.1 and 4.H.2 of the PCGP call for a staffing ratio of one officer per 1,000 residents in unincorporated areas and a response time for emergency calls of eight minutes in suburban areas. According to the *Placer County Sheriff's Office 2024 Annual Report*, the Dispatch Services Unit handled a total of 119,838 calls for service in 2021, with 41,925 calls being 911 calls.[13]

Schools

The project would be served by three school districts. The portion of the project site to the north of Walerga Road, as well as the off-site affordable housing parcel, would be served by Center Joint Unified School District (CJUSD) (kindergarten through grade 12). The portion of the project site to the south of Walerga Road would be served by DCJESD (kindergarten through grade eight) and the Roseville Joint Union High School District (RJUHSD) (grades nine through 12). Based on the most recently updated attendance areas for each district, the northern portion of the project site and the off-site affordable housing parcel are within the CJUSD Rex Fortune Elementary School attendance area, Wilson C. Riles Middle School attendance area, and Center High School attendance area. The southern portion of the project site is within the DCJESD Creekview Ranch K-8 attendance area and the RJUHSD Oakmont High School attendance area. Table 15-1 below provides enrollment and capacity information for the schools.

Table 15-1
Schools Serving the Project Site

School	District	Grades	Enrollment	Capacity
Rex Fortune Elementary School	CJUSD	K-6	565	800
Wilson C. Riles Middle School	CJUSD	7-8	740	1,100
Center High School	CJUSD	9-12	1,289	2,000
Creekview Ranch School	DCJESD	K-8	840	924
Oakmont High School	RJUHSD	9-12	1,400	1,800

Sources:

- ***Putnam, Richard, Director of Facilities, Center Joint Unified School District. Personal communication [email] with Taylor Hauft, Associate II, Raney Planning and Management, Inc. September 15, 2025.***
- ***Dry Creek Joint Elementary School District, School Facilities Master Plan, 2025.***
- ***Roseville Joint Union High School District, 2022.***

Parks and Recreational Facilities

Recreational opportunities are provided by numerous federal, State, and local jurisdictions and private entities in Placer County. At the federal level, the U.S. Forest Service (USFS) manages over 300,000 acres in portions of the Tahoe National Forest, El Dorado National Forest, and portions of the Tahoe Basin, including recreation facilities and campgrounds generally near rivers,

[11] Placer County. *West Oaks County Center*. Available at: https://www.placer.ca.gov/westoaks. Accessed September 2025.

[12] Placer County Sheriff's Department. *Loomis Office*. Available at: https://www.placer.ca.gov/2271/Loomis-Office. Accessed July 2025.

[13] Placer County Sheriff's Department. *Placer County's Sheriff's Office 2024 Annual Report.* 2024.

streams, reservoirs, and lakes along the I-80 and State Route (SR) 89 corridors. At the State level, the California Department of Parks and Recreation operates eight State parks and recreation areas throughout Placer County. At the local level, the proposed project area is served by the Parks, Trails, and Open Space Division of the Placer County Department of Agriculture, Parks, and Natural Resources. The nearest public Placer County park to the project site and off-site affordable housing parcel is Dry Creek Community Park, located approximately 0.5-mile south of the site and 1.85 miles northeast of the off-site affordable housing parcel.

The Placer County Parks and Trails Master Plan (Master Plan), which is intended to guide future park and trail development in the County, was adopted in late 2019 and subsequently updated in 2021 to reflect the updated Hidden Falls Regional Park Trails Expansion Project.[14] Currently, funding for maintenance of parks and recreational facilities within the project area is provided through CSA 28, Zone 169. However, the project site is located outside of existing CSA 28, Zone 169 boundaries. Thus, the entitlements for the proposed project include a request for annexation into CSA 28, Zone 169 for the purposes of generating funds for the maintenance of public park and open space facilities in the Dry Creek area, subject to approval by the Placer County Board of Supervisors.

Other Public Facilities

The Placer County Public Works Department is responsible for repairs and maintenance of over 1,000 miles of roadways within unincorporated Placer County from Roseville to Tahoe. The Public Works Department provides roadside tree and vegetation control, emergency roadway hazard response, bridge maintenance, maintenance of roadway signs, and striping and traffic signals. In addition to public roads, Placer County maintains various public facilities, such as public libraries and community buildings, which could potentially be used by residents of the proposed project.

The nearest library is the Martha Riley Community Library, located approximately 2.5 miles north of the project site and approximately 5.6 miles north of the off-site affordable housing parcel. The Roseville Public Library is located approximately 7.3 miles east of the site and nine miles east of the off-site affordable housing parcel. Placer County also operates the Placer County Library, located in the City of Auburn, approximately 20 miles northeast of the project site and off-site affordable housing parcel along I-80, and the Granite Bay Library on Douglas Boulevard, approximately 10 miles east of the project site and 13 miles east of the off-site affordable housing parcel.

Water Supply and Delivery Infrastructure

Water supply for the project area is provided by the Northern Division Sacramento District of the California American Water Company (CAL-AM) through an agreement with the Placer County Water Agency (PCWA). The Sacramento District of CAL-AM's Northern Division is comprised of ten service areas, each of which contains a Public Water System (PWS). All of the PWS within CAL-AM's Northern Division are regulated by the State Water Resources Control Board's (SWRCB) Division of Drinking Water (DDW). The project site and off-site affordable housing parcel are located within the West Placer PWS. CAL-AM's West Placer Service Area encompasses 11,154 acres within western Placer County, bounded by the City of Roseville limits to the east and the Sutter County line to the west. The Antelope Service Area bounds the West Placer Service Area to the south. According to the 2020 UWMP, CAL-AM has approximately 1,393 municipal water service connections within the West Placer Service Area.[15]

[14] Placer County. *Parks and Trails Master Plan.* April 2022.
[15] California American Water Company, Sacramento Main District. *2020 Urban Water Management Plan*. June 2021.

Water Supply and Demand

In 2016, CAL-AM and PCWA entered into a wholesale water supply agreement, which includes an agreement that PCWA will supply CAL-AM with surface water through December 2034.[16] The PCWA's estimated average year supply is presented in Table 15-2 below, in units of acre-feet per year (AFY). A portion of the total PCWA supply presented in Table 15-2 would be directed to CAL-AM for use in supplying the West Placer Service Area. CAL-AM is required to use only surface water within the West Placer Service Area pursuant to the CAL-AM's franchise agreement with Placer County, with the exception of a specific part of the service area not inclusive of the project site or off-site affordable housing parcel. Thus, the project area does not rely on groundwater as a water supply source.

Table 15-2
PCWA Average Year Supply (AFY)

PCWA Supply Source	2020	2025	2030	2035	2040
Middle Fork Project	120,000	120,000	120,000	120,000	120,000
Central Valley Project[1]	0	0	35,000	35,000	35,000
Pacific Gas & Electric Co. (PG&E)	125,400	125,400	125,400	125,400	125,400
Pre-1914 Appropriations	3,400	3,400	3,400	3,400	3,400
Recycled Water	0	0	2,500	5,000	7,000
Groundwater	2,000	2,000	4,000	4,000	5,000
Total	**250,800**	**250,800**	**290,300**	**292,800**	**295,800**

[1] Central Valley Project supply is not currently available due to physical limitations. Supply from Central Valley Project is 0 AFY until infrastructure is in place to access this supply, which is assumed to be in 2030.

Source: PCWA, 2020 Urban Water Management Plan [Table 6-4], 2021.

CAL-AM Water Supply and Projected Demand

The Sacramento District of CAL-AM's Northern Division has estimated the demand for the West Placer Service Area, and the projected water demands are presented in Table 15-3. Demand estimates include projected growth for the West Placer Service Area.[17] In addition to demand estimates for the West Placer Service Area, Table 15-3 presents a comparison of the estimated water supply for the area.

As shown in Table 15-3, the Northern Division Sacramento District of CAL-AM has estimated that the PCWA water supplies to the West Placer Service Area will meet the estimated demand from the Service Area through the year 2040. CAL-AM expects that the contract between CAL-AM and PCWA will be renegotiated if CAL-AM requires additional water.

Table 15-3
West Placer Service Area Supply and Demand Comparison (AFY)

	2025	2030	2035	2040
West Placer Service Area Demand	2,262	2,357	2,913	3,361
West Placer Service Area Water Supply	2,262	2,357	2,913	3,361
Surplus	0	0	0	0

Source: California American Water Company, 2020 UWMP [Tables 4-2 and 6-6], 2021.

[16] Placer County Water Agency and California-American Water Company. *Agreement Between Placer County Water Agency and California American Water for Water Supply*. July 6, 2015.
[17] California American Water Company, Sacramento Main District. *2020 Urban Water Management Plan*. June 2021.

The PCWA's 2020 UWMP shows in Chapter 7 that PCWA has sufficient water supplies through the projected buildout conditions during a series of multiple dry-year conditions. Therefore, CAL-AM is anticipated to have sufficient water supplies to meet the demands of the West Placer Service Area until at least 2040.

The CAL-AM current water supply agreement with PCWA, signed in December 2021, guarantees a water supply up to 2.236 million gallons per day (mgd). The new contract increased CAL-AM's guaranteed supply to cover the service area's current demand needs. Historically, PCWA has allowed CAL-AM to purchase as much water as needed to meet West Placer's demand, resulting in CAL-AM occasionally purchasing more water than what is guaranteed in the contract. As noted above, CAL-AM will renegotiate the contract with PCWA as demand increases up to the PCWA's projected CAL-AM buildout demand. The projected water supply shown in Table 15-3, above, is considered a firm supply, meaning available during all dry year scenarios, as the assumption can be made that the guaranteed amount in the supply contract will be renegotiated to match the service area's demand.

PCWA Water Supply and Projected Demand

The PCWA planned for CAL-AM's West Placer demand in the PCWA 2020 UWMP. According to the PCWA 2020 UWMP, the general area of CAL-AM's West Placer service area is anticipated to grow, resulting in an expanded wholesale agreement with CAL-AM. The PCWA's 2020 UWMP Notification Letter, dated November 20, 2020, included the specific amount of wholesale water PCWA plans on selling to CAL-AM, as shown in Table 15-4.

Table 15-4
CAL-AM's Water Demand Used in PCWA's 2020 UWMP (AFY)

	Current	2025	2030	2035	2040	Buildout
CAL-AM	1,021	1,178	1,404	1,684	1,965	2,385
Placer Vineyards	--	1,688	3,376	5,064	6,752	8,440
Total	1,021	2,866	4,780	6,748	8,717	10,825

Source: PCWA 2020 UWMP Notification Letter, 2020.

The PCWA 2020 UWMP also analyzed PCWA's ability to provide water for average, single dry year, and five consecutive dry years scenarios. The results of the analysis show that PCWA has sufficient water supply to support the projected buildout demand during all scenarios.

Water Supply Reliability

During previous single- and multiple-dry years, CAL-AM has maintained the ability to supply 100 percent of average/normal water year supply to the West Placer Service Area through distributions from the PCWA. Under existing agreements, CAL-AM anticipates that PCWA will continue to have sufficient water supplies through projected buildout conditions, including the West Placer Service Area, during a series of multiple-dry-year conditions.[18]

Although CAL-AM anticipates meeting all water demand under single- and multiple-dry years, CAL-AM maintains a Water Shortage Contingency Plan. Should water supplies be insufficient to meet average demand, CAL-AM has the authority to implement voluntary conservation measures following notification of the California Public Utilities Commission (CPUC) of the need for such measures. Should further water conservation measures be needed, CAL-AM would request

[18] California American Water Company, Sacramento Main District. *2020 Urban Water Management Plan*. June 2021.

authorization from the CPUC to implement mandatory conservation measures. The request for authorization to the CPUC from CAL-AM would include the percent reduction needed by CAL-AM and would specify the measures needed to achieve such reductions.[19]

Water Quality

The PCWA provides the West Placer Service Area with high-quality surface water, which originates in Folsom Lake. Disinfection by-product formation and pressure variations have recently been reduced, which has improved water quality in the service area.[20]

Water Delivery Infrastructure

Water distribution in the West Placer Service Area is administered by CAL-AM.[21] An existing 16-inch water line currently extends along Walerga Road and a 24-inch water line currently extends along Baseline Road in the project site vicinity. An existing 24-inch main is located within PFE Road in the vicinity of the off-site affordable housing parcel. The existing line, and new proposed water line connections, will be discussed in Impact 15-6 of this chapter.

Wastewater Conveyance and Treatment

The project site is located outside of existing Placer County Sewer Service Area (CSA) or Districts. Thus, the entitlements for the proposed project include a request for annexation into CSA 28, Zone 173, for sanitary sewer service, subject to approval by the Placer County Board of Supervisors. Therefore, the sections below discuss the sewer services currently provided by the Placer County Sewer Service Area within the project area.

Wastewater Conveyance

Sewer services in the project area are provided by the Placer County Department of Public Works, Environmental Engineering and Utilities Division. Placer County operates 47 sewer pump stations, approximately 300 miles of sewer piping, and more than 560 septic tank effluent pump systems. The existing sewer pipeline system within unincorporated areas of the County in the project vicinity are located within CSA 28, Zone 173, and are owned and maintained by Placer County. The DCWPCP noted that soil conditions and potential problems related to groundwater pollution in the Plan area would constrain the use of private sewer systems for some development areas within the DCWPCP. In particular, the DCWPCP noted that, at the time that the DCWPCP was prepared, the Placer County Environmental Health Department required that all developments with lot sizes less than seven acres must be connected to public sewer systems. As such, the DCWPCP anticipated that developments in the eastern portion of the Plan area would be connected to a public sewer system, which would include conveyance infrastructure. The South Placer Wastewater Authority (SPWA) South Placer Regional Wastewater 2020 Systems Evaluation provides an overview of the sewer infrastructure within south Placer County, including the DCWPCP area.

Wastewater Treatment

Sewer treatment for the Placer CSA 28, Zone 173, is provided at the Dry Creek Wastewater Treatment Plant (WWTP), which is located within the southern edge of the City of Roseville, approximately two miles southeast of the project site. The Dry Creek WWTP is owned by the City

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19 California American Water Company, Sacramento Main District. *2020 Urban Water Management Plan*. June 2021.
20 *Ibid.*
21 Placer County Water Agency and California American Water Company. *Agreement Between Placer County Water Agency and California American Water for Water Supply.* July 6, 2015.

of Roseville and treats wastewater from areas of the City of Roseville, the City of Rocklin, and the Town of Loomis, as well as nearby areas within unincorporated portions of Placer County.

Under the Dry Creek WWTP's National Pollutant Discharge Elimination System (NPDES) Permit, Number CA0079502, the Dry Creek WWTP has a permitted average dry weather flow (ADWF) of 18 mgd and a peak wet-weather flow (PWWF) of 45 mgd.[22] As of 2016, the Dry Creek WWTP was operating at approximately 50 percent of the WWTP's permitted flow, with an ADWF of 8.5 mgd, and a PWWF under 25 mgd.[23] Of the 8.5 mgd of ADWF being treated at the Dry Creek WWTP in 2016, approximately 65 percent, or 5.5 mgd, originated from the City of Roseville.[24]

Tertiary-level treatment at the Dry Creek WWTP consists of screening, primary clarification, aeration, secondary clarification, filtering, and disinfection. Recycled water from the Dry Creek WWTP is used to irrigate four golf courses, several area parks, and some areas of public street landscaping.[25] Treated wastewater from the Dry Creek WWTP that is not used for irrigation purposes is discharged to Dry Creek. Residual solids from the treatment process are transported to the Western Placer Waste Management Authority (WPWMA) sanitary landfill or are transferred to a City-approved vendor for off-site land application.

The City of Roseville owns and operates the Dry Creek WWTP on behalf of the City's Regional Partners, which consist of the City of Roseville, the South Placer Municipal Utility District, and portions of unincorporated Placer County. Pursuant to the Operations Agreement among the Regional Partners, upon reaching 75 percent capacity at the WWTP, capacity improvements must be initiated. As discussed above, the Dry Creek WWTP operated at approximately 8.5 mgd ADWF in 2016, out of a permitted capacity of 18 mgd. Although the Dry Creek WWTP operated below its permitted capacity in the past, buildout demand of the Dry Creek WWTP's service area is estimated to reach approximately 21 mgd. Thus, improvements to the Dry Creek WWTP are likely to be needed prior to buildout of the Dry Creek WWTP's service area. Demand from new development is currently accommodated at the WWTP on a first-come-first-served basis.[26]

Wastewater Collection Infrastructure

Wastewater collection in the West Placer Service Area is provided by the Placer County Department of Public Works Environmental Engineering and Utilities Division. Wastewater collection infrastructure within the project area currently includes County-maintained existing eight-inch "Sewer B" gravity lines within Walerga Road, an existing eight-inch sewer line to the south of the project site, and an existing Dry Creek/West Placer Community Facilities District (CFD) #1 sewer lift station located east of Walerga Road and south of Dry Creek, approximately 0.53-mile to the south.

In the vicinity of the off-site affordable housing parcel, an eight-inch sewer main within PFE Road would be constructed pursuant to the RVSP, as part of the Silver Sage subdivision and PFE Road/Watt Avenue intersection off-site improvements, where the sewer line in PFE Road would be extended from the Glen Willow subdivision site immediately east of Silver Sage to Watt Avenue. The approved Frisvold Property Project, located immediately to the east of the off-site affordable housing parcel, would extend the PFE Road sewer main along its frontage to Watt

22 City of Roseville. *City of Roseville General Plan 2035*. August 17, 2016.
23 *Ibid.*
24 City of Roseville. *2020 Urban Water Management Plan*. June 2021.
25 *Ibid.*
26 *Ibid*.

Avenue, if such improvements have not already been constructed as part of the future expansion of the PFE Road/Watt Avenue intersection.

The existing and proposed wastewater collection infrastructure will be discussed further in Impact 15-6 of this chapter.

Solid Waste

Solid waste collection services in the project area are provided by Recology Auburn Placer, under contract with Placer County. Recology provides curbside collection of mixed waste (garbage and recyclables), green waste, and some universal and household hazardous wastes by appointment. The mixed waste collected by Recology is delivered to the WPWMA Materials Recovery Facility (MRF), where waste is processed, recyclables are recovered, and residuals are disposed. The MRF is located near SR 65, between Roseville and Lincoln, at the corner of Athens Avenue and Fiddyment Road. Recovered materials from the MRF are sold throughout the world, helping to conserve natural resources. Non-recyclable materials are sent to the Western Regional Sanitary Landfill (WRSL) for disposal, which is co-located at the MRF site. The current space available, together with recovery efforts by the MRF, will help to delay the WRSL from reaching capacity.

The WPWMA is a regional agency established in 1978 through a Joint Exercise of Powers Agreement between the County of Placer and the cities of Roseville, Rocklin, and Lincoln to acquire, own, operate, and maintain a sanitary landfill site and all related improvements.[27]

The WPWMA designed and built the MRF to divert recyclable materials from being disposed at the landfill. The MRF also processes source separated food waste, wood waste and green waste and accepts separated recyclables, including electronics and other universal wastes (e.g., batteries and fluorescent lamps), at the recycling drop-off and buy-back center. The compost portion of the MRF has an annual processing capacity of 82,000 tons (averaged over the year and does not account for seasonal peaks). The MRF is permitted to have up to 75,000 cubic yards (approximately 37,500 tons) of compost material at the facility at any one time.

Residual waste from the MRF is transported to the WRSL. The WPWMA owns and oversees all operations on-site – the WRSL, MRF, compost facility, and Permanent Household Hazardous Waste Collection Facility (PHHWCF). A private firm, under contract with WPWMA, manages the day-to-day operation of the facilities. The landfill is specified as a Class II/Class III non-hazardous site. Hazardous waste from households and Conditionally Exempt Small Quantity Generators is accepted at the PHHWCF.

Permit Limits and Site Constraints

The 291-acre WRSL is permitted to accept 1,900 tons per day and 624 vehicles per day. Between January 1, and November 9, 2021, the landfill received an average of 862.14 tons of waste per day, serving 144 vehicles. The WRSL has a permitted design capacity of 36,350,000 cubic yards and, as of December 2021, has a remaining capacity of 22,690,011 cubic yards. Under current land use and development conditions, the WRSL has a permitted lifespan extending to 2058.[28]

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[27] Western Placer Waste Management Authority. *About the WPWMA*. Available at: https://wpwma.ca.gov/about-us/. Accessed July 2025.

[28] Placer County Department of Public Works, Environmental Engineering Division (Solid Waste). *EIR Guidance Document*. August 2022.

The MRF has a permitted processing limit of 1,750 tons per day.[29] On average, the MRF received 884.86 tons of material per day between January 1 and November 9, 2021. While the permitted processing limit remains the same, the MRF expanded in 2007, increasing its processing capacity of municipal solid waste and construction and demolition debris to 2,200 tons per day.[30] Currently, the MRF is being upgraded to further increase processing capacity. These upgrades will increase recyclable material recovery including organic material and are anticipated to extend the landfill capacity through 2110.

The compost portion of the facility has an annual processing capacity of 82,000 tons (averaged over the year, excluding seasonal peaks). The facility is permitted to have up to 75,000 cubic yards (approximately 37,500 tons) of compost material at any one time.

Gas, Electric, and Telecommunication Infrastructure

The Sacramento Municipal Utility District (SMUD) would provide electric services to the project site. SMUD is a community-owned electric utility which generates, transmits, and distributes electricity to a 900-square-mile territory that includes Sacramento County and parts of Placer County, and Yolo County. SMUD is one of the ten largest publicly owned utilities in the U.S.

Natural gas services in the project area are provided by PG&E. PG&E is one of the largest providers of electricity and natural gas throughout Placer County. PG&E is a San Francisco based, private company, publicly regulated by the California Public Utilities Commission and provides electricity and natural gas to the majority of Northern California. PG&E has ample resources to meet a wide range of projected growth; however, when the time comes, additional improvements to the facilities may be required to meet future growth demands.

Existing electrical and telecommunication distribution lines are located along Baseline Road and Vineyard Road in the project vicinity. Additionally, a 30-inch PG&E gas transmission line is located along the north side of Baseline Road within an existing easement, which would remain as is with implementation of the proposed project.

15.3 REGULATORY CONTEXT

The following discussion contains a summary of regulatory controls pertaining to public services and utilities, including State and local laws and ordinances.

Federal Regulations

The federal environmental laws and policies relevant to public services and utilities are primarily related to water quality, which is addressed in Chapter 12, Hydrology and Water Quality, of this EIR.

State Regulations

The following are applicable State regulations related to the proposed project.

[29] California Department of Resources Recycling and Recovery (CalRecycle). *Western Placer Waste Mgmt Authority MRF (31-AA-0001)*. Available at: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/2537?siteID=2269. Accessed March 2026.

[30] Placer County Department of Public Works, Environmental Engineering Division (Solid Waste). *EIR Guidance Document*. August 2022.

Uniform Fire Code

The Uniform Fire Code with the State of California Amendments contains regulations relating to construction, maintenance, and use of buildings. Topics addressed in the California Fire Code (CFC) include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions intended to protect and assist fire responders, industrial processes, and many other general and specialized fire-safety requirements for new and existing buildings and the surrounding premises. The Fire Code contains specialized technical regulations related to fire and life safety.

California Health and Safety Code

State fire regulations are set forth in Sections 15000 et seq. of the California Health and Safety Code, include regulations for building standards (as also set forth in the California Building Code), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training.

Proposition 1A/Senate Bill 50

Proposition 1A/Senate Bill (SB) 50 (Chapter 407, Statutes of 1998) is a school construction measure primarily for modernization and rehabilitation of older school facilities and construction of new school facilities. Proposition 1A/SB 50 implemented significant fee reforms by amending the laws governing developer fees and school mitigation.

- Establishes the base (statutory) amount (indexed for inflation) of allowable developer fees at $1.93 per square foot for residential construction and $0.31 per sf for commercial construction.
- Prohibits school districts, cities, and counties from imposing school impact mitigation fees or other requirements in excess of or in addition to those provided in the statute.

Proposition 1A/SB 50 also prohibits local agencies from using the inadequacy of school facilities as a basis for denying or conditioning approvals of any "[…] legislative or adjudicative act […] involving […] the planning, use, or development of real property" (Government Code 65996(b)). Moreover, for CEQA purposes, the development fees authorized by SB 50 are deemed to be "full and complete school facilities mitigation" for impact caused by new development (Government Code 65996(b)).

Additionally, a local agency cannot require participation in a Mello-Roos for school facilities; however, the statutory fee is reduced by the amount of any voluntary participation in a Mello-Roos. Satisfaction of the Proposition 1A/SB 50 statutory requirements by a developer is deemed to be "full and complete mitigation." The law identifies certain circumstances under which the statutory fee can be exceeded, including preparation and adoption of a "needs analysis," eligibility for State funding, and satisfaction of two of four requirements (post-January 1, 2000) identified in the law including: year-round enrollment, general obligation bond measure on the ballot over the last four years that received 50 percent plus one of the votes cast, 20 percent of the classes in portable classrooms, or specified outstanding debt. Assuming a district qualifies for exceeding the statutory fee, the law establishes ultimate fee caps of 50 percent of costs where the State makes a 50 percent match, or 100 percent of costs where the State match is unavailable. District certification of payment of the applicable fee is required before the County can issue the building permit.



Quimby Act

California Government Code Section 66477, Subdivision Map Act, referred to as the Quimby Act, permits local jurisdictions to require the dedication of land and/or the payment of in-lieu fees solely for park and recreation purposes. The required dedication and/or fees are based upon the residential density, parkland cost, and other factors. Land dedication and fees collected pursuant to the Quimby Act may be used for acquisition, improvement, and expansion of park, playground, and recreational facilities or the development of public school grounds.

California Green Building Code

The 2022 California Green Building Standards Code, otherwise known as the CALGreen Code (California Code of Regulations [CCR] Title 24, Part 11) is a portion of the California Building Standards Code (CBSC), which became effective on January 1, 2023. The CBSC is adopted every three years by the Building Standards Commission (BSC).

The purpose of the CALGreen Code is to improve public health, safety, and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices. The CALGreen standards regulate the method of use, properties, performance, types of materials used in construction, alteration repair, improvement and rehabilitation of a structure or improvement to property. The provisions of the code apply to the planning, design, operation, construction, use, and occupancy of every newly constructed building or structure throughout California. Requirements of the current CALGreen Code include, but are not limited to, the following measures:

- Mandatory reduction in indoor water use through compliance with specified flow rates for plumbing fixtures and fittings;
- Mandatory reduction in outdoor water use through compliance with a local water efficient landscaping ordinance or the California Department of Water Resources' (DWR's) Model Water Efficient Landscape Ordinance (MWELO);
- 65 percent of construction and demolition waste must be diverted from landfills;
- Mandatory inspections of energy systems to ensure optimal working efficiency;
- Inclusion of electric vehicle (EV) charging stations or designated spaces capable of supporting future charging stations; and
- Low-pollutant-emitting exterior and interior finish materials, such as paints, carpets, vinyl flooring, and particle boards.

The CALGreen standards also include voluntary efficiency measures that are provided at two tiers and implemented at the discretion of local agencies and applicants. According to Section A4.602 of Appendix A4 of the CALGreen Code, CALGreen's Tier 1 standards call for a 15 percent improvement in energy requirements, stricter water conservation, 65 percent diversion of construction and demolition waste, 10 percent recycled content in building materials, 20 percent permeable paving, 20 percent cement reduction, and cool/solar-reflective roofs. CALGreen's more rigorous Tier 2 standards call for a 30 percent improvement in energy requirements, stricter water conservation, 80 percent diversion of construction and demolition waste, 15 percent recycled content in building materials, 30 percent permeable paving, 25 percent cement reduction, and cool/solar-reflective roofs. Placer County does not require compliance with Tier 1 or Tier 2 CALGreen standards at this time.

Assembly Bill 1327

Assembly Bill (AB) 1327, the Solid Waste Reuse and Recycling Access Act of 1991 requires jurisdictions to adopt ordinances requiring development projects to provide adequate storage area for collection and removal of recyclable materials. Placer County adopted such an ordinance (Municipal Code Section 8.16.080).

Assembly Bill 1881

AB 1881, the Water Conservation in Landscaping Act of 2006 required DWR to update the Model Efficient Landscape Ordinance. Furthermore, AB 1881 required local agencies to adopt the updated model ordinance or an equivalent ordinance by January 1, 2010. If local jurisdictions failed to adopt the updated model ordinance or an equivalent by January 1, 2010, the DWR's updated model ordinance would automatically be adopted by statute. Placer County adopted its Water Efficient Landscape Ordinance (WELO) in October 2017.

Senate Bill 1016

Enacted in 2007, SB 1016 amended portions of the California Integrated Waste Management Act, allowing the California Integrated Waste Management Board (CIWMB) to use per capita disposal as an indicator in evaluating compliance with the requirements of AB 939. Jurisdictions track and report their per capita disposal rates to CalRecycle.

Senate Bill 1383

SB 1383 (2016) directed the California Air Resources Board (CARB) to approve and start implementing a Short-Lived Climate Pollutant (SLCP) strategy to reduce statewide emissions of SLCPs in 2018. Because methane is a SLCP produced from the decomposition of organic waste in landfills, the bill established targets to achieve a statewide 50-percent reduction in the 2014 organic waste disposal level by 2022 and to achieve a 75-percent reduction in the 2014 organic waste disposal level by 2025.

The Western Placer Waste Management Authority (WPWMA) Materials Recovery Facility (MRF) accepts source separated organic wastes, recovers organic wastes, recovers organic waste from the mixed waste stream and recycles or composts materials as appropriate. Upgrades to the facility are underway to ensure SB 1383 organic waste recovery levels are achieved. These upgrades are anticipated to be complete by 2025. Additionally, Recology, under contract with the County, provides certain organic waste collection services to businesses, including paper, cardboard, and food waste collection.

Further, where a local jurisdiction has not adopted a more stringent construction and demolition (C&D) ordinance, California Building Standards Code (Title 24) requires construction activities to implement Sections 4.408 and 5.408 of the CALGreen Code. The WPWMA MRF accepts mixed and separated construction debris for recycling. Contractors may also separate and self-haul debris to a recycler of their choice. Verification of diversion is required as part of the building permit process. Recology, under contract with the County, provides debris box collection services to aid in the separation of recyclable debris. Current C&D diversion rates are found at: https://wpwma.ca.gov/#.

Senate Bill 610 and Senate Bill 221

In 2001, the California Legislature enacted two pieces of legislation relevant to environmental review focused on the water consumption associated with large development projects. SB 610 (Chapter 643, Statutes of 2001; Section 21151.9 of the Public Resources Code (PRC) and

Section 10910 et seq. of the Water Code) requires the preparation of water supply assessments (WSAs) for large developments. Government Code section 66473.7(a)(1), created through SB 221 requires an affirmative written verification of sufficient water supply for subdivisions of more than 500 units. SB 221 is designed as a "fail-safe" mechanism to ensure that collaboration on finding the needed water supplies to serve a new large subdivision occurs early in the planning process.

As stated in CEQA Guidelines Section 15155, which reflects SB 610 requirements, any residential development exceeding 500 dwelling units is considered a "water-demand project" and is required to prepare a WSA. The proposed project includes 212 new single-family detached homes and 220 multi-family units, totaling 432 residences on-site. Thus, neither a water supply verification under SB 221 nor a WSA under SB 610 is required for the proposed project.

Urban Water Management Planning Act

In 1983, the California Legislature enacted the Urban Water Management Planning Act (Water Code Sections 10610 – 10656). The Act requires that every urban water supplier that provides water to 3,000 or more customers, or that provides over 3,000 acre-feet of water annually shall prepare and adopt an UWMP within a year of becoming an urban water supplier and update the plan at least once every five years. The Act specifies the content that is to be included in an UWMP, and states that urban water suppliers should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple-dry years. The Act also states that the management of urban water demands and the efficient use of water shall be actively pursued to protect both the people of the State and their water resources. The Sacramento Main District of CAL-AM prepared and adopted an UWMP in 2020.[31]

California Integrated Waste Management Act – Assembly Bill 939

AB 939, the California Integrated Waste Management Act of 1989, contains requirements to minimize solid waste disposal in California landfills, prioritizing source reduction, recycling, composting and environmentally safe transformation and land disposal. According to AB 939, all cities and counties are required to divert 25 percent of all solid waste from landfill facilities by January 1, 1995, and 50 percent by January 1, 2000. AB 939 requires that counties prepare Integrated Waste Management Plans to implement these landfill diversion goals and prepare and adopt Source Reduction and Recycling Elements (SRRE). The SSRE must establish a program for managing and reducing waste generated in the jurisdiction to meet the 50 percent waste diversion mandate. Cities and counties that do not meet this mandate are subject to $10,000-per-day fines. The Five-year Review of Placer County's Countywide Integrated Waste Management Plan was approved by CalRecycle in October 2023.

Local Regulations

The following are applicable local regulations related to the proposed project.

Placer County General Plan

The relevant goals and policies from the PCGP related to public services and utilities are presented below.

[31] California American Water Company, Sacramento Main District. *2020 Urban Water Management Plan*. June 2021.

Public Facilities and Services Element

Goal 4.A To ensure the timely development of public facilities and the maintenance of specified service levels for these facilities.

Policy 4.A.1 Where new development requires the construction of new public facilities, the new development shall fund its fair share of the construction. The County shall require dedication of land within newly developing areas for public facilities, where necessary.

Policy 4.A.2 The County shall ensure through the development review process that adequate public facilities and services are available to serve new development. The County shall not approve new development where existing facilities are inadequate unless the following conditions are met:

a. The applicant can demonstrate that all necessary public facilities will be installed or adequately financed (through fees or other means); and
b. The facilities improvements are consistent with applicable facility plans approved by the County or with agency plans where the County is a participant.
c. The facilities improvements are designed and built to the current standards of the agency providing service.

Goal 4.B To ensure that adopted facility and service standards are achieved and maintained through the use of equitable funding methods.

Policy 4.B.1 The County shall require that new development pay its fair share of the cost of all existing facilities it uses based on the demand for these facilities attributable to the new development; exceptions may be made when new development generates significant public benefits (e.g., low income housing, needed health facilities) and when alternative sources of funding can be identified to offset foregone revenues.

Policy 4.B.2 The County shall require that new development pay the cost of upgrading existing public facilities or construction of new facilities that are needed to serve the new development; exceptions may be made when new development generates significant public benefits (e.g., low income housing, needed health facilities) and when alternative sources of funding can be identified to offset foregone revenues.

Policy 4.B.3 The County shall require, to the extent legally possible, that new development pay the cost of providing public services that are needed to serve the new development; exceptions



may be made when new development generates significant public benefits (e.g., low income housing, needed health facilities) and when alternative sources of funding can be identified to offset foregone revenues. This includes working with the cities to require new development within city limits to mitigate impacts on Countywide facilities and services.

Goal 4.C To ensure the availability of an adequate and safe water supply and the maintenance of high quality water in water bodies and aquifers used as sources of domestic supply.

Policy 4.C.1 The County shall require proponents of new development to demonstrate the availability of a long-term, reliable water supply. The County shall require written certification from the service provider that either existing services are available or needed improvements will be made prior to occupancy. Where the County will approve groundwater as the domestic water source, test wells, appropriate testing, and/or report(s) from qualified professionals will be required substantiating the long-term availability of suitable groundwater.

Policy 4.C.2 The County shall approve new development based on the following guidelines for water supply:

a. Urban and suburban development should rely on public water systems using surface supply.
b. Rural communities should rely on public water systems. In cases where parcels are larger than those defined as suburban and no public water system exists or can be extended to the property, individual wells may be permitted.
c. Agricultural areas should rely on public water systems where available, otherwise individual water wells are acceptable.

Policy 4.C.6 The County shall promote efficient water use and reduced water demand by:

a. Requiring water-conserving design and equipment in new construction;
b. Encouraging water-conserving landscaping and other conservation measures;
c. Encouraging retrofitting existing development with water-conserving devices; and,
d. Encouraging water-conserving agricultural irrigation practices.

Goal 4.D The County shall require wastewater conveyance and treatment facilities that are sufficient to serve the Placer County General Plan proposed density of

residential, commercial, and public/institutional uses in a way which protects the public and environment from adverse water quality or health impacts.

Policy 4.D.2 The County shall require developments outside of an existing sewer service area and needing new connections to public conveyance and treatment facilities to be annexed into the sewer service area providing service.

Policy 4.D.4 The County shall require developments needing new connections to construct wastewater conveyance facilities which are sized and located to provide sewer service based on permitted densities and applicable sewer shed area. Wastewater conveyance systems shall be designed for gravity flow. Where gravity conveyance systems are not feasible, the agency providing service may approve pumping service where a site specific engineering analysis demonstrates the long-term cost effectiveness of pumped facilities.

Policy 4.D.5 The County shall require developments needing new connections to pay their fair share of the cost for future public wastewater facilities which support development based on the Placer County General Plan. The fair share will be based on the demand for these facilities attributable to the new development.

Policy 4.D.6 The County shall promote efficient water use and reduced wastewater system demand by:

a. Requiring water-conserving design and equipment in new construction as required in California law (AB 1881);
b. Encouraging retrofitting with water-conserving devices; and
c. Designing wastewater systems to minimize inflow and infiltration.

Policy 4.D.10 The County shall require all public wastewater facilities to be designed and built to the current standards of the agency providing service.

Goal 4.G To ensure the safe and efficient disposal or recycling of solid waste generated in Placer County.

Policy 4.G.1 The County shall require all new urban/suburban development, excluding rural development, to include provisions for solid waste collection.

Policy 4.G.2 The County shall promote maximum use of solid waste source reduction, recycling, composting, and environmentally-safe transformation of wastes.

Policy 4.G.7 The County shall require that all new development complies with applicable provisions of the Placer County Integrated Waste Management Plan.

Goal 4.H To provide adequate law enforcement services to deter crime and to meet the growing demand for services associated with increasing population and commercial/industrial development in the County.

Policy 4.H.1 Within the County's overall budgetary constraints, the County shall strive to maintain the following staffing ratios (expressed as the ratio of officers to population):

a. 1:1,000 for unincorporated areas
b. 1:7 for jail population
c. 1:16,000 total county population for court and civil officers

Policy 4.H.2 The County Sheriff shall strive to maintain the following average response times for emergency calls for service:

a. 6 minutes in urban areas
b. 8 minutes in suburban areas
c. 15 minutes in rural areas
d. 20 minutes in remote areas

Policy 4.H.4 The County shall require new development to develop or fund sheriff facilities that, at a minimum, maintain the above standards.

Policy 4.H.5 The County shall consider public safety issues in all aspects of commercial and residential project design, including crime prevention through environmental design.

Goal 4.I To protect residents of and visitors to Placer County from injury and loss of life and to protect property and watershed resources from fires.

Policy 4.I.2 The County shall encourage local fire protection agencies in the County to maintain the following standards (expressed as average response times to emergency calls):

a. 4 minutes in urban areas
b. 6 minutes in suburban areas
c. 10 minutes in rural areas

Policy 4.I.3 The County shall require new development to develop or fund fire protection facilities, personnel, and operations and

maintenance that, at a minimum, maintains the above service level standards.

Policy 4.I.9 The County shall ensure that all proposed developments are reviewed for compliance with fire safety standards by responsible local fire agencies per the Uniform Fire Code and other County and local ordinances.

Recreation and Cultural Resources Element

Goal 5.A To develop and maintain a system of conveniently located, properly-designed parks and recreational facilities to serve the needs of present and future residents, employees, and visitors.

Policy 5.A.1 The County shall strive to achieve and maintain a standard of 10 acres of improved parkland per 1,000 population. The standard shall be comprised of the following:

- 5 acres of improved active parkland per 1,000 population
- 5 acres of passive recreation area or open space per 1,000 population

Policy 5.A.3 The County shall require new development to provide a minimum of 5 acres of improved parkland and 5 acres of passive recreation area or open space for every 1,000 new residents of the area covered by the development. The park classification system shown in Table 5-1 (see Table 15-5) should be used as a guide to the type of the facilities to be developed in achieving these standards.

Table 15-5
Park Classification System

Park Type	Use Description	Desirable Site Characteristics
Mini-Park (2 acres or less)	Specialized facilities that serve a concentrated or limited population or specific group, such as children or senior citizens.	Within neighborhoods and close to high-density housing or housing for the elderly.
Neighborhood Park (2 to 15 acres)	Area for intense recreational activities, such as field games, court games, playground apparatus, skating, picnicking.	Easily-accessible to neighborhood population (geographically centered with safe walking and bike access).
Community Park (15 or more acres)	Area of diverse environmental quality. May include areas suited for intense recreational activities. May be an area of natural quality for outdoor recreation, such as walking, viewing, and picnicking. May be any combination of the above,	May include natural features, such as water bodies. Easily-accessible to neighborhood served.

(Continues on next page)

Table 15-5
Park Classification System

Park Type	Use Description	Desirable Site Characteristics
	depending on site suitability and community need.	
Linear Park	Area developed for one or more modes of travel, such as hiking, biking, horseback riding, or crosscountry skiing.	Built or natural corridors, such as utility rights-of-way, that link other elements of the recreation system or community facilities, such as school, libraries, commercial areas, and other park areas.
Special Use	Areas for specialized or single-purpose recreational activities such as golf courses, nature centers, marinas, arenas, outdoor theaters, downhill ski areas, or areas that preserve, maintain, and interpret buildings, sites, and objects of archaeological significance. Also boulevards and parkways.	
Conservancy Areas	Protection and management of the natural/cultural environment with recreation use as a secondary objective.	Variable, depending on the resource being protected.

Policy 5.A.4 The County shall consider the use of the following open space areas as passive parks to be applied to the requirement for 5 acres of passive park area for every 1,000 residents.

- Floodways
- Protected riparian corridors and stream environment zones
- Protected wildlife corridors
- Greenways with the potential for trail development
- Open water (e.g., ponds, lakes, and reservoirs)
- Protected woodland areas
- Protected sensitive habitat areas providing that interpretive displays are provided (e.g., wetlands and habitat for rare, threatened or endangered species)

Buffer areas are not considered as passive park areas if such areas are delineated by setbacks within private property. Where such areas are delineated by public easements or are held as common areas with homeowner/property owner access or public access, they

will be considered as passive park areas provided that there are opportunities for passive recreational use.

Policy 5.A.5 The County shall require the dedication of land and/or payment of fees, in accordance with state law (Quimby Act and the Mitigation Fee Act) to ensure funding for the acquisition and development of public recreation facilities. The fees are to be set and adjusted as necessary to provide for a level of funding that meets the actual cost to provide for all of the public parkland and park development needs generated by new development.

Dry Creek-West Placer Community Plan

The relevant goals and policies from the DCWPCP related to public services and utilities are presented below.

Community Development Element: The Land Use Plan

Policy 4 To subject new developments with potential for adverse fiscal and other impacts on the delivery of essential public services to an "impact analysis" so as to avoid unreasonable financial burdens on the community and other affected local governmental agencies to ensure the continued availability of essential public services.

Policy 8 Residential areas should be located where a full range of services and facilities can be provided most efficiently and economically.

Policy 43 To allow for continued increased commercial and residential development only where all public services can be provided in an adequate and timely manner.

Policy 44 The rate of development and location of projects shall not exceed the capacity of the community, special districts and utility companies to provide all needed services and facilities in an orderly and economic manner.

Community Development Element: Community Design Element

Goal 6 It is a goal to create residential development which allows the following elements: human interaction, bicycle and pedestrian circulation, an appropriate relationship to the existing development in the area, and the creation of a neighborhood identity and//or focus (i.e. parks, schools, natural open space areas, creek site of historical or archaeological significance, etc.

Goal 8 A major goal of the plan is to utilize and improve the Dry Creek environs as a focal point of existing and new neighborhoods to be created in the area through the placement of park facilities, roadway, trails, interpretive areas, visibility, etc.

Policy 17 Require the construction of bicycle, pedestrian, and equestrian trails as provided in this Plan and use the policies of the Placer County Bikeways Master Plan in determining routes and trail type for areas not depicted on the Plan Trails map but still required to satisfy the policies of this Plan.

Policy 18 Utility lines shall be installed underground to ensure minimum disruption to the environment and as little disturbance as possible to vegetation, particularly in scenic corridors.

Community Development Element: Public Services

Goal 1 Public service and facilities must be available to serve the needs created by the present and future development which occurs in the plan area.

Goal 2 Maintain the most feasible and acceptable balance between adequate public services, costs of providing those services and projected demand.

Goal 3 Prevent the commitment of land use through premature public service facility construction.

Goal 4 Make urban services available only to those lands which, under the Land Use plan, will need them.

Goal 5 Ensure that the rate of development shall not exceed the capacity of County, community, special districts (including school districts), and utility companies to provide all needed public services in a timely, orderly, and economically feasible manner.

Policy 1 Coordination of city, county, and district public works planning and land use planning are essential. A major problem is to design major water, sewer and road extensions, intended to serve urban areas, in such a way that they do not also serve intervening non-urban areas, and thereby encourage their urbanization.

Policy 3 Discourage over-development of facilities, services, and systems in advance of demand to ensure that no inequitable financial burden is imposed and to prevent the commitment of land use through premature public facility construction.

Policy 4 Ensure that adequate services will be available for proposed development before granting approvals.

Policy 7 Consider mitigation measures from new development to reduce impacts on local services, i.e., schools, parks, etc.

Goal To provide sewage disposal facilities which will serve the Dry Creek-West Placer Area's proposed density of residential, commercial, industrial, and

public uses in a way which protects the public from adverse water quality or health impacts.

Policy 1 — Require all new commercial, industrial, institutional, and residential subdivisions to install and connect to a public sewer system.

Community Development Element: Parks and Recreation

Goal 1 — To provide a variety of park and recreation facilities adequate to meet the needs of present and future residents of the Dry Creek Area.

Policy 1 — To provide future park facilities in accordance with park standards and location guidelines as set forth in this plan.

Policy 5 — To encourage private recreation facilities within residential developments (as required in planned unit developments) to off-set the demand for public facilities.

Policy 6 — To require the dedication of land and/or payment of fees, in accordance with state law (Quimby Act) to ensure funding for the acquisition and development of public recreation facilities.

Policy 9 — To encourage compatible recreational use of riparian areas along streams and creeks in the same area where feasible.

Policy 12 — To require the development of a regional trail system which provides an alternative mode of transportation. This trail system should be designed to provide access to separated trails without requiring the trail to be done by automobile or by pedestrians traveling adjacent to motor vehicles which may be traveling at speeds in excess of 25 m.p.h.

Environmental Resources Management Element: Open Space

Goal 8 — A community trail system shall be developed to:

a. Provide safe, pleasant, convenient travel by foot, horse or bicycle within the Community Plan area.
b. Provide recreational opportunities to residents of the Community Plan area.
c. Connect local trails to regional trail systems.
d. Establish an off-street, non-vehicular community trail system which links school facilities, parks and recreation, community

Policy 11 — Open spaces should be linked visually and physically to form a system of open spaces. Where appropriate, trails shall connect open space areas. Dedication of easements shall be encouraged and in many cases required as lands are developed and built.

Dry Creek Greenway Regional Vision Plan

In 2011, the Placer County Board of Supervisors adopted The Dry Creek Greenway Regional Vision (Vision Plan), a proposed regional open space greenway and park system that protects the natural waterways, riparian corridors, natural and cultural resources and sensitive habitat lands. The Vision Plan area consists of Dry Creek and its major tributaries including Miners Ravine, Secret Ravine, Strap Ravine, Antelope Creek, Cirby Creek, Clover Valley Creek, and Linda Creek. The Vision Plan includes a coordinated multi-jurisdiction management strategy to address hiking, biking, equestrian trails and public access, habitat preservation, flood control, and water quality. The concept of the Vision Plan is for a connected open space system linking the Dry Creek Parkway with Folsom Lake State Recreation Area and the uplands of the watershed. The Vision Plan consists of the following objectives:

- Preserve and enhance riparian and aquatic habitats;
- Conserve and protect significant historic, cultural and scenic resources;
- Connect the Dry Creek Parkway to the Folsom Lake State Recreation Area;
- Provide for the management of Greenway resources;
- Provide active and passive recreation opportunities;
- Preserve floodwater conveyance capacity and reduce property damage due to flooding;
- Work with existing plans and policies;
- Secure funding to sustain and complete the Greenway;
- Function as a local and regional asset; and
- Facilitate land use planning and management within the Greenway.

Placer County Code

Sections from the Placer County Code related to fire protection services and park and recreational facilities are discussed below.

Development Fees for Fire Protection

Article 15.36, Development Fees for Fire Protection, of the Placer County Code requires new development within the unincorporated areas of the County to pay a development fee to the relevant fire protection agency for the benefit of the owners or residents of the development. The responsibility for compliance with the requirements of Government Code Section 66000 et seq., and for the collection, receipting, and management of fees collected from new development projects shall rest with the serving fire protection agency.

Parks and Recreational Facilities Fees

Article 15.34, Parks and Recreational Facilities Fees, of the Placer County Code requires payment of parks and recreational facility fees to implement the goals and objectives of the PCGP and mitigate impacts caused by new developments. The purpose of the park and recreation facilities impact fee is to provide funding for expansion of parkland and recreation facilities required to serve new development in unincorporated Placer County. Payment of fees is required prior to the issuance of building permits or at the earliest time permitted by law.

Section 16.08.100 of the Placer County Code requires that as a condition of approval for a final subdivision or parcel map, a portion of such land must be dedicated for park or recreational purposes, a fee paid in lieu thereof, or a combination of both. The portion to be dedicated must be sufficient to provide five acres of parkland per 1,000 residents of the subdivision. In addition,

while not included in the Placer County Code, General Plan Policy 5.A.1 sets a standard of five acres of passive recreation area or open space per 1,000 residents.

Placer County Water Efficient Landscape Ordinance

The Placer County Landscape Design Guidelines incorporate the County's WELO. The County's WELO established water efficiency requirements for developments throughout the County based on the number of landscaped areas included in proposed development projects, and whether the project involves new development or renovation type activities. Water use efficiency in the WELO is to be achieved through the use of drought tolerant plantings, and proper landscaping, as well as specific requirements for irrigation systems. The specific requirements for water use efficiency in landscaping would be confirmed during design reviews for proposed projects. Specifically, the WELO requires applications to include Landscape Packages, which would present water budgets, soil management reports, grading plans, landscape design plans, irrigation plans and other information related to the overall design of landscaping within projects.

15.4 IMPACTS AND MITIGATION MEASURES

The section below describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to public services and utilities. A discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines and the County's Initial Study Checklist, determination of significant impacts is based on whether the proposed project would do any of the following:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times or other performance objectives for any of the public services:
    - Fire protection;
    - Police protection;
    - Schools;
    - Parks;
    - Other public facilities;
    - Maintenance of public facilities, including roads;
- 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;
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment;
- Require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects;
- Have insufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years;

- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals; or
- Fail to comply with federal, State, and local management and reduction statutes and regulations related to solid waste.

Impacts related to storm drainage facilities are addressed in Chapter 12, Hydrology and Water Quality, of this EIR.

It is important to note that, in addressing public service demand issues under CEQA, the appropriate focus is on the environmental effects of whatever steps might be necessary to achieve or maintain adequate service. For example, if proposed new development would create an increased demand for law enforcement or fire protection services, an EIR should inquire as to whether new or expanded physical facilities may be required to provide such service. The "impacts" addressed under CEQA are the physical effects of providing service, not any possible failure to provide adequate service under applicable standards. (See *City of Hayward v. Board of Trustees of the Cal. State University* (2015) 242 Cal.App.4th 833, 843 ["[t]he need for additional fire protection services is not an environmental impact that CEQA requires a project proponent to mitigate"]; *Goleta Union School Dist. v. Regents of Univ. of Cal.* (1995) 37 Cal.App.4th 1025, 1031–1034 [school overcrowding attributable to new development is not an environmental effect subject to CEQA, though the physical effects of new facility construction to serve new students would be]; and CEQA Guidelines, § 15131, subd. (a) ["[e]conomic or social effects of a project shall not be treated as significant effects on the environment"].)

The focus of CEQA on physical impacts, however, does prevent a county or city from requiring new development to take the steps needed to ensure adequate public services, such as law enforcement service. Such steps are simply beyond the scope of CEQA. They should instead be imposed under some other body of State statutory law (e.g., the Planning and Zoning Law [Gov. Code, § 65300 et seq.] or the Subdivision Map Act [Gov. Code, § 66410 et seq.]) or under a local government's broad police power under the California Constitution. (See Cal. Const., Art. XI, § 7; *Candid Enterprises, Inc. v. Grossmont Union High School Dist.* (1985) 39 Cal.3d 878, 885.)

It is also important to understand that special legal principles apply to impacts to school facilities. According to Government Code Section 65996, the development fees authorized by Senate Bill 50 (1998) (described earlier) are deemed to be "full and complete school facilities mitigation" for impact caused by new development. The legislation also recognized the need for the fee to be adjusted periodically to keep pace with inflation. The legislation indicated that in January 2000, and every two years thereafter, the State Allocation Board would increase the maximum fees according to the adjustment for inflation in the statewide index for school construction.

Section 65996 also prohibits public agencies from using CEQA or "any other provision of state or local law" to deny approval of "a legislative or adjudicative act, or both, involving, but not limited to, the planning, use, or development of real property or any change in governmental organization or reorganization" on the basis of the project's impacts on school facilities.

Method of Analysis

To determine the potential for the project to result in substantial adverse impacts associated with the provision of new or altered government facilities, relevant public services and utilities planning documents were reviewed, including, but not limited to, the PCGP, the Placer County General Plan EIR, the DCWPCP, the Placer County LAFCo Municipal Service Review for Fire and Emergency Services, the California American Water Company's Sacramento Main District 2020 UWMP, and direct communication with service providers. In addition, a Preliminary Water Report (see Appendix I), and a Wastewater Report (see Appendix J) were prepared to assess project-specific impacts related to the proposed water supply and sewer services that would be provided to the project. The methods of analysis used in the Preliminary Water Report and Wastewater Report are described in further detail below.

Preliminary Water Report

The purpose of the Preliminary Water Report prepared for the proposed project was to provide a feasibility study of the proposed project, which is anticipated to be constructed over five phases, and the phased water supply improvements associated with the project.

As part of the Preliminary Water Report, a hydraulic model was developed for the proposed project using the EPANET (Version 2.2) program, and was run for two different scenarios. Scenario 1 analyzed the peak-day demand of the ultimate buildout conditions with the fire flow considered. Scenario 2 demonstrated the peak-hour demand of the ultimate buildout without the additional fire flow demand on the system. The project's peak water demand assumptions were based off of CAL-AM standards.

Wastewater Report

The Wastewater Report prepared for the proposed project evaluated the ability of the existing wastewater conveyance infrastructure in the project vicinity to accommodate the wastewater generated by operations of the proposed project, as well as that generated by other properties within the overall sewer shed area.

Pipe sizes required to serve the service area were determined using the requirements of the Placer County Land Development Manual, and Manning's Equation, as well as a Manning's Roughness Coefficient of 0.013, were used to calculate the capacity of typical pipe diameters flowing at 70 percent full. The Wastewater Report used a demand factor of 380 gallons per day per equivalent dwelling unit (gpd/EDU) for single-family residential development and 260 gpd/EDU for multi-family residential development, with a safety factor of 2.0, and corresponding peaking factors. In addition, the following methodology was used:

1. The report included an analysis of the proposed sewer collection system needed to provide sewer service to the 212 new on-site single-family detached homes and 220 on-site multi-family units, for a total of 432 on-site EDUs. In addition, the report included an analysis of the system's capability to provide expanded sewer service to the additional properties within the sewer shed boundary surrounding the project site. Therefore, the overall sewer shed analyzed within the Wastewater Report prepared for the proposed project consisted of 1,388 on- and off-site EDUs.
2. The Wastewater Report evaluated capacity of the existing emergency wastewater storage tanks at the Dry Creek/West Placer CFD #1 lift station to serve the proposed project, accounting for other users served prior to development of the proposed project.

The 22 potential ADUs that could be developed on-site could be accommodated within the pipe sizes required to serve the service area. Thus, the additional units, if included, would not be anticipated to alter the conclusions of the Wastewater Report prepared for the project by King Engineering.

The off-site 10-inch sewer main in Walerga Road (from manholes KC11-05 to KC11-08) may experience surcharging during PWWF, if allowed by the district. If the district does not allow surcharging, upsizing approximately 960 linear feet of 10-inch sewer main to 12-inch sewer main will be required.

The on-site eight-inch sewer main (from manholes KC11-01 to KC11-05) interior to Phase 4 of the project site may experience surcharging during PWWF, if allowed by the district. If the district does not allow surcharging, upsizing approximately 1,545 linear feet of eight-inch sewer main to 10-inch sewer main will be required.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed project in comparison with the standards of significance identified above. In most cases, potential environmental impacts associated with the proposed project and the 22 on-site ADUs would not differ. Thus, unless otherwise noted, the below project-specific analysis applies to both the proposed project and the on-site ADUs. A separate analysis of impacts associated with the off-site affordable housing parcel is also provided below. In addition, the off-site sewer lift station improvements area is located within Dry Creek Community Park and the improvements would be limited to providing an underground tank for additional emergency sewer storage capacity. As such, the off-site sewer lift station improvements would not result in increased demand for public services or utilities in the DCWPCP area, and, as a result, the off-site sewer lift station improvements are not discussed further within the impact analyses presented below. However, a discussion of the required improvements necessary to serve the proposed project is included under Impact 15-6 related to wastewater infrastructure.

15-1 Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or 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 services. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to resulting in substantial adverse physical impacts associated with the provision of new or physically altered fire protection facilities associated with development of the proposed project and potential future development of the off-site affordable housing parcel.

Proposed Project

The proposed project would include annexation into the Dry Creek Zone of Benefit (CSA 28, Zone 165) for provision of fire protection services to the site. Given that fire protection and emergency medical services within Zone 165 are the responsibility of Placer County,

the requested annexation would be subject to approval by the County Board of Supervisors.

Fire protection services for the project site would be provided by PCFD by way of Station 100, located at 8350 Cook Riolo Road. Station 100 is located approximately 1.8 miles from the project site. In addition, two new fire stations are proposed as part of the Placer Vineyards Specific Plan, to the west across Walerga Road. Pursuant to Policy 4.4.2, the County maintains an average response time goal of six minutes for suburban areas.

As previously mentioned, CAL FIRE is responsible for providing emergency services in Placer County and has stated their ability to serve future planned growth in the Dry Creek area, and still maintain compliance with established safety response times. As is currently the case, incidents will occur where the City of Roseville (Roseville) Fire Department is called upon to provide mutual aid at or near the project area to send the closest available unit to an emergency incident, regardless of jurisdictional boundaries. In that spirit of cooperation to provide the fastest and highest level of service to the surrounding area, Roseville Fire Department has signed onto a Closest Resource Agreement (CRA) with PCFD and other surrounding fire departments to provide mutual aid between all participating fire departments. As outlined in the CRA, Roseville can adjust the amount of reciprocal coverage by setting draw-down levels, or withdraw from the CRA entirely. Timing and triggers for public service improvements occur when impacts associated with additional development exceeds established safety standards, which is not the case for the proposed project. As residential units are constructed and fire impact fees are collected, projects are required to pay their fair share towards existing and planned fire protection improvements, which will address the project's impacts to fire services for all safety providers and increase the County's ability to serve unincorporated areas, in addition to continuing to provide reciprocal aid to the City of Roseville and surrounding local governments.

PCFD collects a Fire Facilities Fee specific to fire services for each sub area within the PCFD service area. The development impact fee is calculated based on a "fair share portion" of anticipated capital needs through 2060. Currently, the PCFD's Fire Facilities Fee for the 2025-2026 fiscal year is $1.05 per sf of residential development. Final improvement plans for the proposed project would be subject to review by the PCFD as part of the County's approval process in order to ensure compliance with fire and safety standards.

Although implementation of the proposed project would increase the amount of building space within the project site, all structures included in the proposed project would be constructed consistent with the CBSC and CFC. In compliance with the CBC (specifically Section 903.2.1.3, Group A-3), the design of the residences would include the installation and use of automatic fire sprinklers, and fire alarm systems would be incorporated pursuant to CFC requirements. Such features would reduce the potential for fires to occur within the proposed structures, which would reduce the demand for fire protection services from the project site.

In addition, given the proximity of the project site to Station 100, the response time to the project site is anticipated to be within the achievable response time goal. As such, response times for the proposed project would be consistent with General Plan Policy



4.I.2, and the proposed project would not require the provision of new or physically altered fire service facilities.

Off-Site Affordable Housing Parcel

As discussed throughout this EIR, the proposed RVSP amendment and rezone would result in a maximum development potential of 120 affordable income-restricted units within the off-site affordable housing parcel. While the baseline development potential for the proposed affordable housing parcel consists of 3,750 sf of commercial uses, plus the 39 density reserve units, the RVSP EIR analyzed development of the off-site affordable housing parcel with 60 High-Density Residential (HDR) units prior to rezoning of the parcel to Commercial uses in the 2015 Amendment. As discussed under Impact 14-13 of the RVSP EIR, development of the RVSP would result in a minor increase in fire protection personnel required to serve the development. However, the RVSP EIR included Mitigation Measure 14-13a, which requires the RVSP applicant to establish a special benefit assessment district or other funding mechanism to assure adequate funding for the ongoing maintenance and operation of fire protection and related services, including the costs for services required to satisfy Placer County Fire Department staffing requirements.

With respect to the 120 affordable income-restricted units associated with the off-site affordable housing parcel, fire protection services would be provided by PCFD by way of Station 100. The project applicant would be required to pay the applicable PCFD Fire Facilities Fee for residential development. It should be noted that Mitigation Measure 14-13a included in the RVSP EIR is beyond the scope of current CEQA requirements, as courts have since clarified that funding for public services is not an environmental concern pursuant to CEQA (*City of Hayward v. Board of Trustees of the California State University* [1st Dist. June 28, 2012] Cal App 4th [Case Nos. A13412, A132424, A131413, A132423]). Therefore, at such time the off-site affordable housing parcel gets developed, the project would be required to fund the fair share of such fees required to provide the additional staffing required to serve the off-site affordable housing parcel as a condition of approval, and RVSP EIR Mitigation Measure 14-13a is not applied in this EIR. In addition, final improvement plans for the affordable housing units would be subject to review by the PCFD as part of the County's approval process in order to ensure compliance with fire and safety standards. Thus, potential future development of the off-site affordable housing parcel would not require the provision of new or physically altered fire service facilities.

Conclusion

Given that the proposed project and potential future buildout of the off-site affordable housing parcel would not increase population such that PCFD would require new or altered facilities, the proposed project would not result in a need for new, or improvements to existing, fire protection facilities, construction of which could cause significant environmental impacts. Therefore, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

15-2 Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for law enforcement services. Based on the analysis below, and with implementation of mitigation for the off-site affordable housing parcel, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to resulting in substantial adverse physical impacts associated with the provision of new or physically altered law enforcement facilities associated with development of the proposed project and the off-site affordable housing parcel.

Proposed Project

The proposed project is located within the jurisdiction of and would be provided services by the PCSO. As described above, the proposed project would be served by the South Placer Substation located in Loomis at the intersection of Horseshoe Bar Road and I-80, approximately 12 miles to the northeast of the project site. In addition, limited law enforcement services may be provided by the PCSO's community service station located southeast of the project site. Furthermore, the West Placer Sheriff's Station is located at 5750 West Oaks Boulevard in Rocklin, approximately eight miles to the northwest. The West Placer Sheriff's Station operates a limited number of patrols, and limited County services will be available in early 2026, with plans to expand.

The threshold for this impact, as derived from Appendix G of the CEQA Guidelines, is related to whether the project would result in substantial adverse physical impacts associated with the provision of new or physically altered sheriff facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios or performance objectives.

New or physically altered law enforcement facilities would not be needed to adequately serve the proposed project. In addition, though response times are dependent upon the location of patrol officers at the time of the emergency call, on average, response times to the project site would be anticipated to be within the Placer County General Plan's eight-minute response time standard for suburban areas. Thus, the proposed project would not require the provision of new or physically altered law enforcement facilities.

Off-Site Affordable Housing Parcel

As discussed above, the RVSP EIR analyzed development of the off-site affordable housing parcel with 60 HDR units prior to rezoning of the parcel to Commercial uses. As discussed under Impact 14-14 of the RVSP EIR, development of the RVSP would result in an increase in personnel, equipment, and resources required to serve the development. Similar to the proposed project, new or physically altered law enforcement facilities would not be needed to adequately serve the proposed 120 affordable income-restricted units within the off-site affordable housing parcel, and response times to the off-site affordable housing parcel are anticipated to be within the Placer County General Plan's eight-minute response time standard for suburban areas. Nonetheless, the RVSP EIR included

Mitigation Measure 14-14a, which requires the RVSP applicant to establish a special benefit assessment district or other funding mechanism to assure adequate funding for the ongoing maintenance and operation of law enforcement services, with funding responsibilities imposed on residential and commercial properties within the RVSP area, including the costs for services required to satisfy the staffing standards set forth above and General Plan standards now in existence or as later amended. Mitigation Measure 14-14a included in the RVSP EIR is beyond the scope of current CEQA requirements, as courts have since clarified that funding for public services is not an environmental concern pursuant to CEQA (*City of Hayward v. Board of Trustees of the California State University* [1st Dist. June 28, 2012] Cal App 4th [Case Nos. A13412, A132424, A131413, A132423]). Therefore, at such time the off-site affordable housing parcel gets developed, the project would be required to fund the fair share of such fees required to provide the additional staffing and equipment required to serve the off-site affordable housing parcel as a condition of approval, and RVSP EIR Mitigation Measure 14-14a is not applied in this EIR.

In addition, in accordance with PCGP Policy 4.H.5, the RVSP EIR included Mitigation Measure 14-14b, which requires implementation of crime prevention through environmental design to identify design features that encourage criminal activity and identify solutions to mitigate problematic designs. At such time the off-site affordable housing parcel gets developed, RVSP EIR Mitigation Measure 14-14b, which has been incorporated into this EIR as Mitigation Measure 15-2, would be required. Thus, potential future development of the off-site affordable housing parcel would not require the provision of new or physically altered law enforcement facilities.

Conclusion

Based on the above, the proposed project and potential future development of the off-site affordable housing parcel would not result in a need for new, or improvements to existing, sheriff protection facilities, construction of which could cause significant environmental impacts. Nevertheless, the off-site affordable housing parcel is located within the overall RVSP area for which the RVSP EIR included mitigation measures intended to be implemented by all future development to reduce impacts related to law enforcement facilities. Thus, the impact herein is determined to be ***significant*** as a means to incorporate the applicable RVSP mitigation measure into this EIR and ensure the applicable RVSP EIR mitigation measure is implemented for the off-site affordable housing parcel. Therefore, should development of the off-site affordable housing parcel occur, implementation of Mitigation Measure 14-14b of the RVSP EIR would be required to ensure a significant impact does not occur. The referenced RVSP mitigation measure is incorporated into this EIR as Mitigation Measure 15-2 below.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

Off-Site Affordable Housing Parcel

15-2 *Implement RVSP EIR Mitigation Measure 14-14b:*

Potential crime problems dealing with circulation systems and structures may be reduced by utilizing the concepts of Crime Prevention Through Environmental Design. Development design shall consider the effect on

features that could encourage criminal activity and work to eliminate such features. Coordination with the Sheriff's Department shall be required during design stages of all development within the Plan Area. Approval of final subdivision maps shall require Sheriff's Department review, including written approval, relating to safety in design.

15-3 Result in substantial adverse physical impacts associated with the provision of new or physically altered school services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or performance objectives. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to resulting in substantial adverse physical impacts associated with the provision of new or physically altered school facilities associated with development of the proposed project and the off-site affordable housing parcel.

Proposed Project

The proposed project would construct 212 new single-family residential units, 220 new multi-family units, and potentially up to 22 ADUs within the CJUSD, DCJESD, and RJUHSD school districts. The assumption was made that the ADUs would not be occupied by residents with school-aged children. Therefore, this discussion focuses on impacts associated with the 432 new residences associated with the proposed project. Overall, the proposed project would construct 110 single-family residential units and 220 multi-family units within the CJUSD, and 102 single-family residential units within the DCJESD and RJUHSD. Based on the student generation rates provided by the CJUSD, DCJESD and the RJUHSD,[32,33,34] the proposed project is expected to generate 123 students in kindergarten through grade eight and 36 students in grades nine through 12 (see Table 15-6).

As shown in Table 15-6, the proposed project would not increase the student population over the available capacity of the schools. In addition, according to SB 50, payment of the necessary school impact fees for the project would be considered full and satisfactory CEQA mitigation. As discussed previously, proposition 1A/SB 50 prohibits local agencies from using the inadequacy of school facilities as a basis for denying or conditioning approvals of any "[…] legislative or adjudicative act […] involving […] the planning, use, or development of real property" (Government Code 65996[b]).

To the extent that the school districts may need additional facilities to accommodate students from the project site as the project gradually builds out over time, the districts will control what it needs to build and when new construction would be necessary. The County is not in a position to speculate about what steps the districts would take (see PRC Section 21151.8 [school districts are CEQA lead agencies for school projects]).

32 Center Joint Unified School District. *Level 1 Development School Fee Justification Study.* March 2020.
33 Dry Creek Joint Elementary School District. *School Facilities Master Plan*. February 2025.
34 Roseville Joint Union High School District. *Developer Fee Justification Study.* March 5, 2016.

Table 15-6
Proposed Project: Enrollment, Capacity, and Student Generation by School

School	Enrollment	Capacity	Student Generation Rate Per Unit	Students Generated by Project	Project Plus Existing Enrollment
Rex Fortune Elementary School	565	800	0.250	83	648
Wilson C. Riles Middle School	740	1,100	0.072	24	764
Center High School	1,289	2,000	0.149	50	1,339
Creekview Ranch School	840	924	0.158	16	857
Oakmont High School	1,400	1,800	0.110	12	1,412

Sources:
- ***Center Joint Unified School District. Level 1 Development School Fee Justification Study. March 2020.***
- ***Dry Creek Joint Elementary School District, School Facilities Master Plan, 2025.***
- ***Roseville Joint Union High School District. Developer Fee Justification Study. March 5, 2016.***

Notably, CEQA Guidelines Section 15314 provide a categorical exemption for "minor additions to existing schools within existing school grounds where the addition does not increase original student capacity by more than 25 percent or ten classrooms, whichever is less. The addition of portable classrooms is included in this exemption." Whether the districts would need to obtain new classrooms to educate an increased student population from new development within the district's boundaries would be dependent on ongoing facility needs estimates and student population projections, which are subject to change over time based on factors such as changing birth rates and other social and economic factors. Thus, development of the proposed project would not require the provision of new or physically altered school facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or performance objectives.

Off-Site Affordable Housing Parcel

Development of the off-site affordable housing parcel would result in 120 multi-family units within the CJUSD. Based on the student generation rates provided by the CJUSD, the 120 multi-family residential units are expected to generate 39 students in kindergarten through grade eight and 18 students in grades nine through 12 (see Table 15-7).

As shown in Table 15-7, development of the off-site affordable housing parcel would not increase the student population over the available capacity of the schools. In addition, as shown in Table 15-8, the number of students generated by the off-site affordable housing development in combination with the students generated by the proposed project would not increase the student population over the available capacity of the schools.

Table 15-7
Off-Site Affordable Housing Parcel:
Enrollment, Capacity, and Student Generation by School

School	Enrollment	Capacity	Student Generation Rate Per Unit	Students Generated by Off-Site Affordable Housing Development	Affordable Housing Development Plus Existing Enrollment
Rex Fortune Elementary School	565	800	0.250	30	595
Wilson C. Riles Middle School	740	1,100	0.072	9	749
Center High School	1,289	2,000	0.149	18	1,307

Source: Center Joint Unified School District. Level 1 Development School Fee Justification Study. March 2020.

Table 15-8
Proposed Project and Off-Site Affordable Housing Parcel:
Total Enrollment, Capacity, and Student Generation by School

School	Enrollment	Capacity	Student Generation Rate Per Unit	Students Generated by Proposed Project and Off-Site Affordable Housing Parcel	Proposed Project and Affordable Housing Development Plus Existing Enrollment
Rex Fortune Elementary School	565	800	0.250	113	678
Wilson C. Riles Middle School	740	1,100	0.072	33	773
Center High School	1,289	2,000	0.149	68	1,357

Source: Center Joint Unified School District. Level 1 Development School Fee Justification Study. March 2020.

According to SB 50, payment of the necessary school impact fees for the project would be considered full and satisfactory CEQA mitigation. While the RVSP EIR included Mitigation Measure 14-12a, which requires payment of statutory school impact fees, such mitigation is beyond the scope of current CEQA requirements, as courts have since clarified that funding for public services is not an environmental concern pursuant to CEQA (*City of Hayward v. Board of Trustees of the California State University* [1st Dist. June 28, 2012] Cal App 4th [Case Nos. A13412, A132424, A131413, A132423]). Therefore, the off-site affordable housing parcel would be required to pay school impact fees as a condition of approval, and RVSP EIR Mitigation Measure 14-12a is not applied in this EIR. Thus, potential future development of the off-site affordable housing parcel would not require the provision of new or physically altered school facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or performance objectives.

Conclusion

Based on the above, the proposed project and potential future development of the off-site affordable housing parcel would not result in any reasonably foreseeable substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or performance objectives for maintenance of schools, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

15-4 Result in an increase in 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, or include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to resulting in substantial adverse physical impacts associated with the provision of new or physically altered recreational facilities associated with development of the proposed project and the off-site affordable housing parcel.

Proposed Project

As noted above, the project would include the construction of 432 residential units, and, based on an average of 2.54 persons per household used for the *Placer County Park and Recreation Facilities Fee Study* (Fee Study), would be anticipated to house approximately 1,098 new residents on the project site.[35] The 22 ADUs are also conservatively assumed to generate an additional estimated 56 on-site residents for the purpose of calculating required parkland. Such residents could increase demand on existing parks and

[35] Placer County. *Placer County Park and Recreation Facilities Fee Study.* September 2003.

recreational facilities, potentially requiring provision of new facilities or expansion of existing facilities. As noted in Chapter 13 of this EIR, current regional housing profiles identify an average household size of 2.94 persons per household for the DCWPCP area.[36] However, the 2.54 persons per household figure is used in this analysis in order to maintain consistency with the Fee Study.

Both the PCGP and the DCWPCP require dedication of land and/or payment of fees in accordance with State law to ensure funding for the acquisition and development of public recreation facilities. Consistent with goals and policies in the PCGP and the DCWPCP, Section 16.08.100 of the Placer County Code requires dedication of land for park or recreational purposes, or a fee paid in lieu thereof, or a combination of both, as a condition of approval for final subdivision or parcel maps. The land areas required for dedication may be up to an amount equivalent to the land necessary to provide five acres of parkland per 1,000 residents of the proposed subdivision.

The proposed project would include development of a public, 2.1-acre neighborhood park in the Placer Creek Residential Phase 2 development (Lot PARK-1). Additional park areas would be provided in pockets along Placer Creek. The proposed project would include approximately 9.9 acres of open space bisected by “Placer Creek” and situated between the Placer Creek Residential Phase 3 and 4 neighborhoods (Lot 5/Lot OS-1). The open space area would be preserved as natural open space by virtue of the underlying zoning and an open space easement to be recorded with the final map. Placer Creek Residential parks, trails and open space would be open to the public.

The Estia Dry Creek development would feature an extensive internal pedestrian circulation system that would provide connectivity to project amenities and the surrounding community. A 3,537-sf community center building would include a club room, two fitness rooms, a dog washing facility, and leasing offices with associated lounge, break room, and storage areas. An outdoor pool with patios and grill areas would be located adjacent to the community center. Additional amenities would include a centrally located dog park, and car washing stations. The on-site amenities and recreational facilities associated with the Estia Dry Creek development would be private.

Additionally, the proposed project would include an approximately 1,300-foot-long Class I meandering trail along the Baseline Road frontage, and an approximately 2,300-foot-long Class I meandering trail along the southern/eastern Walerga Road frontage. Placer Creek Residential Phase 4 would also include an approximately 1,600-foot-long extension of the existing trail within the open space portion of the project site. An approximately 1,600-foot-long Class I trail on the southern side of Placer Creek would be connected to the stubbed path north of the three existing Sun Valley Oaks homes fronting White Mill Crescent Road at Vineyard Road. From the proposed trail, a pedestrian bridge would go over to Placer Creek and connect to a trail south of Phase 3, ultimately connecting to N Street within the Placer Creek Residential Phase 3 neighborhood.

In addition, the proposed project aims to implement minor enhancements within the abandoned Old Walerga Road corridor, which bisects the project site and existing residential development to the west of the project site within the broader Placer Vineyards area. The corridor is privately owned and encumbered by existing public utility easements;

[36] ESRI Business Analyst. *Housing Profile, DCWPCP Area*. January 2026.

accordingly, any proposed enhancements would be subject to landowner consent, utility coordination, and applicable approvals, and would not be implemented absent such consent. Proposed enhancements would be limited to areas previously disturbed by the former roadway and may include linkages on the north side to the planned Class I trail along Baseline Road and on the south side to Town Center Drive, limited pavement surface treatments (such as slurry seal or comparable non-structural applications), signage, and striping to accommodate pedestrians and bicyclists. If implemented, the improvements to the Old Walerga Road corridor would enhance connectivity of local residents to nearby retail and commercial centers, provide additional safety for pedestrians and cyclists, support multimodal access, and contribute to the overall functionality and integration of the local trail network.

Based on the County's requirement of five acres of parkland per 1,000 residents (Section 16.08.100 of the Placer County Code and General Plan Policy 5.A.1), the proposed project would be required to provide a minimum of approximately 5.36 acres of parkland (0.005 acres/resident X 1,072 estimated residents), and with the inclusion of 22 ADUs, would require 5.64 acres of parkland. Thus, by providing 2.1 acres of neighborhood park area, the proposed project would not meet the park requirements and payment of an in-lieu fee would be required. Where a combination of land and fees is required, the total value of the dedication would not exceed the cost of providing fully developed park land and recreational facilities. Given that the project would include development of park land and payment of fees to meet the demand created by future residents, the project would not be anticipated to substantially increase demand on existing or future parks or recreational facilities in the surrounding area. Furthermore, pursuant to Article 15.34 of the Placer County Code, the project applicant would be required to pay a parks and recreational facility fee. The purpose of the park and recreation facilities impact fee is to provide funding for expansion of park land and recreation facilities required to serve new development in unincorporated Placer County.

In addition to requiring a minimum of five acres of active parkland per 1,000 residents, General Plan Policy 5.A.1 sets a standard of five acres of passive recreation area or open space per 1,000 residents. Using the calculations noted above, a minimum of approximately 5.64 acres of passive recreation area or open space would be required for the proposed project. Because the project would include approximately 9.9 acres of open space areas, the project would comply with General Plan Policy 5.A.1 related to the provision of passive recreation area or open space.

Based on the above, the proposed project would not result in an increase in the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of such facilities would occur or be accelerated.

Off-Site Affordable Housing Parcel

Development of the off-site affordable housing parcel would include the construction of a maximum of 120 multi-family residential units, and, based on an average of 2.54 persons per household used for the *Placer County Park and Recreation Facilities Fee Study* (Fee Study), would be anticipated to house approximately 305 new residents on the off-site parcel.[37] Based on the County's requirement of five acres of parkland and five acres of open space per 1,000 residents (Section 16.08.100 of the Placer County Code and

[37] Placer County. *Placer County Park and Recreation Facilities Fee Study.* September 2003.

General Plan Policy 5.A.1), development of the off-site affordable housing parcel would be required to provide a minimum of approximately 1.5 acres of parkland and 1.5 acres of open space (0.005 acres/resident X 305 estimated residents). As discussed throughout this EIR, site-specific development plans, designs, or proposals for the off-site affordable housing parcel are not available at this time. However, similar to the proposed project, the project applicant would be required to pay an in-lieu fee if the required park and open space area is not provided, and the applicant would be required to pay a parks and recreational facility fee. Thus, potential future development of the off-site affordable housing parcel would not result in an increase in the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of such facilities would occur or be accelerated.

Conclusion

Based on the above, the proposed project and potential future development of the off-site affordable housing parcel would not result in an increase in 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, or include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

15-5 Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or performance objectives for maintenance of public facilities, including roads, or for other government services. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to resulting in substantial adverse physical impacts associated with the provision of new or physically altered roads or other public facilities associated with development of the proposed project and the off-site affordable housing parcel.

Proposed Project and Off-Site Affordable Housing Parcel

The following section describes the potential adverse physical effects related to the maintenance and construction of County roads, library facilities, and other public facilities and services associated with the proposed project and the off-site affordable housing parcel.

Roads

The proposed project would result in the construction of 212 new single-family residences, 220 multi-family units, a potential of either up to 22 on-site ADUs or 120 off-site affordable housing units, and associated infrastructure, including a private internal road network that

would connect to the public roadway system (Baseline Road, Walerga Road, Vineyard Road, and potentially Watt Avenue and PFE Road).

All internal and frontage roadway improvements included in the proposed project would be funded by the project applicant, and all private streets within Phase 1 would be maintained by the property owner or property owner's association, and Phases 3 and 4 would be maintained by the neighborhood homeowner's association (HOA). Phase 2 proposes to create or annex into a CSA to fund County maintenance of the onsite subdivision roads. In addition, the project applicant would be required by the County to pay a Traffic Impact Fee. The Traffic Impact Fee, along with other Development Impact Fees levied by the County, is intended to fund and sustain necessary improvements resulting from new development, such as road widening, signalization of intersections, and bridge replacements.

In addition, as discussed throughout this EIR, site-specific development plans, designs, or proposals for the off-site affordable housing parcel are not available at this time. However, development of the off-site affordable housing parcel would similarly connect to a public roadway system and internal and frontage roadway improvements would be funded by the future applicant/developer. The future applicant/developer would also be required to pay the Traffic Impact Fee, along with other Development Impact Fees, to minimize any adverse physical impacts associated with maintenance of existing County roads or construction of new County road facilities.

While project-generated traffic could result in an incremental increase in maintenance of County roads in the project area, such an increase would be negligible. Currently, the County uses gasoline tax and federal and State funding for transportation infrastructure maintenance. Payment of Traffic Impact Fees by the applicant prior to the issuance of building permits for the proposed project, as well as payment of applicable taxes by future project residents, would minimize any adverse physical impacts associated with maintenance of existing County roads or construction of new County road facilities.

Libraries and Other Public Facilities and Services

Placer County maintains public facilities such as public libraries and community buildings, which could potentially be used by residents of the proposed project. In addition, the residents could potentially use public facilities in the nearby City of Roseville. However, given the size of the proposed development compared to the existing population of Placer County and the City of Roseville, any additional demand generated by the proposed project and the off-site affordable housing parcel would be relatively minor and is not likely to result in the need to alter existing facilities or construct new facilities. Furthermore, the project applicant would be required to pay a Public Facilities Impact Fee to the County prior to issuance of building permits for the proposed project on a per unit basis. Public Facilities Impact Fees are used to construct or expand a range of facilities, including facilities for general administration, jails and public protection, health and human services, public works, and agriculture. A list of the specific facilities to be constructed is included in the County's Multi-Year Capital Plan.

Conclusion

Based on the above, the proposed project and potential future development of the off-site affordable housing parcel would not result in substantial adverse physical impacts

associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or performance objectives for maintenance of public facilities, including roads, or for other government services. Thus, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

15-6 Require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects. Based on the analysis below, and with implementation of mitigation for the off-site affordable housing parcel, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to requiring or resulting in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects, associated with development of the proposed project and the off-site affordable housing parcel.

Proposed Project

The following sections describe the water, wastewater treatment, electric power, natural gas, and telecommunications facilities improvements that would be necessary to serve the proposed project, including 22 on-site ADUs.

Water Supply Infrastructure

The Estia Dry Creek development would include construction of a 12-inch loop system. In addition, the proposed project would include four- to 12-inch internal water lines for domestic water service and fire/hydrant connections. Internal water lines would connect to an existing 16-inch line in Walerga Road.

According to the Preliminary Water Report prepared for the proposed project, CAL-AM standards require water pressure to be greater than 50 psi and lower than 80 psi without fire demand added. The minimum pressure is reduced to 20 psi when fire demand is included. In addition, CAL-AM requires that maximum velocity is five feet per second with maximum hour flow and without fire demand added, and 10 feet per second with maximum day flow and fire demand included. According to the hydraulic modeling conducted as part of the Preliminary Water Report prepared for the proposed project, the proposed project would operate within CAL-AM's required conditions. As such, the new 12-inch loop system and four- to 12-inch internal water lines would be consistent with CAL-AM's minimum sizing requirements for public water lines.

In addition, all water utility improvements would be required to comply with all applicable local and State codes. CAL-AM has not identified any sizing deficiencies in the water

supply infrastructure located upstream of the project site. Thus, the existing water supply infrastructure is sufficiently sized to accommodate the increased demand from the proposed project, and the project would not require the construction of new or expanded water conveyance infrastructure beyond the improvements noted above.

The proposed on-site water conveyance infrastructure would be designed to meet standard residential fire flow requirements. The water system throughout the site would include residential hook-ups and hydrant connections, and each unit connection would provide fire flows necessary for a residential fire sprinkler system in addition to the domestic water service. All necessary water conveyance infrastructure would be financed by the project applicant.

To ensure that maintenance and upgrades to water conveyance infrastructure are properly financed, CAL-AM charges customers for capacity based on the required meter size and additional components. The proposed project would be required to pay all relevant CAL-AM fees, which would help to ensure that CAL-AM would maintain sufficient capacity and infrastructure to serve the proposed project.[38] Given compliance with all applicable rules and regulations, including payment of necessary fees, CAL-AM would be capable of providing service to the project.

While the use of recycled water is encouraged, an adequate supply of recycled water is not currently available. If recycled water was currently available, retailer or service provider is not currently available, nor is there any economically practical way to develop a storage facility on the property needed to pressurize a recycled water distribution system.

Wastewater Conveyance Infrastructure

The proposed project would be served by the Dry Creek WWTP. Flows would be conveyed through existing eight-inch “Sewer B” gravity lines within Walerga Road to the Dry Creek WWTP. Eight-inch sanitary sewer lines would be included throughout the project site and would connect to an existing eight-inch sewer line to the south of the project site. The proposed project would include the development of an eight-inch sewer line either extending under Placer Creek or within Walerga Road in order to route sewer flows to the south (see Figure 15-2). The alternative routing within Walerga Road would avoid surcharging the existing 8-inch sewer line within Phase 4 (Q Street), but would require additional excavation within Walerga Road. Alternatively, the surcharging could be avoided by upsizing those parts of the existing sewer system on- and off-site. All sewer improvements would be consistent with the South Placer Regional Wastewater and Recycled Water Systems Evaluation. Pumped sewer lots are not proposed as part of the multi-family Estia Dry Creek development, as the lots would have gravity sewer service.

The existing Dry Creek/West Placer CFD #1 lift station is located east of Walerga Road and south of Dry Creek within Dry Creek Community Park, approximately 0.53-mile to the south. Based on existing EDU counts to the CFD #1 lift station, with 3,924 ultimate EDUs and 1,228 existing EDUs, the proposed project is expected to contribute 432 EDUs, or approximately 15 percent of the total new EDUs anticipated to connect to the CFD #1 lift station. According to the Wastewater Report prepared for the proposed project, the emergency storage required for the proposed project would be 45,930 gallons.

[38] Placer County Water Agency and California American Water Company. *Agreement Between Placer County Water Agency and California American Water for Water Supply*. July 6, 2015.

Figure 15-2
Sewer Routing

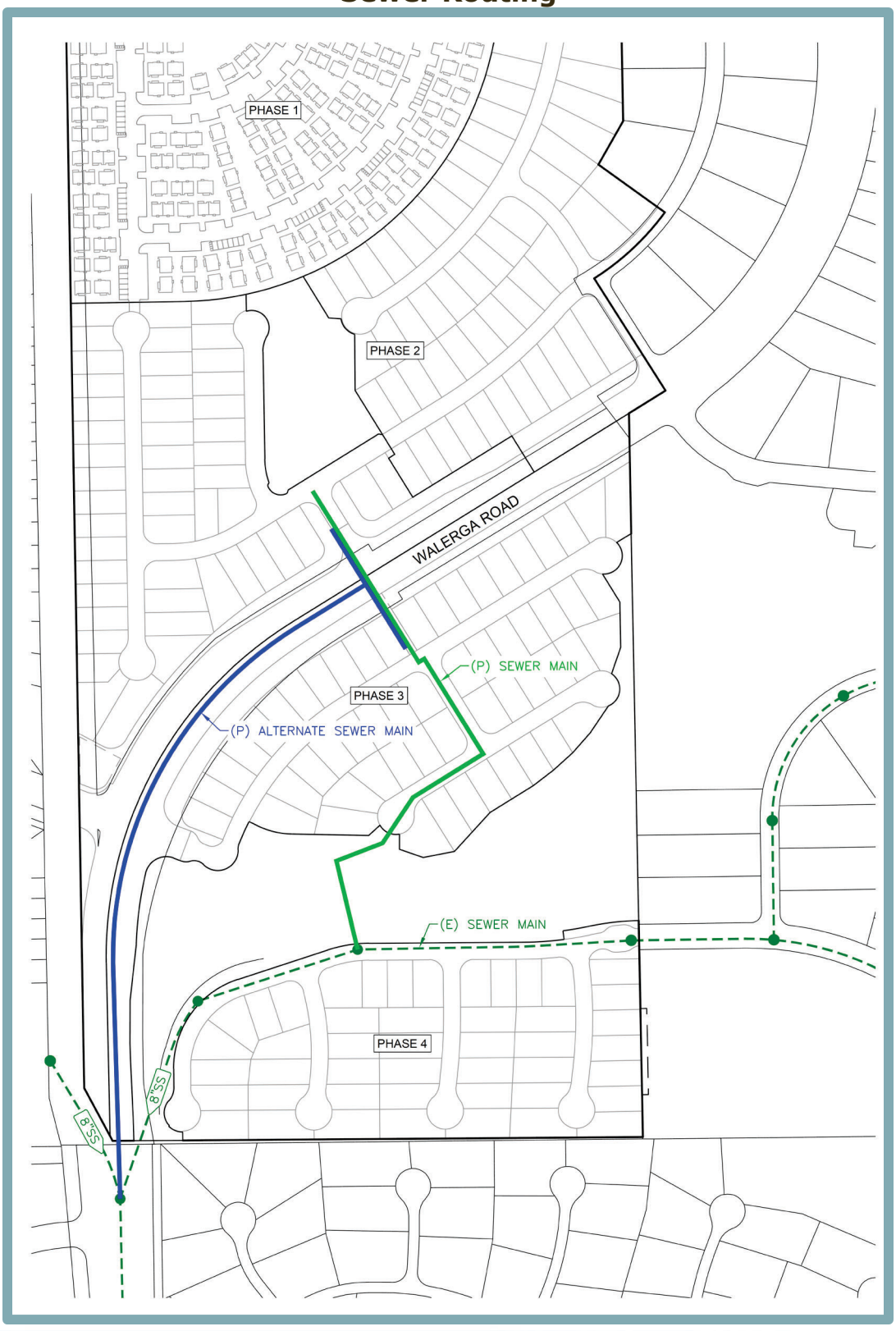


*Figure not OCR compatible

The Mariposa and Mason Trails developments within the RVSP have already built two storage tanks with 35,250 gallons and 47,000 gallons of emergency storage at the CFD #1 lift station. The combined emergency storage required for the aforementioned projects and the proposed project would total 126,120 gallons, which is not accommodated by the 82,250 gallons of storage provided by the two existing underground tanks. Other developments have used the storage capacity of the existing underground tanks prior to development of the proposed project. Therefore, the proposed project is required to increase the emergency storage capacity at the existing lift station.

As shown in Figure 15-3, the Emergency Wastewater Storage Plan would include a third 47,000-gallon tank to be developed as part of the proposed project. The potential environmental effects associated with the lift station improvements are analyzed throughout this EIR.

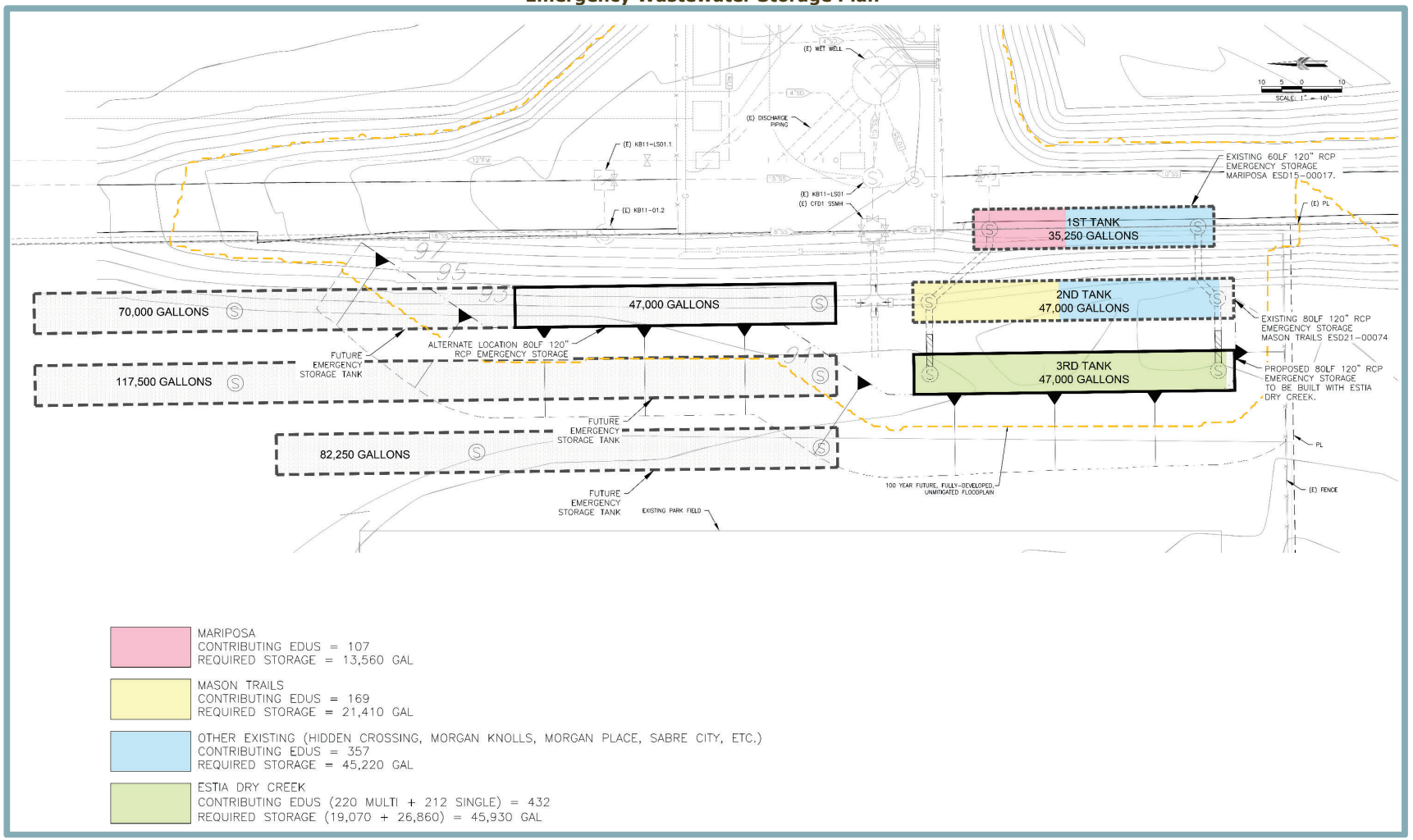
The project site is not currently located within an area that receives sewer service from the County. In order for Placer County to obtain ownership of the proposed sewer system and provide maintenance of the proposed infrastructure, the project site areas must be annexed into CSA 28, Zone 173. Such an annexation would require approval by the Placer County Board of Supervisors. Upon approval of the annexation, the proposed project would be subject to the County's sewer connection fees. Pursuant to Section 13.12.350 of the Placer County Code, the current sewer connection fees for the project area are approximately $11,270 per EDU.

A portion of each connection fee would be distributed to the City of Roseville for ongoing and future upgrades to the Dry Creek WWTP. The remainder of each fee is used by the County for system upgrades and ongoing maintenance. In addition, future residents of the proposed project would be subject to payment of a monthly sewer fee to the County to fund ongoing provision of sewer services. The current monthly sewer fee as of July 2025 is $48.27 per EDU.

Electricity, Natural Gas, and Telecommunications Infrastructure

The project site is currently within the service area of SMUD for electric service, and PG&E for natural gas service. The proposed project would include new connections to existing electrical, natural gas, and telecommunications infrastructure located in the project vicinity, such as the existing electrical and telecommunication lines currently maintained along Baseline Road to the north of the project site and Vineyard Road to the southeast of the project site. A 30-inch PG&E gas transmission line is located along the north side of Baseline Road within an existing easement. The proposed project would not include improvements within the existing PG&E easement. In addition, Consolidated Communications and Comcast would provide fiber communication and internet services to the proposed project. Given the proximity of existing electricity and natural gas lines to the project site, substantial extension of new infrastructure would not be required. In accordance with County Code, overhead utility lines along the project frontages would be required to be undergrounded.

Figure 15-3
Emergency Wastewater Storage Plan



* Figure not OCR Compatible

Given that the majority of the project site is currently anticipated for development with residential uses according to the DCWPCP, such utilities have been designed to accommodate additional demand associated with buildout of the site. While the proposed project would result in development of the site at an increased density relative to what has been anticipated based on the site's land use and zoning designations, upsizing or upgrading of the existing dry utilities is not anticipated in order to serve the project.

Off-Site Affordable Housing Parcel

The following sections describe the water, wastewater treatment, electric power, natural gas, and telecommunications facilities improvements that would be necessary to serve the off-site affordable housing parcel.

Water Supply Infrastructure

As discussed throughout this EIR, site-specific development plans, designs, or proposals for the off-site affordable housing parcel are not available at this time. However, development of the off-site affordable housing parcel would similarly be required to connect to a public water system. Existing infrastructure in the vicinity of the off-site affordable housing parcel would be used to provide water service to the site. The approved Frisvold Property Project, which is located to the east of the off-site affordable housing parcel, would extend a 24-inch water main within PFE Road to the eastern boundary of the off-site affordable parcel. At such time the off-site affordable housing parcel gets developed, RVSP EIR Mitigation Measure 14-1a, which has been incorporated into this EIR as Mitigation Measure 15-6(a), would be required.

Development of the off-site affordable housing parcel would be subject to all relevant CAL-AM fees, which would help to ensure that CAL-AM would maintain sufficient capacity and infrastructure to serve the parcel. Payment of the connection fees required pursuant to RVSP EIR Mitigation Measure 14-1a would offset maintenance of the water main extensions included as part of the RVSP. In addition, because development of the off-site affordable housing parcel would install new water pipelines, the development would be subject to Mitigation Measure 14-4a of the RVSP, which has been incorporated into this EIR as Mitigation Measure 12-2(h). As such, future potential development of the off-site affordable housing parcel would not require major relocation or expansion of any water infrastructure, the construction of which could cause significant environmental effects.

Wastewater Conveyance Infrastructure

As discussed throughout this EIR, site-specific development plans, designs, or proposals for the off-site affordable housing parcel are not available at this time. However, development of the off-site affordable housing parcel would similarly be required to connect to a public wastewater conveyance system. As discussed in the RVSP EIR, the on-site collection system within the RVSP would include six-inch-diameter to 15-inch-diameter sewer mains. Trunk sewer mains would be located within larger arterial roadways, and smaller collector mains would be located within the collector and residential roadways and would direct all on- and off-site sewage to an on-site pump station. An existing pump station and force main east of Walerga Road and north of PFE Road have been designed to accept wastewater flows from the RVSP area for conveyance to the Dry Creek WWTP.

In the vicinity of the off-site affordable housing parcel, an eight-inch sewer main within PFE Road would be constructed pursuant to the RVSP, as part of the Silver Sage subdivision and PFE Road/Watt Avenue intersection off-site improvements, where the sewer line in PFE Road would be extended from the Glen Willow subdivision site immediately east of Silver Sage to Watt Avenue. The approved Frisvold Property Project, located immediately to the east of the off-site affordable housing parcel, would extend the PFE Road sewer main constructed as part of the Silver Sage subdivision along its frontage to Watt Avenue, if such improvements have not already been constructed as part of the future expansion of the PFE Road/Watt Avenue intersection. If none of the aforementioned projects construct the required RVSP sewer improvements, such improvements would be developed with the off-site affordable housing parcel.

All RVSP area flows would be directed to the Dry Creek WWTP by the RVSP pump station and a minimum 12-inch diameter force main located south of Dry Creek, crossing Walerga Road, as well as through the existing Dry Creek/West Placer CFD #1 force main. The RVSP EIR included Mitigation Measures 14-3a and 14-3b to ensure that sufficient pump station and force main capacity exists to serve full buildout of the RVSP in conjunction with the Placer Vineyards development. The aforementioned mitigation measures would not be applicable to the off-site affordable housing parcel on a project-specific level. Similar to the proposed project, the potential future development of the off-site affordable housing parcel would also be subject to the County's sewer connection fees. Lastly, because development of the off-site affordable housing parcel would install new wastewater pipelines, the development would be subject to Mitigation Measure 14-4a of the RVSP, which has been incorporated into this EIR as Mitigation Measure 12-2(h). As such, existing infrastructure in the vicinity of the off-site affordable housing parcel would be used to provide wastewater service to the off-site affordable housing development, and potential future development of the off-site affordable housing parcel would not require major relocation or expansion of any wastewater infrastructure, the construction of which could cause significant environmental effects.

Electricity, Natural Gas, and Telecommunications Infrastructure

The off-site affordable housing parcel is currently within the service area of SMUD for electric service, and PG&E for natural gas service. Development of the off-site affordable housing parcel would include new connections to existing electrical natural gas, and telecommunications infrastructure located in the project vicinity. The parcel could be served by existing supply infrastructure, connecting near the corner of Watt Avenue and PFE Road. In addition, Consolidated Communications and Comcast would provide fiber communication and internet services to the off-site affordable housing parcel. Given the proximity of existing electricity and natural gas lines to the project site, substantial extension of new infrastructure would not be required. In accordance with County Code, overhead utility lines along the parcel frontages would be required to be undergrounded.

Given that the off-site affordable housing parcel is currently anticipated for development with residential uses according to the RVSP, such utilities have been designed to accommodate additional demand associated with buildout of the site. While the future potential development of the off-site affordable housing parcel would result in development of the site at an increased density relative to what has been anticipated based on the site's land use and zoning designations, and what was assumed for the site as part of the RVSP

EIR, upsizing or upgrading of the existing dry utilities is not anticipated in order to serve the off-site affordable housing development.

Conclusion

Adequate water and wastewater conveyance infrastructure would be provided within the project site and within off-site areas. The proposed project and potential future development of the off-site affordable housing parcel would be subject to water connection fees through CAL-AM, as well as the County's sewer connection fee. Funds from the required fees would be used for maintenance and upkeep of the water and wastewater systems. With development of the proposed project, other expansions to the water or wastewater infrastructure in the project area would not be required.

Based on the above, the proposed project would not require or result in the relocation or construction of new or expanded water, storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects. Nevertheless, the off-site affordable housing parcel is located within the overall RVSP area for which the RVSP EIR included mitigation measures intended to be implemented by all future development to pay fees and reduce the potential for pipelines to leak within the RVSP area. Thus, the impact herein is determined to be ***significant*** as a means to incorporate the applicable RVSP mitigation measures into this EIR and ensure the applicable RVSP EIR mitigation measures are implemented for the off-site affordable housing parcel. At such time the off-site affordable housing parcel gets developed, implementation of Mitigation Measures 14-1a and 14-4a of the RVSP EIR would be required to ensure a significant impact does not occur. The referenced RVSP mitigation measures are incorporated into this EIR as Mitigation Measures 15-6(a) and 12-2(h).

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

Off-Site Affordable Housing Parcel

15-6(a) *Implement RVSP EIR Mitigation Measure 14-1a:*

Payment of the connection fees is intended to act to offset future maintenance of the planned water main extensions. Construction of the lines to the appropriate standards is intended to ensure the transmission mains are in a condition suitable for operation and maintenance by Cal-Am in the future, provide a reliable resource to the area, and provide a source of water for adjoining uses not included in the project.

15-6(b) *Implement the following Mitigation Measure set forth in this EIR:*

- *12-2(f) Implement RVSP EIR Mitigation Measure 14-4a:*

  To reduce the potential for any of the proposed water or recycled water supply or wastewater transmission pipelines to leak and affect service and environmental conditions of surrounding areas, Placer County standards specify material type; wall thicknesses;

connection methods, including coupling information; backfill material type and placement methods; and installation location relative to other utilities. Adhering to these standards will reduce the likelihood that the project pipelines would affect adjacent or sensitive areas. However, in areas where the groundwater table is close to the pipeline, additional measures may be needed to protect groundwater quality, including more robust pipe joint details, use of fusible C-900/905 pipe sections, pipe wrap, or cathodic protection.

15-7 Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years. Based on the analysis below, and with implementation of mitigation for the off-site affordable housing parcel, the impact is *less than significant*.

The following discussion includes an analysis of water supplies available to serve the proposed project and the off-site affordable housing parcel.

Proposed Project

The proposed project would include development of a total of 220 multi-family units, 212 single-family units, and a potential 22 ADUs on the project site, as well as the development of a 2.2-acre neighborhood park, a community center, and various associated improvements. Thus, the project would result in increased demand for water supplies relative to existing conditions. As discussed in Chapter 13, Land Use and Planning/Population and Housing, of this EIR, the proposed project would house an estimated maximum of approximately 1,312 residents. CAL-AM has established a per capita per day water usage target of 173 gallons per capita per day (gcpd).[39] Based on the per capita per day water usage estimate for CAL-AM customers of 173 gcpd and the project's estimated population of 1,312 residents, the project would be anticipated to result in a total daily water demand of approximately 226,976 gpd, which equates to approximately 82.84 million gallons per year or 254.2 AFY.[40]

Demand estimates for future development within the West Placer Service Area within the CAL-AM 2020 UWMP are based on growth estimates for the region and service area, including buildout estimates from the DCWPCP. The site is currently zoned for residential uses and, thus, increased water demand associated with buildout of the site has been accounted for in regional planning efforts. Table 15-9 presents the water demand that could be generated from buildout of the project site under the site's current zoning designations compared to water demand associated with buildout of the proposed project.

As shown in the table, the proposed project would increase total water demand by approximately 185,110 gpd, or 207.3 AFY, compared to buildout of the site per the existing zoning designation.

[39] California American Water Company, Sacramento Main District. *2020 Urban Water Management Plan*. June 2021.
[40] *Ibid.*

Table 15-9
Project Site Buildout Water Demand

Scenario	Size (units)[1]	Population[2]	Demand Rate (gcpd)	Total Water Demand (gpd)
Buildout Per Existing Zoning Designations	81	242	173	41,866
Buildout of Proposed Project	454	1,312	173	226,976
Net Change	**+373**	**+1,088**	**--**	**+185,110**

1 Unit number estimated based on buildout of the 80.1-acre Rural-Low Density (1-2.3 acre minimum) designated land within the project site (80.1 acres / 1 acre = 81 units).

2 Based on average household size of 2.94 persons/household for single- and multi-family units and 1.91 persons/household for ADUs (see Chapter 13, Land Use and Planning/Population and Housing, of this EIR).

Source: CAL-AM 2020 UWMP, 2021.

As set forth in Section 6.1.2 of PCWA's 2020 UWMP, PCWA has the following sources of surface water:

- Water purchased from the PG&E from the Yuba and Bear Rivers under the 1982 Zone 3 Contract Purchase Agreement (25,000 AFY) and the February 27, 2015, Water Supply Agreement (100,400 AFY);
- Water stored in its Middle Fork Project (MFP) under water rights permits 13856 and 13858 (120,000 AFY);
- Central Valley Project (CVP) water under CVP Repayment Contract 14-06-200-5082A-IR1-P from the American River (35,000 AFY); and
- Surface water from various small creeks under pre-1914 water rights (S000959 [40 cubic feet per second maximum], S000967 [amount unstated], S010397 [amount unstated], and S010398 [amount unstated]).

In Section 6.2 of the PCWA UWMP, PCWA projects a total water supply of 295,800 AFY in 2040 (including 5,000 AFY of groundwater and 7,000 AFY of recycled water) and a total of 297,800 AFY at buildout (including 5,000 AFY of groundwater and 9,000 AFY of recycled water). The calculations assume 3,400 AFY from PCWA's Pre-1914 Appropriative Rights.

With regard to groundwater usage, Section 6.1.1.3 of the UWMP states that "PCWA has not used any groundwater in the past five years. PCWA's last use of groundwater was in August 2014. The proposed Regional University development plans to construct one new well and the proposed Placer Ranch development plans to construct two new wells. Therefore, PCWA is anticipating an increase of groundwater supply for single-dry year between 2025-2040 from 2,000 gpm to 5,000 gpm."

As discussed previously, in 2016, CAL-AM and PCWA entered into a wholesale water supply agreement, which includes an agreement that PCWA will supply CAL-AM with surface water through December 2034.[41] CAL-AM expects that the contract between CAL-AM and PCWA will be renegotiated if CAL-AM requires additional water. Therefore, as shown in Table 15-3 above, CAL-AM has estimated that the PCWA water supplies to the

41 Placer County Water Agency and California-American Water Company. *Agreement Between Placer County Water Agency and California American Water for Water Supply*. July 6, 2015.

West Placer Service Area will meet the estimated demand from the Service Area through the year 2040. In addition, PCWA planned for CAL-AM's West Placer demand in the PCWA 2020 UWMP. According to the PCWA 2020 UWMP, the general area of CAL-AM's West Placer service area is anticipated to grow, resulting in an expanded wholesale agreement with CAL-AM. Specifically, the PCWA's 2020 UWMP Notification Letter, dated November 20, 2020, included the specific amount of wholesale water PCWA plans on selling to CAL-AM, as shown in Table 15-4, above. The comparison of CAL-AM's demand projections and PCWA's wholesale projections for the West Placer Service Area are shown in Table 15-10.

Table 15-10
Comparison of PCWA and CAL-AM Water Projections for the West Placer Service Area (AFY)

	2025	2030	2035	2040
PCWA Wholesale Projection	2,866	4,780	6,748	8,717
CAL-AM Demand Projection	2,262	2,357	2,913	3,361
Surplus	604	2,423	3,835	5,356

Sources:
- ***PCWA 2020 UWMP Notification Letter, 2020.***
- ***CAL-AM 2020 UWMP, 2021.***

As shown in the table, PCWA has conservatively estimated that CAL-AM's water demands for the West Placer Service Area would be greater than the demand projections included in the CAL-AM 2020 UWMP. As such, the anticipated increase in water demand of approximately 207.3 AFY that would result from implementation of the proposed project could be accommodated by the 604 AFY surplus anticipated by PCWA for the West Placer Service Area. By the year 2040, the surplus is anticipated to increase to approximately 5,356 AFY.

In addition to the water consumption associated with occupation of the residential units within the proposed project, the proposed landscaped and park areas would require irrigation water. The Placer County Landscape Design Guidelines provide recommendations and requirements for new landscaping within the County,[42] which are compliant with the State's Water Conservation in Landscaping Act, and the County's WELO.[43] New developments with landscaped areas equal to or greater than 500 sf must comply with the County's water efficient landscaping requirements. The proposed project would be subject to the County's water efficient landscaping requirements.

Requirements for establishing water efficient landscaping include the use of compost and mulch, installation of climate adapted plants, restrictions on turf areas, and requirements for irrigation systems. Compliance with the County's WELO would be ensured during the design review process through submission of a landscape package to the County for review and approval. The landscape package would include water budget calculations, a soil management report, landscape design plan, irrigation design plan, and other documents related to the proposed landscaping, irrigation, and grading plans. Compliance

[42] Placer County Planning Services Division. *Placer County Landscape Design Guidelines*. Adopted May 7, 2013.
[43] Placer County. *Water Efficient Landscape Ordinance*. Available at: https://www.placer.ca.gov/3394/Water-Efficient-Landscape-Ordinance. Accessed March 2026.

with the County's WELO would ensure that irrigation water consumption is minimized and occurs in compliance with the County's standards.

With respect to the conceptual landscape plans provided at this time, the proposed project would include a landscaped corridor along the project frontage on the south side of Baseline Road. Trees and shrubs would be planted throughout the Estia Dry Creek development and along both sides of Walerga Road within the project site and along the boundary of the 2.2-acre neighborhood park. Within the Phase 4 development, native tree plantings would be provided along the Class I trail on the southern side of Placer Creek. Preliminary landscaping designs for roadway and park areas have been drafted in compliance with the County's WELO. The proposed park has been designed with integrated turf, hardscapes, and other landscaping. The use of hardscapes and other landscaping allows for the reduction of turf throughout the proposed park areas, which would limit the amount of irrigation water needed for turf within the project site.

In addition, during previous single- and multiple-dry years, CAL-AM has maintained the ability to supply 100 percent of average/normal water year supply to the West Placer Service Area through distributions from the PCWA. Under existing agreements, CAL-AM anticipates that PCWA will continue to have sufficient water supplies through projected buildout conditions, including the West Placer Service Area, during a series of multiple-dry-year conditions.[44]

Although CAL-AM anticipates meeting all water demand under single- and multiple-dry years, CAL-AM maintains a Water Shortage Contingency Plan. Should water supplies be insufficient to meet average demand, CAL-AM has the authority to implement voluntary conservation measures following notification of the CPUC of the need for such measures. Should further water conservation measures be needed, CAL-AM would request authorization from the CPUC to implement mandatory conservation measures. The request for authorization to the CPUC from CAL-AM would include the percent reduction needed by CAL-AM and would specify the measures needed to achieve such reductions.[45]

Off-Site Affordable Housing Parcel

As discussed above, the RVSP EIR evaluated buildout of the off-site affordable housing parcel with 60 HDR units, and concluded that sufficient water supplies are available to serve the entire RVSP area. According to the RVSP EIR, development of 60 HDR units within the parcel would result in a total maximum day demand of 47,400 gpd, or approximately 53 AFY. While potential future development of the off-site affordable housing parcel could result in the development of 120 HDR units, for an anticipated demand of approximately 106 AFY, the anticipated increase in water demand associated with the additional 60 units that would result from implementation of the off-site affordable housing development could be accommodated by the 604 AFY surplus anticipated by PCWA for the West Placer Service Area. Furthermore, the increased demand of 53 AFY that would result from the additional 60 units from what was analyzed in the RVSP EIR in combination with the 257.61 AFY that would result from implementation of the proposed project could be accommodated by the 604 AFY surplus. Nonetheless, at such time the

[44] California American Water Company, Sacramento Main District. *2020 Urban Water Management Plan*. June 2021.
[45] *Ibid.*

off-site affordable housing parcel gets developed, RVSP EIR Mitigation Measure 14-1b, which has been incorporated into this EIR as Mitigation Measure 15-7, would be required.

Pursuant to Mitigation Measure 14-1b, prior to the recordation of any final subdivision map, the project applicant shall obtain a written certification from the water service provider that either existing services are available for the off-site affordable housing parcel or that needed improvements will be in place prior to occupancy. In addition, while site-specific development plans, designs, or proposals for the off-site affordable housing parcel are not available at this time, similar to the proposed project, landscaping associated with the future potential development of the off-site affordable housing parcel would be subject to the Placer County Landscape Design Guidelines, which are compliant with the State's Water Conservation in Landscaping Act, and the County's WELO.

Conclusion

Based on the above, sufficient water supplies would be available to available to serve the proposed project, the off-site affordable housing parcel, and other reasonably foreseeable future development during normal, dry, and multiple dry years. Nevertheless, the off-site affordable housing parcel is located within the overall RVSP area for which the RVSP EIR included mitigation measures intended to be implemented by all future development and ensure availability of water supplies. Thus, the impact herein is determined to be ***significant*** as a means to incorporate the applicable RVSP mitigation measures into this EIR and ensure the applicable RVSP EIR mitigation measures are implemented for the off-site affordable housing parcel. Therefore, at such time the off-site affordable housing parcel gets developed, implementation of Mitigation Measure 14-1b of the RVSP EIR would be required to ensure a significant impact does not occur. The referenced RVSP mitigation measure is incorporated into this EIR as Mitigation Measure 15-7 below.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

Off-Site Affordable Housing Parcel

15-7 *Implement RVSP EIR Mitigation Measure 14-1b:*

Prior to approval of any small lot tentative subdivision map, the County shall comply with Government Code Section 66473.7 or make a factual showing or impose conditions similar to those required by Section 66473.7, as appropriate to the size of the subdivision. Prior to the recordation of any final subdivision map or prior to County approval or any similar approval or entitlement required for nonresidential uses, the Applicant shall obtain a written certification from the water service provider that either existing services are available or that needed improvements will be in place prior to occupancy.

15-8 Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments. Based on the analysis below, and with implementation of mitigation for the off-site affordable housing parcel, the impact is *less than significant*.

The following discussion includes an analysis of wastewater treatment required to serve the proposed project and the off-site affordable housing parcel.

Proposed Project

Wastewater from the existing sewer lift station would ultimately be routed to, and treated at, the Dry Creek WWTP, which is operated by the City of Roseville. The Dry Creek WWTP discharges tertiary treated effluent to Dry Creek under an existing NPDES permit. The NPDES permit includes Waste Discharge Requirements, which include stringent effluent limitations for ammonia, aluminum, cadmium, carbon tetrachloride, cyanide, dibromochloromethane, dichlorobromomethane, iron, manganese, mercury, total chlorine residual, and zinc. Dry Creek WWTP is currently in compliance with all existing permitting, and, thus, effluent meets the Regional Water Quality Control Board (RWQCB) requirements within the NPDES permit. By permitting the Dry Creek WWTP for a maximum ADWF of 18 mgd and a PWWF of 45 mgd, the RWQCB has determined that the Dry Creek WWTP can treat the foregoing volume of wastewater without exceeding the NPDES discharge requirements.

According to the Wastewater Report prepared for the proposed project, the proposed project is anticipated to result in a total of 432 EDUs, and the design average flow for pipes is 380 gallons per day per residential single-family EDU and 260 gallons per day per residential multi-family EDU. Therefore, according to King Engineering, the wastewater generation estimates anticipated for the proposed project would be approximately 0.14 mgd ADWF and 0.50 mgd PWWF.[46] Wastewater generated by the proposed project could be adequately accommodated by the Dry Creek WWTP's currently available permitted ADWF of 18 mgd and PWWF of 45 mgd. In addition, wastewater generated by the 22 ADUs would not be anticipated to exceed the WWTP's available capacity. Capacity for the additional wastewater is not reserved within the WWTP; rather, capacity is available on a first-come, first-served basis. In addition, as discussed above, a portion of the sewer connection fee for each EDU would be distributed to the City of Roseville for ongoing and future upgrades to the Dry Creek WWTP, and future residents of the proposed project would be subject to payment of a monthly sewer fee to the County to fund the ongoing provision of sewer services. Thus, the proposed project would not result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

[46] Paul, Micah, Staff Engineer, King Engineering. Personal communication [email] with Nick Pappani, Vice President, Raney Planning and Management, Inc. October 13, 2025.

Off-Site Affordable Housing Parcel

According to the RVSP EIR, the 60 HDR units within the off-site affordable housing parcel would result in a total flow of 7,800 gpd, or 0.0078 mgd. The doubling in units associated with development of the off-site affordable housing parcel would result in an ADWF of 0.0156 mgd and PWWF of 0.061 mgd. Wastewater generated by future development of off-site affordable housing parcel, in combination with the proposed project's 0.5 mgd PWWF for a total of 0.561 mgd PWWF, could be adequately accommodated by the Dry Creek WWTP's currently available permitted ADWF of 18 mgd and PWWF of 45 mgd. However, based on the County's "first-come, first-served," basis for wastewater service, Placer County shall secure written certification from the service provider that existing services are available or needed improvements will be made prior to occupancy, prior to approval of future tentative maps. As such, at such time the off-site affordable housing parcel gets developed, RVSP EIR Mitigation Measure 14-5a, which has been incorporated into this EIR as Mitigation Measure 15-8, would be required. Mitigation Measure 14-5a would ensure that potential future development of the off-site affordable housing parcel would not result in a determination by the wastewater treatment provider which serves or may serve the parcel that it does not have adequate capacity to serve the projected demand in addition to the provider's existing commitments.

Conclusion

Based on the above, the proposed project and potential future development of the off-site affordable housing parcel, would not result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate wastewater treatment capacity to serve the project's projected demand in addition to the provider's existing commitments. Nevertheless, at such time the off-site affordable housing parcel gets developed, implementation of Mitigation Measure 14-5a of the RVSP EIR would be required to ensure a ***significant*** impact does not occur. The referenced RVSP mitigation measure is incorporated into this EIR as Mitigation Measure 15-8 below.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

Off-Site Affordable Housing Parcel

15-8 *Implement RVSP EIR Mitigation Measure 14-5a:*

Commitments from the wastewater treatment provider to receive anticipated flows from the specific plan area at the Dry Creek WWTP shall be secured by Placer County prior to County approval of improvement plans for wastewater collection and transmission infrastructure.

15-9 Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals, or conflict with federal, State, and local management and reduction statutes and regulations related to solid waste. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of solid waste capacity required to serve the proposed project and the off-site affordable housing parcel and compliance with federal, State, and local management and reduction statutes and regulations related to solid waste.

Proposed Project

Most solid waste collected in unincorporated Placer County is delivered to the WPWMA MRF where waste is processed, recyclables are recovered, and residuals are disposed. The proposed project would generate solid waste associated with construction activities as well as from future residents of the proposed project. Construction debris would be disposed of in accordance with applicable federal, State, and local regulations and standards. Solid waste collection services would be provided by Recology Auburn Placer.

As described above, as of December 2021 the currently permitted 291-acre WRSL has a remaining capacity of 22,690,011 cubic yards, the current average daily throughput is 862.14 tons (January 1 through November 9, 2021), and the permitted lifespan extends to 2058.[47] The MRF has a permitted processing limit of 1,750 tons per day and 1,014 vehicles per day. While the permitted processing limit remains the same, the MRF expanded in 2007, increasing its processing capacity of municipal solid waste and construction and demolition debris to 2,200 tons per day.[48] The average daily tonnage received at the MRF between January 1, and November 9, 2021 was 884.86 tons, serving 661.7 vehicles, which is notably less than the permitted amounts. Considering the remaining permitted daily capacity at the MRF averages 865 tons, the MRF has a remaining annual capacity of at least 315,725 tons.

According to the U.S. EPA's report, *Estimating 2003 Building-Related Construction and Demolition Materials Amounts*, residential construction activities generate an average of 4.39 lbs/sf of waste.[49] The proposed project would include construction of 220 single-story multi-family units, 212 single-family residential units, and 22 ADUs; however, the total building square footage of the future units is currently unknown. Therefore, for analysis purposes, each single-family unit was conservatively estimated to include 2,500 sf of building space, each multi-family unit was estimated to include 1,000 sf of building space, and each potential ADU was estimated to include 750 sf of building space. As such, the proposed project could result in a total buildout square footage of 766,500 sf, construction of which would produce approximately 3,364,935 lbs (1,682 tons) of construction waste (4.39 lbs/sf X 766,500 sf).

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47 Placer County Department of Public Works, Environmental Engineering Division (Solid Waste). *EIR Guidance Document*. August 2022.

48 *Ibid.*

49 U.S. Environmental Protection Agency. *Estimating 2003 Building-Related Construction and Demolition Materials Amounts.* 2009.

The construction waste estimate presented above represents a conservative analysis of the maximum potential waste production from construction of the proposed project. The CALGreen Code requires at least 65 percent diversion of construction waste for projects permitted after January 1, 2017. As such, a minimum of approximately 1,093 tons of waste would be diverted away from landfill disposal during construction. Considering the applicable CALGreen Code requirements, buildout of the proposed project would be anticipated to produce up to 589 tons of waste. Construction waste generation represents a short-term increase in waste generation. The WRSL is permitted to accept 693,500 tons per year. Therefore, construction waste associated with the proposed project would represent approximately 0.08 percent of the WRSL's total annual permitted capacity.

During operation of the project, the future residents would produce solid waste that would be collected by Recology and transferred to the WRSL. Operational solid waste generation from the proposed 212 single-family residences has been estimated based on an average waste generation rate for single-family residential development of 10.2 pounds per unit per day.[50] In addition, operational solid waste generation from the proposed 220 multi-family units and 22 ADUs has been estimated based on an average waste generation rate for multi-family residential development of 8.6 pounds per unit per day.[51] As such, the proposed project could produce approximately 4,244 pounds of solid waste per day. A total of 4,244 pounds of solid waste per day would equate to approximately 774.53 tons per year, or 0.12 percent of the WRSL's annual permitted capacity. A contribution of a maximum of 0.12 percent of the WRSL's total annual permitted capacity would not be considered a substantial amount of waste, and the WRSL has adequate capacity to accept such waste. Furthermore, the project site is currently designated for residential development by the PCGP and the DCWPCP. While the proposed project would result in more intensive uses than what is currently anticipated to be developed on site, development of the site and the associated solid waste generation has been generally anticipated by the County as part of the DCWPCP. Therefore, the project would not be considered to contribute significant amounts of waste to the WRSL, and the WRSL has sufficient capacity to handle the increase in waste anticipated to be generated by implementation of the proposed project.

Off-Site Affordable Housing Parcel

According to the RVSP EIR, construction activities would result in a less-than-significant impact related to exceeding landfill capacity. With respect to operational waste, according to the RVSP EIR, development of 60 HDR units on the off-site affordable housing parcel would result in an estimated 994 pounds of solid waste per day. Thus, a doubling in units associated with development of the off-site affordable housing parcel would result in approximately 1,888 pounds of solid waste per day. A total of 1,888 pounds of solid waste per day would equate to approximately 345 tons per year, or 0.05 percent of the WRSL's annual permitted capacity. The proposed project in combination with the off-site affordable housing parcel would result in a maximum of approximately 1,120 tons of solid waste per year, or approximately 0.17 percent of the WRSL's permitted capacity. A contribution of a maximum of 0.17 percent of the WRSL's total annual permitted capacity would not be considered a substantial amount of waste, and the WRSL has adequate capacity to accept such waste. Therefore, the off-site affordable housing parcel would not be considered to

[50] California Department of Resources Recycling and Recovery. *Estimated Solid Waste Generation Rates*. Available at: https://www2.calrecycle.ca.gov/WasteCharacterization/General/Rates. Accessed July 2025.
[51] *Ibid.*

contribute significant amounts of waste to the WRSL, and the WRSL has sufficient capacity to handle the increase in waste anticipated to be generated by potential future development of the off-site affordable housing parcel.

Conclusion

Based on the above, construction and operation of the proposed project and the off-site affordable housing parcel would not generate solid waste in excess of State or local standards or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. In addition, the project would not conflict with applicable federal, State, and local management and reduction statutes and regulations related to solid waste. Thus, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. For further detail related to the cumulative setting of the proposed project, refer to Chapter 20, Statutorily Required Sections, of this EIR.

15-10 Cumulative impacts to public services. Based on the analysis below, the cumulative impact is *less than significant*.

Potential cumulative impacts related to fire and law enforcement protection services, schools, public services and government facilities, and parks and recreation are discussed below.

Fire Protection Services

Neither the Placer County General Plan EIR nor the DCWPCP EIR identified cumulative impacts related to fire protection. Rather, impacts were determined to be reduced to less-than-significant levels through implementation of the goals and policies included in the General Plan and DCWPCP. Such policies require provision of adequate funding and an adequate water supply as a component of new development approval.

As discussed above, the response times to the proposed project and the off-site affordable housing parcel would be consistent with General Plan Policy 4.4.2, and CAL FIRE would be capable of serving the project site and the off-site affordable housing parcel with existing equipment and facilities. In addition, the project and off-site affordable housing parcel development would be required to pay a Fire Facilities Fee to PCFD. The development impact fee is calculated based on a "fair share portion" of anticipated capital needs through 2060. Furthermore, development within the project site and the off-site affordable housing parcel, as well as other future development throughout Placer County and the DCWPCP area, would be required to comply with all applicable regulations imposed by PCFD and the CFC, as adopted by Section 15.04.510 of the Placer County

Code. Based on the above, the proposed project and the off-site affordable housing parcel would result in a less-than-significant cumulative impact related to fire protection services.

Law Enforcement Services

Neither the Placer County General Plan EIR nor the DCWPCP EIR identified cumulative impacts related to law enforcement services. Rather, impacts were determined to be reduced to less-than-significant levels through implementation of the goals and policies included in the General Plan and DCWPCP. Policy 4.H.1 of the PCGP sets a response time goal of eight minutes for suburban areas such as the DCWPCP area.

Though response times are dependent upon the location of patrol officers at the time of the emergency call, on average, response times to the project site and the off-site affordable housing parcel would be anticipated to be within the PCGP's eight-minute response time standard for suburban areas. As a result, the proposed project and the off-site affordable housing parcel development would not result in a need for new, or improvements to existing, sheriff protection facilities, construction of which could cause significant environmental impacts. Similar to the proposed project and the off-site affordable housing parcel development, other future development within the region would be required to address impacts related to sheriff protection services on a project-by-project basis. Based on the above, the proposed project and the off-site affordable housing parcel, in combination with future development occurring under buildout of Placer County, would have a less-than-significant impact to sheriff protection services.

Schools

Cumulative buildout within the County and surrounding area could result in overcrowding at schools in the area. However, each individual development would be required to pay SB 50 school impact fees, similar to the proposed project and the off-site affordable housing parcel development, which would contribute to the facilitation of school expansions to serve the needs of the area. Furthermore, according to SB 50, payment of the necessary school impact fees for the project would be considered full and satisfactory CEQA mitigation. Proposition 1A/SB 50 prohibits local agencies from using the inadequacy of school facilities as a basis for denying or conditioning approvals of any "[…] legislative or adjudicative act […] involving […] the planning, use, or development of real property" (Government Code 65996[b]).

The 2023 DCJESD School Facilities Master Plan anticipated cumulative development in the area, including, but not limited to, the Creekview Ranch, The Ranch, the Mill Creek (listed as Providence Park) projects, as well as the portion of the proposed project within the DCJESD.[52] As discussed therein, based on anticipated students from planned development in Placer County, an additional 10 classrooms will need to be added to the Creekview Ranch School by the 2026/2027 school year. However, according to the School Facilities Master Plan, payment of development fees, in combination with other funding sources, would be sufficient to ensure sufficient school facilities are available to serve all existing and reasonably foreseeable development.

[52] Dry Creek Joint Elementary School District. *School Facilities Master Plan* [pg. 18]. March 2025.

In addition, The Ranch Project includes a one-acre school expansion site (Lot A2) and a pick-up/drop-off access area (Lot A1) and road to provide a second access point to the school's east side. The DCJESD plans to use Lot A2 to expand school facilities of the Creekview Ranch School, which could include, but not be limited to, portable classrooms, outdoor recreation space, etc. The DCJESD plans to add new permanent classrooms on Lot A2 to increase school capacity. The designation of Lots A1 and A2 for use by the Creekview Ranch School would further mitigate cumulative impacts associated with increases in student population within the DCJESD.

As noted above, to the extent that CJUSD, DCJESD, or RJUHSD may need additional facilities to accommodate students from the project site, the districts will control what is needed to build and when new construction would be necessary. Whether the districts would need to obtain additional new classrooms to educate an increased student population from new development within the district's boundaries would be dependent on ongoing facility needs estimates and student population projections, which are subject to change over time based on factors such as changing birth rates and other social and economic factors.

Therefore, the proposed project and the off-site affordable housing parcel development, in combination with future development occurring under buildout of Placer County, would result in a less-than-significant cumulative impact related to the need for new, or improvements to existing, school facilities.

Parks and Recreation

The proposed project would include the provision of an on-site public 2.1-acre neighborhood park and would not result in an increase in the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of such facilities would occur or be accelerated. Pursuant to Article 15.34 of the Placer County Code, future development projects within unincorporated Placer County, including the proposed project and the off-site affordable housing parcel, would be required to pay a parks and recreational facility fee. The purpose of the park and recreation facilities impact fee is to provide funding for expansion of parkland and recreation facilities required to serve new development in unincorporated Placer County. Future development within the DCWPCP would similarly be required to comply with the County's park land dedication/in-lieu fee standards. Therefore, the proposed project and the off-site affordable housing parcel development, in combination with future buildout in the County, would result in a less-than-significant cumulative impact related to parks and recreation.

Public Facilities and Government Services

As discussed above, while project-generated traffic could result in an incremental increase in maintenance of County roads in the project area, such an increase would be negligible. Similarly, given the size of the proposed development, any additional demand on libraries or other public facilities and services generated by the proposed project would be relatively minor, and is not likely to result in the need for alteration of existing facilities or the construction of new facilities. The proposed project and the off-site affordable housing parcel development, as well as other development in the unincorporated County, would be required by the County to pay Development Impact Fees, which would help to fund and sustain public facilities and services, including public roads, within Placer

County. The proposed project and the off-site affordable housing parcel development, in combination with future development occurring under buildout of the DCWPCP, would result in a less-than-significant cumulative impact.

Conclusion

Based on the above, the proposed project and the off-site affordable housing parcel, in combination with future development occurring under buildout of the DCWPCP, would result in a ***less-than-significant*** cumulative impact related to public services.

Mitigation Measure(s)

None required.

15-11 Increase in demand for utilities and service systems associated with the proposed project, in combination with future buildout in the DCWPCP area. Based on the analysis below, the project's incremental contribution to this significant cumulative impact is *less than cumulatively considerable*.

The following discussion provides an analysis of the proposed project's and the off-site affordable housing parcel's contribution to cumulative impacts related to the increased demand for utilities and service systems within the project area.

Water Supply

CAL-AM anticipates that cumulative development within CAL-AM's West Placer Service Area, which encompasses the DCWPCP area, including the project site, would result in increased water demand from the West Placer Service Area, as shown in Table 15-10 above. As shown in the table, demand in the West Placer Service Area is anticipated to change from 2,262 AFY to 2,357 AFY between 2025 and 2030, resulting in an increase of 95 AFY. By the year 2040, cumulative demand is anticipated to increase to 3,361 AFY. Table 15-10 demonstrates that the anticipated growth in demand could be accommodated by available supplies, with an annual surplus of at least 604 AFY in 2025. By the year 2040, the surplus is anticipated to increase to approximately 5,356 AFY. As discussed previously, because CAL-AM anticipates supply surpluses for the West Placer Service area of at least 604 AFY, the proposed project's anticipated demand increase of an estimated 257.61 AFY, in combination with the off-site affordable housing parcel demand of approximately 106 AFY, could be accommodated by CAL-AM supplies. The cumulative impact from past, present, and probable future projects would be less than significant, and the proposed project's incremental impact would be less than cumulatively considerable.

Wastewater Conveyance and Treatment

Wastewater from the project site, off-site affordable housing parcel, and other areas in the DCWPCP, City of Roseville, and Placer County are treated at the Dry Creek WWTP. Thus, the geographic setting for cumulative wastewater impacts is the Dry Creek WWTP service area.

With regard to the capacity of wastewater conveyance infrastructure, as discussed above, the Emergency Wastewater Storage Plan would include a third 47,000-gallon

tank to be developed as part of the proposed project. Similar to the proposed project, future development projects throughout the project region would be required to evaluate project-specific impacts on wastewater conveyance infrastructure, such as the CFD #1 lift station or upsizing existing sewer pipes to avoid potential surcharging at buildout, and provide upgrades to the system, or implement project-specific mitigation, as necessary, to ensure any potential impacts are reduced to a less-than-significant level, where possible. Additionally, the option to develop an eight-inch sewer main within Walerga Road to route sewer flows to the south would avoid surcharging the existing onsite 8-inch sewer line within Phase 4 (Q Street). Sewer pipelines would be sized accordingly to ensure that surcharging would not occur downstream of the proposed project under peak design flow conditions. To avoid surcharging existing sewer pipelines, the project may need to upgrade the existing system where necessary to accommodate sewer buildout capacity conditions. This would create impacts along some of Walerga Road between the project location and the CFD #1 lift station. Upgrades to the system would benefit the broader sewer shed, minimizing future physical impacts, and may participate in fair share fees of the sewer shed. In addition, Placer County shall secure written certification from the service provider that existing services are available or needed improvements will be made prior to occupancy, prior to approval of future tentative maps associated with the off-site affordable housing parcel. Therefore, wastewater flows associated with the proposed project, off-site affordable housing parcel, and other cumulative development would potentially create capacity issues within the downstream wastewater conveyance system, and upsizing of existing sewer lines may be required.

As noted under Impact 15-8 above, the Dry Creek WWTP currently has adequate capacity to serve the project's anticipated demand in addition to the WWTP's existing commitments. However, the WWTP's permitted ADWF capacity of 18 mgd would not be sufficient to accommodate the wastewater anticipated to be generated due to full buildout of the WWTP service area, which is estimated to reach approximately 21 mgd. Thus, improvements to the Dry Creek WWTP are likely to be needed prior to buildout of the Dry Creek WWTP's service area, and the combined impact of cumulative development within the service area would be significant.

Utility providers employ various programs and mechanisms to support provision of services to new development; for example, Placer County has adopted development fees consistent with State law to facilitate the provision of public services for projects consistent with the buildout of the General Plan, and various utility providers charge connection fees and recoup costs of new infrastructure, including wastewater treatment infrastructure, through standard billings for services. Accordingly, the proposed project and the off-site affordable housing parcel would be subject to payment of the County's sewer connection fees. The County's sewer connection fees are currently approximately $11,132 per EDU, a portion of which would be distributed to the City of Roseville for ongoing and future upgrades to the Dry Creek WWTP. Payment of sewer connection fees would allow for capacity expansion of the Dry Creek WWTP as necessary to serve cumulative buildout of the WWTP's service area, including the project site. According to CEQA Section 15130(a)(3), paying a "fair share fee" is permissible as effective mitigation for cumulative impacts if the fees are part of a reasonable plan of actual mitigation that the relevant agency commits to implementing. Therefore, the proposed project's and the off-site affordable housing parcel's contribution to the significant cumulative impact related to wastewater treatment facilities would be less than cumulatively considerable.

Electricity, Natural Gas, and Telecommunications Facilities

Environmental effects associated with the construction of new or expanded electricity, natural gas, and telecommunications facilities would primarily be project-specific, rather than cumulative. As noted under Impact 15-6 above, while the project and the off-site affordable housing parcel would include new connections to existing electrical, natural gas, and telecommunications infrastructure located in the project vicinity, substantial extension of existing off-site infrastructure would not be required. Therefore, the proposed project and off-site affordable housing parcel would result in a less than cumulatively considerable impact related to construction of new or expanded electricity, natural gas, and telecommunications facilities.

Solid Waste

As noted previously, solid waste collection services for the proposed project would be provided by Recology Auburn Placer; disposal and recycling would be provided by the WRSL and WPWMA MRF. With the current space available and the recovery efforts by the MRF, the WRSL is anticipated to operate through 2058.[53] Development of the project site with low-density residential development, which would generate solid waste, was anticipated by the DCWPCP.

Although the proposed project includes redesignation and rezoning of the project site, the project would not be anticipated to result in significantly more intense waste generation than was previously anticipated for the project site in the DCWPCP and, thus, regional solid waste planning efforts. In addition, as discussed above, the WRSL has adequate capacity to accept waste from the off-site affordable housing parcel. As such, the incremental increase in demand for solid waste collection and disposal services that would result from implementation of the proposed project and off-site affordable housing parcel has generally been anticipated by regional solid waste providers, the DCWPCP, and the PCGP. Therefore, the cumulative impacts from past, present, and probable future projects to solid waste would be less than significant, and the proposed project's and off-site affordable housing parcel's incremental contribution would be considered less than cumulatively considerable.

Conclusion

Based on the above, adequate water supplies exist to accommodate cumulative growth of the West Placer Service Area, including growth within the DCWPCP and increased demand due to operation of the proposed project and off-site affordable housing parcel. In addition, the proposed project and off-site affordable housing parcel would not be anticipated to result in significantly more intense solid waste generation than was previously anticipated in the DCWPCP and RVSP. The proposed project and off-site affordable housing parcel would not result in any significant cumulative impacts related to electrical, natural gas, and telecommunications infrastructure.

Given that improvements to the Dry Creek WWTP are likely to be needed prior to buildout of the Dry Creek WWTP's service area, the combined impact of cumulative development related to wastewater treatment would be significant. However, the proposed project and off-site affordable housing parcel would be subject to applicable utility fees used to fund

[53] Placer County Department of Public Works, Environmental Engineering Division (Solid Waste). *EIR Guidance Document*. August 2022.

upgrades to the Dry Creek WWTP and would not result in substantially increased demand for wastewater treatment services relative to buildout of the project site and off-site affordable housing parcel according to the current DCWPCP land use designations. Thus, the project's and off-site affordable housing parcel's impact would be minimized to the maximum extent feasible such that the project's incremental contribution to the significant cumulative impact would be ***less than cumulatively considerable***.

Mitigation Measure(s)

None required.

16. TRANSPORTATION

16. TRANSPORTATION

16.1 INTRODUCTION

As discussed in Chapter 3, Project Description, of this EIR, the proposed project would include a total of 432 residential units and associated improvements, off-site sewer lift station improvements, and two options to meet the County's affordable housing regulations. The affordable housing options include the provision of a minimum of 22 Accessory Dwelling Units (ADUs) on lots proposed for development with single-family residential units, or an off-site proposal wherein Homes by Towne would rezone and transfer the fee title to the County for an approximately four-acre parcel off-site within the Riolo Vineyards Specific Plan (RVSP), which could develop a maximum of 120 affordable income-restricted units.

The Transportation chapter of the EIR discusses the existing transportation and circulation facilities within the project vicinity, as well as applicable policies and guidelines used to evaluate operation of such facilities. Where development of the proposed project, including the off-site sewer lift station improvements and affordable housing component, would conflict with applicable policies or guidelines, mitigation measures are identified. The information contained within this chapter is primarily based on a Vehicle Miles Traveled (VMT) Memorandum[1] (VMT Memorandum) (see Appendix K of this EIR) and a Local Transportation Analysis (LTA)[2] (see Appendix L) prepared for the proposed project by Kimley-Horn. Additional information was sourced from the Placer County General Plan (PCGP),[3] the PCGP EIR,[4] the Dry Creek-West Placer Community Plan (DCWPCP),[5] the RVSP,[6] and the RVSP EIR.[7] The Transportation and Circulation Element of the DCWPCP was updated in August 2011.

As discussed further below, the current California Environmental Quality Act (CEQA) Guidelines require lead agencies such as Placer County to use VMT, rather than Level of Service (LOS), as the primary metric for assessing transportation impacts under CEQA (CEQA Guidelines Section 15064.3). However, consistent with the County of Placer Transportation Study Guidelines (November 2020), both a VMT analysis and LOS analysis were prepared for the proposed project. Pursuant to CEQA Guidelines Section 15064.3, impact significance in this chapter is based upon VMT, whereas the results of the LOS analysis presented in the LTA will be used by Placer County to address consistency with PCGP and the DCWPCP Transportation Element goals and policies related to transportation, including adopted LOS policies.

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1 Kimley-Horn. *Estia Dry Creek and Placer Creek Residential, Vehicle Miles Traveled (VMT) Analysis Memorandum*. October 3, 2025.
2 Kimley-Horn. *Local Transportation Analysis, Estia Dry Creek and Placer Creek Residential, Placer County, California.* June 25, 2026.
3 Placer County. *Countywide General Plan Policy Document*. August 1994 (updated May 2013).
4 Placer County. *Countywide General Plan EIR*. July 1994.
5 Placer County. *Dry Creek-West Placer Community Plan.* Amended May 12, 2009.
6 Placer County. *Riolo Vineyard Specific Plan*. October 20, 2008.
7 Placer County. *Riolo Vineyard Specific Plan Environmental Impact Report.* January 2008.

16.2 EXISTING ENVIRONMENTAL SETTING

The section below describes the physical and operational characteristics of the existing transportation system within the study area, including the surrounding roadway network and transit, bicycle, and pedestrian facilities.

Existing Roadways

The existing major roadways within the vicinity of the project site and off-site affordable housing parcel are shown in Figure 16-1 and summarized below.

Baseline Road

Baseline Road is an east-west arterial roadway that provides access to the project site. Located north of the project site, Baseline Road has two lanes in each direction. The posted speed limit on Baseline Road is 45 miles per hour (mph) and the design speed is 65 mph. Pedestrian or bicycle facilities are not provided along the portion of the roadway immediately north of the project site, although such facilities do occur along the roadway further to the east of the site. Baseline Road provides vehicle access to minor arterials, major collectors, and residential and commercial areas east of Santucci Boulevard.

Walerga Road

Walerga Road is a north-south four-lane minor arterial that connects Baseline Road to Sacramento County, as well as providing vehicle access to the project site and local roadways. North of Baseline Road, Walerga Road transitions to Fiddyment Road. Sidewalks and bike lanes are located near intersections along Walerga Road where the roadway runs adjacent to existing single-family residences. Where the roadway bisects the project site, which does not currently include existing residences, such facilities do not currently exist. The posted speed limit along Walerga Road is 50 mph and the roadway has a design speed of 65 mph.

Crowder Lane

Crowder Lane is a north-south two-lane minor collector that connects Baseline Road to Vineyard Road to the east of the project site. Sidewalks associated with existing residential development exist along the western side of the roadway. The posted speed limit along Crowder Lane is 35 mph and the design speed is 50 mph.

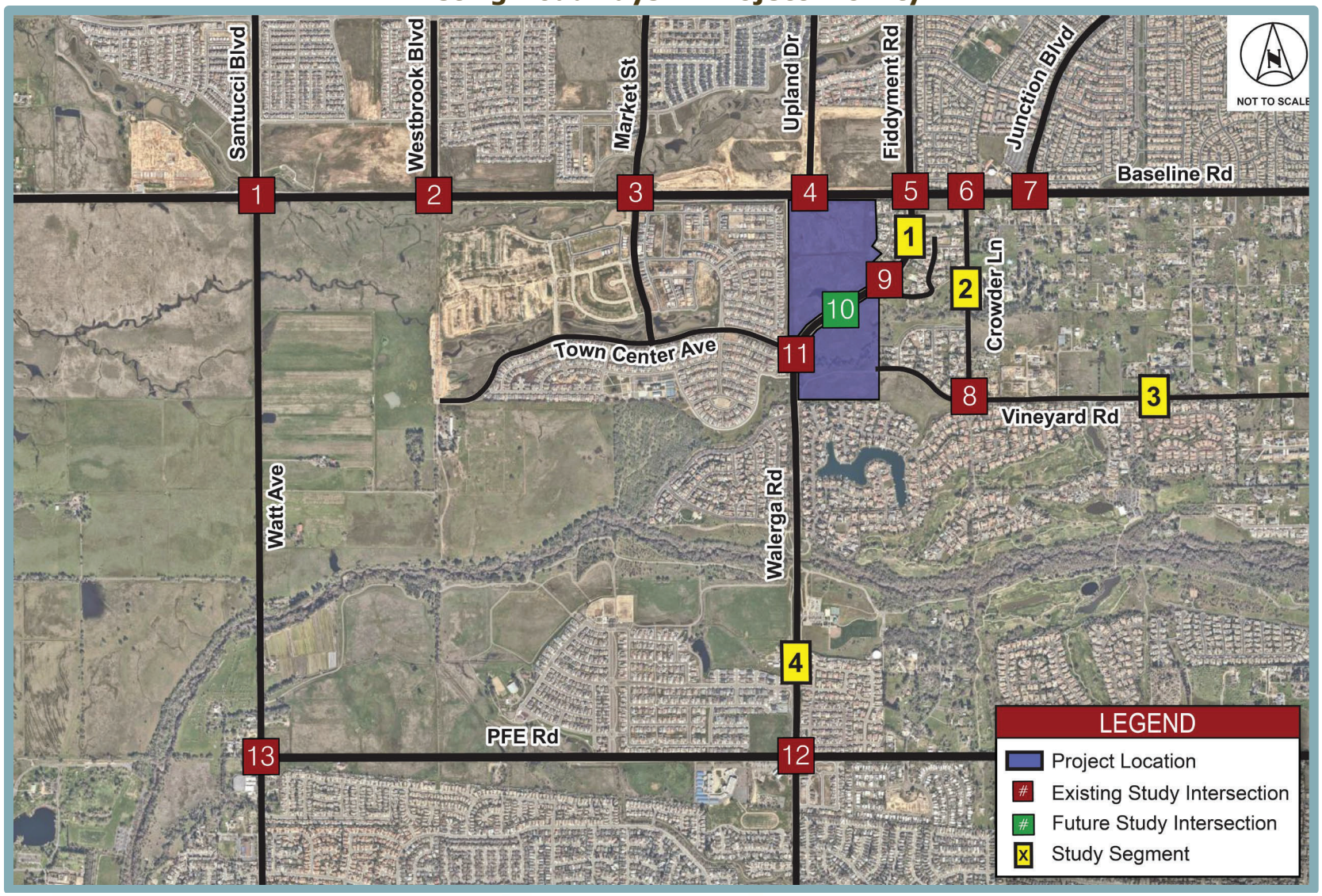
Vineyard Road

Vineyard Road is an east-west two-lane major collector that provides vehicle access to the project site, local roadways, and residential driveways. Sidewalks and a bike lane are provided along the north and south sides of Vineyard Road at the project site access, but end at Crowder Lane. Vineyard Road intersects with Cook Riolo Road to the west and Foothills Boulevard to the east. The posted speed limit on Vineyard Road is 45 mph and the design speed is 55 mph.

PFE Road

PFE Road is an east-west rural collector located south of the project site that bounds the off-site affordable housing parcel to the south. The roadway intersects with both Walerga Road and Watt Avenue. PFE Road offers vehicle access to arterial and local roadways, and residential driveways in the area. PFE Road has a posted speed limit of 45 mph and the design speed is 55 mph.

Figure 16-1
Existing Roadways in Project Vicinity



* Figure not OCR Compatible

Watt Avenue

Watt Avenue is a north-south major arterial that connects Baseline Road with Sacramento County, where the roadway transitions from two to four lanes. Watt Avenue bounds the off-site affordable housing parcel to the west. In the vicinity of the off-site affordable housing parcel, Watt Avenue is a two-lane roadway. Watt Avenue links western Placer County with Interstate 80 (I-80), and has a posted speed limit of 45 mph and a design speed of 65 mph.

Nearby Intersections

The following intersections are located in the general project vicinity, within the jurisdictions of Placer County or the City of Roseville:

1. Baseline Road at Santucci Boulevard/Watt Avenue (City of Roseville);
2. Baseline Road at Westbrook Boulevard (City of Roseville);
3. Baseline Road at Market Street (City of Roseville);
4. Baseline Road at Project Access/Upland Drive (City of Roseville);
5. Baseline Road at Fiddyment Road/Walerga Road (City of Roseville);
6. Baseline Road at Crowder Lane (City of Roseville);
7. Baseline Road at Junction Boulevard (City of Roseville);
8. Vineyard Road at Crowder Lane (Placer County);
9. Walerga Road at Springhill Drive (Placer County);
10. Walerga Road at Project Access (Placer County);
11. Walerga Road at Town Center Drive (Placer County);
12. Walerga Road at PFE Road (Placer County); and
13. Watt Avenue at PFE Road (Placer County).

Operations of the aforementioned intersections are evaluated in the project-specific LOS analysis presented in the LTA and will otherwise be used by the County in the project review process to address consistency with PCGP and the DCWPCP Transportation Element goals and policies related to LOS.

Pedestrian, Bicycle and Transit Facilities

The sections below describe the existing pedestrian, bicycle and transit facilities located within the vicinity of the project site and the off-site affordable housing parcel.

Sidewalks and Pathways

Existing sidewalks do not occur within the project site or off-site affordable housing parcel. Wellbrook Place at the northeast corner of the project site includes a sidewalk that ends at the site's eastern boundary. As previously discussed, sidewalks are currently located along portions of Walerga Road, including at the southernmost corner of the northern portion of the site at the intersection of Walerga Road and Town Center Avenue. Portions of Baseline Road to the east and west of the project site frontage also include existing sidewalks; such facilities are not present along the project site's northern boundary.

The DCWPCP notes that the County's associated planning documents do not specify the location of future pedestrian facilities; however, subdivisions and development projects within the DCWPCP are required to provide such facilities along their frontages as part of the County's approval process.

Bicycle Facilities and Trails

The Placer County Regional Bikeway Plan provides information regarding the regional system of bikeways for transportation and recreation purposes. The regional bikeway plan was approved by the Placer County Transportation Planning Agency (PCTPA) Board in 2018 and subsequently adopted by the Placer County Board of Supervisors. The Placer County Regional Bikeway Plan includes the following system classifications:

- Class I Bikeway (Bike Path) provides a completely separated facility designed for the exclusive use of cycles and pedestrians.
- Class II Bikeway (Bike Lane) provides on-road striped lanes with signs and pavement markings and legends with restricted travel to motor vehicles and pedestrians. Through travel by motor vehicles or pedestrians is prohibited, but crossflows by pedestrians and motorists is permitted.
- Class III Bikeway (Bike Route) provides on-street routes designated by signs or permanent markings and shared with pedestrians and motorists.
- Class IV Bikeway (Separated Bikeway) is a bikeway for the exclusive use of bicycles similar to a Class II facility, but includes a separation between the bike facility and through vehicular traffic. Separation facilities may include flexible posts, inflexible physical barriers, striping or on-street parking. Class IV facilities also allow for two-way bicycle traffic.

The southern portion of the site includes a paved multi-purpose trail which extends from Vineyard Road to the east to Walerga Road to the west. Outside of the project site boundaries, the nearest existing bicycle facilities to the project site include Class II bike lanes on Baseline Road and Walerga Road. As described in the Placer County Regional Bikeway Plan and presented in Figure 16-2, a Class II bike lane is planned along Walerga Road where the roadway bisects the project site. The bike lane has been partially constructed as part of the existing single-family residential development. The Placer County Regional Bikeway Plan also anticipated construction of the existing paved multi-purpose trail that connects to Vineyard Road.

With respect to the off-site affordable housing parcel, Watt Avenue and PFE Road include future bike lanes in the vicinity of the parcel associated with the future widening.

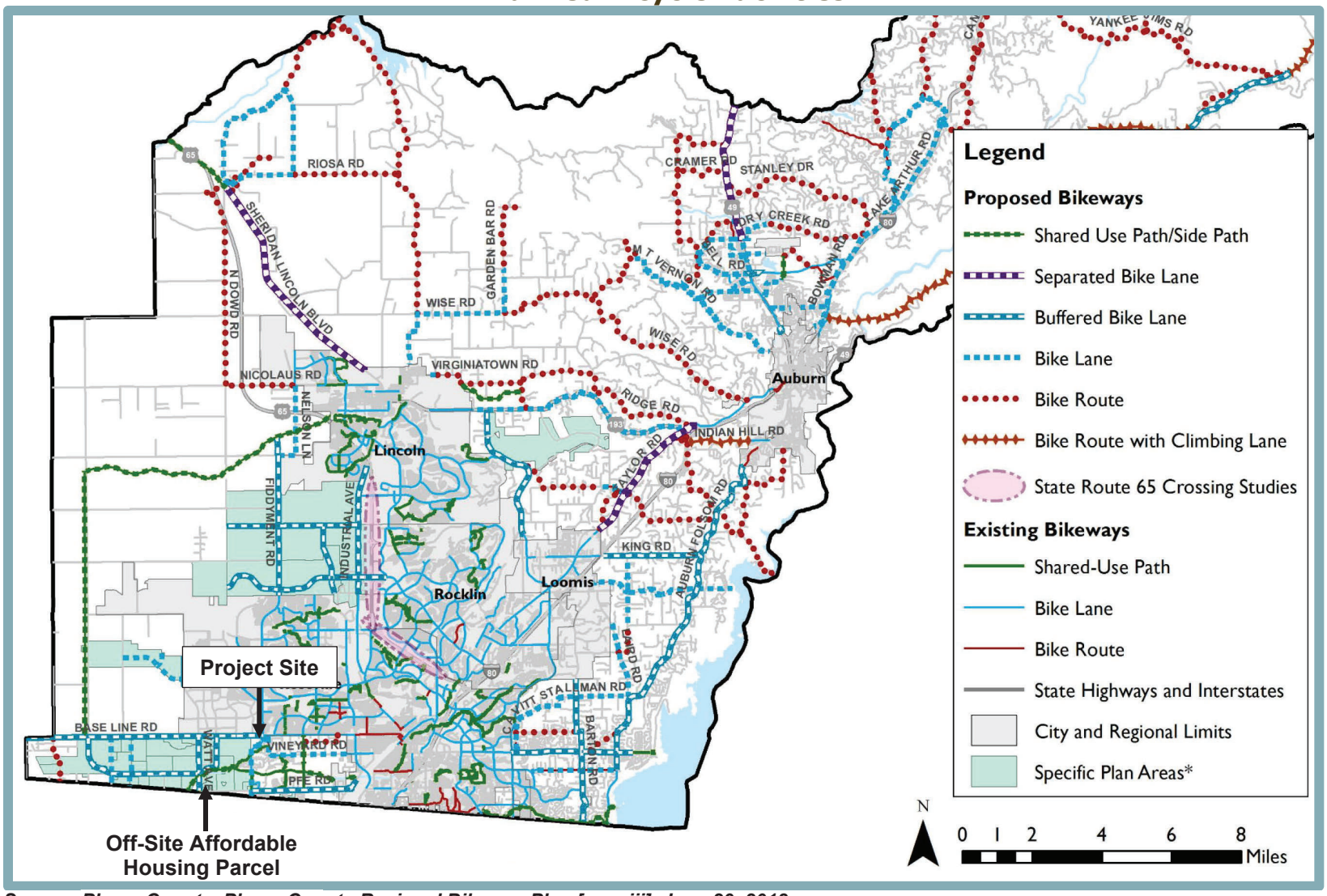
Transit System

Transit service in the vicinity of the project site is provided by Roseville Transit. Roseville Transit Route D includes a stop approximately 0.70-mile east of the project site along Junction Boulevard near Baseline Road. Route D traverses the western neighborhoods of Roseville and connects to the Roseville Civic Center junction, which provides connections to commuter buses. Future transit routes have been identified in the immediate vicinity of the project site as part of planned inter-regional services, as shown in Figure 16-3 from the Transit Master Plan for the Placer Vineyards Specific Plan (PVSP).[8]

With respect to the off-site affordable housing parcel, Sacramento Regional Transit (SacRT) includes a bus stop along Route 19 at Watt Avenue and Elverta Road, approximately 0.96-mile south of the parcel down Watt Avenue. SacRT Route 19 runs seven days a week, from approximately 6:00 AM through 8:45 PM on Monday through Friday, and 7:00 AM to 7:00 PM on weekends and holidays.[9]

[8] Placer County. *Placer Vineyards Transit Master Plan.* March 2014.
[9] Sacramento Regional Transit. *Route: 19-Rio Linda.* Available at: https://www.sacrt.com/routes-schedules/#19. Accessed October 2025.

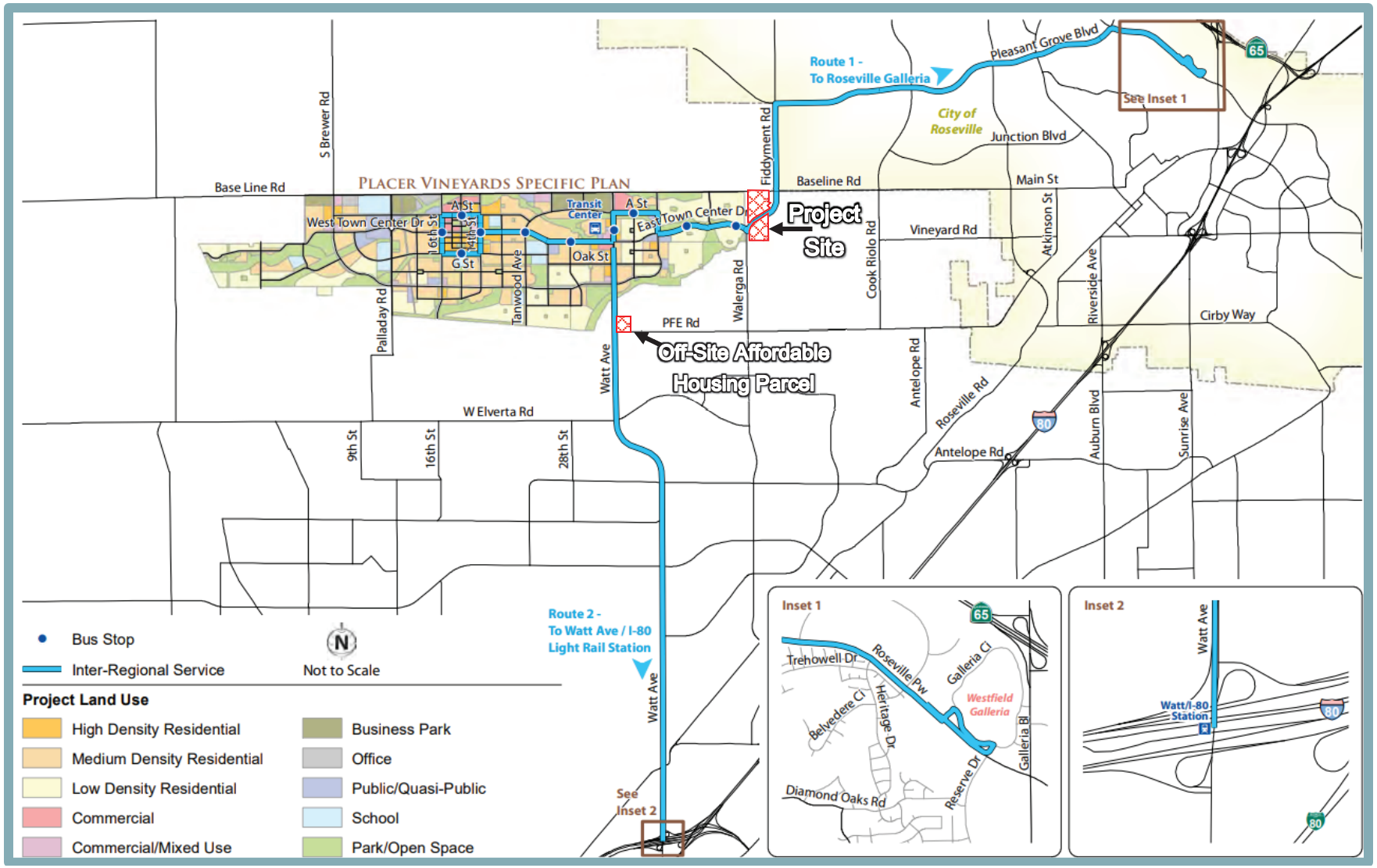
Figure 16-2
Planned Bicycle Facilities



Source: Placer County. Placer County Regional Bikeway Plan [pg. viii]. June 29, 2018.

* Figure not OCR Compatible

Figure 16-3
Planned Transit Facilities



Source: Placer County. Placer Vineyards Transit Master Plan [Figure 3]. March 2014.

* Figure not OCR Compatible

Planned transit routes associated with the PVSP would also include improvements in the vicinity of the off-site affordable housing parcel. For example, the PVSP Transit Master Plan includes a future bus stop at Watt Avenue and Dyer Lane, located approximately 0.40-mile north of the off-site affordable housing parcel. In addition, as shown in Figure 16-3, the PVSP Transit Master Plan also includes a new inter-regional route that would run along Watt Avenue, west of the off-site affordable housing parcel.

Furthermore, the PCTPA has designated the Western Placer Consolidated Transportation Service Agency as the Consolidated Transportation Service Agency to serve western Placer County. As defined by State law, a Consolidated Transportation Service Agency is an agency that coordinates and/or provides transportation services for a particular region, including services for the elderly and individuals with disabilities who cannot use conventional transit services.

Since June 2008, the Consolidated Transportation Service Agency has developed a public/private partnership with Transit Operator Working Group, Seniors First, and its key partners, to run three pilot programs that are intended to serve elderly persons and persons with disabilities who are unable to use conventional public transit services.

Vehicle Miles Traveled

Pursuant to CEQA Guidelines Section 15064.3, VMT is the primary metric used to identify transportation impacts under CEQA. VMT is a metric that accounts for the number of vehicle trips generated and the length or distance of those trips. VMT does not directly measure traffic operations; instead, VMT is a measure of transportation network use and efficiency, especially when expressed as a function of population (i.e., VMT per capita). For residential projects, such as the proposed project, Placer County considers household or home-based VMT per capita, which is the sum of trip lengths originating from home, divided by the number of residents. VMT per capita tends to increase as land use density decreases and travel becomes more reliant on the use of single-passenger vehicles.

In response to Senate Bill (SB) 743, which updated the CEQA Guidelines to include new transportation metrics, Placer County developed the Placer County VMT Estimation Tool for use in evaluating local development projects. The Placer County VMT Estimation Tool is based on data from the regional travel demand model, and is an interactive web-based map that estimates a project's VMT metrics based on the VMT performance of adjacent existing development. The Placer County VMT Estimation Tool divides Placer County into Traffic Analysis Zones (TAZs) with generally similar rates of VMT. To use the Placer County VMT Estimation Tool, the project must be generally consistent in size and land use type (i.e., density, mix of uses, transit accessibility, etc.) with the surrounding built environment.[10] Based on the Placer County VMT Estimation Tool, the existing VMT in unincorporated Placer County is 30.43 VMT per capita.

16.3 REGULATORY CONTEXT

Existing transportation policies, laws, and regulations that would apply to the proposed project are summarized below and provide a context for the impact discussion related to the project's consistency with the applicable regulatory conditions.

Federal plans, policies, regulations, or laws related to transportation and circulation are not directly applicable to the proposed project. Rather, the analysis presented herein focuses on State

[10] Placer County. *County of Placer Transportation Study Guidelines*. Revised May 2021.

and local regulations, which govern the regulatory environment related to transportation and circulation at the project level.

State Regulations

The following are the State environmental regulations relevant to transportation.

Senate Bill 743

SB 743, enacted in 2013, created Public Resources Code (PRC) Section 21099, which directed the Governor's Office of Land Use and Climate Innovation (LCI) (formerly known as the Office of Planning and Research [OPR]) and the Secretary of the Natural Resources Agency to establish criteria for determining the significance of transportation impacts of projects within transit priority areas, with the option of creating new statewide criteria. The significance criteria for transit priority areas were to promote the reduction of greenhouse gas (GHG) emissions, the development of multimodal transportation networks, and a diversity of land uses. In developing the new criteria, LCI and the Secretary were to recommend potential metrics that included, but were not limited to, VMT, VMT per capita, automobile trip generation rates, or automobile trips generated. Section 21099 further provided that, once the CEQA Guidelines had been updated as required by the statute, "automobile delay, as described solely by level of service [LOS] or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment pursuant to [CEQA], except in locations specifically identified in the guidelines, if any."

Consistent with these directives, the Natural Resources Agency promulgated CEQA Guidelines Section 15064.3, which became effective in late 2018. It provides that "[g]enerally, vehicle miles traveled is the most appropriate measure of transportation impacts," with VMT referring to "the amount and distance of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and non-motorized travel." Rather than limit its scope only to transit priority areas, the section changed the approach to assessing transportation impacts under CEQA all over the State. Thus, LOS ceased to be a valid criterion or factor for assessing the significance of transportation impacts under CEQA as of late 2018. (See *Citizens for Positive Growth & Preservation v. City of Sacramento* (2019) 43 Cal.App.5th 609, 625-626.) Agencies were required to start using VMT as the basis for environmental analysis in environmental documents issued for public review starting on July 1, 2020 (CEQA Guidelines Section 15064[c], referencing Section 15007).

Technical Advisory on Evaluating Transportation Impacts in CEQA

In December of 2018, LCI published the Technical Advisory on Evaluation of Transportation Impacts in CEQA (Technical Advisory), which is a nonbinding guidance document to provide advice and recommendations regarding assessment of VMT, thresholds of significance, and mitigation measures. The Technical Advisory is intended to be a resource for the public to use at their discretion, and the LCI does not enforce any part of the recommendations contained therein. The Technical Advisory includes recommendations regarding methodology, screening thresholds, and recommended thresholds per land use type.

Vehicle Miles Traveled-Focused Transportation Impact Study Guide

In May of 2020, the California Department of Transportation (Caltrans) adopted the Vehicle Miles Traveled-Focused Transportation Impact Study Guide (TISG) to provide direction to lead agencies regarding compliance with SB 743. The TISG replaces the Caltrans' 2002 Guide for the

Preparation of Traffic Impact Studies and is for use with local land use projects, not for transportation projects on the State Highway System. The objectives of the TISG are to provide:[11]

a) Guidance in determining when a lead agency for a land use project or plan should analyze possible impacts to the State Highway System, including its users.
b) An update to the Guide for the Preparation of Traffic Impact Studies (Caltrans, 2002) that is consistent with SB 743 and the CEQA Guidelines adopted on December 28, 2018.
c) Guidance for Caltrans land use review that supports State land use goals, State planning priorities, and GHG emission reduction goals.
d) Statewide consistency in identifying land use projects' possible transportation impacts to the State Highway System and to identify potential non-capacity increasing mitigation measures.
e) Recommendations for early coordination during the planning phase of a land use project to reduce the time, cost, and/or frequency of preparing a Transportation Impact Study or other indicated analysis.

Caltrans has jurisdiction over State highways. Therefore, Caltrans controls all construction, modification, and maintenance of State highways, and any improvements to such roadways require Caltrans approval.

Local Regulations

The following are the local environmental goals, policies, and regulations relevant to transportation.

Placer County General Plan

The following goals and policies from the PCGP are applicable to the proposed project.

Transportation and Circulation Element

Goal 3.A To provide for the long-range planning and development of the County's roadway system to ensure the safe and efficient movement of people and goods.

Policy 3.A.1 The County shall plan, design, and regulate roadways in accordance with the functional classification system described in Part I of this Policy Document and reflected in the Circulation Plan Diagram.

Policy 3.A.2 Streets and roads shall be dedicated, widened, and constructed according to the roadway design and access standards generally defined in Section I of this Policy Document and, more specifically in community plans, specific plans, and the County's Highway Deficiencies Report (SCR 93). Exceptions to these standards may be considered due to environmental, geographical, historical, or other similar limiting factors. An exception may be permitted only upon determination by the Public Works

[11] California Department of Transportation. *Vehicle Miles Traveled-Focused Transportation Impact Study Guide*. May 20, 2020.

Director that safe and adequate public access and circulation are preserved.

Policy 3.A.3 The County shall require that roadway rights-of-way be wide enough to accommodate the travel lanes needed to carry long-range forecasted traffic volumes (beyond 2010), as well as any planned bikeways and required drainage, utilities, landscaping, and suitable separations. Minimum right-of-way criteria for each class of roadway in the County are specified in Part I of this Policy Document.

Policy 3.A.11 The County shall require an analysis of the effects of traffic from all land development projects. Each such project shall construct or fund improvements necessary to mitigate the effects of traffic from the project consistent with Policy 3.A.7. Such improvements may include a fair share of improvements that provide benefits to others.

Policy 3.A.13 The County shall assess fees on new development sufficient to cover the fair share portion of that development's impacts on the local and regional transportation system. Exceptions may be made when new development generates significant public benefits (e.g., low income housing, needed health facilities) and when alternative sources of funding can be identified to offset foregone revenues.

Goal 3.C To maximize the efficient use of transportation facilities so as to: 1) reduce travel demand on the County's roadway system; 2) reduce the amount of investment required in new or expanded facilities; 3) reduce the quantity of emissions of pollutants from automobiles; and 4) increase the energy-efficiency of the transportation system.

Policy 3.C.1 The County shall promote the use of transportation systems management (TSM) programs that divert automobile commute trips to transit, walking, and bicycling.

Policy 3.C.4 During the development review process, the County shall require that proposed projects meet adopted Trip Reduction Ordinance (TRO) requirements.

Goal 3.D To provide a safe, comprehensive, and integrated system of facilities for non-motorized transportation.

Policy 3.D.1 The County shall promote the development of a comprehensive and safe system of recreational and commuter bicycle routes that provides connections between the County's major employment and housing areas and between its existing and planned bikeways.



Policy 3.D.5 The County shall continue to require developers to finance and install pedestrian walkways, equestrian trails, and multi-purpose paths in new development, as appropriate.

Policy 3.D.8 The CDRA Engineering and Surveying Division and the Department of Public Works shall view all transportation improvements as opportunities to improve safety, access, and mobility for all travelers and recognize cycling, pedestrian, and transit modes as integral elements of the transportation system.

Policy 3.D.11 The County shall work to achieve equality of convenience and choice among all modes of transportation – pedestrian, cycling, transit and motor vehicles, through a balanced and interconnected transportation system.

Dry Creek-West Placer Community Plan

The following goals and policies from the DCWPCP are applicable to the proposed project.

Community Development Element: Population and Housing

Goal 1 Provide sound and adequate housing to all residents at desirable locations including consideration of transportation facilities, school facilities and proximity to major employment centers.

Policy 1 Encourage residential development in areas which provide an adequate and accessible transportation network and which reduce commuting distances to areas of employment.

Community Development Element: Community Design Element

Policy 16 Require the dedication of sufficient road right-of-way as outlined in the Circulation Element and as needed to provide all roadside amenities required herein.

Policy 17 Require the construction of bicycle, pedestrian, and equestrian trails as provided in this Plan and use the policies of the Placer County Bikeways Master Plan in determining routes and trail type for areas not depicted on the Plan Trails map but still required to satisfy the policies of this Plan.

Transportation and Circulation Element

Goal 5 The road network within the Community Plan area shall be coordinated with road networks of adjacent jurisdictions.

Policy 6 The rights-of-way for roads shall be wide enough to accommodate roadways, trails, bikeways, drainage, public utilities, landscaping/vegetation, and suitable separation between facilities. Minimum right-of-way widths are shown in the following table for roadways within the Community Plan area (summarized as Table 16-1):

Table 16-1
Roadway Right-of-Way Standards

Roadway	Right-of-Way
Baseline Road (Sutter County line to Walerga Road/Fiddyment Road)	106 feet
Antelope Road	100 feet
PFE Road (Watt Avenue to Walerga Road)	64 feet
PFE Road (Antelope Road to City of Roseville)	100 feet
Watt Avenue	130 feet
Walerga Road	106 feet
All Other 2 Lane Roads	60 feet

The County may modify these right-of-way standards at their discretion, and may elect to exclude landscaped areas, sidewalks, utilities, and other roadway appurtenances from the defined public right-of-way.

Policy 7 Street lighting, traffic signals, and signage shall be kept to a minimum.

Policy 8 Off-street vehicular parking shall be provided for all new development.

Policy 13 Community Plan area roadways shall be designed and maintained to encourage safe, alternative forms of transportation that contribute to a rural atmosphere (such as walking, biking, horseback riding, etc.). Roadways which provide access to the linear "parkway" along Dry Creek and residential areas shall be designed to discourage through traffic. Alignment, width, signage, etc., shall all be appropriate for a minor residential street rather than a major arterial.

Policy 14 As development of the Community Plan area occurs, public dedication of rights-of-way shall be required for the roads, trails, and bikeways identified in this Community Plan. Construction of such roads, trails, and bikeways shall be required as conditions of approval placed on land development project approvals.

Policy 18 Land development projects shall be designed to minimize the number of access points onto major roadways.

Policy 19 Adequate safety precautions shall be provided at major intersections. Such precautions may include crossing guards, signalization, and other measures to improve the safety for pedestrians and reduce the risk of accidents.

Policy 20 A full environmental analysis under the California Environmental Quality Act at a project level shall be

undertaken, and public hearings shall be held prior to approval of the widening of any road scheduled for expansion under this Community Plan.

County of Placer Transportation Study Guidelines

The County of Placer Transportation Study Guidelines were published in November 2020. The Guidelines are intended to provide a clear and consistent technical approach to preparing Transportation Studies in Placer County. They establish analysis techniques for transportation studies based on the current state-of-the-practice in transportation planning and engineering. For example, the Guidelines set forth a number of thresholds for use in analyses within the County, including VMT thresholds per region. The significance thresholds for Western Placer County and recommended VMT metric used to measure VMT are described by land use type. Recommended thresholds for East Placer County (unincorporated areas from Donner Summit to the east, including the Tahoe Basin) were adopted by Placer County on June 22, 2021.

Placer County Transportation Planning Agency

The PCTPA is the State-designated Regional Transportation Planning Agency for Placer County and is responsible for making decisions about the County's transportation system. In addition to developing and adopting the regional transportation plans and strategies, the PCTPA also allocates the local transportation fund and has entered into a Memorandum of Understanding with Caltrans and the Sacramento Area Council of Governments (SACOG) to govern federal transportation planning and programming in Placer County. The PCTPA has also been involved in preparation of the following transportation planning documents.

Placer County Regional Bikeway Plan

In June 2018, Placer County adopted the Regional Bikeway Plan 2018 Update (Regional Bikeway Plan). The Regional Bikeway Plan identifies a vision and goals for bicycling, a network of bikeways to connect the County, and supportive programs and practices to encourage bicycling. The vision statement for the Regional Bikeway Plan is to promote safe, convenient, and enjoyable bicycling by establishing a comprehensive system of bikeways that link the communities of Placer County.[12] The Regional Bikeway Plan develops a regional system of bikeways that connects the six incorporated cities and numerous unincorporated community areas. As shared-use paths are expanded across the County, they will continue to provide scenic recreational routes as well as key longer-distance regional connections.

Placer Vineyards Transit Master Plan

In March 2014, the County adopted the final Transit Master Plan for the PVSP. The Master Plan satisfies transit-related requirements contained in the development agreement associated with the PVSP, and includes plans for the following: an internal transit system to be implemented as the PVSP is constructed; an ADA dial-a-ride service; commuter service to be provided to the City of Sacramento's downtown area; and regional service with connections to the Watt Avenue Light Rail Station in Sacramento County, Regional University, Galleria Mall, and other regional centers.

Placer County Short Range Transit Plan

In August 2018, the County adopted the Placer County Short Range Transit Plan (SRTP) for the Placer County Transit program, which serves western Placer County. The SRTP is intended to provide a detailed business plan to guide the Placer County Transit program in establishing

[12] Placer County. *Placer County Regional Bikeway Plan*. June 29, 2018.

service strategies, improvement priorities, and implementation sequencing over the 2018 through 2025 planning period. The SRTP includes a review of demographics and transit needs, a series of surveys and ridership counts conducted for all Placer County Transit services, a review of the effectiveness and efficiency of existing services, analysis of a wide range of transit options, and the results of public input processes.

The SRTP was prepared jointly with the development of parallel SRTPs for Roseville Transit, Auburn Transit, and the Western Placer Consolidated Transit Service Agency.[13]

Funding Sources/Fee Programs

In April 1996, the Placer County Board of Supervisors adopted the Countywide Traffic Impact Fee Program, which required new development within the County to reduce impacts to the roadway system by paying traffic impact fees. The collected fees, in addition to other funding sources, make it possible for the County to construct roads and other transportation facilities and improvements needed to accommodate new development. The fee was last updated in June 2025. The County's fee program and Capital Improvement Program (CIP) are divided into 11 districts, and the project site is located within the Dry Creek Benefit District. Current study area improvements included in the fee program located in the area are noted in Table 16-2.

Table 16-2
Dry Creek CIP Improvements

Street	Existing Number of Lanes	Location	Description
Cook Riolo Road	Two Lanes	PFE Road to Baseline Road	Roundabouts/intersection improvements
Dyer Lane	Two Lanes	Baseline Road to 16th Street/ Placer Vineyards Road	Widen to four lanes
Locust Road	Two Lanes	Sacramento County line to 18th Street	Widen to four lanes
North Antelope Road	Two Lanes	Sacramento County line to PFE Road	Widen to five lanes
		at PFE Road	Signal/intersection improvements
PFE Road	Two Lanes	North Antelope Road to City of Roseville	Widen to five lanes
		Walerga Road to Cook Riolo Road	Traffic-calming/control measures
		Watt Avenue to Walerga Road	Widen to four lanes
Placer Vineyards Road	Two Lanes	Sacramento County line to Baseline Road	Widen to four lanes
Vineyard Road	Two Lanes	at Brady Lane	Intersection improvements
Walerga Road	Four Lanes	Baseline Road to Sacramento County line	Widen to six lanes
		at Town Center Avenue	Signal/intersection improvements*

(continued on next page)

[13] Placer County Transportation Planning Agency. *Placer County Transit Short Range Transit Plan 2018-2025*. August 9, 2018.

Table 16-2
Dry Creek CIP Improvements

Street	Existing Number of Lanes	Location	Description
Watt Avenue	Two Lanes	Just south of Sacramento County line to Baseline Road	Widen to six lanes
		Bridge replacement at Dry Creek (Phase 1)	Construct four-lane bridge
		Bridge replacement at Dry Creek (Phase 2)	Widen from four lanes to six lanes
		at A Street	Signal/intersection improvements
		at Dyer Lane	Signal/intersection improvements
		at East Town Center Drive	Signal/intersection improvements
		at Oak Street	Signal/intersection improvements
		at PFE Road	Signal/intersection improvements

* Completed Project

Source: Placer County, Countywide Capital Improvement Programs, June 10, 2025.

Other fee programs deal with specific areas of the County or are linked to particular development. For example, Placer County and the City of Roseville have adopted a City-County Traffic Fee. The South Placer Regional Transportation Authority (SPRTA) State Route (SR) 65 Joint Powers Authority (JPA) fee addresses improvements to SR 65 and a Tier 2 Placer Parkway Fee. In addition, the City of Roseville administers a separate CIP Program that funds City transportation improvements. The current City of Roseville CIP addresses Year 2035 conditions.

16.4 IMPACTS AND MITIGATION MEASURES

This section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to transportation.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, the proposed project would be considered to result in a significant adverse impact on the environment related to transportation if the project would result in any of the following:

- Conflict with a program, plan, ordinance, or policy, except LOS, addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities;
- Substantially increase hazards to vehicle safety due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access or access to nearby uses; or
- Result in VMT which exceeds an applicable threshold of significance, except as provided in CEQA Guidelines Section 15064.3, subdivision (b).

Table 16-3 lists the criteria to be applied in assessing transportation-related CEQA impacts. The below criteria are copied from the County of Placer Transportation Study Guidelines. A project would result in significant CEQA impacts if any of the listed criteria are triggered.

Table 16-3
CEQA Impact Significance Criteria

Analysis	Component	Significance Criteria
VMT	Roadway	The project would result in a VMT-related impact per the applicable threshold of significance in Table 2 of Placer County Transportation Study Guidelines and VMT impact analysis results.
Multi-Modal Plan Consistency	Transit Service and Facilities	The project physically disrupts an existing transit service or facility or interferes with implementation of a planned transit service or facility.
		The project results in increased travel time for buses that adversely affects on-time performance.
		The project results in increased transit ridership demands that result in passenger loads that exceed vehicle loading standards.
		The project results in increased potential for safety conflicts involving transit vehicles and other modes of travel.
	Bicycle Facilities	The project physically disrupts an existing bicycle facility or interferes with implementation of a planned bicycle facility.
		The project results in a significant increase in bicyclists on a facility that does not have adequate bicycle facilities, such that conflicts between bicyclists and other travel modes are likely to increase.
	Pedestrian Facilities	The project fails to provide accessible and safe pedestrian connections between buildings and to adjacent streets and transit facilities.
		The project physically disrupts an existing pedestrian facility or interferes with implementation of a planned pedestrian facility.
		The project results in an increased presence of vehicles and/or pedestrians on a facility that does not have adequate pedestrian facilities, such that conflicts between pedestrians and other travel modes are likely to increase.
	General Plan Consistency	The project conflicts or creates inconsistencies with General Plan policies, except an LOS policy.
Hazard & Safety Impact	Roadway Design and Users	The project would create a condition that does not meet current design standards.
		The project would substantially increase hazards to vehicle safety due to geometric design features (e.g., sharp curves or dangerous intersections).
		The project introduces incompatible users (e.g., farm equipment) to a roadway or transportation facility not intended for those users.
	State Highway Facilities	The project results in queueing at off-ramps resulting in slow or stopped traffic past the off-ramp gore point.
		Project is determined to negatively affect safety of the State highway facility.

Source: Placer County Transportation Study Guidelines, 2020.

Vehicle Miles Traveled Standard of Significance

On December 1, 2020, with the passage of Resolution 2020-250, the Placer County Board of Supervisors adopted VMT thresholds of significance, screening criteria, and Transportation Study Guidelines for analyzing transportation impacts under CEQA. Table 16-4 summarizes the VMT thresholds of significance for Western Placer County.

Table 16-4
VMT Thresholds of Significance by Project Type for Western Placer County

Land Use/Project Type	Recommended Metric	Threshold of Significance
Residential	Household or Home-based VMT per Capita	15 Percent Below Unincorporated County Baseline
Commercial Retail	Total VMT	Zero Net Increase
Office Employment	Work VMT per Employee	15 Percent Below Unincorporated County Baseline
Industrial/Agricultural Employment	Work VMT per Employee	
Hotel/Campground	VMT per Room or per Site	

Source: Placer County Transportation Study Guidelines, 2020.

Based on the table, for the proposed project, a VMT impact would be considered less than significant if the household or home-based VMT per capita is determined to be 15 percent below the unincorporated County Baseline.

Method of Analysis

The analysis methodology provided in the VMT Memorandum and LTA (see Appendices K and L, respectively) prepared for the proposed project by Kimley-Horn are discussed below.

VMT Memorandum

Kimley-Horn estimated VMT per capita associated with the proposed project by using the Placer County VMT Estimation Tool, which is an interactive web-based tool that estimates a project's VMT based on the VMT performance of adjacent existing development. The Placer County VMT Estimation Tool is based on data from SACOG's SACSIM19 regional travel demand model.

The proposed project components were input into the Placer County VMT Estimation Tool, including the project site location, development type, and development intensity (220 duplex units and 212 single-family units within the project site, and 120 affordable housing units at the off-site affordable housing parcel) to estimate the average household VMT per resident based on residential uses already within the travel demand model.

The 22 accessory dwelling units (ADUs) proposed as part of development within the project site would meet the County's definition and screening criteria for affordable housing. Therefore, the 22 ADUs were presumed to have a less-than-significant VMT impact without the need for further quantitative analysis by the VMT Memorandum. The 120 affordable housing units at the off-site affordable housing parcel would also meet the County's screening criteria; nevertheless, VMT for the units was quantified as part of the VMT Memorandum.

Local Transportation Analysis

The LTA prepared for the proposed project included an evaluation of the trips that could be generated by the proposed project for both existing conditions plus the project and the cumulative conditions, as well as a vehicle queuing analysis.

Trip Generation

The projected number of trips generated by the proposed project was approximated using data included in the Trip Generation Manual, 11th Edition, published by the Institute of Transportation Engineers (ITE). ITE Land Use Code 210 (Single-Family Detached Housing) was used to approximate single-family home trips, and ITE Land Use Code 220 (Multi-Family Housing [Low-

Rise]) was used to approximate the home trips associated with the multi-family units, affordable housing units, and the potential ADUs. The trip generation estimate is conservative because the total includes estimated trips from both the off-site affordable housing parcel and the ADUs; in actuality, only one of the two affordable housing options studied in this EIR would be implemented.

Table 16-5 presents the project trip generation estimates. As shown in the table, the project is anticipated to generate a total of 4,519 weekday trips, including 312 trips during the AM peak hour and 402 during the PM peak hour. If included, the ADUs would result in the addition of 216 weekday trips, 30 AM peak hour trips, and 30 PM peak hour trips, for a total of 4,735 daily trips (including 342 AM peak hour trips and 432 PM peak hour trips).

Collision History

Collision data sourced from the Safe Transportation Research and Education Center at UC Berkeley was evaluated for seven of the study intersections (Intersections #1, #2, #5, #7, #11, #12, and #13 shown in Figure 16-1 above). The collision data was combined with the calculated intersection entering average daily traffic (ADT) to develop an existing intersection crash rate. The calculated crash rates for the studied intersections were then compared to Caltrans collision data for similar intersections. The collision summary covered the years 2021 through 2025 and included rear-end, broadside, sideswipe, head-on, overturning, hit-object, and other types of accidents.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts on the transportation system is based on implementation of the proposed project, as well as the two affordable housing options analyzed throughout this EIR, in comparison to the existing conditions and the standards of significance presented above. Each impact is followed by recommended mitigation to reduce the identified impacts, if needed. The analysis of traffic operations, specifically intersection and roadway LOS, is not required pursuant to CEQA Guidelines Section 15064.3(a), as congestion and intersection operations do not constitute a transportation impact under CEQA. Placer County staff will separately review LOS for the project's consistency with PCGP and DCWPCP LOS policies.

In most cases, potential environmental impacts associated with the proposed project and the 22 on-site ADUs would not differ. Thus, unless otherwise noted, the below analysis applies to both the proposed project and the on-site ADUs. In addition, the off-site sewer lift station improvements area is located within Dry Creek Regional Park and the improvements would be limited to providing an underground tank for additional emergency sewer storage capacity. As such, the off-site sewer lift station improvements would not result in any operational transportation impacts, and, as a result, the off-site sewer lift station improvements are not discussed further within the operational impact analyses presented below.

16-1 Conflict with a program, plan, ordinance, or policy, except LOS, addressing the circulation system during construction activities. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The potential for the proposed project and off-site sewer lift station improvements area, as well as the off-site affordable housing parcel, to conflict with a program, plan, ordinance, or policy, with the exception of LOS standards, addressing the circulation system during construction activities is addressed separately below.

Table 16-5
Proposed Project Trip Generation

Land Use (ITE Code)	Dwelling Units	Daily Trips	Weekday AM Peak Hour					Weekday PM Peak Hour				
			Total Trips	In		Out		Total Trips	In		Out	
				Percent	Trips	Percent	Trips		Percent	Trips	Percent	Trips
Phase 1 – Multi-Family Housing (Low-Rise) (220)	220	1,486	91	24	22	76	69	115	63	73	37	42
Phase 2 – Single-Family Detached Housing (210)	110	1,102	81	25	20	75	61	109	63	68	37	41
Phase 3 – Single-Family Detached Housing (210)	55	582	43	25	11	75	32	57	63	36	37	21
Phase 4 – Single-Family Detached Housing (210)	47	504	37	25	9	75	28	49	63	31	37	18
Affordable Housing – Multi-Family Housing (Low-Rise) (220)	120	845	60	24	14	76	46	72	63	45	37	27
Total Project Trips:		**4,519**	**312**	**--**	**76**	**--**	**236**	**402**	**--**	**253**	**--**	**149**
ADUs – Multi-Family Housing (Low-Rise) (220)	22	216	30	24	7	76	23	30	63	19	37	11
Total Project Trips with ADUs:		**4,735**	**342**	**--**	**83**	**--**	**259**	**432**	**--**	**272**	**--**	**160**

Source: Kimley-Horn, June 2026.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Construction activities associated with the proposed project would include use of construction equipment, including vehicles removing or delivering fill material, bulldozers, and other heavy machinery, as well as building materials delivery, and construction worker commutes. The transport of heavy construction equipment to the site, haul truck trips, and construction worker commutes could affect the local roadway network. Construction workers typically arrive before the morning peak hour and leave before the evening peak hours of the traditional commute time periods. Deliveries of building material (lumber, concrete, asphalt, etc.) would also normally occur outside of the traditional commute time periods. In addition, any truck traffic to the site would follow designated truck routes, and project construction would likely stage any large vehicles (i.e., earth- moving equipment, cranes, etc.) on the site prior to beginning site work and remove such vehicles at project completion. However, detailed information related to the construction schedule during site development, or a construction management plan, is not available. As a result, construction activities could include disruptions to the transportation network near the project site and off-site sewer lift station improvements area.

In addition to the construction of structures and internal roadways, the proposed project would also include on-site roadway improvements, including the following: a new driveway located along Baseline Road; an emergency vehicle access (EVA) route to the Estia Dry Creek development; a new roadway off of Walerga Road between Springhill Drive and Town Center Avenue; new street extensions from Wellbrook Place, Bridgestone Crescent Road to the east, and Springhill Drive; an extension of Vineyard Road, which currently terminates at the southern entry to the Sun Valley Oaks subdivision at White Mill Crescent Road, to the west; an EVA for Phase 3 connecting to Walerga Road across from the new Phase 2 access; and an EVA route for Phase 4 at the southwest corner of the site. The proposed project would also include off-site improvements, including the off-site sewer lift station improvements, as well as roadway improvements to Baseline Road at Crowder Lane, Baseline Road at St. Clare Church, and a median curb restriction on Walerga Road at the Project Access/Springhill Drive intersection. In addition, the proposed project would include the reconfiguration of Walerga Road and Baseline Road. The frontage improvements along Walerga Road would include the following: two, seven-foot-wide bike lanes; three, 12-foot-wide travel lanes in each direction; a Class I trail or sidewalk; and a 13- to 24-foot-wide center landscaped median. The project would widen Baseline Road along its frontage to accommodate one half of a six-lane cross section with seven-foot-wide bike lanes on both sides of the street, along with curb and gutter improvements. Lastly, as discussed in Chapter 15, Public Services and Utilities, the proposed project includes an option to develop an eight-inch sewer line within Walerga Road in order to route sewer flows to the south.

The proposed project would also likely require nighttime work for the construction of roadway and utility improvements to minimize daytime traffic circulation impacts on Walerga Road and Baseline Road, as the roads have a high volume of traffic during the daytime. Nighttime work would be short-term and is expected to last approximately one to two weeks at three different locations and would occur at varying times.

Nonetheless, the proposed improvements discussed above would directly influence the transportation network near the site during construction. Therefore, the proposed project

could result in daytime and nighttime roadway or lane closures that adversely affect residents in the project area.

Off-Site Affordable Housing Parcel

The potential future development of the off-site affordable housing parcel does not include any site-specific development plans, designs, or proposals at this time. Future construction activities associated with such residential development would include the use of construction equipment, including vehicles removing or delivering fill material, bulldozers, and other heavy machinery, as well as building materials delivery, and construction worker commutes. The transport of heavy construction equipment to the off-site affordable housing parcel, haul truck trips, and construction worker commutes could affect the local roadway networks in the vicinity. In addition, should buildout of the off-site affordable housing parcel occur, signalization of the Watt Avenue/PFE Road intersection would be required, which could affect the two roadways. Installation of a traffic signal at this intersection is also required for RVSP buildout; thus, the timing of the respective developments may dictate the party responsible for constructing this signal.

Similar to the proposed project, the RVSP EIR concluded that construction within the off-site affordable housing parcel would temporarily add trips to the local roadway network during periods of construction. Preparation and implementation of construction traffic management plans for on- and off-site construction activities to reduce impacts to a less-than-significant level during the various phases of RVSP construction was required by RVSP EIR Mitigation Measure 9-1a, which has been incorporated into this EIR as Mitigation Measure 16-1(b).

Conclusion

Based on the above, without proper planning of on-site construction activities, construction traffic could interfere with existing roadway operations during the construction phase, which could result in a risk to public safety. Therefore, project traffic related to construction activities could result in a ***significant*** impact.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level by ensuring that construction traffic would not interfere with existing roadway operations.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

16-1(a) *The Improvement Plans shall include a signing and striping plan and shall include all on- and off-site traffic control devices. At least two weeks prior to the commencement of construction, a construction signing and traffic control plan shall be provided to the Engineering and Surveying Division and Department of Public Works for review and approval. The construction signing and traffic control plan shall include (but not be limited to) items such as:*

- *Guidance on the number and size of trucks per day entering and leaving the project site;*
- *Identification of arrival/departure times that would minimize traffic impacts;*

- *Approved truck circulation patterns;*
- *Locations of staging areas;*
- *Locations of employee parking and methods to encourage carpooling and use of alternative transportation;*
- *Methods for partial/complete street closures (e.g., timing, signage, location and duration restrictions);*
- *Criteria for use of flaggers and other traffic controls;*
- *Preservation of safe and convenient passage for bicyclists and pedestrians through/around construction areas;*
- *Monitoring for roadbed damage and timing for completing repairs;*
- *Limitations on construction activity during peak/holiday weekends and special events;*
- *Preservation of emergency vehicle access;*
- *Coordination of construction activities with construction of other projects that occur concurrently in the Dry Creek-West Placer Community Plan (DCWPCP) to minimize potential additive construction traffic disruptions, avoid duplicative efforts (e.g., multiple occurrences if similar signage), and maximize effectiveness of traffic mitigation measures (e.g., joint employee alternative transportation programs);*
- *Removing traffic obstructions during emergency evacuation events; and*
- *Providing a point of contact for DCWPCP residents and guests to obtain construction information, have questions answered, and convey complaints.*

The construction signing and traffic control plan shall be developed such that the following minimum set of performance standards is achieved throughout project construction. Additional performance standards are anticipated to be developed once details of project construction are better known.

- *All construction employees shall park in designated lots owned by the project applicant or on private lots otherwise arranged for by the project applicant.*
- *Roadways shall be maintained clear of debris (e.g., rocks) that could otherwise impede travel and impact public safety.*

Off-Site Affordable Housing Parcel

16-1(b) *Implement RVSP EIR Mitigation Measure 9-1a:*

Prior to improvement plan approval, including roadway improvements and the offsite water and sewer line improvements, a Construction Traffic Management Plan shall be prepared to the satisfaction of the Placer County Public Works Department. The purpose of the plan is to provide for vehicular, pedestrian, equestrian, and bicycle safety, and to minimize adverse LOS, including neighborhood traffic impacts during project construction. This plan shall include the following components:

1. *A striping and signing plan including offsite traffic control devices, shall be prepared by the Applicant and shall be reviewed and approved by the County Traffic Engineer;*
2. *An analysis of traffic volumes on roadways where one-way traffic control would be required, if any, to determine whether the hours of such control should be limited;*
3. *Provision of flag persons as necessary to facilitate traffic flow through construction areas;*
4. *Arranging construction schedules to begin and end during off-peak hours, as necessary and feasible as approved by Placer County; and*
5. *A community relations program to be implemented prior to and during the construction period.*

The Applicant shall implement the Construction Traffic Management Plan.

16-2 Conflict with a program, plan, ordinance, or policy, except LOS, addressing the circulation system, including transit, roadway bicycle, and pedestrian facilities, during operations. Based on the analysis below, the impact is *less than significant*.

The following discussion is an analysis of potential impacts to existing or planned pedestrian facilities, bicycle facilities, or transit facilities and services within the vicinity of the project site associated with the proposed project and development of the off-site affordable housing parcel.

Proposed Project

The following discussion focuses on whether the proposed project would result in impacts to existing or planned pedestrian facilities, bicycle facilities, or transit facilities and services within the vicinity of the project site.

Pedestrian System

Existing sidewalks do not occur within the project site. Wellbrook Place at the northeast corner of the site includes a sidewalk that ends at the site's eastern boundary. As previously discussed, sidewalks are currently located along portions of Walerga Road, including at the southernmost corner of the northern portion of the site at the intersection of Walerga Road and Town Center Avenue. In addition, as previously discussed, sidewalks are located along portions of Baseline Road. Consistent with the design standards established within the DCWPCP, the proposed project would include an eight-foot separated sidewalk along the project frontages on Baseline Road and Walerga Road. The Placer Creek Residential neighborhoods would be served by an internal roadway system, which would include sidewalks on each side of the new internal residential roadways. The proposed project would also include an approximately 1,300-foot-long Class I meandering trail along the Baseline Road frontage, and an approximately 2,300-foot-long Class I meandering trail along the southern/eastern Walerga Road frontage. Additionally, the project would extend an existing trail north of Vineyard Road, just north of Phase 4.

In addition, the proposed project aims to implement minor enhancements within the abandoned Old Walerga Road corridor, which bisects the project site and existing residential development to the west of the project site within the broader Placer Vineyards area. The corridor is privately owned and encumbered by existing public utility easements; accordingly, any proposed enhancements would be subject to landowner consent, utility coordination, and applicable approvals, and would not be implemented absent such consent. Proposed enhancements would be limited to areas previously disturbed by the former roadway and may include linkages on the north side to the planned Class I trail along Baseline Road and on the south side to Town Center Drive, limited pavement surface treatments (such as slurry seal or comparable non-structural applications), signage, and striping to accommodate pedestrians and bicyclists. If implemented, the improvements to the Old Walerga Road corridor would enhance connectivity of local residents to nearby retail and commercial centers, provide additional safety for pedestrians and cyclists, support multimodal access, and contribute to the overall functionality and integration of the local trail network.

Overall, the proposed project would provide new pedestrian connections to existing pedestrian facilities in the site vicinity. The proposed on- and off-site pedestrian improvements would not physically disrupt an existing pedestrian facility, nor interfere with implementation of a planned pedestrian facility. As such, development of the proposed project would not adversely affect pedestrian facilities.

Bicycle Facilities

As previously discussed, the southern portion of the site includes a paved multi-purpose trail extending from Vineyard Road to Walerga Road. The nearest existing bicycle facilities to the project site include Class II bike lanes on Baseline Road and Walerga Road. As described in the Placer County Regional Bikeway Plan and presented in Figure 16-2, a Class II bike lane is proposed as part of the project along Walerga Road where the roadway bisects the project site. The bike lane has been partially constructed as part of the existing single-family residential development in the site vicinity. The Placer County Regional Bikeway Plan also anticipated construction of the existing shared use path that connects to Vineyard Road.

As part of improving bicycle access in the project vicinity, the proposed project would include the construction of a seven-foot Class II bike lane on the south side of Baseline Road and the east and west sides of Walerga Road along the project site frontage. The proposed frontage improvements for the reconfiguration of Walerga Road would also include the new travel lanes, either a Class I trail or sidewalk, and center landscaped median discussed above.

Overall, the proposed project would provide new bicycle connections to existing bicycle facilities, which would be consistent with what was anticipated in the Placer County Regional Bikeway Plan. The proposed on- and off-site improvements would not physically disrupt an existing bicycle facility, nor interfere with implementation of a planned bicycle facility. As such, development of the proposed project would not adversely affect bicycle facilities.

Transit System

According to the LTA, Roseville Transit service operates on fixed routes in Roseville with connections to Placer County Transit and SacRT. Roseville Transit services Route D with a stop approximately 0.70-mile east of the project site at Baseline Road and Woodcreek Oaks Boulevard. Route D traverses the western neighborhoods of the City of Roseville and connects to the Civic Center Junction, which provides connections to commuter buses. Roseville Transit also services Route R with a stop at Foothills Boulevard at Main Street/Baseline Road, approximately three miles east from the project site. The project site is located approximately 5.9 miles away from the Louis Orlando Transit Center at the Orlando Avenue/Louis Lane intersection, which houses regional transit Route 10: Auburn/Light Rail (bus) and Route 60: Placer Commuter Express (vanpool).

Development of the proposed project is not anticipated to conflict with the goals, policies, and objectives found in the PCTPA SRTP. Additionally, the proposed project would not include features that would conflict with existing or planned transit services, such as the planned inter-regional services included in the PVSP Transit Master Plan (see Figure 16-3). Therefore, development and operation of the proposed project would not adversely affect transit service and facilities.

Off-Site Affordable Housing Parcel

With respect to the off-site affordable housing parcel, Watt Avenue includes an existing buffered bike lane in the vicinity of the parcel. PFE Road does not have existing bicycle facilities. The closest bus stop to the off-site affordable housing parcel is a SacRT Route 19 stop at Watt Avenue and Elverta Road, approximately 0.96-mile south of the site down Watt Avenue.

The Placer County Regional Bikeway Plan identifies planned Class II bike lanes on PFE Road, but not sections of PFE Road within the RVSP area. The RVSP identifies planned pedestrian facilities as part of the ultimate cross-sections of Watt Avenue and PFE Road, including seven-foot Class II bike lanes along both roadways and a Class I trail that would be eight feet wide along PFE Road and 10 feet along Watt Avenue. Any future residential development within the off-site affordable housing parcel would require sidewalks as part of their frontage improvements. The County would require the future applicant to construct frontage improvements, including any planned bicycle and/or pedestrian facility improvements. Further, any alterations to existing bicycle and pedestrian facilities proposed at the time of development would be required to comply with all applicable Placer County and RVSP policies and design standards. Compliance with such would ensure that future development of the off-site affordable housing parcel would not conflict with adopted policies, plans, or programs supporting alternative transportation.

As discussed under Impact 9-18 of the RVSP EIR, the 933 residential units anticipated for the RVSP area would generate an increased demand for new transit services. The RVSP EIR concluded that, if transit services were not provided to the RVSP area, an unmet transit need would likely occur prior to buildout of the Specific Plan. Such unmet transit needs are defined by PCTPA and are reviewed on a regular basis. To meet a potential unmet transit need, Placer County would need to provide a reasonable amount of transit service to the RVSP area. Therefore, the RVSP EIR included Mitigation Measure 9-18a, which required the creation of a Community Service Area (CSA) to cover transit service and fund the cost of transit services and any related capital costs for buses, passenger

amenities, and facilities. In compliance with RVSP Mitigation Measure 9-18a, Transit CSA 28 Zone of Benefit 224 was established for the RVSP in October 2017.[14] Based on the conclusions of the RVSP EIR, because a CSA for transit service has been implemented, impacts associated with the RVSP on transit service would be less than significant.

Conclusion

Based on the above, the proposed project would not conflict with adopted policies, plans, or programs supporting alternative transportation (i.e., bus turnouts, bicycle lanes, bicycle racks, public transit, pedestrian facilities, etc.). Thus, the project would result in a ***less-than-significant*** impact to pedestrian, bicycle, and transit facilities.

Mitigation Measure(s)

None required.

16-3 Substantially increase hazards to vehicle safety due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). Based on the analysis below, the impact is *less than significant*.

The following discussion evaluates whether development at the project site and the off-site affordable housing parcel would substantially increase hazards to vehicle safety due to a geometric design feature or incompatible uses.

Proposed Project

The proposed project would not include any new sharp curves or dangerous intersections and would not be located in the vicinity of any such roadway features. In fact, based on the collision data reviewed as part of the LTA, the majority of the examined intersections had calculated existing intersection crash rates below the Statewide average crash rate (see Table 16-6). The Watt Avenue/PFE Road intersection (Intersection #13) is located immediately adjacent to the off-site affordable housing parcel and, thus, is discussed in further detail below.

Table 16-6
Intersection Crash Rate Summary

ID	Intersection	Statewide Average Crash Rate	Intersection Actual Crash Rate
1	Baseline Road at Santucci Boulevard/Watt Avenue	0.33	0.22
2	Baseline Road at Westbrook Boulevard	0.28	0.03
5	Baseline Road at Fiddyment Road/Walerga Road	0.33	0.20
7	Baseline Road at Junction Boulevard	0.28	0.09
11	Walerga Road at Town Center Avenue	0.28	0.05
12	Walerga Road at PFE Road	0.33	0.24
13	Watt Avenue at PFE Road	0.11	0.28

Source: Kimley-Horn, June 2026.

[14] Placer County Board of Supervisors. *Resolution No. 2017-206: A Resolution Establishing Zone of Benefit No. 224 Within County Service Area 28 and Establishing An Assessment on Parcels Within Said Zone (Riolo Vineyard) to Provide Transit Services*. October 24, 2017.

The proposed widening of Walerga Road would ultimately include the construction of two, seven-foot-wide bike lanes, three 12-foot-wide travel lanes in each direction, a Class I trail or sidewalk, and a 13- to 24-foot-wide center landscaped median. As part of the proposed project, Baseline Road would be widened along its frontage to accommodate one half of a six-lane cross section that consists of a 14-foot-wide median, a 12-foot wide and two 11-foot-wide travel lanes in each direction, seven-foot-wide bike lanes on both sides of the street, along with curb and gutter improvements. The proposed improvements are intended, in part, to provide safe pedestrian and cyclist circulation in the project area.

All internal roadways and frontage improvements would be designed consistent with applicable Placer County standards, which would be confirmed during improvement plan review. Furthermore, the proposed project would not introduce incompatible uses, such as farm equipment or heavy-duty truck traffic, to area roadways during operations. Potential impacts related to project construction traffic are discussed under Impact 16-1 above.

The proposed project would include a number of other roadway improvements that would help to safely accommodate project-related increases in traffic on the local roadway system. The roadway improvements include:

- Restricting northbound left turns from Crowder Lane onto Baseline Road through a mountable raised median, newly installed left-turn/U-turn lane at Baseline Road near the existing entry to the St. Clare Catholic Church parking lot, and appropriate signage on Crowder Lane; and
- Restricting eastbound left turns and westbound left turns from Springhill Drive to Walerga Road by installing a median curb restriction. (Left-turns in will still be permitted at Springhill Road.)

Both of the above improvements would include coordination with the City of Roseville to implement the required modifications at the Baseline Road/Fiddyment Road/Walerga Road intersection to accommodate U-turns (signage, signal timing, etc.). Overall, the proposed project would not substantially increase hazards to vehicle safety due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

Off-Site Affordable Housing Parcel

The potential future development of the off-site affordable housing parcel does not include any site-specific development plans, designs, or proposals at this time. As such, the potential for development on the off-site affordable housing parcel to substantially increase hazards to vehicle safety due to a geometric design feature cannot be specifically evaluated at this time. However, all new developments that occur within the County are required to comply with all applicable design standards as part of constructing or modifying the transportation system. For example, RVSP Circulation Goal #1 and Policy 1 are related to creating a safe and efficient transportation network capable of meeting increased traffic demands for all modes of travel, and RVSP Circulation Policy 6 is related to using roadway design to regulate speed and manage traffic. In addition, PCGP Policy 3.A.2 requires all streets and roads to be constructed in accordance with General Plan, community plan, and specific plan standards.

The collision data reviewed as part of the LTA revealed seven collisions at the Watt Avenue/PFE Road intersection located immediately southwest of the off-site affordable housing parcel within the five-year period (2021 through 2025), including rear-end, broadside, and hit-object collisions. As shown in Table 16-6, the total calculated existing intersection crash rate was 0.28 crashes per million entering vehicles, which is higher than the total average crash rate for similar intersections (0.11 crashes per million entering vehicles) and the Statewide average crash rate for such intersections (0.21 crashes per million entering vehicles). However, the LTA concluded that signalization of the intersection would improve roadway safety for all roadway users. Signalization of the Watt Avenue/PFE Road intersection is required for RVSP buildout, or should the off-site affordable housing option be implemented as part of the proposed project.

Conclusion

Based on the above, the proposed project would not substantially increase hazards to vehicle safety due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment), and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

16-4 Result in inadequate emergency access or access to nearby uses. Based on the analysis below, the impact is *less than significant*.

Several factors determine whether a site has sufficient access for emergency vehicles, including the following:

1. Number of access points (both public and emergency access only);
2. Width of access points;
3. Width of internal roadways; and
4. Length of dead-end roadways.

The following discussion evaluates emergency access for the proposed project and off-site affordable housing parcel, separately.

Proposed Project

Emergency vehicle access to the proposed project would be provided at multiple locations. A temporary EVA to the Estia Dry Creek development would be through future Phase 2 by way of a non-signalized Walerga Road intersection (EVA only) located between Springhill Drive and the existing signalized access (i.e., Town Center Avenue) to the Placer Vineyards Property 1A development to the southwest of the site. The ultimate Estia Dry Creek EVA would use the Phase 2 subdivision roadways and connections to Walerga Road, including an additional Walerga Road connection by way of Springhill Road.

Access to the Placer Creek Residential Phase 2 neighborhood would be provided by a Springhill Drive extension and a new roadway off of Walerga Road between Springhill Drive and Town Center Avenue. Both access points would allow for right-in egress and right-out egress controlled by a median in Walerga Road. Left-turns out of the subdivision would be restricted, but lefts-turns in would still be permitted at Springhill Road.

Access to the Placer Creek Residential Phase 3 neighborhood would be from a new eastern/fourth leg of the existing signalized intersection at Walerga Road and Town Center Avenue, and an EVA is proposed from Walerga Road to M Street, opposite the new Phase 2 access on Walerga Road.

Access to the southern Phase 4 Placer Creek Residential neighborhood would be from the western extension of Vineyard Road, which currently terminates at the project site, just west of the southern entry to the Sun Valley Oaks subdivision at White Mill Crescent Road. An EVA for Phase 4 is proposed from Q Court to Walerga Road in the southwest corner of the project site, in the same location as the existing encroachment for Sewer and Emergency Access.

The Phase 1 project entry from Baseline Road, the entry to Placer Creek Residential Phase 3 from Walerga Road, and the Placer Creek Residential Phase 4 entry on Vineyard Road would all include access gates. The proposed gated access points would be required to comply with the emergency vehicle access conditions established by Section 15.04.580 of the Placer County Code, which includes requirements for gated entrances to automatically open from the interior without the use of a special code or device for first responders. As discussed in Chapter 3, Project Description, of this EIR, the pedestrian gates would be located at the project entries for Phases 3 and 4 and would remain unlocked during daylight hours.

Off-Site Affordable Housing Parcel

The potential future development of the off-site affordable housing parcel does not include any site-specific development plans, designs, or proposals. The final design of access routes to the off-site affordable housing parcel, including emergency access, would be subject to updated study and determined by the County at the time that specific plans are received. Thus, the adequacy of specific emergency access routes cannot be analyzed at this time.

Nonetheless, the RVSP EIR included conceptual access designs to the off-site affordable housing parcel within Figure 3-7 (reproduced herein as Figure 16-4). As shown in the figure, the off-site affordable housing parcel was anticipated for residential uses, consistent with the potential development associated with the proposed project.

The RVSP also anticipated restricted left turns from the off-site affordable housing parcel, as well as a signal at the intersection of Watt Avenue and PFE Road. As discussed above, should buildout of the off-site affordable housing parcel occur, signalization of the Watt Avenue/PFE Road intersection would be required, consistent with the RVSP. Because installation of a traffic signal at the Watt Avenue/PFE Road intersection is required for RVSP buildout, the timing of the respective developments may dictate the party responsible for constructing this signal.

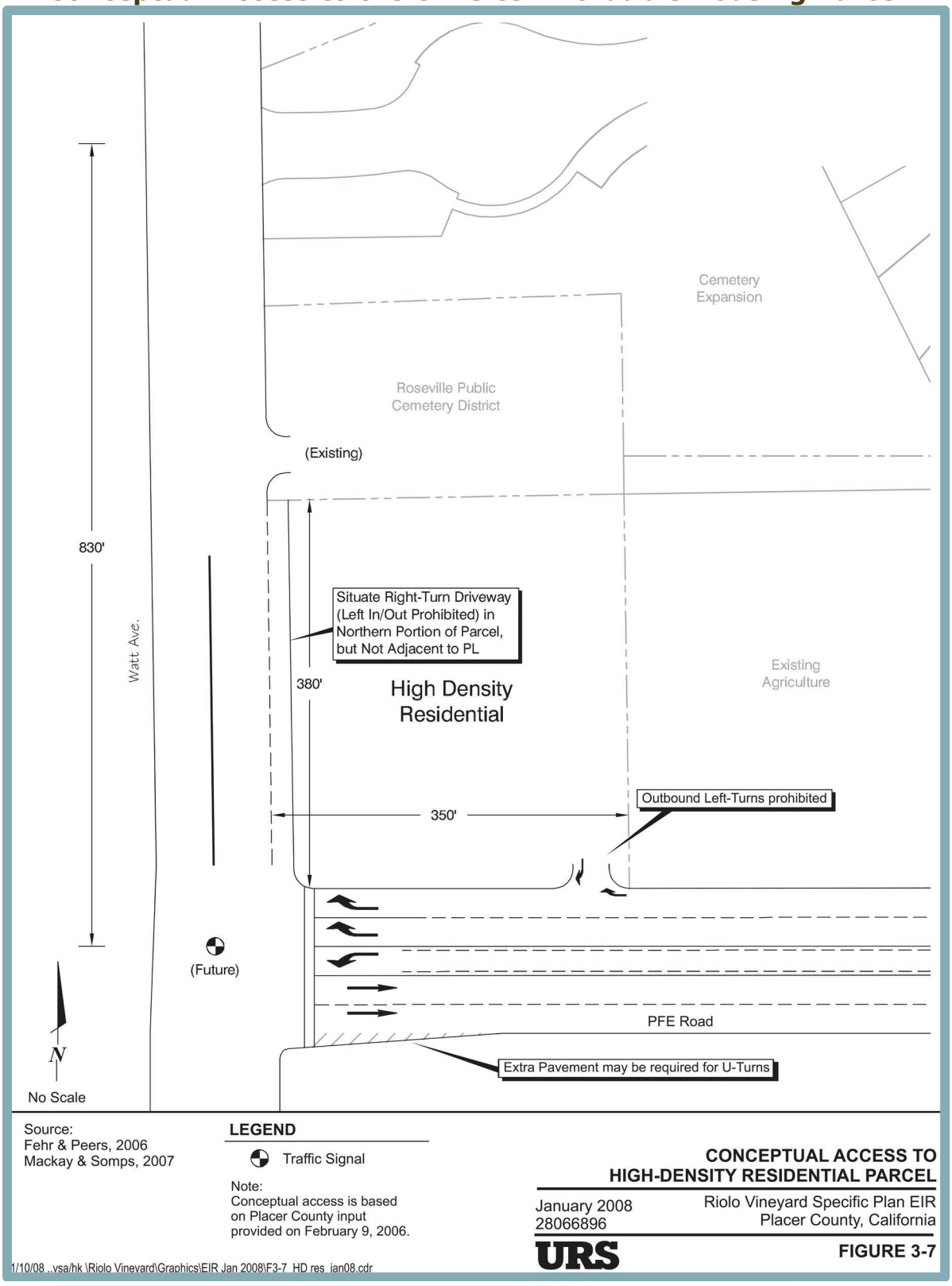
Conclusion

Based on the above, the proposed project would not result in inadequate emergency access or access to nearby uses, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

Figure 16-4
Conceptual Access to the Off-Site Affordable Housing Parcel



* Figure not OCR Compatible

16-5 Result in VMT which exceeds an applicable threshold of significance, except as provided in CEQA Guidelines Section 15064.3, subdivision (b). Based on the analysis below, the impact is *less than significant*.

The following discussion evaluates whether the development of the proposed project and/or the off-site affordable housing parcel would result in VMT which exceeds an applicable threshold of significance.

Proposed Project and Off-Site Affordable Housing Parcel

Table 16-7 summarizes the results of the VMT analysis prepared for the proposed project. According to the VMT Memorandum, the unincorporated County baseline VMT per capita is 30.43. As discussed previously, pursuant to County guidance, residential projects that generate VMT per capita at 15 percent less than the unincorporated County baseline average may be considered to have a less-than-significant VMT impact. Therefore, the VMT threshold applied to the proposed project is 15 percent less than 30.43, or 25.86 VMT per capita.

Table 16-7
VMT Analysis Results

	Per Capita VMT			
Site	Unincorporated Placer County Average	15 Percent Reduction Goal	Project Generated Rate	Placer County Goal Met?
Project Site	30.43	25.86	18.98	Yes
Off-Site Affordable Housing Parcel	30.43	25.86	21.46	Yes

Source: Kimley-Horn, October 2025.

According to the VMT Memorandum prepared for the proposed project and as shown in Table 16-7, the results of the Placer County VMT Estimation Tool determined that the VMT per capita for the proposed project would be 18.98 for development within the project site and 21.46 for the off-site affordable housing parcel, which are both below the 25.86 VMT per capita threshold.

While the off-site affordable housing parcel was evaluated using the County's VMT evaluation tool, the site also meets the County's definition and screening criteria for affordable housing. Therefore, because the affordable housing parcel meets at least one of the screening criteria set by the County, future development of the off-site affordable housing parcel could be presumed to have a less-than-significant impact related to VMT without the need for further quantitative analysis.

Given that the per-capita VMT associated with the proposed project would achieve the applicable VMT reduction goal, the proposed project would not conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b), and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

Cumulative Impacts and Mitigation Measures

For further detail related to the cumulative setting of the proposed project, refer to Chapter 20, Statutorily Required Sections, of this EIR.

Increased traffic volumes on local roadway facilities under cumulative conditions would not substantially alter performance related to bicycle facilities, pedestrian facilities, transit facilities and services, and emergency vehicle access. Rather, impacts to such facilities under Cumulative Plus Project conditions would be similar to those discussed above under Impacts 16-2, 16-3, and 16-4. In addition, construction activities associated with the project would be complete prior to the cumulative analysis year. Therefore, such topics are not discussed further in the cumulative analysis presented herein.

Similarly, the VMT impact analysis for Existing Plus Project conditions included under Impact 16-5 would also apply to Cumulative Plus Project conditions. The VMT significance threshold compares project-generated VMT per service population to that of existing local and regional development. The VMT comparison is useful because the comparison provides information regarding how the project aligns with long-term environmental goals related to VMT established based on existing development levels as recommended by the LCI Technical Advisory. The Technical Advisory indicates that VMT efficiency metrics, such as VMT per service population, may not be appropriate for CEQA cumulative analysis because they employ a denominator. Instead, the Technical Advisory recommends that an impact finding from an efficiency-based project-specific VMT analysis (i.e., Existing Plus Project conditions) would imply an identical impact finding for a cumulative VMT analysis.[15] An example provided by LCI explains that a project that falls below an efficiency-based threshold that is aligned with long-term environmental goals and relevant plans would have no cumulative impact distinct from the project impact. A similar determination is made in the Placer County Transportation Study Guidelines.[16] Therefore, a cumulative analysis of VMT is not presented in this section as the conclusion would remain identical to that presented under Impact 16-5.

[15] Governor's Office of Planning and Research. *Technical Advisory on Evaluating Transportation Impacts in CEQA* [pg. 6]. December 2018.
[16] Placer County. *County of Placer Transportation Study Guidelines* [pg. 28]. May 2021.

17. Tribal Cultural Resources

17. TRIBAL CULTURAL RESOURCES

17.1 INTRODUCTION

As discussed in Chapter 3, Project Description, of this EIR, the proposed project would include a total of 432 residential units and associated improvements, off-site sewer lift station improvements, and two options to meet the County's affordable housing regulations. The affordable housing options include the provision of a minimum of 22 Accessory Dwelling Units (ADUs) on lots proposed for development with single-family residential units, or an off-site proposal wherein Homes by Towne would rezone and transfer the fee title to the County an approximately four-acre parcel off-site within the Riolo Vineyards Specific Plan (RVSP) which could develop a maximum of 120 affordable income-restricted units.

The Tribal Cultural Resources chapter of the EIR addresses known and unknown tribal cultural resources in the vicinity of the project site and off-site sewer lift station improvements area, as well as the off-site affordable housing parcel. Pursuant to Public Resources Code (PRC) Section 21074, tribal cultural resources are defined as sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either included or determined to be eligible for inclusion in the California Register of Historical Resources, or included in a local register of historical resources as defined in subdivision (k) of PRC Section 5020.1. This chapter summarizes the existing setting with respect to tribal cultural resources, identifies thresholds of significance, evaluates potential project impacts to such resources, and sets forth mitigation measures. The impact discussions and mitigation measures presented in each technical section apply to both the project site and the off-site sewer lift station improvements area, unless otherwise noted.

Information presented in this chapter is primarily drawn from a Sacred Lands File (SLF) search conducted by the California Native American Heritage Commission (NAHC), and Native American consultation pursuant to Assembly Bill (AB) 52 and Senate Bill (SB) 18, as well as the Cultural and Paleontological Resources Assessment prepared by Natural Investigations Company.[1] This chapter also includes information from the Placer County General Plan (PCGP),[2] the PCGP EIR,[3] RVSP EIR,[4] and the Dry Creek-West Placer Community Plan (DCWPCP).[5]

17.2 EXISTING ENVIRONMENTAL SETTING

A detailed overview of the project area's cultural history is included in Chapter 8, Cultural Resources, of this EIR. The sections below provide an ethnographic overview of tribal history within the project area, as well as an overview of the tribal outreach and consultation conducted for the proposed project, and any known tribal cultural resources within the area.

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1 Natural Investigations Company. *Cultural and Paleontological Resources Assessment for the Estia Dry Creek & Placer Creek Residential Property Development Project, Placer County, California*. June 2025.
2 Placer County. *Countywide General Plan Policy Document*. August 1994 (updated May 2013).
3 Placer County. *Countywide General Plan EIR*. July 1994.
4 Placer County. *Riolo Vineyard Specific Plan Environmental Impact Report.* January 2008.
5 Placer County. *Dry Creek-West Placer Community Plan.* Amended May 12, 2009.

Ethnographic Overview of the Project Area

The project site is located in lands historically occupied by the Nisenan (also known as the Southern Maidu). Prior to Euro-American contact, Nisenan territory included the southern extent of the Sacramento Valley, east of the Sacramento River between the North Fork Yuba River and Cosumnes River on the north and south, respectively, and extended east into the foothills of the Sierra Nevada. Neighboring groups included the Plains Miwok to the south, Southern Patwin to the west across the Sacramento River beyond the Yolo Basin, and Konkow and Maidu to the north. Three Maiduan languages, Konkow, Maiduan, and Nisenan, are regarded as a subgroup of Penutian stock. Ethnographers have also distinguished three Nisenan dialects: Northern Hill, Southern Hill, and Valley.

The Nisenan established central villages and smaller satellite villages along the main watercourses in their territories. Valley Nisenan villages were generally located on low, natural rises along streams and rivers or on gentle, south-facing slopes; Hill Nisenan villages were located on ridges and large flats along major streams. Semi-permanent or winter villages, as well as seasonally occupied campsites, were used at various times during the seasonal round of subsistence activities associated with hunting, fishing, and gathering plant resources. Historically, a Nisenan village, known as *Pitsokut* or *Pich-u-gut,* was located in the Roseville area, and may have been at the location of a habitation site recorded along Dry Creek.

Village population is reported as ranging from 15 to over 500 individuals, with the number of residences ranging from 40 to 50 in larger villages, and only three to seven in smaller villages. Traditional village structures included semisubterranean or aboveground conical, circular, or dome-shaped houses, as well as acorn granaries, winter grinding houses, ceremonial or dance houses, and sweathouses. Nisenan mortuary practices included cremation and burial in a separate cemetery area.

Like the majority of Native Californians, the Nisenan relied on acorns as a staple food, which were collected in the fall and then stored in granaries. The Nisenan were seasonally mobile hunter-gatherers who also relied on a wide range of abundant natural resources that were available in their territories. Large and small mammals, such as pronghorn antelope, deer, tule elk, black bear, cottontail, and jackrabbit, among other species, were hunted by individuals or by communal groups. Game birds, waterfowl, and fish, particularly salmon, were also important components of the Nisenan diet. In addition to acorns, plant resources included pine nuts, buckeye nuts, hazelnuts, fruits, berries, seeds, and underground tubers.

Similar to other California Native American groups, the Nisenan employed a variety of tools, implements, and enclosures for hunting and collecting natural resources. The bow and arrow, snares, traps, nets, and enclosures or blinds were used for hunting land mammals and birds. For fishing, the Nisenan made canoes from tule, balsa, or logs, and used harpoons, hooks, nets, and basketry traps. To collect plant resources, the Nisenan used sharpened digging sticks, long poles for dislodging acorns and pinecones, and a variety of woven tools (seed beaters, burden baskets, and carrying nets).

Foods were processed with a variety of tools, such as bedrock mortars, cobblestone pestles, anvils, and portable stone or wooden mortars that were used to grind or mill acorns and seeds. Tools and implements included knives, anvils, leaching baskets and bowls, woven parching trays, and woven strainers and winnowers. Prior to processing, the acorns were stored in the village granaries. The Nisenan and neighboring groups participated in an extensive east-west trade

network between the coast and the Great Basin. From coastal groups marine shell (*Olivella* and abalone) and steatite moved eastward, while salt and obsidian traveled westward from the Sierras and Great Basin. Basketry, an important trade item, moved in both directions.

The traditional culture and lifeways of the Nisenan who inhabited the fertile plains between Sacramento and the Sierra foothills were disrupted beginning in the early 1800s. Although Spanish explorers entered Nisenan territory as early as 1808, records do not exist of the forced movement of Nisenan to the missions. During the Mexican period, native peoples were affected by land grant settlements and decimated by foreign disease epidemics that swept through the densely populated Central Valley. An epidemic that swept the Sacramento Valley in 1833 caused the death of an estimated 75 percent of the Valley Nisenan population, wiping out entire villages.

In the heart of Nisenan territory, the discovery of gold in 1848 at Sutter's Mill on the American River near Coloma had a devastating impact on the remaining Nisenan, as well as other groups of Native Americans in the Central Valley and along the Sierra Nevada foothills. By 1850, with their lands, resources, and way of life being overrun by the steady influx of non-native people during the Gold Rush, surviving Nisenan moved to the foothills and mountains, or labored for the growing ranching, farming, and mining industries in the area. Today, Nisenan descendants reside on the Auburn, Berry Creek, Chico, Enterprise, Greenville, Mooretown, Shingle Springs, and Susanville rancherias, as well as on the Round Valley Reservation.

The United Auburn Indian Community (UAIC) is a federally recognized Tribe comprised of both Miwok and Maidu (Nisenan) Indians and are traditionally and culturally affiliated with the project area. The Tribe possesses the expertise concerning tribal cultural resources in the area and are contemporary stewards of their culture and the landscapes. The Tribal community represents the continuity and endurance of their ancestors by maintaining their connection to their history and culture. The Tribe's goal is to ensure the preservation and continuance of their cultural heritage for current and future generations.

NAHC Sacred Lands File Search

Natural Investigations Company contacted the NAHC requesting a search of the SLF for tribal cultural resources within or near the project area, which includes the project site and the off-site sewer lift station improvements area. The results of the search returned by the NAHC on January 14, 2025, were negative for Native American cultural resources in the project vicinity.

Tribal Consultation

Pursuant to AB 52 and SB 18, on January 22, 2025, Placer County sent invitations to consult to tribes who requested notification of proposed projects within the geographic area. Specifically, combined AB 52 and SB 18 notification letters were sent to the Ione Band of Miwok Indians, the UAIC, the Washoe Tribe of Nevada and California, and the Colfax-Todds Valley Consolidated Tribe. In addition, SB 18 specific notification letters were sent to the Shingle Springs Band of Miwok Indians, T'Si-Akim Maidu, and Wilton Rancheria. A response was received from the UAIC on February 4, 2025. The UAIC provided a sensitivity map to the County showing where they would like to monitor during on-site construction. This monitoring requirement has been incorporated into this chapter as mitigation.

On May 7, 2026, Placer County initiated tribal consultation pursuant to AB 52 and SB 18 specifically for the off-site sewer lift station improvements area and the off-site affordable housing parcel. The UAIC requested site-specific mitigation measures for the off-site sewer lift station

location, The tribal cultural awareness training and inadvertent discoveries measure requested for the off-site sewer lift station improvements area has been incorporated into this chapter as mitigation. The Tribe did not request any additional mitigation for the off-site affordable housing parcel.

Known Tribal Cultural Resources

As discussed above, the NAHC SLF results indicated that recorded Native American sacred sites or traditional cultural properties are not known to exist within the project site. One previously recorded site (P-31-000203) is mapped as being directly adjacent to the western border of the off-site sewer lift station improvements area and is described below.

P-31-000203– Precontact-Era Site

P-31-000203 is identified as a small precontact occupation site comprised of one white petrified wood projectile point, ochre, and manos. The site was first recorded in 1965 and was updated in 1991, during which one unifacial Greenstone flake with possible utilized chippage was identified; the update did not include mention of the previously found artifacts. A subsequent update of the site occurred in 1999, during which a fragment of a small andesitic cobble mano and a uniface metavolcanic cobble chopper were located. Further differences from the 1991 update were not noted. During the intensive pedestrian survey completed by Natural Investigations Company, the presence of P-31-000203 was not indicated and the location of the resource therefore could not be confirmed. In addition, the off-site sewer lift station improvements area is heavily utilized by recreational activities, a Community Park is adjacent to the west, and a previously landscaped grass area adjacent to the south was being regraded during the survey. The 1999 update of P-31-000203 mentioned that the site was disced regularly.

No new tribal cultural resources were identified in the project site or the off-site sewer lift station improvements area during cultural resource investigations.

17.3 REGULATORY CONTEXT

Federal, State, and local governments have developed laws and regulations designed to protect significant tribal cultural resources that may be affected by actions that they undertake or regulate. The following section contains a summary of basic federal and State laws governing preservation of tribal cultural resources of national, regional, State, and local significance.

Federal Regulations

The following are the federal environmental laws and policies relevant to cultural resources.

Section 106 for the National Historical Preservation Act of 1966

Federal regulations for cultural resources are governed primarily by Section 106 of the National Historic Preservation Act (NHPA) of 1966. Section 106 of NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and affords the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The Council's implementing regulations, "Protection of Historic Properties," are found in Title 36 of the Code of Federal Regulations (CFR) Part 800. The goal of the Section 106 review process is to offer a measure of protection to sites, which are determined eligible for listing on the National Register of Historic Places (NRHP). The criteria for determining NRHP eligibility are found in 36 CFR Part 60. Amendments to the NHPA (1986 and 1992) and subsequent revisions to the implementing regulations have, among other things, strengthened the provisions for Native American consultation and participation in the Section 106 review process. While federal agencies

must follow federal regulations, most projects by private developers and landowners do not require this level of compliance. Federal regulations only come into play in the private sector if a project requires a federal permit or uses federal funding.

State Regulations

The following are the State environmental laws and policies relevant to tribal cultural resources.

Assembly Bill 52

AB 52 adds tribal cultural resources to the categories of cultural resources in CEQA, which had formerly been limited to historic, archaeological, and paleontological resources. "Tribal cultural resources," pursuant to PRC Section 21074(a), are defined as either:

> (1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
>
> (A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.
> (B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
>
> (2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

Under AB 52 (PRC Section 21084.2), a project that may cause a substantial adverse change in the significance of a tribal cultural resource is defined as a project that may have a significant effect on the environment. Where a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document must discuss the impact and whether feasible alternatives or mitigation measures could avoid or substantially lessen the impact. AB 52 (PRC Section 21080.3.1) requires lead agencies to provide notice to tribes that are traditionally and culturally affiliated with the geographic area of a proposed project if they have requested notice of projects proposed within that area. If the tribe(s) requests consultation within 30 days upon receipt of the notice, the lead agency must consult with the tribe(s). Consultation may include discussing the type of environmental review necessary, the significance of tribal cultural resources, the significance of the project's impacts on the tribal cultural resources, and alternatives and mitigation measures recommended by the tribe(s).

Senate Bill 18

SB 18, signed into law in September 2004, requires local (city and county) governments to consult with California Native American tribes when adopting or substantially amending a general plan, or designating land as open space, in order to aid in the protection of traditional tribal cultural places ("cultural places"). According to the Office of Land Use and Climate Innovation (LCI), formerly the Office of Planning and Research, moreover, this consultation requirement also applies to the adoption or substantial amendments of specific plans (defined in Government Code Section 65450 et seq.). (See LCI, *Tribal Consultation Guidelines*, p. 3 [2005]). The intent of SB 18 is to provide California Native American tribes an opportunity to participate in local land use decisions at an early planning stage, for the purpose of protecting, or mitigating impacts to, cultural places. The consultation and notice requirements apply to adoption and amendment of both

general plans (defined in Government Code Section 65300 et seq.) and specific plans (defined in Government Code Section 65450 et seq.). The proposed project includes a General Plan Amendment and, thus, is subject to SB 18 consultation requirements.

Public Resources Code Section 5024.1(c)

According to PRC Section 5024.1(c), a resource may be listed as a historical resource in the California Register of Historical Resources if the resource meets any of the following NRHP criteria:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
(2) Is associated with the lives of persons important in our past.
(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
(4) Has yielded, or may be likely to yield, information important in prehistory or history.

Local Regulations

The following are the local government's environmental policies that are intended to protect tribal cultural resources by mitigating the potential impacts of new development in areas containing important tribal cultural resources.

Placer County General Plan

The PCGP policies relating to the protection of tribal cultural resources that are applicable to the proposed project are presented below.

Recreation and Cultural Resources

Goal 5.D To identify, protect, and enhance Placer County's important historical, archeological, paleontological, and cultural sites and their contributing environment.

Policy 5.D.3 The County shall solicit the views of the Native American Heritage Commission, State Office of Historic Preservation, North Central Information Center, and/or the local Native American community in cases where development may result in disturbance to sites containing evidence of Native American activity and/or to sites of cultural importance.

Policy 5.D.7 The County shall require that discretionary development projects are designed to avoid potential impacts to significant paleontological or cultural resources whenever possible. Unavoidable impacts, whenever possible, shall be reduced to a less than significant level and/or shall be mitigated by extracting maximum recoverable data. Determinations of impacts, significance, and mitigation shall be made by qualified archaeological (in consultation with recognized local Native American groups), historical, or paleontological consultants, depending on the type of resource in question.

17.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to tribal cultural resources. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with PRC Section 21084.2, Appendix G of the CEQA Guidelines, and Placer County's Environmental Checklist, an impact related to tribal cultural resources is considered significant if the proposed project would:

- Cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:
    - Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k); or
    - A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Method of Analysis

The impact analysis contained in this chapter is primarily based on a SLF search conducted by the NAHC and Native American consultation pursuant to AB 52 and SB 18, as well as a Cultural and Paleontological Resources Assessment prepared by Natural Investigations Company. The Cultural and Paleontological Resources Assessment addresses the project area, which included the project site and the off-site sewer lift station improvements area, but did not include the off-site affordable housing parcel, which has been subject to environmental review as part of the County's review and approval of the RVSP. The methods of analysis are described in further detail below.

Native American Tribal Consultation

Pursuant to AB 52 and SB 18, on January 22, 2025, Placer County sent invitations to consult to tribes who requested notification of proposed projects within this geographic area. Specifically, combined AB 52/SB 18 notification letters were sent to the Ione Band of Miwok Indians, the UAIC, the Washoe Tribe of Nevada and California, and the Colfax-Todds Valley Consolidated Tribe. In addition, SB 18 specific notification letters were sent to the Shingle Springs Band of Miwok Indians, T'Si-Akim Maidu, and Wilton Rancheria. A response was received from the UAIC on February 4, 2025. Following a site visit, the UAIC provided a sensitivity map to the County showing where they would like to monitor during on-site construction. This monitoring requirement has been incorporated into this chapter as mitigation.

On May 7, 2026, Placer County re-opened AB 52 and SB 18 consultation by sending follow-up invitations to consult to the same tribes to address the off-site sewer lift station and off-site affordable housing parcel. A response was received from the UAIC on May 15, 2026. Following a site visit of the off-site sewer lift station location, the Tribe provided supplemental mitigation

measures specific to the off-site location. These measures have been incorporated into this chapter as mitigation. The Tribe did not request to survey the off-site affordable housing parcel within the RVSP, nor did the Tribe request any site-specific mitigation associated with the parcel.

As noted previously, Natural Investigations Company contacted the California NAHC to request a search of the SLF for the traditional cultural resources within or near the project site and off-site sewer lift station improvements area. The SLF is populated by members of the Native American community who have knowledge about the locations of tribal cultural resources. The results of the SLF search, dated January 14, 2025, were negative, which indicates that known Native American cultural resources do not exist within or near the project site and off-site sewer lift station improvements area.

Cultural Resources Study

Preparation of the Cultural and Paleontological Resources Assessment included a cultural resources records search, consultation with NAHC, paleontological resource analysis, and intensive pedestrian survey of the project site and off-site sewer lift station improvements area. As noted above, the Cultural and Paleontological Resources Assessment addresses the project area, which included the project site and the off-site sewer lift station improvements area, but did not include the off-site affordable housing parcel.

Records Search Methods

Cultural resource literature searches of the project area were completed at the North Central Information Center (NCIC) of the California Historical Resources Information System (CHRIS) at California State University, Sacramento, on February 8, 2025 for the project site and on June 16, 2025 for the off-site sewer lift station improvements area. The record searches were conducted to determine the extent of previous surveys within a 0.25-mile radius of the project site and off-site sewer lift station improvements area, and whether previously documented pre-contact or historic archaeological sites, architectural resources, or traditional cultural properties exist within the project area. In addition to the official records and maps for archaeological sites and surveys in Placer County, Natural Investigations Company reviewed several historic references and other cultural archival sources, which are detailed in Chapter 8, Cultural Resources, of this EIR.

Field Survey Methods

Natural Investigations Company conducted an intensive pedestrian survey of the project site on January 1, 2025. Natural Investigations Company also conducted an intensive pedestrian survey of the off-site sewer lift station improvements area on June 16, 2025. All portions of the project areas were surveyed intensively using transects spaced at 15 meters apart or less. During the pedestrian survey, all visible ground surface within the project area was carefully examined for cultural material (e.g., flaked stone tools, toolmaking debris, stone milling tools, or fire-affected rock), soil discoloration that might indicate the presence of a cultural midden, soil depressions and features indicative of the former presence of structures or buildings (e.g., postholes, foundations), or historic-era debris (e.g., metal, glass, ceramics). Ground disturbances (e.g., animal burrows, drainages, dirt roads, etc.) were visually inspected. A digital camera was used to take photographs of the project areas, a Munsell® Soil Color Chart was used to record soil color, and a handheld BE-3300-GPS global positioning system (GPS) unit with sub-meter accuracy was used to record locational data. As discussed above, Natural Investigations Company attempted to identify the location of P-31-000203 during the field survey of the off-site sewer lift station improvements area. However, the presence of P-31-000203 was not identified and the location of the resource therefore could not be confirmed.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the proposed project and off-site sewer lift station improvements, as well as the two affordable housing options analyzed throughout this EIR, in comparison with the standards of significance identified above. In most cases, potential environmental impacts associated with the proposed project and the potential 22 on-site ADUs would not differ. Thus, unless otherwise noted, the below analysis applies to both the proposed project and the on-site ADUs.

17-1 Cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel, which could cause a substantial adverse change in the significance of a tribal cultural resource, as defined in PRC Section 21074.

According to PRC Section 21074, tribal cultural resources are sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe, or are resources determined by the lead agency to be significant pursuant to criteria set forth in Section 5024.1, subdivision (c). The criteria set forth in PRC Section 5024.1, subdivision (c), includes resources that are associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage, resources associated with the lives of historically important persons, resources that embody the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values, or resources that have yielded, or may be likely to yield, information important in precontact history or history. Potential impacts to tribal cultural resources associated with the proposed project, off-site sewer lift station improvements area, and potential future development of the off-site affordable housing parcel are discussed below.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

Because the conditions of the proposed project area and off-site sewer lift station improvements area are similar, the potential for either component to cause a substantial adverse change in the significance of a tribal cultural resource, as defined in PRC Section 21074, would be similar. Thus, the following discussion applies to both the proposed project and the off-site sewer lift station improvements area.

As noted previously, records searches of the NAHC SLF failed to indicate the presence of tribal cultural resources within or near the project site or the proposed off-site sewer lift station improvements area. However, based on a records search of the CHRIS, one small precontact-era occupation site, P-31-000203, has been previously recorded directly adjacent to the off-site sewer lift station improvements area. Natural Investigations Company conducted an intensive pedestrian survey of the entire mapped location of P-31-000203 to determine the presence or absence of cultural materials. The intensive pedestrian survey did not indicate the presence of P-31-000203 and the location of the resource therefore could not be confirmed.

While known tribal cultural resources have not been recorded within the project site, and the previously recorded site (P-31-000203) adjacent to the off-site sewer lift station improvements area was not located during the field survey conducted for the Cultural and Paleontological Resources Assessment, the Cultural and Paleontological Resources Assessment determined that the soil formations in the project area date back to periods of known human occupation. In addition, a tributary of Dry Creek runs through the project site, and the off-site sewer lift station improvements area is located immediately south of Dry Creek. Because the project area is located in lands historically occupied by the Nisenan, and the Nisenan established villages along main watercourses in their territories, the proximity of the project site and off-site sewer lift station improvements area to Dry Creek indicate the potential presence of tribal cultural resources. Therefore, the project site and off-site sewer lift station improvements area have the potential to contain buried resources, and previously undiscovered tribal cultural resources could potentially occur within areas where construction is proposed as part of the proposed project.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel was not included in the NAHC SLF search or CHRIS search conducted as a part of the Cultural and Paleontological Resources Assessment. As such, the parcel was not evaluated for the presence of tribal cultural resources. However, the off-site affordable housing parcel is located within the RVSP. Pursuant to the RVSP EIR, a NAHC SLF search was conducted for the RVSP area that did not indicate the presence of recorded tribal cultural resources. In addition, while the construction of the proposed affordable units does not include any site-specific development plans, designs, or proposals at this time, potential future development of the off-site parcel would be subject to County review and compliance with the applicable requirements described in the PCGP and RVSP. It is worth noting that the County offered supplemental AB 52 and SB 18 consultation for the off-site affordable housing parcel at the same time as the offer to consult for the off-site sewer lift station improvements area. While the UAIC requested a site visit and ultimately site-specific mitigation measures for the off-site sewer lift station location, the Tribe did not request a site visit nor any additional mitigation for the off-site affordable housing parcel.

Therefore, at such time the off-site affordable housing parcel gets developed, the future developer would be required to comply with PCGP policies related to tribal cultural resources, including Policy 5.D.3, which requires contact with the NAHC and the local Native American community where development may result in disturbance to sites containing evidence of Native American activity and/or sites of cultural importance. Compliance with PCGP Policy 5.D.7 would also be required, requiring that development projects be designed to avoid potential impacts to significant paleontological or cultural resources, include mitigation where applicable, and initiate consultation with a qualified consultant. Additionally, the off-site affordable housing parcel would be required to comply with Mitigation Measures 7-1b, 7-1c, and 7-2a of the RVSP EIR, which require compliance with recommendations of a qualified archaeologist if cultural resources are exposed during construction, subsurface testing, and data recovery excavation, as applicable to the site.

At such time the off-site affordable housing parcel gets developed, the future developer would be required to comply with the RVSP Mitigation Measures 7-1b, 7-1c, and 7-2a, in order to reduce potential impacts to tribal cultural resources to a less-than-significant level.

Conclusion

Based on the above, without inclusion of appropriate measures reflecting tribal consultation carried out by the County with the UAIC to account for unanticipated discoveries of potential subsurface tribal cultural resources as well as the sensitive Dry Creek Corridor, and the mitigation measures required by the RVSP EIR for the off-site affordable housing parcel, the proposed project could cause a substantial adverse change in the significance of a tribal cultural resource, as defined in PRC Section 21074, during project construction, and a ***significant*** impact could occur. The referenced RVSP mitigation measures are incorporated into this EIR as Mitigation Measures 8-2(d), 8-2(e), and 8-3(d), as shown below.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

Project Site and Off-Site Sewer Lift Station Improvements Area

17-1(a) *The following language shall be noted on project Improvement Plans, subject to review and approval by the Placer County Community Development Resource Agency:*

If any suspected Tribal Cultural Resources (TCRs) or resources of cultural significance to the UAIC, including, but not limited to, features, anthropogenic/cultural soils, cultural belongings or objects (artifacts), shell, bone, shaped stones or bone, or ash/charcoal deposits are discovered by any person during construction activities, including ground disturbing activities, all work shall pause immediately within 100 feet of the find, or an agreed upon distance based on the project area and nature of the find. Work shall cease in and within the immediate vicinity of the find regardless of whether the construction is being actively monitored by a Tribal Monitor, cultural resources specialist, or professional archaeologist.

A Tribal Representative and the Placer County Community Development Resource Agency shall be immediately notified, and the Tribal Representative, in coordination with the Placer County Community Development Resource Agency, shall determine if the find is a TCR (PRC Section 21074) and the Tribal Representative shall make recommendations for further evaluation and treatment as necessary.

<u>Treatment and Documentation:</u>

The culturally affiliated Tribe shall consult with the Placer County Community Development Resource Agency to (1) identify the boundaries of the new TCR and (2) if feasible, identify appropriate preservation in place and avoidance measures, including redesign or adjustments to the existing construction process, and long-term management, or 3) if avoidance is infeasible, identify a reburial location in proximity of the find where no future disturbance is anticipated. Permanent curation of TCRs shall not take place unless approved in writing by the culturally affiliated Tribe.

The construction contractor(s) shall provide secure, on-site storage for culturally sensitive soils or objects that are components of TCRs that are found or recovered during construction. Only Tribal Representatives shall have access to the storage. Storage size shall be determined by the nature of the TCR and can range from a small lock box to a conex box (shipping container). A secure (locked), fenced area can also provide adequate on-site storage if larger amounts of material must be stored.

The construction contractor(s) and Placer County shall facilitate the respectful reburial of the culturally sensitive soils or objects. This includes providing a reburial location that is consistent with the Tribe's preferences, excavation of the reburial location, and assisting with the reburial, upon request.

Any discoveries shall be documented on a Department of Parks and Recreation (DPR) 523 form within two weeks of the discovery and submitted to the appropriate CHRIS center in a timely manner. The DPR 523 forms shall be completed and submitted to the CHRIS center by the project archaeologist. If the project does not require an archaeologist, the DPR forms shall be completed and submitted to the CHRIS by the UAIC. If completed by the project archaeologist, the UAIC shall have an opportunity to review the completed forms.

Work at the TCR discovery location shall not resume until authorization is granted by Placer County in coordination with the culturally affiliated Tribe.

If articulated or disarticulated human remains, or human remains in any state of decomposition or skeletal completeness, are discovered during construction activities, the Placer County Coroner and the culturally affiliated Tribe shall be contacted immediately. Upon determination by the Placer County Coroner that the find is Native American in origin, the Native American Heritage Commission will assign the Most Likely Descendent who will work with the project proponent to define appropriate treatment and disposition of the burials.

17-1(b) *The following language shall be noted on project Improvement Plans, subject to review and approval by the Placer County Community Development Resource Agency:*

The project proponent or their construction contractor shall comply with the following measure to assist with identification of TCRs at the earliest possible time during project-related earthmoving activities:

- *The project proponent shall contact the UAIC Tribal Historic Preservation Officer (THPO) (thpo@auburnrancheria.com) at least two months prior to project ground-disturbing activities to retain the services of a UAIC Certified Tribal Monitor(s). The duration of the construction schedule and Tribal Monitoring shall be determined at this time.*

- *A contracted Tribal Monitor(s) shall monitor all ground disturbing activities (e.g., vegetation removal, grading, and/or other ground disturbing activities; note: fill activities are excluded from this requirement) in the mapped area and 50' buffer provided by the UAIC to the County on June 26, 2025 (confidential map provided to the County and subsequently to the applicant). All ground-disturbing activities in the mapped area provided by the UAIC to the County on June 26, 2025, shall be subject to Tribal Monitoring unless otherwise determined unnecessary by the UAIC.*
- *Specific to the off-site sewer lift station location, a contracted Tribal Monitor(s) shall monitor initial clearing and grubbing for the entire footprint of disturbance.*
- *Tribal Monitors or Tribal Representatives shall have the authority to direct that work be temporarily paused, diverted, or slowed within 100 feet of the immediate impact area if sites, cultural soils, or objects of potential significance are identified. The temporary pause/diversion shall be of an adequate duration for the Tribal Representative to examine the resource.*
- *Appropriate treatment of TCRs may include, but is not limited to:*

    A. *Recordation of the resource(s);*
    B. *Avoidance and preservation of the resource(s); and/or*
    C. *Recovery and reburial of the resource(s) onsite or in a feasible off-site location in a designated area subject to no future disturbance. The location of the reburial shall be acceptable to the UAIC.*

- *To track the implementation of this measure, the Tribal Monitor(s) shall document field-monitoring activities on a Tribal Monitor log.*
- *The Tribal Monitor(s) shall wear the appropriate safety equipment while on the construction site.*
- *The Tribal Monitor, in consultation with the UAIC THPO and the project proponent, shall determine a mutual end or reduction to the on-site monitoring if/when construction activities have a low potential for impacting TCRs.*
- *In the event the Tribal Monitor does not report to the job site at the scheduled time after receiving 24 hour business day notice, construction activities may proceed without tribal monitoring. At no time, regardless of the presence or absence of a Tribal Monitor, shall suspected TCRs be mishandled or disrespected.*
- *The County shall assist with resolution of disagreements between the project proponent/contractor and the Tribe if such occurs on the project.*

17-1(c) *The following language shall be noted on Improvement Plans, subject to review and approval by the Placer County Community Development Resource Agency:*

- *The Applicant/Contractor shall provide a Tribal Cultural Awareness and Sensitivity Training (training) for all personnel involved in project construction, including field consultants and construction workers, at their own expense. The training shall be developed in coordination with interested Native American Tribes.*
- *The training shall be conducted before any project-related construction activities begin at the project site. The training will include relevant information regarding sensitive cultural resources and tribal cultural resources, including applicable regulations, protocols for avoidance, and consequences of violating State laws and regulations. The training will also describe appropriate avoidance and impact minimization measures for cultural resources and tribal cultural resources that could be located at the project site and will outline what to do and who to contact if any potential cultural resources or tribal cultural resources are encountered. The training will emphasize the requirement for confidentiality and culturally appropriate treatment of any discovery of significance to Native Americans and will discuss appropriate behaviors and responsive actions, consistent with Native American tribal values. The training may be done in coordination with the project archaeologist.*
- *All ground-disturbing equipment operators shall be required to receive the training and sign a form that acknowledges receipt of the training.*

Off-Site Affordable Housing Parcel

17-1(d) Implement the following Mitigation Measure set forth in this EIR:

- *<u>8-2(d)</u> Implement RVSP EIR Mitigation Measure 7-1b if culturally significant materials are discovered during construction:*

  A qualified professional archaeologist shall be retained to conduct subsurface testing at potentially important known archaeological sites. As it has not been determined if the known sites within the Specific Plan Area are eligible for inclusion to either the NRHP or CRHR, subsurface testing (i.e., resource evaluation) should be initiated for sites when construction is to occur within 100 feet of the resource and where Mitigation Measure 7-1a [incorporated as Mitigation Measure 8-2(c) of this EIR] proves infeasible. Subsurface testing should also be implemented if culturally significant materials (i.e., unique archaeological resources or historical resources) are inadvertently exposed during construction.

  Subsurface testing procedures could involve shovel testing, augering, or other such techniques designed to identify and/or characterize subsurface archaeological deposits. If a resource is determined to be important under CEQA (i.e., because it is a unique archaeological resource or an historical resource), then Mitigation Measure 7-1c [incorporated as Mitigation Measure 8-2(e) of this EIR] must also be implemented.

17-1(e) *Implement the following Mitigation Measure set forth in this EIR:*

- *<u>8-2(e)</u> Implement RVSP EIR Mitigation Measure 7-1c if culturally significant materials are discovered during construction:*

  A qualified professional archaeologist shall be retained to conduct data recovery excavation. This mitigation measure will be implemented as an alternative to Mitigation Measures 7-1a [incorporated as Mitigation Measure 8-2(c) of this EIR] at cultural resource sites determined to be eligible for inclusion in either the NRHP or CRHR.

  In compliance with CEQA, implementation of this mitigation measure would entail preparation and adoption of a data recovery plan that makes provisions for adequately recovering the scientifically consequential information from and about the resource. The data recovery plan must be prepared and adopted prior to commencing any excavation activities.

17-1(f) *Implement the following Mitigation Measure set forth in this EIR if significant archaeological materials are discovered during construction:*

- *<u>8-3(d)</u> Implement RVSP EIR Mitigation Measure 7-2a:*

  In the event of the discovery of buried archaeological artifacts, exotic rock (non-native), or unusual amounts of shell or bone, it is recommended that project activities in the vicinity of the find be immediately stopped and a qualified professional archaeologist consulted to assess the resource and provide proper management recommendations. If the find is determined to be a historical or unique archaeological resource, contingency funding and a time allotment to allow for implementation of avoidance measures or appropriate mitigation shall be made available, as provided in Section 15064.5 of the CEQA Guidelines. In addition, the Placer County Planning Department and Department of Museums must also be contacted. Work in the area may only proceed after authorization is granted by the Placer County Planning Department. All construction and improvement plans for subsequent development within the Plan Area involving ground disturbance shall include these provisions. The archaeologist shall evaluate any potential effects on any historical resource or unique archaeological resource, and where such effects would be significant, shall recommend potential mitigation to the County for its consideration. The County will assess the feasibility of any proposed mitigation (e.g., avoidance of the historical resource) and impose the mitigation where feasible in light of factors such as the nature of the find, project design, costs, Specific Plan policies and land use assumptions, and other considerations. If avoidance is unnecessary or infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of

the project site while mitigation for paleontological resources is carried out.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

17-2 Cause a cumulative loss of tribal cultural resources. Based on the analysis below, the cumulative impact is *less than significant*.

Generally, while some tribal cultural resources may have regional significance, the resources themselves are site-specific, and impacts to them are project-specific. For example, impacts to a subsurface tribal cultural resource at one project site would not generally be made worse by impacts to a tribal cultural resource at another site due to development of another project. Rather, the resources and the effects upon them are generally independent. A possible exception to the aforementioned general conditions would be where a tribal cultural resource represents the last known example of its kind or is part of a larger resource site. For such a resource, cumulative impacts, and the contribution of a project to them, may be considered cumulatively significant.

As described above, known tribal cultural resources do not exist within the project site or off-site sewer lift station improvements area. While the potential exists for tribal cultural resources to be present on the off-site affordable housing parcel, potential future development of the off-site affordable housing parcel would be subject to County review and compliance with the applicable requirements described in the PCGP, RVSP, and the DCWPCP aimed at reducing potential impacts to tribal cultural resources. Furthermore, implementation of the project-specific mitigation measures set forth in this EIR (Mitigation Measures 17-1[a] through 17-1[c]) would ensure that any impacts to previously unknown, subsurface resources that are discovered either on the project site or within the off-site sewer lift station improvements area or off-site affordable housing parcel during construction activities are reduced to less than significant.

Similar to the proposed project, future development projects within the DCWPCP would be required to consult with tribes culturally and traditionally affiliated with the project area to implement project-specific mitigation to ensure any potential impacts to identified tribal cultural resources are reduced to a less-than-significant level, where possible. Therefore, given that tribal cultural resource impacts are generally site-specific and each future project within the DCWPCP would be required to mitigate such impacts, any potential impacts associated with cumulative buildout of the DCWPCP area would not combine to result in a significant cumulative impact.

Based on the above, the potential for impacts related to a cumulative loss of tribal cultural resources, to which implementation of the proposed project might contribute, is ***less than significant.***

Mitigation Measure(s)

None required.

18. Wildfire

18. WILDFIRE

18.1 INTRODUCTION

As discussed in Chapter 3, Project Description, of this EIR, the proposed project would include a total of 432 residential units and associated improvements, off-site sewer lift station improvements, and two options to meet the County's affordable housing regulations. The affordable housing options include the provision of a minimum of 22 Accessory Dwelling Units (ADUs) on lots proposed for development with single-family residential units, or an off-site proposal wherein Homes by Towne would rezone and transfer the fee title to the County for an approximately four-acre parcel off-site within the Riolo Vineyards Specific Plan (RVSP) which could develop a maximum of 120 affordable income-restricted units.

The Wildfire chapter of the EIR summarizes the setting information and identifies wildfire potential within the project area based on State and local mapping. The chapter also includes a review of completed, active, and planned fuel treatment projects within the region and consideration of site-specific factors that could affect wildfire potential at the project site. The information contained in the analysis is primarily based on the Placer County General Plan (PCGP),[1] the PCGP EIR,[2] and the Dry Creek-West Placer Community Plan (DCWPCP).[3]

18.2 EXISTING ENVIRONMENTAL SETTING

The following section describes the existing wildfire setting in the project region, including the existing fire types, wildland fire hazards, fuel treatment efforts, public safety power shutoffs (PSPS), and fire protection agencies and resources in the project region.

Fire Types

The following sections describe the three fire types to which various areas of Placer County are at risk of experiencing.

Wildfires

Wildfires occur on mountains, hillsides, and grasslands. Vegetation, wind, temperature, humidity, and slope are all factors that affect how wildfires spread. In Placer County, native vegetation, such as chaparral, sage, and grassland, provide fuel that allows wildfires to spread easily across large tracts of land. Such plant species are capable of regeneration after a fire, making periodic wildfires a natural part of the local ecology. Placer County is considered a rural/suburban County with wildfire as the most prevalent fire type. The climate of the Placer County region keeps the grass dry, which makes the region's grass more readily combustible during fire season. As discussed in further detail in the Topography and Vegetation subsection, steep slopes bring grass and brush within reach of upward-moving flames, while impeding the access of firefighting equipment. Seasonal drought conditions exacerbate fire hazards.

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1 Placer County. *Countywide General Plan Policy Document.* August 1994 (updated May 2013).
2 Placer County. *Countywide General Plan EIR*. July 1994.
3 Placer County. *Dry Creek-West Placer Community Plan*. Amended May 12, 2009.

Wildland-Urban Interface Fires

The wildland-urban interface (WUI) zone is an area where buildings and infrastructure (e.g., cell towers, schools, water supply facilities) mix with areas of wildland vegetation susceptible to ignition due to several factors, including topographical features, vegetation fuel types, local weather conditions, and prevailing winds. The interface is sometimes divided into the defense zone (areas near communities, usually about 0.25-mile thick) and threat zones (an approximately 1.25-mile buffer around the defense zone). Wildfires and urban interface fires have occurred within Placer County, especially in the Sierra Nevada region where a majority of parcels are within a Very High Fire Hazard Severity Zone (FHSZ).

In the WUI zone, efforts to prevent ignitions and limit wildfire losses hinge on hardening structures and creating defensible space through a multi-faceted approach, including engineering, enforcement, education, emergency response, and economic incentive. Different strategies in the defense and threat zones of the WUI help to limit the spread of fire and reduce risks to people and property. As discussed in further detail in the Wildfire Classifications subsection, wildfire threat within the County ranges from Moderate to Very High. The highest threat occurs in the Sierra Nevada, which is considered a Very High FHSZ, whereas the County's valley and foothill regions are considered Moderate and High FHSZs.

Structural Fires

Urban fires occur in developed environments, destroying buildings and other humanmade structures. Structural fires are often caused by faulty wiring or mechanical equipment or combustible construction materials, and are able to proliferate due to the absence of fire alarms and sprinkler systems. The fires have been due largely to human accidents, although deliberate fires (arson) may be a cause of some events. Older buildings that lack modern fire safety features may face greater risk of damage from fires. To minimize fire damage and loss, the County's Fire Code, which is based on the California Fire Code (CFC), sets standards for building and construction. The code requires the provision of adequate water supply for firefighting, fire retardant construction, and minimum street widths, among other things. Fire prevention awareness programs and fire drills are conducted to train residents to respond quickly and correctly to reduce injury and losses during fires.

Wildland Fire Hazards

The following section includes a discussion of the potential for wildland fires to occur in the project area and the agencies and resources available for wildland fire suppression.

Wildfire Classifications

With respect to wildland fires, previous significant WUI fires within the State have precipitated the passage of statutes necessitating the classification of wildland fire hazard areas, according to a location's potential for causing ignitions to buildings. Such classifications are referred to as FHSZs and provide the basis for application of various mitigation strategies to reduce risks to buildings associated with wildland fires. The zones also relate to the requirements for building codes designed to reduce the ignition potential to buildings in the WUI zones.

Pursuant to Government Code Section 51178, Very High FHSZs are determined by the Director of Forestry and Fire Protection, based on consistent statewide criteria and the severity of fire hazard that is expected to prevail in such areas. Very high FHSZs are based on fuel loading, slope, fire weather, and other relevant factors, including areas where Santa Ana, Mono, and Diablo winds have been identified by the California Department of Forestry and Fire Protection

(CAL FIRE) as a major cause of wildfire spread. Public Resources Code (PRC) Sections 4201 through 4204 direct CAL FIRE to map fire hazards within State Responsibility Areas (SRAs), based on relevant factors such as fuels, terrain and weather. SRAs are recognized by the Board of Forestry and Fire Protection as areas where CAL FIRE is the primary emergency response agency responsible for fire suppression and prevention.

The project site is not located within a SRA, but, rather, is located within a Local Responsibility Area (LRA). As shown in Figure 18-1, the project site is not identified by CAL FIRE as being within a FHSZ area, although the southern portion of the site is located adjacent to a Moderate FHSZ. The off-site affordable housing parcel is not located within the WUI zone, but is located within a moderate FHSZ. Additionally, the project site is not located within a WUI zone (see Figure 18-2).

Topography and Vegetation

Topography, which includes slope and aspect, can play a significant role in wildfire risk. Fires burn faster uphill than downhill, due to fuels above a fire being brought into closer contact with upward moving flames. In addition, the process of heat transfer is influenced by topography, because heat rises (convection) and heat transfer through convection tends to move upward. Furthermore, during wildfires, burning materials on the forest floor also create convection currents that preheat the leaves and branches of shrubs and trees above the fire. Heat transfer, therefore, occurs more rapidly through fuels up a slope, resulting in fire traveling more quickly upslope than downslope.

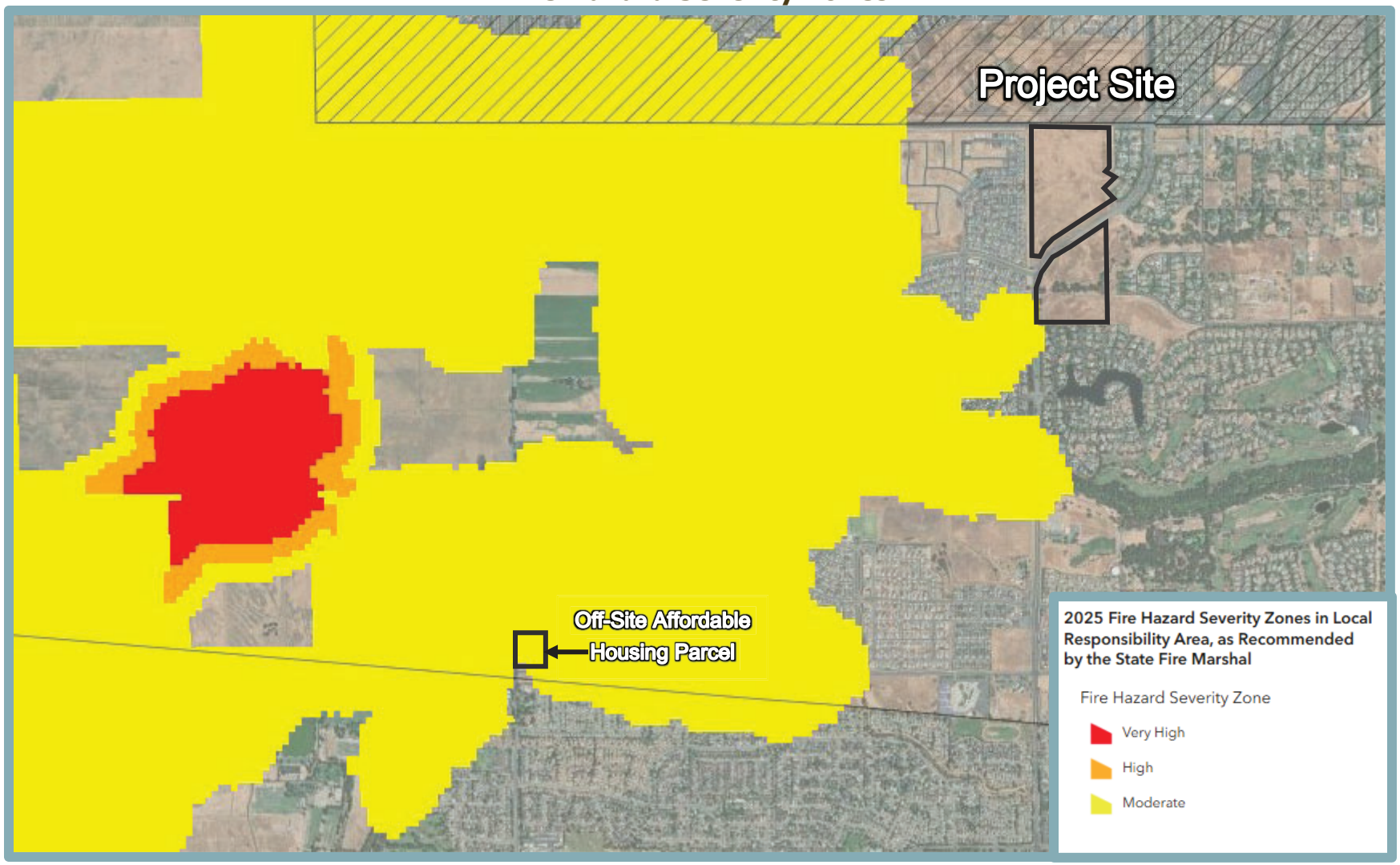
Vertical air currents can also lift burning materials, as floating embers, known as firebrands, can settle in unburned areas ahead of a fire, starting smaller fires. The phenomenon is called spotting and could result in rapid advancement of a fire.

With respect to the project region's topography and vegetation, the region's elevation and topography is varied, due to the presence of upland areas and floodplains, but overall, the DCWPCP area does not contain steep slopes or significant slopes, such as those in steep-walled canyons or mountainous valleys. The absence of steep and significant slopes limits wildfire risks related to topography in the project region.

While the project site and off-site affordable housing parcel are undeveloped, many portions of the DCWPCP area are currently developed with a variety of scattered single-family homes and residential subdivisions. The DCWPCP area is an urbanizing area, which encompasses approximately 9,200 acres in the southwest portion of Placer County and is comprised of multiple specific plan areas, including the RVSP and the Placer Vineyards Specific Plan (PVSP). As part of the PVSP, 1,285 residential units associated with Property 1A are currently under construction west of the project site, across Walerga Road. In addition, the Baseline Marketplace is under construction to the north. Completion of the foregoing development would remove available fuel sources from the area, primarily those consisting of grassland.

Other existing development is located in the project vicinity, which further reduces the available fuel sources near the project site. Single-family residences associated with the Sun Valley Oaks residential neighborhood are located to the east, and single-family residences associated with the Morgan Creek residential neighborhood are located to the south.

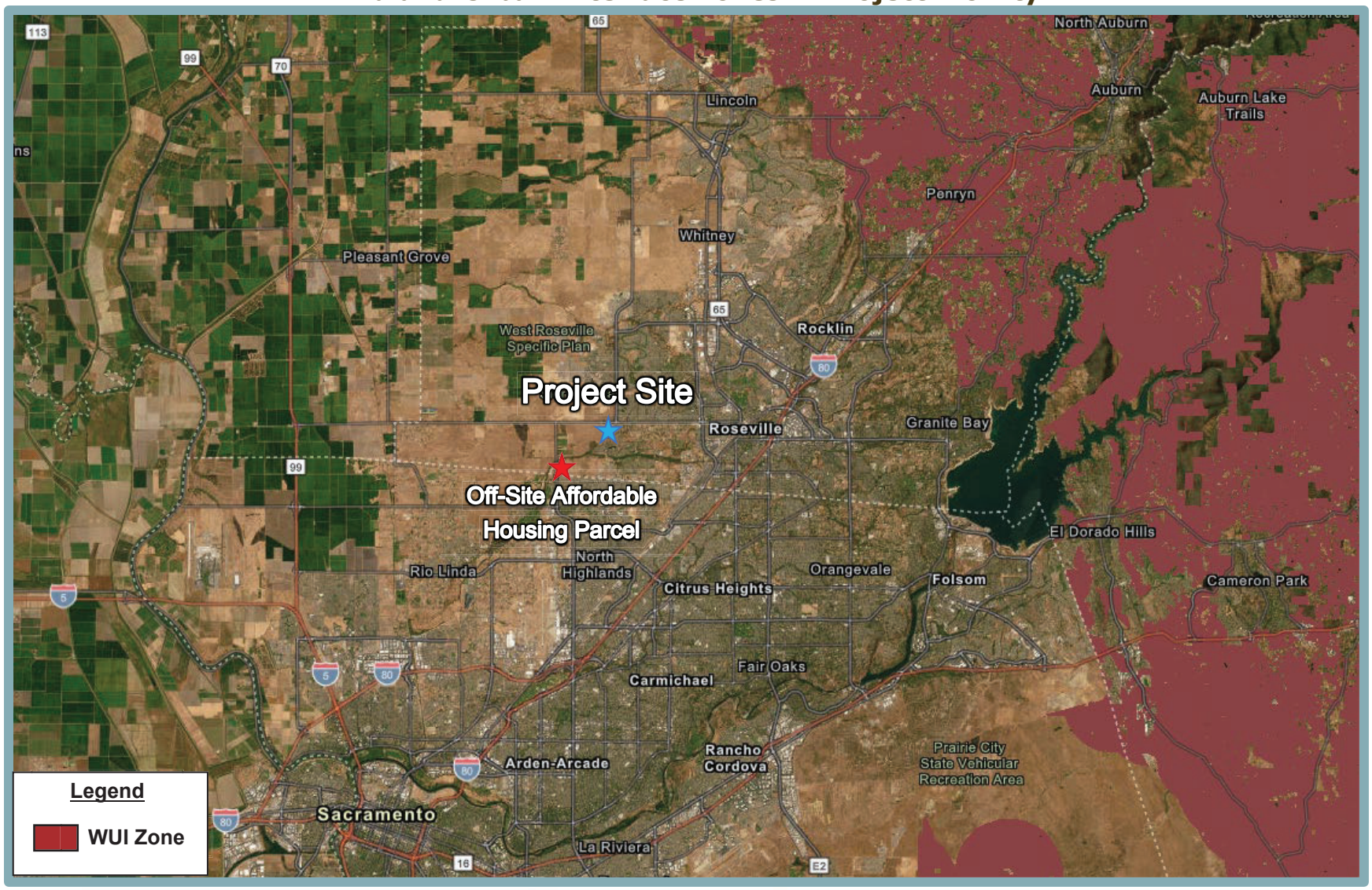
Figure 18-1
Fire Hazard Severity Zones



Source: California Department of Forestry and Fire Resources, Fire Hazard Severity Zone Viewer, 2026.

* Figure not OCR Compatible

Figure 18-2
Wildland-Urban Interface Zones in Project Vicinity



* Figure not OCR Compatible

With respect to the project site, the northern portion is undeveloped, consists of non-native annual grassland with gently rolling topography, and is interspersed with seasonal wetlands and vernal pools. The southern portion of the site also includes undeveloped annual grassland with gently rolling topography, interspersed with seasonal wetlands and vernal pools, and is bisected by a paved bicycle trail and Placer Creek, which flows east to west. The existing on-site vegetation provides potential fuel for wildfire. However, given the gently rolling terrain across the project site, slope would not affect on-site fire behavior, as compared to mountainous areas associated with the Sierra Nevada in the County's northeastern region. In addition, areas to the east of the project site contain tributaries to Dry Creek, which would provide potential fuel sources for wildfire.

The off-site affordable housing parcel is currently undeveloped and contains open grassy fields disturbed through regular maintenance. Similar to the project site, the existing on-site vegetation provides potential fuel for wildfire, but the gently rolling terrain would ensure that slope would not affect on-site fire behavior as compared to mountainous areas within the County.

Prevailing Winds

The predominant wind direction at the project site and off-site affordable housing parcel is from the south throughout the year.[4] Southerly winds are most dominant from May to September. The southerly direction of prevailing winds suggests that, during the majority of the year, winds would generally facilitate the spread of fire towards the north of the project site, towards Baseline Road, and towards the north of the off-site affordable housing parcel, towards the existing cemetery.

Large Fire History

According to CAL FIRE, relatively few larger wildfires, defined as 10 acres or greater, have occurred within the project region over the past four years.[5] Wildfire incidents were not recorded by CAL FIRE within Placer County in 2023.

- In September 2025, the Porter Fire burned 10 acres in Placer County, at the intersection of Porter Road and Karchner Road, approximately 18.15 miles north of the project site. Damages to structures or injuries to fire personnel and/or civilians were not reported.
- In September 2025, the Sierra Fire burned 44 acres in Placer County, at the intersection of Sierra College Boulevard and English Colony Way, approximately 10.86 miles northeast of the project site. Damages to structures or injuries to fire personnel and/or civilians were not reported.
- In August 2025, the Ranch Fire burned 140 acres in Placer County along State Route (SR) 65, just north of the community of Whitney and 6.88 miles northeast of the project site. Damages to structures or injuries to fire personnel and/or civilians were not reported.
- In July 2025, the Stardust Fire burned 12 acres in Placer County, along Stardust Lane within the City of Lincoln, approximately 10.91 miles northeast of the project site. Damages to structures or injuries to fire personnel and/or civilians were not reported.
- In July 2025, the Moore Fire burned 20 acres in Placer County, at the intersection of Moore Road and Nelson Lane in the City of Lincoln, approximately 8.67 miles north of the project site. Damages to structures or injuries to fire personnel and/or civilians were not reported.

[4] Weather Spark. *Climate and Average Weather Year Round in Roseville*. Available at: https://weatherspark.com/y/1156/Average-Weather-in-Roseville-California-United-States-Year-Round. Accessed September 2025.

[5] California Department of Forestry and Fire Protection. *Incidents Overview*. Available at: https://www.fire.ca.gov/incidents/. Accessed July 2025.

- In June 2025, the Riosa Fire burned 49 acres in Placer County, at Sheridan Lincoln Boulevard just south of the community of Sheridan. Damages to structures or injuries to fire personnel and/or civilians were not reported.
- In May 2025, the Sunset Fire burned 65 acres in Placer County, at the intersection of Sunset Boulevard and Fiddyment Road, approximately 5.09 miles north of the project site. Damages to structures or injuries to fire personnel and/or civilians were not reported.
- In May 2025, the Catlett Fire burned 175 acres in Placer County, along East Catlett Road approximately 6.93 miles northwest of the project site. Damages to structures or injuries to fire personnel and/or civilians were not reported.
- In August 2024, the Far Fire burned 12 acres in Placer County along Camp Far West Road and McCourtney Road, northwest of the community of Sheridan. Damages to structures or injuries to fire personnel and/or civilians were not reported.
- In July 2024, the Athens Fire burned 260 acres in Placer County surrounding the area of Athens Avenue and Fiddyment Road, approximately 6.06 miles north of the project site. Damages to structures or injuries to fire personnel and/or civilians were not reported.
- In July 2024, the Royal Fire burned 215 acres in Placer County near Soda Springs Road. Damages to structures or injuries to fire personnel and/or civilians were not reported.
- In July 2024, the Watt Fire burned 23 acres in Placer County near the intersection of Watt Avenue and Dyer Lane, approximately 1.60 miles to the west of the project site. Damages to structures or injuries to fire personnel and/or civilians were not reported.
- In June 2024, the Amoruso Fire burned 502 acres in Placer County at the intersection of Amoruso Way and Sunset Boulevard West, approximately 5.23 miles north of the project site and generally located east of the community of Pleasant Grove. Damages to structures or injuries to fire personnel and/or civilians were not reported.
- In June 2024, the PFE Fire burned 15 acres in Placer County at the intersection of PFE Road and Watt Avenue, located approximately 1.81 miles southwest of the project site and immediately adjacent to the off-site affordable housing parcel. Damages to structures or injuries to fire personnel and/or civilians were not reported.
- In May 2024, the Watt Fire burned 20 acres in Placer County at the intersection of PFE Road and Watt Avenue, located approximately 1.81 miles southwest of the project site and immediately adjacent to the off-site affordable housing parcel. Damages to structures or injuries to fire personnel and/or civilians were not reported.
- In May 2024, the Virginiatown Fire burned 95 acres immediately east of the community of Virginiatown in unincorporated Placer County. Updates and reports related to damages were not recorded.
- In September 2022, the Garden Fire burned 29 acres in Placer County, near the intersection of Garden Bar Road and Big Hill Road, northwest of the City of Auburn. Damages to structures or injuries to fire personnel and/or civilians were not reported.
- In September 2022, the Dutch Fire burned 48 acres in Placer County, north of Interstate 80 (I-80) and east of Ridge Road near the southern boundary of the community of Dutch Flat, which is located approximately 25 miles northeast of the City of Auburn. Damages to structures or injuries to fire personnel and/or civilians were not reported.
- In September 2022, the Hill Fire burned 11 acres in Placer County, on Iowa Hill Road approximately eight miles north of the community of Foresthill. Damages to structures or injuries to fire personnel and/or civilians were not reported.
- In September 2022, the Mosquito Fire burned 76,788 acres across El Dorado and Placer Counties at Mosquito Road and OxBow Reservoir east of the community of Foresthill, Placer County. According to the most recent incident update, a total of 78 structures were

destroyed and 13 were damaged. Injuries to fire personnel and/or civilians were not reported as part of the incident update.

- In August 2022, the Oak Fire burned 22 acres in Placer County west of I-80, along Live Oak Road near the unincorporated community of Weimar, which is located approximately 10 miles northeast of the City of Auburn. Damages to structures or injuries to fire personnel and/or civilians were not reported. This incident was separate from the 19,244-acre August 2022 wildfire in Mariposa County that shares the same name.
- In July 2022, a separate Riosa Fire burned 38 acres in Placer County, at the intersection of Riosa Road and Karchner Road, approximately three miles southeast of the City of Wheatland. Damages to structures or injuries to fire personnel and/or civilians were not reported.
- In July 2022, a separate Porter Fire burned 166 acres in Placer County, at the intersection of Porter Road and Camp Far West Road, approximately four miles east of the City of Wheatland. Damages to structures or injuries to fire personnel and/or civilians were not reported.

CAL FIRE strives to extinguish 95 percent of all wildland fires at 10 acres or less. Additional fires, beyond those listed above, have occurred within the project region over the past four years. The fires, for the most part, were extinguished within the above stated goal of under 10 acres.

Fuel Treatment Efforts

Fuel treatment efforts have been ongoing within the project region. Forest fuel treatments are used by managers for ecological restoration and reducing fire hazards. Due to past management decisions and long-term fire exclusion, forests are denser and are susceptible to severe wildfires. Fuel treatments aim to reduce the intensity and size of wildfires, increase species diversity, and restore forests to their historical condition. Two common types of treatments include:

- Mechanical thinning: cutting and clearing wood and brush; and
- Prescribed fire: burning existing fuel before more accumulates.

Based on proximity to homes and communities, one treatment may be used over the other. Several research studies show a combination of thinning, followed by burning of surface fuels, is most effective in promoting forest resilience to wildfire.[6]

Implementation of the Placer County Conservation Program (PCCP) would result in the permanent protection of approximately 50,000 acres in conservation reserves by the year 2060. Preservation of the protected lands requires that they are managed to reduce their susceptibility to wildfire. For example, each Reserve System unit would have a fire management component that would describe site-specific conditions and actions required to (1) reduce existing fuel loads, (2) re-introduce fire as a natural process of the ecosystem (if permissible), (3) minimize environmental effects and protect sensitive resources, and (4) enhance and/or restore natural community characteristics.

Current fuel reduction efforts (i.e., the Chipper Program) and new programs (i.e., the Biomass Box Program) would accomplish fuel reduction treatment efforts. The Placer County Resource Conservation District's (RCD) Chipper Program provides low-cost brush chipping for residents in

[6] For example, see U.S. Department of Agriculture/Forest Service, Rocky Mountain Research Station. *Review of Fuel Treatment Effectiveness in Forests and Rangelands and a Case Study from the 2007 Megafires in Central Idaho USA (General Technical Report RMRS-GTR-252)*. January 2011.

Placer County. The Chipper Program continues to be available for local residents seeking to reduce fire hazards and improve defensible space around buildings and structures. The Chipper Program is funded through grants secured through a partnership with the RCD, Placer County Office of Emergency Services (OES), the Placer County Sheriff's Office, the Placer County Air Pollution Control District, and CAL FIRE.[7]

The Placer County Wildfire Protection and Biomass Utilization Program (i.e., the Biomass Box Program) was established in 2006 to help protect residents, communities, forests, and important forest resources from the threat of wildfire and to efficiently manage and use biomass. Many wildfire protection activities and projects involve the cutting of trees and brush to reduce wildfire hazard. Trees large enough to have commercial value as lumber are transported to mills for processing, but brush, small trees, and the limbs and tops of larger trees are excess biomass that has most often been disposed of by open burning to complete the necessary reduction of fire hazard. Placer County has recognized that a better option is to use the excess biomass for generation of energy. As part of the thinning of forested areas, the excess brush, small trees, limbs, and tree tops are ground and then transported by way of haul trucks to a biomass power plant. Using excess biomass for generation of energy provides benefits through offsetting fossil fuel energy generation, reducing air pollution emissions, and increasing support for jobs associated with the biomass utilization. Use of biomass for energy also has potential to help support the economic sustainability of forest management and hazard reduction projects designed to reduce the negative effects of wildfires.[8]

Public Safety Power Shutoffs

In an effort to prevent fires, the electrical services provider for southern Placer County, Pacific Gas & Electric Co. (PG&E), initiated PSPS in 2019, which may continue in subsequent years until fire risks associated with power lines are decreased. PSPS events involve PG&E turning off electrical service during times when the weather is predicted to have a heightened fire risk from gusty winds and dry conditions. Dependent on the fire risks, the power outage events may occur in specific areas or for all PG&E customers across the County.

Similarly, the Sacramento Municipal Utility District (SMUD), a community-owned electric utility that serves Sacramento County and portions of Placer County, including the project site and off-site affordable housing parcel, maintains the option, if necessary, of shutting off power. SMUD has protocols for disabling automatic reclosers and for de-energizing lines to protect public safety and also has an Outage Communications Plan that addresses potential de-energization events. If power must be shutoff, SMUD will include targeted messaging for affected areas that will set expectations and identify support resources.

The California Public Utilities Commission (CPUC) adopted the High Fire-Threat District Map in 2018,[9] which serves to assist in the public's protection from potential fire hazards associated with overhead powerline facilities and nearby aerial communication facilities by delineating fire-threat areas in the State. Fire-threat areas are designated as Tier 1, 2, or 3, with Tier 1 defined as a High Hazard Zone, Tier 2 as an Elevated Hazard Zone, and Tier 3 as an Extreme Hazard Zone.

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7 Placer County. *Chipper Program Available for Placer County Residents*. Available at: https://www.placer.ca.gov/483/_1122012. Accessed October 2025.

8 Placer County Community Development Resource Agency. *Biomass and Wildfire Protection*. Available at: https://www.placer.ca.gov/2881/Biomass-Wildfire-Protection. Accessed March 2026.

9 California Public Utilities Commission. *Fire-Threat Maps and Fire-Safety Regulations Proceedings*. Available at: https://www.cpuc.ca.gov/industries-and-topics/wildfires/fire-threat-maps-and-fire-safety-rulemaking. Accessed July 2025.

Neither the project site nor the off-site parcel is located within an area designated as Tier 1, 2, or 3 (see Figure 18-3). As such, the site would not be regularly subject to power-shutoff events by PG&E or SMUD. Throughout power-shutoff events, emergency services in Placer County remain functional with back-up power supplies, but many businesses and agencies are not operational, which could result in inadequate access to medical services and exposure to excessive heat or cold.

Fire Agencies and Resources

Several fire agencies provide fire protection services in the project region, including wildland fire and structural fire response. The Placer County Fire Department (PCFD), which has a Cooperative Fire Protection Agreement with CAL FIRE, provides wildland fire suppression at the project site. Both CAL FIRE and PCFD are discussed below.

California Department of Forestry and Fire Protection

Wildland fire protection is provided either by the State (through CAL FIRE) or the federal government (through the U.S. Forest Service). The State has direct protection responsibility for all State and private wildlands (or forest lands) in designated areas, and provides support and assistance to local jurisdictions in other areas of the State. CAL FIRE provides support and assistance to PCFD for wildland fire response at the project site and strives to meet the National Fire Protection Association (NFPA) 1710 guideline for fire department response time of five minutes 90 percent of the time.

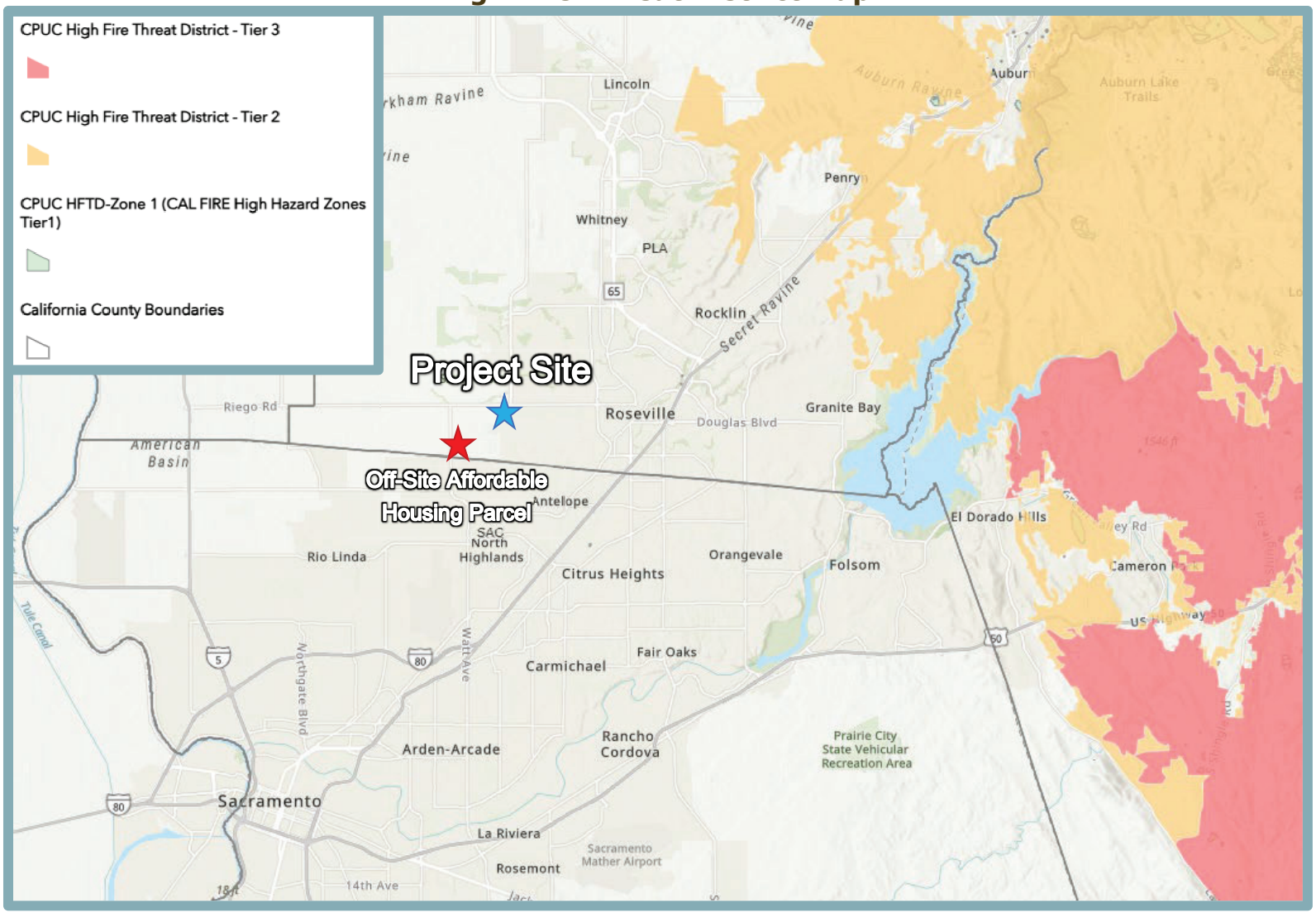
The nearest CAL FIRE station to the project site and the off-site affordable housing parcel is Station No. 100, located at 8350 Cook Riolo Road, approximately 1.21 miles east of the project site and 3.10 miles northeast of the off-site affordable housing parcel. The CAL FIRE station is jointly operated with the PCFD and provides services to the unincorporated areas of Placer County. Station 100 is a full-time staffed station. The full-time firefighters are augmented by seasonal and volunteer firefighters that support the emergency response capabilities of CAL FIRE and PCFD. CAL FIRE has mutual and/or automatic aid agreements and, thus, may assist local fire agencies with structural fires and medical incidents under the closest resource concept. In addition, as is currently the case, incidents could occur where the City of Roseville Fire Department is called upon to provide mutual aid at or near the project area to send the closest available unit to an emergency incident, regardless of jurisdictional boundaries. In that spirit of cooperation to provide the fastest and highest level of service to the surrounding area, the Roseville Fire Department has signed onto a Closest Resource Agreement (CRA) with PCFD and other surrounding fire departments to provide mutual aid between all participating fire departments. As outlined in the CRA, Roseville can adjust the amount of reciprocal coverage by setting draw-down levels or withdraw from the CRA entirely.

Placer County Fire Department

The project site is located within the service territory of the PCFD, whose services are administered by the County OES. The territory served by the PCFD is consistent with the boundaries of County Service Area (CSA) 28, which is used as a means to fund PCFD services.

As previously discussed, because the project site and off-site affordable housing parcel are located within an LRA, the PCFD is responsible for providing wildland fire suppression services to the project site and off-site affordable housing parcel. In combination with CAL FIRE, the PCFD integrates State and local firefighting resources, which includes services rendered through eight full-time stations and seven volunteer fire stations.

Figure 18-3
High Fire-Threat District Map



Source: California Public Utilities Commission, CPUC High Fire Threat District (HFTD) Map, 2025.

* Figure not OCR Compatible

PCFD services include fire protection, rescue, and emergency response services for approximately 475 square miles of unincorporated area in Placer County. Fire prevention and protection in areas of Placer County not served by independent fire protection districts or municipal fire departments are provided through a partnership with CAL FIRE and seven volunteer companies, all operated by CAL FIRE under the name PCFD. Services provided include fire suppression, emergency medical, fire prevention, and rescue, among others. Additionally, PCFD, by way of its contract with CAL FIRE, conducts fire inspections and assists with land development functions within the PCFD service area. All fire agencies within Placer County operate under a mutual aid system, defined as a pre-arranged plan and contract between agencies for reciprocal assistance upon request by the first-response agency.

CAL FIRE is responsible for providing emergency services in Placer County and has stated their ability to serve future planned growth in the Dry Creek area and still maintain compliance with established safety response times. As is currently the case, incidents will occur where the City of Roseville (Roseville) Fire Department is called upon to provide mutual aid at or near the project area to send the closest available unit to an emergency incident, regardless of jurisdictional boundaries. In that spirit of cooperation to provide the fastest and highest level of service to the surrounding area, Roseville Fire Department has signed onto a Closest Resource Agreement (CRA) with PCFD and other surrounding fire departments to provide mutual aid between all participating fire departments. As outlined in the CRA, Roseville can adjust the amount of reciprocal coverage by setting draw-down levels, or withdraw from the CRA entirely. Timing and triggers for public service improvements occur when impacts associated with additional development exceeds established safety standards, which is not the case for the proposed project. As residential units are constructed and fire impact fees are collected, projects are required to pay their fair share towards existing and planned fire protection improvements, which will address the project's impacts to fire services for all safety providers and increase the County's ability to serve unincorporated areas, in addition to continuing to provide reciprocal aid to the City of Roseville and surrounding local governments.

Currently, CAL FIRE employs personnel that respond to PCFD calls for service, including permanent personnel assigned to serve PCFD stations full-time. As noted above, CAL FIRE Station No. 100, located approximately 1.21 miles east of the project site at 8350 Cook Riolo Road, is the closest fire station to the site and is jointly operated with the PCFD. Station 100 is approximately 3.10 miles northeast of the off-site affordable housing parcel; however, a Sacramento Metro Fire District station (Station 117) is located at 7961 Cherry Brook Drive, 1.80 miles southwest of the parcel.

Emergency Vehicle Access

Fire access can be described as the means by which firefighters can enter an area to quickly mitigate a wildfire incident prior to spread to adjacent properties and critical infrastructure at risk. For the purposes of fire apparatus access to the project site, emergency vehicles would have access to the site by way of Baseline Road and Walerga Road. Once on-site, fire engines could access the proposed residences by way of the newly constructed internal roadways. In addition, further access would be provided by the emergency vehicle access (EVA) routes included as part of the proposed project: one within Phase 1 between Estia Dry Creek and the Phase 2 roadways; one in Placer Creek Residential Phase 3, from Walerga Road to M Street; and one in Phase 4, located from Q Court to Walerga Road in the southwest corner of the project site. Phase 2 would provide two points of access to Walerga Road (J Street and the proposed Springhill Drive extension), and Sub-Phase 2A would include a temporary EVA through Phase 1 in the interim

until Sub-Phase 2B is constructed. Access to the off-site affordable housing parcel would be granted by way of Watt Avenue, which bounds the parcel to the west, and by PFE Road, which bounds the parcel to the south.

The existing roads that would serve as the primary evacuation routes during a wildfire event for both the project site and off-site affordable housing parcel would include Baseline Road and Walerga Road in the immediate project vicinity, as well as PFE Road, Foothills Boulevard, Watt Avenue, and I-80 in the surrounding area.

18.3 REGULATORY CONTEXT

Applicable federal laws or regulations pertaining to wildfire that would directly apply to the proposed project do not exist. The following sections provide a summary of the State and local regulations pertaining to wildfire that are applicable to the proposed project.

State Regulations

The following are the State environmental laws and policies relevant to wildfire.

State Responsibility Area

Pursuant to PRC Sections 4125-4128, the Board of Forestry and Fire Protection classifies all lands in the State for the purposes of determining areas in which the financial responsibility of preventing and suppressing wildfire is primarily the responsibility of the State. The classified lands are termed SRA.

Fire Hazard Severity Zones

FHSZs are geographical areas designated pursuant to California PRC Sections 4201 through 4204 and classified as Very High, High, or Moderate in SRAs or as Local Agency Very High FHSZs designated pursuant to California Government Code Sections 51175 through 51189.

The California Code of Regulations (CCR), Title 14, Section 1280 entitles the maps of the geographical areas as “Maps of the Fire Hazard Severity Zones in the State Responsibility Area of California.” The State Responsibility Area FHSZ maps, originally adopted in 2007, were updated by CAL FIRE in 2023 and incorporated into the CCR by the Office of the State Fire Marshal. The maps define the regulatory hazard designations that govern building standards and defensible space requirements within SRAs. The most recent adoption became effective April 1, 2024.

Local Regulations

The following local goals and policies related to wildfire are applicable to the proposed project.

Placer County General Plan

The following goals and policies from the PCGP related to wildfire are applicable to the proposed project.

Public Facilities and Services Element

Goal 4.I To protect residents of and visitors to Placer County from injury and loss of life and to protect property and watershed resources from fires.

Policy 4.I.1 The County shall encourage local fire protection agencies in Placer County to maintain the following minimum fire protection standards (expressed as Insurance Service Organization (ISO) ratings):

a. ISO 4 in urban areas
b. ISO 6 in suburban areas
c. ISO 8 in rural areas

Policy 4.I.2 The County shall encourage local fire protection agencies in the County to maintain the following standards (expressed as average response times to emergency calls):

a. 4 minutes in urban areas
b. 6 minutes in suburban areas
c. 10 minutes in rural areas

Policy 4.I.3 The County shall require new development to develop or fund fire protection facilities, personnel, and operations and maintenance that, at a minimum, maintains the above service level standards.

Policy 4.I.9 The County shall ensure that all proposed developments are reviewed for compliance with fire safety standards by responsible local fire agencies per the Uniform Fire Code and other County and local ordinances.

Health and Safety Element

Goal 8.C.1 To minimize the risk of loss of life, injury, and damage to property and watershed resources resulting from unwanted fires.

Policy 8.C.1.1 The County shall require that new development meet State, County, and local fire district standards for fire protection, including the California Building Standards Code, the International Wildland-Urban Interface Code, and the Placer County Municipal Code as applicable.

Policy 8.C.1.2 The County shall refer applicants of development projects in the unincorporated county to the appropriate local fire agencies for review for compliance with fire safety standards. If dual responsibility exists, then both agencies shall review and comment relative to their area of responsibility. If standards are different or conflicting, the more stringent standards shall be applied. All development in high fire hazard areas shall be designed and constructed to minimize the risk from fire hazards.

Policy 8.C.1.6	The County shall continue to implement State fire safety standards through enforcement of the applicable standards contained in the Placer County Land Development Manual.
Policy 8.C.1.9	For tentative parcel maps and tentative subdivision maps located in a High or Very High Fire Hazard Severity Zone (FHSZ), the County shall require the undergrounding of new electric utilities, except in cases where the undergrounding of such utilities is infeasible or where alternative mitigation is more appropriate or provides the same level of benefit or protection. For all projects located in a Moderate FHSZ, or nonresidential projects in High or Very High FHSZ, the County shall consider all feasible fire preventative measures during environmental review. All projects shall conform to the utility requirements, as specified in applicable Community and Specific Plans, as well as all applicable design standards and guidelines.

Dry Creek-West Placer Community Plan

The relevant goals and policies from the DCWPCP related to wildfire are presented below.

Community Development: Public Services

Goal 1	Protect the citizens and visitors of the plan area from loss of life while protecting property and watershed resources from unwanted fires through preplanning, education, fire defense improvements, and fire suppression.
Policy 1	Ensure that all proposed developments are reviewed for fire safety standards by local fire agencies responsible for its protection, including providing adequate water supplies and ingress and egress.
Policy 2	Maintain strict enforcement of the County Zoning Ordinance, Uniform Building Code and the Uniform Fire Code.
Policy 5	For those portions of the plan area that are served by the Dry Creek Fire Protection District and that are to be developed in rural-low density residential, low density residential, medium or high density residential, commercial, professional office or industrial, adopt a four minute maximum response time to as much of the new development as possible.

Placer County Code

The following applicable codes related to wildfire are from the Placer County Code.

Building Code

Buildings constructed within the project site would be subject to the current building standards found in both the CBC and Chapter 15 of the Placer County Code. Pursuant to Section 15.04.570

of the Placer County Code, the PCFD enforces standards associated with the CFC and all State fire marshal codes related to the installation of residential fire sprinkler systems and the installation of Class A roofing materials within all residential units. Both State and local requirements would significantly assist in reducing the threat of a wildfire spreading from undeveloped land to a nearby building.

Fire Code

Placer County has adopted the CFC (Title 24 CCR, Part 9) (Sections 15.04.510 [Fire Code Adopted] and 15.04.520 [Fire Code Amended]). The CFC addresses fire risk during project construction and operations, including emergency access, access gates, sprinkler systems, fire alarms within buildings, and construction of access roads to accommodate fire apparatus. With respect to construction, CFC Chapter 33 establishes fire safety provisions intended to reduce the risk of ignition and fire spread to the project site, adjacent structures, and surrounding land during construction. Additional requirements may apply, as well as at the discretion of the local fire authority having jurisdiction. The CFC also requires that an automatic fire sprinkler and/or fire extinguishing system be installed throughout new one- and two-family dwellings and commercial buildings 3,600 square feet (sf) and larger.

Fire Prevention Code

Chapter 9, Article 9.32, Part 3 of the Placer County Code requires the maintenance of “fire breaks" around structures and the clearing of roofs to prevent structural fires in the WUI. Chapter 9, Article 9.32, Part 4 of the Placer County Code requires that hazardous vegetation be abated on unimproved parcels in the County. Abatement of hazardous fuels is required if the unimproved parcel is adjacent to an improved parcel where implementation of required defensible space would extend onto the unimproved parcel. Abatement is also required along roads if, in the opinion of the County fire warden, the presence of hazardous fuels constitutes a potential obstacle to emergency access.

Subdivision Design Standards and Improvements

In order to better meet the ultimate goals of fire protection, including goals related to the protection of life, community, and valuable property, each subdivider of land in the unincorporated portions of Placer County is required to comply with the minimum requirements set forth in Placer County Code Section 16.08.080 (Fire Suppression). The requirements contained therein are related to water supply for the purposes of fire flow, including provisions related to hydrants, delivery rate, maintenance of the water system, and on-site water storage.

Placer County Office of Emergency Services

Placer County’s OES provides emergency management services in cooperation with local cities and special districts, including fire agencies. During an active incident, such as fire or flood, the OES helps initiate first responses. The functions of the OES include emergency planning, response, recovery, and mitigation, including preparation of a Local Hazard Mitigation Plan (LHMP). The currently adopted Placer County LHMP, which was updated in 2021,[10] is a joint effort between Placer County and 15 other jurisdictions and is intended to guide hazard mitigation planning to reduce the effects of hazard events, including wildfires.

[10] Placer County. *2021 Local Hazard Mitigation Plan Update*. June 2021.

Placer County Local Hazard Mitigation Plan

The LHMP was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 so that Placer County would be eligible for the Federal Emergency Management Agency's (FEMA) Pre-Disaster Mitigation and Hazard Mitigation Grant Programs, as well as lower flood insurance premiums. The LHMP is a multi-jurisdictional plan that geographically covers the entire area within Placer County's jurisdictional boundaries. The purpose of the plan is to guide hazard mitigation planning and to better protect the people and property of the County from the effects of hazard events. The LHMP demonstrates the community's commitment to reducing risks from hazards and serves as a tool to help decisionmakers direct mitigation activities and resources.

The Placer County Board of Supervisors adopted the 2021 LHMP on November 16, 2021. The goals of the 2021 LHMP are as follows:

- Goal 1: Minimize risk and vulnerability of Placer County to the impacts of natural hazards and protect lives and reduce damages and losses to property, economy, public health and safety, and the environment;
- Goal 2: Provide protection for critical facilities, infrastructure, utilities and services from hazard impacts;
- Goal 3: Improve public awareness, education, communication, and preparedness for all hazards;
- Goal 4: Increase communities' capabilities to mitigate losses and to be prepared for, respond to, and recover from a disaster event;
- Goal 5: Ensure a more resilient County that can adapt to the hazards created or exacerbated by Climate Change;
- Goal 6: Reduce fire severity and mitigate undesirable fire outcomes in Placer County; and
- Goal 7: Maintain FEMA Eligibility/Position the communities for grant funding.

Placer County and Placer Operational Area Emergency Operations Plan

The Placer County and Placer Operational Area Emergency Operations Plan (EOP) provides the guidelines needed for emergency response planning, preparation, training and execution throughout unincorporated Placer County.[11] The EOP is applicable to any natural disaster or manmade emergency occurring in or in the proximity of Placer County that affects, or may affect, the unincorporated area of the County (or the entire operational area, should response require coordination of the emergency response efforts of multiple agencies or jurisdictions). Emergency events range from minor oil spills, brush fires and minor flooding to severe winter storms, floods, wildland fires, and earthquakes to countywide public health emergencies, all of which have potentially catastrophic long-term public safety, economic, social and political implications.

Placer County Community Wildfire Protection Plan

The Placer County CWPP is the result of a communitywide planning effort that included extensive field data gathering, compilation of existing documents and geographic information system (GIS) data, and scientific analyses and recommendations designed to reduce the threat of wildfire-related damages to values at risk. The CWPP provides valuable information related to wildfire to citizens, policymakers, and public agencies throughout western Placer County. The primary goal of the CWPP is to protect human life, private property, essential infrastructure, and natural

[11] Placer County Office of Emergency Services. *Placer County and Placer Operational Area Emergency Operations Plan.* Adopted December 14, 2010.

resources through the implementation of fire prevention projects that work to increase public awareness, improve forest health, sustain local wildlife and preserve the natural beauty of the area through a shared responsibility concept. To that end, the CWPP identified recommendations to aid stakeholders in preventing and/or reducing the threat of wildfire in the County.

Placer County Sustainability Plan

The County adopted the Placer County Sustainability Plan (PCSP): A Greenhouse Gas Emission Reduction Plan and Adaptation Strategy on January 28, 2020. The primary goal for the adaptation component of the PCSP is to create a resilient Placer County that can adapt to the hazards created or exacerbated by climate change. To accomplish this goal, the PCSP provides several goals, strategies, and actions that promote coordination among agencies, protection of buildings, and implementation of mitigation measures to reduce wildfire activity in the County. The following PCSP strategies and actions are related to wildfire.

Strategy WF-5

Require all new large development projects in Moderate, High, or Very High Fire Hazard Severity Zones to have multiple points of ingress and egress to improve evacuations and emergency response access.

Strategy WF-7

Explore requiring fire-safe improvements before issuing a building permit or other formal approval for significant retrofits to buildings in identified Very High and High Fire Hazard Severity Zones, including installation of sprinklers and fire-safe exterior materials as feasible.

Action 1

Coordinate with the Placer County Fire Safe Alliance and local Fire Safe Councils to encourage new and existing planned developments in the WUI and other areas with elevated wildfire risk to join the Placer County Firewise Communities program.[12]

18.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to wildfire. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, Section XX, Wildfire, determination of significant impacts related to wildfire is based on whether the proposed project would result in the following, if located in or near SRAs or lands classified as Very High FHSZs:

- Substantially impair an adopted emergency response plan or emergency evacuation plan.

[12] The Placer County Fire Safe Alliance provides community assistance, information, and education programs in an effort to reduce the risks of wildfire danger to life and property in the County, and is comprised of various members, including, but not limited to, Placer County; CAL FIRE; U.S. Bureau of Land Management; U.S. Bureau of Reclamation; and the Greater Auburn Area, Foresthill/Iowa Hill, Lincoln, and Placer Sierra Fire Safe Councils. Through the County's Firewise Communities Program, Placer County is a member community of the NFPA's Firewise USA Program, which is aimed at homeowners and provides specific criteria for communities regarding wildfire preparedness. The program provides resources to help homeowners learn how to adapt to living with wildfire and encourages neighbors to work together to take action to prevent losses.

- Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.
- Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.
- Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

Pursuant to CEQA Guidelines Appendix G, the standards of significance listed above are only relevant when a project's location is within an SRA or Very High FHSZ. The project site is not located within land designated as either. Rather, the project site is located within a LRA and is identified by CAL FIRE as being within a Non-Very High FHSZ area. Nevertheless, because the project site is located adjacent to a Moderate FHSZ and the off-site parcel is located within a Moderate FHSZ, in order to provide a conservative analysis, this chapter evaluates the potential impacts of the proposed project based on the standards listed above.

In addition to the above standards, an additional, more generic significance standard can be derived from CEQA Guidelines Appendix G, Section X, Hazards and Hazardous Materials. Under the additional standard, which applies to projects located within LRAs and outside Very High FHSZs, the proposed project would result in a significant impact if the project would:

- Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

All of the above standards should be understood and applied in light of legal principles articulated by the California Supreme Court in *California Building Industry Assn. v. Bay Area Air Quality Management Dist.* (2015) 62 Cal.4th 369, 377-378, where the court explained that "agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents. But when a proposed project risks exacerbating those environmental hazards or conditions that already exist, an agency must analyze the potential impact of such hazards on future residents or users. In those specific instances, it is the *project's* impact on the environment—and not the *environment's* impact on the project—that compels an evaluation of how future residents or users could be affected by exacerbated conditions." (Original italics.)

Method of Analysis

The impact analysis contained in this chapter is based on a review of available CAL FIRE wildfire hazard mapping and recent wildfire history within Placer County. In addition, State and local fire hazard regulations were evaluated to identify applicable design requirements for the proposed project to minimize wildfire risk (e.g., defensible space).

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed project and off-site sewer lift station improvements, as well as the two affordable housing options analyzed throughout this EIR, in comparison with the standards of significance identified above. In most cases, potential environmental impacts associated with the proposed project and the 22 on-site ADUs would not differ. Thus, unless otherwise noted, the below analysis applies to both the proposed project and the on-site ADUs.

18-1 Substantially impair an adopted emergency response plan or emergency evacuation plan. Based on the analysis below, the impact is *less than significant*.

The following discussion includes an analysis of potential impacts related to development of the proposed project and off-site sewer lift station improvements area, as well as the off-site affordable housing parcel, which could substantially impair an adopted emergency response plan or emergency evacuation plan.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

The off-site sewer lift station improvements area is located within Dry Creek Community Park and the improvements would be limited to providing an underground tank for additional underground emergency sewer storage capacity. As such, the off-site sewer lift station improvements would not result in impacts to emergency response or evacuation. Thus, the following analysis is focused potential impacts associated with the proposed project.

Emergency events, like wildland fires, are unpredictable. The location of the fire, the time of day an event occurs, the direction of travel, and the rate of spread are unknown. Due to such uncertainty, the use of traditional capacity analysis, such as AM and PM peak hour operations at study intersections, is limited for the analysis of emergency events. Furthermore, while Placer County has an adopted LHMP and EOP, which are both intended to provide emergency resources and plans in response to local hazards, such as wildfires, the County does not have an adopted emergency evacuation plan. However, in the event of an emergency, emergency responders do have measures that can be deployed to aid in the movement of the public from danger. For instance, during evacuation events, State and/or local emergency responders provide active traffic control at intersections, close roads, provide detours for through traffic, and actively manage available travel lanes to facilitate evacuation away from the emergency. Such measures would be initiated in the event that an evacuation is deemed necessary.

For the purposes of this analysis, the existing roads adjacent to the project site, Baseline Road and Walerga Road, would serve as the primary evacuation route during a wildfire event. In addition, PFE Road and Foothills Boulevard, which are located within approximately two miles from the project site boundary, would also serve to assist in evacuating residents. As the closest major highway, I-80 would also facilitate evacuation from the area. In addition, the proposed EVA routes would be provided throughout the site, connecting to Walerga Road.

The Circulation Plan Diagram in the PCGP (Figure 1-8 of the PCGP) depicts the circulation system for the unincorporated portions of the County, with roadways shown by means of a set of roadway classifications. Roadways are classified based on the linkages they provide and their function, both of which reflect their importance to land use patterns, travelers, and the public's general welfare. The County's roadway system classifies roadways into the following hierarchy: local streets, collector roadways, arterial roadways, thoroughfares, and expressways. In general, roadways higher in the hierarchy are meant to collect traffic from roads lower in the order.

As discussed in Chapter 16, Transportation, of this EIR, the roadways that provide access to the project site include Baseline Road, Walerga Road, and Vineyard Road. Baseline Road is an east-west arterial, Walerga Road is a north-south four-lane major arterial, and Vineyard Road is an east-west two-lane major collector. The roadways surrounding the project site primarily serve to collect vehicles from local streets and route them to roads higher in the County's classification hierarchy. The roadways could experience substantial congestion if all residents of the 432 proposed residences evacuated the area at the same time.

However, the Placer County Board of Supervisors adopted the Countywide Traffic Impact Fee Program in April 1996, requiring new development within the County to address adverse effects to the roadway system through payment of traffic impact fees. The fees collected through the program, in addition to other funding sources, allow the County to construct roads and other transportation facilities and improvements needed to accommodate new development. The fee was updated by Placer County in August 2021. The County's fee program and Capital Improvement Program (CIP) is divided into 11 districts, and the project site is included in the Dry Creek-West Placer Benefit District.[13] Current roadway improvements planned in the project vicinity are shown in Table 18-1.

Table 18-1
Dry Creek CIP Improvements

Street	Existing Number of Lanes	Location	Description
Cook Riolo Road	Two Lanes	PFE Road to Baseline Road	Roundabouts/intersection improvements
Dyer Lane	Two Lanes	Baseline Road to 16th Street/ Placer Vineyards Road	Widen to four lanes
Locust Road	Two Lanes	Sacramento County line to 18th Street	Widen to four lanes
North Antelope Road	Two Lanes	Sacramento County line to PFE Road	Widen to five lanes
		at PFE Road	Signal/intersection improvements
PFE Road	Two Lanes	North Antelope Road to City of Roseville	Widen to five lanes
		Walerga Road to Cook Riolo Road	Traffic-calming/control measures
		Watt Avenue to Walerga Road	Widen to four lanes
Placer Vineyards Road	Two Lanes	Sacramento County line to Baseline Road	Widen to four lanes
Vineyard Road	Two Lanes	at Brady Lane	Intersection improvements
Walerga Road	Four Lanes	Baseline Road to Sacramento County line	Widen to six lanes

(Continued on next page)

[13] Placer County. *Countywide Capital Improvement Programs.* July 8, 2024. Available at: https://www.placer.ca.gov/DocumentCenter/View/63571/Countywide-Capital-Improvement-Programs-CIP.

Table 18-1
Dry Creek CIP Improvements

Street	Existing Number of Lanes	Location	Description
		at Town Center Avenue	Signal/intersection improvements*
Watt Avenue	Two Lanes	Just south of Sacramento County line to Baseline Road	Widen to six lanes
		Bridge replacement at Dry Creek (Phase 1)	Construct four-lane bridge
		Bridge replacement at Dry Creek (Phase 2)	Widen from four lanes to six lanes
		at A Street	Signal/intersection improvements
		at Dyer Lane	Signal/intersection improvements
		at East Town Center Drive	Signal/intersection improvements
		at Oak Street	Signal/intersection improvements
		at PFE Road	Signal/intersection improvements

* Completed Project

Source: Placer County, Countywide Capital Improvement Programs, June 10, 2025.

Based on the planned CIP improvements shown in Table 18-1, project vicinity roadways, including Walerga Road, are scheduled for improvements that would allow for traffic volumes generated by buildout of the DCWPCP, including the proposed project, to be better accommodated. For example, as part of the proposed project, the section of Walerga Road that bisects the project site into the northern and southern portions would be widened from four lanes to six lanes.

The aforementioned improvements would aid in the event that evacuation of the project site during a wildfire is necessary. Additionally, during evacuation events, emergency responders would provide active traffic control at intersections, and may close roads, provide detours for through traffic, and/or actively manage available travel lanes to facilitate evacuation away from the emergency. Furthermore, as discussed previously, the proposed EVA routes would allow fire engines to access the project site, generally facilitating emergency vehicle responses and potential evacuation services throughout.

In the event of a wildfire, future residents of the proposed project would be provided sufficient warning through the Placer Alert system, a component of a partnership between public safety agencies in Placer, Sacramento, and Yolo counties to alert residents about emergency events and other important public safety information through a community notification system. The system enables the Placer County Sheriff's Office to provide the public with critical information quickly in a variety of situations, such as severe weather, unexpected road closures, and evacuations of buildings or neighborhoods. All members of the public can sign up for Placer Alert

through the Placer County Sheriff's Office website and elect to receive notifications of emergency situations through various means, including text messages and email.

During wildfire events, emergency responders would be able to access the project site to combat fires, which would serve to reduce the hazardous conditions that precipitate the need for evacuation of residents. As part of the proposed project, new internal roadways would be constructed within the project site, which would connect to Baseline Road and Walerga Road. From the proposed access points, the Placer Creek Residential neighborhoods would be served by an internal roadway system, which would include sidewalks and rolled curb and gutters on each side. Interior roadways would be public in Phase 2 and private in Phases 3 and 4. The proposed streets would provide access to individual residential lots and would feature travel lanes at least 10 feet wide. Therefore, all internal roadways proposed as part of the project would be wide enough to accommodate emergency vehicles. Accordingly, the proposed project would provide adequate emergency access to the project site and would not be expected to conflict with any potential evacuation routes.

The Placer Creek Residential Phase 3 entry from Walerga Road and Phase 4 entry on Vineyard Road would be gated. The gated entries would be constructed consistent with County Detail ST-27 and the proposed gated access points would be required to comply with the emergency vehicle access conditions established by Section 15.04.580 of the Placer County Code. Section 15.04.580 requires that emergency vehicles be provided access at gated entries through inclusion of an override switch and an approved emergency radio frequency gate opening device. Therefore, the proposed gated entries would not impair emergency vehicles from accessing the site in an emergency event.

EVA routes to the project site would be developed as part of Phase 1 between Estia Dry Creek and the Phase 2 roadways connecting to Walerga Road. An EVA route in Placer Creek Residential Phase 3 would be located from Walerga Road to M Street, opposite the new Phase 2 entrance/J Street. In Phase 4, an EVA route would be located from Q Court to Walerga Road in the southwest corner of the project site. The proposed EVA routes would be comprised of 20-foot-wide pavement for two-way travel. Emergency vehicles would be expected to primarily come from Station 100 at 8350 Cook Riolo Road. For example, emergency vehicles could proceed from the station southward along Cook Riolo Road, then proceed westward at the Cook Riolo Road/Vineyard Road intersection. From Vineyard Road, which would be extended westward to connect to the project site as part of the proposed project, emergency vehicles would access the Phase 4 portion of the project site through the proposed gated entry or gated EVA on Walerga Road. The Phase 1 area would be accessed by way of Baseline Road, and Phases 2 and 3 would be accessed by way of Walerga Road. Given that Station 100 is located approximately 1.21 miles east of the project site, emergency vehicles would be anticipated to arrive on-site within a timely manner.

During project construction, temporary lane closures on Baseline Road and Walerga Road could be required. However, as required by Mitigation Measure 16-1 in the Transportation chapter of this EIR, any temporary lane closures would be coordinated with County OES, the Placer County Engineering and Surveying Division, and local emergency services providers. In addition, any lane closures due to nighttime roadwork would not substantially impair emergency evacuations or emergency

responses, as less traffic occurs at night. Furthermore, complete closure of the roadways at any point is not anticipated.

Off-Site Affordable Housing Parcel

As discussed throughout this EIR, the proposed RVSP amendment and rezone would result in a maximum development potential of 120 affordable income-restricted units within the off-site affordable housing parcel. The existing roads adjacent to the off-site affordable housing parcel are Watt Avenue to the west and PFE Road to the south, which would serve as the primary evacuation route during a wildfire event. I-80, which is directly accessible from Watt Avenue, would also facilitate evacuation from the off-site affordable housing parcel.

Similar to the above, future development on the off-site affordable housing parcel would be subject to payment of all applicable Placer County traffic impact fees. The off-site parcel is also located within the Dry Creek-West Placer Benefit District.[14] Based on the planned CIP improvements shown in Table 18-1, project vicinity roadways, including PFE Road, are scheduled for improvements that would allow for traffic volumes generated by buildout of the project area, including the development of up to 120 new affordable units within the off-site affordable housing parcel, to be better accommodated. For example, the section of PFE Road that bounds the off-site affordable housing parcel to the south is anticipated to be widened from two lanes to four lanes. The CIP also includes planned signal and intersection improvements at the Watt Avenue/PFE Road intersection. As discussed in Chapter 3, Project Description, of this EIR, the installation of the traffic signal noted in the CIP is required for RVSP buildout; thus, the timing of the RVSP and the proposed project may dictate the party responsible for constructing the signal. Overall, the foregoing roadway improvements would aid in the event that evacuation of the project area during a wildfire is necessary. Additionally, during evacuation events, emergency responders would provide active traffic control to facilitate evacuation away from the emergency.

In the event of a wildfire, residents of the future off-site affordable units would be provided sufficient warning through the Placer Alert system, which would provide the public with critical information quickly. All members of the public can sign up for Placer Alert through the Placer County Sheriff's Office website and elect to receive notifications of emergency situations through various means.

Although specific site access plans are not currently available, Section 3.6.2 of the RVSP describes access to the off-site affordable housing parcel through a potential auxiliary lane and deceleration taper on the eastern side of Watt Avenue, as well as by a potential driveway near the southeastern corner of the parcel to facilitate right turns from westbound traffic on PFE Road. Even if future access to the off-site affordable housing parcel were to differ as compared to what was anticipated in the RVSP, roadway construction and driveways would be designed compliant with applicable Placer County standards, which would be confirmed during improvement plan review. Therefore, emergency responders would be able to access the parcel during wildfire events to combat fires, which would serve to reduce the hazardous conditions that precipitate the need for evacuation of residents. At the time project

[14] Placer County. *Countywide Capital Improvement Programs.* July 8, 2024. Available at: https://www.placer.ca.gov/DocumentCenter/View/63571/Countywide-Capital-Improvement-Programs-CIP.

information becomes available, the proposed access routes within the parcel would also be reviewed and approved by both PCFD and CAL FIRE.

Conclusion

Based on the above, the proposed project, off-site sewer lift station improvements, and potential future development of the off-site affordable housing parcel would not substantially impair an adopted emergency response plan or emergency evacuation plan, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

18-2 Due to factors such as on-site fuel sources, slope, and prevailing winds, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Based on the analysis below, the impact is *less than significant*.

As noted earlier, the significance standard applicable in or near SRAs or lands classified as Very High FHSZs assumes that a significant environmental effect occurs where a proposed project would exacerbate wildfire risks in a way that would expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire due to slope, prevailing winds, and other factors. Another, more generic significance standard, potentially applicable anywhere, assumes that a significant environmental effect occurs where a proposed project would expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires. The analysis below primarily considers the first significance standard, as well as the second significance standard insofar as a significant risk of loss, injury, or death could result from wildfire-generated pollutant concentrations exacerbated by the proposed project or the uncontrolled spread of a wildfire exacerbated by the proposed project and off-site sewer lift station improvements area, as well as the off-site affordable housing parcel.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

The off-site sewer lift station improvements area is located within Dry Creek Community Park and the improvements would be limited to providing an underground tank for additional underground emergency sewer storage capacity. As such, the off-site sewer lift station improvements would not exacerbate wildfire risks. Thus, the following analysis focuses on potential impacts associated with the proposed project.

The project site is located within the DCWPCP area and contains seasonal wetlands, vernal pools, Placer Creek tributary, and existing vegetation, including undeveloped annual grassland and limited riparian woodland vegetation. The following discussions evaluate the potential impacts associated with the proposed project related to the exacerbation of wildfire risks due to factors such as on-site fuel sources, slope, and prevailing winds.

Wildfire Risks Due to Existing On-Site Fuel Sources

CEQA Guidelines Appendix G indicates that the extent and nature of on-site vegetation, which would serve as fuel for a wildfire, should be evaluated to determine the potential for a project to exacerbate wildfire risk. The project site is undeveloped and currently consists of annual grassland interspersed with seasonal wetlands, vernal pools, and is bisected by Placer Creek. Some areas surrounding the site also currently contain grassland and trees. Development of the proposed project would include site clearing activities, which would remove on-site vegetation and would create a buffer between the 9.60 acres of the site that would be retained as open space and the proposed residential development. Development of the site with residential uses would reduce the existing risk of wildland fire to surrounding areas, because site improvements, such as roadways, driveways, and irrigated landscaping, would reduce readily combustible vegetation. Additionally, existing wildfire risks would not be anticipated to be exacerbated during project operation, as residential uses typically do not involve operation components that would increase the risk of wildfire.

The proposed project would reduce on-site fuel sources through the development of a total of 432 new residential units, which includes 212 single-family lots and 220 multi-family units, as well as the potential for an additional 22 ADUs, within the 92.2-acre project site, the sum of which would remove most of the on-site annual grassland. The proposed project would be required to comply with all applicable State and local standards and regulations associated with prevention of wildfire hazards, including Placer County Code Sections 15.04.510 and 15.04.520, which serve to adopt and amend, as applicable, the CFC. The CFC requires that an automatic fire sprinkler and/or fire extinguishing system be installed throughout new one- and two-family dwellings and commercial buildings 3,600 sf and larger. In addition, the project would be subject to the applicable provisions set forth in Placer County Code Section 16.08.080, which contains requirements for subdivisions related to water supply for the purposes of fire flow, including provisions related to hydrants, delivery rate, maintenance of the water system, and on-site water storage. Although the project site is not within a WUI or Very High or High FHSZ, Placer County Code Section 9.32.160 sets forth hazardous vegetation abatement standards for improved parcels with which the proposed project would be required to comply.[15] Furthermore, the PCFD enforces standards set forth in the CBC associated with the installation of residential fire sprinkler systems and the installation of Class A roofing materials within all residential units. Overall, both State and local requirements would significantly assist in reducing the threat of a wildfire spreading from undeveloped land to the proposed structures, as well as the potential of fire spreading from the site to surrounding areas.

The proposed project would include various landscaping buffers along the Baseline Road and Walerga Road frontages and throughout the site, which would introduce new sources of vegetation. However, as set forth in Placer County Code Section 15.75.040, the landscaping would include irrigation scheduling in accordance with the County's Water Efficient Landscape Ordinance, which would ensure the proposed vegetation is sufficiently watered to not result in excessively dry fuel sources. In addition, the landscape corridor along the south side of Baseline Road would include

[15] Woessner, Ryan, Fire Marshal, California Department of Forestry and Fire Protection, Placer County Fire Department. Personal Communication [email] with Nick Pappani, Vice President, Raney Planning & Management, Inc. March 14, 2022.

a six-foot-tall concrete masonry unit (CMU) wall, which would further reduce the risk of fire spreading to adjacent areas.

The proposed project would include development of a 2.2-acre neighborhood park in the Placer Creek Residential Phase 2 development (Lot PARK-1), additional park areas in pockets along Placer Creek, and approximately 9.6 acres of open space between the Placer Creek Residential Phase 3 and 4 neighborhoods (Lot OS-1). Preservation of such areas as open space would maintain portions of the on-site fuel sources. The acreage received by the County would be subject to a fire management component of an Open Space Management Plan that would be aimed at preventing or impairing the spread of a fire and reducing fire severity. The fire management component would ensure that fuel sources within Lot OS-1 are reduced. Therefore, because the on-site fuel sources would be subject to routine maintenance, the proposed project would not exacerbate the risk of wildfire spreading to adjacent areas.

Wildfire Risks Due to Slope

The DCWPCP area does not contain steep or significant slopes, which limits wildfire risks related to topography in the project region. Based on the existing topography of the project site, slope would not affect on-site fire behavior, as compared to the mountainous areas associated with the Sierra Nevada in the County's northeastern region. Therefore, the proposed project would not exacerbate wildfire risks due to slope, and a less-than-significant impact would occur.

Wildfire Risks Due to Prevailing Winds

With respect to prevailing winds at the project site, as previously discussed, winds from the south are most dominant from May to September. The predominant direction of prevailing winds suggests that, during the majority of the year, winds could be reasonably assumed to facilitate spread of fire towards the north of the site, towards Baseline Road. However, as discussed above, the majority of on-site fuel sources would be removed as part of development of the proposed project, which would ensure the proposed project does not exacerbate the wildfire risk due to prevailing winds during project operation.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel is currently undeveloped and contains open grassy fields disturbed through regular maintenance. With respect to wildfire risks due to existing on-site fuel sources, future development of the affordable units would include site clearing activities, removing vegetation and thereby reducing the existing risk of wildland fire to surrounding areas. Additionally, existing wildfire risks would not be anticipated to be exacerbated during project operation, as residential uses typically do not involve operation components that would increase the risk of wildfire. The future affordable housing development within the parcel would be subject to the same State and local standards and regulations discussed above, including the CBC, Placer County Code Sections 15.04.510 and 15.04.520 related to adopting the CFC, and Placer County Code Section 16.08.080 related to water supply. Therefore, similar to the above, the proposed project would not exacerbate wildfire risk related to fuel sources.

With respect to wildfire risks due to slope, the area surrounding the off-site affordable housing parcel does not contain steep or significant slopes, which limits wildfire risks related to topography in the project region. Based on the existing topography of the site, slope would not affect fire behavior as compared to the mountainous areas in the County's northeastern region.

As discussed above, the predominant direction of prevailing winds in the area suggests that winds occurring throughout the year could be reasonably assumed to facilitate spread of fire north. The majority of fuel sources would be removed as part of development of the off-site parcel, which would ensure that potential future development does not exacerbate the wildfire risk due to prevailing winds during project operation. In addition, the off-site parcel is bounded to the south by PFE Road, which would act as a fuel break between any wildfires moving north and the parcel.

Conclusion

Based on the above, the proposed project, off-site sewer lift station improvements, and the potential future development of the off-site affordable housing parcel would not exacerbate wildfire risks due to prevailing winds, slope, and other factors, and the project would thereby not expose residents in the project vicinity to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Because the project would result in the removal of the majority of fuel sources, the potential impact related to wildfire risks associated with winds, slope, and other factors would be reduced. Therefore, a ***less-than-significant*** impact could occur.

Mitigation Measure(s)

None required.

18-3 Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment. Based on the analysis below, the impact is *less than significant*.

The following discussion is an analysis of potential impacts related to the installation or maintenance of infrastructure associated with the proposed project and off-site sewer lift station improvements, as well as the potential future development of the off-site affordable housing parcel, that may exacerbate fire risk or result in temporary or ongoing impacts to the environment.

Proposed Project and Off-Site Sewer Lift Station Improvements Area

The off-site sewer lift station improvements area is located within Dry Creek Community Park and the improvements would be limited to providing an underground tank for additional underground emergency sewer storage capacity. As such, the off-site sewer lift station improvements is not considered the type of infrastructure that could exacerbate fire risk or result in ongoing impacts to the environment. The potential environmental impacts of the off-site sewer lift station improvements have been evaluated throughout this EIR.

The proposed project would include installation of various infrastructure components, including roadways, EVA routes, connection to fire water sources, power lines, and other utilities. Additionally, the proposed project would include off-site improvements to the Walerga Road/Fiddyment Road/Baseline Road intersection. Potential physical environmental impacts that could result from implementation of the proposed project, including the off-site improvements, have been evaluated throughout the technical chapters of this EIR.

The proposed internal roadways would not exacerbate fire risks, as the Placer County Code requires a 10-foot vegetation clearance next to roadsides to reduce fire hazards. Additionally, pursuant to County standards and DCWPCP Policy 18, power lines and other utilities constructed for the proposed project would be undergrounded, which would reduce fire risks during operations. As discussed above under Impact 18-2, structures constructed as part of the proposed project would comply with all applicable standards set forth by the CBC and CFC, including the use of Class A roofing materials within all residential units and fire-intrusion design of roofing and vents. Therefore, the proposed infrastructure improvements associated with the project would not substantially exacerbate wildfire risk.

The proposed project would also be subject to the applicable provisions set forth in Placer County Code Section 16.08.080, which contains requirements for subdivisions related to water supply for the purposes of fire flow, including provisions related to hydrants, delivery rate, maintenance of the water system, and on-site water storage. As mandated by Section 16.08.080(A)(1), the proposed project would be required to provide a pressurized hydrant system throughout the project site, subject to the approval by the Community Development Resource Agency Director. The fire hydrants within the site would meet all applicable PCFD and CAL FIRE requirements. Long-term maintenance and operation of the emergency water supply infrastructure would not involve any activities that would result in an increase in wildfire risk.

While the long-term maintenance of the proposed roadways, vegetation clearances, emergency water supply connections, power lines, and other utilities would not exacerbate fire risks, the activities associated with the initial construction and placement of the utilities and infrastructure could cause a temporary increase in fire risks due to the use of heavy equipment, which would contain combustible materials such as fuels and oils and ignition sources. However, the project contractor would be required to comply with all California Health and Safety Codes and local County ordinances regulating the handling, storage, and transportation of hazardous materials, which would help to minimize the potential for accidental conditions, including fire.

Off-Site Affordable Housing Parcel

The off-site affordable housing parcel is reasonably anticipated to include installation of various infrastructure components, including roadways and connections to fire water sources, power lines, and other utilities. Potential physical environmental impacts that could result from the construction of a maximum of 120 affordable units on the off-site parcel have been evaluated throughout the technical chapters of this EIR.

The future units constructed within the off-site parcel would be subject to the same State and local standards and regulations discussed above, including the CBC, CFC, and Placer County standards related to the 10-foot vegetation clearance next to roadsides, undergrounding of utility lines, and water supply. In addition, the project contractor would also be required to comply with all California Health and Safety Codes and local County ordinances.

Conclusion

Based upon the above, the proposed project, off-site sewer lift station improvements, and the potential future development of the off-site affordable housing parcel would not require the installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment. Therefore, the project would result in a ***less-than-significant*** impact.

Mitigation Measure(s)

None required.

18-4 Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. Based on the analysis below, the impact is *less than significant*.

The following discussion is an analysis of potential impacts related to exposing people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes associated with the proposed project, off-site sewer lift station improvements, and the potential future development of the off-site affordable housing parcel.

Proposed Project, Off-Site Sewer Lift Station Improvements Area, and Off-Site Affordable Housing Parcel

The off-site sewer lift station improvements area is located within Dry Creek Community Park and the improvements would be limited to providing an underground tank for additional underground emergency sewer storage capacity. As such, the off-site sewer lift station improvements is not considered the type of infrastructure that could exacerbate fire risk or result in ongoing impacts to the environment. The potential environmental impacts of the off-site sewer lift station improvements have been evaluated throughout this EIR. Therefore, the remainder of the below discussion is focused on the proposed project and the off-site affordable housing parcel.

As noted earlier, one significance standard applicable in or near SRAs or lands classified as Very High FHSZs assumes that a significant environmental effect occurs where a proposed project would expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. Another, more generic significance standard, potentially applicable anywhere, assumes that a significant environmental effect occurs where a proposed project would expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

The analysis below primarily considers the first significance standard, as well as the second significance standard insofar as a significant risk of loss, injury, or death could result from downslope or downstream flooding or landslides exacerbated by the proposed project, as a result of runoff, post-fire slope instability, or drainage changes.

Wildfires alter landscapes and can result in post-event hazards triggered primarily by rainfall. Rainfall that is normally captured and stored by vegetation can run off almost instantly, causing creeks and drainage areas to flood much sooner during a storm and with more water than is expected under unburned conditions. Soils burned at moderate and high severity tend to have reduced infiltration capacity and are more easily eroded. The potential post-fire flooding, soil erosion, and debris flows could impact recreational areas, homes, structures, roads, and other infrastructure within, adjacent to, and downstream from burned areas.

Wildfire-related flooding and increased runoff may continue for several years in a burn area. However, post-fire debris flows do not typically occur beyond the second rainy season. Some of the largest debris-flow events happen during the first post-fire storm season. While multiple factors can affect debris-flow occurrence, post-fire debris flows generally are triggered by one of two processes: surface erosion caused by rainfall runoff; and landsliding caused by rainfall seeping into the ground. Surface erosion runoff processes are by far the most prevalent contributors to debris flows. Landsliding contributes less to fire-related debris flow, but prolonged heavy rains may increase soil moisture even after a wildfire.[16] The wetted soil can then fail, producing infiltration-triggered landslides. The landslides could be shallow or deep-seated (i.e., greater than 10 to 15 feet deep).

As previously discussed, the project site and off-site affordable housing parcel do not feature steep or significant slopes. As such, the proposed project would not be vulnerable to risks such as post-fire downslope or downstream flooding or landslides. Additionally, through development of the proposed project and potential future development of the off-site affordable housing parcel, the majority of on-site fuel sources would be removed as part of site improvements, thereby reducing the potential for substantial fire-burned areas to occur on-site. The reduction in on-site areas highly vulnerable to wildfires would similarly reduce the potential for post-fire runoff from the developed project site or off-site affordable housing parcel to transport substantial sediment to Placer Creek. Furthermore, given the developed nature of the area surrounding the project site and off-site affordable housing parcel, the potential for surface erosion caused by rainfall runoff to occur would be limited.

Conclusion

Based on the above, the proposed project, off-site sewer lift station improvements, and the potential future development of the off-site affordable housing parcel would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes and would not exacerbate any existing significant risk of exposing people or structures, either directly or indirectly, to loss, injury or death resulting from downslope or downstream flooding or landslides exacerbated by the proposed project

[16] U.S. Geological Survey. *Post-Fire Flooding and Debris Flow*. Available at: https://ca.water.usgs.gov/wildfires/wildfires-debris-flow.html. Accessed July 2025.

or potential future development of the off-site affordable housing parcel, as a result of runoff, post-fire slope instability, or drainage changes. Therefore, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)
None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

The cumulative setting for impacts related to wildfire encompasses buildout of the DCWPCP. For more details regarding the cumulative setting, refer to Chapter 20, Statutorily Required Sections, of this EIR.

18-5 Increase in wildfire risk attributable to the proposed project, in combination with cumulative development. Based on the analysis below, the cumulative impact is *less than significant*.

The cumulative setting for this EIR encompasses the DCWPCP area. Future development within the DCWPCP would result in changes to the existing land use environment through conversion of vacant land to developed uses that would result in a reduction of existing vegetation. Approved, planned, and under-construction development within the DCWPCP area includes the following: the Creekview Ranch Project, which is located approximately 1.59 miles southeast of the project site; the Brady Vineyard Subdivision Project, currently under construction, approximately 2.25 miles east of the project site down Vineyard Road; the under-construction Double S Ranch Subdivision Project, 1.28 miles east of the project site; the PVSP, portions of which are currently under construction west of the project site, across Walerga Road; the RVSP, currently under construction southeast of the PVSP; the approved Mill Creek Project, approximately 1.80 miles to the southeast of the site; and the under-construction The Ranch Project, approximately 1.50 miles east of the project site. All the foregoing future development areas are separated from the project site by intervening existing development, such as existing roadways, as well as residential and agricultural uses. Development of other approved projects, as well as the project site, would change the existing landscape of those specific locations from vacant or minimally developed land to more intensively developed residential areas with one- and two-story homes on various sized lots.

The DCWPCP area is not located within an SRA and or a Very High FHSZ. In fact, the entire DCWPCP area is located within a Non-Very High FHSZ. Additionally, all development facilitated by buildout of the DCWPCP would be subject to existing regulations and guidelines designed to prevent wildfire hazards. Similar to the proposed project, development of other areas within the DCWPCP would be required to comply with Placer County Code Sections 15.04.700 and 15.04.710, which serve to

adopt and amend, as applicable, the CFC. In addition, future subdivision projects would be subject to the applicable provisions set forth in Placer County Code Section 16.08.080, which contains requirements for subdivisions related to water supply for the purposes of fire flow, including provisions related to hydrants, delivery rate, maintenance of the water system, and on-site water storage. Furthermore, the PCFD enforces standards set forth in the CBC associated with the installation of residential fire sprinkler systems and the installation of Class A roofing materials within all residential units. As such, all buildings would meet all fire code requirements, as set forth by the CBC and CFC, which could include fire sprinklers and fire alarms, as determined by the County Fire Marshal at building permit stage, depending upon building and occupancy type. Finally, similar to the project site, parcels within the DCWPCP currently include fuel sources such as trees, riparian vegetation, and annual grassland. However, development of said parcels would remove some existing fuel sources, thereby reducing the cumulative risk of wildfire hazards. Compliance with State and local standards would minimize wildfire risks at each cumulative project location.

Based on the above, the cumulative impact associated with the proposed project, off-site sewer lift station improvements, and the potential future development of the off-site affordable housing parcel in conjunction with cumulative development in the region, would be ***less than significant*** related to exacerbating wildfire risk.

Mitigation Measure(s)

None required.

19. Effects Not Found to be Significant

19. EFFECTS NOT FOUND TO BE SIGNIFICANT

19.1 INTRODUCTION

Section 15128 of the CEQA Guidelines requires that an EIR briefly describe the reasons why various environmental effects were determined not to be significant and, therefore, were not discussed in detail in the EIR. The Effects Not Found to be Significant chapter of this EIR summarizes environmental issues that were determined not to be significant with implementation of the proposed project and potential future development of the off-site affordable housing parcel. The reasons for the conclusion of non-significance are provided for each issue area, as applicable, below.

19.2 AESTHETICS

Consistent with Appendix G of the CEQA Guidelines, the proposed project, including the off-site sewer lift station, and potential future development of the off-site affordable housing parcel were determined to have no impact with regard to the following issue area:

- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State Scenic Highway.

Officially designated State Scenic Highways are not located in Placer County. Therefore, neither the proposed project nor the potential future development of the off-site affordable housing parcel would substantially damage any scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings, within a State Scenic Highway.

19.3 AGRICULTURAL RESOURCES

Consistent with Appendix G of the CEQA Guidelines, the proposed project and potential future development of the off-site affordable housing parcel were determined to have no impact with regard to the following issue areas:

- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code [PRC] Section 12220[g]), timberland (as defined by PRC Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g]);
- Result in the loss of forest land or conversion of forest land to non-forest use; and
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of forest land to non-forest use.

The project site and off-site affordable housing parcel are not considered forest land (as defined in PRC Section 12220[g]) or timberland (as defined by PRC Section 4526), and are not zoned Timberland Production (as defined by Government Code Section 51104[g]). Therefore, neither the proposed project nor the potential future development of the off-site affordable housing parcel would conflict with existing zoning for, or cause rezoning of, forest land or timberland, or result in the loss of forest land or conversion of forest land to non-forest use, or involve other changes in

the existing environment which, due to their location or nature, could result in conversion of forest land to non-forest use.

19.4 GEOLOGY AND SOILS

Consistent with Appendix G of the CEQA Guidelines and in accordance with Placer County, the proposed project and potential future development of the off-site affordable housing parcel were determined to have no impact with regard to the following issue areas:

- 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 waste water;
- Result in exposure of people or property to geologic and geomorphological (i.e., Avalanches) hazards, such as earthquakes, landslides, mudslides, seismic-related ground failure or similar hazards;
- 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; and/or
- 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.

The existing sewer pipeline system within unincorporated areas of Placer County in the vicinity of the proposed project and off-site affordable housing parcel are located within Placer County Service Area 28, Zone 173, and are owned and maintained by Placer County. The project and off-site affordable housing parcel would include annexation into Service Area 28, Zone 173 for sanitary sewer service; therefore, the sites would have access to the existing sewer infrastructure following Placer County Board of Supervisors approval of the annexation. The proposed project would also include sewer improvements in the off-site improvement area, including increasing emergency storage capacity at the existing sewer lift station located approximately 0.53-mile to the south of the project site. All sewer improvements would be consistent with the South Placer Regional Wastewater and Recycled Water Systems Evaluation. Thus, the construction or operation of septic tanks or other alternative wastewater disposal systems would not be included as part of the proposed project or the potential future development of the off-site affordable housing parcel. Therefore, no impact would occur regarding the capability of soil to adequately support the use of septic tanks or alternative wastewater disposal systems.

Seismically induced landslides are triggered by earthquake ground shaking. The risk of landslide hazard is greatest in areas with steep, unstable slopes. Because neither the project site nor the off-site affordable housing parcel contains any steep slopes and they are not located at or near any active or potentially active faults, the risk of landslide and/or ground failure on the site or off-site affordable housing parcel would not be substantial. Therefore, the proposed project and potential future development of the off-site affordable housing parcel would not expose people or property to geologic or geomorphological hazards, such as avalanches, earthquakes, landslides, mudslides, seismic-related ground failure, or similar hazards.

According to the Department of Conservation's Mineral Land Classification of Placer County,[1] documented mines or prospects do not exist in the vicinity of the project site or the off-site affordable housing parcel. The Placer County General Plan (PCGP), the Dry Creek-West Placer Community Plan (DCWPCP), and the Riolo Vineyard Specific Plan (RVSP), in which the off-site

[1] California Department of Conservation, Division of Mines and Geology. *Mineral Land Classification of Placer County, California*. 1995.

affordable housing parcel is located, do not identify any substantial mineral resources within the vicinity of the sites. Furthermore, neither the project site nor the off-site parcel is designated or zoned for any mineral resources. Therefore, development of the proposed project and potential future development of the off-site affordable housing parcel would not 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, or of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

19.5 HAZARDS AND HAZARDOUS MATERIALS

Consistent with Appendix G of the CEQA Guidelines, the proposed project and potential future development of the off-site affordable housing parcel were determined to have no impact with regard to the following issue areas:

- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment; and
- 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 or excessive noise for people residing or working in the project area.

According to the Phase I Environmental Site Assessment prepared for the proposed project by Environmental Risk Assessors, the project site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and impacts related to such would not occur. In addition, the off-site affordable housing parcel is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.[2] Therefore, neither the proposed project nor the potential future development of the off-site affordable housing parcel would create a significant hazard to the public or the environment associated with being located on such a site.

Neither the proposed project nor the off-site affordable housing parcel is located within an airport land use plan or within two miles of a public airport, public use airport, or private airstrip. The nearest airport relative to the project site and off-site affordable housing parcel is McClellan Airport, which is located approximately 5.41 miles and 4.74 miles, respectively, to the south of the sites. Both the project site and off-site affordable housing parcel are located outside of the McClellan Airport Influence Area.[3] Therefore, the proposed project and potential future development of the off-site affordable housing parcel would not result in a safety hazard for people residing or working in the project area associated with an airport or airstrip.

19.6 LAND USE AND PLANNING/POPULATION AND HOUSING

Consistent with Appendix G of the CEQA Guidelines and the Placer County Environmental Checklist, the proposed project and potential future development of the off-site affordable housing parcel were determined to have no impact with regard to the following issue areas:

[2] California Environmental Protection Agency. *Cortese List Data Resources.* Available at: https://calepa.ca.gov/sitecleanup/corteselist/. Accessed October 2025.

[3] Airport Land Use Commission. *McClellan Air Force Base Comprehensive Land Use Plan*. Amended December 1992.

- Cause economic or social changes that would result in significant adverse physical changes to the environment such as urban decay or deterioration; and/or
- Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

CEQA does not require an analysis of social issues unless a direct link to the physical environment exists. One way that social issues are typically handled in CEQA documents is to consider the potential for a project to change the socioeconomics of a community, which could lead to physical blight. The proposed project and the potential future development of the off-site affordable housing parcel would construct a residential development within the DCWPCP area, which is primarily characterized by existing residential, agricultural, and vacant land. Neither the proposed project nor the potential future development of the off-site affordable housing parcel would develop retail uses that would result in increased vacancy rates or abandonment of commercial spaces in the project vicinity. Historically, only proposed retail projects or other commercial projects that would be open to the public have generated concerns about urban decay. The concern is that competition from new businesses would cause existing businesses to lose market share, which would then result in business closures and the physical decay of business structures or the geographic areas in which the businesses are located. (See, e.g., *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1204-1213 [two EIRs for proposed Walmart supercenters were inadequate for failing to address the possibility of urban decay resulting from the prospect that existing retailers with higher prices could go out of business]; *Chico Advocates for a Responsible Economy v. City of Chico* (2019) 40 Cal.App.5th 839, 849-852 [substantial evidence supported conclusion in EIR for a proposed grocery store that the project would not result in urban decay]; and *Placerville Historic Preservation League v. Judicial Council of California* (2017) 16 Cal.App.5th 187, 197-200 [substantial evidence supported conclusion in EIR for courthouse relocation project that the reduced number of court employees in Downtown Placerville would not lead to restaurant closures resulting in urban decay].) In contrast, residential projects bring new customers to a geographic area, with resulting benefits to local businesses. Here, the proposed project and potential future development of the off-site affordable housing parcel would be likely to bring economic benefits to existing and future retail and commercial businesses within reasonable driving distances of the sites.

For these reasons, neither the proposed project nor the potential future development of the off-site affordable housing parcel would cause economic or social changes that would result in significant adverse physical changes to the environment such as urban decay or deterioration.

The project site and the off-site affordable housing parcel are currently undeveloped. Thus, the proposed project and potential future development of the off-site affordable housing parcel would not result in the displacement of existing people or housing, necessitating the construction of replacement housing elsewhere, and no impact would occur.

19.7 NOISE

Consistent with Appendix G of the CEQA Guidelines, the proposed project and potential future development of the off-site affordable housing parcel were determined to have no impact with regard to the following issue area:

- 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, exposure of people residing or working in the project area to excessive noise levels.

Neither the proposed project nor the off-site affordable housing parcel is located within the vicinity of a private airstrip, an airport land use plan, or two miles of a public airport or public use airport. The nearest airport relative to the project site and the off-site affordable housing parcel is McClellan Airport, which is located approximately 5.41 miles and 4.74 miles, respectively, to the south of the sites. Therefore, the proposed project and the potential future development of the off-site affordable housing parcel would not expose people residing or working in the project area to excessive noise levels associated with airports.

20. Statutorily Required Sections

20. STATUTORILY REQUIRED SECTIONS

20.1 INTRODUCTION

The Statutorily Required Sections chapter of the Draft EIR includes discussions regarding those topics that are required to be included in an EIR, pursuant to CEQA Guidelines Section 15126.2. The chapter includes a discussion of the proposed project's potential to result in growth-inducing impacts; the cumulative setting analyzed in this EIR; significant irreversible environmental changes; and significant and unavoidable impacts caused by the proposed project.

20.2 GROWTH-INDUCING IMPACTS

State CEQA Guidelines Section 15126.2(e) requires an EIR to evaluate the potential growth-inducing impacts of a proposed project. Specifically, an EIR must discuss the ways in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Growth can be induced in a number of ways, including the elimination of obstacles to growth, or by encouraging and/or facilitating other activities that could induce growth. Examples of projects likely to have growth-inducing impacts include extensions or expansions of infrastructure systems beyond what is needed to serve project-specific demand, and development of new residential subdivisions or office complexes in areas that are currently only sparsely developed or are undeveloped.

The CEQA Guidelines are clear that while an analysis of growth-inducing effects is required, it should not be assumed that induced growth is necessarily significant or adverse. This analysis examines the following potential growth-inducing impacts related to implementation of the proposed project and assesses whether these effects are significant and adverse (see CEQA Guidelines, Section 15126.2[e]):

1. Foster population and economic growth and construction of housing.
2. Eliminate obstacles to population growth.
3. Affect service levels, facility capacity, or infrastructure demand.
4. Encourage or facilitate other activities that could significantly affect the environment.

Foster Population and Economic Growth and Construction of Housing

As discussed in Chapter 13, Land Use and Planning/Population and Housing, of this EIR, the proposed 432-unit single-family and multi-family development would increase the available housing within the Dry Creek-West Placer Community Plan (DCWPCP) area. Using the 2.94 persons/household average household size for the DCWPCP area,[1] the proposed project could house an estimated 1,270 residents. In addition, the proposed project could include 22 accessory dwelling units (ADUs) on-site in order to meet the County's affordable housing requirements. Because the 22 ADUs are anticipated to be smaller than the proposed 212 single-family units, a lower person per household rate of 1.91 persons per household is applied to the ADUs. Thus, the construction of 22 ADUs could result in approximately 42 additional residents within the project site, for a total of 1,312 residents. Under the existing General Plan/DCWPCP land use designations for the site, 80.1 acres of the site are currently designated as Rural-Low Density

[1] ESRI Business Analyst. *Housing Profile, DCWPCP Area*. January 2026.

Residential (RLDR) and zoned Residential Single-Family, combining Agriculture, combining a minimum Building Site of 40,000 square feet, combining Planned Residential Development of one dwelling unit per acre (RS-AG-B-40 PD=1, and 12.1 acres of the site are currently designated as Greenbelt and Open Space (OS) and zoned Open Space, combining Planned Residential Development of one dwelling unit per acre (O PD=1). As the maximum allowable residential density under the RLDR designation is one dwelling unit per acre, approximately 80 single-family residences could be built on the project site under the existing designation, resulting in a population of approximately 235 residents. Thus, the proposed project could result in an increase of approximately 1,035 residents beyond what was previously anticipated for the site by the County based on the existing land use designations.

As discussed within Chapter 3, Project Description, of this EIR, this EIR evaluates two options by which the applicant could satisfy the project's affordable housing requirements, one of which would involve an amendment to the Riolo Vineyard Specific Plan (RVSP) and a rezone of the four-acre off-site affordable housing parcel to Residential Multifamily 30 (RM30), which would result in a maximum development potential of 120 affordable income-restricted units. While this affordable housing option would include a rezone to allow for development of the aforementioned units, the County has previously planned for urban buildout of the off-site affordable housing parcel, as evidenced by the parcel's previous designation of High Density Residential (HDR). The RVSP EIR evaluated development of the off-site affordable housing parcel with 60 HDR units and determined that such development would result in 120 residents. Using the same estimated number of persons per household used within the RVSP EIR, a doubling in HDR units within the off-site affordable housing parcel would result in a total of 240 future residents. Nonetheless, similar to the proposed project, the increase in population that could be generated by potential future development of the off-site affordable housing parcel would still be within the range of growth projections assumed in the DCWPCP and by the Sacramento Area Council of Governments (SACOG) and would not be an introduction of substantial new population.

The new residential population would likely patronize local businesses and services in the area, fostering economic growth. Population growth resulting from the proposed project would be within the Placer County (i.e., DCWPCP) and SACOG growth estimates for the project area. Furthermore, the on-site infrastructure included in the proposed project would be sized to serve only the project site. The proposed project would include increasing emergency storage capacity at the existing Dry Creek/West Placer Community Facilities District (CFD) #1 lift station located approximately 0.53-mile to the south of the project site to meet project demands. All sewer improvements would be consistent with the South Placer Regional Wastewater and Recycled Water Systems Evaluation and would require increasing emergency storage capacity at the existing lift station. However, such improvements would be sized to meet the demands of only planned development and would not foster unplanned population growth.

While construction of the proposed project would result in increased construction employment opportunities, which could potentially result in increased permanent population and demand for housing in the vicinity of the project site, employment patterns of construction workers is such that construction workers would not likely, to any significant degree, relocate their households as a result of the construction-related employment opportunities associated with the proposed project. Although the proposed project would provide short-term employment opportunities, which would likely be filled from the local employee base, with the possible exception of a few household and landscape maintenance jobs, permanent jobs would not be directly created by the proposed project. Therefore, the project would not result in long-term employment growth in the area.



Appendix G of CEQA Guidelines has been recently amended to include inquiries asking whether unplanned population growth would result in potentially significant impacts. However, the occurrence of growth that is planned, and the environmental effects of which have been analyzed in connection with a land use plan or a regional plan, should not be considered in and of itself to be a significant impact. Rather, new development may result in specific impacts in particular categories, such as aesthetics, agricultural lands, air quality, etc. Such impacts may have already been anticipated in environmental documents prepared for earlier planning decisions such as general plans, community plans, and specific plans. Consequently, as discussed in further detail under Impacts 13-4 and 13-6 within Chapter 13, Land Use and Planning/Population and Housing, of this EIR, although the proposed project would result in population growth of the DCWPCP area, such growth would be within the buildout projections for the DCWPCP area, and within growth projections for unincorporated areas within Placer County. As discussed in Chapter 13, development of 432 single-family and multi-family residential units and potentially an additional 22 ADUs, and the associated addition of approximately 1,312 residents, would increase the total current population of the DCWPCP area from 8,352 to approximately 9,664, or a 15.7 percent increase, conservatively assuming that all project residents would be new to the DCWPCP area. However, as discussed in the Existing Environmental Setting section of Chapter 13, the DCWPCP projected that the area's population could grow to as much as 9,836 residents by buildout. In addition, the Sacramento Area Council of Governments (SACOG) 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) identifies the portion of the DCWPCP area, not including the Placer Vineyards Specific Plan (PVSP) and RVSP, as one of the Established Communities within the MTP/SCS study area. As of 2020, Established Communities within Placer County included 21,440 housing units, and such communities are anticipated to grow to 24,200 units by 2035, 24,600 units by 2040, and 30,650 housing units at buildout.[2] Thus, the increase in population that could be generated by the proposed project would still be within the range of growth projections assumed in the DCWPCP and MTP/SCS. In addition, as discussed in Chapter 13, Land Use and Planning/Population and Housing, of this EIR, the potential off-site affordable housing component could result in a doubling in HDR units with a total of 240 future residents. Similar to the proposed project, the increase in population that could be generated by the off-site affordable housing parcel would still be within the range of growth projections assumed in the DCWPCP and by SACOG. Therefore, while the project would foster population and economic growth, such growth would be similar to what has been previously anticipated for the project region, and a less-than-significant impact related to population and economic growth would occur.

Eliminate Obstacles to Population Growth

The elimination of either physical or regulatory obstacles to growth is considered to be a growth-inducing effect. A physical obstacle to growth typically involves the lack of public service infrastructure. The extension of public service infrastructure, including roadways, water mains, and sewer lines, into areas that are not currently provided with these services, would be expected to support new development. Similarly, the elimination or change to a regulatory obstacle, including existing growth and development policies, could result in new growth.

One of the options by which the applicant could satisfy the project's affordable housing requirements would include transferring in fee title to the County an off-site affordable housing parcel, as discussed throughout this EIR. This option would involve a rezone of the off-site affordable housing parcel to the Residential Multifamily 30, combining Design Scenic Corridor

[2] Sacramento Area Council of Governments. *2020 Metropolitan Transportation Plan/Sustainable Communities Strategy*. Adopted November 18, 2019.

(RM30-Dc) zone, which could enable the parcel to be developed by right, depending on the percentage of deed-restricted affordable units included in the future proposal, whereas development of the parcel would currently be considered a discretionary project. Thus, the rezone of the off-site affordable housing parcel could result in the elimination or change to a regulatory obstacle to growth. Nonetheless, this EIR analyzes all of the reasonably foreseeable consequences associated with the future maximum development potential of the off-site affordable housing parcel of 120 affordable income-restricted units.

As discussed in Chapter 15, Public Services and Utilities, of this EIR, the proposed project's water supply infrastructure would include the construction of a 12-inch loop system within the Estia Dry Creek development. In addition, the proposed project would include four- to 12-inch internal water lines for domestic water service and fire/hydrant connections. Internal water lines would connect to an existing 16-inch line in Walerga Road and an existing 24-inch line in Baseline Road. Additionally, the potential development of the off-site affordable housing parcel by the future developer would include the installation of new water pipelines that would connect to existing infrastructure in the vicinity. California American Water's (CAL-AM) existing water main infrastructure is anticipated to be sufficiently sized to accommodate the increased demand from the proposed project and the off-site affordable housing parcel, and the construction of new or expanded water conveyance infrastructure beyond the improvements noted above necessary to serve the proposed project and off-site affordable housing parcel would not be required. Water conveyance infrastructure needed for the proposed project would be financed by the project applicant, and required water line improvements for the off-site affordable housing parcel would be constructed by the future affordable housing developer. Consequently, the construction of on-site water infrastructure would not be anticipated to result in elimination of obstacles to population growth.

As discussed above, the proposed upgrades to the existing off-site CFD #1 lift station would be designed to serve the proposed project, as well as future planned development within the CFD #1 lift station sewer shed. All sewer improvements would be consistent with the South Placer Regional Wastewater and Recycled Water Systems Evaluation. Similar to the proposed project, future development projects throughout the project region would be required to evaluate project-specific impacts on wastewater conveyance infrastructure, such as the CFD #1 lift station. Thus, the proposed improvements to the CFD #1 lift station would not be anticipated to result in elimination of obstacles to unplanned population growth. The project site is located outside of existing Placer County Sewer Service Districts. Thus, the entitlements for the proposed project include a request for annexation into County Service Area (CSA) 28, Zone 173, for sanitary sewer service, subject to approval by the Placer County Board of Supervisors. In addition, existing infrastructure in the vicinity of the off-site affordable housing parcel would be used to provide wastewater service to the off-site affordable housing development, and the potential future development of the off-site affordable housing parcel would not require major relocation or expansion of any wastewater infrastructure. Therefore, the construction of wastewater infrastructure on the off-site affordable housing parcel would not be anticipated to result in elimination of obstacles to population growth.

In addition, as discussed in Chapter 3, Project Description, of this EIR, the proposed project would include roadway improvements in the project vicinity which would be designed to serve the proposed project, as well as future planned development within the project site vicinity. Thus, the proposed roadway improvements would not be anticipated to result in elimination of obstacles to unplanned population growth.

Although implementation of the aforementioned sewer and roadway improvements may be considered to eliminate obstacles to growth, such improvements are essential to support the proposed project, and the improvements would not eliminate obstacles to growth in a manner that would encourage previously unplanned growth.

Affect Service Levels, Facility Capacity, or Infrastructure Demand

Increases in population that would occur as a result of a proposed project may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental impacts. As discussed in Chapter 15, Public Services and Utilities, of this EIR, increased demands for public services, including fire and police protection services, attributable to the proposed project and off-site affordable housing parcel would not necessitate the construction of new or expanded facilities that could cause significant environmental impacts. In addition, as discussed in Chapter 15, Public Services and Utilities, of this EIR, wastewater generated by the proposed project and the potential future development of the off-site affordable housing parcel can be accommodated by existing wastewater treatment facilities and infrastructure at the Dry Creek Wastewater Treatment Plant (WWTP), and, with the proposed upgrades to the off-site CFD #1 lift station, adequate conveyance capacity exists for the proposed project's sanitary sewer flows. In addition, existing water supply infrastructure would be sufficient to accommodate the domestic and fire flow demands associated with the proposed project and the potential future development of the off-site affordable housing parcel.

The landfill that would serve the proposed project and off-site affordable housing parcel has adequate capacity to manage the solid waste generated as a result of the project. Furthermore, mitigation measures set forth in Chapter 12, Hydrology and Water Quality, of this EIR would ensure that the proposed project and the potential future development of the off-site affordable housing parcel would not create or contribute runoff water that would exceed the capacity of the County's stormwater drainage systems. Therefore, the proposed project and the potential future development of the off-site affordable housing parcel would not increase population such that service levels, facility capacity, or infrastructure demand would require construction of new facilities that could cause significant environmental impacts.

Encourage or Facilitate other Activities That Could Significantly Affect the Environment

This EIR provides a comprehensive assessment of the potential for environmental impacts associated with implementation of the proposed project and the potential future development of the off-site affordable housing parcel. Please refer to Chapters 4 through 18 of this EIR, which comprehensively address the potential for impacts from urban development on the project site and the off-site affordable housing parcel.

20.3 CUMULATIVE IMPACTS

CEQA Guidelines, Section 15130 requires that an EIR discuss the cumulative and long-term effects of the proposed project that would adversely affect the environment. "Cumulative impacts" are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines, Section 15355). "[I]ndividual effects may be changes resulting from a single project or a number of separate projects" (CEQA Guidelines, Section 15355, subd. [a]). "The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future

projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time" (CEQA Guidelines, Section 15355, subd. [b]).

The need for cumulative impact assessment reflects the fact that, although a project may cause an "individually limited" or "individually minor" incremental impact that, by itself, is not significant, the increment may be "cumulatively considerable," and, thus, significant, when viewed together with environmental changes anticipated from past, present, and probable future projects (CEQA Guidelines, Section 15064, subd. [h(1)], Section 15065, subd. [c], and Section 15355, subd. [b]). Accordingly, particular impacts may be less than significant on a project-specific basis but significant on a cumulative basis if their small incremental contribution, viewed against the larger backdrop, is cumulatively considerable. However, CEQA Guidelines, Section 15064, subdivision (h)(5) states, "[…]the mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable." Therefore, even where cumulative impacts are significant, any level of incremental contribution is not necessarily deemed cumulatively considerable.

Section 15130(b) of CEQA Guidelines indicates that the level of detail of the cumulative analysis need not be as great as for the project impact analyses, but that analysis should reflect the severity of the impacts and their likelihood of occurrence, and that the analysis should be focused, practical, and reasonable. To be adequate, a discussion of cumulative effects must include the following elements:

> (1) Either (a) a list of past, present and probable future projects, including, if necessary, those outside the agency's control, or (b) a summary of projections contained in an adopted general plan or related planning document, or in a prior certified EIR, which described or evaluated regional or area-wide conditions contributing to the cumulative impact, provide that such documents are reference and made available for public inspection at a specified location;
>
> (2) A summary of the individual projects' environmental effects, with specific reference to additional information and stating where such information is available; and
>
> (3) A reasonable analysis of all of the relevant projects' cumulative impacts, with an examination of reasonable, feasible options for mitigating or avoiding the project's contribution to such effects (Section 15130[b]).

For some projects, the only feasible mitigation measures will involve the adoption of ordinances or regulations, rather than the imposition of conditions on a project-by-project basis (Section 15130[c]). Section 15130(a)(3) states that an EIR may determine that a project's contribution to a significant cumulative impact will be rendered less than cumulatively considerable, and thus not significant, if a project is required to implement or fund the project's fair share of a mitigation measure or measures designed to alleviate the cumulative impact.

A discussion of cumulative impacts is provided within each of the technical chapters of this EIR pursuant to CEQA Guidelines Section 15130.

Cumulative Setting

The lead agency should define the relevant geographic area of inquiry for each impact category (id., Section 15130, subd. [b][3]), and should then identify the universe of "past, present, and probable future projects producing related or cumulative impacts" relevant to the various categories, either through the preparation of a "list" of such projects or through the use of "a

summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact" (id., subd. [b][1]).

The majority of the cumulative analysis in this section is based upon a summary of projections contained in the DCWPCP, as well as other reasonably foreseeable projects within the project region. Such projects include, but are not limited to, the Placer Vineyards Specific Plan, RVSP, Sierra Vista Specific Plan, Baseline Marketplace, the Double S Ranch Project, the Creekview Ranch Project, The Ranch Project, and Mill Creek Project. Limited situations exist where geographic setting differs between project chapter analysis within a particular region. Examples include hydrology, for which the cumulative geographic setting is generally limited to the 689.18-acre Dry Creek Walerga Road Tributary drainage shed. Another example is air quality, for which the cumulative geographic setting is the Sacramento Valley Air Basin (SVAB). Global climate change is, by nature, a cumulative impact, and greenhouse gas (GHG) emissions contribute, on a cumulative basis, to the significant adverse environmental impacts of global climate change (e.g., sea level rise, more extreme weather patterns, impacts to water supply and water quality, public health impacts, impacts to ecosystems, impacts to agriculture, and other environmental impacts). A single project could not generate enough GHG emissions to contribute noticeably to a change in the global average temperature. However, the combination of GHG emissions from a project in combination with other past, present, and future projects could contribute substantially to the world-wide phenomenon of global climate change and the associated environmental impacts. Although the geographical context for global climate change is the Earth, for analysis purposes under CEQA, and due to the regulatory context pertaining to GHG emissions and global climate change applicable to the proposed project, the geographical context for global climate change in this EIR is limited to the State of California.

20.4 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

CEQA Guidelines Section 15126.2(d) identifies an impact category that sometimes must be addressed in EIRs: significant irreversible environmental changes that would be caused by the proposed project, should the project be implemented. CEQA Guidelines Section 15127 states that this impact category need be included only in EIRs prepared in connection with certain categories of projects, one of which is "[t]he adoption, amendment, or enactment of a plan, policy, or ordinance of a public agency." Although the proposed project is not itself a plan, policy, or ordinance, the proposed project does propose amendments to the Placer County General Plan, DCWPCP, and the RVSP. For this reason, the County has conservatively chosen to address this impact category.

An impact would be determined to be a significant and irreversible change in the environment if:

- Buildout of the project area could involve a large commitment of nonrenewable resources;
- The primary and secondary impacts of development could generally commit future generations to similar uses (e.g., a highway provides access to a previously remote area);
- Development of the proposed project could involve uses in which irreversible damage could result from any potential environmental accidents associated with the project; or
- The phasing and eventual development of the project could result in an unjustified consumption of resources (e.g., the wasteful use of energy).

The proposed project would likely result in, or contribute to, the following significant irreversible environmental changes:

- Conversion of predominantly vacant land to a fully built-out residential community, thus precluding alternative land uses in the future;
- Irreversible consumption of goods and services, such as fire, police, and school services, associated with the future population; and
- Irreversible consumption of energy and natural resources, such as water, electricity, and natural gas, associated with the future residents.

If the Placer County Board of Supervisors chooses to approve the proposed project, the Board will be concluding that the irreversible environmental changes, and the natural resource consumption that accompanies them, are justified in light of the economic, social, or other benefits that the Board might invoke in approving the project. For example, the Board might conclude that the economic and social benefits created by 432 new homes and 22 new ADUs, or the potential future development of 120 affordable housing units within the off-site affordable housing parcel justify the irretrievable loss of environmental and natural resources.

20.5 SIGNIFICANT AND UNAVOIDABLE IMPACTS

According to CEQA Guidelines, an EIR must include a description of those impacts identified as significant and unavoidable should the proposed action be implemented (CEQA Guidelines Section 15126.2[c]). Such impacts would be considered unavoidable when the determination is made that either mitigation is not feasible or only partial mitigation is feasible such that the impact is not reduced to a level that is less-than-significant. This section identifies the significant impact that could not be eliminated or reduced to a less-than-significant level by mitigations imposed by the County. The final determination of the significance of impacts and the feasibility of mitigation measures would be made by the County as part of the County's certification action. The significant and unavoidable impact of the proposed project is summarized below.

Generation of a substantial temporary increase in ambient noise levels in noise-sensitive locations in the vicinity of the project or a substantial temporary increase in ambient noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. (Impact 14-1)

Development of the proposed project and potential future development of the off-site affordable housing parcel would be required to comply with Placer County Code and DCWPCP policies related to noise, which would ensure that the proposed project restricts noise sources associated with construction activities to specific hours and requires that all construction equipment be fitted with factory-installed muffling devices and maintained in good working order. However, according to the Noise Report prepared for the proposed project, the proposed project would likely require nighttime work on off-site utility lines and traffic signals at three different locations to minimize daytime traffic circulation impacts on Walerga Road and Baseline Road. The nighttime construction activities could result in exterior noise level increases greater than five decibels (dB) above ambient levels and interior noise levels above 45 dB. In addition, constructing temporary sound walls consistent with Mitigation Measure 14-1(a) along the existing single-family residences on Springhill Drive would not be feasible due to the existing topography. Based on the above and given that the project site and off-site affordable housing parcel are located near existing sensitive receptors, according to the Noise Report, construction activities could result in exterior noise level increases greater than five dB above ambient levels and interior noise levels above 45 dB. Therefore, a significant and unavoidable impact would occur.

21. Alternatives Analysis

21. ALTERNATIVES ANALYSIS

21.1 INTRODUCTION

The Alternatives Analysis chapter of the EIR includes consideration and discussion of a range of reasonable alternatives to the proposed project, as required per CEQA Guidelines Section 15126.6. Generally, the chapter includes discussions of the following: the purpose of an alternatives analysis; alternatives considered but dismissed; a reasonable range of project alternatives and their associated impacts in comparison to the proposed project's impacts; and the environmentally superior alternative.

21.2 PURPOSE OF ALTERNATIVES

The primary intent of the alternatives evaluation in an EIR, as stated in Section 15126.6(a) of the CEQA Guidelines, is to "[…] describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." CEQA Guidelines Section 15364 defines "feasible" as:

> [...]capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors.

Section 15126.6(f) of CEQA Guidelines states, "The range of alternatives required in an EIR is governed by a "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice." Section 15126.6(f) of CEQA Guidelines further states:

> The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determined could feasibly attain most of the basic objectives of the project.

In addition, an EIR is not required to analyze alternatives when the effects of the alternative "cannot be reasonably ascertained and whose implementation is remote and speculative."

The CEQA Guidelines provide the following guidance for discussing alternatives to a proposed project:

- An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives (CEQA Guidelines Section 15126.6[a]).

- Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code [PRC] Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if

these alternatives would impede to some degree the attainment of the project objectives, or would be more costly (CEQA Guidelines Section 15126.6[b]).

- The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination […] Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts (CEQA Guidelines Section 15126.6[c]).

- The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison (CEQA Guidelines Section 15126.6[d]).

- If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed (CEQA Guidelines Section 15126.6[d]).

- The specific alternative of "no project" shall also be evaluated along with its impact. The purpose of describing and analyzing a no project alternative is to allow decision-makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. The no project alternative analysis is not the baseline for determining whether the proposed project's environmental impacts may be significant, unless it is identical to the existing environmental setting analysis which does establish that baseline (CEQA Guidelines Section 15126.6[e][1]).

- If the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the remaining alternatives (CEQA Guidelines Section 15126.6[e][2]).

Project Objectives

Based on the above, reasonable alternatives to the project must be capable of feasibly attaining most of the basic objectives of the project. As set forth in Chapter 3, Project Description, of this EIR, the project's underlying purpose is to address statewide and regional housing shortages through a project plan and design that increases the residential holding capacity of the Dry Creek-West Placer Community Plan (DCWPCP) while preserving key on-site open space and biological values and avoiding or minimizing land use conflicts with surrounding land uses. The following project objectives are consistent with this underlying purpose:

1. Create a high-quality neighborhood environment containing a mix of residential, open space, and recreational land uses.
2. Develop a well-designed, economically feasible residential community that consists of a variety of residential products and unit types.
3. Offer an amenity-rich residential community that offers modern amenities and open spaces for residents, such as trails, parks, recreational areas, and gathering spaces.

4. Provide a comprehensively planned project that protects sensitive environmental habitat and resources, including existing riparian and oak woodland habitat on the project site, within a permanent greenbelt area providing a significant public benefit.
5. Use land resources efficiently by providing a well-planned development on an underutilized vacant site.
6. Promote pedestrian-oriented development, providing medium and high-density housing on a major transportation corridor and within walking distance of places of business and employment.
7. Provide a well-designed residential community with neighborhood identity in close proximity to jobs and services in Placer and Sacramento counties.
8. Increase the supply and diversity of housing types in the DCWPCP area that can support a wider range of lifestyles, consistent with the goals and policies of the County's Housing Element.
9. Assist in providing affordable housing and complying with Regional Housing Needs Allocation (RHNA) requirements by conveying a four-acre affordable housing site within the Riolo Vineyards Specific Plan area to Placer County.
10. Create a development of a density, scale and character that complements and is supportive of surrounding development.
11. Design a residential neighborhood that complements surrounding/existing neighborhoods by incorporating compatible land uses, lot sizes, street layouts while providing smooth transitions to adjacent neighborhoods through the appropriate setbacks, landscaping, and open space features; and establishing logical roadway and pedestrian connections consistent with the County's design principles.

Impacts Identified in the EIR

In addition to attaining the majority of project objectives, reasonable alternatives to the project must be capable of substantially lessening, or avoiding, identified significant environmental impacts of the proposed project. The significance level of impacts identified in the EIR are presented below.

Less Than Significant or No Impact

As discussed in each respective section of this EIR, the proposed project would result in no impact or a less-than-significant impact related to the following topics associated with the resource area indicated, and mitigation would not be required:

- ***Aesthetics.*** The EIR determined that a less-than-significant impact would occur related to the proposed project having a substantial adverse effect on a scenic vista. The EIR also determined that a less-than-significant impact would occur related to the proposed project conflicting with applicable zoning and other regulations governing scenic quality associated with cumulative development of the proposed project in combination with future buildout of the DCWPCP area. In addition, the EIR determined that the proposed project would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway, and no impact would occur.

- ***Agricultural Resources.*** The EIR determined that the proposed project would result in no impact or less-than-significant impacts for all issues related to agricultural resources, including cumulative impacts.

- ***Air Quality and Greenhouse Gas Emissions.*** The EIR determined that the proposed project would result in a less-than-significant impact related to exposing sensitive receptors to substantial pollutant concentrations. In addition, the EIR determined that the proposed project would result in a less-than-significant impact related to resulting in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

- ***Biological Resources.*** The EIR determined that implementation of the proposed project would result in a less-than-significant impact related to interfering substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impeding the use of native wildlife nursery sites. In addition, the EIR determined that the proposed project would result in a less-than-significant impact related to conflicting with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan. Furthermore, the proposed project's incremental contribution to the cumulative loss of habitat for special-status species was determined to be less than cumulatively considerable.

- ***Cultural Resources.*** The EIR determined that the proposed project would result in a less-than-significant impact related to causing a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines, Section 15064.5. In addition, impacts related to causing a cumulative loss of cultural resources were determined to be less than significant.

- ***Energy.*** The EIR determined that the proposed project would result in less-than-significant impacts for all issues related to energy, including cumulative energy impacts.

- ***Geology and Soils.*** The EIR determined that impacts related to directly or indirectly causing potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, or seismic-related ground failure, including liquefaction and landslides, would be less than significant. In addition, the EIR determined that impacts related to having soils incapable of supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater would not occur. Similarly, the EIR determined that impacts related to resulting in exposure of people or property to geologic and geomorphological (i.e., Avalanches) hazards, such as earthquakes, landslides, mudslides, seismic-related ground failure, or similar hazards, would not occur. The EIR also determined that no impact would occur related to resulting in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State, or resulting 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. Furthermore, impacts related to cumulative increases in the potential for geological related impacts and hazards were determined to be less than significant.

- ***Hazards and Hazardous Materials.*** The EIR determined that the proposed project would result in no impact or less-than-significant impacts for all issues related to hazards and hazardous materials, including cumulative impacts.

- ***Hydrology and Water Quality.*** The EIR determined that impacts related to substantially decreasing groundwater supplies or interfering substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin or conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan, as well as the proposed project's incremental contribution to the significant cumulative impact related to water quality and drainage, would be less than significant.

- ***Land Use and Planning/Population and Housing.*** The EIR determined that the proposed project would result in no impact or less-than-significant impacts for all issues related to land use and planning and population and housing, including cumulative impacts.

- ***Noise.*** The EIR determined that the proposed project would result in a less-than-significant impact related to the generation of a substantial permanent increase in ambient noise levels in noise-sensitive locations in the vicinity of the project or generation of a substantial permanent increase in ambient noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. In addition, the EIR determined that the proposed project would have a less-than-significant impact related to the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. The EIR also determined that the proposed project would have no impact related to being 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, expose people residing or working in the project area to excessive noise levels. Furthermore, the EIR determined that impacts related to the generation of a substantial permanent increase in ambient noise levels associated with cumulative development of the proposed project in combination with future buildout of the DCWPCP would be less than significant.

- ***Public Services and Utilities.*** The EIR determined that the proposed project would result in less-than-significant impacts related to resulting in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or 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 services, maintenance of public facilities, including roads, or other government services, and school services and/or facilities. Furthermore, the EIR determined that the proposed project would result in a less-than-significant impact related to resulting in an increase in 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, or include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. The EIR also determined that the proposed project would result in a less-than-significant impact related to generating solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impairing the attainment of solid waste reduction goals, or conflict with federal, State, and local management and reduction statutes and regulations related to solid waste. A less-than-significant cumulative impact was identified related to public services as well as related to resulting in an increase in demand for utilities and service systems associated with the proposed project in combination with future buildout in the DCWPCP area.

- ***Transportation.*** The EIR determined that impacts related to conflicting with a program, plan, ordinance, or policy, except level of service (LOS), addressing the circulation system, including transit, roadway bicycle, and pedestrian facilities, during operations would be less-than-significant. In addition, the EIR determined that a less-than-significant impact would occur related to a substantial increase in hazards to vehicle safety due to a geometric design feature or incompatible uses, as well as related to resulting in inadequate emergency access or access to nearby uses. Furthermore, the EIR determined that the proposed project would not result in vehicle miles traveled (VMT) which exceeds an applicable threshold of significance, except as provided in CEQA Guidelines Section 15064.3, subdivision (b), and a less-than-significant impact would occur.

- ***Tribal Cultural Resources.*** The EIR determined that impacts related to causing a cumulative loss of tribal cultural resources would be less-than-significant.

- ***Wildfire.*** The EIR determined that the proposed project would result in less-than-significant impacts for all issues related to wildfire, including cumulative impacts.

As stated above, reasonable alternatives to the project must be capable of substantially lessening, or avoiding, identified significant environmental impacts of the proposed project. Because the proposed project would not result in significant impacts related to the resource areas listed above, a comparison of potential impacts associated with the aforementioned resource areas as a result of project alternatives versus the proposed project is not provided in this chapter. Rather, this chapter focuses on those resource areas and specific impacts listed below that have been identified for the proposed project as requiring mitigation to reduce significant impacts to less than significant, or have been found to remain significant and unavoidable.

Less Than Significant with Mitigation

Environmental impacts (including cumulative impacts) of the proposed project that have been identified as requiring mitigation measures to ensure that the level of significance is ultimately less than significant include the following:

- ***Aesthetics.*** Consistent with the findings of the Riolo Vineyards Specific Plan (RVSP) EIR, this EIR determined that potential future development of the off-site affordable housing parcel could conflict with applicable zoning and other regulations governing scenic quality. In addition, because the types of lighting and the specific locations have not yet been determined, implementation of the proposed project could create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. Furthermore, the EIR determined that the proposed project's contribution to the significant cumulative impact related to light and glare associated with cumulative development of the DCWPCP area would be cumulatively considerable. However, the EIR requires mitigation in order to ensure that the aforementioned project-specific impacts are reduced to less-than-significant levels, and the project's incremental contribution to the significant cumulative impact is less than cumulatively considerable.

- ***Air Quality and Greenhouse Gas Emissions.*** Consistent with the findings of the RVSP EIR, this EIR determined that potential future development of the off-site affordable housing parcel could conflict with or obstruct implementation of the applicable air quality plan during project construction and operation. In addition, the EIR determined that the

off-site affordable housing parcel could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors). Furthermore, potential future development of the off-site affordable housing parcel could result in the generation of greenhouse gas (GHG) emissions that may have a significant impact on the environment or conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs. However, the EIR requires mitigation in order to ensure that the aforementioned impacts related to air quality and GHG emissions would be less than significant.

- ***Biological Resources.*** The EIR determined that implementation of the proposed project could result in potential adverse effects to special-status plants, Crotch's bumble bee, special-status branchiopods, valley elderberry longhorn beetle (VELB), western spadefoot, northwestern pond turtle, roosting bats, Swainson's hawk, burrowing owl, and nesting songbirds and raptors protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (CFGC) either directly (e.g., threaten to eliminate a plant community or cause a wildlife population to drop below self-sustaining levels or threaten to eliminate an animal community), or through substantial habitat modifications or substantial reduction in the number or range of the species. In addition, the project could have a substantial adverse effect on riparian habitat or other sensitive natural communities identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife (CDFW) or the U.S. Fish and Wildlife Service (USFWS) and/or have a substantial adverse effect on federal or State protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. The EIR also determined that the proposed project could conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, or have a substantial adverse effect on the environment by converting oak woodlands or impacting individual trees. The EIR requires mitigation in order to ensure that all of the aforementioned impacts related to biological resources would be reduced to less-than-significant levels.

- ***Cultural Resources.*** The EIR determined that implementation of the proposed project could cause a substantial adverse change in the significance of a unique archaeological resource pursuant to CEQA Guidelines, Section 15064.5, or disturb human remains, and would have the potential to cause a physical change which would affect unique ethnic cultural values, or restrict existing religious or sacred uses within the potential impact area. However, the EIR requires mitigation in order to ensure that the aforementioned impacts related to cultural resources would be less than significant.

- ***Geology and Soils.*** The EIR determined that implementation of the proposed project could result in short-term construction related impacts associated with soil erosion and the loss of topsoil. The EIR also determined that the proposed project could result in impacts related to being located on a geological 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 lateral spreading, subsidence, or collapse, or being located on expansive soil, as defined in Table 18-1B of the Uniform Building Code. In addition, the EIR determined that implementation of the proposed project could result in directly or indirectly destroying a unique paleontological resource or site or unique geologic feature. Furthermore, the EIR determined that the

proposed project could result in significant disruptions, displacements, compaction, or overcrowding of the soil, or substantial change in topography or ground surface relief features. However, the EIR requires mitigation in order to ensure that the aforementioned impacts are reduced to less-than-significant levels.

- ***Hydrology and Water Quality.*** The EIR determined that implementation of the proposed project could result in potential construction and operational impacts related to the violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality. In addition, the EIR determined that the proposed project could substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; or create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff either during construction or in the post-construction condition. Similarly, the EIR determined that the proposed project could substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows or expose people or structures to risk of loss, injury or death involving flooding through the placement of housing in a flood hazard area, or risk release of pollutants due to project inundation. However, the EIR requires mitigation in order to ensure that the aforementioned impacts related to hydrology and water quality are reduced to less-than-significant levels.

- ***Public Services and Utilities.*** Consistent with the findings of the RVSP EIR, this EIR determined that potential future development of the off-site affordable housing parcel could result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for law enforcement services. In addition, the EIR determined that potential future development of the off-site affordable housing parcel could require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects, as well as a potential impact related to having sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years. Furthermore, the EIR determined that potential future development of the off-site affordable housing parcel could result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

- ***Transportation.*** The EIR determined that implementation of the proposed project could conflict with a program, plan, ordinance, or policy, except LOS, addressing the circulation system during construction activities. However, the EIR requires mitigation in order to ensure that the aforementioned impact is reduced to a less-than-significant level.

- ***Tribal Cultural Resources.*** The EIR determined that implementation of the proposed project could cause a substantial adverse change in the significance of a tribal cultural resource, as defined in PRC Section 21074. However, the EIR requires mitigation in order to ensure that the aforementioned impact is reduced to a less-than-significant level.

Significant and Unavoidable

The EIR has determined that the following project impact would remain significant and unavoidable, even after implementation of the feasible mitigation measures set forth in this EIR:

- ***Noise.*** The EIR determined that, even with the implementation of mitigation, impacts related to the generation of a substantial temporary increase in ambient noise levels during construction of the proposed project in noise-sensitive locations in the vicinity of the project or a substantial temporary increase in ambient noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies, would be significant and unavoidable.

21.3 SELECTION OF ALTERNATIVES

The requirement that an EIR evaluate alternatives to the proposed project or alternatives to the location of the proposed project is a broad one; the primary intent of the alternatives analysis is to disclose other ways that most of the basic objectives of the project could be attained, while reducing the magnitude of, or avoiding, one or more of the significant environmental impacts of the proposed project. Alternatives that are included and evaluated in the EIR must be feasible alternatives. However, the CEQA Guidelines require the EIR to "set forth only those alternatives necessary to permit a reasoned choice." As stated in Section 15126.6(a), an EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. The CEQA Guidelines provide a definition for "a range of reasonable alternatives" and thus limit the number and type of alternatives that may need to be evaluated in a given EIR. According to the CEQA Guidelines Section 15126.6(f):

> The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determined could feasibly attain most of the basic objectives of the project.

First and foremost, alternatives in an EIR must be feasible. In the context of CEQA Guidelines Section 21061.1, "feasible" is defined as:

> ...capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors.

Finally, an EIR is not required to analyze alternatives when the effects of the alternative "cannot be reasonably ascertained and whose implementation is remote and speculative."

In the context of Draft EIR preparation, "feasible" really means "*potentially* feasible." Importantly, the inclusion of an alternative in an EIR is not evidence that it is feasible as a matter of law, but rather reflects the judgment of lead agency staff that the alternative is potentially feasible. The final determination of *actual* feasibility will be made by the lead agency decision-making body through the adoption of CEQA Findings at the time of action on the project. (See CEQA

Guidelines, Section 15091[a][3] [findings requirement, where alternatives can be rejected as infeasible].)

As the courts have explained, "[t]he issue of feasibility arises at two different junctures: (1) in the assessment of alternatives in the EIR and (2) during the agency's later consideration of whether to approve the project." (*California Native Plant Society v. City of Santa Cruz* [2009] 177 Cal.App.4th 957, 981 [*CNPS*], citing *Mira Mar Mobile Community v. City of Oceanside* [2004] 119 Cal.App.4th 477, 489 [*Mira Mar*].) "But 'differing factors come into play at each stage.'" (*CNPS*, *supra*, 177 Cal.App.4th at p. 981.) "For the first phase—inclusion in the EIR—the standard is whether the alternative is potentially feasible." (*CNPS*, *supra*, 177 Cal.App.4th at p. 981, citing *Mira Mar*, supra, 119 Cal.App.4th at p. 489; CEQA Guidelines, § 15126.6, subd. [a].) "By contrast, at the second phase—the final decision on project approval—the decision-making body evaluates whether the alternatives are actually feasible." (*CNPS*, *supra*, 177 Cal.App.4th at p. 981, citing CEQA Guidelines, Section 15091, subd. [a][3].) "At that juncture, the decisionmakers may reject as infeasible alternatives that were identified in the EIR as potentially feasible." (*CNPS*, *supra*, 177 Cal.App.4th at p. 981, citing *Mira Mar*, *supra*, 119 Cal.App.4th at p. 489.)

One basis on which agency decisionmakers can reject a potentially feasible alternative as being actually infeasible is a determination that the alternative is *economically* infeasible. To demonstrate this kind of infeasibility, the decisionmakers must conclude, based on substantial evidence in the record, that "the marginal costs of the alternative as compared to the cost of the proposed project are so great that a reasonably prudent property owner would not proceed with the [alternative]." (*Uphold Our Heritage v. Town of Woodside* [2007] 147 Cal.App.4th 587, 600.) The reduction in profits or additional costs associated with an alternative, compared with those of the proposed project, must be enough to deter the reasonably prudent investor from proceeding with the alternative. (*San Franciscans Upholding the Downtown Plan v. City and County of San Francisco* [2002] 102 Cal.App.4th 656, 693-694.)

Another basis by which decisionmakers may reject a potentially feasible alternative as actually infeasible is a determination that the alternative embodies an undesirable outcome from a policy standpoint. In this vein, decisionmakers may legitimately consider whether particular alternatives, compared with a proposed project, represent an undesirable balance of competing policy considerations or fail to attain project objectives to the same degree as a proposed project. (See *City of Del Mar v. City of San Diego* [1982] 133 Cal.App.3d 410, 417 ["'feasibility' under CEQA encompasses 'desirability' to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, and technological factors"]; *CNPS*, *supra*, 177 Cal.App.4th at p. 1001 [same]; *San Diego Citizenry Group v. County of San Diego* [2013] 219 Cal.App.4th 1, 17 [same]; *Sierra Club v. County of Napa* [2004] 121 Cal.App.4th 1490, 1506-1509 [upholding CEQA findings rejecting alternatives in reliance on applicant's project objectives]; *Citizens for Open Government v. City of Lodi* (2012) 296 Cal.App.4th 296, 314-315 [court upholds agency action where alternative selected "entirely fulfill" a particular project objective and "would be 'substantially less effective' in meeting" the lead agency's "goals"]; and *In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings* [2008] 43 Cal.4th 1143, 1165, 1166 ["feasibility is strongly linked to achievement of each of the primary program objectives"; "a lead agency may structure its EIR alternative analysis around a reasonable definition of underlying purpose and need not study alternatives that cannot achieve that basic goal"].)

Alternatives Considered But Dismissed From Further Analysis

Consistent with CEQA, primary consideration was given to alternatives that could reduce significant project impacts, while still meeting most of the basic project objectives.

As stated in Guidelines Section 15126.6(c), among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are:

(i) failure to meet most of the basic project objectives,
(ii) infeasibility, or
(iii) inability to avoid significant environmental impacts.

Regarding item (ii), infeasibility, among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent). No one of these factors establishes a fixed limit on the scope of reasonable alternatives.

The off-site alternative was considered but dismissed from detailed analysis in this EIR. The reason(s) for dismissal, within the context of the three above-outlined permissible reasons, are provided below.

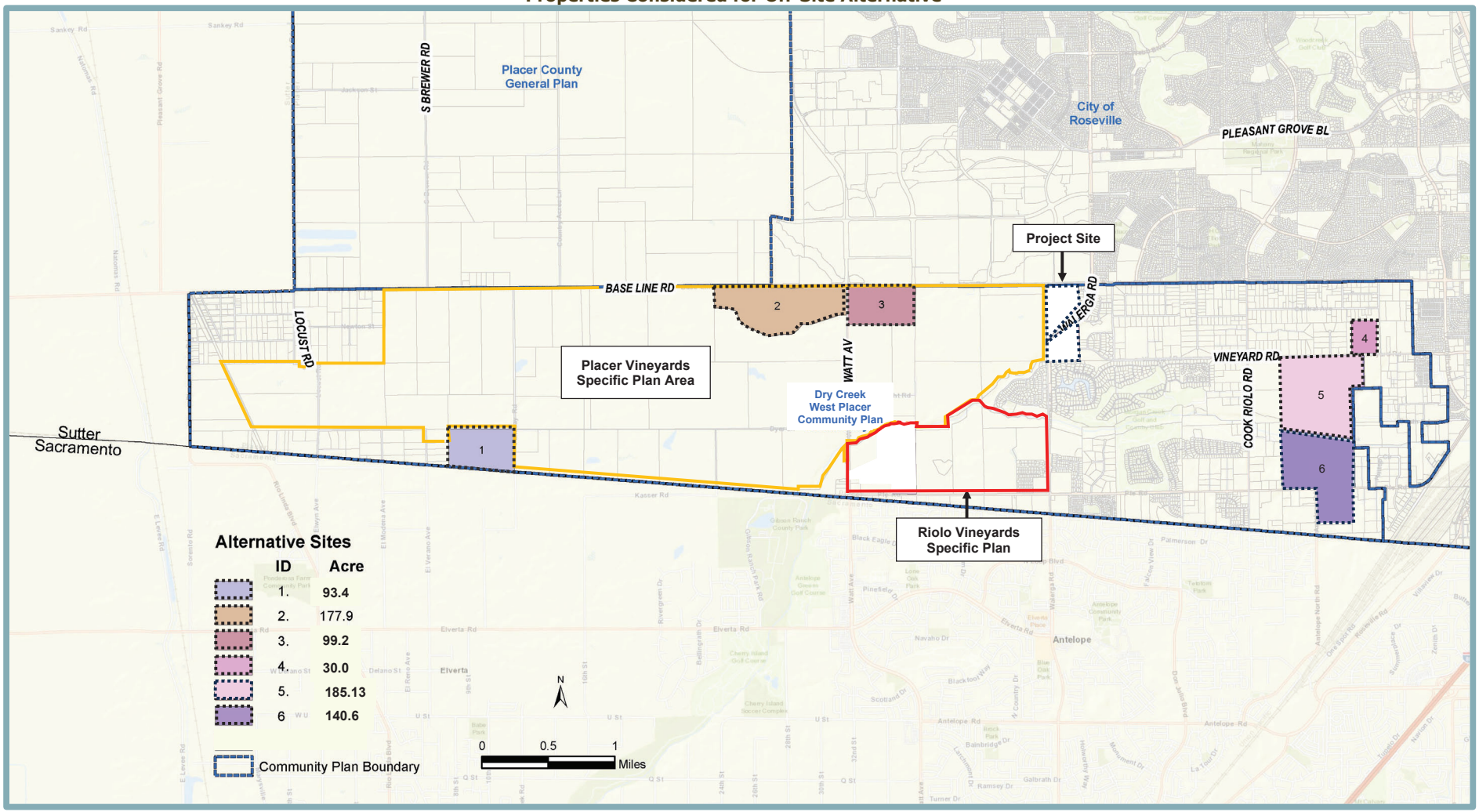
Off-Site Alternative

The possibility of an off-site location was considered as an alternative to the proposed project. The County's Geographic Information System (GIS) database was consulted to provide information regarding vacant properties in the DCWPCP of sufficient size to accommodate the proposed project. The locations of such properties are illustrated in Figure 21-1 below.

In considering sites potentially available for future development, the objectives of the proposed project were used to assess the suitability of available sites. Site 2 was dismissed from further analysis, as a Small Lot Vesting Tentative Subdivision Map with 225 single-family lots was approved by the County for the parcel. In addition, Site 5, shown on the map, was dismissed from further analysis, as The Ranch Project was approved for that site. Site 6 has also been dismissed from further analysis, as the Creekview Ranch Project was approved by the County for the site and is under construction.

Site 1 (93.4 acres) is located outside of a Specific Plan area. Access to the property is limited, as compared to the proposed project. The primary access road, Palladay Road, is a very narrow roadway that transitions to an unmaintained dirt road along the parcel's eastern boundary. Furthermore, Parcel 1 is made up of agricultural land interspersed with sensitive drainage features. As such, biological and agricultural resource impacts would be expected to be similar or increased compared to the proposed project. In addition, the cost of providing infrastructure to the site is reasonably anticipated to render development of the proposed project at Site 1 infeasible.

Figure 21-1
Properties Considered for Off-Site Alternative



* Figure not OCR Compatible

Site 3 (99.2 acres) is located within the Placer Vineyards Specific Plan (PVSP) area. A small lot map has not yet been approved for Parcel 3; however, a conceptual lot plan including a mix of medium- and high-density residential units has been prepared for the site. According to the PVSP EIR, Parcel 3 contains extensive seasonal wetland features.[1] As such, impacts related to biological resources associated with construction of a residential subdivision on Parcel 3 would likely be greater compared to the proposed project.

Site 4 (30.0 acres) is currently vacant and undeveloped. However, Site 4 is significantly smaller than the project site and the other parcels considered for the Off-Site Alternative, and would not be able to accommodate a similar number of units as the proposed project.

It is also important to consider that the project site is located in an area served by existing regional infrastructure and arterial roadways, and is located adjacent to existing and planned urban development in the City of Roseville, as well as existing and planned urban areas within Placer County. Development of the proposed project at one of the aforementioned off-site locations within Placer County would be anticipated to require the extension of additional infrastructure and public services compared to the project site, and would not likely represent an efficient use of existing public investments. In addition, an off-site alternative would require an expansion of urban uses into areas within Placer County that are designated under the General Plan for agricultural use or to areas less suitable for development compared to the project site due to environmental or habitat constraints.

Overall, off-site alternatives that could accomplish the project objectives or accommodate a similar type and intensity of development as the proposed project are not considered feasible. As a result, the Off-Site Alternative is dismissed from detailed evaluation.

Alternatives Considered in this EIR

The following alternatives are considered and evaluated in this section:

- No Project (No Build) Alternative;
- Reduced Project Alternative; and
- Resource Avoidance Alternative.

See Table 21-3 for a comparison of the environmental impacts resulting from the considered alternatives and the proposed project.

As discussed in Chapter 3, Project Description, of this EIR, the project includes two options to meet the County's affordable housing regulations. One of the affordable housing options includes the construction of 22 on-site Accessory Dwelling Units (ADUs), resulting in a total of 454 units. Similarly, the Reduced Project Alternative and Resource Avoidance Alternative analyzed herein could require construction of on-site affordable housing in the form of ADUs. Similar to the proposed project, if the project applicant chooses this option to satisfy the affordable housing requirement, it is assumed that ADUs would be accommodated on the single-family lots, such that the total number of lots would remain unchanged, as would the overall disturbance area associated with the project. In order to provide an equivalent comparison, the same percentage of ADUs assumed for the proposed project has been applied to each Alternative. The County's

[1] Placer County. *Revised Draft Environmental Impact Report, Volume I, for Placer Vineyards Specific Plan, Placer County, California* [Figure 4.4-1]. March 2006.

regulations require a minimum of 10 percent of the units within the proposed project be affordable housing.

The other option under consideration to satisfy the project's affordable housing requirements includes transferring in fee title to the County an off-site vacant parcel under Homes by Towne ownership, within the RVSP. The proposed affordable housing parcel is approximately four acres, located at the northeast corner of PFE Road and Watt Avenue, and is identified as Assessor's Parcel Number (APN) 023-200-056-000. The project applicant would seek an amendment to the RVSP and a rezone of the proposed affordable housing parcel to the newly established RM30 (Residential Multifamily 30) zone, which can result in a maximum development potential of 120 affordable income-restricted units. Although specific development plans are not currently available, the EIR evaluated the potential environmental impacts associated with the net increase in development potential at the affordable housing parcel within the RVSP. For the purposes of the Alternatives analysis contained herein, it is assumed that the amendment to the RVSP and rezone to RM30, which could result in a maximum development potential of 120 affordable income-restricted units on the off-site affordable housing parcel, could similarly apply to both the Reduced Project Alternative and the Resource Avoidance Alternative. Thus, any associated impacts related to the off-site affordable housing parcel, as discussed throughout this EIR, would also apply to the Alternatives, and the identified mitigation measures related to the potential future development of the off-site affordable housing parcel would be the same. As a result, there is no need for a comparison of impacts and mitigation measures related to the off-site affordable housing parcel for each Alternative.

No Project (No Build) Alternative

CEQA requires the evaluation of the comparative impacts of the "No Project" alternative (CEQA Guidelines Section 15126.6[e]). Analysis of the no project alternative shall:

> "… discuss […] existing conditions […] as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services." (*Id.*, subd. [e][2]) "If the project is other than a land use or regulatory plan, for example a development project on identifiable property, the 'no project' alternative is the circumstance under which the project does not proceed. Here the discussion would compare the environmental effects of the property remaining in the property's existing state versus environmental effects that would occur if the project were approved. If disapproval of the project under consideration would result in predictable actions by others, such as the proposal of some other project, this 'no project' consequence should be discussed. In certain instances, the no project alternative means 'no build,' wherein the existing environmental setting is maintained. However, where failure to proceed with the project would not result in preservation of existing environmental conditions, the analysis should identify the practical result of the project's non-approval and not create and analyze a set of artificial assumptions that would be required to preserve the existing physical environment." (*Id.*, subd. [e][3][B]).

The County has decided to evaluate a No Project (No Build) Alternative, which assumes that the current conditions of the project site and off-site affordable housing parcel would remain, and the sites would not be developed. As described in this EIR, the northern portion of the project site (i.e., north of Walerga Road) is undeveloped, consists of non-native annual grassland with gently rolling topography, and is interspersed with seasonal wetlands and vernal pools. The southern portion of the project site similarly includes undeveloped annual grassland with gently rolling topography, interspersed with seasonal wetlands, vernal pools, and is bisected by Placer Creek, which flows east to west. The Federal Emergency Management Agency (FEMA) 100-year

floodplain, containing approximately 4.7 acres, is located within the Placer Creek tributary area, which bisects the southern portion of the project site. A band of oak woodlands is located along the Placer Creek riparian corridor. The off-site affordable housing parcel is undeveloped and consists of grassy fields with gently rolling topography. The No Project (No Build) Alternative would not meet any of the project objectives and would not meet the overall intent of the DCWPCP's land use designation for the project site.

Although the County has included this No Project (No Build) Alternative for informational purposes, the County notes that, given the Alternative's inconsistency with existing DCWPCP and RVSP designations and policies, it is very unlikely that the project site or the off-site affordable housing parcel would remain in the currently, relatively untouched physical conditions indefinitely. Even if the Board of Supervisors were to deny the proposed project, the sites would likely be developed at some point in a manner consistent with the DCWPCP and RVSP, which reflects the County's current planning policies regarding the amount of development appropriate for the sites.

Aesthetics

The EIR determined that without implementation of Mitigation Measure 4-3(a), development of the proposed project could increase the amount of light and glare generated on the site, which could be visible from the surrounding residential development and roadways in the project vicinity. In addition, the EIR determined that without implementation of Mitigation Measure 4-5(a), development of the proposed project could create new sources of light or glare associated with cumulative development of the sites in combination with future buildout of the DCWPCP. The No Project (No Build) Alternative would consist of the continuation of the existing conditions of the project site. Because the No Project (No Build) Alternative would not introduce any new structures or buildings on the site, the Alternative would not create new sources of light or glare associated with development of the site both individually and in combination with future buildout of the DCWPCP. Thus, significant impacts related to Aesthetics would not occur under the No Project (No Build) Alternative.

Biological Resources

Under the No Project (No Build) Alternative, construction activities, including ground disturbance, would not occur on the project site. As such, the Alternative would not have the potential to impact special-status plants, Crotch's bumble bee, special-status branchiopods, VELB, western spadefoot, northwestern pond turtle, roosting bats, Swainson's hawk, burrowing owl, and nesting songbirds and raptors protected under the MBTA and CFGC. The Alternative would not include removal of trees and, thus, would not conflict with the County's Tree Preservation Ordinance. In addition, the Alternative would not result in any substantial adverse effects on riparian habitat or other sensitive natural communities and/or have a substantial adverse effect on federal or State protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. As such, the mitigation measures identified in Chapter 7 would not be required under the Alternative. Overall, significant impacts related to Biological Resources would not occur under the No Project (No Build) Alternative.

Cultural Resources

Because land disturbance on the project site would not occur under the No Project (No Build) Alternative, the Alternative would not have the potential to result in impacts to cultural resources. The mitigation measures identified in Chapter 8 would not be required under the Alternative. Overall, significant impacts related to Cultural Resources would not occur under the No Project (No Build) Alternative.

Geology and Soils

Because the No Project (No Build) Alternative would not include grading or other ground-disturbing activities, substantial soil erosion or loss of topsoil would not occur, and the Alternative would not result in significant disruptions, displacements, compaction, or overcrowding of the on-site soils, or a substantial change in topography or ground surface relief features. In addition, the Alternative would not have the potential to destroy a unique paleontological resource or unique geologic feature. Furthermore, because development would not occur, the Alternative would not have the potential to result in impacts related to unstable geologic units/soils, including expansive soils. Thus, the mitigation measures identified in Chapter 10 would not be required under the Alternative. Overall, significant impacts related to Geology and Soils would not occur under the No Project (No Build) Alternative.

Hydrology and Water Quality

The No Project (No Build) Alternative would not include any ground disturbance or otherwise alter existing site conditions and, thus, would not have the potential to result in construction or operational impacts related to water quality. Additionally, changes in the existing drainage patterns of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; or create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff either during construction or in the post-construction condition, would not occur. In addition, the Alternative would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows or expose people or structures to risk of loss, injury or death involving flooding through the placement of housing in a flood hazard area, or risk release of pollutants due to project inundation. Thus, the mitigation measures identified in Chapter 12 would not be required under the Alternative. Overall, significant impacts related to Hydrology and Water Quality would not occur under the No Project (No Build) Alternative.

Noise

The EIR determined that the proposed project would result in a significant and unavoidable impact related to the generation of a substantial temporary increase (during construction) in ambient noise levels in noise-sensitive locations in the vicinity of the project or a substantial temporary increase in ambient noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Because the No Project (No Build) Alternative would not involve construction activities, Mitigation Measures 14-1(a) and 14-1(b) to reduce construction noise to the extent feasible would not be required. Overall, the proposed project's significant and unavoidable temporary impact related to Noise would not occur under the No Project (No Build) Alternative.

Transportation

The No Project (No Build) Alternative would not include construction on the project site and, thus, would not generate construction traffic on local roadways. As such, the mitigation measure related to preparation and implementation of a construction signing and traffic control plan would not be required. Overall, significant impacts related to Transportation would not occur under the No Project (No Build) Alternative.

Tribal Cultural Resources

Because land disturbance on the project site would not occur under the No Project (No Build) Alternative, the Alternative would not have the potential to result in impacts to tribal cultural resources. The mitigation measures identified in Chapter 17 would not be required under the Alternative. Overall, significant impacts related to Tribal Cultural Resources would not occur under the No Project (No Build) Alternative.

Reduced Project Alternative

The Reduced Project Alternative would consist of buildout of the project site as shown in Figure 21-2. Under the Reduced Project Alternative, Phases 3 and 4 of the proposed project would not be developed, and on-site open space around Placer Creek would be increased. Similar to the proposed project, the Reduced Project Alternative would require a General Plan/DCWPCP Amendment and rezone to change the residential portions of the northern portion of the project site to High Density Residential (HDR) and Medium Density Residential (MDR). Unlike the proposed project, the entire portion of the project site south of Walerga Road would be designated Open Space (OS). Under the Reduced Project Alternative, the MDR portion of the project site would be developed at a density of 3.17 dwelling units per acre (du/ac) and the HDR portion of the project site would be developed at a density of 9.5 du/ac.

Table 21-1 provides a summary of the land uses that would be developed under the Reduced Project Alternative as compared to the proposed project.

Table 21-1
Land Use Comparison – Reduced Project Alternative

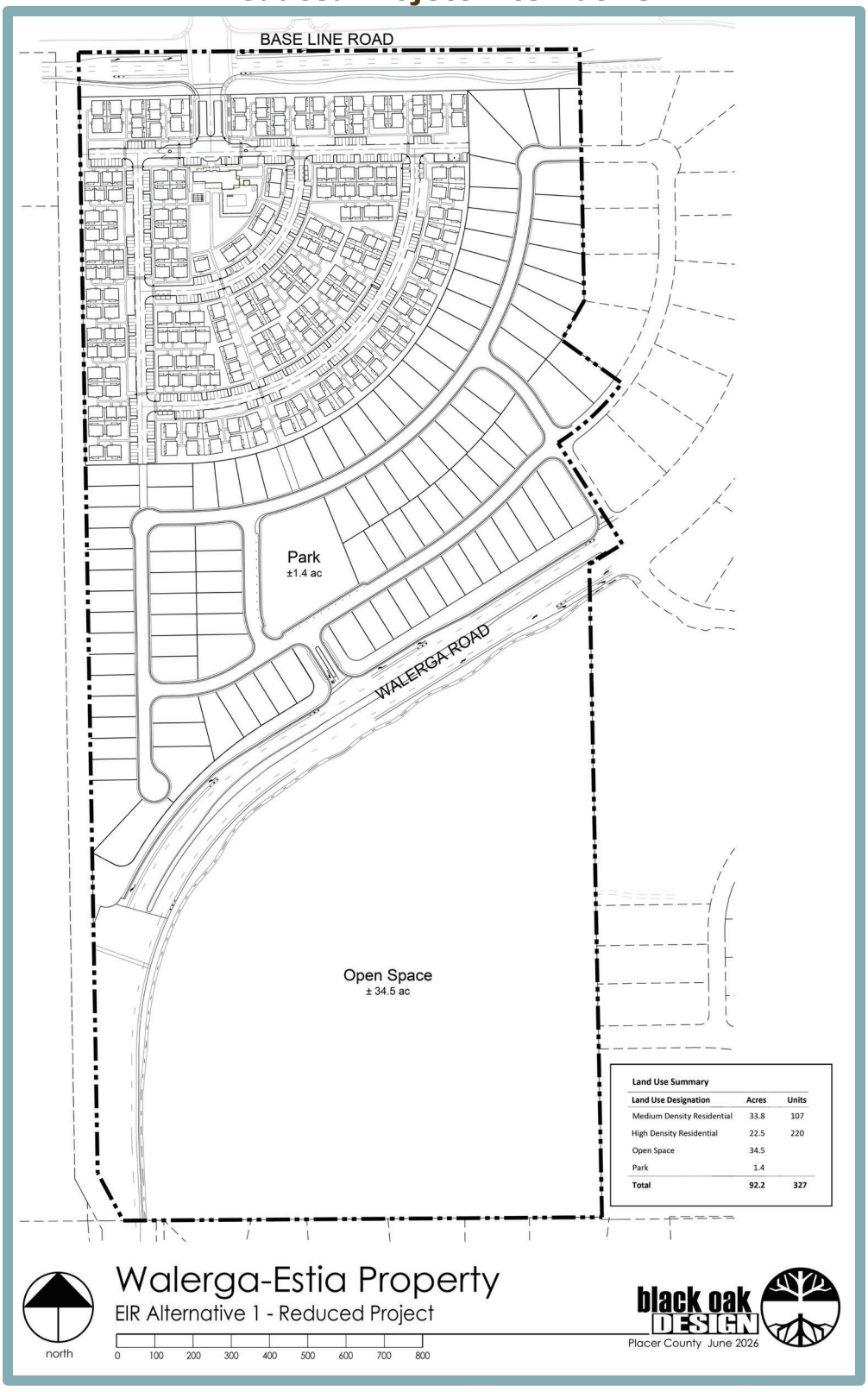
Land Use	Proposed Project (Acres)	Reduced Project Alternative (Acres)
Medium Density Residential	57.0	33.8
High Density Residential	23.2	22.5
Open Space	9.9	34.5
Park	2.1	1.4
Total Acreage	**92.2**	**92.2**
Total Dwelling Units	**432**	**327**

As shown in Table 21-1, the Reduced Project Alternative would result in the development of 105 fewer residential units (327 vs 432 units) than the proposed project. The 220 multi-family HDR units would remain the same under the Alternative, and the single-family MDR units would be reduced from 212 units to 107 units.

Should the project applicant choose the affordable housing option to develop on-site ADUs, a total of 11 ADUs (10 percent of the 107 single-family residential units) would be included under the Alternative to satisfy the County's affordable housing obligation, for a total of 338 residential units.

As discussed above, the off-site affordable housing parcel option would not change under the Alternative, and is therefore not discussed further.

Figure 21-2
Reduced Project Alternative



* Figure not OCR Compatible

The open space area would be increased under the Alternative by 24.6 acres (34.5 vs 9.9 acres). Because the Reduced Project Alternative would include fewer single-family residential units than the proposed project, and Phases 3 and 4 of the proposed project would not be developed, the Alternative would result in a smaller area of disturbance as compared to the proposed project. As such, the Alternative would result in an overall lesser disturbance area and a larger open space area than the proposed project.

Similar to the proposed project, the Reduced Project Alternative would include development of a residential community with both multi-family and single-family units, as well as an open space area. Because the Alternative would not include development in the southern portion of the project site, development near Placer Creek would be avoided, and the construction of stormwater outfalls into Placer Creek and the pedestrian bridge over Placer Creek would not occur. Off-site improvements required under the proposed project, including upgrades to the existing Community Facilities District #1 Sewer Lift Station and improvements to nearby intersections and roadways, would still occur under the Reduced Project Alternative.

Due to the residential nature of the Reduced Project Alternative, and because the design would generally resemble the proposed project, including open space, most project objectives would be fully or partially met by the Alternative. However, due to the reduced number of single-family residential units, the Reduced Project Alternative would satisfy Objective 8 to a lesser extent.

Aesthetics

Given that the project site is undeveloped and comprised primarily of undeveloped grassland interspersed with seasonal wetlands and vernal pools, the Alternative would introduce residential development to the project site that does not currently exist. Therefore, similar to the proposed project, the Alternative would introduce new substantial sources of light and glare to the undeveloped project site, including along the project site frontage at Baseline Road and Walerga Road. Such sources would include, but not be limited to, streetlights within internal street systems, vehicle headlights, exterior lighting fixtures, interior light spilling through windows, and light reflected off of windows. However, the Alternative would result in the development of approximately 105 fewer single-family residential units than the proposed project, and development would not occur south of Walerga Road. Therefore, the lighting and glare associated with the Alternative would be less intensive than the proposed project because sources of light and glare would not be developed in the southern portion of the project site. All lighting for on-site parking spaces and parking areas would be required to comply with Section 17.54.070(A)(2)(i) of the Placer County Code. Similar to the proposed project, the Reduced Project Alternative would be subject to compliance with the applicable sections of the Placer County Design Guidelines related to light pollution, including, but not limited to, shielding of fixtures such that direct rays do not pass onto residential property lines. However, because the types of lighting and the specific locations are not known for the Reduced Project Alternative, Mitigation Measure 4-3(a) would still be required.

As such, the mitigation measure identified for the proposed project related to Aesthetics would still be required under the Alternative, and the potential for the Alternative to create a new source of substantial light or glare which would adversely affect day or nighttime views in the area would remain. Overall, because the Alternative would include the development of substantially fewer residential units on a reduced development footprint, impacts related to Aesthetics could be reduced under the Alternative as compared to the proposed project.

Biological Resources

The Reduced Project Alternative would include residential development of the project site, similar to the proposed project. However, because the Reduced Project Alternative would not include the development of Phase 3 or Phase 4 of the proposed project in the southern portion of the site, the Alternative would result in the development of 105 fewer single-family residential units than the proposed project and the amount of open space area would be increased under the Alternative by 24.6 acres, thereby reducing the development footprint as compared to the proposed project. Because the Alternative would not include development in the southern portion of the project site, development near Placer Creek would be avoided, and the construction of stormwater outfalls into Placer Creek and the pedestrian bridge over Placer Creek would not occur. Due to the decreased disturbance area, impacts related to Biological Resources under the Alternative would be fewer than the proposed project. For example, as the Alternative would not include development in the southern portion of the project site, the 1.3 acres of valley foothill riparian woodland (VFRW) on both sides of Placer Creek that would be permanently impacted by the proposed project would be completely avoided under the Alternative. While the Alternative would still include ground-disturbing activities on the project site and would have the potential to impact special-status plants, Crotch's bumble bee, special-status branchiopods, VELB, western spadefoot, northwestern pond turtle, roosting bats, Swainson's hawk, burrowing owl, and nesting songbirds and raptors protected under the MBTA and CFGC, potential impacts to the foregoing species would be reduced as compared to the proposed project due to the reduced disturbance area. In particular, while impacts to northwestern pond turtle would remain potentially significant under the Alternative due to development within the off-site sewer lift station improvements area, by avoiding the 1.3 acres of VFRW adjacent to Placer Creek, the Alternative would eliminate potential impacts to northwestern pond turtle within the project site.

Due to the reduced disturbance area and the avoidance of the 1.3 acres of VFRW adjacent to Placer Creek, the Alternative could result in the removal of a reduced number of trees than the proposed project. Even so, the Alternative would still have the potential to conflict with the County's Tree Preservation Ordinance. In addition, the VFRW within the project site is considered to be a Sensitive Natural Community by the California Department of Fish and Wildlife (CDFW). Because the Alternative would completely avoid impacts to the 1.3 acres of VFRW that would be permanently impacted under the proposed project, the Alternative would have a reduced impact on riparian habitats or sensitive natural communities as compared to the proposed project. Furthermore, approximately 1.84 acres of aquatic resources would be permanently disturbed and approximately 0.01-acre of aquatic resources would be temporarily disturbed by development of the proposed project on the project site and the off-site sewer lift station improvements area. Because the amount of open space area would be increased under the Alternative and development would not occur on the southern portion of the project site, the Alternative would completely avoid impacts to 0.03-acre of irrigated wetland, 0.13-acre of seasonal wetland, 0.05-acre of seasonal wetland swale, 0.09-acre of vernal pool, 0.01-acre of ephemeral drainage, and 0.3-acre of intermittent drainage. Thus, impacts to aquatic resources on the project site would be reduced by 0.61-acre under the Alternative. However, the off-site sewer lift station improvements are still assumed to occur under the Alternative and, thus, impacts to aquatic resources located at the off-site sewer lift station improvements area would still occur under the Alternative. Therefore, the Alternative could also still result in substantial adverse effects on riparian habitat or other sensitive natural communities and/or have a substantial adverse effect on federal or State protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. As such, all mitigation measures identified for the proposed project related to Biological Resources would still be required under

the Alternative. Overall, impacts related to Biological Resources could be fewer under the Alternative compared to the proposed project.

Cultural Resources

As mentioned above, the development footprint of the project site would be reduced under the Reduced Project Alternative. Due to the decreased disturbance area, the likelihood for development of the Alternative to unearth new, previously undiscovered resources would be reduced. As such, impacts related to Cultural Resources under the Alternative would be fewer than the proposed project. However, similar to the proposed project, the Reduced Project Alternative would still result in residential development on the project site. Consequently, the mitigation measures identified in Chapter 8 of this EIR would still be required, and the potential for the Alternative to result in disturbance or destruction of archaeological resources and human remains, and to cause a physical change which would affect unique ethnic cultural values or restrict existing religious or sacred uses would remain. Overall, impacts related to Cultural Resources could be fewer under the Reduced Project Alternative as compared to the proposed project.

Geology and Soils

Given that the Reduced Project Alternative would include a reduced overall area of disturbance as compared to the proposed project, the potential for grading and other ground-disturbing activities to result in substantial soil erosion or loss of topsoil, as well as significant disruptions, displacements, compaction, or overcrowding of the soil, or substantial change in topography or ground surface relief features, could be reduced. In addition, the Reduced Project Alternative would result in a reduction of 105 single-family residential units and 11 potential ADUs as compared to the proposed project and, therefore, a reduced number of residential units and associated occupants would be subject to potential impacts related to being located on unstable geologic units/soils, potentially resulting in lateral spreading, subsidence, collapse, or expansive soils. In particular, the loose surficial soils found in borings D7, D8, and D9 as a part of the Geotechnical Due Diligence Review prepared by ENGEO are all located in the southern portion of the project site; because the Reduced Project Alternative would not include development in the southern portion of the site, impacts related to unstable geologic units/soils due to loose surficial soils would be reduced as compared to the proposed project. Similar to the discussion related to cultural resources, the Alternative could have a decreased potential to encounter and destroy a unique paleontological resource or site or unique geologic feature. However, the Alternative would still include residential development and, as such, the mitigation measures identified in Chapter 10 of this EIR would still be required under the Alternative. Overall, impacts related to Geology and Soils could be fewer under the Reduced Project Alternative as compared to the proposed project.

Hydrology and Water Quality

Given that the Reduced Project Alternative would include a reduced overall area of disturbance as compared to the proposed project, the potential for the Alternative to result in construction and operational impacts related to water quality would be decreased. In particular, because the Alternative would not include development in the southern portion of the project site, development near Placer Creek would be avoided, and the construction of stormwater outfalls into Placer Creek and the pedestrian bridge over Placer Creek would not occur. Thus, as development near Placer Creek would be avoided under the Alternative, the potential for the Alternative to result in impacts to water quality during construction would be reduced as compared to the proposed project. In addition, as Phase 3 and Phase 4 of the proposed project would not be developed and the



stormwater outfalls into Placer Creek would not be constructed, stormwater runoff from Phase 3 and Phase 4 of the proposed project would not enter Placer Creek. As such, the potential for the Alternative to result in impacts to water quality during project operation would be reduced as compared to the proposed project. Additionally, because a smaller portion of the site would be developed with residential uses, and the amount of on-site open space would increase by 24.6 acres, a smaller amount of the site would be developed with impervious surfaces. Therefore, the potential for the Reduced Project Alternative to result in substantial changes in drainage patterns and increases in stormwater runoff rates could be decreased as compared to the proposed project. Furthermore, an area in the southern portion of the project site is within a Federal Emergency Management Agency (FEMA) mapped AE floodplain zone, which is a 100-year floodplain. As the Reduced Project Alternative would not include development in the southern portion of the project site, the portion of the 100-year floodplain within the project site would be completely avoided and impacts related to flooding would be reduced. However, the Alternative would still include grading in the floodplain located in the off-site sewer lift station improvements area and would include the shed shift for portions of Phase 1 and Phase 2 and, as such, the mitigation measures identified in Chapter 12 of this EIR would still be required under the Alternative. Overall, impacts related to Hydrology and Water Quality could be fewer under the Reduced Project Alternative as compared to the proposed project.

Noise

The Reduced Project Alternative would include development of the project site with residential uses, similar to the proposed project. However, the Alternative would only include development in the northern portion of the project site, leaving the southern portion of the site as undeveloped open space. As the southern portion of the project site would not be developed with residential uses, impacts related to temporary noise due to construction would be fewer than the proposed project as the noise levels at the sensitive receptors located to the south of the project site would be reduced. Nonetheless, the proposed project would likely require nighttime work and, according to the Noise Report, nighttime construction would result in noise levels exceeding the applicable threshold at sensitive receptors located to the west of the project site. As the Reduced Project Alternative would still include development in the northern portion of the project site, in the vicinity of the sensitive receptors located to the west of the project site, impacts related to temporary noise due to construction of the Alternative could still occur. Therefore, because the northern portion of the project site would still be developed with residential uses, Mitigation Measures 14-1(a) and 14-1(b) would still be required and a significant and unavoidable impact related to the generation of a substantial temporary increase in ambient noise levels in noise-sensitive locations in the vicinity of the project or a substantial temporary increase in ambient noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards or other agencies, would still occur. Overall, while the significant and unavoidable impact related to temporary noise due to construction would still occur under the Alternative, fewer sensitive receptors would be exposed to significant temporary noise increases, and noise impacts could be fewer under the Reduced Project Alternative as compared to the proposed project.

Transportation

As mentioned above, the Reduced Project Alternative would result in the development of 105 fewer single-family residential units and 11 fewer potential ADUs and a decreased development footprint as compared to the proposed project. Due to the decreased number of residential units and development footprint, the Reduced Project Alternative would result in a reduction in the overall intensity of construction traffic. However, because the proposed project would be constructed in phases, and Phase 1 and Phase 2 would remain the same under the proposed

project and the Alternative, the traffic volume at any time during construction of Phase 1 and Phase 2 of the Alternative would not decrease. Even so, because the Alternative would not include the construction of Phase 3 or Phase 4, vehicles associated with construction of the Alternative would be present on the roadways for a shorter amount of time. Nonetheless, the Alternative would still include residential development and off-site roadway improvements, and would add construction vehicle traffic to area roadways, thereby potentially conflicting with existing traffic patterns. As such, Mitigation Measure 16-1(a) related to preparation and implementation of a construction signing and traffic control plan would still be required under the Alternative. Overall, development of the Reduced Project Alternative would result in fewer impacts related to Transportation compared to the proposed project.

Tribal Cultural Resources

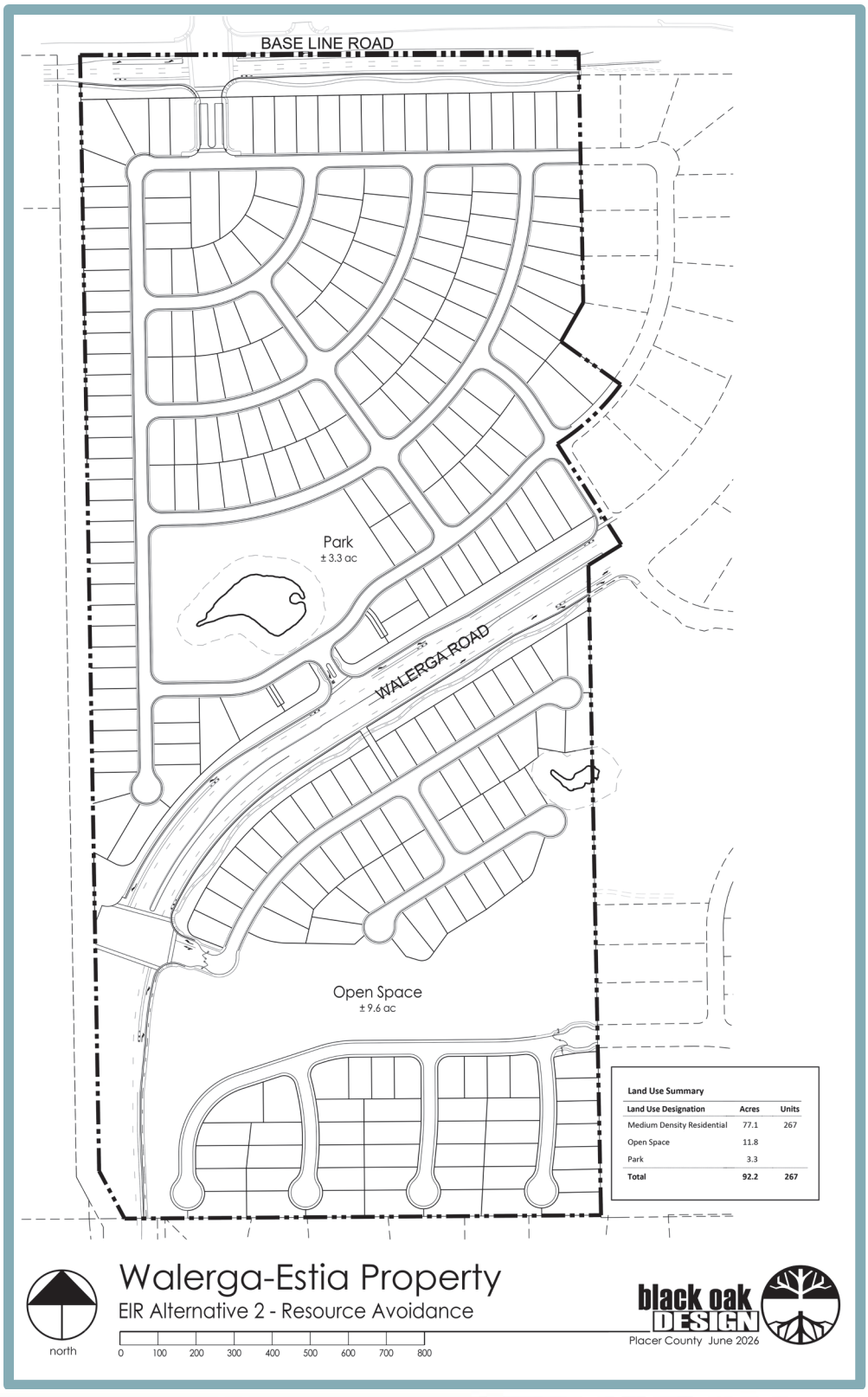
The development footprint would be reduced under the Reduced Project Alternative as compared to the proposed project. Due to the decreased disturbance area, the likelihood of development of the Alternative to unearth new, previously undiscovered resources would be reduced. As such, impacts related to Tribal Cultural Resources under the Alternative could be fewer than the proposed project. However, similar to the proposed project, the Reduced Project Alternative would still result in residential development on the project site, and construction of the Alternative could also unearth new, previously undisturbed resources. Consequently, the mitigation measures identified in Chapter 17 of this EIR would still be required, and the potential for the Alternative to result in a substantial adverse change in the significance of a tribal cultural resource would remain. Overall, impacts related to Tribal Cultural Resources could be fewer under the Reduced Project Alternative as compared to the proposed project.

Resource Avoidance Alternative

The Resource Avoidance Alternative would consist of buildout of the project site as shown in Figure 21-3. The Resource Avoidance Alternative would require a General Plan/DCWPCP Amendment and rezone to change the residential portions of the project site to MDR. Under the Resource Avoidance Alternative, the residential portion of the project site would be developed at a density of 3.81 du/ac with no multi-family residential units constructed. Table 21-2 provides a summary of the land uses that would be developed under the Resource Avoidance Alternative as compared to the proposed project.

As shown in Table 21-2, the overall disturbance area of the project site would be reduced, as the Resource Avoidance Alternative would include the development of 165 fewer residential units (267 vs 432 units) than the proposed project and residential development under the Alternative would be reduced by 3.1 acres (77.1 acres vs 80.2 acres). Should the project applicant choose the affordable housing option to develop on-site ADUs, a total of 27 ADUs (10 percent of the 267 single-family residential units) would be included under the Alternative to satisfy the County's affordable housing obligation, for a total of 294 residential units.

Figure 21-3
Resource Avoidance Alternative



* Figure not OCR Compatible

Table 21-2
Land Use Comparison – Resource Avoidance Alternative

Land Use	Proposed Project (Acres)	Resource Avoidance Alternative (Acres)
Medium Density Residential	57.0	77.1
High Density Residential	23.2	--
Open Space	9.9	11.8
Park	2.1	3.3
Total Acreage	**92.2**	**92.2**
Total Dwelling Units	**432**	**267**

As discussed above, the off-site affordable housing parcel option would not change under the Alternative, and is therefore not discussed further.

In addition, the amount of on-site park area would be increased by 1.2 acres (3.3 vs 2.1 acres) and open space area would be increased by 1.9 acres (11.8 vs 9.9 acres) as compared to the proposed project in order to avoid the largest on-site vernal pool in the park lot, as well as the smaller vernal pool along the eastern Phase 3 site boundary.

Similar to the proposed project, the Resource Avoidance Alternative would include development of single-family units. However, the Alternative would not include development of multi-family units in the northern portion of the project site, and instead would develop single-family units throughout the residential areas of the project site. Upgrades to the off-site existing Community Facilities District #1 Sewer Lift Station would still occur under the Resource Avoidance Alternative.

Due to the residential nature of the Resource Avoidance Alternative, and because the Alternative would include open space, most project objectives would be fully or partially met. However, because the Alternative would develop 165 fewer residential units (excluding potential ADUs) than the proposed project, and would only develop single-family units, and not provide a mix of single-family and multi-family units, Objectives 2, 6, and 8 would not be met.

Aesthetics

Similar to the proposed project, the Resource Avoidance Alternative would include development of the project site with residential uses. However, the Alternative would result in the development of approximately 165 fewer units than the proposed project (excluding potential ADUs), and residential development under the Alternative would be reduced by 3.1 acres. Nonetheless, the Alternative would introduce new substantial sources of light and glare to the undeveloped project site. Such sources would include, but not be limited to, streetlights within internal street systems, vehicle headlights, exterior lighting fixtures, interior light spilling through windows, and light reflected off of windows. However, the Alternative would result in the development of approximately 165 fewer residential units than the proposed project and would replace the development of the multi-family units in the northern portion of the project site with single-family units. Therefore, as the more densely populated multi-family units would not be developed under the Alternative, the lighting and glare associated with the Alternative would be less intensive than the proposed project. Similar to the proposed project, the Alternative would be subject to compliance with the applicable sections of the Placer County Design Guidelines related to light pollution, including, but not limited to, shielding of fixtures such that direct rays do not pass onto residential property lines. However, because the types of lighting and the specific locations are

not known for the Resource Avoidance Alternative, Mitigation Measure 4-3(a) would still be required.

As such, the mitigation measure identified for the proposed project related to Aesthetics would still be required under the Alternative, and the potential for the Alternative to create a new source of substantial light or glare which would adversely affect day or nighttime views in the area would remain. Overall, because the Alternative would include the development of substantially fewer residential units and exclude the development of multi-family units, impacts related to Aesthetics could be reduced under the Alternative as compared to the proposed project.

Biological Resources

The Resource Avoidance Alternative would include residential development of the project site, similar to the proposed project. However, the Alternative would result in the development of 165 fewer residential units than the proposed project (excluding potential ADUs), the amount of park area would be increased under the Alternative by 1.2 acres, and the amount of open space area would be increased by 1.9 acres, thereby reducing the development footprint as compared to the proposed project. The Alternative would be designed to avoid the majority of impacts to the on-site vernal pools by preserving the existing vernal pools in the central portion and on the southeastern boundary of the project site by expanding the acreage of the park and eliminating the development of several single-family homes in the southern portion of the site (e.g., in the Phase 3 portion of the proposed project). However, as the Alternative would include development of single-family homes in the northern portion of the project site, development of the Alternative would still impact the vernal pool located on the northern frontage of the project site. Due to the decreased disturbance area, impacts related to Biological Resources under the Alternative would be fewer than the proposed project. For example, due to the preservation of the vernal pools in the central portion and on the southeastern boundary of the project site, the Alternative would have a reduced potential to impact special-status branchiopods and western spadefoot as compared to the proposed project. However, as the Alternative would still include ground-disturbing activities on the project site, the Alternative would still have the potential to impact special-status plants, Crotch's bumble bee, VELB, northwestern pond turtle, roosting bats, Swainson's hawk, burrowing owl, and nesting songbirds and raptors protected under the MBTA and CFGC. In addition, while the Alternative could result in the removal of a reduced number of trees than the proposed project, the Alternative would still have the potential to conflict with the County's Tree Preservation Ordinance. The Alternative could also still result in substantial adverse effects on riparian habitat or other sensitive natural communities and/or have a substantial adverse effect on federal or State protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means as the Alternative would not avoid impacts to the vernal pool located on the northern frontage of the project site, nor the seasonal wetland within the northern portion of the site. In addition, similar to the proposed project, the Alternative would impact the VFRW and Placer Creek through installation of new stormwater outfalls and the pedestrian bridge over the creek. As such, all mitigation measures identified for the proposed project related to Biological Resources would still be required under the Alternative. Overall, impacts related to Biological Resources could be fewer under the Alternative as compared to the proposed project.

Cultural Resources

As mentioned above, the development footprint of the project site would be reduced under the Resource Avoidance Alternative, as the amount of park area would be increased by 1.2 acres under the Alternative, and the amount of open space area would be increased by 1.9 acres. Due

to the decreased disturbance area, the likelihood of development of the Alternative to unearth new, previously undiscovered resources would be reduced. As such, impacts related to Cultural Resources under the Alternative would be fewer than the proposed project. However, similar to the proposed project, the Resource Avoidance Alternative would still result in residential development on the project site. Consequently, the mitigation measures identified in Chapter 8 of this EIR would still be required, and the potential for the Alternative to result in disturbance or destruction of archaeological resources and human remains, and to cause a physical change which would affect unique ethnic cultural values or restrict existing religious or sacred uses would remain. Overall, impacts related to Cultural Resources could be fewer under the Resource Avoidance Alternative as compared to the proposed project.

Geology and Soils

Given that the Resource Avoidance Alternative would include a reduced overall area of disturbance as compared to the proposed project, the potential for grading and other ground-disturbing activities to result in substantial soil erosion or loss of topsoil, as well as significant disruptions, displacements, compaction, or overcrowding of the soil, or substantial change in topography or ground surface relief features, could be reduced. In addition, the Resource Avoidance Alternative would result in a reduction of 165 residential units as compared to the proposed project (excluding potential ADUs) and, therefore, a reduced number of residential units and associated occupants would be subject to potential impacts related to being located on unstable geologic units/soils, potentially resulting in lateral spreading, subsidence, collapse, or expansive soils. Similar to the discussion related to cultural resources, the Alternative could have a decreased potential to encounter and destroy a unique paleontological resource or site or unique geologic feature. However, the Alternative would still include residential development and, as such, the mitigation measures identified in Chapter 10 of this EIR would still be required under the Alternative. Overall, impacts related to Geology and Soils could be fewer under the Resource Avoidance Alternative as compared to the proposed project.

Hydrology and Water Quality

Given that the Resource Avoidance Alternative would include a reduced overall area of disturbance as compared to the proposed project, the potential for the Alternative to result in construction and operational impacts related to water quality would be decreased. In addition, because the amount of park area would be increased by 1.2 acres under the Alternative and the amount of open space area would be increased by 1.9 acres, a smaller amount of the site would be developed with impervious surfaces. Thus, the potential for the Resource Avoidance Alternative to result in substantial changes in drainage patterns and increases in stormwater runoff rates could be decreased as compared to the proposed project. Furthermore, an area in the southern portion of the project site is within a FEMA mapped AE floodplain zone, which is a 100-year floodplain. While the amount of on-site open space area would be increased by 1.9 acres in the Resource Avoidance Alternative, including in the floodplain area located in the southern portion of the project site, impacts related to flooding would still occur under the Alternative as construction of the pedestrian bridge and the associated placement of fill within the 100-year floodplain would still occur. Overall, the Alternative would still include residential development and the shed shift for portions of Phase 1 and Phase 2, as such, the mitigation measures identified in Chapter 12 of this EIR would still be required under the Alternative. Overall, impacts related to Hydrology and Water Quality could be fewer under the Resource Avoidance Alternative as compared to the proposed project.

Noise

With regard to construction noise, the overall intensity of development occurring under the Resource Avoidance Alternative would be relatively similar to the proposed project, considering the Alternative would still develop residential units throughout the project site. While the Alternative would not develop multi-family units and would develop 165 fewer residential units than the proposed project (excluding potential ADUs), the Alternative would still include development near all the sensitive receptors that Chapter 14 of this EIR identified as having significant and unavoidable impacts related to temporary construction noise, including the single-family residences located to the east, west, and south of the project site. As such, while construction duration would decrease due to the reduced number of residential units, the equipment used and noise intensity would be similar. Therefore, impacts related to construction noise would be similar, Mitigation Measures 14-1(a) and 14-1(b) would still be required, and a significant and unavoidable impact related to the generation of a substantial temporary increase in ambient noise levels in noise-sensitive locations in the vicinity of the project or a substantial temporary increase in ambient noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards or other agencies would still occur. Overall, noise impacts could be similar under the Resource Avoidance Alternative as compared to the proposed project.

Transportation

Similar to the proposed project, the Resource Avoidance Alternative would add construction vehicle traffic to area roadways, thereby potentially conflicting with existing traffic patterns. As such, Mitigation Measure 16-1(a) related to preparation and implementation of a construction signing and traffic control plan would still be required under the Alternative. However, because the Alternative would involve construction of 165 fewer residential units as the proposed project (excluding potential ADUs), the overall intensity of construction traffic would likely be reduced. Therefore, development of the Resource Avoidance Alternative could result in fewer impacts related to Transportation as compared to the proposed project.

Tribal Cultural Resources

Due to the decreased disturbance area associated with the Resource Avoidance Alternative as compared to the proposed project, the likelihood of development of the Alternative to unearth new, previously undiscovered resources could be reduced. As such, impacts related to Tribal Cultural Resources under the Alternative could be fewer than the proposed project. However, similar to the proposed project, the Resource Avoidance Alternative would still result in residential development on the project site, and construction of the Alternative could also unearth new, previously undisturbed resources. Consequently, the mitigation measures identified in Chapter 8 of this EIR would still be required, and the potential for the Alternative to result in a substantial adverse change in the significance of a tribal cultural resource would remain. Overall, impacts related to Tribal Cultural Resources could be fewer under the Resource Avoidance Alternative as compared to the proposed project.

21.4 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

An EIR is required to identify the environmentally superior alternative from among the range of reasonable alternatives that are evaluated. The environmentally superior alternative is generally the alternative that would be expected to generate the least amount of significant impacts. Identification of the environmentally superior alternative is an informational procedure and the alternative selected may not be the alternative that best meets the goals or needs of the County. Section 15126(e)(2) of the CEQA Guidelines requires that an environmentally superior alternative

be designated and states, “If the environmentally superior alternative is the ‘no project’ alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.” In this case, the No Project (No Build) Alternative would be considered the environmentally superior alternative, because the project site is assumed to remain in its current condition under the alternative. Consequently, all of the impacts resulting from the proposed project would not occur under the Alternative, as shown in Table 21-3 below. As will be demonstrated below, aside from the No Project (No Build) Alternative, the Reduced Project Alternative is the next best environmentally superior alternative.

The No Project (No Build) Alternative would not meet any of the project objectives. Because the Reduced Project Alternative and the Resource Avoidance Alternative would include the development of a residential neighborhood incorporating open space, and because the designs of each Alternative would generally resemble the proposed project, including the upgrades to the existing Community Facilities District #1 Sewer Lift Station and improvements to nearby intersections and roadways, most project objectives would be fully or partially met by each Alternative. However, due to the reduced number of single-family residential units, the Reduced Project Alternative would satisfy Objective 8 to a lesser extent than the proposed project. In addition, because the Resource Avoidance Alternative would only develop single-family units and would eliminate the multi-family unit component of the proposed project, the Resource Avoidance Alternative would not satisfy Project Objectives 2, 6, or 8. Overall, none of the alternatives would be as effective as the proposed project in satisfying the portion of the underlying purpose of the proposed project focused on addressing statewide and regional housing shortages.

As discussed throughout this chapter and shown in Table 21-3, the Reduced Project Alternative would result in fewer impacts as compared to impacts associated with the proposed project related to all of the eight issue areas for which significant project impacts were identified. The Resource Avoidance Alternative would result in impacts similar to those of the proposed project related to one issue area, and fewer impacts related to the remaining seven issue areas for which significant project impacts were identified. While the significant and unavoidable impact related to Noise identified for the proposed project would still occur under all of the Alternatives, the significant and unavoidable impact related to Noise would be reduced under the Reduced Project Alternative, but would be similar under the Resource Avoidance Alternative, as compared to the proposed project.

Based on the above, the Reduced Project Alternative would satisfy Project Objective 8 to a lesser extent, but would result in fewer impacts than the proposed project related to each issue area for which significant project impacts were identified, whereas the Resource Avoidance Alternative would not satisfy Project Objectives 2, 6, or 8 and would result in a similar impact for the short-term significant and unavoidable impact related to Noise. Therefore, the Reduced Project Alternative would be considered the Environmentally Superior Alternative. However, as discussed above, the significant and unavoidable impact related to Noise that was identified for the proposed project would still occur under the Reduced Project Alternative. As such, the number of significant and unavoidable impacts overall would be the same under the Reduced Project Alternative and the proposed project.

Table 21-3
Comparison of Environmental Impacts for Project Alternatives

Resource Area		Proposed Project	No Project (No Build) Alternative	Reduced Project Alternative	Resource Avoidance Alternative
4. Aesthetics					
4-3	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
4-5	Creation of new sources of light or glare associated with cumulative development of the proposed project in combination with future buildout of the DCWPCP.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
7. Biological Resources					
7-1	Impacts to special-status plant species either directly (e.g., threaten to eliminate a plant community) or through substantial habitat modifications.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
7-2	Impacts to Crotch's bumble bee either directly (e.g., cause a wildlife population to drop below self-sustaining levels or threaten to eliminate an animal community) or through substantial habitat modifications or substantial reduction in the number or range of the species.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
7-3	Impacts to special-status branchiopods either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications or substantial	Less-Than-Significant with Mitigation	None	Fewer	Fewer

Table 21-3
Comparison of Environmental Impacts for Project Alternatives

Resource Area	Proposed Project	No Project (No Build) Alternative	Reduced Project Alternative	Resource Avoidance Alternative
reduction in the number or range of the species.				
7-4 Impacts to VELB either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
7-5 Impacts to western spadefoot either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
7-6 Impacts to northwestern pond turtle either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
7-7 Have a substantial adverse effect, either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications or substantial reduction in the number or range of the species, on Swainson's hawk.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
7-8 Impacts to burrowing owl either directly (e.g., cause a wildlife	Less-Than-Significant with Mitigation	None	Fewer	Fewer

Table 21-3
Comparison of Environmental Impacts for Project Alternatives

	Resource Area	Proposed Project	No Project (No Build) Alternative	Reduced Project Alternative	Resource Avoidance Alternative
	population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications.				
7-9	Impacts to other nesting birds and raptors protected under the MBTA and CFGC either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications or substantial reduction in the number or range of the species.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
7-10	Impacts to roosting bats either directly (e.g., cause a wildlife population to drop below self-sustaining levels, threaten to eliminate an animal community) or through substantial habitat modifications.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
7-11	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 CDFW or USFWS.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
7-12	Have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling,	Less-Than-Significant with Mitigation	None	Fewer	Fewer

Table 21-3
Comparison of Environmental Impacts for Project Alternatives

	Resource Area	Proposed Project	No Project (No Build) Alternative	Reduced Project Alternative	Resource Avoidance Alternative
	hydrological interruption, or other means.				
7-14	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, or have a substantial adverse effect on the environment by converting oak woodlands or impacting individual trees.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
	8. Cultural Resources				
8-2	Cause a substantial adverse change in the significance of a unique archeological resource pursuant to CEQA Guidelines, Section 15064.5.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
8-3	Disturb any human remains, including those interred outside of dedicated cemeteries.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
8-4	Have the potential to cause a physical change which would affect unique ethnic cultural values, or restrict existing religious or sacred uses within the potential impact area.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
	10. Geology and Soils				
10-2	Result in substantial soil erosion or the loss of topsoil.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
10-3	Be located on a geological unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on	Less-Than-Significant with Mitigation	None	Fewer	Fewer

Table 21-3
Comparison of Environmental Impacts for Project Alternatives

Resource Area	Proposed Project	No Project (No Build) Alternative	Reduced Project Alternative	Resource Avoidance Alternative
or off-site lateral spreading, subsidence, or collapse, or be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code.				
10-4 Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
10-5 Result in significant disruptions, displacements, compaction or overcrowding of the soil, or substantial change in topography or ground surface relief features.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
12. Hydrology and Water Quality				
12-1 Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality during construction.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
12-2 Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality during operations.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
12-4 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: substantially increase the rate or amount of surface runoff in a manner which would result in	Less-Than-Significant with Mitigation	None	Fewer	Fewer

Table 21-3
Comparison of Environmental Impacts for Project Alternatives

Resource Area	Proposed Project	No Project (No Build) Alternative	Reduced Project Alternative	Resource Avoidance Alternative
flooding on- or off-site; or create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff either during construction or in the post-construction condition.				
12-5 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows or expose people or structures to risk of loss, injury or death involving flooding through the placement of housing in a flood hazard area, or risk release of pollutants due to project inundation.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
14. Noise				
14-1 Generation of a substantial temporary increase in ambient noise levels in noise-sensitive locations in the vicinity of the project or a substantial temporary increase in ambient noise levels in excess of standards established in the local general plan or noise	**Significant and Unavoidable**	**None**	**Fewer***	**Similar***

Table 21-3
Comparison of Environmental Impacts for Project Alternatives

Resource Area	Proposed Project	No Project (No Build) Alternative	Reduced Project Alternative	Resource Avoidance Alternative
ordinance, or applicable standards of other agencies.				
16. Transportation				
16-1 Conflict with a program, plan, ordinance, or policy, except LOS, addressing the circulation system during construction activities.	Less-Than-Significant with Mitigation	None	Fewer	Fewer
17. Tribal Cultural Resources				
17-1 Cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074.	Less-Than-Significant with Mitigation	None	Fewer	Fewer

Note: No Impact = "None;" Greater than the Proposed Project = "Greater," Less than Proposed Project = "Fewer;" and Similar to Proposed Project = "Similar"

* Significant and Unavoidable impact(s) determined for the proposed project would still be expected to occur under the Alternative.

22. EIR Authors and Persons Consulted

22. EIR Authors and Persons Consulted

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Appendix A

COUNTY OF Placer
COMMUNITY DEVELOPMENT RESOURCE AGENCY

COMMUNITY DEVELOPMENT/RESOURCE AGENCY
Environmental Coordination Services
County of Placer

DATE: April 7, 2025

TO: California State Clearinghouse
Responsible and Trustee Agencies
Interested Parties and Organizations

SUBJECT: **Notice of Preparation of an Environmental Impact Report for the Proposed Estia Dry Creek and Placer Creek Residential Project**

REVIEW PERIOD: **April 7, 2025 to May 7, 2025**

As lead agency for the preparation of an Environmental Impact Report (EIR) for the Estia Dry Creek and Placer Creek Residential Project (proposed project) Placer County has prepared this Notice of Preparation (NOP) in accordance with Section 15082 of the Guidelines for the Implementation of the California Environmental Quality Act (CEQA) (CEQA Guidelines). According to that provision, the purpose of the NOP is to provide responsible agencies and trustee agencies the opportunity to provide the lead agency with specific details about the scope and content of the environmental information related to the responsible and trustee agencies' areas of statutory responsibility that the agencies would like the lead agency to include in the Draft EIR.

The County will need to know the views of your agency as to the scope and content of the environmental information germane to your agency's statutory responsibilities in connection with the proposed project. Responsible agencies will need to use the EIR prepared by the County when considering their permits or other approvals for the proposed project.

Your agencies' timely comments on this NOP should ensure that the Draft EIR will include sufficient environmental information to allow your agencies to complete their statutory responsibilities with respect to the proposed project.

This NOP is also being provided to other interested parties who are also invited to provide their recommendations regarding the scope and content of the Draft EIR.

Project Location: The project site consists of approximately 92.2 gross (87.6 net) acres located south of Baseline Road, immediately east of the abandoned old Walerga Road right-of-way, west of the Fiddyment Road/Baseline Road/Walerga Road intersection and the western portion of Sun Valley Oaks residential subdivision, and north of the Morgan Creek residential subdivision in the Dry Creek-West Placer Community Plan Area (DCWPCP) of unincorporated Placer County. Walerga Road, which curves from the northeast to the southwest, separates the northern 52.3-acre portion of the project site, identified by Assessor's Parcel Number (APN) 023-221-076, and the southern 35.3-acre portion of the project site, identified by APN 023-221-074.

Project Description: The proposed project would include the development of two separate residential communities over the course of four phases. Phase 1 would consist of the 220-unit Estia Dry Creek development, and Phases 2, 3, and 4 would consist of the 212-lot Placer Creek Residential development. Development of Phases 1 and 2 would occur on the northern portion of the site (APN 023-221-076), north of Walerga Road, and development of Phases 3 and 4 would occur on the southern portion of the site (APN 023-221-074), south of Walerga Road.

The Estia Dry Creek (Phase 1) development would include 220 single-story multi-family units consisting of 80 one-bedroom units and 140 two-bedroom units, ranging from approximately 700 square feet (sf) to 1,100 sf. A 3,537-sf community center building would also be developed in the center of the Estia Dry Creek site, and an outdoor pool with patios and grill areas would be located adjacent to the community center. Garages and surface parking would be located throughout the site. Site access would be provided by a new internal roadway system, which would connect to a new driveway off of Baseline Road. Pedestrian paths would be located throughout the site.

The Placer Creek Residential (Phases 2, 3, and 4) development would include 212 single-family residential lots with a minimum lot size of 6,000 sf. Phase 2 would include the development of 110 single-family lots, and a centrally located 2.2-acre public neighborhood park with associated amenities. Phase 3 would include the development of 55 single-family lots and potential recreational amenities. Phase 4 would include the development of 47 single-family lots and the western extension of Vineyard Road, which would provide site access, along with trails and the seven-acre oak woodlands area along the Dry Creek tributary, referred to as "Placer Creek," riparian corridor, which would be preserved as open space. The Placer Creek riparian corridor would separate the Phase 3 and 4 developments.

The proposed project would require County approval of a General Plan/DCWPCP Map Amendment, Rezone, Vesting Large Lot Tentative Subdivision Map, Vesting Phased Small Lot Tentative Subdivision Map, Design Review, and two service area annexations. The project will also request a General Plan/Riolo Vineyards Specific Plan (RVSP) Amendment and Rezone for the proposed affordable housing parcel located off-site. These entitlement requests are discussed in further detail below. Other approvals necessary to implement the proposed project would include Placer County Conservation Program (PCCP) authorization, a Section 404 permit from U.S. Army Corps of Engineers (USACE), a Section 1602 permit from the California Department of Fish and Wildlife (CDFW), a Section 401 Water Quality Certification from the Regional Water Quality Control Board (RWQCB), and a National Pollutant Discharge Elimination System (NPDES) Construction General Permit.

Towne Development of Sacramento, LLC is the applicant for the project.

Contact Information: For more information regarding the proposed project, please refer to the following detailed project description or contact Kara Conklin, Senior Planner, at (530) 745-3053 or kconklin@placer.ca.gov. A copy of the NOP is available for review on the Placer County website at:

https://www.placer.ca.gov/2526/Environmental-Impact-Reports

The NOP is also available during normal business hours, at the same link, via computer kiosks at the Placer County Libraries, the Placer County Community Development Resource Agency (3091 County Center Drive, Auburn) and Tahoe (775 North Lake Boulevard, Tahoe City), and the County Clerk's Office (2954 Richardson Drive, Auburn).

NOP Comment Period: Written comments should be submitted at the earliest possible date, but not later than 5:00 PM on May 7, 2025 to Meghan Schwartz, Environmental Coordination Services, Placer County Community Development Resource Agency, 3091 County Center Drive, Suite 190, Auburn, CA 95603, (530) 745-3132, or cdraecs@placer.ca.gov.

NOP Scoping Meeting: In addition to the opportunity to submit written comments, a NOP scoping meeting will be held in person to inform interested parties about the proposed project, and to provide agencies and the public with an opportunity to provide comments on the scope and content of the EIR. Further information on the date and time of the scoping meeting is provided below.

EIR Scoping Meeting on Estia Dry Creek and Placer Creek Residential Project
Thursday | April 24, 2025 | 4:00 PM to 6:00 PM
In-Person:
CDRA Planning Commission Room
3091 County Center Drive, Auburn, CA

1.0 PROJECT DESCRIPTION

1.1 Location and Setting

The project site is located in the northern portion of the DCWPCP area in unincorporated Placer County (see Figure 1). The 92.2-acre project site (APNs 023-221-076 and -074) is bisected by Walerga Road, which generally curves from northeast to southwest. The 52.3-acre northern portion of the site (APN 023-221-076) is bounded by Baseline Road to the north and Walerga Road to the south. The northern portion of the site is undeveloped, consists of non-native annual grassland with rolling topography, and is

interspersed with seasonal wetlands and vernal pools. The 35.3-acre southern portion of the site (APN 023-221-074) is bounded by Walerga Road to the north and west. The southern portion of the site includes a paved bicycle trail which extends from Vineyard Road to the east and Walerga Road to the west. In addition, the southern portion of the site includes undeveloped annual grassland with rolling topography, interspersed with seasonal wetlands, vernal pools, and is bisected by an un-named tributary of Dry Creek (named "Placer Creek" for this project) which flows east to west. The Federal Emergency Management Agency (FEMA) 100-year floodplain, containing approximately 4.7 acres, is located within the Placer Creek tributary area, which bisects the southern portion of the project site. A band of oak woodlands is located along the Placer Creek riparian corridor.

Roadways in the immediate project vicinity include Baseline Road to the north, Walerga Road bisecting the project site from the southwest to the northeast, Town Center Avenue to the west, and Vineyard Road to the southeast. Additionally, the northern boundary of the project site is adjacent to the Roseville City Limits, and the southern boundary of the project site is located approximately 1.2 miles from the Placer County/Sacramento County line (see Figure 2).

The Placer County General Plan/DCWPCP land use designations for the project site are Rural-Low Density (1-2.3 acre minimum) (RLDR), and Greenbelt and Open Space (OS) (see Figure 3). The site is zoned Residential Single-Family, Combining Agricultural, Combining Building Site of 40,000 square feet (RS-AG-B-40), combining Planned Residential Development one dwelling unit per acre maximum density (PD=1); and Open Space (O) (see Figure 4).

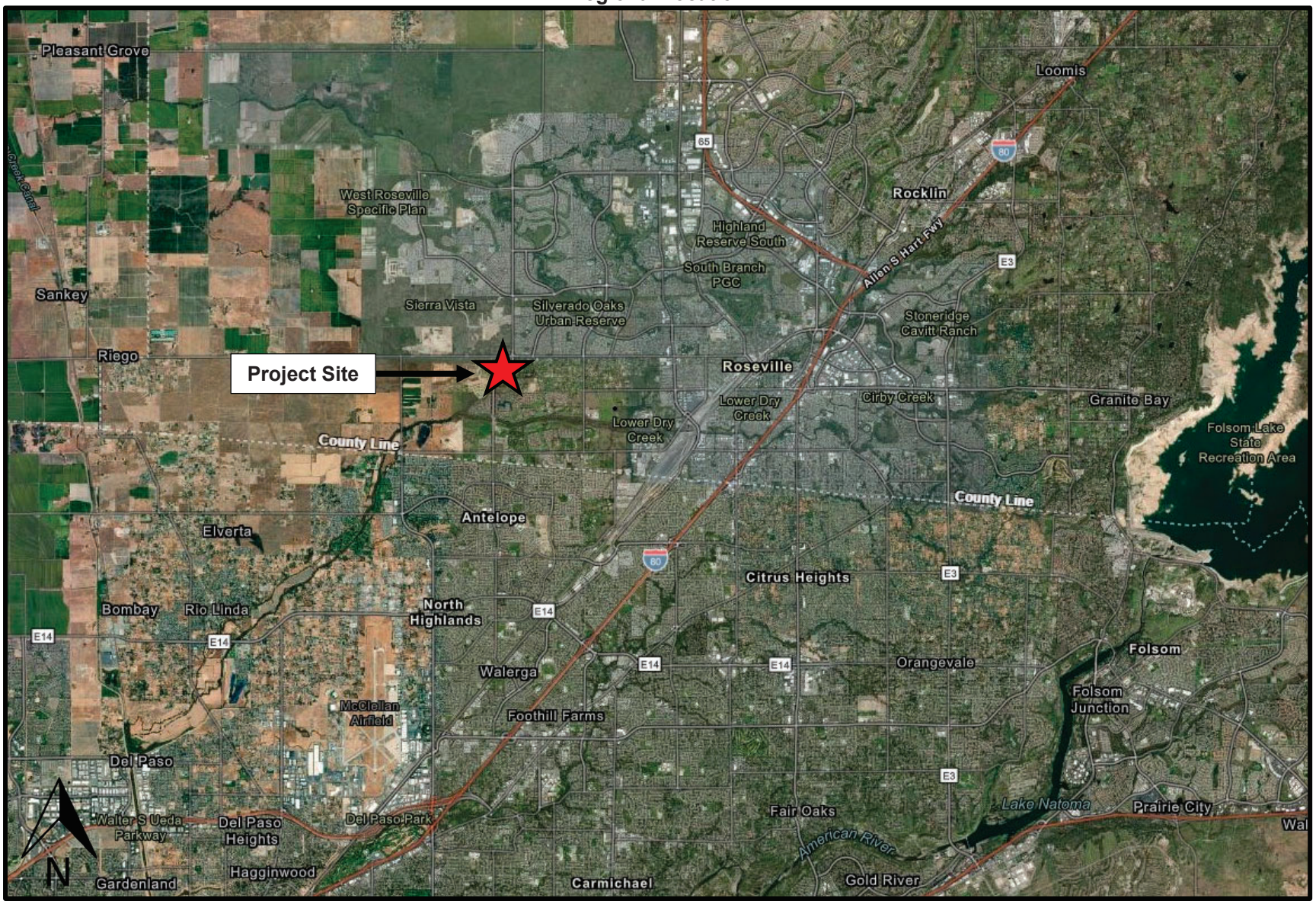
1.2 Surrounding Land Uses

Surrounding existing land uses for the project site include the under-construction Baseline Commercial Center to the north, across Baseline Road; single-family residences associated with the Sun Valley Oaks residential neighborhood and Dry Creek tributaries to the east; single-family residences associated with the Morgan Creek residential neighborhood to the south; and the under-construction Property 1A of the Placer Vineyards Specific Plan (PVSP), which will include 1,285 residential units, to the west, across Walerga Road. Table 1 describes the land use and zoning designations of the parcels surrounding the project site.

Table 1
Surrounding Land Use and Zoning Designations

Parcel Location	Land Use	Zoning
North of the Project Site	City of Roseville: Community Commercial (CC)	City of Roseville: General Commercial (GC)
South of the Project Site	Placer County: Rural Residential (RR)	Placer County: RS-AG-B-40, PD=1
East of the Project Site	Placer County: RR; OS	Placer County: RS-AG-B-40, PD=1, O
West of the Project Site	Placer County: Placer Vineyards Specific Plan	Placer County: Specific Plan, Placer Vineyards Specific Plan (SPL-PVSP)

Figure 1
Regional Location



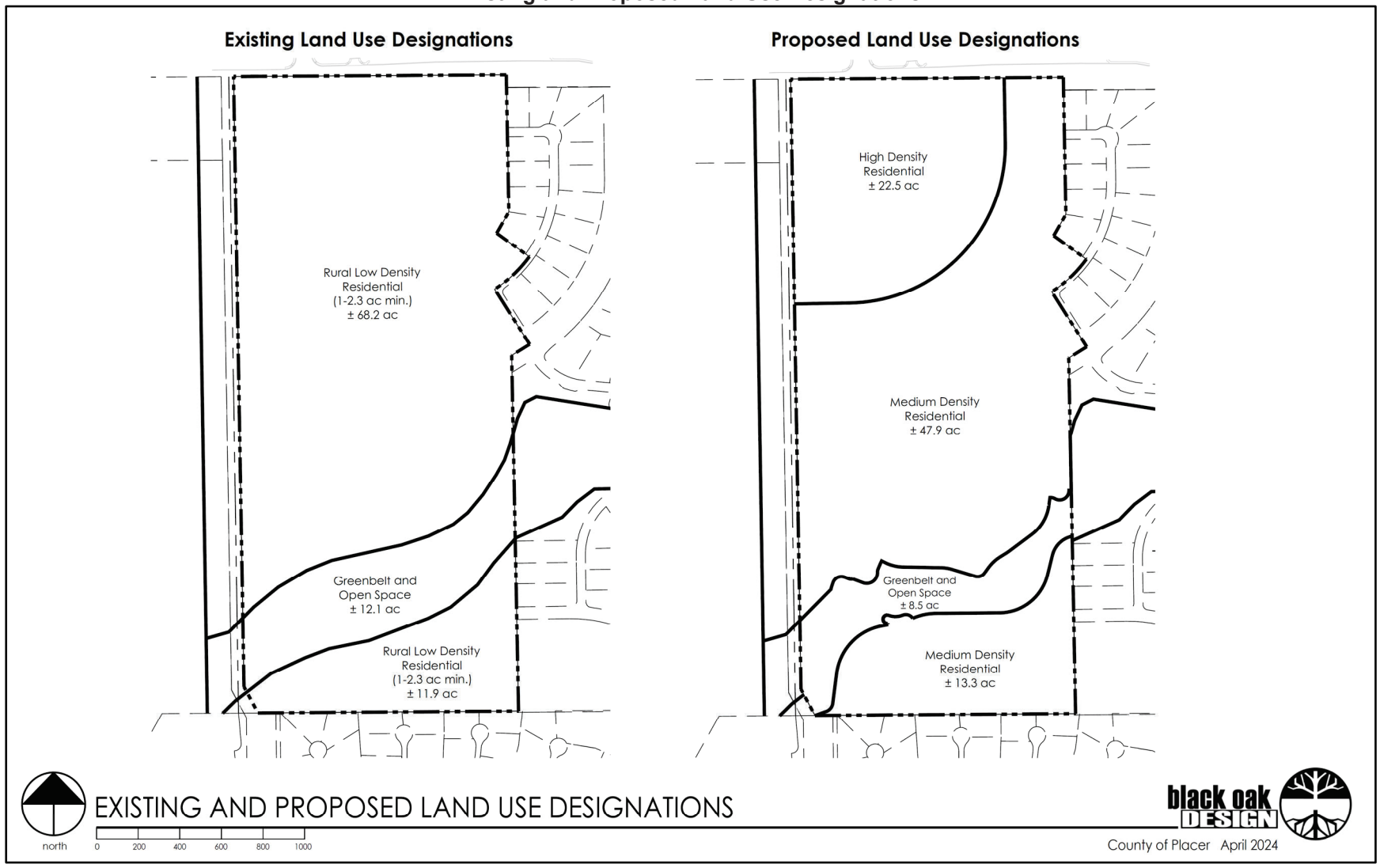
* Figure not OCR Compatible

Figure 2
Project Location



* Figure not OCR Compatible

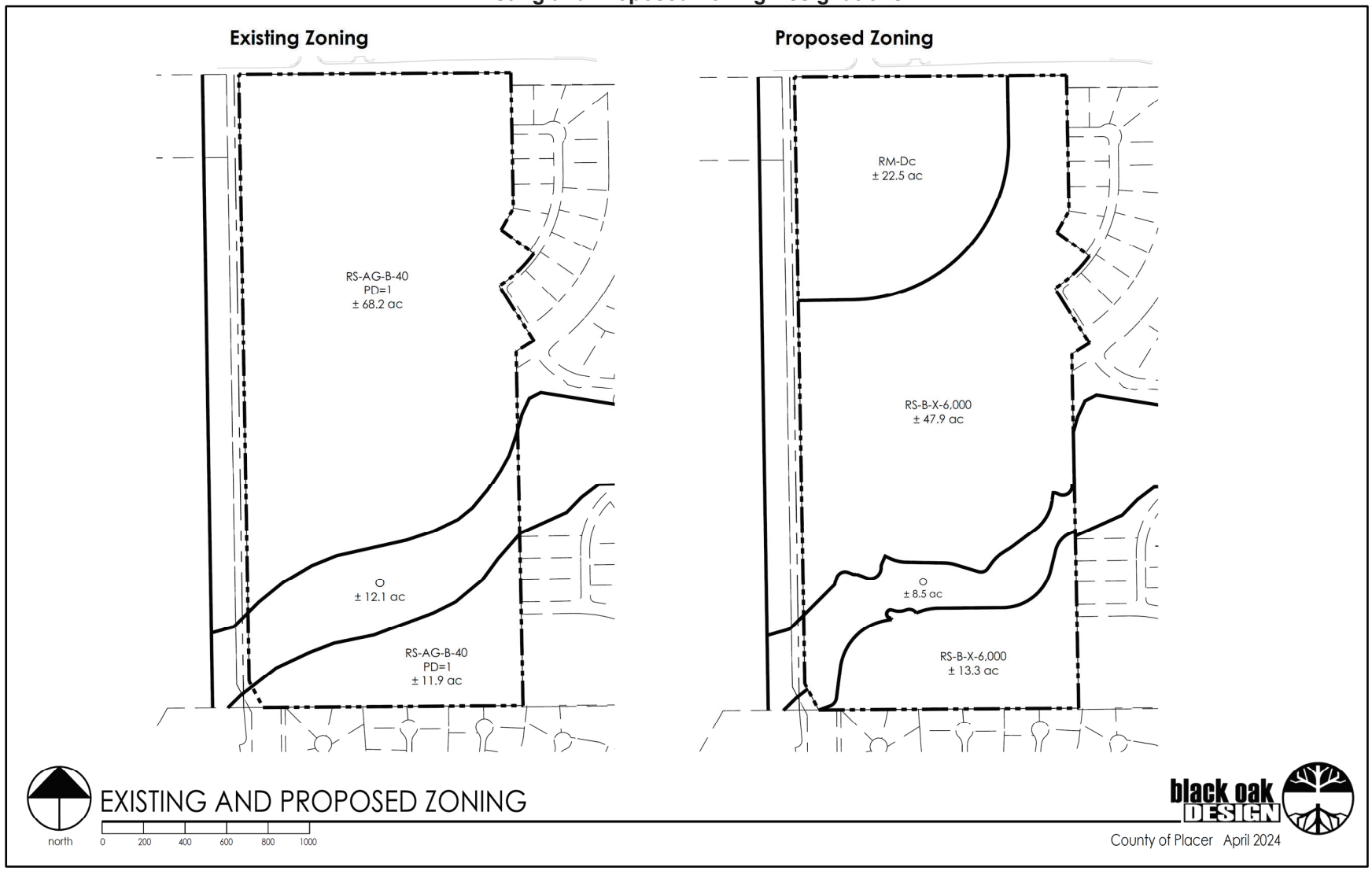
Figure 3
Existing and Proposed Land Use Designations



Note: Land use designation acreages are approximate and will be refined through the EIR process.

* Figure not OCR Compatible

Figure 4
Existing and Proposed Zoning Designations



Note: Zoning designation acreages are approximate and will be refined through the EIR process.

* Figure not OCR Compatible

1.3 Project Components

The proposed project includes the development of two separate residential communities over the course of four phases. Phase 1 would consist of the 220-unit Estia Dry Creek development, and Phases 2, 3, and 4 would consist of the 212-lot Placer Creek Residential development. Development of Phases 1 and 2 would occur on the northern portion of the site (APN 023-221-076), north of Walerga Road, and development of Phases 3 and 4 would occur on the southern portion of the site (APN 023-221-074), south of Walerga Road (see Figure 5). The gross project density would be approximately 4.6 residential units per acre. The proposed project would require County approval of several discretionary entitlements. The proposed project components, along with all required entitlements and approvals, are described in the following sections.

Estia Dry Creek

The Estia Dry Creek development (Phase 1) would include 220 single-story multi-family units consisting of 80 one-bedroom units and 140 two-bedroom units, ranging from approximately 700 sf to 1,100 sf. Each unit would include a private fenced backyard. A 3,537-sf community center building would also be developed and would include a club room, two fitness rooms, and leasing offices with associated lounge, break room, and storage areas. An outdoor pool with patios and grill areas would be located adjacent to the community center. Additional amenities would include a centrally-located dog park, pet washing stations, and car washing stations. Garages and surface parking would be located throughout the site. The density for the Estia Dry Creek portion of the proposed project would be approximately 9.5 residential units per acre.

Placer Creek Residential

The Placer Creek Residential development (Phases 2, 3, and 4) would include 212 single-family residential lots with a minimum lot size of 6,000 sf. Lot coverage is proposed to be 35 percent for two-story homes and 40 percent for single-story homes. Phase 2 would include the development of 110 single-family lots, and a centrally located 2.2-acre public neighborhood park with associated amenities. Phase 3 would include the development of 55 single-family lots and potential recreational amenities. Phase 4 would include the development of 47 single-family lots and the western extension of Vineyard Road, which would provide site access, along with trails and the seven-acre oak woodlands area along the “Placer Creek” riparian corridor, which would be preserved as open space. The Placer Creek riparian corridor would separate the Phase 3 and 4 developments. The average residential density of the Placer Creek Residential site would be approximately 3.8 dwelling units per acre.

General Plan and DCWPCP Amendments

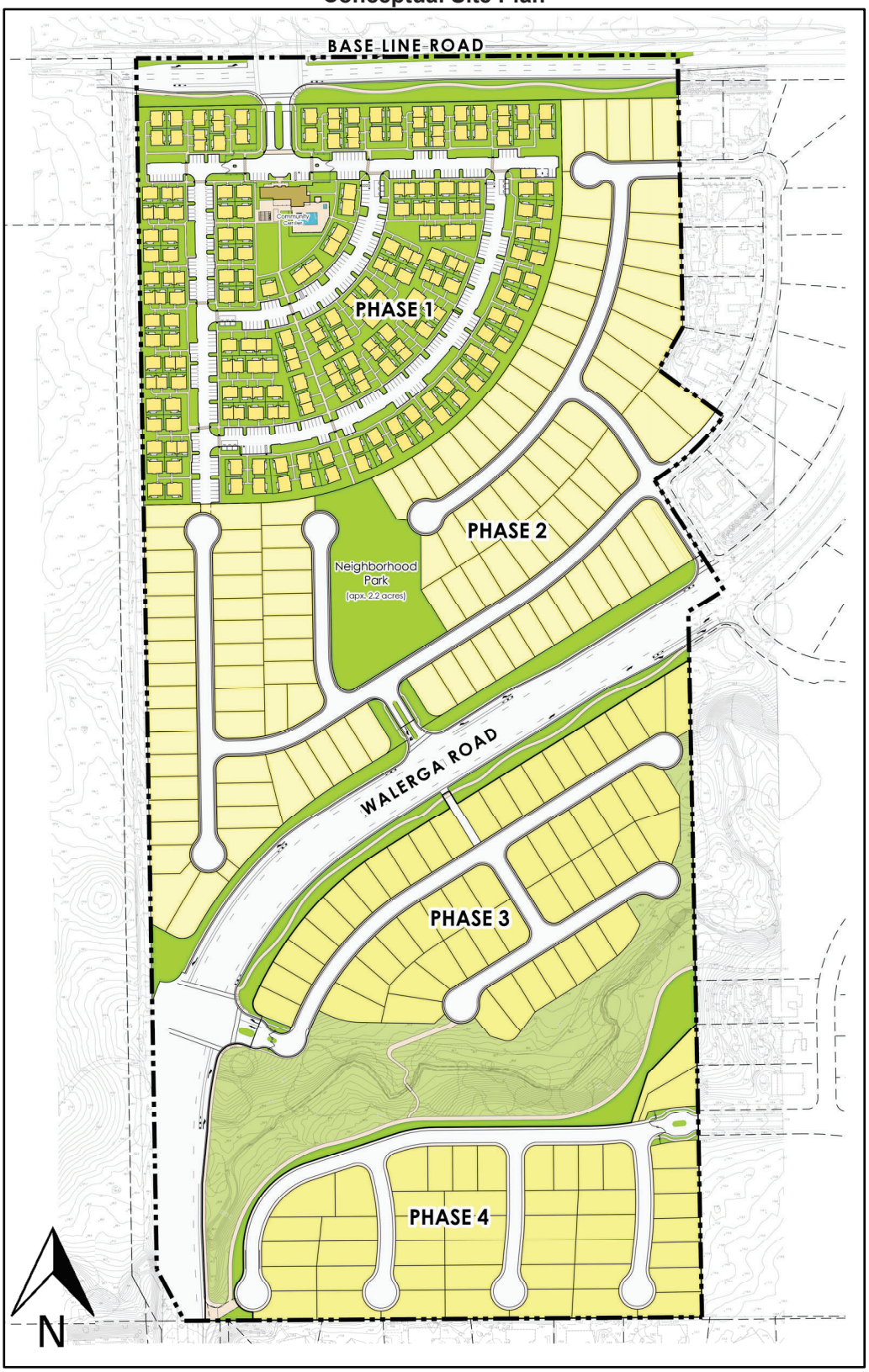
The 92.2-acre project site (including Walerga Road) is currently designated RLDR (80.1 acres) and OS (12.1 acres). The project would include a General Plan/DCWPCP Map Amendment to change the site’s land use designations to High Density Residential (HDR) (22.5 acres), Medium Density Residential (MDR) (61.2 acres), and OS (9.6 acres).

Rezone

Project Site

The project would include a rezone to change the site’s zoning designations from RS-AG-B-40 PD=1 (80.1 acres) and O (12.1 acres), to Residential Multifamily, Combining Design Scenic Corridor (RM-Dc) (22.5 acres), Residential Single Family, Combining a Minimum Building Site of 6,000 sf (RS-B-X-6,000) (61.2 acres), and Open Space (O) (9.6 acres).

Figure 5
Conceptual Site Plan



* Figure not OCR Compatible

Off-Site Affordable Housing

As discussed further below in the Affordable Housing section, the applicant intends to satisfy the project's affordable housing requirements by transferring in fee title to the County an off-site vacant parcel under Homes by Towne ownership, within the Riolo Vineyards Specific Plan (RVSP). The project applicant is seeking to rezone the affordable housing parcel to the newly established zone of Residential Multifamily 30 (RM30), which can result in a maximum development potential of 120 affordable income-restricted units.

Tentative Subdivision Maps

The proposed project would include a Large Lot Tentative Subdivision Map (see Figure 6) to subdivide the net 87.6-acre project site into large lot parcels corresponding to the residential areas of the site (Lots 1 through 4) and the on-site open space (Lot 5) (see Figure 6). In addition, the proposed project would include a Vesting Phased Small Lot Tentative Subdivision Map (see Figure 7) to subdivide large Lots 2, 3, and 4 into 212 single-family residential lots ranging from approximately 6,000 sf to 15,673 sf. Table 2 below provides a summary of the proposed on-site land uses. As shown in the table, the total unit count is 432, which includes 212 single-family lots and 220 multi-family units.

Table 2
Land Use Summary

Lot	Phase	Land Use Designation	Zoning Designation	Land Use	Gross Acres
Lot 1 (220 Units)	1	HDR	RM-Dc	Multi-Family Residential	23.2
Lot 2 (110 Units)	2	MDR	RS-B-6	Single-Family Residential	19.2
Lot 3 (55 Units)	3	MDR	RS-B-6	Single-Family Residential	8.9
Lot 4 (47 Units)	4	MDR	RS-B-6	Single-Family Residential	8.7
LC-3	2	LC	RS-B-6	Landscape Corridor	0.8
LC-4	2	LC	RS-B-6	Landscape Corridor	0.8
LC-5	3	LC	RS-B-6	Landscape Corridor	1.5
LC-6	4	LC	RS-B-6	Landscape Corridor	0.1
LC-7	4	LC	RS-B-6	Landscape Corridor	0.1
OS-1*	3	OS	O	Open Space	9.6
PARK-1	2	PR	RS-B-6	Park	2.2
ROAD-2	2	HE	--	Public Road	4.9
ROAD-3	3	MDR	RS-B-6	Private Road	2.5
ROAD-4	4	MDR	RS-B-6	Private Road	2.7
Walerga Road	2, 3	HE	--	Public Road	5.7
Walerga Road	--	HE	--	Public Road	1.2
Total					**92.2**

Note: Lot acreages are approximate and will be refined through the EIR process.

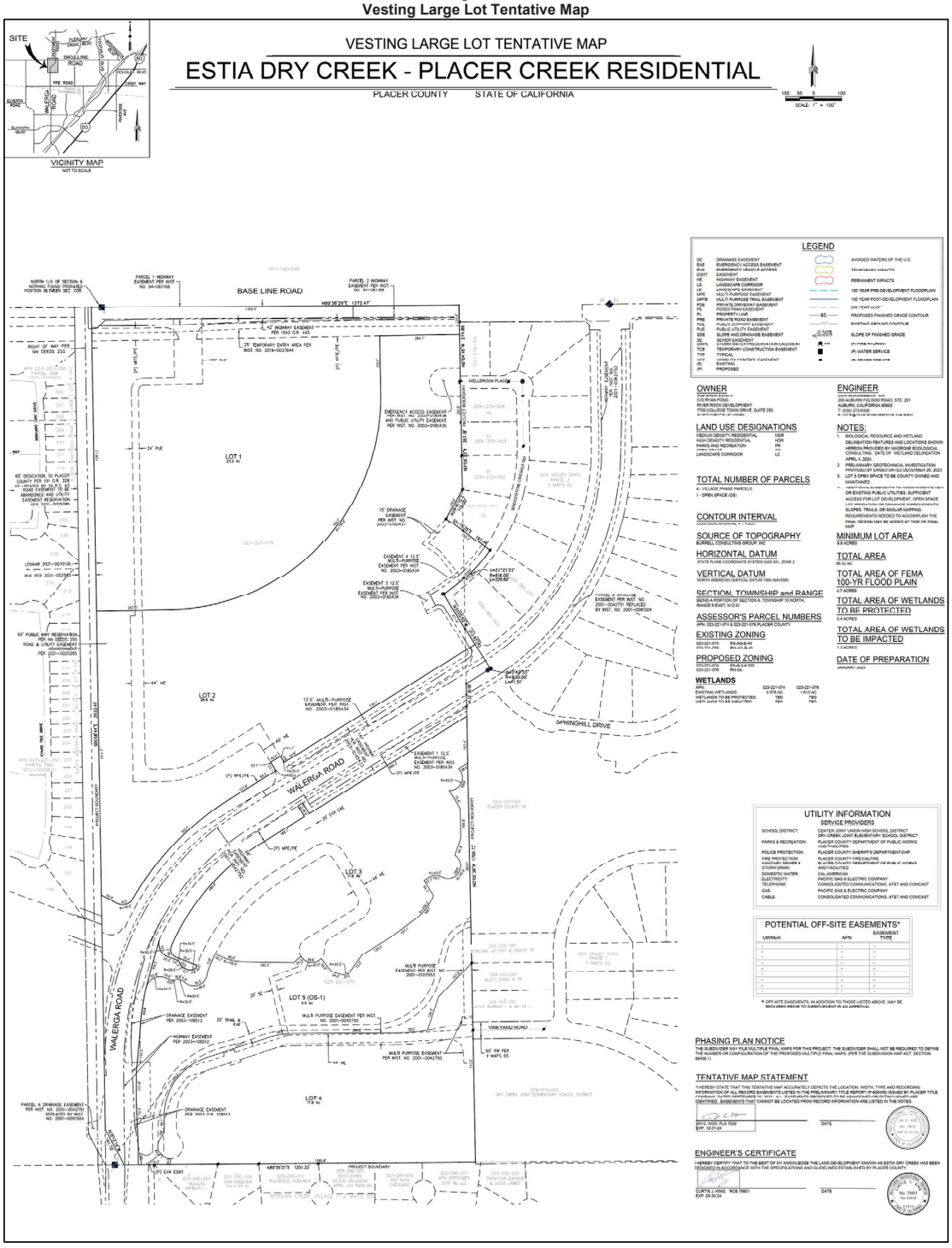
*Lot developed with the Large Lot Final Map.

Affordable Housing

The Estia Dry Creek development is exempt from the Placer County Inclusionary Housing Ordinance (County Code 15.65.050.B.16) due to the unit sizes averaging less than 1,600 sf.

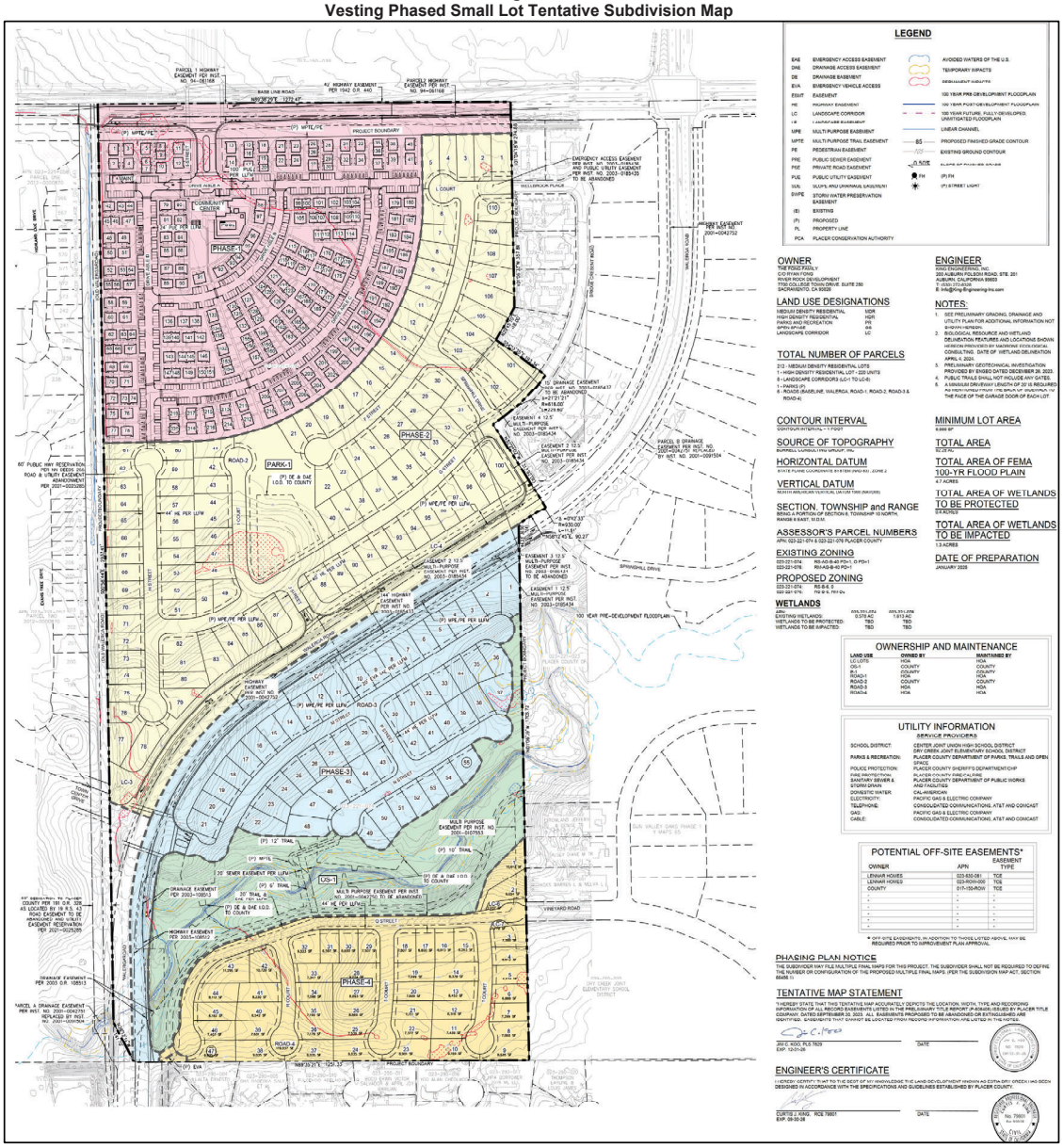
As discussed in the Rezone section above, the applicant intends to satisfy the project's affordable housing requirements by transferring in fee title to the County an off-site vacant parcel under Homes by Towne ownership, within the RVSP. The proposed affordable housing parcel is approximately four acres, located at the northeast corner of PFE Road and Watt Avenue, and is identified as APN 023-200-056-000.

Figure 6
Vesting Large Lot Tentative Map



* Figure not OCR Compatible

Figure 7
Vesting Phased Small Lot Tentative Subdivision Map



* Figure not OCR Compatible

In 2015, the County approved an amendment to the RVSP, which redesignated the subject parcel from HDR to Commercial. The 2015 RVSP Amendment did not include additional traffic analysis; thus, the County limited the amount of commercial development on this parcel to a maximum of 3,750 sf, which roughly equates to the same number of vehicle trips that could be generated by the previously approved HDR use.

In addition to a commercial development potential of 3,750 sf, the applicant, Homes by Towne, has 39 density reserve units available towards this parcel. Thus, the baseline development potential for the proposed affordable housing parcel consists of 3,750 sf of commercial, plus the 39 density reserve units. The project applicant is seeking an amendment to the RVSP and a rezone of the proposed affordable housing parcel to the newly established zone of RM30 (Residential Multifamily 30), which can result in a maximum development potential of 120 affordable income-restricted units. This EIR will evaluate the potential environmental impacts associated with the net increase in development potential at the affordable housing parcel within the RVSP.

Parks, Recreation, Open Space, and Trails

The proposed project would include development of a public, 2.2-acre neighborhood park in the Placer Creek Residential Phase 2 development (Lot PARK-1). Additional park areas would be provided in pockets along Placer Creek. The proposed project would include approximately 9.6 acres of open space bisected by “Placer Creek” and situated between the Placer Creek Residential Phase 3 and 4 neighborhoods (Lot 5/Lot OS-1). The open space area would be preserved as natural open space by virtue of the underlying zoning and an open space easement to be recorded with the final map. Placer Creek Residential parks, trails and open space would be open to the public.

The Estia Dry Creek development would feature an extensive internal pedestrian circulation system that would provide connectivity to project amenities and the surrounding community. A 3,537-sf community center building would include a club room, two fitness rooms, a dog washing facility, and leasing offices with associated lounge, break room, and storage areas. An outdoor pool with patios and grill areas would be located adjacent to the community center. Additional amenities would include a centrally located dog park, and car washing stations. The on-site amenities and recreational facilities associated with the Estia Dry Creek development would be private.

The proposed project would include an approximately 1,300-foot long Class I meandering trail along the Baseline Road frontage, and an approximately 2,300-foot long Class I meandering trail along the southern/eastern Walerga Road frontage. Placer Creek Residential Phase 4 would also include an approximately 1,600-foot long extension of the existing trail within the open space portion of the project site. An approximately 1,600 foot long Class I trail on the southern side of Placer Creek would be connected to the stubbed path north of the three existing Sun Valley Oaks homes fronting White Mill Crescent Road at Vineyard Road. From the proposed trail, a pedestrian bridge would go over to Placer Creek and connect to a trail south of Phase 3, ultimately connecting to N Street within the Placer Creek Residential Phase 2 neighborhood.

The project site would be annexed into County Service Area 28, Zone of Benefit 169 (Dry Creek Parks) for ongoing maintenance of public parks, trails, and recreation amenities within the Dry Creek community.

Access, Circulation, and Parking

Primary access to the Estia Dry Creek development would be provided by a new driveway located along Baseline Road, to the north of the site. The proposed driveway would be aligned with the future six-lane, fully signalized Upland Drive, which would serve the Baseline Marketplace Commercial development located north of the site, along the north side of Baseline Road. An Emergency Vehicle Access to the Estia Dry Creek development would be from Phase 2 via a non-signalized Walerga Road intersection located between Springhill Drive and the existing signalized access (i.e., Town Center Avenue) to the Placer Vineyards Property 1A development to the southwest of the site.

Access to the Placer Creek Residential Phase 2 neighborhood would be provided by the aforementioned new roadway off of Walerga Road between Springhill Drive and Town Center Avenue, and new street extensions from Wellbrook Place and Bridgestone Crescent Road to the east. Access to the Placer Creek Residential Phase 3 neighborhood would be from the eastern/fourth leg of the proposed signalized intersection/access to Walerga at Town Center Avenue, and an Emergency Vehicle Access is proposed from opposite the Phase 2 access on Walerga Road. Access to the southern Phase 4 Placer Creek Residential neighborhood would be from the western extension of Vineyard Road, which currently terminates at the southern entry to the Sun Valley Oaks subdivision at White Mill Crescent Road. An Emergency Vehicle Access for Phase 4 is proposed at the southwest corner of the site in the same location as the existing encroachment for Sewer and Emergency Access.

The Estia Dry Creek and Placer Creek Residential Phase 2 entries on Walerga and Baseline Roads would be landscaped with native vegetation and marked with enhanced hardscape features, using materials consistent with the DCWPCP and the Placer County Landscape Guidelines. The Placer Creek Residential Phase 3 entry from Walerga Road would include a landscaped median with a vehicle gate beyond the median, and the Placer Creek Residential Phase 4 entry on Vineyard Road would also be gated. Pedestrian gates would be located at the project entries and would remain unlocked during daylight hours. Project-identification monument features would be located at each of the entries.

From the proposed access points, the Placer Creek Residential neighborhoods would be served by an internal roadway system, which would include sidewalks and rolled curb and gutters on each side. Interior roadways would be public in Phase 2 and private in Phases 3 and 4. Low Impact Development (LID) features would be included along the roads, and on-street parking would be permitted on both sides of the streets.

An emergency vehicle access (EVA) connection would be developed as part of Phase 1 between Estia Dry Creek and the Phase 2 roadways connecting to Walerga Road. An EVA in Placer Creek Residential Phase 3 would be located from Walerga Road to M Street, opposite the new Phase 2 entrance/J Street. In Phase 4, an EVA would be located from Q Court to Walerga Road in the southwest corner of the project site.

Parking spaces provided in the Estia Dry Creek multi-family residential site would comply with the parking requirements pursuant to Placer County Municipal Code 17.54.040. A total of 457 parking spaces would be included in the Estia Dry Creek site, including 385 surface spaces and 72 garage parking spaces. All garage spaces would be electric vehicle (EV) ready. Additionally, three level 3 fast EV chargers would be provided on-site, one of which would be located at the Community Center, and two of which would be located within the community. Each single-family residence within the Placer Creek Residential development is anticipated to include a private garage and driveway.

Utilities and Public Services

Treated water service for the project would be provided by California American Water (Cal-Am) through an agreement with Placer County Water Agency (PCWA). The Estia Dry Creek development would include construction of a 12-inch loop system. In addition, the proposed project would include four- to 12-inch internal water lines for domestic water service and fire/hydrant connections. Internal water lines would connect to an existing 16-inch line in Walerga Road.

The proposed project would be served by the Dry Creek Wastewater Treatment Plant (Dry Creek WWTP). Flows would be conveyed through existing eight-inch “Sewer B” gravity lines within Walerga Road to the Dry Creek WWTP. The proposed project would include the development of an eight-inch sewer line extending across Placer Creek. Eight-inch sanitary sewer lines would be included throughout the project site and would connect to an existing eight-inch sewer line to the south of the project site. An existing sewer lift station is located east of Walerga Road and south of Dry Creek, approximately 0.75-mile to the south. All sewer improvements would be consistent with the South Placer Regional Wastewater and Recycled Water Systems Evaluation, and depending on the timing of other local projects, would require increasing emergency storage capacity at the existing lift station. The project site would be annexed into Placer County Service Area 28, Zone 173 for sanitary sewer service.

The project site is located within the Dry Creek Watershed. The Estia Dry Creek and Placer Creek Residential Phase 2 sites would have both Baseline Road and Walerga Road storm drain tie-ins, and the Placer Creek Residential Phase 2 component would also drain to the southwest. The "Placer Creek" tributary to Dry Creek is located between the Placer Creek Residential Phases 3 and 4 residential neighborhoods and flows southwest to Dry Creek. Development of the project site would require installation of on-site drainage facilities and alteration of site topography to accommodate the proposed land uses. 24-inch and 18-inch storm drains within the Phase 3 and Phase 4 site would outfall to the Placer Creek tributary. A box culvert extension would be included in the southwestern portion of the project site under Walerga Road. The proposed project would include on-site construction of stormwater quality treatment facilities, including LID features. The proposed project would participate in the Dry Creek Watershed Drainage Improvements in-lieu fee to fund improvements. The drainage system for the proposed project will be evaluated in detail in the EIR.

The proposed project is within the service area of Pacific Gas & Electric Company (PG&E) for electric and natural gas service. A 30-inch PG&E gas transmission line is located along the north side of Baseline Road within an existing easement. In addition, Consolidated Communications and Comcast would provide fiber communication and internet services to the proposed project. The proposed project would connect to the existing dry utility lines within the project vicinity.

Solid waste would be collected by Recology Auburn Placer, a private collection firm, and transported to the Western Placer Waste Management Authority's Western Regional Sanitary Landfill, located north of the City of Roseville.

Additionally, the proposed project would be served by the Placer County Sheriff's Office, California Highway Patrol (CHP), Placer County Fire, Center Joint Unified School District (grades K-12), Dry Creek Joint Elementary School District (grades K-8), and Roseville Joint Union High School District (grades 9-12). The nearest Placer County Fire Station is the Dry Creek Fire Station (Station 100), located at 8350 Cook Riolo Road, approximately 1.5 miles east of the project site. A new fire station is planned for the Placer Vineyards Project, which would provide supplemental fire services. The proposed project would require annexation into the Dry Creek Fire Zone of Benefit (County Service Area 28, Zone of Benefit 165) for provision of fire protection services.

Off-Site Improvements

The Estia Dry Creek development and the Placer Creek Residential development would each include respective off-site improvements. Depending upon the construction timing of each development, and any improvement triggers which would be determined by the traffic study prepared for the proposed project, either of the developments may be required to complete certain off-site improvements at the Walerga Road/Fiddyment Road/Baseline Road intersection.

The proposed project would include the reconfiguration of Walerga Road to include two, seven-foot wide bike lanes, three 12-foot wide travel lanes in each direction, a Class I trail or sidewalk, and a 13- to 24-foot wide center landscaped median.

A six-foot tall noise barrier, using a combination berm and wall, would be constructed between the Walerga Road frontages and adjacent residential units.

Design Review

Pursuant to Placer County Code Section 17.52.070, the Estia Dry Creek development would require County approval of Design Review for the rezone to the RM-Dc zoning designation to ensure compliance with the County's Multifamily and Mixed-Use Design Manual. The purpose of the design review (-Dc, -Dh, -Ds) combining districts is to provide special regulations to protect and enhance the aesthetic character of lands and buildings within public view; to protect historic buildings; to minimize any adverse impacts of conflicting land uses; to enhance tourism through the protection of lands and buildings having unique aesthetic characteristics; and to provide special project review procedures for lands and uses which by their nature

require special attention to architectural design and massing, landscaping, circulation, and/or energy conservation.

Annexations

The proposed project would require annexation into the Placer County Service Area 28, Zone 173, for sanitary sewer service, subject to approval by the County Board of Supervisors. While maintenance and operation of the sewer collection system would be the responsibility of Placer County, the project's wastewater would be treated at the City of Roseville's Dry Creek WWTP, consistent with normal County practice.

The proposed project would also require annexation into the Placer County Service Area 28, Zone 169, for ongoing maintenance and the generation of funds for public parks, trails, and open space recreation amenities within the Dry Creek community, and annexation into the Dry Creek Fire Zone of Benefit (County Service Area 28, Zone of Benefit 165) for provision of fire protection services, subject to Placer County approval.

Project Phasing and Construction

As shown in Figure 5, the proposed project would be constructed over the course of four development phases, with the first phase (i.e., the Estia Dry Creek development) located adjacent to Baseline Road. The proposed Large Lot Tentative Subdivision Map parcels correspond to the conceptual phasing (see Figure 6). Development of Phases 1 and 2 would occur on the northern portion of the site (APN 023-221-076), north of Walerga Road, and development of Phases 3 and 4 would occur on the southern portion of the site (APN 023-221-074), south of Walerga Road. The Estia Dry Creek and Placer Creek Residential Phase 2 would be constructed in two separate phases, with all site work, including grading and necessary infrastructure, completed with the first phase. The Placer Creek Residential Phases 3 and 4 would be developed in a single phase, but the two neighborhoods would be physically separated. The Phase 3 and 4 sites would require mass grading.

1.4 Requested Entitlements

The proposed project would require County approval of the following:

- General Plan/DCWPCP Map Amendment to change the land use designations to High Density Residential (22.5 acres), Medium Density Residential (61.2 acres), and Greenbelt & Open Space (8.5 acres);
- General Plan/RVSP Map Amendment to change the land use designation of the four-acre parcel (APN 023-200-056-000), located on the northeast corner of PFE Road and Watt Avenue from Commercial to High Density Residential (HDR);
- Rezone to Residential Multifamily, Combining Design Review (RM-Dc) (22.5 acres), Residential Single Family, Combining Building Site Minimum of 6,000 sf (RS-B-X-6,000) (61.2 acres), and O (8.5 acres);
- Rezone of a four-acre parcel (APN 023-200-056-000), located at the northeast corner of PFE Road and Watt Avenue from Residential Single Family, combining Agriculture, combining minimum Building Site of 20,000 square feet, combining Development Reserve, combining Planned Residential Development of 2 units per acre (RS-AG-B-20-DR PD = 2) and Specific Plan District – Riolo Vineyards Specific Plan (SPL-RVSP) to Residential Multifamily 30, combining Design Scenic Corridor (RM30-Dc);
- Vesting Large Lot Tentative Subdivision Map;
- Vesting Phased Small Lot Tentative Subdivision Map;
- Design Review for the Estia Dry Creek multifamily neighborhood to ensure compliance with the County's Multifamily and Mixed-Use Design Manual;
- Annexation into Placer County Service Area 28, Zone 173 for sanitary sewer service;

- Annexation into Placer County Service Area 28, Zone 169 for ongoing maintenance of public parks, trails and open space recreation amenities within the Dry Creek community; and
- Annexation into the Dry Creek Fire Zone of Benefit (County Service Area 28, Zone of Benefit 165) for provision of fire protection services.

The project would require the following approvals/permits from other responsible agencies:

- Placer County Conservation Program Authorization (Placer Conservation Authority);
- Section 404 Nationwide Permit (or Letter of Permission) (USACE);
- Section 401 Water Quality Certification (RWQCB – Central Valley Region);
- Section 1602 Permit (CDFW); and
- NPDES Construction General Permit (RWQCB – Central Valley Region).

2.0 PROBABLE ENVIRONMENTAL EFFECTS AND SCOPE OF THE EIR

Consistent with Appendix G of the CEQA Guidelines, the County anticipates that the EIR will contain the following chapters:

- Aesthetics
- Agricultural Resources
- Air Quality and Greenhouse Gas Emissions
- Biological Resources
- Cultural Resources
- Energy
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning/Population and Housing
- Noise
- Public Services and Utilities
- Transportation
- Tribal Cultural Resources
- Wildfire
- Statutorily Required Sections
- Effects Not Found to be Significant
- Alternatives Analysis

Each chapter of the EIR will include identification of the thresholds of significance, identification of project-level and cumulative impacts, and the development of mitigation measures and monitoring strategies, as required. The proposed EIR will describe the relevant portions of the Placer County General Plan, the Placer County General Plan EIR, and the DCWPCP, where applicable. In addition to these County documents, project-specific technical studies are being prepared by technical experts to support the EIR's analyses.

The following paragraphs summarize the anticipated analyses that will be included in the EIR.

Aesthetics: The Aesthetics chapter of the EIR will summarize existing regional and project area aesthetics and visual setting. To the extent applicable, the chapter will describe project-specific aesthetics issues such as scenic vistas, trees, historic buildings, existing visual character or quality of the project area, as well as light and glare. Pursuant to Appendix G of the CEQA Guidelines, if the project site is determined to be in a non-urbanized area, the focus of the analysis concerning the project's effects on visual character or quality of the project site and its surroundings will be on whether the proposed project will substantially degrade the existing visual character or quality of public views of the site and its surroundings. If the project site is determined to be in an urbanized area, the focus of the analysis will be on whether the proposed project will conflict with applicable zoning and other regulations governing scenic quality.

Agricultural Resources: The Agricultural Resources chapter of the EIR will provide information regarding the existing setting relative to agricultural resources on the project site based on a review of maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency for Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as well as the types of on-site soils, determined through a Web Soil Survey, which will be conducted using the USDA Natural Resources Conservation Service website. The chapter will include an analysis of the proposed project's potential to conflict with the existing zoning for agricultural-related use and any Williamson Act contract. The chapter

will identify thresholds of significance applicable to the proposed project. The impacts will be measured against the thresholds of significance and appropriate mitigation measures and monitoring strategies will be identified which are consistent with the policies of Placer County.

Air Quality and Greenhouse Gas Emissions. The air quality and greenhouse gas (GHG) emissions analysis for the proposed project will be performed using the California Emissions Estimator Model (CalEEMod) software program and following Placer County Air Pollution Control District (PCAPCD) CEQA Guidelines.

The air quality impact analysis will include a quantitative assessment of short-term (i.e., construction) and long-term (i.e., operational) increases of criteria air pollutant emissions of primary concern (i.e., ROG, NO_X, and PM_{10}). The project's cumulative contribution to regional air quality will be discussed, based in part on the modeling conducted at the project level. The analysis will also address any potential odor impacts that may occur, as well as toxic air contaminant (TAC) emissions.

The GHG emissions analysis will include a quantitative estimate of carbon dioxide equivalent emissions from the proposed project, including indirect emissions (e.g., electricity, natural gas) and construction emissions. The chapter will include an analysis of the project's consistency with the Placer County Sustainability Plan (PCSP).

The significance of air quality and GHG impacts will be determined in comparison to PCAPCD significance thresholds. PCAPCD-recommended mitigation measures and PCSP strategies will be incorporated, if needed, to reduce any significant air quality impacts, and anticipated reductions in emissions associated with proposed mitigation measures will be quantified.

Biological Resources. The Biological Resources chapter of the EIR will summarize the setting and describe the potential project effects to plant communities, oak woodlands, wildlife, and wetland and riparian communities, including adverse effects on rare, endangered, candidate, sensitive, and other special-status species for the project site. Effects associated with all on-site and off-site improvements will be included in the analysis. Analysis in the chapter will be based on a Biological Resources Assessment. The project site is within the PCCP boundary; thus, an evaluation of the potential for the proposed development of the project to conflict with the provisions of the adopted PCCP will be included in the chapter. Mitigation measures for all identified impacts will be developed consistent with applicable laws and regulations, including the PCCP.

Cultural Resources. The Cultural Resources chapter of the EIR will describe the potential effects to historical and archaeological resources from buildout of the proposed project. Analysis in the chapter will be based on a Cultural Resources Report prepared for the proposed project, which will include the results of a field survey and records search. Effects associated with all on-site and off-site improvements will be included in the analysis.

Energy. The Energy chapter of the EIR will evaluate whether the proposed project could result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation. The discussion will also evaluate whether the proposed project would conflict with or obstruct a State or local plan for renewable energy. The chapter will review the PCSP to identify energy-related measures that may be applicable to the proposed project.

Geology and Soils. The Geology and Soils chapter of the EIR will summarize the setting and describe the potential effects from the project relating to soil erosion, earthquakes, liquefaction, expansive/unstable soils, as well as identify any known paleontological resources or unique geological features within the project area. The chapter will also discuss the potential for significant disruptions to soil or changes in topography due to project development. The chapter will be based primarily on a site-specific Geotechnical Due Diligence Review prepared for the proposed project.

Hazards and Hazardous Materials. The Hazards and Hazardous Materials chapter of the EIR will summarize the setting and describe any potential for existing or possible hazardous materials within the project area, including but not limited to overhead/underground utility lines, or soil contamination associated

with pesticides. The chapter will also assess the potential for the proposed project to create a significant hazard to the public or environment through the routine transport, use, or disposal of hazardous materials.

Impacts of the environment on a project, as compared to impacts of a project on the environment, are beyond the scope of required CEQA review. The California Supreme Court has held that, "CEQA does not generally require an agency to consider the effects of existing environmental conditions on a proposed project's future users or residents. What CEQA does mandate is an analysis of how a project might exacerbate existing environmental hazards." As such, the mere presence of possible hazardous materials at the site or in the vicinity, should such exist, would be considered an existing environmental condition and, thus, would not be considered an impact under CEQA. Rather, the proposed project could have the potential to result in an impact associated with possible hazardous materials should the proposed project exacerbate the existing conditions (e.g., contaminated soils become airborne during ground-disturbing activities and expose construction workers or future residents of the proposed project). The chapter will primarily be based on a site-specific Phase I Environmental Site Assessment.

Hydrology and Water Quality. The Hydrology and Water Quality chapter of the EIR will summarize setting information and identify potential impacts on stormwater drainage, flooding, groundwater (i.e., depletion and recharge), and water quality, including stormwater runoff water quality. The Hydrology and Water Quality chapter will evaluate project-related increases in impervious surfaces and stormwater flows, increases in downstream flooding, and on-site facilities necessary to treat on-site runoff. In addition, the chapter will evaluate impacts associated with potential minor alteration of the 100-year floodplain limits and existing drainage patterns. The chapter will primarily be based on project-specific Preliminary Drainage Reports.

Land Use and Planning/Population and Housing. The Land Use and Planning/Population and Housing chapter of the EIR will evaluate the consistency of the proposed project with the policies and regulations included in the Placer County General Plan, DCWPCP, and County Code adopted for the purpose of avoiding or mitigating an environmental effect. In addition, the chapter will include an evaluation of the potential for the project to induce substantial unplanned population growth in the area, either directly or indirectly (i.e., through extension of roads or other infrastructure). Additionally, the chapter will include a discussion of Placer County's affordable housing requirements. The chapter will rely on information from the California Department of Finance, Placer County General Plan, and the Placer County General Plan Housing Element.

Noise. The Noise chapter of the EIR will be based on a project-specific Noise Study. The chapter will address potential noise impacts resulting from project construction and operation, including existing and future traffic noise levels on the local roadway network. Noise-sensitive land uses or activities in the project vicinity will be identified and ambient noise and vibration level measurements on, and in the vicinity of, the project site will be conducted to quantify existing background noise and vibration levels for comparison to the predicted project-generated levels. Noise exposure levels will then be compared to applicable significance criteria in the Placer County General Plan Noise Element, the DCWPCP, and CEQA. Feasible and appropriate mitigation measures to avoid or reduce adverse impacts will be identified, as needed.

Public Services and Utilities. The Public Services and Utilities chapter of the EIR will evaluate whether the proposed project could increase demands upon local service providers (e.g., fire, police, schools). In accordance with Appendix G, the focus of the analysis will be on whether the project's demand would require physical alteration of, or need for new governmental facilities, in order to maintain acceptable service ratios, response times, or other performance objectives, the construction of which could cause significant environmental impacts.

Additionally, the chapter will evaluate the proposed project's increase in water supply demand and wastewater generation to determine whether the existing water and sewer infrastructure systems have adequate capacity (wastewater) and supply (water), to accommodate demands from the proposed project, or if system upgrades would be required. The chapter will also evaluate the receiving landfill's capacity to accommodate the increase in solid waste associated with the proposed project. Electricity and natural gas service will also be addressed in the chapter. The chapter will be based on existing information from the

Placer County General Plan, DCWPCP, and information obtained from direct consultation with appropriate service providers.

Transportation. The Transportation chapter of the EIR will be based on a Transportation Impact Analysis (TIA) prepared specifically for the proposed project. Impact determination for CEQA purposes will be based on vehicle miles traveled (VMT), consistent with CEQA Guidelines Section 15064.3, which became effective statewide on July 1, 2020. The VMT analysis will be prepared consistent with Placer County's current guidance regarding analysis of VMT.

The proposed project's impacts to alternative modes such as pedestrian, bicycle and transit facilities will be assessed based on their significance criteria contained in the adopted Placer County guidelines. The EIR chapter will also include an analysis of the proposed project's potential impacts related to conflicting with applicable programs, policies, and ordinances addressing the circulation system, vehicle safety hazards, and emergency access. Feasible and appropriate mitigation measures to avoid or reduce adverse impacts will be identified, as needed.

Tribal Cultural Resources. The Tribal Cultural Resources chapter will describe the potential effects to tribal cultural resources from buildout of the proposed project. The County will conduct Native American tribal consultation pursuant to Assembly Bill (AB) 52 and Senate Bill (SB) 18, the latter of which is required for the proposed project due to the proposed General Plan Amendment. Input from tribes will be incorporated into the Tribal Cultural Resources chapter. Feasible and appropriate mitigation measures to avoid or reduce adverse impacts will be identified, as needed.

Wildfire. The Wildfire chapter of the EIR will address the questions in Section XX, Wildfire, of Appendix G of the CEQA Guidelines. Specifically, the proposed project will be evaluated to determine if the project would substantially impair an adopted emergency response plan or emergency evacuation plan. In addition, the chapter will consider whether the proposed project would exacerbate fire risk, as well as whether the project would expose people or structures to significant post-fire risks, including downslope or downstream flooding or landslides. Mapping prepared by the California Department of Forestry and Fire Protection (CAL FIRE) regarding fire hazard severity zones will be reviewed, and if necessary, the analysis will include consultation with CAL FIRE.

Statutorily Required Sections. Pursuant to CEQA Guidelines Section 21100(B)(5), the Statutorily Required Sections chapter of the EIR will address the potential for growth-inducing impacts of the proposed project, focusing on whether removal of any impediments to growth would occur with the proposed project. A summary of any significant and unavoidable impacts identified within the EIR will be included in this chapter, as well as a discussion of significant irreversible impacts. The chapter will generally describe the cumulative setting for the proposed project; however, a detailed description of the subject-specific cumulative setting, as well as analysis of the cumulative impacts, will be included in each technical chapter of the EIR.

Effects Not Found to be Significant. Section 15128 of the CEQA Guidelines states that an EIR shall contain a brief statement indicating the reasons that various possible significant effects of a project were determined not to be significant and were, therefore, not discussed in detail in the EIR. Accordingly, the Effects Not Found to be Significant chapter of the EIR will include abbreviated discussions of impacts determined not to be significant.

Alternatives Analysis. In accordance with Section 15126.6(a) of the CEQA Guidelines, the EIR will include an analysis of a range of alternatives, including a No Project Alternative. Consideration will be given to potential off-site locations consistent with CEQA Guidelines, Section 15126.6(f)(2), and such locations will be determined in consultation with County staff. If it is determined that an off-site alternative is not feasible or is unnecessary, the EIR will include a discussion describing why such a conclusion was reached. The project alternatives will be selected when more information related to project impacts is available in order to be designed to reduce significant project impacts. The chapter will also include a section of alternatives considered but dismissed, if necessary. The Alternatives Analysis chapter will describe the alternatives and identify the environmentally superior alternative. The alternatives will be analyzed at a level of detail less than that of the proposed project; however, the analyses will include sufficient detail to allow a meaningful

comparison of the impacts. Such detail may include conceptual site plans for each alternative, basic quantitative traffic information (e.g., trip generation), as well as a table that will compare the features and the impacts of each alternative in comparison to the proposed project.

APPENDIX B

California Department of Transportation

DISTRICT 3
703 B STREET | MARYSVILLE, CA 95901-5556
(530) 821-8401 | www.dot.ca.gov

June 25, 2024

GTS # 03-PLA-2024-01275

Janeann Lyons, CDRA Technician
Placer County, Community Development Resource Agency
3091 County Center Dr.
Auburn, CA 95603

Estia Dry Creek & Placer Creek Residential (PLN24-00144)

Dear Ms. Lyons,

Thank you for including the California Department of Transportation (Caltrans) in the review process for the project referenced above. We reviewed this local development for impacts to the State Highway System (SHS) in keeping with our mission, vision, and goals, some of which includes addressing equity, climate change, and safety, as outlined in our statewide plans such as the California Transportation Plan, Caltrans Strategic Plan, and Climate Action Plan for Transportation Infrastructure.

The project consists of two parcels, APN # 023-221-076 and 023-221-074. The first parcel is in the southeast intersection of Baseline Blvd. and Walerga Road. The second parcel is south of the first parcel, located in the southeast intersection of the Walerga Road and Walerga Road. This site is approximately five miles north of Interstate (I-) 80 and approximately seven miles west of the State Route (SR) 65 and I-80 interchange. This project is proposing multiple development phases as one project, which will include a Highschool, three separate neighborhoods containing 217 single family residential homes, as well as a small community containing 220-unit single story apartment homes. Based on the Design Application, Environmental Impact Report files and other associated documents in the review request, Caltrans has the following requests and recommendations:

Freeway Operations / Forecasting and Modeling

Based on our review, the proposed development will generate a significant number of daily trips and will have a substantial impact on the VMT.

- Please provide a Transportation Impact Study that investigates the "No Project" and "Plus Project" scenarios under Existing and Cumulative conditions.
    - The traffic study should calculate the trip generation that will be generated by the project. Caltrans requests project trip generation tables, per SB 743 Guidelines, for weekday, weekday AM peak hour, and

weekday PM peak hour following methodologies outlined in the ITE Trip Generation Handbook, 3rd Edition, and use trip generation rates in the ITE Trip Generation Manual, 11th Edition, unless project-specific data or local land-use-specific data is available.

- If the analyses determines that the addition of the project would adversely affect operations and safety of the SHS' mainline and/or to the interchanges, the project will need to pay a fair share toward facility improvements. Please contact Caltrans if more information is required regarding the scope of work for the study.

- If you believe the project is exempt from VMT analysis, please provide your justification/explanations.

Transportation Impact Fees

Please identify project-generated travel demand and estimate the costs of transit and active transportation improvements necessitated by the proposed project; viable funding sources such as development and/or transportation impact fees should also be identified. We encourage a sufficient allocation of fair share contributions toward multi-modal and regional transit improvements to fully mitigate cumulative impacts to regional transportation. We also strongly support measures to increase sustainable mode shares, thereby reducing VMT.

If you have any question regarding these comments or require additional information, please contact Angelina Healy, Local Development Review Coordinator, by phone (530) 790-8138 or via email at D3.Local.Development@dot.ca.gov.

Sincerely,



Gary S. Arnold, Branch Chief
Local Development Review and Complete Streets
Division of Planning, Local Assistance, and Sustainability
Caltrans District 3

6 May 2025

Meghan Schwartz
Placer County
3091 County Center Drive, Suite 190
Auburn, CA 95603
mschwartz@placer.ca.gov

COMMENTS TO REQUEST FOR REVIEW FOR THE NOTICE OF PREPARATION FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT, ESTIA DRY CREEK AND PLACER CREEK RESIDENTIAL PROJECT (PLN24-00144), SCH#2025040378, PLACER COUNTY

Pursuant to the State Clearinghouse's 7 April 2025 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Notice of Preparation for the Draft Environmental Impact Report* for the Estia Dry Creek and Placer Creek Residential Project (PLN24-00144), located in Placer County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

I. Regulatory Setting

Basin Plan

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38.

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original Basin Plans were adopted in 1975, and have been updated and revised periodically as

required, using Basin Plan amendments. Once the Central Valley Water Board has adopted a Basin Plan amendment in noticed public hearings, it must be approved by the State Water Resources Control Board (State Water Board), Office of Administrative Law (OAL) and in some cases, the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues. For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website:
http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/

Antidegradation Considerations

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Implementation Policy is available on page 74 at:
https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf

In part it states:

Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.

This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality.

II. Permitting Requirements

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit), Construction General Permit Order No. 2009-0009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention

Plan (SWPPP). For more information on the Construction General Permit, visit the State Water Resources Control Board website at: http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

Phase I and II Municipal Separate Storm Sewer System (MS4) Permits[1]

The Phase I and II MS4 permits require the Permittees reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process.

For more information on which Phase I MS4 Permit this project applies to, visit the Central Valley Water Board website at: http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/

For more information on the Phase II MS4 permit and who it applies to, visit the State Water Resources Control Board at: http://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml

Clean Water Act Section 404 Permit

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACE). If a Section 404 permit is required by the USACE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements. If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACE at (916) 557-5250.

Clean Water Act Section 401 Permit – Water Quality Certification

If an USACE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 10 of the Rivers and Harbors Act or Section 9 from the United States Coast Guard), is required for this

[1] Municipal Permits = The Phase I Municipal Separate Storm Water System (MS4) Permit covers medium sized Municipalities (serving between 100,000 and 250,000 people) and large sized municipalities (serving over 250,000 people). The Phase II MS4 provides coverage for small municipalities, including non-traditional Small MS4s, which include military bases, public campuses, prisons and hospitals.

project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications. For more information on the Water Quality Certification, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_certification/

Waste Discharge Requirements – Discharges to Waters of the State

If USACE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project may require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation. For more information on the Waste Discharges to Surface Water NPDES Program and WDR processes, visit the Central Valley Water Board website at:https://www.waterboards.ca.gov/centralvalley/water_issues/waste_to_surface_water/

Projects involving excavation or fill activities impacting less than 0.2 acre or 400 linear feet of non-jurisdictional waters of the state and projects involving dredging activities impacting less than 50 cubic yards of non-jurisdictional waters of the state may be eligible for coverage under the State Water Resources Control Board Water Quality Order No. 2004-0004-DWQ (General Order 2004-0004). For more information on the General Order 2004-0004, visit the State Water Resources Control Board website at: https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2004/wqo/wqo2004-0004.pdf

Dewatering Permit

If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Threat General Order) 2003-0003 or the Central Valley Water Board's Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Threat Waiver) R5-2018-0085. Small temporary construction dewatering projects are projects that discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

For more information regarding the Low Threat General Order and the application process, visit the Central Valley Water Board website at: http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf

For more information regarding the Low Threat Waiver and the application process, visit the Central Valley Water Board website at:

https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2018-0085.pdf

Limited Threat General NPDES Permit

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Limited Threat Discharges to Surface Water* (Limited Threat General Order). A complete Notice of Intent must be submitted to the Central Valley Water Board to obtain coverage under the Limited Threat General Order. For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2016-0076-01.pdf

NPDES Permit

If the proposed project discharges waste that could affect the quality of surface waters of the State, other than into a community sewer system, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. A complete Report of Waste Discharge must be submitted with the Central Valley Water Board to obtain a NPDES Permit. For more information regarding the NPDES Permit and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/help/permit/

If you have questions regarding these comments, please contact me at (916) 464-4684 or Peter.Minkel2@waterboards.ca.gov.

Peter G. Minkel
Engineering Geologist

cc: State Clearinghouse unit, Governor's Office of Planning and Research, Sacramento

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April 8, 2025

Meghan Schwartz
Placer County
3091 County Center Drive
Auburn CA 95603

Re: 2025040378 Estia Dry Creek and Placer Creek Residential Project, Placer County

Dear Ms. Schwartz:

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.

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)).

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 (https://ohp.parks.ca.gov/?page_id=30331) 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: Pricilla.Torres-Fuentes@NAHC.ca.gov.

Sincerely,

Pricilla Torres-Fuentes

Pricilla Torres-Fuentes
Cultural Resources Analyst

cc: State Clearinghouse

Pacific Gas and Electric Company

Plan Review Team
Land Management

PGEPlanReview@pge.com

April 21, 2025

Ref: Gas and Electric Transmission and Distribution

Hello,

Thank you for submitting project plans for our review. PG&E will review the submitted plans in relationship to any existing Gas and Electric facilities within the project area. If the proposed project is adjacent/or within PG&E owned property and/or easements, we will be working with you to ensure compatible uses and activities near our facilities.

Attached you will find information and requirements as it relates to Gas facilities (Attachment 1) and Electric facilities (Attachment 2). Please review these in detail, as it is critical to ensure your safety and to protect PG&E's facilities and its existing rights.

Below is additional information for your review:

1. This plan review process does not replace the application process for PG&E gas or electric service your project may require. For these requests, please continue to work with PG&E Service Planning: https://www.pge.com/en/account/service-requests/building-and-renovation.html.

2. If the project being submitted is part of a larger project, please include the entire scope of your project, and not just a portion of it. PG&E's facilities are to be incorporated within any CEQA document. PG&E needs to verify that the CEQA document will identify any required future PG&E services.

3. An engineering deposit may be required to review plans for a project depending on the size, scope, and location of the project and as it relates to any rearrangement or new installation of PG&E facilities.

Any proposed uses within the PG&E fee strip and/or easement, may include a California Public Utility Commission (CPUC) Section 851 filing. This requires the CPUC to render approval for a conveyance of rights for specific uses on PG&E's fee strip or easement. PG&E will advise if the necessity to incorporate a CPUC Section 851filing is required.

This letter does not constitute PG&E's consent to use any portion of its easement for any purpose not previously conveyed. PG&E will provide a project specific response as required.

Sincerely,

Plan Review Team
Land Management

Attachment 1 – Gas Facilities

There could be gas transmission pipelines in this area which would be considered critical facilities for PG&E and a high priority subsurface installation under California law. Care must be taken to ensure safety and accessibility. So, please ensure that if PG&E approves work near gas transmission pipelines it is done in adherence with the below stipulations. Additionally, the following link provides additional information regarding legal requirements under California excavation laws: https://www.usanorth811.org/images/pdfs/CA-LAW-2018.pdf

1. Standby Inspection: A PG&E Gas Transmission Standby Inspector must be present during any demolition or construction activity that comes within 10 feet of the gas pipeline. This includes all grading, trenching, substructure depth verifications (potholes), asphalt or concrete demolition/removal, removal of trees, signs, light poles, etc. This inspection can be coordinated through the Underground Service Alert (USA) service at 811. A minimum notice of 48 hours is required. Ensure the USA markings and notifications are maintained throughout the duration of your work.

2. Access: At any time, PG&E may need to access, excavate, and perform work on the gas pipeline. Any construction equipment, materials, or spoils may need to be removed upon notice. Any temporary construction fencing installed within PG&E's easement would also need to be capable of being removed at any time upon notice. Any plans to cut temporary slopes exceeding a 1:4 grade within 10 feet of a gas transmission pipeline need to be approved by PG&E Pipeline Services in writing PRIOR to performing the work.

3. Wheel Loads: To prevent damage to the buried gas pipeline, there are weight limits that must be enforced whenever any equipment gets within 10 feet of traversing the pipe.

Ensure a list of the axle weights of all equipment being used is available for PG&E's Standby Inspector. To confirm the depth of cover, the pipeline may need to be potholed by hand in a few areas.

Due to the complex variability of tracked equipment, vibratory compaction equipment, and cranes, PG&E must evaluate those items on a case-by-case basis prior to use over the gas pipeline (provide a list of any proposed equipment of this type noting model numbers and specific attachments).

No equipment may be set up over the gas pipeline while operating. Ensure crane outriggers are at least 10 feet from the centerline of the gas pipeline. Transport trucks must not be parked over the gas pipeline while being loaded or unloaded.

4. Grading: PG&E requires a minimum of 36 inches of cover over gas pipelines (or existing grade if less) and a maximum of 7 feet of cover at all locations. The graded surface cannot exceed a cross slope of 1:4.

5. Excavating: Any digging within 2 feet of a gas pipeline must be dug by hand. Note that while the minimum clearance is only 24 inches, any excavation work within 24 inches of the edge of a pipeline must be done with hand tools. So to avoid having to dig a trench entirely with hand tools, the edge of the trench must be over 24 inches away. (Doing the math for a 24 inch

wide trench being dug along a 36 inch pipeline, the centerline of the trench would need to be at least 54 inches [24/2 + 24 + 36/2 = 54] away, or be entirely dug by hand.)

Water jetting to assist vacuum excavating must be limited to 1000 psig and directed at a 40° angle to the pipe. All pile driving must be kept a minimum of 3 feet away.

Any plans to expose and support a PG&E gas transmission pipeline across an open excavation need to be approved by PG&E Pipeline Services in writing PRIOR to performing the work.

6. Boring/Trenchless Installations: PG&E Pipeline Services must review and approve all plans to bore across or parallel to (within 10 feet) a gas transmission pipeline. There are stringent criteria to pothole the gas transmission facility at regular intervals for all parallel bore installations.

For bore paths that cross gas transmission pipelines perpendicularly, the pipeline must be potholed a minimum of 2 feet in the horizontal direction of the bore path and a minimum of 24 inches in the vertical direction from the bottom of the pipe with minimum clearances measured from the edge of the pipe in both directions. Standby personnel must watch the locator trace (and every ream pass) the path of the bore as it approaches the pipeline and visually monitor the pothole (with the exposed transmission pipe) as the bore traverses the pipeline to ensure adequate clearance with the pipeline. The pothole width must account for the inaccuracy of the locating equipment.

7. Substructures: All utility crossings of a gas pipeline should be made as close to perpendicular as feasible (90° +/- 15°). All utility lines crossing the gas pipeline must have a minimum of 24 inches of separation from the gas pipeline. Parallel utilities, pole bases, water line ‘kicker blocks’, storm drain inlets, water meters, valves, back pressure devices or other utility substructures are not allowed in the PG&E gas pipeline easement.

If previously retired PG&E facilities are in conflict with proposed substructures, PG&E must verify they are safe prior to removal. This includes verification testing of the contents of the facilities, as well as environmental testing of the coating and internal surfaces. Timelines for PG&E completion of this verification will vary depending on the type and location of facilities in conflict.

8. Structures: No structures are to be built within the PG&E gas pipeline easement. This includes buildings, retaining walls, fences, decks, patios, carports, septic tanks, storage sheds, tanks, loading ramps, or any structure that could limit PG&E’s ability to access its facilities.

9. Fencing: Permanent fencing is not allowed within PG&E easements except for perpendicular crossings which must include a 16 foot wide gate for vehicular access. Gates will be secured with PG&E corporation locks.

10. Landscaping: Landscaping must be designed to allow PG&E to access the pipeline for maintenance and not interfere with pipeline coatings or other cathodic protection systems. No trees, shrubs, brush, vines, and other vegetation may be planted within the easement area. Only those plants, ground covers, grasses, flowers, and low-growing plants that grow unsupported to a maximum of four feet (4’) in height at maturity may be planted within the easement area.

11. Cathodic Protection: PG&E pipelines are protected from corrosion with an “Impressed Current” cathodic protection system. Any proposed facilities, such as metal conduit, pipes, service lines, ground rods, anodes, wires, etc. that might affect the pipeline cathodic protection system must be reviewed and approved by PG&E Corrosion Engineering.

12. Pipeline Marker Signs: PG&E needs to maintain pipeline marker signs for gas transmission pipelines in order to ensure public awareness of the presence of the pipelines. With prior written approval from PG&E Pipeline Services, an existing PG&E pipeline marker sign that is in direct conflict with proposed developments may be temporarily relocated to accommodate construction work. The pipeline marker must be moved back once construction is complete.

13. PG&E is also the provider of distribution facilities throughout many of the areas within the state of California. Therefore, any plans that impact PG&E’s facilities must be reviewed and approved by PG&E to ensure that no impact occurs which may endanger the safe operation of its facilities.

Attachment 2 – Electric Facilities

It is PG&E's policy to permit certain uses on a case by case basis within its electric transmission fee strip(s) and/or easement(s) provided such uses and manner in which they are exercised, will not interfere with PG&E's rights or endanger its facilities. Some examples/restrictions are as follows:

1. Buildings and Other Structures: No buildings or other structures including the foot print and eave of any buildings, swimming pools, wells or similar structures will be permitted within fee strip(s) and/or easement(s) areas. PG&E's transmission easement shall be designated on subdivision/parcel maps as "**RESTRICTED USE AREA – NO BUILDING."**

2. Grading: Cuts, trenches or excavations may not be made within 25 feet of our towers. Developers must submit grading plans and site development plans (including geotechnical reports if applicable), signed and dated, for PG&E's review. PG&E engineers must review grade changes in the vicinity of our towers. No fills will be allowed which would impair ground-to-conductor clearances. Towers shall not be left on mounds without adequate road access to base of tower or structure.

3. Fences: Walls, fences, and other structures must be installed at locations that do not affect the safe operation of PG&'s facilities. Heavy equipment access to our facilities must be maintained at all times. Metal fences are to be grounded to PG&E specifications. No wall, fence or other like structure is to be installed within 10 feet of tower footings and unrestricted access must be maintained from a tower structure to the nearest street. Walls, fences and other structures proposed along or within the fee strip(s) and/or easement(s) will require PG&E review; submit plans to PG&E Centralized Review Team for review and comment.

4. Landscaping: Vegetation may be allowed; subject to review of plans. On overhead electric transmission fee strip(s) and/or easement(s), plant only low-growing shrubs under the wire zone and only grasses within the area directly below the tower. Along the border of the transmission line right-of-way, plant only small trees no taller than 10 feet in height at maturity. PG&E must have access to its facilities at all times, including access by heavy equipment. No planting is to occur within the footprint of the tower legs. Greenbelts are encouraged.

5. Reservoirs, Sumps, Drainage Basins, and Ponds: Prohibited within PG&E's fee strip(s) and/or easement(s) for electric transmission lines.

6. Automobile Parking: Short term parking of movable passenger vehicles and light trucks (pickups, vans, etc.) is allowed. The lighting within these parking areas will need to be reviewed by PG&E; approval will be on a case by case basis. Heavy equipment access to PG&E facilities is to be maintained at all times. Parking is to clear PG&E structures by at least 10 feet. Protection of PG&E facilities from vehicular traffic is to be provided at developer's expense AND to PG&E specifications. Blocked-up vehicles are not allowed. Carports, canopies, or awnings are not allowed.

7. Storage of Flammable, Explosive or Corrosive Materials: There shall be no storage of fuel or combustibles and no fueling of vehicles within PG&E's easement. No trash bins or incinerators are allowed.

8. Streets and Roads: Access to facilities must be maintained at all times. Street lights may be allowed in the fee strip(s) and/or easement(s) but in all cases must be reviewed by PG&E for proper clearance. Roads and utilities should cross the transmission easement as nearly at right angles as possible. Road intersections will not be allowed within the transmission easement.

9. Pipelines: Pipelines may be allowed provided crossings are held to a minimum and to be as nearly perpendicular as possible. Pipelines within 25 feet of PG&E structures require review by PG&E. Sprinklers systems may be allowed; subject to review. Leach fields and septic tanks are not allowed. Construction plans must be submitted to PG&E for review and approval prior to the commencement of any construction.

10. Signs: Signs are not allowed except in rare cases subject to individual review by PG&E.

11. Recreation Areas: Playgrounds, parks, tennis courts, basketball courts, barbecue and light trucks (pickups, vans, etc.) may be allowed; subject to review of plans. Heavy equipment access to PG&E facilities is to be maintained at all times. Parking is to clear PG&E structures by at least 10 feet. Protection of PG&E facilities from vehicular traffic is to be provided at developer's expense AND to PG&E specifications.

12. Construction Activity: Since construction activity will take place near PG&E's overhead electric lines, please be advised it is the contractor's responsibility to be aware of, and observe the minimum clearances for both workers and equipment operating near high voltage electric lines set out in the High-Voltage Electrical Safety Orders of the California Division of Industrial Safety (https://www.dir.ca.gov/Title8/sb5g2.html), as well as any other safety regulations. Contractors shall comply with California Public Utilities Commission General Order 95 (http://www.cpuc.ca.gov/gos/GO95/go_95_startup_page.html) and all other safety rules. No construction may occur within 25 feet of PG&E's towers. All excavation activities may only commence after 811 protocols has been followed.

Contractor shall ensure the protection of PG&E's towers and poles from vehicular damage by (installing protective barriers) Plans for protection barriers must be approved by PG&E prior to construction.

13. PG&E is also the owner of distribution facilities throughout many of the areas within the state of California. Therefore, any plans that impact PG&E's facilities must be reviewed and approved by PG&E to ensure that no impact occurs that may endanger the safe and reliable operation of its facilities.

Placer County
AIR POLLUTION CONTROL DISTRICT

110 Maple Street, Auburn, CA 95603 • (530) 745-2330 • Fax (530) 745-2373 • www.placerair.org

Erik C. White, Air Pollution Control Officer

April 10, 2025

SENT VIA E-MAIL: cdraecs@placer.ca.gov

Meghan Schwartz
Environmental Coordination Services
Placer County Community Development Resource Agency
3091 County Center Drive, Suite #190
Auburn, CA 95603

SUBJECT: Estia Dry Creek and Placer Creek Residential Project (PLN24-00144)

Ms. Schwartz,

Thank you for submitting the Estia Dry Creek and Placer Creek Residential Project (PLN24-00144) Notice of Preparation Project (Project) to the Placer County Air Pollution Control District (District) for review and comment. The District provides the following comments for consideration.

1. Any project that includes the use of equipment capable of releasing emissions to the atmosphere may require permits(s) from the District. The applicant, developer, or operator of a project that includes a generator, boiler, or hot water heaters should contact the District early to determine if a permit is required, and to begin the permit application process. Portable construction equipment (e.g. generators, compressors, pile drivers, lighting equipment, etc.) with an internal combustion engine over 50 horsepower are required to have a PCAPCD permit or a California Air Resources Board portable equipment registration.

2. District Rule 228, Fugitive Dust (PDF), establishes standards to be met by activities generating fugitive dust. When an area to be disturbed is greater than one acre, a dust control plan must be submitted to and approved by the District. The District has developed an application for this purpose, which can be found on the District website: Form Center • Dust Control Form

3. The District suggests that no wood burning appliances, including fireplaces and woodstoves, shall be installed within any residential units associated with the Project.

Thank you for allowing the District this opportunity to review the project proposal. Please do not hesitate to contact me at 530.745.2327 or lnavarro@placer.ca.gov if you have any questions.

Sincerely,

Laura Navarro
Assistant Planner
Planning & Monitoring Section
Placer County Air Pollution Control District

Placer County Local Agency Formation Commission
110 Maple Street Auburn, CA 95603 | (530) 889-4097

May 6, 2025

COMMISSIONERS

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(County)

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COUNSEL

Michael Walker
General Counsel

STAFF

Michelle McIntyre
Executive Officer

Amanda Ross
Acting Assistant Executive Officer

Amy Engle
Commission Clerk

Placer County Community Development Resource Agency
Attn: Meghan Schwartz, Senior CDRA Technician
3091 County Center Dr, Suite #190
Auburn, CA 95603

Subject: **Comments on the Notice of Preparation of an Environmental Impact Report for the Proposed Estia Dry Creek and Placer Creek Residential Project**

Dear Ms. Schwartz,

Thank you for sending Placer LAFCO the Notice of Preparation for the *Estia Dry Creek and Placer Creek Residential Project.* Placer LAFCO appreciates the opportunity to provide meaningful comments regarding the scope and content of the EIR in accordance with CEQA Guidelines Section 15082. LAFCO staff has reviewed the supplied documents and offers the following comments.

Estia Dry Creek and Placer Creek Residential Project

As detailed in the Notice of Preparation, the project proposes the development of two separate residential communities over the course of four phases on two parcels (APN 023-221-076 and 023-221-074). The project site consists of approximately 92.2 gross (87.6 net) acres located south of Baseline Road, immediately east of the abandoned old Walerga Road right-of-way, west of the Fiddyment Road/Baseline Road/Walerga Road intersection and the western portion of Sun Valley Oaks residential subdivision, and north of the Morgan Creek residential subdivision in the Dry Creek-West Placer Community Plan Area (DCWPCP) of unincorporated Placer County. Walerga Road, which curves from the northeast to the southwest, separates the northern 52.3-acre portion of the project site, identified by Assessor's Parcel Number (APN) 023-221-076, and the southern 35.3-acre portion of the project site, identified by APN 023-221-074.

The Project proposes the development of Estia Dry Creek (Phase 1) of 220 single-story multi-family units consisting of 80 one-bedroom units and 140 two-bedroom units, ranging from approximately 700 square feet (sf) to 1,100sf. A 3,537-sf community center building would also be developed in the center of the Estia Dry Creek site, and an outdoor

pool with patios and grill areas would be located adjacent to the community center.

The Placer Creek Residential (Phases 2, 3, and 4) development would include 212 single-family residential lots with a minimum lot size of 6,000 sf. Phase 2 would include the development of 110 single-family lots, and a centrally located 2.2-acre public neighborhood park with associated amenities. Phase 3 would include the development of 55 single-family lots and potential recreational amenities. Phase 4 would include the development of 47 single-family lots and the western extension of Vineyard Road, which would provide site access, along with trails and the seven-acre oak woodlands area along the Dry Creek tributary, referred to as "Placer Creek" riparian corridor, which would be preserved as open space. The Placer Creek riparian corridor would separate the Phase 3 and 4 developments.

The proposed project is anticipated to require County approval of a General Plan/DCWPCP Map Amendment, Rezone, Vesting Large Lot Tentative Subdivision Map, Vesting Phased Small Lot Tentative Subdivision Map, Design Review, and two service area annexations. The project will also request a General Plan/Riolo Vineyards Specific Plan (RVSP) Amendment and Rezone for the proposed affordable housing parcel located off-site.

LAFCO Responsibility

LAFCO is an independent, regulatory agency with discretion to approve, wholly, partially or conditionally, or disapprove, changes of organization or reorganizations. In accordance with the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000 ("CKH Act"), LAFCO is required to consider various factors when evaluating a proposal, including, but not limited to, impacts to agricultural and open space lands, the provision of municipal services and infrastructure to the project site, timely and available supply of water, fair share of regional housing, consistency with regional plans, and other factors. The statutory mission of LAFCO is to discourage urban sprawl and encourage the orderly formation and development of local agencies.

LAFCO Comments

The following sections detail Placer LAFCO's comments to the NOP for the above referenced project.

Proposed Annexation

There are references throughout the NOP that propose annexation of the project site to Placer County Service Area 28, Zone 173 for sanitary sewer services; Placer County Service Area 28, Zone 169 for ongoing maintenance of public parks, trails and open space recreation within the Dry Creek community; and annexation into the Dry Creek Fire Zone of Benefit (County Service Area 28, Zone of Benefit 165) for the provision of fire protection services.

As mentioned above, LAFCO's statutory mission is to encourage the orderly formation and development of local agencies. Because the project is located adjacent to the City of Roseville and within the existing City of Roseville Sphere of Influence, the CEQA analysis should consider the potential annexation by the City, as it may be the more logical service provider.

Additional Analysis to Satisfy Placer LAFCO Requirements

LAFCO's approvals for the annexation of the project into the adjacent special districts or the City of Roseville would be a fundamental part of the entitlements required for this project. In order to approve the annexation of the project into any special districts or the City, LAFCO must consider specific factors in reviewing such proposals as outlined in Government Code §56668. As such, LAFCO provides the following comments on the project proposal to be considered for inclusion in the project analysis. In addition, because LAFCO would rely on the project's Draft EIR in its own approvals to comply with CEQA, LAFCO requests that the following be addressed in the Draft EIR produced for this project. Deficiencies in the environmental document as required by LAFCO may result in the need for additional CEQA compliance work or disapproval of project proposals.

1. Project Description

   - Please ensure that Placer LAFCO is listed as an agency whose approval is required for any annexations of any special districts or to the City of Roseville.
   - Please identify maintenance entities for all utilities and public services, including landscaping, lighting, sound walls, roads, public water, storm water drainage, maintenance in and out of public right-of-way, and sewer infrastructure.
   - Please include a description of the timing of annexations in relation to the proposed development entitlements and construction schedule. Typically, LAFCO's organization and reorganization processes are required after project approvals and before map recordation. In the case of a tentative map, all approvals should happen prior to the recording of the map.
   - Please include a statement that acknowledges the project site is located adjacent to the City of Roseville's city boundaries to the north and within the City of Roseville's existing Sphere of Influence.

2. Agricultural Resources

   LAFCo Review Factor: *The effect of the proposal on maintaining the physical and economic integrity of agricultural lands*. (Government Code §56668.e)

   The project analysis should include an evaluation of this factor for LAFCO's consideration, as Placer LAFCO will consider this factor in any reorganization proposals. In addition to the definition of Prime Agricultural Land used by the Department of Conservation's Farmland Mapping and Monitoring Program, the Draft EIR should evaluate the project site to determine whether it meets the LAFCo definition of "prime agricultural land" under Government Code Section 56064, indicate whether implementation of the project would result in a loss of such land, and provide mitigation to reduce the impact if necessary. LAFCO will use this information and the findings of the EIR to inform its decisions about any annexation process.

3. Hazards and Hazardous Materials

   LAFCo Review Factor: *Information contained in a local hazard mitigation plan, information contained in a safety element of a general plan, and any maps that identify land as a very high fire hazard zone pursuant to Section 51178 or maps that identify land determined to be in a state responsibility area pursuant to Section 4102 of the Public Resources Code, if it is determined that such information is relevant to the area that is the subject of the proposal.* (Government Code §56668.q)

   The Draft EIR should include an analysis of potential safety impacts resulting from the project to ensure LAFCO can make appropriate determinations on the project.

4. Hydrology and Water Quality

   LAFCO Review Factor: *Timely availability of water supplies adequate for projected needs including, but not limited to, the projected needs as specified in Section 65352.5*. (Government Code §56668.l)

   The Draft EIR should include an analysis of potential water supply impacts resulting from the project to ensure LAFCO can make appropriate determinations on the project.

5. Land Use and Planning

   LAFCo Review Factors:

   The effect of the proposed action and of alternative actions, on adjacent areas, on mutual social and economic interests, and on the local governmental structure of the county. (Government Code §56668.c)

   The definiteness and certainty of the boundaries of the territory, the nonconformance of proposed boundaries with lines of assessment or ownership, the creation of island or corridors of unincorporated territory, and other similar matters affecting the proposed boundaries. (Government Code §56668.f)

   Please provide an exhibit in the Draft EIR that shows the proposed areas of annexation, City of Roseville boundaries, the City's sphere of influence, and public and private infrastructure and maintenance entities, with all layers on one map for ease of reference.

   The conformity of both the proposal and its anticipated effects with both the adopted commission policies on providing planned, orderly, efficient patterns of urban development, and the policies and priorities set forth in Section 56377. (Government Code §56668.d)

   Government Code §56377 states:

   (a) Development or use of land for other than open-space uses shall be guided away from existing prime agricultural lands in open-space use toward areas containing nonprime agricultural lands, unless that action would not promote the planned, orderly, efficient development of an area.

   (b) Development of existing vacant or nonprime agricultural lands for urban uses within the existing jurisdiction of a local agency or within the sphere of influence of a local agency

should be encouraged before any proposal is approved which would allow for or lead to the development of existing open-space lands for non-open-space uses which are outside of the existing jurisdiction of the local agency or outside of the existing sphere of influence of the local agency.

The Draft EIR should include an analysis of potential agricultural impacts, if any, resulting from the project to ensure LAFCO can make appropriate determinations on the project.

Consistency with city or county general and specific plans. (Government Code §56668.h)

Since the City of Roseville may be the more logical service provider, the EIR should also analyze its consistency with Roseville's General Plan.

6. Population and Housing

LAFCo Review Factors:

Population and population density; land area and land use; assessed valuation; topography, natural boundaries, drainage basins; proximity to other populated areas; and the likelihood of significant growth in the area, and in adjacent incorporated and unincorporated areas, during the next 10 years. (Government Code §56668.a)

Given that the project's proposal to convert two parcels to a higher intensity use will increase the population and require more intensive public services, this project will require the evaluation of the factors listed in this item, including but not limited to population and growth inducement in adjoining areas. Please include this information in the project analysis.

The extent to which the proposal will assist the receiving entity in achieving its fair share of the regional housing needs as determined by the appropriate council of governments. (Government Code §56668.m)

The project applicant proposes to satisfy the project's affordable housing requirements by transferring in fee title to the County an off-site vacant parcel under Homes by Towne ownership, within the Riolo Vineyards Specific Plan (RSVP). The project applicant is seeking to rezone the affordable housing parcel to the newly established zone of Residential Multifamily 30 (RM30), which can result in a maximum development potential of 120 affordable income-restricted units. Because the City of Roseville may be the more logical service provider, please provide analysis relative to the City of Roseville's General Plan affordable housing policies and requirements. LAFCO will consider the project's assistance with regional fair share housing needs as determined by SACOG.

7. Public Services/Utilities and Service Systems (and Growth Inducing Impacts)

LAFCO Review Factors:

Need for organized community services; the present cost and adequacy of governmental services and controls in the area; probable future needs for those services and controls; probable effect of the proposed incorporation, formation, annexation, or exclusion and of

alternative courses of action on the cost and adequacy of services and controls in the area and in adjacent areas. (Government Code §56668.b.1)

The ability of newly formed or receiving entity to provide the services which are the subject of the application to the area, including the sufficiency of revenues for such services following the proposed boundary change. (Government Code §56668.k)

Pursuant to Government Code §56653, an annexation can only be approved if the applicable MSRs and Plans for Services demonstrate that adequate services can be provided to the annexed area. An annexation proposal must therefore include a Plan for Services consistent with the applicable MSR and must demonstrate that the service provider can provide the required services, including sufficiency of revenues for such services and any associated costs

8. Transportation and Circulation

LAFCo Review Factors:

The effect of the proposed action and of alternative actions, on adjacent areas, on mutual social and economic interests, and on the local governmental structure of the county. (Government Code §56668.c)

A regional transportation plan adopted pursuant to Section 65080. (Government Code §56668.g)

Please include trip distribution in the transportation analysis to determine the impact to nearby County and City roads, maintenance responsibility, and the need for annexation. Please also include an evaluation of the project's consistency with the Sacramento Council of Governments Regional Transportation Plan/Sustainable Communities Strategy.

Thank you for the opportunity to comment on Notice of Preparation for the *Estia Dry Creek and Placer Creek Residential Project*. Please contact the LAFCO office if you have any questions.

Sincerely,

Amanda Ross, Acting Assistant Executive Officer
Placer LAFCO

CALIFORNIA NATIVE PLANT SOCIETY, REDBUD CHAPTER
Representing Nevada & Placer Counties

P.O. Box 2662, Nevada City CA 95959
https://chapters.cnps.org/redbud/

April 26, 2025

Meghan Schwartz, Environmental Coordination Services
Placer County Community Development Resource Agency
3091 County Center Drive, Suite 190, Auburn, CA 95603,
Dear Ms. Schwartz,

RE: Notice of Preparation of an Environmental Impact Report for the Proposed Estia Dry Creek and Placer Creek Residential Project

Dear Megan Schwarts and Placer County Community Development Resource Agency

The California Native Plant Society Redbud Chapter is responding to the NOP for the proposed Estia Dry Creek and Placer Creek Residential Project, which is proposed for the area south of the City of Roseville and north of Sacramento County.

First we request that legible maps and figures be included in the NOP. The published maps and figures are very hard to read because of their size and the pale gray and pink writing.

The biological resources discussion in the EIR must explain any impacts to vernal pools, oak woodlands and grassland habitat in addition to a detailed examination of the effects on the open space/riparian area. It is essential that there be a complete analysis of the cumulative impacts to grassland habitats, vernal pool habitats, and woodland habitats and the species of fauna that inhabit them. We also request that during preparation of the environmental document you review previous comments from Redbud Chapter CNPS and the Sierra Nevada Alliance (our partner organization) concerning the critical importance of connectivity (these issues are also addressed in comments submitted in connection with the General Plan update). Riparian areas and the plants growing there are essential to wildlife habitat and corridors. In fact, wildlife, especially birds and insects, provide seed dispersal and pollination to isolated native plant populations. Please report on evidence that the site is utilized as a wildlife dispersal or migration corridor and how the project will interfere with the movement of any native resident or migratory species or with established native resident or migratory wildlife and plants.

The document should include information on the placement of fences or walls around the project's borders. When gated development is proposed, placement of walls or fences is likely to result in alteration, disruption, or barriers to wildlife dispersal and migration patterns. The potential effects on the dispersal and migration patterns of wildlife are compounded by the multiple jurisdictions and projects along creeks.

The EIR should review impacts of the proposed reduction of open space from the current 12 acres to 8 acres. Alternatives should be identified that would increase open space, not by adding developed turf but by protecting existing flora and soil communities.

Please provide scientific analysis of the relationship of the project site/sites to the goals and footprint of Placer County's multiple-species conservation efforts and natural communities conservation planning. In addition, the EIR must assess the project's consistency with Senate Bill 1425 and Assembly Bill 1889 which require cities and counties to address habitat connectivity and cumulative impacts to wildlife populations. Our Chapter's previous comments on the Placer County Conservation Program/Plan (PCCP) are applicable to this proposed project.

Single family housing has traditionally included nonnative sod for lawns, which contribute to wasteful water use, greenhouse gas emissions, habitat loss and water pollution from herbicide/fertilizer runoff. This is incompatible with California laws designed to promote sustainable practices that conserve resources, protect the environment and promote landscaping with locally native plants. Note that there are locally native grasses that are indistinguishable in appearance but environmentally sustainable and preserve habitat. Outdoor play space for residents, including a community center and a dog park, do not substitute for the habitat value of undeveloped lands. In terms of community livability and quality of life, developments should not be allowed to substitute cheap acres of sod as recreation space" instead of providing amenities that actually improve the quality of life for residents, such as tennis courts, libraries, basketball hoops and the link should be made part of the concept plan - as once built, NIMBYism will preclude these enhancements in the future.

Since the project will be converting natural/semi-natural lands into urban/suburban uses, this is clearly a significant impact. Since the site is almost entirely surrounded by other developed properties, the habitat loss to listed species (swainson's hawk, tricolored blackbird, burrowing owl, Western Pond Turtle etc.) that are known to nest and forage in the area is especially concerning.

We note this project would reduce the open space corridor along the creek. These creek corridors provide the only avenue for terrestrial wildlife movement and as such are critical resources for wildlife survival. It is essential that there be an alternative that increases rather than decreases riparian open space and that at a minimum - CA Fish and WIldlife standards are applied.

Additionally, trails are proposed, partially encroaching on the natural area. While we see the value of trails, there should be a wide buffer and design features that keep people and pets out of the creek zone while allowing them to be near enough to hear birdsong.

The NOP does not indicate that any effort will be made to preserve grassland. Grassland bird species are declining faster than any other songbird populations, how will this be mitigated? How much and what type of habitat will be added to permanently protected lands elsewhere in the County? Please address the quantitative and qualitative impacts of the proposed project on biological resources during pre-construction site work, during construction, and upon completion and occupancy.

Land-use practices can indirectly affect flora. Specifically, single-family developments contribute more to ecosystem-service losses, habitat loss, high vehicle miles traveled (VMT) and social isolation than does multi-family housing. Multi-family housing also affords people who are not home buyers opportunities to enjoy safe, sanitary and affordable living. Additionally, the scarcity of affordable housing in the region and in Placer County specifically is not improved with this development. At a minimum, the unit price in this project should reflect the actual income demographic of the region - where 67% have incomes within the affordable housing threshold. The environmental document should address how a multifamily project for the subject property will better address county needs for affordable housing and state housing obligations while reducing the development footprint and associated ecosystem-service losses.

The California Native Plant Society Redbud Chapter recommends that the County of Placer:

- Comprehensively consider cumulative impacts. This is a relatively small project among many single family sprawl projects being entertained by the County, but it Regardless, the cumulative impacts of this project in context with the other developments must be considered as they are compounding. The NOP must comprehensively address cumulative\ threats to biodiversity and identify necessary actions and policies to mitigate these threats and protect the biodiversity that sustains us.

- Identify and protect wildlife corridors. must be identified and protected. Species inhabiting islands of habitat tend toward extinction. Wildlife corridors provide essential traveling avenues for wildlife species and plants, allow movement between isolated populations, promoting increased genetic diversity. They provide food and shelter for a variety of wildlife and help with juvenile dispersal and seasonal migrations.

- Setbacks from streams. The EIR must determine if the County's setbacks are adequate for long term protection of habitat and species survival. In addition, the EIR must determine whether the County has enforcement mechanisms consistent with California Fish and Wildlife regulations and those mechanisms will be engaged if violations occur. Encroachment into stream corridors with structures, excavation, waste-dumping, fencing, non-native animals, and non-native landscaping dilutes, destroys and constricts some of the last remaining safe corridors for fish and wildlife movement in the western part of the county. Enforcement of stream setbacks is often deferred to California Fish and Wildlife, which does not have capacity nor rapid response means.

- Protocols for mitigating/preventing spread of invasive weeds. Enact protocols at all public recreation venues to mitigate the spread of invasive weeds; they are the single greatest threat to native plants, the foundation of our ecosystem.

- Utilize Locally Native Plants. Require a minimum 70 percent locally native plants in the landscaping of new development. This 70% figure is scientifically proven to be necessary to support biodiversity. Native pollinators require specific native plants in order to reproduce. Without those native plants, our environments will not support the caterpillar larvae of butterflies and moths, which are necessary to feed native birds. A nest of baby birds requires 9,000 caterpillars in order to successfully fledge. No caterpillars? No birds. Research has shown that 70 percent locally native plants is the minimum necessary to maintain native songbird populations. Our native oak trees are keystone species, hosting caterpillars of over 550 butterfly and moth species.

- Provide a "pocket forest" or "pollinator garden" within a half mile of every home built in new subdivisions. These small plots of urban land densely planted with locally native plants provide health benefits to people and wildlife, build climate resilience, mitigate extreme heat, and advance equitable access to the benefits of nature, all while enhancing ecological biodiversity and supporting pollinator corridors. Pollinator gardens can be a desirable feature for homeowners and renters, as they provide a refreshing change to the same tired-old palette of non-native plants that are used in high volume in many developments.

- In all publicly funded projects and park spaces, choose plants that naturally occur in this part of Placer County. These provide both resident and migratory birds with the essential insect, fruit, seeds, and shelter they need year-round—while helping them adapt and survive in the face of climate change.

- Recognize and protect biodiversity in all native plant communities. A plant community is an assemblage of plant species that usually occur together in nature when environmental conditions are the same. Within these communities, plants and animals co-evolved with and depend upon one another for survival in complex food webs. Each plant community has an array of vertical layers-overstory, midstory and understory.

As a general comment, the massive developments in West Placer have irrevocably transformed the landscape, wiping out habitat for plants and animals, and replacing it with thousands of acres of heat generating asphalt, concrete, houses, and non-native plants of low ecological value. From here on out, it is incumbent on all of us to preserve what little open space is left, use native plants in and around developed areas, and get full mitigations of high ecological value to help offset the loss of natural areas.

We are available by email to explore these issues further with you or your staff. We can be reached at Redbudadvacacy@gmail.com.

Thank you for your time and consideration.

Sincerely,

Sue Stack
Co-chair, Conservation Advocacy Committee
CNPS Redbud Chapter

Jeanne WIlson
Co-chair Conservation Advocacy Committee
CNPS Redbud Chapter

SIERRA CLUB
PLACER GROUP

May 7th, 2025

To:

Kara Conklin, Senior Planner, kconklin@placer.ca.gov

Meghan Schwartz, cdraecs@placer.ca.gov

Ladies and Gentlemen:

Thank you for the opportunity to comment on the Notice of Preparation of an Environmental Impact Report for the Proposed Estia Dry Creek and Placer Creek Residential Project.

We appreciate this statement from page 14 of the NOP:

> The Estia Dry Creek and Placer Creek Residential Phase 2 entries on Walerga and Baseline Roads would be landscaped with native vegetation and marked with enhanced hardscape features, using materials consistent with the DCWPCP and the Placer County Landscape Guidelines.

We request that extensive use of native plants also be done in other build phases, throughout the developments. This would be consistent with Placer County and Dry Creek requirements for use of native plants, and also help mitigate the huge loss of native flora and fauna which is occurring throughout West Placer County, which has so degraded the quality of life for residents.

First, let's take a high-level look. Populations of insects, birds and animals are crashing both worldwide and in our area, as habitats are converted from natural vegetation to human use (agriculture, residential and commercial development).[1] Agriculture can leave some room for native plants and animals, as has been well attested by Dry Creek residents who have described how their community used to have hawks, eagles, owls, and many bird species. But with the onslaught of development in West Placer, there are now many heartbreaking stories of how ripping out trees and paving over farmland and open space have meant the end of beneficial animal populations. The Estia Dry Creek and Placer Creek Residential Project could be just one more nail in the coffin in the death of West Placer ecology…

…But it doesn't have to be this way! The solution is to build some habitat into the project itself. Use of native plants throughout the developments (near open space, along roads, and adjacent to houses) will provide a desirable feature which benefits the developer and residents (pollinator gardens that people enjoy), and as mitigation for environmental degradation.

Locally native plants are the foundation of our ecosystem and the food chain. If "ecosystem" is a somewhat dry and abstract term, I encourage you to use the phrase "basis of all life" instead. When we destroy the native ecosystem, as this and other projects will do as currently designed (with standard commercial landscaping), we cut the legs out from underneath our basis of life.

Extensive use of native plants is in keeping with Goal 6.D of the Placer County Conservation Plan, "to preserve and protect the valuable vegetation resources of Placer County." In particular see policy 6.D.10, "The County shall encourage the planting of native trees, shrubs, and grasslands in order to preserve the visual integrity of the landscape, provide habitat conditions suitable for native wildlife, and ensure that a maximum number and variety of well-adapted plants are maintained."

See the requirements of Dry Creek West Placer Community Plan (DCWPCP), Policy 14, "Where possible, preserve native trees and support the use of native drought tolerant plant materials in all revegetation/landscaping projects." Also Policy 13, "For landscaping which is part of site development where original vegetation has been removed or where additional plantings are included, the emphasis should be on drought tolerant, native species where possible."

In addition to low water usage and benefits to nature, native plants can add visual interest and provide a welcome visual change from the same old boring commercial plantings.

This is not rocket science, folks. What we are talking about here is landscaping. Landscaping. An appropriate plant palette for use as an environmental mitigation is not hard to implement.

With any landscape planning, these 8 areas need to be addressed:

Ecological value

Appearance

Water use

Cost

Maintenance

Survivability

Availability

Flammability

All these are either favorable or manageable for use of native plants in Estia Dry Creek and Placer Creek and other developments. Resources for selecting an appropriate plant palette are available through CNPS, Audubon Society, Xerces Society and other sources.

The idea of building some habitat along with housing is not a "fringe science" or untested idea. Many mainsteam wildlife-protection groups now promote "backyard habitat" projects that can help stabilize populations of butterflies and birds. [2, 3, 4, 5] A recent local example of how native plants are practical and effective was the Gardens Gone Native Plant Tour in the Sacramento-Placer area on May 3rd.[6]

Our group has been involved in reviews of recent West Placer developments projects such as The Ranch, Mill Creek, and now Estia Dry Creek and Placer Creek Residential. The language in the EIRs follows a familiar pattern: Concerns about destruction of natural resources at the development sites are dismissed, saying that environmental impacts are reduced to insignificant status through the PCCP. The PCCP does provide lots of benefit to Placer County, but can't really compensate for what is being lost at the development sites. Bird and plant species won't migrate to another location. Instead, they will die in West Placer, leaving an ecological wasteland. Over time, plants and animals will spread in the natural areas in a different location, but this is not the same. Payment of a land conversion fee will not compensate for loss of habitat in the developed areas.

Thank you for the plan to use native plants in the Phase 2 entry areas. We request that this be expanded throughout the developments.

Regards,

Harry White

Chair, Placer Group, Mother Lode Chapter, Sierra Club

placersierraclub@gmail.com

[1] https://www.audubon.org/press-room/us-bird-populations-continue-alarming-decline-new-report-finds

[2] https://www.nwf.org/Native-Plant-Habitats/Create-and-Certify

[3] https://www.sacvalleycnps.org/homegrown-habitat/

[4] https://homegrownnationalpark.org/

[5] https://calscape.org/design-ideas

[6] https://www.sacvalleycnps.org/gardens-gone-native-tour/

SIERRA FOOTHILLS AUDUBON SOCIETY
P.O. BOX 1937
GRASS VALLEY CA 95945-1937

May 3, 2025

Placer County Planning Commission, planningcommission@placer.ca.gov
Meghan Schwartz
Environmental Coordination Services
3091 County Center Drive, Suite 190
Auburn, CA 95603
cdraecs@placer.ca.gov

Dear Meghan,

RE Estia Dry Creek and Placer Creek Residential Project

I am submitting these comments on the Estia Dry Creek and Placer Creek Residential Project, on behalf of Sierra Foothills Audubon Society and its over 600 Placer County members. The Sierra Foothills Audubon Society's mission is to educate ourselves and others to the variety and beauty of our natural environment and protect our wildlife and natural places.

Biological resources

From the Estia NOP: *"The Biological Resources chapter of the EIR will summarize the setting and describe the potential project effects to plant communities, oak woodlands, wildlife, and wetland and riparian communities, including adverse effects on rare, endangered, candidate, sensitive, and other special-status species for the project site. Effects associated with all on-site and off-site improvements will be included in the analysis. Analysis in the chapter will be based on a Biological Resources Assessment. The project site is within the PCCP boundary; thus, an evaluation of the potential for the proposed development of the project to conflict with the provisions of the adopted PCCP will be included in the chapter. Mitigation measures for all identified impacts will be developed consistent with applicable laws and regulations, including the PCCP".*

SFAS Comments

We agree that the Project is subject to PCCP requirements and would be converting natural/semi-natural lands into urban/suburban uses. It is still potential habitat to listed species (swainson's hawk, tri colored blackbird, burrowing owl, etc.) that are known to nest and forage in the area.
Key findings from the 2025 U.S. State of the Birds Report show that more than one-third of U.S. bird species are of high or moderate conservation concern,

including 112 Tipping Point species that have lost more than 50 percent of their populations in the last 50 years. That includes 42 Red-Alert species facing perilously low populations, such as the Allen's Hummingbird, Tricolored Blackbird, and Saltmarsh Sparrow — birds that are at risk without immediate intervention.

We ask that the Draft EIR pay particular attention to the following species that rate as high likelihood of occurring at the site**.**

Swainson's hawk (*Buteo swainsoni*) is a raptor species that is not federally listed, but is listed as threatened by CDFW; Swainson's hawk is also a PCCP Covered Species. Breeding pairs typically nest in tall trees associated with riparian corridors, and forage in grassland, irrigated pasture, and cropland with a high density of rodents. The Central Valley populations breed and nest in the late spring through early summer before migrating to Central and South America for the winter. The annual brome grassland/VPC throughout the study area represents suitable foraging habitat for Swainson's hawk, and the trees within the study area provide suitable nesting habitat. Swainson's hawk has *high* potential for occurrence within the study area.

Proposed mitigation as recommended in the Mill Creek project.
A targeted Swainson's hawk nest survey shall be conducted throughout the non-PCCP portion of the overall project area and all accessible areas within a 0.25-mile radius of the proposed construction area, at most,15 days prior to construction activities. If active Swainson's hawk nests are found within 0.25-mile of a construction area, construction shall cease within 0.25-mile of the nest until the project biologist determines that the young have fledged or it is determined that the nesting attempt has failed. The 0.25-mile buffer may be reduced if a smaller, sufficiently protective buffer is proposed by the project biologist and approved by the County and CDFW after taking into consideration the natural history of the Swainson's hawk, the proposed activity level adjacent to the nest, the nest occupants' habituation to existing or ongoing activity, nest concealment (i.e., whether there are visual or acoustic barriers between the proposed activity and the nest), and what (if any) nest monitoring is proposed. Note that if CDFW fails to respond within three business days of the proposal for a revised nest buffer, that will be considered their approval of the revised buffer. The results of the Swainson's hawk nest survey shall be submitted to the Placer County Community Development Resource Agency.

If it has been determined that a portion of the overall project site is within 10 miles of an active Swainson's hawk nest (an active nest is defined as a nest with documented Swainson's hawk use within the past five years), the applicant shall mitigate for the loss of suitable Swainson's hawk foraging habitat by implementing the following measures:
 One acre of suitable foraging habitat shall be protected for each acre of suitable foraging habitat that is proposed to be developed that is within one mile

of an active nest. Protection shall be by way of purchase of mitigation bank credits or other land protection mechanism acceptable to the County.
 0.75-acre of suitable foraging habitat shall be protected for each acre of suitable foraging habitat that is proposed to be developed that is between one and five miles from an active nest. Protection shall be by way of purchase of mitigation bank credits or other land protection mechanism acceptable to the County.
 0.5-acre of suitable foraging habitat shall be protected for each acre of suitable foraging habitat that is proposed to be developed that is between five and 10 miles from an active nest. Protection shall be by way of purchase of mitigation bank credits or other land protection mechanism acceptable to the County.
PCCP General Condition 3: The proposed project shall pay a land conversion fee for the permanent conversion of natural land cover including VPC Low, VPC Intermediate, Cropland, Eucalyptus, Rural Residential, and Rural Residential Forested. The fees to be paid shall be those in effect at the time of ground disturbance authorization for each project phase and shall be based on the effect to modeled species habitat at the parcel scale. In addition to land conversion, the project would result in permanent direct effects and temporary effects to PCCP Special Habitats as estimated in the Biological Resources Assessment (BRA) prepared for the proposed project. The total special habitat fee obligation including temporary effect fees shall be paid prior to issuance of a land conversion authorization that allows ground disturbance.

SFAS Comment
Though mitigation bank credits as part of the PCCP sound like we will have reduced the project to non-significant status, the basic problem is that land set aside in the future in other areas far to the north of the County is not exactly equivalent. Bird species and plant species do not willingly migrate to another location. We also note that stopping construction during nesting season does not ensure that the area will continually be able to be used in the future. When they return the following year, they will find the trees gone, and nesting will not occur.

Northern harrier *Circus cyaneus* -- / CSC
Northern harrier (*Circus cyaneus*) is not listed pursuant to either the CESA or FESA; however, the species is considered to be a species of special concern by the CDFW. Northern harrier is known to nest within the Central Valley, along the Pacific Coast, and in northeastern California. Northern harrier is a ground nesting species, and typically nests in emergent wetland/marsh, open grasslands, or savannah habitats. Foraging occurs within a variety of open habitats such as marshes, agricultural fields, and grasslands. The annual brome grassland/VPC throughout the study area is suitable nesting and foraging habitat for northern harrier. Based on the above, northern harrier has *high* potential for occurrence within the study area.

White-tailed kite *Elanus leucurus* -- / CFP

White-tailed kite is not federally or State listed, but is a CDFW fully protected species. The species is a yearlong resident in the Central Valley and is primarily found in or near foraging areas such as open grasslands, meadows, farmlands, savannahs, and emergent wetlands. White-tailed kites typically nest from March through June in trees within riparian, oak woodland, and savannah habitats of the Central Valley and Coast Range. The annual brome grassland/VPC throughout the study area represent suitable foraging habitat for white-tailed kite, and the trees within the study area provide suitable nesting habitat. Two records of white-tailed kite have been documented in the CNDDB within five miles of the study area. Based on the above, white-tailed kite has *high* potential for occurrence within the study area.

Loggerhead shrike

Loggerhead shrike (*Lanius ludovicianus*) is not listed and protected pursuant to either the CESA or the FESA; however, the species is a CDFW species of special concern. Loggerhead shrikes nest in small trees and shrubs in woodland and savannah vegetation communities, and forage in open habitats throughout California. The nesting season ranges from March through June. The trees and annual brome grassland/VPC within the study area provide suitable habitat for loggerhead shrike. Loggerhead shrike has not been documented in the CNDDB within five miles of the study area. Based on the above, loggerhead shrike has *high* potential for occurrence within the study area.

Mitigation for these species

From the Mill Valley Draft EIR: If active raptor nests are found, construction activities shall not take place within 500 feet of the nest until the young have fledged. If active songbird nests are found, a 100-foot non-disturbance buffer shall be established. The non-disturbance buffers may be reduced if a smaller, sufficiently protective buffer is proposed by the project biologist and approved by the County (*and CDFW for any CESA listed or CDFW Fully-Protected species) after taking into consideration the natural history of the species of bird nesting, the proposed activity level adjacent to the nest, the nest occupants' habituation to existing or ongoing activity, and nest concealment (i.e., whether there are visual or acoustic barriers between the proposed activity and the nest)*

SFAS Comments

Though mitigations as part of the PCCP sound like we will have reduced the project to non-significant status, the basic problem is that land set aside in other areas far to the north of the County is not exactly equivalent. Bird species and plant species do not willingly migrate to another location. We also note that stopping construction during mating season does not ensure that the area will continually be able to be used in the future.

Wildlife Corridors

SFAS Comments

Wes the 2025 U.S. State of the Birds Report indicated, there is a Red Alert for habitat for Tri-Colored Blackbirds. We should be improving habitat for birds when we can, including creating corridors for wildlife to move through. We recommend that the project study how corridors can be created and maintained for the species that have high likelihood of occurrence, including Tricolored blackbirds that could also use this habitat. The project must identify and protect wildlife corridors. Species inhabiting islands of habitat are tending toward extinction. **Wildlife corridors** provide essential traveling avenues for wildlife species and plants, allow movement between isolated populations, promoting increased genetic diversity. They provide food and shelter for a variety of wildlife and help with juvenile dispersal and seasonal migrations.

Riparian areas

From the Estia NOP: *The northern portion of the site is undeveloped, consists of non-native annual grassland with rolling topography, and is interspersed with seasonal wetlands and vernal pools. , the southern portion of the site includes undeveloped annual grassland with rolling topography, interspersed with seasonal wetlands, vernal pools, and is bisected by an un-named tributary of Dry Creek (named "Placer Creek" for this project) which flows east to west. The Federal Emergency Management Agency (FEMA) 100-year floodplain, containing approximately 4.7 acres, is located within the Placer Creek tributary area, which bisects the southern portion of the project site. A band of oak woodlands is located along the Placer Creek riparian corridor.*

SFAS Comments
This project will include development in these areas. Riparian-associated bird species occupy a wide variety of ecological niches; accordingly, they require a complex vegetative structure for breeding, foraging, and shelter/cover (Riparian Habitat Joint Venture 2004). Riparian woodlands provide many niches for breeding birds because they typically support diverse plant communities, are varied in their vertical and horizontal structures, and provide a source of surface water (MacArthur 1964; James 1971; Rice et al. 1983, 1984; Brinson et al. 2002). Many riparian areas offer a range of successional habitats due to the dynamic nature of their hydrology.

Riparian woodlands are also critical to a diversity of migratory birds (e.g., raptors, flycatchers, vireos, warblers, tanagers, sparrows, and grosbeaks) that depend on trees and shrubs near streams for shelter/cover and for the rich food supplies (e.g., insects, seeds, and fruits) associated with these areas (Jones & Stokes 2004a). Moreover, riparian areas can also provide perching, nesting, and foraging habitat, as well as water, for bird species that primarily nest in upland areas (Heath and Ballard 2003).

We ask that the project EIR include a discussion that deals with protection of stream areas that will help in recovery efforts for sensitive species such as these.

Stream setbacks

SFAS Comments
We ask that adequate stream setbacks and enforcement mechanisms consistent with California Fish and Wildlife regulations. Encroachment into stream corridors with structures, excavation, waste-dumping, fencing, livestock, and non-native landscaping dilutes, destroys and constricts some of the last remaining safe corridors for fish and wildlife movement in the western part of the county. Enforcement of stream setbacks is often deferred to California Fish and Wildlife, which does not have capacity nor rapid response means.

Napa County Board of Supervisors Water Quality and Tree Protection Ordinance (WQTPO) Excerpt Page 1
"On April 9, 2019, the Napa County Board of Supervisors (BOS) amended the County's Conservation Regulations with the adoption of the Water Quality and Tree Protection Ordinance (WQTPO) to enhance requirements for stream, wetland, and municipal reservoir setbacks, and to increase tree canopy retention and preservation. These new requirements went into effect on May 10, 2019.

Since 1991, the County's Conservation Regulations (Chapter 18.108) prohibited the construction of main or accessory structures, earthmoving activity, grading or removal of vegetation, or agricultural uses of land within required stream setbacks. With the adoption of the WQTPO, existing requirements were expanded to apply setbacks to wetlands and ephemeral and intermittent streams."

We ask that the project comply with these guidelines until the County passes an ordinance for ensuring stream setbacks to protect the riparian habitat.

Trees

SFAS Comments
The basic question is: will the loss of special-status habitat in projects like this end up with the loss of special species that cause their disappearance from the general landscape? That would be a cumulatively considerable impact. SFAS does annual bird counts that show these declines.
We ask that replacement of plants and trees be replaced with native plants and species.

Open Space

SFAS Comments
In general, the Estia Dry Creek and Placer Creek Residential Project has insufficient requirements that would preserve open space. The project calls for one 2.2-acre public neighborhood park and a 6.6 acre (down from 12.2 acre)

riparian corridor. This is out of over 90 acres of current open space. This will have limited value as habitat for plants, insects, birds, and animals.

As a general comment, the massive developments in West Placer have irrevocably transformed the landscape, wiping out habitat for plants and animals, and replacing it with hundreds of acres of asphalt, concrete, houses, and non-native plants of low ecological value. From here on out, it is incumbent on all of us to preserve what little open space is left, use native plants in and around developed areas, and get full mitigations of high ecological value to help offset the loss of natural areas.

Energy

From the Estia Project; *The Energy chapter of the EIR will evaluate whether the proposed project could result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation. The discussion will also evaluate whether the proposed project would conflict with or obstruct a State or local plan for renewable energy. The chapter will review the PCSP to identify energy-related measures that may be applicable to the proposed project.*

From the Draft REIR for the Mill project:" *The 2022 Title 24 standards are the currently applicable building energy efficiency standards and became effective on January 1, 2023. Compliance with the 2022 Title 24 Building Energy Efficiency Standards will reduce energy use and associated GHG emissions compared to structures built in compliance with the previous 2019 Title 24 standards. The 2022 Title 24 standards focus on four key areas in newly constructed homes and businesses:*
 Encouraging electric heat pump technology for space and water heating, which consumes less energy and produces fewer emissions than gas-powered units.
 Establishing electric-ready requirements for single-family homes to position owners to use cleaner electric heating, cooking and EV charging options whenever they choose to adopt those technologies.
 Expanding solar photovoltaic (PV) system and battery storage standards to make clean energy available onsite and complement the state's progress toward a 100 percent clean electricity grid.
 Strengthening ventilation standards to improve indoor air quality.
It should also be noted that the CALGreen standards include what is commonly called California's 2020 Solar Mandate, which requires all newly built homes to install solar photovoltaic systems The mandate applies to "all low-rise residential occupancies including single-family homes, duplexes, garden apartments, and other housing types with three or fewer habitable stories" The mandate includes multi-family housing such as apartment buildings as long as the buildings are under three stories."

SFAS Comments

We are pleased that Placer County is complying with these State rules, and hope the Draft EIR calls for the same standards.

From the Draft Mill Project EIR: *"While the 2020 Solar Mandate requires solar power systems sufficient to generate enough electricity to meet the annual electricity usage of the building, exceptions and limitations exist such as for properties with a small roof area or that receive an abundance of shade."*

SFAS Comments
The project developers can design the project to minimize the exceptions to the Solar mandate by facing the buildings' roofs to the southwest for the maximum solar effect. Shading is not a problem since the project plans to take down most of the trees in the area. Choosing types of trees and their locations is also available.
We ask that lawns not be part of this project. American lawns occupy some 30-40 million acres of land. Lawnmowers to maintain them account for some 5 percent of the nation's air pollution – probably more in urban areas. Each year more than 17 million gallons of fuel are spilled during the refilling of lawn and garden equipment—more than the oil that the Exxon Valdez spilled. Homeowners spend billions of dollars and typically use 10 times the amount of pesticide and fertilizers per acre on their lawns as farmers do on crops; the majority of these chemicals are wasted due to inappropriate timing and application. These chemicals then runoff and become a major source of water pollution. Finally, 30 to 60 percent of urban fresh water is used on lawns. Most of this water is also wasted due to poor timing and application.

We also ask that the project comply with the latest recommendations on fire safety by hardening of the homes (siding, vegetation rules).

Air quality and GHG emissions

Greenhouse Gas Emissions

From the Estia Draft NOP: *The GHG emissions analysis will include a quantitative estimate of carbon dioxide equivalent emissions from the proposed project, including indirect emissions (e.g., electricity, natural gas) and construction emissions. The chapter will include an analysis of the project's consistency with the Placer County Sustainability Plan (PCSP). The significance of air quality and GHG impacts will be determined in comparison to PCAPCD significance thresholds. PCAPCD-recommended mitigation measures and PCSP strategies will be incorporated, if needed, to reduce any significant air quality impacts, and anticipated reductions in emissions associated with proposed mitigation measures will be quantified.*

From the Draft Mill Creek EIR: *Strategies from the PCSP related to energy use that would apply to the proposed project include the following:*
Strategy E-1. Facilitate a transition to electricity as the primary energy source for residential, mixed-use, commercial, and office buildings.
Strategy E-4. Encourage new residential, office, and commercial development, as mitigation for discretionary projects exceeding applicable CEQA GHG thresholds, to implement CALGreen Tier 1 standards and accelerate Zero Net Energy (ZNE) in new construction.
Strategy E-15. Incentivize new homes to install renewable energy generation and energy storage systems that can fully supply the home's energy needs, in cases where the required size of the renewable energy system is insufficient to fully meet on-site demand.
In addition, the 2022 CBSC has begun phasing in the provision of ZNE by requiring residential projects to include the provision of an on-site solar system. Therefore, a portion of the electricity demand associated with the proposed project would be met by on-site renewable energy."

SFAS Comments
We enthusiastically agree with these strategies and ask that they be included in the Draft Estia EIR. Unfortunately, these are all voluntary goals.
Are there project plans to offer solar plus storage to the homes? The California Public Utilities Commission (CPUC) approved a Net Energy Metering (NEM) solar tariff that applies new residential rates to incent battery storage and load shifting from evening hours to overnight or midday hours.
Are there project plans to install centralized solar plus battery storage on the site that could be used by residents to charge batteries if power goes down? This could be at a meeting place on the site or where community EV charging stations are situated.
Has there been a discussion of building all-electric homes? The California Air Resources Board recently passed a measure that beginning in 2030, homeowners in California looking to replace their furnace or hot-water heater will only be able to purchase zero-emission appliances. Regulators expect this to primarily mean a switch to heat pumps that can both heat and cool homes — as well as heat pump water heaters. It seems unwise to go with the expense of installing natural gas lines and connections and then having everyone convert to electric when their equipment ages and fails.
Energy star electric appliances could be recommended to the new homeowners, including information of the various rebate/credits.

We ask that the Planning department hold talks with the developer to strongly suggest that these strategies be implemented for this project.

From the Dry Creek-West Placer Community Plan
The following goal and policies related to energy are from the Community Development Element of the DCWPCP:
Goal Provide safe, innovative and energy efficient residential developments.

Policy 3 Encourage the use of passive and direct solar collection and incorporate home design innovations which limit energy consumption.
Policy 27 Promote energy and resource conservation in any future land development project especially through consideration of alternative energy sources (i.e. passive solar collection) or state of the art energy and water conservation measures.

SFAS Comments
We ask that the Planning department hold talks with the developer to strongly suggest that these policies be implemented for this project.

The main opposition to Berkeley implementing a no gas structure was the opposition from the restaurant industry for their gas cooking appliances. This project is for residential homes that have an option of induction burners rather than gas tops. SMUD's 100% renewable electricity goal is admirable. However, natural gas is possibly more impactful on climate change. Installing gas lines throughout the development is a waste since they will not be needed for HVAC space and air conditioning and other appliances. Though it is not a state law currently, meeting zero energy goals will require phasing out of natural gas by 2045, easily in the lifetime of the new houses being built.

We ask that the Planning department hold talks with the developer to strongly suggest that all-electric homes be constructed for this project.

From the Draft Mill Creek REIR: *The 2022 CBSC requires that all new residential unit garages be designed with wiring sufficient to single-family residences and would not include public parking areas. While the proposed project would not include any public EV charging stations, private EV charging stations would generally comply with the intent of this strategy.to provide future installation of electric vehicle charging infrastructure. Therefore, private EV charging stations could be accommodated, should the homeowners choose to install EV chargers. Additionally, the strategies set forth in the PCSP are not required to be implemented. In fact, the PCSP strategies are specifically recommended for discretionary projects when the applicable project-level GHG emission thresholds are exceeded. Under the PCSP, the County uses the PCAPCD's GHG thresholds to determine whether PCSP emission reduction measures are required. Because the proposed project's operational GHG emissions would be below the applicable GHG thresholds (refer to Tables 6-12 and 6-13 in Chapter 6, Air Quality and GHG Emissions), implementation of the efficiency strategies included in the PCSP is not required. Most importantly, implementation of the proposed project would not interfere with the goals established in the PCSP nor preclude future projects from complying with the suggested strategies.*

SFAS Comments
We ask that the goals of the PCSP be modified to require zero energy housing .

Based on the above, the proposed project would not be considered to generate GHG emissions, either directly or indirectly, that would have a significant impact on the environment, or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Consequently, the project would result in a ***less than cumulatively considerable*** incremental contribution to the significant cumulative impact related to GHG emissions and climate change.

In sum, though most of the projects being implemented in California individually would not have a considerable impact, the cumulative impact on the climate would be considerable. We ask that Placer County lower its standard to be zero energy for any new project. This includes modification of the Air Quality Standard of 10,000 megatons to zero energy.

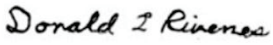
SFAS Final comment
Expanding Placer County development to currently vacant areas is still not environmentally sound. Commute times with CO2 emissions are increased. Infill is still preferred. And to base housing assumptions on what growth will occur by 2050 is questionable given that these projections currently have not been met Even though the Regional projections seem to be met, houses are not built, especially low income housing.

From the draft Mill Creek Executive Summary
Areas of controversy that were identified in NOP comment letters, and are otherwise known for
the region, include the following:

- Maintaining the rural aesthetic of the area;
- Increased light pollution;
- Conversion of farmland to urban uses;
- Increases in air quality emissions and impacts to climate change;
- Biological impacts associated with wildlife habitats and naturally occurring wetlands;
- Impacts to archeological and tribal cultural resources;
- Concerns related to lead-based paint, asbestos, and contaminated soils;
- Concerns related to water supply, quality and distribution systems;
- Noise pollution;
- Cumulative impact on schools and other public services;
- Traffic increases along existing surrounding roadways; and
- Increased electrical delivery demand and energy efficiency.

All these areas of controversy are of legitimate concern and can only be satisfied by not doing this project. New housing must come from urban infill.

Thank you for your consideration of these comments.



Donald L Rivenes
Conservation Chair
Sierra Foothills Audubon Society
rivenes@sbcglobal.net

From: Kara Conklin
To: Placer County Environmental Coordination Services; Nick Pappani (npappani@raneymanagement.com)
Cc: Leigh Chavez; Meghan Schwartz
Subject: FW: wrong phone number on Estia project?
Date: Thursday, April 24, 2025 3:40:54 PM

FYI: Comments for NOP

From: Laura Bullard <bullardll@aol.com>
Sent: Thursday, April 24, 2025 2:29 PM
To: Kara Conklin <KConklin@placer.ca.gov>
Cc: Christopher Pahule <cpahule@placer.ca.gov>; Alexander Fisch <AFisch@placer.ca.gov>; Bonnie Gore <BonnieGore@placer.ca.gov>
Subject: Re: wrong phone number on Estia project?

Good Afternoon Kara,
Thanks for being so quick to get back to me. When I dial the number you have listed, it took me to a code compliance and cannabis enforcement line and asks me if I want to file a complaint. So, I am not sure what is happening, but you might want to check into that one. I spoke with a customer service person (one of the options) and she was not able to provide me with any information and forwarded me to Planning where I got a voice mail box. This is a lot of run around to get information.

I am trying to get information on this project as we have a lot of people with concerns on this project. I know at the MAC meeting on this project they were proposing some odd little lots which they were going to make "dog friendly" in order to get around the size limitations in our community plan. We all basically said that they needed to stick to the sizing of the community plan which is 1/4 acre (with no allowance for streets and undevelopable land).

I have not had the opportunity beyond the original MAC presentation to look at the DEIR, but one of the **concerns that I had texted to me yesterday was about them supposedly using the new RM 30 (**I may have the wrong letters). Is there something in this proposal where they are asking for this?

Another concern with this project is that it **NOT make it so that it becomes a through road from Vineyard over to Walerga**. I believe that in the proposal I heard at the MAC, there is no proposal to make that a through road, but please make sure that it does not become that.

There will **always be the concern that this area is being stretched way beyond what our community plan called for in regard to housing density**. The concern there is that **every time that occurs, the traffic situation in the area is becoming unbearable.** It is not as though these developments exist only within themselves. They feed into the larger traffic patterns in the area. This has made it so that what was once a short trip to my mother's house (which I am now living at taking care of her) has become a nightmare--taking up to 3-4 times as long as it once did a few

years ago.

Another concern is about the **"phasing" of the project and whether or not it contains the amount of both low and very low housing that is supposed to exist when a development goes in**. This is really a two-part concern.

First, does the overall project contain the **10% low income required by county mandate with a proportion for very low incom**e. If not, that should be an automatic NO! (That automatic NO should have come on THE RANCH project which got approved even though the county admitted it did not have the very low income portion dealt with. Your guys' response was, "We'll deal with that later." Are you?)

Second, **if it does require the 10%, is it being done in all phases so that it is not getting left until the end**--maybe after the next cycle of state enforcement for the standard.

The l**ast thing we need is to get to a point as just happened where developers were allowed to "buy out" their obligation or it was put into a later phase and so it did not meet the requirements for that state enforcement cycle.**

Help us out hear (I am referring to "us" as all of the current residents of Placer County). I am seeing my county destroyed, and it needs to stop. You all in Planning have the ability to limit these plans to what our community plans called for. Please don't allow our county to be destroyed any further.

Thanks for your time and consideration,
Laura Bullard
916-765-7903

And PS: The idea that people can only participate in person anymore is also bogus. As a former Government teacher who encouraged my students to get involved, I find the fact that the county is now making it more difficult for that to happen a true crime. For people who work or for people like me who take care of an aging parent (or one with kids), having to come all the way to Auburn to participate in these meetings is beyond an inconvenience. It also gives the appearance that the county is trying to hide things. Not a good thing. Any influence you can have on getting these meetings more easily accessible would be appreciated.

On Thursday, April 24, 2025 at 01:58:05 PM PDT, Kara Conklin <kconklin@placer.ca.gov> wrote:

> Good afternoon, Laura,
>
> Yes, there is an EIR Scoping meeting today from 4:00 – 6:00 pm – it is in person only, as the County is no longer providing Zoom as an option for attendance.

The notice was sent to property owners within 300 feet of the project boundary, and any interested parties and local agencies. It has also been posted on our website. The number listed below is my direct line and is correct. The purpose of the Environmental Impact Report (EIR) Scoping meeting is to obtain public and agency input regarding potentially significant environmental issues, reasonable alternatives and mitigation measures to be evaluated within the Environmental Impact Report. Comments received are considered in preparing the environmental analysis. The merits of the actual project are to be discussed at future hearings.

Do you have specific questions that I can help answer for you?

Thank you,

Kara Conklin

Senior Planner

Planning Services Division

Community Development Resource Agency

3091 County Center Drive

Auburn, CA 95603

530.745.3053

What is your vision for Placer County's future. **Join the conversation.**



From: Laura Bullard <bullardll@aol.com>

Sent: Thursday, April 24, 2025 1:41 PM
To: Kara Conklin <KConklin@placer.ca.gov>
Cc: Christopher Pahule <cpahule@placer.ca.gov>
Subject: wrong phone number on Estia project?

We had something posted on our Facebook page about a **scoping meeting for the Estia project this afternoon. Is this true? And is it only in person?**

In trying to find out information, I went to the project posting and found the following for contact information. ***When I called it, it said that it was for code complaints and for Cannabis violations*****.** Could you clarify if the number was simply incorrect?

For more information regarding the proposed project, please refer to the following detailed project description or contact Kara Conklin, Assistant Planner, at (530) 745-3053 or kconklin@placer.ca.gov.

Comments and objections to Estia and Placer Creek residential project

May 4, 2025

From: Laura Bullard, Lifelong Placer County resident

This is another project which is asking for a rezoning and map amendment which **is NOT IN KEEPING WITH OUR COMMUNITY PLAN and adds undue traffic burdens on those of us in the county who must commute on the roads that this higher density will impact**.The Dry Creek/West Placer Community Plan PLANNED FOR A DENSITY WHICH WOULD BE IN KEEPING WITH OUR roadways and the rural living that at least part of this development will impact. While the majority of the traffic will impact Walerga and Baseline, the added traffic on those roads will still significantly impact the surrounding area simply by making the ability of the current residents of the area have to deal with the bumper to bumper traffic that is becoming a day to day reality on Baseline. The added traffic on Crowder and Vineyard (which are, by design, two lane roads) will have a significant impact on the surrounding community—which was designed to maintain the quiet, country feel that the residents of that community have always cherished. Our Community Plan specifically limits the lot sizes as well as states that the projected population would not probably be reached because of the restriction on lot size and density transfers. This needs to be upheld!

In addition, the idea that the very low-income aspect of this project is going to be transferred to the area off of Watt and PFE is commendable in that it at least accounts for the requirement that this issue be dealt with. But, unless that provision is clearly mandated in the approval, it is folly. Also, does this REQUIRE THEM TO BUILD THOSE UNITS? If not, that is also a magic hat trick. THE REQUIRED ACTUAL BUILDING OF LOW-INCOME UNITS MUST BE MANDATED in any approval. Otherwise, we are going to get into the same problem as we had last year when the county discovered that they did not have enough very low-income areas set aside to meet the state. And as we know, if those areas they set aside under the RM-30 suddenly get constructed with one of the 29 things that don't meet the state mandate, the county will now have to look for other areas to rezone. Not acceptable.

Another interesting component of this is that if you do not allow for the increased density, this development would not have to put in as many low-income units. If they truly got creative, could actually offer low and even very low income residents the ability to own a home (rather than rent) by adding some creative lower income units for sale.

These factors must be taken into consideration on any recommendation that the County does. You need to stick the Community Plan and not allow higher density and must also force the developer to deal with the low income and very low income housing and strictly

tie that to any approval (unlike the Ranch development which you approved recognizing that it did not deal with the very low income issue and you said, “We will deal with that later.” Not acceptable.

From: Patty Greene
To: Placer County Environmental Coordination Services
Subject: Take a break!
Date: Sunday, May 4, 2025 5:26:50 PM

With all due respect, I implore you all to put a pause on all this damned development. I get that it's going to happen come Hell or highwater, but have mercy on your existing constituents, would you? Please!

And quit kicking the developers requirements down the road. Why do they keep getting approved 'mitigations?' Isn't it enough that Newsom and Trump have both sold out on CEQA and the poor environment? I don't blame Republicans or Democrats. It's just elected officials, period.

Can you please consider staggering the build-outs? Right now everything, everywhere is under construction. No allowances for traffic congestion. No stores or restaurants...no medical providers...all the services that all these new people are going to demand, and bitch about when it's not available! Do YOU want to hear it? Or deal with the fall-out from overcrowded schools, not enough police or fire services...

Obviously, I am very concerned about what I see as a serious lack of oversight and planning. And that's being charitable since no mention has been made about how completely fugly all these homes are, and how depressing it is to see the animals struggling to find somewhere to go. Simply destruction of what was a beautiful place to live...

I object to the Estia development, not that it matters. Make the developers follow the rules, and for the love of God, slow down and freaking let the infrastructure catch up before pursuing more stinking "growth."

Sincerely,

Patty Greene
1765 Bamboo St
Roseville CA 95747

From: Lisa Mendenhall
To: Placer County Environmental Coordination Services
Subject: Estia Project
Date: Sunday, May 4, 2025 4:12:56 PM

Hello Meghan,

I'm writing to you over concerns about the Estia project. My husband and I live in Sun Valley Oaks, directly adjacent to the Estia development off Vineyard Rd, and are original owners. When we purchased our home we valued the open space, quiet nights and country living feel, as we raised our 3 kids. This proposed project must be carefully thought out and my requests are:

1. Please do not allow Vineyard Rd to extend through to Walerga Rd. This is a two lane road that cannot end up being a thoroughfare for people trying to get around traffic on Baseline Rd
2. Please do not allow residents of Estia to exit out of the development onto Vineyard. The ask is that they exit on Walerga which is built to handle the traffic, not Vineyard Rd.
3. Please abide by and honor the Dry Creek Community plan which was put in place to preserve the integrity of this precious gem of a community in Roseville. It truly is a special place which is being overtaken by aggressive growth. The infrastructure including roads, emergency personnel which supports this country feel within Placer County can only handle what is already in place.

Thank you for your consideration of the residents who have spent decades here and want to see it continue as the Dry Creek community we know and love.

Sincerely,

Lisa Mendenhall

From: Kara Conklin
To: Placer County Environmental Coordination Services
Cc: Leigh Chavez; Meghan Schwartz; Claudia Garcia
Subject: FW: Estia
Date: Monday, May 5, 2025 10:00:30 AM

FYI comments on Estia

From: Abe Nelson <foraben@gmail.com>
Sent: Sunday, May 4, 2025 3:15 PM
To: Kara Conklin <KConklin@placer.ca.gov>
Subject: Estia

Hey Kara, just wanted to touch base with you about the Estia project on Walerga. I have lived in the Sun Valley neighborhood for the last 10 years. Myself and the rest of my neighbors are completely against any high density housing in this area. We moved to this area because of how it is zoned. Rezoning this area so that developers can make a little more money on this land goes completely against why we all moved to this area to raise our families. Please let me know anything we can do to help block this and keep our community the same as why we moved here. Thank you for your time and effort to represent us. Abe Nelson-concerned home owner

From:	Kara Conklin
To:	Placer County Environmental Coordination Services
Cc:	Leigh Chavez; Meghan Schwartz; Claudia Garcia
Subject:	FW: Estia Project
Date:	Monday, May 5, 2025 9:58:56 AM

FYI – Comment for Estia

From: John Schell <jlschell@gmail.com>
Sent: Sunday, May 4, 2025 1:43 PM
To: Kara Conklin <KConklin@placer.ca.gov>
Subject: Estia Project

Good afternoon,
This note is intended to lodge our vote against the above project. I live in Morgan Creek and the traffic today is frightening when I leave my community. Heading north on Crowder I take my life in my hands turning left onto baseline. The traffic in this area is horrendous and getting worse. I don't even want to think about what it will be like when the corner of Baseline (Riego) and Fiddyment gets developed with Costco etc.

Please understand that my wife and I are opposed to the upcoming discussion and eventual development of this project.

Same goes with the Baseline project that includes multiple commercial businesses. More traffic, noise and congestion. West Roseville needs to get a break!

Thank you

John Schell
Marie Schell

8963 Creekstone Circle
Roseville 95747

Estia NOP Scoping Meeting – 4/24/25

Laura Bullard –

- Aesthetics concerns – not pleasing.
- Traffic – Community Plan says Vineyard is not going to be extended. All traffic should go on Walerga. Development of Costco will also make traffic worse.
- The amount of time it takes commenter to get through traffic is absurd.
- School district boundaries? Where is boundary line between Center Unified, Roseville Joint Union, and Dry Creek?
- Will cars have access to Phase 4?

Harry White –

- Onslaught of development in Placer County has meant the end of beneficial animal populations.
- Solution – build native habitat. Attractive pollinator gardens.
- Extensive use of native plants is consistent with Policy 6D (6.D.10) of PCCP. See also DCWPCP Policies 13 and 14.
- Native plants are low water and aesthetic.

APPENDIX C

Estia Dry Creek and Placer Creek Residential Custom Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

1.2. Land Use Types

1.3. User-Selected Emission Reduction Measures by Emissions Sector

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

2.2. Construction Emissions by Year, Unmitigated

2.4. Operations Emissions Compared Against Thresholds

2.5. Operations Emissions by Sector, Unmitigated

3. Construction Emissions Details

3.1. Site Preparation (2026) - Unmitigated

3.3. Grading (2026) - Unmitigated

3.5. Building Construction (2026) - Unmitigated

3.7. Building Construction (2027) - Unmitigated

3.9. Building Construction (2028) - Unmitigated

3.11. Building Construction (2029) - Unmitigated

3.13. Building Construction (2030) - Unmitigated

3.15. Paving (2026) - Unmitigated

3.17. Architectural Coating (2026) - Unmitigated

3.19. Architectural Coating (2027) - Unmitigated

3.21. Architectural Coating (2028) - Unmitigated

3.23. Architectural Coating (2029) - Unmitigated

3.25. Architectural Coating (2030) - Unmitigated

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

4.3. Area Emissions by Source

4.3.1. Unmitigated

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.9. Operational Mobile Sources

5.9.1. Unmitigated

5.10. Operational Area Sources

5.10.1. Hearths

5.10.2. Architectural Coatings

5.10.3. Landscape Equipment

5.11. Operational Energy Consumption

5.11.1. Unmitigated

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

5.13. Operational Waste Generation

5.13.1. Unmitigated

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

8. User Changes to Default Data

8.1. Justifications

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Estia Dry Creek and Placer Creek Residential
Construction Start Date	5/1/2026
Operational Year	2030
Lead Agency	Placer County
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.5
Precipitation (days)	18
Location	38.74843719261392, -121.36305165127729
County	Placer-Sacramento
City	Unincorporated
Air District	Placer County APCD
Air Basin	Sacramento Valley
TAZ	441
EDFZ	4
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.35

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Condo/Townhouse	220	Dwelling Unit	20	252,404	0.00	—	574	—

Single Family Housing	212	Dwelling Unit	40	413,400	239,580	—	553	—
Health Club	3.5	1000sqft	0.08	3,537	0.00	—	—	—
City Park	2.1	Acre	2.1	0.00	0.00	0.00	—	—
Parking Lot	385	Space	3.5	0.00	0.00	—	—	—
Other Asphalt Surfaces	17	Acre	17	0.00	0.00	—	—	—
Other Asphalt Surfaces	3.0	Acre	3.0	0.00	0.00	—	—	—
Other Non-Asphalt Surfaces	0.27	Acre	0.27	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	8.3	7.9	29	30	0.06	1.2	20	21	1.1	10	11	—	7,085	7,085	0.27	0.24	13	7,122
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	8.2	7.8	13	25	0.03	0.42	3.2	3.6	0.39	0.77	1.2	—	6,576	6,576	0.17	0.33	0.35	6,680
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.8	5.5	9.0	17	0.02	0.34	2.9	3.3	0.31	1.1	1.4	—	4,695	4,695	0.12	0.23	3.7	4,769

Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.1	1.0	1.6	3.2	< 0.005	0.06	0.53	0.59	0.06	0.20	0.25	—	777	777	0.02	0.04	0.61	790

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	8.3	7.9	29	30	0.06	1.2	20	21	1.1	10	11	—	7,085	7,085	0.27	0.24	13	7,122
2027	8.2	7.8	12	28	0.03	0.37	3.2	3.6	0.35	0.77	1.1	—	6,853	6,853	0.15	0.23	12	6,937
2028	8.1	7.7	12	27	0.03	0.33	3.2	3.5	0.31	0.77	1.1	—	6,758	6,758	0.15	0.23	11	6,841
2029	7.9	7.7	11	26	0.03	0.31	3.2	3.5	0.28	0.77	1.1	—	6,669	6,669	0.15	0.22	9.3	6,748
2030	7.8	7.6	11	26	0.03	0.29	3.2	3.5	0.26	0.77	1.0	—	6,581	6,581	0.15	0.22	8.1	6,658
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	8.2	7.8	13	25	0.03	0.42	3.2	3.6	0.39	0.77	1.2	—	6,576	6,576	0.17	0.33	0.35	6,680
2027	8.1	7.7	13	24	0.03	0.37	3.2	3.6	0.35	0.77	1.1	—	6,499	6,499	0.17	0.32	0.31	6,600
2028	7.9	7.6	12	23	0.03	0.33	3.2	3.5	0.31	0.77	1.1	—	6,412	6,412	0.16	0.32	0.27	6,511
2029	7.8	7.6	12	23	0.03	0.31	3.2	3.5	0.28	0.77	1.1	—	6,329	6,329	0.16	0.22	0.24	6,398
2030	7.7	7.5	11	22	0.03	0.29	3.2	3.5	0.26	0.77	1.0	—	6,247	6,247	0.16	0.22	0.21	6,316
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	2.9	2.7	8.9	12	0.02	0.34	2.9	3.3	0.31	1.1	1.4	—	3,071	3,071	0.10	0.10	1.6	3,106
2027	5.8	5.5	9.0	17	0.02	0.27	2.3	2.5	0.25	0.54	0.79	—	4,695	4,695	0.12	0.23	3.7	4,769
2028	5.7	5.5	8.6	17	0.02	0.24	2.3	2.5	0.22	0.54	0.76	—	4,644	4,644	0.11	0.16	3.2	4,699
2029	5.6	5.4	8.2	17	0.02	0.22	2.3	2.5	0.20	0.54	0.74	—	4,571	4,571	0.11	0.16	2.9	4,623
2030	1.9	1.9	2.5	5.2	0.01	0.07	0.73	0.79	0.06	0.17	0.23	—	1,437	1,437	0.03	0.05	0.80	1,453

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.52	0.48	1.6	2.2	< 0.005	0.06	0.53	0.59	0.06	0.20	0.25	—	508	508	0.02	0.02	0.26	514
2027	1.1	1.0	1.6	3.2	< 0.005	0.05	0.41	0.46	0.05	0.10	0.14	—	777	777	0.02	0.04	0.61	790
2028	1.0	1.00	1.6	3.1	< 0.005	0.04	0.41	0.46	0.04	0.10	0.14	—	769	769	0.02	0.03	0.54	778
2029	1.0	0.99	1.5	3.0	< 0.005	0.04	0.41	0.45	0.04	0.10	0.14	—	757	757	0.02	0.03	0.47	765
2030	0.35	0.34	0.46	0.95	< 0.005	0.01	0.13	0.14	0.01	0.03	0.04	—	238	238	0.01	0.01	0.13	241

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	32	31	11	110	0.21	0.38	17	17	0.37	4.3	4.7	193	25,089	25,281	21	0.96	47	26,130
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	28	27	12	76	0.19	0.37	17	17	0.36	4.3	4.7	193	23,351	23,544	21	1.0	5.9	24,377
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	30	29	12	86	0.20	0.38	17	17	0.37	4.3	4.6	193	23,728	23,921	21	0.99	23	24,759
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.4	5.2	2.1	16	0.04	0.07	3.1	3.1	0.07	0.78	0.84	32	3,929	3,960	3.4	0.16	3.8	4,099

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	14	13	7.9	84	0.19	0.14	17	17	0.13	4.3	4.4	—	19,595	19,595	0.77	0.85	42	19,909
Area	18	18	0.23	25	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	66	66	< 0.005	< 0.005	—	66
Energy	0.34	0.17	2.9	1.2	0.02	0.23	—	0.23	0.23	—	0.23	—	5,399	5,399	0.61	0.04	—	5,427
Water	—	—	—	—	—	—	—	—	—	—	—	28	28	56	2.8	0.07	—	147
Waste	—	—	—	—	—	—	—	—	—	—	—	165	0.00	165	16	0.00	—	577
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.8	4.8
Total	32	31	11	110	0.21	0.38	17	17	0.37	4.3	4.7	193	25,089	25,281	21	0.96	47	26,130
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	12	11	9.2	74	0.18	0.14	17	17	0.13	4.3	4.4	—	17,924	17,924	0.90	0.92	1.1	18,222
Area	16	16	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
Energy	0.34	0.17	2.9	1.2	0.02	0.23	—	0.23	0.23	—	0.23	—	5,399	5,399	0.61	0.04	—	5,427
Water	—	—	—	—	—	—	—	—	—	—	—	28	28	56	2.8	0.07	—	147
Waste	—	—	—	—	—	—	—	—	—	—	—	165	0.00	165	16	0.00	—	577
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.8	4.8
Total	28	27	12	76	0.19	0.37	17	17	0.36	4.3	4.7	193	23,351	23,544	21	1.0	5.9	24,377
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	12	11	8.6	72	0.18	0.14	17	17	0.13	4.3	4.4	—	18,268	18,268	0.83	0.88	18	18,571
Area	17	17	0.11	12	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	0.00	33	33	< 0.005	< 0.005	—	33
Energy	0.34	0.17	2.9	1.2	0.02	0.23	—	0.23	0.23	—	0.23	—	5,399	5,399	0.61	0.04	—	5,427
Water	—	—	—	—	—	—	—	—	—	—	—	28	28	56	2.8	0.07	—	147
Waste	—	—	—	—	—	—	—	—	—	—	—	165	0.00	165	16	0.00	—	577
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.8	4.8
Total	30	29	12	86	0.20	0.38	17	17	0.37	4.3	4.6	193	23,728	23,921	21	0.99	23	24,759
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mobile	2.2	2.1	1.6	13	0.03	0.03	3.1	3.1	0.02	0.78	0.80	—	3,025	3,025	0.14	0.15	3.0	3,075
Area	3.1	3.1	0.02	2.2	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	5.4	5.4	< 0.005	< 0.005	—	5.4
Energy	0.06	0.03	0.53	0.23	< 0.005	0.04	—	0.04	0.04	—	0.04	—	894	894	0.10	0.01	—	898
Water	—	—	—	—	—	—	—	—	—	—	—	4.6	4.7	9.2	0.47	0.01	—	24
Waste	—	—	—	—	—	—	—	—	—	—	—	27	0.00	27	2.7	0.00	—	96
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.79	0.79
Total	5.4	5.2	2.1	16	0.04	0.07	3.1	3.1	0.07	0.78	0.84	32	3,929	3,960	3.4	0.16	3.8	4,099

3. Construction Emissions Details

3.1. Site Preparation (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.7	3.1	29	29	0.05	1.2	—	1.2	1.1	—	1.1	—	5,298	5,298	0.21	0.04	—	5,316
Dust From Material Movement	—	—	—	—	—	—	20	20	—	10	10	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	0.10	0.09	0.80	0.79	< 0.005	0.03	—	0.03	0.03	—	0.03	—	145	145	0.01	< 0.005	—	146
Dust From Material Movement	—	—	—	—	—	—	0.54	0.54	—	0.28	0.28	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipm ent	0.02	0.02	0.15	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	—	24	24	< 0.005	< 0.005	—	24
Dust From Material Movement	—	—	—	—	—	—	0.10	0.10	—	0.05	0.05	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.04	0.85	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	191	191	< 0.005	< 0.005	0.63	192
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.8	4.8	< 0.005	< 0.005	0.01	4.8
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.79	0.79	< 0.005	< 0.005	< 0.005	0.80
Vendor	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	0.00
Hauling	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	0.00

3.3. Grading (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.6	3.0	27	28	0.06	1.1	—	1.1	1.0	—	1.0	—	6,599	6,599	0.27	0.05	—	6,621
Dust From Material Movement	—	—	—	—	—	—	9.2	9.2	—	3.7	3.7	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.60	0.50	4.5	4.5	0.01	0.18	—	0.18	0.17	—	0.17	—	1,085	1,085	0.04	0.01	—	1,088
Dust From Material Movement	—	—	—	—	—	—	1.5	1.5	—	0.60	0.60	—	—	—	—	—	—	—

Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.09	0.82	0.83	< 0.005	0.03	—	0.03	0.03	—	0.03	—	180	180	0.01	< 0.005	—	180
Dust From Material Movement	—	—	—	—	—	—	0.28	0.28	—	0.11	0.11	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.04	0.98	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	219	219	< 0.005	< 0.005	0.72	220
Vendor	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	0.00
Hauling	0.01	0.01	0.34	0.07	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	268	268	< 0.005	0.04	0.54	281
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.12	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	33	33	< 0.005	< 0.005	0.05	33
Vendor	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	0.00
Hauling	< 0.005	< 0.005	0.06	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	44	44	< 0.005	0.01	0.04	46
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.4	5.4	< 0.005	< 0.005	0.01	5.5
Vendor	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	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.3	7.3	< 0.005	< 0.005	0.01	7.6

3.5. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.3	1.1	9.9	13	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.3	1.1	9.9	13	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.33	0.28	2.6	3.4	0.01	0.10	—	0.10	0.09	—	0.09	—	624	624	0.03	0.01	—	626
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.47	0.62	< 0.005	0.02	—	0.02	0.02	—	0.02	—	103	103	< 0.005	< 0.005	—	104

Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.86	0.77	0.52	12	0.00	0.00	2.4	2.4	0.00	0.56	0.56	—	2,582	2,582	0.04	0.02	8.5	2,596
Vendor	0.05	0.04	1.7	0.44	0.01	0.02	0.35	0.36	0.02	0.10	0.11	—	1,307	1,307	0.01	0.20	3.2	1,369
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.77	0.67	0.62	8.4	0.00	0.00	2.4	2.4	0.00	0.56	0.56	—	2,281	2,281	0.05	0.10	0.22	2,311
Vendor	0.05	0.04	1.8	0.47	0.01	0.02	0.35	0.36	0.02	0.10	0.11	—	1,308	1,308	0.01	0.20	0.08	1,367
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.18	0.16	2.2	0.00	0.00	0.61	0.61	0.00	0.14	0.14	—	610	610	0.01	0.02	0.96	618
Vendor	0.01	0.01	0.46	0.12	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.03	—	340	340	< 0.005	0.05	0.35	356
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.03	0.41	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	101	101	< 0.005	< 0.005	0.16	102
Vendor	< 0.005	< 0.005	0.08	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	56	56	< 0.005	0.01	0.06	59
Hauling	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	0.00

3.7. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.2	1.0	9.4	13	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.2	1.0	9.4	13	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.88	0.74	6.7	9.2	0.02	0.24	—	0.24	0.22	—	0.22	—	1,712	1,712	0.07	0.01	—	1,718
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	0.13	1.2	1.7	< 0.005	0.04	—	0.04	0.04	—	0.04	—	283	283	0.01	< 0.005	—	284
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.83	0.74	0.44	11	0.00	0.00	2.4	2.4	0.00	0.56	0.56	—	2,536	2,536	0.03	0.02	7.6	2,549
Vendor	0.05	0.04	1.6	0.44	0.01	0.02	0.35	0.36	0.02	0.10	0.11	—	1,279	1,279	0.01	0.19	2.8	1,338
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.74	0.65	0.61	7.9	0.00	0.00	2.4	2.4	0.00	0.56	0.56	—	2,241	2,241	0.05	0.10	0.20	2,271
Vendor	0.05	0.04	1.7	0.45	0.01	0.02	0.35	0.36	0.02	0.10	0.11	—	1,279	1,279	0.01	0.19	0.07	1,336
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.53	0.46	0.37	5.8	0.00	0.00	1.7	1.7	0.00	0.39	0.39	—	1,645	1,645	0.03	0.06	2.3	1,667
Vendor	0.04	0.03	1.2	0.31	0.01	0.01	0.24	0.26	0.01	0.07	0.08	—	913	913	0.01	0.13	0.86	955
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.08	0.07	1.1	0.00	0.00	0.31	0.31	0.00	0.07	0.07	—	272	272	< 0.005	0.01	0.39	276
Vendor	0.01	< 0.005	0.22	0.06	< 0.005	< 0.005	0.04	0.05	< 0.005	0.01	0.01	—	151	151	< 0.005	0.02	0.14	158
Hauling	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	0.00

3.9. Building Construction (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.2	0.99	8.9	13	0.02	0.30	—	0.30	0.28	—	0.28	—	2,397	2,397	0.10	0.02	—	2,406

Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.2	0.99	8.9	13	0.02	0.30	—	0.30	0.28	—	0.28	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.85	0.71	6.4	9.3	0.02	0.22	—	0.22	0.20	—	0.20	—	1,717	1,717	0.07	0.01	—	1,723
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.13	1.2	1.7	< 0.005	0.04	—	0.04	0.04	—	0.04	—	284	284	0.01	< 0.005	—	285
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.79	0.70	0.43	10	0.00	0.00	2.4	2.4	0.00	0.56	0.56	—	2,485	2,485	0.03	0.02	6.7	2,497
Vendor	0.05	0.04	1.5	0.42	0.01	0.02	0.35	0.36	0.02	0.10	0.11	—	1,246	1,246	0.01	0.19	2.4	1,305
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.64	0.62	0.53	7.5	0.00	0.00	2.4	2.4	0.00	0.56	0.56	—	2,195	2,195	0.04	0.09	0.17	2,223
Vendor	0.05	0.04	1.6	0.44	0.01	0.02	0.35	0.36	0.02	0.10	0.11	—	1,246	1,246	0.01	0.19	0.06	1,303
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.46	0.45	0.37	5.5	0.00	0.00	1.7	1.7	0.00	0.40	0.40	—	1,616	1,616	0.03	0.01	2.1	1,622
Vendor	0.04	0.03	1.1	0.31	0.01	0.01	0.24	0.26	0.01	0.07	0.08	—	892	892	0.01	0.14	0.75	934
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.08	0.07	1.0	0.00	0.00	0.31	0.31	0.00	0.07	0.07	—	267	267	< 0.005	< 0.005	0.34	268
Vendor	0.01	< 0.005	0.21	0.06	< 0.005	< 0.005	0.04	0.05	< 0.005	0.01	0.01	—	148	148	< 0.005	0.02	0.12	155
Hauling	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	0.00

3.11. Building Construction (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.2	0.97	8.6	13	0.02	0.28	—	0.28	0.25	—	0.25	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	1.2	0.97	8.6	13	0.02	0.28	—	0.28	0.25	—	0.25	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.82	0.69	6.1	9.2	0.02	0.20	—	0.20	0.18	—	0.18	—	1,712	1,712	0.07	0.01	—	1,718
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.13	1.1	1.7	< 0.005	0.04	—	0.04	0.03	—	0.03	—	283	283	0.01	< 0.005	—	284
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.69	0.68	0.42	9.8	0.00	0.00	2.4	2.4	0.00	0.56	0.56	—	2,442	2,442	0.03	0.02	5.9	2,453
Vendor	0.05	0.04	1.4	0.41	0.01	0.02	0.35	0.36	0.02	0.10	0.11	—	1,209	1,209	0.01	0.18	2.1	1,265
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.62	0.60	0.52	7.1	0.00	0.00	2.4	2.4	0.00	0.56	0.56	—	2,157	2,157	0.04	0.02	0.15	2,163
Vendor	0.05	0.04	1.6	0.43	0.01	0.02	0.35	0.36	0.02	0.10	0.11	—	1,210	1,210	0.01	0.18	0.06	1,264
Hauling	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	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.44	0.43	0.31	5.2	0.00	0.00	1.7	1.7	0.00	0.39	0.39	—	1,583	1,583	0.03	0.01	1.8	1,589
Vendor	0.04	0.03	1.1	0.30	0.01	0.01	0.24	0.26	0.01	0.07	0.08	—	864	864	0.01	0.13	0.66	903
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.08	0.06	0.95	0.00	0.00	0.31	0.31	0.00	0.07	0.07	—	262	262	< 0.005	< 0.005	0.30	263
Vendor	0.01	< 0.005	0.20	0.05	< 0.005	< 0.005	0.04	0.05	< 0.005	0.01	0.01	—	143	143	< 0.005	0.02	0.11	150
Hauling	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	0.00

3.13. Building Construction (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.1	0.94	8.4	13	0.02	0.26	—	0.26	0.24	—	0.24	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.1	0.94	8.4	13	0.02	0.26	—	0.26	0.24	—	0.24	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.25	0.21	1.9	2.9	0.01	0.06	—	0.06	0.05	—	0.05	—	539	539	0.02	< 0.005	—	541
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.34	0.53	< 0.005	0.01	—	0.01	0.01	—	0.01	—	89	89	< 0.005	< 0.005	—	90
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.66	0.65	0.34	9.3	0.00	0.00	2.4	2.4	0.00	0.56	0.56	—	2,401	2,401	0.03	0.02	5.2	2,411
Vendor	0.04	0.03	1.4	0.40	0.01	0.02	0.35	0.36	0.01	0.10	0.10	—	1,170	1,170	0.01	0.18	1.9	1,225
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.60	0.58	0.44	6.7	0.00	0.00	2.4	2.4	0.00	0.56	0.56	—	2,122	2,122	0.04	0.02	0.13	2,127
Vendor	0.04	0.03	1.5	0.42	0.01	0.02	0.35	0.36	0.01	0.10	0.10	—	1,171	1,171	0.01	0.18	0.05	1,224
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.13	0.10	1.6	0.00	0.00	0.53	0.53	0.00	0.12	0.12	—	491	491	0.01	< 0.005	0.50	492
Vendor	0.01	0.01	0.33	0.09	< 0.005	< 0.005	0.08	0.08	< 0.005	0.02	0.02	—	263	263	< 0.005	0.04	0.18	276
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.02	0.02	0.02	0.28	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	81	81	< 0.005	< 0.005	0.08	82
Vendor	< 0.005	< 0.005	0.06	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	44	44	< 0.005	0.01	0.03	46
Hauling	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	0.00

3.15. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.91	0.76	7.1	9.9	0.01	0.32	—	0.32	0.29	—	0.29	—	1,511	1,511	0.06	0.01	—	1,516
Paving	6.2	6.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.20	0.27	< 0.005	0.01	—	0.01	0.01	—	0.01	—	41	41	< 0.005	< 0.005	—	42
Paving	0.17	0.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	< 0.005	< 0.005	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.9	6.9	< 0.005	< 0.005	—	6.9
Paving	0.03	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.03	0.73	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	164	164	< 0.005	< 0.005	0.54	165
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.1	4.1	< 0.005	< 0.005	0.01	4.1
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.68	0.68	< 0.005	< 0.005	< 0.005	0.68
Vendor	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	0.00
Hauling	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	0.00

3.17. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.1	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	5.7	5.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.1	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	5.7	5.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.20	0.26	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	—	31	31	< 0.005	< 0.005	—	31
Architectural Coatings	1.3	1.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.1	5.1	< 0.005	< 0.005	—	5.2
Architectural Coatings	0.24	0.24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.17	0.15	0.10	2.3	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	516	516	0.01	< 0.005	1.7	519
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.13	0.12	1.7	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	456	456	0.01	0.02	0.04	462
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.03	0.40	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	109	109	< 0.005	< 0.005	0.17	111
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	18	18	< 0.005	< 0.005	0.03	18
Vendor	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	0.00
Hauling	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	0.00

3.19. Architectural Coating (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.1	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	5.7	5.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.1	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	5.7	5.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.59	0.80	< 0.005	0.01	—	0.01	0.01	—	0.01	—	95	95	< 0.005	< 0.005	—	96

Architect Coatings	4.1	4.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.11	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	16	16	< 0.005	< 0.005	—	16
Architectural Coatings	0.75	0.75	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.17	0.15	0.09	2.2	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	507	507	0.01	< 0.005	1.5	510
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.13	0.12	1.6	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	448	448	0.01	0.02	0.04	454
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.09	0.07	1.2	0.00	0.00	0.34	0.34	0.00	0.08	0.08	—	329	329	0.01	0.01	0.47	333
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.02	0.02	0.01	0.21	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	54	54	< 0.005	< 0.005	0.08	55
Vendor	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	0.00
Hauling	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	0.00

3.21. Architectural Coating (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.81	1.1	< 0.005	0.02	—	0.02	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	5.7	5.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.81	1.1	< 0.005	0.02	—	0.02	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	5.7	5.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.08	0.58	0.80	< 0.005	0.01	—	0.01	0.01	—	0.01	—	96	96	< 0.005	< 0.005	—	96
Architectural Coatings	4.1	4.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.11	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	16	16	< 0.005	< 0.005	—	16
Architectural Coatings	0.75	0.75	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.14	0.09	2.1	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	497	497	0.01	< 0.005	1.3	499
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.12	0.11	1.5	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	439	439	0.01	0.02	0.03	445
Vendor	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	0.00

Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.09	0.07	1.1	0.00	0.00	0.34	0.34	0.00	0.08	0.08	—	323	323	0.01	< 0.005	0.42	324
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.01	0.20	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	53	53	< 0.005	< 0.005	0.07	54
Vendor	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	0.00
Hauling	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	0.00

3.23. Architectural Coating (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.79	1.1	< 0.005	0.01	—	0.01	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	5.7	5.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipm	0.12	0.10	0.79	1.1	< 0.005	0.01	—	0.01	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	5.7	5.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.07	0.57	0.79	< 0.005	0.01	—	0.01	0.01	—	0.01	—	95	95	< 0.005	< 0.005	—	96
Architectural Coatings	4.1	4.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.10	0.14	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	16	16	< 0.005	< 0.005	—	16
Architectural Coatings	0.75	0.75	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.14	0.08	2.0	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	488	488	0.01	< 0.005	1.2	491

Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.12	0.10	1.4	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	431	431	0.01	< 0.005	0.03	433
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.09	0.06	1.0	0.00	0.00	0.34	0.34	0.00	0.08	0.08	—	317	317	0.01	< 0.005	0.37	318
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.01	0.19	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	52	52	< 0.005	< 0.005	0.06	53
Vendor	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	0.00
Hauling	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	0.00

3.25. Architectural Coating (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.78	1.1	< 0.005	0.01	—	0.01	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134

Architectural Coatings	5.7	5.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.78	1.1	< 0.005	0.01	—	0.01	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	5.7	5.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.20	0.28	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	34	34	< 0.005	< 0.005	—	34
Architectural Coatings	1.5	1.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	< 0.005	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.6	5.6	< 0.005	< 0.005	—	5.6

Architectural Coating	0.26	0.26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.13	0.07	1.9	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	480	480	0.01	< 0.005	1.0	482
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.12	0.09	1.3	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	424	424	0.01	< 0.005	0.03	425
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.35	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	110	110	< 0.005	< 0.005	0.11	110
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.06	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	18	18	< 0.005	< 0.005	0.02	18
Vendor	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	0.00
Hauling	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	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	5.5	5.2	3.2	34	0.08	0.06	6.8	6.9	0.05	1.7	1.8	—	7,868	7,868	0.31	0.34	17	7,994
Single Family Housing	8.2	7.7	4.7	50	0.12	0.08	10	10	0.08	2.6	2.7	—	11,727	11,727	0.46	0.51	25	11,915
Health Club	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	0.00
City Park	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	0.00
Parking Lot	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	0.00
Other Asphalt Surfaces	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	0.00
Other Non-Asphalt Surfaces	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	0.00
Total	14	13	7.9	84	0.19	0.14	17	17	0.13	4.3	4.4	—	19,595	19,595	0.77	0.85	42	19,909
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	4.9	4.5	3.7	30	0.07	0.06	6.8	6.9	0.05	1.7	1.8	—	7,197	7,197	0.36	0.37	0.44	7,317
Single Family Housing	7.2	6.8	5.5	44	0.11	0.08	10	10	0.08	2.6	2.7	—	10,727	10,727	0.54	0.55	0.65	10,905

Health Club	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	0.00
City Park	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	0.00
Parking Lot	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	0.00
Other Asphalt Surfaces	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	0.00
Other Non-Asphalt Surfaces	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	0.00
Total	12	11	9.2	74	0.18	0.14	17	17	0.13	4.3	4.4	—	17,924	17,924	0.90	0.92	1.1	18,222
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	0.89	0.84	0.63	5.3	0.01	0.01	1.2	1.2	0.01	0.31	0.32	—	1,214	1,214	0.06	0.06	1.2	1,235
Single Family Housing	1.3	1.2	0.94	7.9	0.02	0.01	1.8	1.8	0.01	0.46	0.48	—	1,810	1,810	0.08	0.09	1.8	1,840
Health Club	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	0.00
City Park	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	0.00
Parking Lot	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	0.00
Other Asphalt Surfaces	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	0.00
Other Non-Asphalt Surfaces	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	0.00
Total	2.2	2.1	1.6	13	0.03	0.03	3.1	3.1	0.02	0.78	0.80	—	3,025	3,025	0.14	0.15	3.0	3,075

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	634	634	0.10	0.01	—	641
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	1,010	1,010	0.16	0.02	—	1,020
Health Club	—	—	—	—	—	—	—	—	—	—	—	—	20	20	< 0.005	< 0.005	—	21
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	74	74	0.01	< 0.005	—	75
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	1,739	1,739	0.28	0.03	—	1,756
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	634	634	0.10	0.01	—	641
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	1,010	1,010	0.16	0.02	—	1,020

Health Club	—	—	—	—	—	—	—	—	—	—	—	—	20	20	< 0.005	< 0.005	—	21
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	74	74	0.01	< 0.005	—	75
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	1,739	1,739	0.28	0.03	—	1,756
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	105	105	0.02	< 0.005	—	106
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	167	167	0.03	< 0.005	—	169
Health Club	—	—	—	—	—	—	—	—	—	—	—	—	3.4	3.4	< 0.005	< 0.005	—	3.4
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	12	12	< 0.005	< 0.005	—	12
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	288	288	0.05	0.01	—	291

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	0.15	0.08	1.3	0.55	0.01	0.10	—	0.10	0.10	—	0.10	—	1,637	1,637	0.14	< 0.005	—	1,642
Single Family Housing	0.18	0.09	1.6	0.66	0.01	0.13	—	0.13	0.13	—	0.13	—	1,976	1,976	0.17	< 0.005	—	1,982
Health Club	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	47	47	< 0.005	< 0.005	—	47
City Park	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
Parking Lot	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
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	0.34	0.17	2.9	1.2	0.02	0.23	—	0.23	0.23	—	0.23	—	3,661	3,661	0.32	0.01	—	3,671
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	0.15	0.08	1.3	0.55	0.01	0.10	—	0.10	0.10	—	0.10	—	1,637	1,637	0.14	< 0.005	—	1,642
Single Family Housing	0.18	0.09	1.6	0.66	0.01	0.13	—	0.13	0.13	—	0.13	—	1,976	1,976	0.17	< 0.005	—	1,982
Health Club	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	47	47	< 0.005	< 0.005	—	47

City Park	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
Parking Lot	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
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	0.34	0.17	2.9	1.2	0.02	0.23	—	0.23	0.23	—	0.23	—	3,661	3,661	0.32	0.01	—	3,671
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	0.03	0.01	0.24	0.10	< 0.005	0.02	—	0.02	0.02	—	0.02	—	271	271	0.02	< 0.005	—	272
Single Family Housing	0.03	0.02	0.28	0.12	< 0.005	0.02	—	0.02	0.02	—	0.02	—	327	327	0.03	< 0.005	—	328
Health Club	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.8	7.8	< 0.005	< 0.005	—	7.8
City Park	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
Parking Lot	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
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	0.06	0.03	0.53	0.23	< 0.005	0.04	—	0.04	0.04	—	0.04	—	606	606	0.05	< 0.005	—	608

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	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
Consumer Products	14	14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	1.5	1.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	2.3	2.1	0.23	25	< 0.005	0.01	—	0.01	0.01	—	0.01	—	66	66	< 0.005	< 0.005	—	66
Total	18	18	0.23	25	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	66	66	< 0.005	< 0.005	—	66
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	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
Consumer Products	14	14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	1.5	1.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	16	16	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	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

Consumer Product	2.6	2.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.28	0.28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.20	0.19	0.02	2.2	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.4	5.4	< 0.005	< 0.005	—	5.4
Total	3.1	3.1	0.02	2.2	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	5.4	5.4	< 0.005	< 0.005	—	5.4

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	14	13	27	1.4	0.03	—	72
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	13	15	29	1.4	0.03	—	73
Health Club	—	—	—	—	—	—	—	—	—	—	—	0.40	0.37	0.77	0.04	< 0.005	—	2.1
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	28	28	56	2.8	0.07	—	147
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	14	13	27	1.4	0.03	—	72
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	13	15	29	1.4	0.03	—	73
Health Club	—	—	—	—	—	—	—	—	—	—	—	0.40	0.37	0.77	0.04	< 0.005	—	2.1
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	28	28	56	2.8	0.07	—	147
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	2.3	2.1	4.4	0.24	0.01	—	12
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	2.2	2.5	4.7	0.23	0.01	—	12

Health Club	—	—	—	—	—	—	—	—	—	—	—	0.07	0.06	0.13	0.01	< 0.005	—	0.35
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	4.6	4.7	9.2	0.47	0.01	—	24

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	88	0.00	88	8.8	0.00	—	307
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	66	0.00	66	6.6	0.00	—	232
Health Club	—	—	—	—	—	—	—	—	—	—	—	11	0.00	11	1.1	0.00	—	38
City Park	—	—	—	—	—	—	—	—	—	—	—	0.10	0.00	0.10	0.01	0.00	—	0.34
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	165	0.00	165	16	0.00	—	577
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	88	0.00	88	8.8	0.00	—	307
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	66	0.00	66	6.6	0.00	—	232
Health Club	—	—	—	—	—	—	—	—	—	—	—	11	0.00	11	1.1	0.00	—	38
City Park	—	—	—	—	—	—	—	—	—	—	—	0.10	0.00	0.10	0.01	0.00	—	0.34
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	165	0.00	165	16	0.00	—	577
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	15	0.00	15	1.5	0.00	—	51
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	11	0.00	11	1.1	0.00	—	38

Health Club	—	—	—	—	—	—	—	—	—	—	—	1.8	0.00	1.8	0.18	0.00	—	6.3
City Park	—	—	—	—	—	—	—	—	—	—	—	0.02	0.00	0.02	< 0.005	0.00	—	0.06
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	27	0.00	27	2.7	0.00	—	96

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.8	1.8
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.0	3.0
Health Club	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.8	4.8

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.8	1.8
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.0	3.0
Health Club	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.8	4.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.30
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.49	0.49
Health Club	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	< 0.005	< 0.005
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.79	0.79

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	5/1/2026	5/14/2026	5.0	10.0	—
Grading	Grading	5/15/2026	8/6/2026	5.0	60	—
Building Construction	Building Construction	8/21/2026	4/25/2030	5.0	960	—

Paving	Paving	8/7/2026	8/20/2026	5.0	10.0	—
Architectural Coating	Architectural Coating	9/4/2026	5/9/2030	5.0	960	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.0	8.0	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.0	8.0	84	0.37
Grading	Graders	Diesel	Average	1.00	8.0	148	0.41
Grading	Excavators	Diesel	Average	2.0	8.0	36	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.0	8.0	84	0.37
Grading	Scrapers	Diesel	Average	2.0	8.0	423	0.48
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.0	367	0.40
Building Construction	Forklifts	Diesel	Average	3.0	8.0	82	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.0	14	0.74
Building Construction	Cranes	Diesel	Average	1.00	7.0	367	0.29
Building Construction	Welders	Diesel	Average	1.00	8.0	46	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.0	7.0	84	0.37
Paving	Pavers	Diesel	Average	2.0	8.0	81	0.42
Paving	Paving Equipment	Diesel	Average	2.0	8.0	89	0.36
Paving	Rollers	Diesel	Average	2.0	8.0	36	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.0	37	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	Worker	18	14	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.8	HHDT,MHDT
Site Preparation	Hauling	0.00	20	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	Worker	20	14	LDA,LDT1,LDT2
Grading	Vendor	—	8.8	HHDT,MHDT
Grading	Hauling	3.7	20	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	Worker	236	14	LDA,LDT1,LDT2
Building Construction	Vendor	47	8.8	HHDT,MHDT
Building Construction	Hauling	0.00	20	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	Worker	15	14	LDA,LDT1,LDT2
Paving	Vendor	—	8.8	HHDT,MHDT
Paving	Hauling	0.00	20	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	Worker	47	14	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.8	HHDT,MHDT
Architectural Coating	Hauling	0.00	20	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	1,348,253	449,418	5,306	1,769	62,346

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	—	—	15	0.00	0.00
Grading	—	1,762	180	0.00	0.00
Paving	0.00	0.00	0.00	0.00	26

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Phase Name	Land Use	Area Paved (acres)	% Asphalt
Paving	Condo/Townhouse	—	0%
Paving	Single Family Housing	2.3	0%
Paving	Health Club	0.00	0%
Paving	City Park	0.00	0%
Paving	Parking Lot	3.5	100%
Paving	Other Asphalt Surfaces	17	100%
Paving	Other Asphalt Surfaces	3.0	100%
Paving	Other Non-Asphalt Surfaces	0.27	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2026	0.00	204	0.03	< 0.005
2027	0.00	204	0.03	< 0.005
2028	0.00	204	0.03	< 0.005
2029	0.00	204	0.03	< 0.005
2030	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Condo/Townhouse	1,485	1,485	1,485	542,025	9,573	9,573	9,573	3,493,979
Single Family Housing	2,213	2,213	2,213	807,847	14,267	14,267	14,267	5,207,512
Health Club	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

Land Use	Hearth Type	Unmitigated (number)	Mitigated (number)
Condo/Townhouse	Wood Fireplaces	0	0

Condo/Townhouse	Gas Fireplaces	0	0
Condo/Townhouse	Propane Fireplaces	0	0
Condo/Townhouse	Electric Fireplaces	0	0
Condo/Townhouse	No Fireplaces	220	220
Condo/Townhouse	Conventional Wood Stoves	0	0
Condo/Townhouse	Catalytic Wood Stoves	0	0
Condo/Townhouse	Non-Catalytic Wood Stoves	0	0
Condo/Townhouse	Pellet Wood Stoves	0	0
Single Family Housing	Wood Fireplaces	0	0
Single Family Housing	Gas Fireplaces	0	0
Single Family Housing	Propane Fireplaces	0	0
Single Family Housing	Electric Fireplaces	0	0
Single Family Housing	No Fireplaces	212	212
Single Family Housing	Conventional Wood Stoves	0	0
Single Family Housing	Catalytic Wood Stoves	0	0
Single Family Housing	Non-Catalytic Wood Stoves	0	0
Single Family Housing	Pellet Wood Stoves	0	0
Health Club	Wood Fireplaces	0	0
Health Club	Gas Fireplaces	0	0
Health Club	Propane Fireplaces	0	0
Health Club	Electric Fireplaces	0	0
Health Club	No Fireplaces	0	0
Health Club	Conventional Wood Stoves	0	0
Health Club	Catalytic Wood Stoves	0	0
Health Club	Non-Catalytic Wood Stoves	0	0
Health Club	Pellet Wood Stoves	0	0
City Park	Wood Fireplaces	0	0
City Park	Gas Fireplaces	0	0

City Park	Propane Fireplaces	0	0
City Park	Electric Fireplaces	0	0
City Park	No Fireplaces	0	0
City Park	Conventional Wood Stoves	0	0
City Park	Catalytic Wood Stoves	0	0
City Park	Non-Catalytic Wood Stoves	0	0
City Park	Pellet Wood Stoves	0	0
Parking Lot	Wood Fireplaces	0	0
Parking Lot	Gas Fireplaces	0	0
Parking Lot	Propane Fireplaces	0	0
Parking Lot	Electric Fireplaces	0	0
Parking Lot	No Fireplaces	0	0
Parking Lot	Conventional Wood Stoves	0	0
Parking Lot	Catalytic Wood Stoves	0	0
Parking Lot	Non-Catalytic Wood Stoves	0	0
Parking Lot	Pellet Wood Stoves	0	0
Other Asphalt Surfaces	Wood Fireplaces	0	0
Other Asphalt Surfaces	Gas Fireplaces	0	0
Other Asphalt Surfaces	Propane Fireplaces	0	0
Other Asphalt Surfaces	Electric Fireplaces	0	0
Other Asphalt Surfaces	No Fireplaces	0	0
Other Asphalt Surfaces	Conventional Wood Stoves	0	0
Other Asphalt Surfaces	Catalytic Wood Stoves	0	0
Other Asphalt Surfaces	Non-Catalytic Wood Stoves	0	0
Other Asphalt Surfaces	Pellet Wood Stoves	0	0
Other Asphalt Surfaces	Wood Fireplaces	0	0
Other Asphalt Surfaces	Gas Fireplaces	0	0
Other Asphalt Surfaces	Propane Fireplaces	0	0

Other Asphalt Surfaces	Electric Fireplaces	0	0
Other Asphalt Surfaces	No Fireplaces	0	0
Other Asphalt Surfaces	Conventional Wood Stoves	0	0
Other Asphalt Surfaces	Catalytic Wood Stoves	0	0
Other Asphalt Surfaces	Non-Catalytic Wood Stoves	0	0
Other Asphalt Surfaces	Pellet Wood Stoves	0	0
Other Non-Asphalt Surfaces	Wood Fireplaces	0	0
Other Non-Asphalt Surfaces	Gas Fireplaces	0	0
Other Non-Asphalt Surfaces	Propane Fireplaces	0	0
Other Non-Asphalt Surfaces	Electric Fireplaces	0	0
Other Non-Asphalt Surfaces	No Fireplaces	0	0
Other Non-Asphalt Surfaces	Conventional Wood Stoves	0	0
Other Non-Asphalt Surfaces	Catalytic Wood Stoves	0	0
Other Non-Asphalt Surfaces	Non-Catalytic Wood Stoves	0	0
Other Non-Asphalt Surfaces	Pellet Wood Stoves	0	0

5.10.2. Architectural Coatings

—	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
undefined	1,348,253	449,418	5,306	1,769	62,346

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Condo/Townhouse	1,135,016	204	0.0330	0.0040	5,108,388
Single Family Housing	1,807,450	204	0.0330	0.0040	6,167,085
Health Club	36,537	204	0.0330	0.0040	146,639
City Park	0.00	204	0.0330	0.0040	0.00
Parking Lot	132,219	204	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00
Other Non-Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Condo/Townhouse	7,230,613	0.00
Single Family Housing	6,967,682	3,368,961
Health Club	209,189	0.00
City Park	0.00	0.00
Parking Lot	0.00	0.00
Other Asphalt Surfaces	0.00	0.00
Other Asphalt Surfaces	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Condo/Townhouse	163	0.00
Single Family Housing	123	0.00
Health Club	20	0.00
City Park	0.18	0.00
Parking Lot	0.00	0.00
Other Asphalt Surfaces	0.00	0.00
Other Asphalt Surfaces	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Condo/Townhouse	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.5	2.5	10.0
Condo/Townhouse	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.5	2.5	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Health Club	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.0	4.0	18
Health Club	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.0	4.0	18

City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

8. User Changes to Default Data

8.1. Justifications

Screen	Justification
Land Use	Building square footage and acreage adjusted to represent project-specific information. Health Club acreage representative of the Community Center. The 3.016 acres of other asphalt surfaces is representative of the off-site roadway improvements. The 0.273 acres of other non-asphalt surfaces is representative of off-site emergency wastewater storage improvements.
Construction: Construction Phases	Based on typical construction practices, architectural coating assumed to start two weeks after the start of building construction and last for the same number of days. Phase timing is based on the project-specific construction schedule provided by the applicant. Demolition not required for the proposed project.
Operations: Vehicle Data	Trip rates and VMT adjusted to be consistent with traffic data provided for the proposed project.
Operations: Hearths	Based on applicant provided information, all 432 units would not include fireplaces.

Estia Dry Creek and Placer Creek Residential + 22 ADUs Custom Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

1.2. Land Use Types

1.3. User-Selected Emission Reduction Measures by Emissions Sector

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

2.2. Construction Emissions by Year, Unmitigated

2.4. Operations Emissions Compared Against Thresholds

2.5. Operations Emissions by Sector, Unmitigated

3. Construction Emissions Details

3.1. Site Preparation (2026) - Unmitigated

3.3. Grading (2026) - Unmitigated

3.5. Building Construction (2026) - Unmitigated

3.7. Building Construction (2027) - Unmitigated

3.9. Building Construction (2028) - Unmitigated

3.11. Building Construction (2029) - Unmitigated

3.13. Building Construction (2030) - Unmitigated

3.15. Paving (2026) - Unmitigated

3.17. Architectural Coating (2026) - Unmitigated

3.19. Architectural Coating (2027) - Unmitigated

3.21. Architectural Coating (2028) - Unmitigated

3.23. Architectural Coating (2029) - Unmitigated

3.25. Architectural Coating (2030) - Unmitigated

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

4.3. Area Emissions by Source

4.3.1. Unmitigated

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.9. Operational Mobile Sources

5.9.1. Unmitigated

5.10. Operational Area Sources

5.10.1. Hearths

5.10.2. Architectural Coatings

5.10.3. Landscape Equipment

5.11. Operational Energy Consumption

5.11.1. Unmitigated

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

5.13. Operational Waste Generation

5.13.1. Unmitigated

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

8. User Changes to Default Data

8.1. Justifications

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Estia Dry Creek and Placer Creek Residential + 22 ADUs
Construction Start Date	5/1/2026
Operational Year	2030
Lead Agency	Placer County
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.5
Precipitation (days)	18
Location	38.74843719261392, -121.36305165127729
County	Placer-Sacramento
City	Unincorporated
Air District	Placer County APCD
Air Basin	Sacramento Valley
TAZ	441
EDFZ	4
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.35

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Condo/Townhouse	220	Dwelling Unit	20	252,404	0.00	—	574	—

Single Family Housing	234	Dwelling Unit	40	456,300	239,580	—	611	—
Health Club	3.5	1000sqft	0.08	3,537	0.00	—	—	—
City Park	2.1	Acre	2.1	0.00	0.00	0.00	—	—
Parking Lot	385	Space	3.5	0.00	0.00	—	—	—
Other Asphalt Surfaces	17	Acre	17	0.00	0.00	—	—	—
Other Asphalt Surfaces	3.0	Acre	3.0	0.00	0.00	—	—	—
Other Non-Asphalt Surfaces	0.27	Acre	0.27	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	8.6	8.3	29	30	0.06	1.2	20	21	1.1	10	11	—	7,106	7,106	0.27	0.25	14	7,198
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	8.5	8.2	13	25	0.03	0.42	3.3	3.7	0.39	0.79	1.2	—	6,733	6,733	0.17	0.35	0.36	6,842
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.0	5.8	9.0	18	0.02	0.34	2.9	3.3	0.31	1.1	1.4	—	4,807	4,807	0.12	0.24	3.8	4,884

Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.1	1.1	1.6	3.2	< 0.005	0.06	0.54	0.60	0.06	0.20	0.26	—	796	796	0.02	0.04	0.63	809

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	8.6	8.3	29	30	0.06	1.2	20	21	1.1	10	11	—	7,106	7,106	0.27	0.25	14	7,198
2027	8.5	8.2	12	28	0.03	0.37	3.3	3.7	0.35	0.79	1.1	—	7,019	7,019	0.15	0.24	12	7,106
2028	8.5	8.1	12	27	0.03	0.33	3.3	3.7	0.31	0.79	1.1	—	6,921	6,921	0.15	0.24	11	7,007
2029	8.3	8.1	11	27	0.03	0.31	3.3	3.6	0.28	0.79	1.1	—	6,828	6,828	0.15	0.23	9.6	6,910
2030	8.2	8.0	11	26	0.03	0.29	3.3	3.6	0.26	0.79	1.1	—	6,737	6,737	0.15	0.23	8.4	6,817
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	8.5	8.2	13	25	0.03	0.42	3.3	3.7	0.39	0.79	1.2	—	6,733	6,733	0.17	0.35	0.36	6,842
2027	8.4	8.1	13	24	0.03	0.37	3.3	3.7	0.35	0.79	1.1	—	6,653	6,653	0.17	0.34	0.32	6,758
2028	8.3	8.0	12	24	0.03	0.33	3.3	3.7	0.31	0.79	1.1	—	6,563	6,563	0.17	0.33	0.28	6,666
2029	8.2	7.9	12	23	0.03	0.31	3.3	3.6	0.28	0.79	1.1	—	6,477	6,477	0.17	0.23	0.25	6,549
2030	8.1	7.9	11	23	0.03	0.29	3.3	3.6	0.26	0.79	1.1	—	6,391	6,391	0.16	0.23	0.22	6,463
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	3.0	2.7	8.9	12	0.02	0.34	2.9	3.3	0.31	1.1	1.4	—	3,068	3,068	0.10	0.10	1.6	3,102
2027	6.0	5.8	9.0	18	0.02	0.27	2.3	2.6	0.25	0.56	0.81	—	4,807	4,807	0.12	0.24	3.8	4,884
2028	5.9	5.7	8.6	17	0.02	0.24	2.4	2.6	0.22	0.56	0.78	—	4,754	4,754	0.12	0.17	3.4	4,811
2029	5.9	5.7	8.2	17	0.02	0.22	2.3	2.6	0.20	0.56	0.76	—	4,678	4,678	0.11	0.16	3.0	4,733
2030	2.0	1.9	2.6	5.2	0.01	0.07	0.75	0.82	0.06	0.18	0.24	—	1,470	1,470	0.04	0.05	0.83	1,488

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.54	0.50	1.6	2.2	< 0.005	0.06	0.54	0.60	0.06	0.20	0.26	—	508	508	0.02	0.02	0.27	514
2027	1.1	1.1	1.6	3.2	< 0.005	0.05	0.43	0.48	0.05	0.10	0.15	—	796	796	0.02	0.04	0.63	809
2028	1.1	1.0	1.6	3.1	< 0.005	0.04	0.43	0.47	0.04	0.10	0.14	—	787	787	0.02	0.03	0.56	796
2029	1.1	1.0	1.5	3.1	< 0.005	0.04	0.43	0.47	0.04	0.10	0.14	—	775	775	0.02	0.03	0.49	784
2030	0.37	0.36	0.47	0.96	< 0.005	0.01	0.14	0.15	0.01	0.03	0.04	—	243	243	0.01	0.01	0.14	246

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	34	33	12	117	0.23	0.40	18	18	0.39	4.6	5.0	201	26,620	26,821	22	1.0	50	27,713
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	30	29	13	80	0.21	0.39	18	18	0.38	4.6	5.0	201	24,775	24,976	22	1.1	6.3	25,852
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	31	30	12	91	0.21	0.40	18	18	0.39	4.5	4.9	201	25,176	25,377	22	1.1	24	26,257
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.7	5.5	2.2	17	0.04	0.07	3.2	3.3	0.07	0.83	0.90	33	4,168	4,201	3.6	0.17	4.0	4,347

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	15	14	8.4	89	0.20	0.15	18	18	0.14	4.6	4.7	—	20,812	20,812	0.81	0.90	45	21,145
Area	19	19	0.24	26	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	69	69	< 0.005	< 0.005	—	70
Energy	0.36	0.18	3.0	1.3	0.02	0.25	—	0.25	0.25	—	0.25	—	5,709	5,709	0.64	0.04	—	5,738
Water	—	—	—	—	—	—	—	—	—	—	—	29	30	59	3.0	0.07	—	154
Waste	—	—	—	—	—	—	—	—	—	—	—	172	0.00	172	17	0.00	—	601
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.1	5.1
Total	34	33	12	117	0.23	0.40	18	18	0.39	4.6	5.0	201	26,620	26,821	22	1.0	50	27,713
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	13	12	9.8	79	0.19	0.15	18	18	0.14	4.6	4.7	—	19,037	19,037	0.96	0.98	1.2	19,354
Area	17	17	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
Energy	0.36	0.18	3.0	1.3	0.02	0.25	—	0.25	0.25	—	0.25	—	5,709	5,709	0.64	0.04	—	5,738
Water	—	—	—	—	—	—	—	—	—	—	—	29	30	59	3.0	0.07	—	154
Waste	—	—	—	—	—	—	—	—	—	—	—	172	0.00	172	17	0.00	—	601
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.1	5.1
Total	30	29	13	80	0.21	0.39	18	18	0.38	4.6	5.0	201	24,775	24,976	22	1.1	6.3	25,852
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	13	12	9.2	77	0.19	0.15	18	18	0.14	4.5	4.7	—	19,403	19,403	0.88	0.94	19	19,724
Area	18	18	0.12	13	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	0.00	34	34	< 0.005	< 0.005	—	34
Energy	0.36	0.18	3.0	1.3	0.02	0.25	—	0.25	0.25	—	0.25	—	5,709	5,709	0.64	0.04	—	5,738
Water	—	—	—	—	—	—	—	—	—	—	—	29	30	59	3.0	0.07	—	154
Waste	—	—	—	—	—	—	—	—	—	—	—	172	0.00	172	17	0.00	—	601
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.1	5.1
Total	31	30	12	91	0.21	0.40	18	18	0.39	4.5	4.9	201	25,176	25,377	22	1.1	24	26,257
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mobile	2.4	2.2	1.7	14	0.03	0.03	3.2	3.3	0.03	0.83	0.85	—	3,212	3,212	0.15	0.16	3.2	3,266
Area	3.3	3.3	0.02	2.3	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	5.7	5.7	< 0.005	< 0.005	—	5.7
Energy	0.07	0.03	0.56	0.24	< 0.005	0.04	—	0.04	0.04	—	0.04	—	945	945	0.11	0.01	—	950
Water	—	—	—	—	—	—	—	—	—	—	—	4.8	4.9	9.7	0.49	0.01	—	26
Waste	—	—	—	—	—	—	—	—	—	—	—	28	0.00	28	2.8	0.00	—	100
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.84	0.84
Total	5.7	5.5	2.2	17	0.04	0.07	3.2	3.3	0.07	0.83	0.90	33	4,168	4,201	3.6	0.17	4.0	4,347

3. Construction Emissions Details

3.1. Site Preparation (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.7	3.1	29	29	0.05	1.2	—	1.2	1.1	—	1.1	—	5,298	5,298	0.21	0.04	—	5,316
Dust From Material Movement	—	—	—	—	—	—	20	20	—	10	10	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	0.10	0.09	0.80	0.79	< 0.005	0.03	—	0.03	0.03	—	0.03	—	145	145	0.01	< 0.005	—	146
Dust From Material Movement	—	—	—	—	—	—	0.54	0.54	—	0.28	0.28	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipm ent	0.02	0.02	0.15	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	—	24	24	< 0.005	< 0.005	—	24
Dust From Material Movement	—	—	—	—	—	—	0.10	0.10	—	0.05	0.05	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.04	0.85	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	191	191	< 0.005	< 0.005	0.63	192
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.8	4.8	< 0.005	< 0.005	0.01	4.8
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.79	0.79	< 0.005	< 0.005	< 0.005	0.80
Vendor	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	0.00
Hauling	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	0.00

3.3. Grading (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.6	3.0	27	28	0.06	1.1	—	1.1	1.0	—	1.0	—	6,599	6,599	0.27	0.05	—	6,621
Dust From Material Movement	—	—	—	—	—	—	9.2	9.2	—	3.7	3.7	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.60	0.50	4.5	4.5	0.01	0.18	—	0.18	0.17	—	0.17	—	1,085	1,085	0.04	0.01	—	1,088
Dust From Material Movement	—	—	—	—	—	—	1.5	1.5	—	0.60	0.60	—	—	—	—	—	—	—

Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.09	0.82	0.83	< 0.005	0.03	—	0.03	0.03	—	0.03	—	180	180	0.01	< 0.005	—	180
Dust From Material Movement	—	—	—	—	—	—	0.28	0.28	—	0.11	0.11	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.04	0.98	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	219	219	< 0.005	< 0.005	0.72	220
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.12	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	33	33	< 0.005	< 0.005	0.05	33
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.4	5.4	< 0.005	< 0.005	0.01	5.5
Vendor	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	0.00
Hauling	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	0.00

3.5. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.3	1.1	9.9	13	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.3	1.1	9.9	13	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.33	0.28	2.6	3.4	0.01	0.10	—	0.10	0.09	—	0.09	—	624	624	0.03	0.01	—	626
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.47	0.62	< 0.005	0.02	—	0.02	0.02	—	0.02	—	103	103	< 0.005	< 0.005	—	104

Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.89	0.79	0.54	12	0.00	0.00	2.5	2.5	0.00	0.58	0.58	—	2,669	2,669	0.04	0.02	8.8	2,684
Vendor	0.06	0.04	1.8	0.47	0.01	0.02	0.36	0.38	0.02	0.10	0.12	—	1,373	1,373	0.01	0.21	3.3	1,438
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.80	0.70	0.64	8.7	0.00	0.00	2.5	2.5	0.00	0.58	0.58	—	2,358	2,358	0.05	0.10	0.23	2,388
Vendor	0.05	0.04	1.9	0.49	0.01	0.02	0.36	0.38	0.02	0.10	0.12	—	1,373	1,373	0.01	0.21	0.09	1,436
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.21	0.18	0.16	2.3	0.00	0.00	0.63	0.63	0.00	0.15	0.15	—	631	631	0.01	0.02	0.99	639
Vendor	0.01	0.01	0.48	0.12	< 0.005	< 0.005	0.09	0.10	< 0.005	0.03	0.03	—	357	357	< 0.005	0.05	0.37	374
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.03	0.42	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	104	104	< 0.005	< 0.005	0.16	106
Vendor	< 0.005	< 0.005	0.09	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	59	59	< 0.005	0.01	0.06	62
Hauling	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	0.00

3.7. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.2	1.0	9.4	13	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.2	1.0	9.4	13	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.88	0.74	6.7	9.2	0.02	0.24	—	0.24	0.22	—	0.22	—	1,712	1,712	0.07	0.01	—	1,718
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	0.13	1.2	1.7	< 0.005	0.04	—	0.04	0.04	—	0.04	—	283	283	0.01	< 0.005	—	284
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.85	0.76	0.45	11	0.00	0.00	2.5	2.5	0.00	0.58	0.58	—	2,621	2,621	0.03	0.02	7.9	2,635
Vendor	0.05	0.04	1.7	0.46	0.01	0.02	0.36	0.38	0.02	0.10	0.12	—	1,343	1,343	0.01	0.20	2.9	1,405
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.77	0.67	0.63	8.2	0.00	0.00	2.5	2.5	0.00	0.58	0.58	—	2,316	2,316	0.05	0.10	0.20	2,347
Vendor	0.05	0.04	1.8	0.47	0.01	0.02	0.36	0.38	0.02	0.10	0.12	—	1,344	1,344	0.01	0.20	0.08	1,403
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.55	0.48	0.39	6.0	0.00	0.00	1.7	1.7	0.00	0.41	0.41	—	1,700	1,700	0.03	0.07	2.4	1,723
Vendor	0.04	0.03	1.3	0.33	0.01	0.01	0.26	0.27	0.01	0.07	0.08	—	959	959	0.01	0.14	0.91	1,003
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	0.07	1.1	0.00	0.00	0.32	0.32	0.00	0.07	0.07	—	281	281	0.01	0.01	0.40	285
Vendor	0.01	0.01	0.23	0.06	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	159	159	< 0.005	0.02	0.15	166
Hauling	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	0.00

3.9. Building Construction (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.2	0.99	8.9	13	0.02	0.30	—	0.30	0.28	—	0.28	—	2,397	2,397	0.10	0.02	—	2,406

Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.2	0.99	8.9	13	0.02	0.30	—	0.30	0.28	—	0.28	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.85	0.71	6.4	9.3	0.02	0.22	—	0.22	0.20	—	0.20	—	1,717	1,717	0.07	0.01	—	1,723
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.13	1.2	1.7	< 0.005	0.04	—	0.04	0.04	—	0.04	—	284	284	0.01	< 0.005	—	285
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.82	0.73	0.44	11	0.00	0.00	2.5	2.5	0.00	0.58	0.58	—	2,568	2,568	0.03	0.02	7.0	2,581
Vendor	0.05	0.04	1.6	0.44	0.01	0.02	0.36	0.38	0.02	0.10	0.12	—	1,308	1,308	0.01	0.20	2.5	1,370
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.66	0.64	0.55	7.7	0.00	0.00	2.5	2.5	0.00	0.58	0.58	—	2,269	2,269	0.04	0.09	0.18	2,298
Vendor	0.05	0.04	1.7	0.46	0.01	0.02	0.36	0.38	0.02	0.10	0.12	—	1,309	1,309	0.01	0.20	0.07	1,368
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.48	0.47	0.38	5.7	0.00	0.00	1.7	1.7	0.00	0.41	0.41	—	1,670	1,670	0.03	0.01	2.2	1,676
Vendor	0.04	0.03	1.2	0.32	0.01	0.01	0.26	0.27	0.01	0.07	0.08	—	937	937	0.01	0.14	0.79	981
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.09	0.07	1.0	0.00	0.00	0.32	0.32	0.00	0.07	0.07	—	276	276	< 0.005	< 0.005	0.36	277
Vendor	0.01	0.01	0.22	0.06	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	155	155	< 0.005	0.02	0.13	162
Hauling	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	0.00

3.11. Building Construction (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.2	0.97	8.6	13	0.02	0.28	—	0.28	0.25	—	0.25	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	1.2	0.97	8.6	13	0.02	0.28	—	0.28	0.25	—	0.25	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.82	0.69	6.1	9.2	0.02	0.20	—	0.20	0.18	—	0.18	—	1,712	1,712	0.07	0.01	—	1,718
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.13	1.1	1.7	< 0.005	0.04	—	0.04	0.03	—	0.03	—	283	283	0.01	< 0.005	—	284
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.72	0.71	0.44	10	0.00	0.00	2.5	2.5	0.00	0.58	0.58	—	2,523	2,523	0.03	0.02	6.1	2,535
Vendor	0.05	0.04	1.5	0.43	0.01	0.02	0.36	0.38	0.02	0.10	0.12	—	1,270	1,270	0.01	0.19	2.2	1,329
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.64	0.62	0.54	7.4	0.00	0.00	2.5	2.5	0.00	0.58	0.58	—	2,230	2,230	0.04	0.02	0.16	2,236
Vendor	0.05	0.04	1.6	0.45	0.01	0.02	0.36	0.38	0.02	0.10	0.12	—	1,271	1,271	0.01	0.19	0.06	1,327
Hauling	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	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.45	0.44	0.32	5.4	0.00	0.00	1.7	1.7	0.00	0.41	0.41	—	1,636	1,636	0.03	0.01	1.9	1,642
Vendor	0.04	0.03	1.1	0.31	0.01	0.01	0.26	0.27	0.01	0.07	0.08	—	907	907	0.01	0.13	0.69	948
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.08	0.06	0.99	0.00	0.00	0.32	0.32	0.00	0.07	0.07	—	271	271	< 0.005	< 0.005	0.31	272
Vendor	0.01	0.01	0.21	0.06	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	150	150	< 0.005	0.02	0.11	157
Hauling	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	0.00

3.13. Building Construction (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.1	0.94	8.4	13	0.02	0.26	—	0.26	0.24	—	0.24	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.1	0.94	8.4	13	0.02	0.26	—	0.26	0.24	—	0.24	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.25	0.21	1.9	2.9	0.01	0.06	—	0.06	0.05	—	0.05	—	539	539	0.02	< 0.005	—	541
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.34	0.53	< 0.005	0.01	—	0.01	0.01	—	0.01	—	89	89	< 0.005	< 0.005	—	90
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.69	0.67	0.35	9.6	0.00	0.00	2.5	2.5	0.00	0.58	0.58	—	2,482	2,482	0.03	0.02	5.4	2,492
Vendor	0.05	0.03	1.4	0.42	0.01	0.02	0.36	0.38	0.01	0.10	0.11	—	1,229	1,229	0.01	0.19	1.9	1,287
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.62	0.60	0.46	6.9	0.00	0.00	2.5	2.5	0.00	0.58	0.58	—	2,193	2,193	0.04	0.02	0.14	2,199
Vendor	0.04	0.03	1.6	0.44	0.01	0.02	0.36	0.38	0.01	0.10	0.11	—	1,229	1,229	0.01	0.19	0.05	1,286
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.13	0.10	1.6	0.00	0.00	0.55	0.55	0.00	0.13	0.13	—	507	507	0.01	< 0.005	0.52	509
Vendor	0.01	0.01	0.34	0.10	< 0.005	< 0.005	0.08	0.09	< 0.005	0.02	0.02	—	277	277	< 0.005	0.04	0.19	289
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.03	0.02	0.02	0.29	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	84	84	< 0.005	< 0.005	0.09	84
Vendor	< 0.005	< 0.005	0.06	0.02	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	—	46	46	< 0.005	0.01	0.03	48
Hauling	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	0.00

3.15. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.91	0.76	7.1	9.9	0.01	0.32	—	0.32	0.29	—	0.29	—	1,511	1,511	0.06	0.01	—	1,516
Paving	6.2	6.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.20	0.27	< 0.005	0.01	—	0.01	0.01	—	0.01	—	41	41	< 0.005	< 0.005	—	42
Paving	0.17	0.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	< 0.005	< 0.005	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.9	6.9	< 0.005	< 0.005	—	6.9
Paving	0.03	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.03	0.73	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	164	164	< 0.005	< 0.005	0.54	165
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.1	4.1	< 0.005	< 0.005	0.01	4.1
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.68	0.68	< 0.005	< 0.005	< 0.005	0.68
Vendor	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	0.00
Hauling	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	0.00

3.17. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.1	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	6.1	6.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.1	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	6.1	6.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.20	0.26	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	—	31	31	< 0.005	< 0.005	—	31
Architectural Coatings	1.4	1.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.1	5.1	< 0.005	< 0.005	—	5.2
Architectural Coatings	0.26	0.26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.18	0.16	0.11	2.4	0.00	0.00	0.49	0.49	0.00	0.12	0.12	—	534	534	0.01	< 0.005	1.8	537
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.14	0.13	1.7	0.00	0.00	0.49	0.49	0.00	0.12	0.12	—	472	472	0.01	0.02	0.05	478
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.03	0.41	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	113	113	< 0.005	< 0.005	0.18	114
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	19	19	< 0.005	< 0.005	0.03	19
Vendor	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	0.00
Hauling	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	0.00

3.19. Architectural Coating (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.1	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	6.1	6.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.1	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	6.1	6.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.59	0.80	< 0.005	0.01	—	0.01	0.01	—	0.01	—	95	95	< 0.005	< 0.005	—	96

Architect Coatings	4.4	4.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.11	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	16	16	< 0.005	< 0.005	—	16
Architectural Coatings	0.79	0.79	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.17	0.15	0.09	2.3	0.00	0.00	0.49	0.49	0.00	0.12	0.12	—	524	524	0.01	< 0.005	1.6	527
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.13	0.13	1.6	0.00	0.00	0.49	0.49	0.00	0.12	0.12	—	463	463	0.01	0.02	0.04	469
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	0.08	1.2	0.00	0.00	0.35	0.35	0.00	0.08	0.08	—	340	340	0.01	0.01	0.48	345
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.02	0.02	0.01	0.22	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	56	56	< 0.005	< 0.005	0.08	57
Vendor	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	0.00
Hauling	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	0.00

3.21. Architectural Coating (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.81	1.1	< 0.005	0.02	—	0.02	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	6.1	6.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.81	1.1	< 0.005	0.02	—	0.02	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	6.1	6.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.08	0.58	0.80	< 0.005	0.01	—	0.01	0.01	—	0.01	—	96	96	< 0.005	< 0.005	—	96
Architectural Coatings	4.4	4.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.11	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	16	16	< 0.005	< 0.005	—	16
Architectural Coatings	0.80	0.80	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.15	0.09	2.1	0.00	0.00	0.49	0.49	0.00	0.12	0.12	—	514	514	0.01	< 0.005	1.4	516
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.13	0.11	1.5	0.00	0.00	0.49	0.49	0.00	0.12	0.12	—	454	454	0.01	0.02	0.04	460
Vendor	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	0.00

Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	0.08	1.1	0.00	0.00	0.35	0.35	0.00	0.08	0.08	—	334	334	0.01	< 0.005	0.43	335
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.01	0.21	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	55	55	< 0.005	< 0.005	0.07	55
Vendor	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	0.00
Hauling	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	0.00

3.23. Architectural Coating (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.79	1.1	< 0.005	0.01	—	0.01	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	6.1	6.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipm	0.12	0.10	0.79	1.1	< 0.005	0.01	—	0.01	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	6.1	6.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.07	0.57	0.79	< 0.005	0.01	—	0.01	0.01	—	0.01	—	95	95	< 0.005	< 0.005	—	96
Architectural Coatings	4.4	4.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.10	0.14	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	16	16	< 0.005	< 0.005	—	16
Architectural Coatings	0.79	0.79	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.14	0.09	2.0	0.00	0.00	0.49	0.49	0.00	0.12	0.12	—	505	505	0.01	< 0.005	1.2	507

Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.12	0.11	1.5	0.00	0.00	0.49	0.49	0.00	0.12	0.12	—	446	446	0.01	< 0.005	0.03	447
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.09	0.06	1.1	0.00	0.00	0.35	0.35	0.00	0.08	0.08	—	327	327	0.01	< 0.005	0.38	328
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.01	0.20	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	54	54	< 0.005	< 0.005	0.06	54
Vendor	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	0.00
Hauling	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	0.00

3.25. Architectural Coating (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.78	1.1	< 0.005	0.01	—	0.01	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134

Architectural Coatings	6.1	6.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.78	1.1	< 0.005	0.01	—	0.01	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	6.1	6.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.20	0.28	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	34	34	< 0.005	< 0.005	—	34
Architectural Coatings	1.5	1.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	< 0.005	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.6	5.6	< 0.005	< 0.005	—	5.6

Architectural Coating	0.28	0.28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.13	0.07	1.9	0.00	0.00	0.49	0.49	0.00	0.12	0.12	—	496	496	0.01	< 0.005	1.1	498
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.12	0.09	1.4	0.00	0.00	0.49	0.49	0.00	0.12	0.12	—	439	439	0.01	< 0.005	0.03	440
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.36	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	114	114	< 0.005	< 0.005	0.12	114
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.07	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	19	19	< 0.005	< 0.005	0.02	19
Vendor	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	0.00
Hauling	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	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	5.5	5.2	3.2	34	0.08	0.06	6.8	6.9	0.05	1.7	1.8	—	7,868	7,868	0.31	0.34	17	7,994
Single Family Housing	9.0	8.5	5.2	56	0.13	0.09	11	11	0.09	2.8	2.9	—	12,944	12,944	0.51	0.56	28	13,151
Health Club	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	0.00
City Park	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	0.00
Parking Lot	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	0.00
Other Asphalt Surfaces	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	0.00
Other Non-Asphalt Surfaces	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	0.00
Total	15	14	8.4	89	0.20	0.15	18	18	0.14	4.6	4.7	—	20,812	20,812	0.81	0.90	45	21,145
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	4.9	4.5	3.7	30	0.07	0.06	6.8	6.9	0.05	1.7	1.8	—	7,197	7,197	0.36	0.37	0.44	7,317
Single Family Housing	8.0	7.5	6.1	49	0.12	0.09	11	11	0.09	2.8	2.9	—	11,840	11,840	0.60	0.61	0.72	12,037

Health Club	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	0.00
City Park	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	0.00
Parking Lot	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	0.00
Other Asphalt Surfaces	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	0.00
Other Non-Asphalt Surfaces	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	0.00
Total	13	12	9.8	79	0.19	0.15	18	18	0.14	4.6	4.7	—	19,037	19,037	0.96	0.98	1.2	19,354
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	0.89	0.84	0.63	5.3	0.01	0.01	1.2	1.2	0.01	0.31	0.32	—	1,214	1,214	0.06	0.06	1.2	1,235
Single Family Housing	1.5	1.4	1.0	8.7	0.02	0.02	2.0	2.0	0.02	0.51	0.53	—	1,998	1,998	0.09	0.10	2.0	2,031
Health Club	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	0.00
City Park	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	0.00
Parking Lot	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	0.00
Other Asphalt Surfaces	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	0.00
Other Non-Asphalt Surfaces	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	0.00
Total	2.4	2.2	1.7	14	0.03	0.03	3.2	3.3	0.03	0.83	0.85	—	3,212	3,212	0.15	0.16	3.2	3,266

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	634	634	0.10	0.01	—	641
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	1,115	1,115	0.18	0.02	—	1,126
Health Club	—	—	—	—	—	—	—	—	—	—	—	—	20	20	< 0.005	< 0.005	—	21
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	74	74	0.01	< 0.005	—	75
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	1,844	1,844	0.30	0.04	—	1,862
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	634	634	0.10	0.01	—	641
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	1,115	1,115	0.18	0.02	—	1,126

Health Club	—	—	—	—	—	—	—	—	—	—	—	—	20	20	< 0.005	< 0.005	—	21
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	74	74	0.01	< 0.005	—	75
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	1,844	1,844	0.30	0.04	—	1,862
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	105	105	0.02	< 0.005	—	106
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	185	185	0.03	< 0.005	—	186
Health Club	—	—	—	—	—	—	—	—	—	—	—	—	3.4	3.4	< 0.005	< 0.005	—	3.4
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	12	12	< 0.005	< 0.005	—	12
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	305	305	0.05	0.01	—	308

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	0.15	0.08	1.3	0.55	0.01	0.10	—	0.10	0.10	—	0.10	—	1,637	1,637	0.14	< 0.005	—	1,642
Single Family Housing	0.20	0.10	1.7	0.73	0.01	0.14	—	0.14	0.14	—	0.14	—	2,182	2,182	0.19	< 0.005	—	2,188
Health Club	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	47	47	< 0.005	< 0.005	—	47
City Park	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
Parking Lot	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
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	0.36	0.18	3.0	1.3	0.02	0.25	—	0.25	0.25	—	0.25	—	3,866	3,866	0.34	0.01	—	3,876
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	0.15	0.08	1.3	0.55	0.01	0.10	—	0.10	0.10	—	0.10	—	1,637	1,637	0.14	< 0.005	—	1,642
Single Family Housing	0.20	0.10	1.7	0.73	0.01	0.14	—	0.14	0.14	—	0.14	—	2,182	2,182	0.19	< 0.005	—	2,188
Health Club	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	47	47	< 0.005	< 0.005	—	47

City Park	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
Parking Lot	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
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	0.36	0.18	3.0	1.3	0.02	0.25	—	0.25	0.25	—	0.25	—	3,866	3,866	0.34	0.01	—	3,876
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	0.03	0.01	0.24	0.10	< 0.005	0.02	—	0.02	0.02	—	0.02	—	271	271	0.02	< 0.005	—	272
Single Family Housing	0.04	0.02	0.31	0.13	< 0.005	0.03	—	0.03	0.03	—	0.03	—	361	361	0.03	< 0.005	—	362
Health Club	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.8	7.8	< 0.005	< 0.005	—	7.8
City Park	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
Parking Lot	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
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	0.07	0.03	0.56	0.24	< 0.005	0.04	—	0.04	0.04	—	0.04	—	640	640	0.06	< 0.005	—	642

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	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
Consumer Products	15	15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	1.6	1.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	2.4	2.3	0.24	26	< 0.005	0.01	—	0.01	0.01	—	0.01	—	69	69	< 0.005	< 0.005	—	70
Total	19	19	0.24	26	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	69	69	< 0.005	< 0.005	—	70
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	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
Consumer Products	15	15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	1.6	1.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	17	17	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	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

Consumer Product	2.8	2.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.29	0.29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.21	0.20	0.02	2.3	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.7	5.7	< 0.005	< 0.005	—	5.7
Total	3.3	3.3	0.02	2.3	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	5.7	5.7	< 0.005	< 0.005	—	5.7

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	14	13	27	1.4	0.03	—	72
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	15	16	31	1.5	0.04	—	80
Health Club	—	—	—	—	—	—	—	—	—	—	—	0.40	0.37	0.77	0.04	< 0.005	—	2.1
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	29	30	59	3.0	0.07	—	154
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	14	13	27	1.4	0.03	—	72
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	15	16	31	1.5	0.04	—	80
Health Club	—	—	—	—	—	—	—	—	—	—	—	0.40	0.37	0.77	0.04	< 0.005	—	2.1
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	29	30	59	3.0	0.07	—	154
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	2.3	2.1	4.4	0.24	0.01	—	12
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	2.4	2.7	5.2	0.25	0.01	—	13

Health Club	—	—	—	—	—	—	—	—	—	—	—	0.07	0.06	0.13	0.01	< 0.005	—	0.35
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	4.8	4.9	9.7	0.49	0.01	—	26

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	88	0.00	88	8.8	0.00	—	307
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	73	0.00	73	7.3	0.00	—	256
Health Club	—	—	—	—	—	—	—	—	—	—	—	11	0.00	11	1.1	0.00	—	38
City Park	—	—	—	—	—	—	—	—	—	—	—	0.10	0.00	0.10	0.01	0.00	—	0.34
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	172	0.00	172	17	0.00	—	601
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	88	0.00	88	8.8	0.00	—	307
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	73	0.00	73	7.3	0.00	—	256
Health Club	—	—	—	—	—	—	—	—	—	—	—	11	0.00	11	1.1	0.00	—	38
City Park	—	—	—	—	—	—	—	—	—	—	—	0.10	0.00	0.10	0.01	0.00	—	0.34
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	172	0.00	172	17	0.00	—	601
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	15	0.00	15	1.5	0.00	—	51
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	12	0.00	12	1.2	0.00	—	42

Health Club	—	—	—	—	—	—	—	—	—	—	—	1.8	0.00	1.8	0.18	0.00	—	6.3
City Park	—	—	—	—	—	—	—	—	—	—	—	0.02	0.00	0.02	< 0.005	0.00	—	0.06
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	28	0.00	28	2.8	0.00	—	100

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.8	1.8
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.3	3.3
Health Club	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.1	5.1

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.8	1.8
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.3	3.3
Health Club	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.1	5.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.30
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.54	0.54
Health Club	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	< 0.005	< 0.005
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.84	0.84

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	5/1/2026	5/14/2026	5.0	10.0	—
Grading	Grading	5/15/2026	8/6/2026	5.0	60	—
Building Construction	Building Construction	8/21/2026	4/25/2030	5.0	960	—

Paving	Paving	8/7/2026	8/20/2026	5.0	10.0	—
Architectural Coating	Architectural Coating	9/4/2026	5/9/2030	5.0	960	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.0	8.0	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.0	8.0	84	0.37
Grading	Graders	Diesel	Average	1.00	8.0	148	0.41
Grading	Excavators	Diesel	Average	2.0	8.0	36	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.0	8.0	84	0.37
Grading	Scrapers	Diesel	Average	2.0	8.0	423	0.48
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.0	367	0.40
Building Construction	Forklifts	Diesel	Average	3.0	8.0	82	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.0	14	0.74
Building Construction	Cranes	Diesel	Average	1.00	7.0	367	0.29
Building Construction	Welders	Diesel	Average	1.00	8.0	46	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.0	7.0	84	0.37
Paving	Pavers	Diesel	Average	2.0	8.0	81	0.42
Paving	Paving Equipment	Diesel	Average	2.0	8.0	89	0.36
Paving	Rollers	Diesel	Average	2.0	8.0	36	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.0	37	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	Worker	18	14	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.8	HHDT,MHDT
Site Preparation	Hauling	0.00	20	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	Worker	20	14	LDA,LDT1,LDT2
Grading	Vendor	—	8.8	HHDT,MHDT
Grading	Hauling	0.00	20	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	Worker	244	14	LDA,LDT1,LDT2
Building Construction	Vendor	49	8.8	HHDT,MHDT
Building Construction	Hauling	0.00	20	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	Worker	15	14	LDA,LDT1,LDT2
Paving	Vendor	—	8.8	HHDT,MHDT
Paving	Hauling	0.00	20	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	Worker	49	14	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.8	HHDT,MHDT
Architectural Coating	Hauling	0.00	20	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	1,435,126	478,375	5,306	1,769	62,346

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	—	—	15	0.00	0.00
Grading	—	1,762	180	0.00	0.00
Paving	0.00	0.00	0.00	0.00	26

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Phase Name	Land Use	Area Paved (acres)	% Asphalt
Paving	Condo/Townhouse	—	0%
Paving	Single Family Housing	2.6	0%
Paving	Health Club	0.00	0%
Paving	City Park	0.00	0%
Paving	Parking Lot	3.5	100%
Paving	Other Asphalt Surfaces	17	100%
Paving	Other Asphalt Surfaces	3.0	100%
Paving	Other Non-Asphalt Surfaces	0.27	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2026	0.00	204	0.03	< 0.005
2027	0.00	204	0.03	< 0.005
2028	0.00	204	0.03	< 0.005
2029	0.00	204	0.03	< 0.005
2030	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Condo/Townhouse	1,485	1,485	1,485	542,025	9,573	9,573	9,573	3,493,979
Single Family Housing	2,443	2,443	2,443	891,680	15,748	15,748	15,748	5,747,914
Health Club	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

Land Use	Hearth Type	Unmitigated (number)	Mitigated (number)
Condo/Townhouse	Wood Fireplaces	0	0

Condo/Townhouse	Gas Fireplaces	0	0
Condo/Townhouse	Propane Fireplaces	0	0
Condo/Townhouse	Electric Fireplaces	0	0
Condo/Townhouse	No Fireplaces	220	220
Condo/Townhouse	Conventional Wood Stoves	0	0
Condo/Townhouse	Catalytic Wood Stoves	0	0
Condo/Townhouse	Non-Catalytic Wood Stoves	0	0
Condo/Townhouse	Pellet Wood Stoves	0	0
Single Family Housing	Wood Fireplaces	0	0
Single Family Housing	Gas Fireplaces	0	0
Single Family Housing	Propane Fireplaces	0	0
Single Family Housing	Electric Fireplaces	0	0
Single Family Housing	No Fireplaces	212	212
Single Family Housing	Conventional Wood Stoves	0	0
Single Family Housing	Catalytic Wood Stoves	0	0
Single Family Housing	Non-Catalytic Wood Stoves	0	0
Single Family Housing	Pellet Wood Stoves	0	0
Health Club	Wood Fireplaces	0	0
Health Club	Gas Fireplaces	0	0
Health Club	Propane Fireplaces	0	0
Health Club	Electric Fireplaces	0	0
Health Club	No Fireplaces	0	0
Health Club	Conventional Wood Stoves	0	0
Health Club	Catalytic Wood Stoves	0	0
Health Club	Non-Catalytic Wood Stoves	0	0
Health Club	Pellet Wood Stoves	0	0
City Park	Wood Fireplaces	0	0
City Park	Gas Fireplaces	0	0

City Park	Propane Fireplaces	0	0
City Park	Electric Fireplaces	0	0
City Park	No Fireplaces	0	0
City Park	Conventional Wood Stoves	0	0
City Park	Catalytic Wood Stoves	0	0
City Park	Non-Catalytic Wood Stoves	0	0
City Park	Pellet Wood Stoves	0	0
Parking Lot	Wood Fireplaces	0	0
Parking Lot	Gas Fireplaces	0	0
Parking Lot	Propane Fireplaces	0	0
Parking Lot	Electric Fireplaces	0	0
Parking Lot	No Fireplaces	0	0
Parking Lot	Conventional Wood Stoves	0	0
Parking Lot	Catalytic Wood Stoves	0	0
Parking Lot	Non-Catalytic Wood Stoves	0	0
Parking Lot	Pellet Wood Stoves	0	0
Other Asphalt Surfaces	Wood Fireplaces	0	0
Other Asphalt Surfaces	Gas Fireplaces	0	0
Other Asphalt Surfaces	Propane Fireplaces	0	0
Other Asphalt Surfaces	Electric Fireplaces	0	0
Other Asphalt Surfaces	No Fireplaces	0	0
Other Asphalt Surfaces	Conventional Wood Stoves	0	0
Other Asphalt Surfaces	Catalytic Wood Stoves	0	0
Other Asphalt Surfaces	Non-Catalytic Wood Stoves	0	0
Other Asphalt Surfaces	Pellet Wood Stoves	0	0
Other Asphalt Surfaces	Wood Fireplaces	0	0
Other Asphalt Surfaces	Gas Fireplaces	0	0
Other Asphalt Surfaces	Propane Fireplaces	0	0

Other Asphalt Surfaces	Electric Fireplaces	0	0
Other Asphalt Surfaces	No Fireplaces	0	0
Other Asphalt Surfaces	Conventional Wood Stoves	0	0
Other Asphalt Surfaces	Catalytic Wood Stoves	0	0
Other Asphalt Surfaces	Non-Catalytic Wood Stoves	0	0
Other Asphalt Surfaces	Pellet Wood Stoves	0	0
Other Non-Asphalt Surfaces	Wood Fireplaces	0	0
Other Non-Asphalt Surfaces	Gas Fireplaces	0	0
Other Non-Asphalt Surfaces	Propane Fireplaces	0	0
Other Non-Asphalt Surfaces	Electric Fireplaces	0	0
Other Non-Asphalt Surfaces	No Fireplaces	0	0
Other Non-Asphalt Surfaces	Conventional Wood Stoves	0	0
Other Non-Asphalt Surfaces	Catalytic Wood Stoves	0	0
Other Non-Asphalt Surfaces	Non-Catalytic Wood Stoves	0	0
Other Non-Asphalt Surfaces	Pellet Wood Stoves	0	0

5.10.2. Architectural Coatings

—	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
undefined	1,435,126	478,375	5,306	1,769	62,346

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Condo/Townhouse	1,135,016	204	0.0330	0.0040	5,108,388
Single Family Housing	1,995,016	204	0.0330	0.0040	6,807,066
Health Club	36,537	204	0.0330	0.0040	146,639
City Park	0.00	204	0.0330	0.0040	0.00
Parking Lot	132,219	204	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00
Other Non-Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Condo/Townhouse	7,230,613	0.00
Single Family Housing	7,690,743	3,368,961
Health Club	209,189	0.00
City Park	0.00	0.00
Parking Lot	0.00	0.00
Other Asphalt Surfaces	0.00	0.00
Other Asphalt Surfaces	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Condo/Townhouse	163	0.00
Single Family Housing	136	0.00
Health Club	20	0.00
City Park	0.18	0.00
Parking Lot	0.00	0.00
Other Asphalt Surfaces	0.00	0.00
Other Asphalt Surfaces	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Condo/Townhouse	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.5	2.5	10.0
Condo/Townhouse	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.5	2.5	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Health Club	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.0	4.0	18
Health Club	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.0	4.0	18

City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

8. User Changes to Default Data

8.1. Justifications

Screen	Justification
Land Use	Building square footage and acreage adjusted to represent project-specific information. Health Club acreage representative of the Community Center. The 3.016 acres of other asphalt surfaces is representative of the off-site roadway improvements. The 0.273 acres of other non-asphalt surfaces is representative of off-site emergency wastewater storage improvements.
Construction: Construction Phases	Based on typical construction practices, architectural coating assumed to start two weeks after the start of building construction and last for the same number of days. Phase timing is based on the project-specific construction schedule provided by the applicant. Demolition not required for the proposed project.
Operations: Vehicle Data	Trip rates and VMT adjusted to be consistent with traffic data provided for the proposed project.
Operations: Hearths	Based on applicant provided information, all 432 units would not include fireplaces.

Estia Dry Creek and Placer Creek OAH Existing Custom Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

1.2. Land Use Types

1.3. User-Selected Emission Reduction Measures by Emissions Sector

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

2.2. Construction Emissions by Year, Unmitigated

2.4. Operations Emissions Compared Against Thresholds

2.5. Operations Emissions by Sector, Unmitigated

3. Construction Emissions Details

3.1. Site Preparation (2026) - Unmitigated

3.3. Grading (2026) - Unmitigated

3.5. Building Construction (2026) - Unmitigated

3.7. Building Construction (2027) - Unmitigated

3.9. Paving (2026) - Unmitigated

3.11. Architectural Coating (2026) - Unmitigated

3.13. Architectural Coating (2027) - Unmitigated

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

4.3. Area Emissions by Source

4.3.1. Unmitigated

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.9. Operational Mobile Sources

5.9.1. Unmitigated

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

5.10.3. Landscape Equipment

5.11. Operational Energy Consumption

5.11.1. Unmitigated

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

5.13. Operational Waste Generation

5.13.1. Unmitigated

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Estia Dry Creek and Placer Creek OAH Existing
Construction Start Date	5/1/2026
Operational Year	2027
Lead Agency	Placer County
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.50
Precipitation (days)	18.0
Location	38.729555346928166, -121.39173438861674
County	Placer-Sacramento
City	Unincorporated
Air District	Placer County APCD
Air Basin	Sacramento Valley
TAZ	441
EDFZ	13
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.29

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Apartments Low Rise	39.0	Dwelling Unit	3.91	41,340	26,136	—	102	—

Strip Mall	3.75	1000sqft	0.09	3,750	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.80	3.20	29.2	29.7	0.05	1.24	19.8	21.1	1.14	10.1	11.3	—	5,489	5,489	0.22	0.04	1.59	5,508
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.05	2.80	11.0	15.4	0.03	0.40	0.39	0.79	0.37	0.09	0.46	—	3,004	3,004	0.11	0.06	0.04	3,023
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.29	1.17	5.31	7.27	0.01	0.20	0.59	0.79	0.19	0.25	0.44	—	1,394	1,394	0.05	0.02	0.29	1,402
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.23	0.21	0.97	1.33	< 0.005	0.04	0.11	0.14	0.03	0.05	0.08	—	231	231	0.01	< 0.005	0.05	232

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2026	3.80	3.20	29.2	29.7	0.05	1.24	19.8	21.1	1.14	10.1	11.3	—	5,489	5,489	0.22	0.04	1.59	5,508
2027	3.00	2.76	10.5	15.7	0.03	0.36	0.39	0.75	0.33	0.09	0.42	—	3,039	3,039	0.11	0.04	1.42	3,055
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	3.05	2.80	11.0	15.4	0.03	0.40	0.39	0.79	0.37	0.09	0.46	—	3,004	3,004	0.11	0.06	0.04	3,023
2027	2.98	2.74	10.5	15.3	0.03	0.36	0.39	0.75	0.33	0.09	0.42	—	2,995	2,995	0.11	0.05	0.04	3,014
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.29	1.17	5.31	7.27	0.01	0.20	0.59	0.79	0.19	0.25	0.44	—	1,394	1,394	0.05	0.02	0.29	1,402
2027	0.75	0.69	2.48	3.63	0.01	0.08	0.09	0.18	0.08	0.02	0.10	—	711	711	0.03	0.01	0.15	715
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.23	0.21	0.97	1.33	< 0.005	0.04	0.11	0.14	0.03	0.05	0.08	—	231	231	0.01	< 0.005	0.05	232
2027	0.14	0.13	0.45	0.66	< 0.005	0.02	0.02	0.03	0.01	< 0.005	0.02	—	118	118	< 0.005	< 0.005	0.02	118

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.59	3.39	2.07	22.0	0.05	0.05	3.93	3.98	0.05	1.00	1.05	20.7	5,061	5,082	2.27	0.20	14.7	5,212
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.12	2.94	2.37	16.2	0.04	0.05	3.93	3.98	0.05	1.00	1.04	20.7	4,644	4,665	2.29	0.21	0.69	4,787
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.24	3.05	2.25	17.3	0.04	0.05	3.88	3.93	0.05	0.99	1.03	20.7	4,733	4,753	2.27	0.21	6.52	4,878
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	0.59	0.56	0.41	3.16	0.01	0.01	0.71	0.72	0.01	0.18	0.19	3.42	784	787	0.38	0.03	1.08	808

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	2.28	2.11	1.91	19.5	0.05	0.04	3.93	3.96	0.04	1.00	1.03	—	4,754	4,754	0.15	0.19	14.4	4,828
Area	1.29	1.28	0.02	2.38	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	6.59	6.59	< 0.005	< 0.005	—	6.61
Energy	0.02	0.01	0.13	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	297	297	0.04	< 0.005	—	299
Water	—	—	—	—	—	—	—	—	—	—	—	2.99	3.06	6.05	0.31	0.01	—	15.9
Waste	—	—	—	—	—	—	—	—	—	—	—	17.7	0.00	17.7	1.77	0.00	—	61.9
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.32	0.32
Total	3.59	3.39	2.07	22.0	0.05	0.05	3.93	3.98	0.05	1.00	1.05	20.7	5,061	5,082	2.27	0.20	14.7	5,212
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	2.05	1.87	2.23	16.1	0.04	0.04	3.93	3.96	0.04	1.00	1.03	—	4,344	4,344	0.17	0.20	0.37	4,409
Area	1.06	1.06	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
Energy	0.02	0.01	0.13	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	297	297	0.04	< 0.005	—	299
Water	—	—	—	—	—	—	—	—	—	—	—	2.99	3.06	6.05	0.31	0.01	—	15.9
Waste	—	—	—	—	—	—	—	—	—	—	—	17.7	0.00	17.7	1.77	0.00	—	61.9
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.32	0.32
Total	3.12	2.94	2.37	16.2	0.04	0.05	3.93	3.98	0.05	1.00	1.04	20.7	4,644	4,665	2.29	0.21	0.69	4,787
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	2.05	1.88	2.10	16.1	0.04	0.04	3.88	3.92	0.04	0.99	1.02	—	4,429	4,429	0.16	0.20	6.20	4,498
Area	1.17	1.17	0.01	1.17	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	3.25	3.25	< 0.005	< 0.005	—	3.26
Energy	0.02	0.01	0.13	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	297	297	0.04	< 0.005	—	299

Water	—	—	—	—	—	—	—	—	—	—	—	2.99	3.06	6.05	0.31	0.01	—	15.9
Waste	—	—	—	—	—	—	—	—	—	—	—	17.7	0.00	17.7	1.77	0.00	—	61.9
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.32	0.32
Total	3.24	3.05	2.25	17.3	0.04	0.05	3.88	3.93	0.05	0.99	1.03	20.7	4,733	4,753	2.27	0.21	6.52	4,878
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.37	0.34	0.38	2.94	0.01	0.01	0.71	0.72	0.01	0.18	0.19	—	733	733	0.03	0.03	1.03	745
Area	0.21	0.21	< 0.005	0.21	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	0.54	0.54	< 0.005	< 0.005	—	0.54
Energy	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	49.2	49.2	0.01	< 0.005	—	49.5
Water	—	—	—	—	—	—	—	—	—	—	—	0.49	0.51	1.00	0.05	< 0.005	—	2.63
Waste	—	—	—	—	—	—	—	—	—	—	—	2.93	0.00	2.93	0.29	0.00	—	10.3
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.05	0.05
Total	0.59	0.56	0.41	3.16	0.01	0.01	0.71	0.72	0.01	0.18	0.19	3.42	784	787	0.38	0.03	1.08	808

3. Construction Emissions Details

3.1. Site Preparation (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.74	3.14	29.2	28.8	0.05	1.24	—	1.24	1.14	—	1.14	—	5,298	5,298	0.21	0.04	—	5,316
Dust From Material Movement	—	—	—	—	—	—	19.7	19.7	—	10.1	10.1	—	—	—	—	—	—	—

Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.40	0.39	< 0.005	0.02	—	0.02	0.02	—	0.02	—	72.6	72.6	< 0.005	< 0.005	—	72.8
Dust From Material Movement	—	—	—	—	—	—	0.27	0.27	—	0.14	0.14	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.07	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.0	12.0	< 0.005	< 0.005	—	12.1
Dust From Material Movement	—	—	—	—	—	—	0.05	0.05	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.04	0.85	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	191	191	< 0.005	< 0.005	0.63	192
Vendor	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	0.00
Hauling	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	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.38	2.38	< 0.005	< 0.005	< 0.005	2.41
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.39	0.39	< 0.005	< 0.005	< 0.005	0.40
Vendor	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	0.00
Hauling	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	0.00

3.3. Grading (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.96	1.65	15.0	17.4	0.03	0.65	—	0.65	0.59	—	0.59	—	2,960	2,960	0.12	0.02	—	2,970
Dust From Material Movement	—	—	—	—	—	—	7.08	7.08	—	3.42	3.42	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.04	0.33	0.38	< 0.005	0.01	—	0.01	0.01	—	0.01	—	64.9	64.9	< 0.005	< 0.005	—	65.1
Dust From Material Movement	—	—	—	—	—	—	0.16	0.16	—	0.08	0.08	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.7	10.7	< 0.005	< 0.005	—	10.8
Dust From Material Movement	—	—	—	—	—	—	0.03	0.03	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.03	0.73	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	164	164	< 0.005	< 0.005	0.54	165
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.26	3.26	< 0.005	< 0.005	0.01	3.31

Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.54	0.54	< 0.005	< 0.005	< 0.005	0.55
Vendor	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	0.00
Hauling	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	0.00

3.5. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.50	0.42	3.86	5.07	0.01	0.15	—	0.15	0.14	—	0.14	—	938	938	0.04	0.01	—	941
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.08	0.70	0.93	< 0.005	0.03	—	0.03	0.02	—	0.02	—	155	155	0.01	< 0.005	—	156
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	0.06	1.43	0.00	0.00	0.30	0.30	0.00	0.07	0.07	—	320	320	< 0.005	< 0.005	1.06	322
Vendor	0.01	< 0.005	0.17	0.05	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	134	134	< 0.005	0.02	0.32	140
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.08	0.08	1.05	0.00	0.00	0.30	0.30	0.00	0.07	0.07	—	283	283	0.01	0.01	0.03	286
Vendor	0.01	< 0.005	0.18	0.05	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	134	134	< 0.005	0.02	0.01	140
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.03	0.42	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	114	114	< 0.005	< 0.005	0.18	115
Vendor	< 0.005	< 0.005	0.07	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	52.3	52.3	< 0.005	0.01	0.05	54.8
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	18.8	18.8	< 0.005	< 0.005	0.03	19.1

Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.67	8.67	< 0.005	< 0.005	0.01	9.07
Hauling	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	0.00

3.7. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29	0.24	2.21	3.04	0.01	0.08	—	0.08	0.07	—	0.07	—	563	563	0.02	< 0.005	—	565
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	0.05	0.04	0.40	0.55	< 0.005	0.01	—	0.01	0.01	—	0.01	—	93.2	93.2	< 0.005	< 0.005	—	93.5
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	0.05	1.35	0.00	0.00	0.30	0.30	0.00	0.07	0.07	—	314	314	< 0.005	< 0.005	0.94	316
Vendor	0.01	< 0.005	0.16	0.04	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	131	131	< 0.005	0.02	0.29	137
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.08	0.98	0.00	0.00	0.30	0.30	0.00	0.07	0.07	—	278	278	0.01	0.01	0.02	281
Vendor	0.01	< 0.005	0.18	0.05	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	131	131	< 0.005	0.02	0.01	137
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.24	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	67.0	67.0	< 0.005	< 0.005	0.10	67.9
Vendor	< 0.005	< 0.005	0.04	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	30.7	30.7	< 0.005	< 0.005	0.03	32.1
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.1	11.1	< 0.005	< 0.005	0.02	11.2
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.09	5.09	< 0.005	< 0.005	< 0.005	5.32
Hauling	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	0.00

3.9. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.81	0.68	6.23	8.81	0.01	0.26	—	0.26	0.24	—	0.24	—	1,350	1,350	0.05	0.01	—	1,355
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.31	0.43	< 0.005	0.01	—	0.01	0.01	—	0.01	—	66.6	66.6	< 0.005	< 0.005	—	66.8
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.0	11.0	< 0.005	< 0.005	—	11.1
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.04	0.98	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	219	219	< 0.005	< 0.005	0.72	220

Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	9.79	9.79	< 0.005	< 0.005	0.02	9.92
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.62	1.62	< 0.005	< 0.005	< 0.005	1.64
Vendor	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	0.00
Hauling	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	0.00

3.11. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	1.50	1.50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	1.50	1.50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.31	0.41	< 0.005	0.01	—	0.01	0.01	—	0.01	—	48.6	48.6	< 0.005	< 0.005	—	48.8
Architectural Coatings	0.55	0.55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.05	8.05	< 0.005	< 0.005	—	8.07
Architectural Coatings	0.10	0.10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.01	0.29	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	64.0	64.0	< 0.005	< 0.005	0.21	64.4
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.21	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	56.6	56.6	< 0.005	< 0.005	0.01	57.3
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	21.2	21.2	< 0.005	< 0.005	0.03	21.4
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.50	3.50	< 0.005	< 0.005	0.01	3.55
Vendor	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	0.00
Hauling	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	0.00

3.13. Architectural Coating (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipm	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	1.50	1.50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	1.50	1.50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.22	0.30	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	35.0	35.0	< 0.005	< 0.005	—	35.1
Architectural Coatings	0.39	0.39	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.01	0.01	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.80	5.80	< 0.005	< 0.005	—	5.82
Architectural Coatings	0.07	0.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.01	0.27	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	62.9	62.9	< 0.005	< 0.005	0.19	63.2
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.20	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	55.6	55.6	< 0.005	< 0.005	< 0.005	56.3
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.05	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	15.0	15.0	< 0.005	< 0.005	0.02	15.2
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.48	2.48	< 0.005	< 0.005	< 0.005	2.51
Vendor	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	0.00
Hauling	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	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	1.36	1.26	1.12	11.4	0.03	0.02	2.29	2.31	0.02	0.58	0.60	—	2,772	2,772	0.09	0.11	8.37	2,816
Strip Mall	0.91	0.84	0.79	8.10	0.02	0.02	1.64	1.65	0.01	0.42	0.43	—	1,982	1,982	0.06	0.08	5.99	2,013
Total	2.28	2.11	1.91	19.5	0.05	0.04	3.93	3.96	0.04	1.00	1.03	—	4,754	4,754	0.15	0.19	14.4	4,828
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	1.22	1.12	1.31	9.49	0.02	0.02	2.29	2.31	0.02	0.58	0.60	—	2,533	2,533	0.10	0.12	0.22	2,572
Strip Mall	0.82	0.75	0.92	6.64	0.02	0.02	1.64	1.65	0.01	0.42	0.43	—	1,811	1,811	0.07	0.08	0.16	1,838
Total	2.05	1.87	2.23	16.1	0.04	0.04	3.93	3.96	0.04	1.00	1.03	—	4,344	4,344	0.17	0.20	0.37	4,409
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.22	0.21	0.23	1.73	< 0.005	< 0.005	0.41	0.42	< 0.005	0.10	0.11	—	428	428	0.02	0.02	0.60	434
Strip Mall	0.15	0.14	0.16	1.21	< 0.005	< 0.005	0.30	0.30	< 0.005	0.08	0.08	—	306	306	0.01	0.01	0.43	310
Total	0.37	0.34	0.38	2.94	0.01	0.01	0.71	0.72	0.01	0.18	0.19	—	733	733	0.03	0.03	1.03	745

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	108	108	0.02	< 0.005	—	109
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	19.6	19.6	< 0.005	< 0.005	—	19.8
Total	—	—	—	—	—	—	—	—	—	—	—	—	127	127	0.02	< 0.005	—	129
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	108	108	0.02	< 0.005	—	109
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	19.6	19.6	< 0.005	< 0.005	—	19.8
Total	—	—	—	—	—	—	—	—	—	—	—	—	127	127	0.02	< 0.005	—	129
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	17.9	17.9	< 0.005	< 0.005	—	18.0
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	3.25	3.25	< 0.005	< 0.005	—	3.28
Total	—	—	—	—	—	—	—	—	—	—	—	—	21.1	21.1	< 0.005	< 0.005	—	21.3

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.01	0.01	0.13	0.05	< 0.005	0.01	—	0.01	0.01	—	0.01	—	159	159	0.01	< 0.005	—	160
Strip Mall	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.6	10.6	< 0.005	< 0.005	—	10.6
Total	0.02	0.01	0.13	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	170	170	0.02	< 0.005	—	170
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.01	0.01	0.13	0.05	< 0.005	0.01	—	0.01	0.01	—	0.01	—	159	159	0.01	< 0.005	—	160
Strip Mall	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.6	10.6	< 0.005	< 0.005	—	10.6
Total	0.02	0.01	0.13	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	170	170	0.02	< 0.005	—	170
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	26.4	26.4	< 0.005	< 0.005	—	26.4
Strip Mall	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.75	1.75	< 0.005	< 0.005	—	1.76
Total	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	28.1	28.1	< 0.005	< 0.005	—	28.2

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	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
Consumer Products	0.96	0.96	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.09	0.09	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.23	0.22	0.02	2.38	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.59	6.59	< 0.005	< 0.005	—	6.61
Total	1.29	1.28	0.02	2.38	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	6.59	6.59	< 0.005	< 0.005	—	6.61
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	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
Consumer Products	0.96	0.96	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.09	0.09	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	1.06	1.06	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	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
Consumer Products	0.18	0.18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectural	0.02	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.02	0.02	< 0.005	0.21	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.54	0.54	< 0.005	< 0.005	—	0.54
Total	0.21	0.21	< 0.005	0.21	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	0.54	0.54	< 0.005	< 0.005	—	0.54

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	2.46	2.57	5.03	0.25	0.01	—	13.1
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	0.53	0.49	1.02	0.05	< 0.005	—	2.77
Total	—	—	—	—	—	—	—	—	—	—	—	2.99	3.06	6.05	0.31	0.01	—	15.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	2.46	2.57	5.03	0.25	0.01	—	13.1
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	0.53	0.49	1.02	0.05	< 0.005	—	2.77
Total	—	—	—	—	—	—	—	—	—	—	—	2.99	3.06	6.05	0.31	0.01	—	15.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Apartments	—	—	—	—	—	—	—	—	—	—	—	0.41	0.43	0.83	0.04	< 0.005	—	2.17
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	0.09	0.08	0.17	0.01	< 0.005	—	0.46
Total	—	—	—	—	—	—	—	—	—	—	—	0.49	0.51	1.00	0.05	< 0.005	—	2.63

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	15.6	0.00	15.6	1.56	0.00	—	54.5
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	2.12	0.00	2.12	0.21	0.00	—	7.42
Total	—	—	—	—	—	—	—	—	—	—	—	17.7	0.00	17.7	1.77	0.00	—	61.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	15.6	0.00	15.6	1.56	0.00	—	54.5
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	2.12	0.00	2.12	0.21	0.00	—	7.42
Total	—	—	—	—	—	—	—	—	—	—	—	17.7	0.00	17.7	1.77	0.00	—	61.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	2.58	0.00	2.58	0.26	0.00	—	9.02

Strip Mall	—	—	—	—	—	—	—	—	—	—	—	0.35	0.00	0.35	0.04	0.00	—	1.23
Total	—	—	—	—	—	—	—	—	—	—	—	2.93	0.00	2.93	0.29	0.00	—	10.3

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.30
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.32	0.32
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.30
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.32	0.32
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.05	0.05
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	< 0.005	< 0.005

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.05	0.05

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	5/1/2026	5/7/2026	5.00	5.00	—
Grading	Grading	5/8/2026	5/19/2026	5.00	8.00	—
Building Construction	Building Construction	6/15/2026	4/30/2027	5.00	230	—
Paving	Paving	5/20/2026	6/12/2026	5.00	18.0	—
Architectural Coating	Architectural Coating	6/29/2026	5/14/2027	5.00	230	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37

Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Paving	Cement and Mortar Mixers	Diesel	Average	2.00	6.00	10.0	0.56
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	6.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	6.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	14.3	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.80	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	15.0	14.3	LDA,LDT1,LDT2
Grading	Vendor	—	8.80	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	29.3	14.3	LDA,LDT1,LDT2
Building Construction	Vendor	4.78	8.80	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—

Paving	Worker	20.0	14.3	LDA,LDT1,LDT2
Paving	Vendor	—	8.80	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	5.86	14.3	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.80	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	83,714	27,905	5,625	1,875	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	—	—	7.50	0.00	—
Grading	—	—	8.00	0.00	—
Paving	0.00	0.00	0.00	0.00	0.00

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Apartments Low Rise	—	0%
Strip Mall	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2026	0.00	204	0.03	< 0.005
2027	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Apartments Low Rise	275	275	275	100,214	3,218	3,218	3,218	1,174,482
Strip Mall	178	178	178	65,016	2,305	2,305	2,305	841,174

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Apartments Low Rise	—
Wood Fireplaces	0

Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	39
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
83713.5	27,905	5,625	1,875	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Apartments Low Rise	192,986	204	0.0330	0.0040	496,707
Strip Mall	35,105	204	0.0330	0.0040	33,018

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Low Rise	1,281,791	367,523
Strip Mall	277,772	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Low Rise	28.9	—
Strip Mall	3.94	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Apartments Low Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Low Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Strip Mall	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Strip Mall	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00
Strip Mall	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

8. User Changes to Default Data

Screen	Justification
Land Use	Lot acreage adjusted to represent overall acreage of the project site.
Construction: Construction Phases	Based on typical construction practices, architectural coating assumed to start two weeks after the start of building construction and last for the same number of days. Demolition not required for the proposed project.
Operations: Vehicle Data	Trip rates adjusted to be consistent with traffic data provided for the proposed project.
Operations: Hearths	All 39 units would not include fireplaces.

Estia Dry Creek and Placer Creek OAH Proposed Custom Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

1.2. Land Use Types

1.3. User-Selected Emission Reduction Measures by Emissions Sector

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

2.2. Construction Emissions by Year, Unmitigated

2.4. Operations Emissions Compared Against Thresholds

2.5. Operations Emissions by Sector, Unmitigated

3. Construction Emissions Details

3.1. Site Preparation (2026) - Unmitigated

3.3. Grading (2026) - Unmitigated

3.5. Building Construction (2026) - Unmitigated

3.7. Building Construction (2027) - Unmitigated

3.9. Paving (2026) - Unmitigated

3.11. Architectural Coating (2026) - Unmitigated

3.13. Architectural Coating (2027) - Unmitigated

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

4.3. Area Emissions by Source

4.3.1. Unmitigated

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.9. Operational Mobile Sources

5.9.1. Unmitigated

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

5.10.3. Landscape Equipment

5.11. Operational Energy Consumption

5.11.1. Unmitigated

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

5.13. Operational Waste Generation

5.13.1. Unmitigated

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Estia Dry Creek and Placer Creek OAH Proposed
Construction Start Date	5/1/2026
Operational Year	2027
Lead Agency	Placer County
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.50
Precipitation (days)	18.0
Location	38.729555346928166, -121.39173438861674
County	Placer-Sacramento
City	Unincorporated
Air District	Placer County APCD
Air Basin	Sacramento Valley
TAZ	441
EDFZ	13
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.29

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Apartments Low Rise	120	Dwelling Unit	4.00	127,200	26,136	—	313	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.14	5.87	29.2	29.7	0.05	1.24	19.8	21.1	1.14	10.1	11.3	—	5,489	5,489	0.22	0.08	4.61	5,508
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.11	5.82	11.5	17.9	0.03	0.41	1.14	1.55	0.37	0.27	0.65	—	3,891	3,891	0.13	0.12	0.12	3,929
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.40	2.27	5.50	8.27	0.01	0.20	0.88	1.08	0.19	0.32	0.51	—	1,745	1,745	0.06	0.05	0.79	1,761
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.44	0.42	1.00	1.51	< 0.005	0.04	0.16	0.20	0.03	0.06	0.09	—	289	289	0.01	0.01	0.13	292

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	6.14	5.87	29.2	29.7	0.05	1.24	19.8	21.1	1.14	10.1	11.3	—	5,489	5,489	0.22	0.08	4.61	5,508

2027	6.07	5.80	10.9	19.0	0.03	0.36	1.14	1.50	0.33	0.27	0.60	—	3,995	3,995	0.12	0.08	4.11	4,025
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	6.11	5.82	11.5	17.9	0.03	0.41	1.14	1.55	0.37	0.27	0.65	—	3,891	3,891	0.13	0.12	0.12	3,929
2027	6.03	5.76	11.0	17.7	0.03	0.36	1.14	1.50	0.33	0.27	0.60	—	3,865	3,865	0.13	0.11	0.11	3,902
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	2.40	2.27	5.50	8.27	0.01	0.20	0.88	1.08	0.19	0.32	0.51	—	1,745	1,745	0.06	0.05	0.79	1,761
2027	1.54	1.48	2.59	4.22	0.01	0.09	0.27	0.36	0.08	0.06	0.14	—	922	922	0.03	0.03	0.42	931
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.44	0.42	1.00	1.51	< 0.005	0.04	0.16	0.20	0.03	0.06	0.09	—	289	289	0.01	0.01	0.13	292
2027	0.28	0.27	0.47	0.77	< 0.005	0.02	0.05	0.06	0.01	0.01	0.03	—	153	153	< 0.005	< 0.005	0.07	154

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	7.87	7.50	3.90	42.2	0.09	0.10	7.04	7.14	0.10	1.79	1.89	55.4	9,377	9,432	5.93	0.36	26.7	9,716
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.81	6.46	4.42	29.3	0.08	0.10	7.04	7.14	0.09	1.79	1.88	55.4	8,623	8,679	5.97	0.39	1.58	8,947
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	7.13	6.77	4.22	32.6	0.08	0.10	6.96	7.06	0.10	1.77	1.87	55.4	8,785	8,840	5.95	0.38	12.0	9,114
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.30	1.24	0.77	5.95	0.01	0.02	1.27	1.29	0.02	0.32	0.34	9.16	1,454	1,464	0.98	0.06	1.99	1,509

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	4.20	3.89	3.45	35.2	0.08	0.07	7.04	7.11	0.06	1.79	1.85	—	8,530	8,530	0.28	0.34	25.7	8,663
Area	3.63	3.59	0.07	6.81	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	18.2	18.2	< 0.005	< 0.005	—	18.3
Energy	0.05	0.02	0.39	0.16	< 0.005	0.03	—	0.03	0.03	—	0.03	—	822	822	0.10	0.01	—	826
Water	—	—	—	—	—	—	—	—	—	—	—	7.56	7.23	14.8	0.78	0.02	—	39.7
Waste	—	—	—	—	—	—	—	—	—	—	—	47.8	0.00	47.8	4.78	0.00	—	167
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.91	0.91
Total	7.87	7.50	3.90	42.2	0.09	0.10	7.04	7.14	0.10	1.79	1.89	55.4	9,377	9,432	5.93	0.36	26.7	9,716
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	3.77	3.44	4.03	29.2	0.08	0.07	7.04	7.11	0.06	1.79	1.85	—	7,794	7,794	0.32	0.37	0.67	7,912
Area	2.99	2.99	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
Energy	0.05	0.02	0.39	0.16	< 0.005	0.03	—	0.03	0.03	—	0.03	—	822	822	0.10	0.01	—	826
Water	—	—	—	—	—	—	—	—	—	—	—	7.56	7.23	14.8	0.78	0.02	—	39.7
Waste	—	—	—	—	—	—	—	—	—	—	—	47.8	0.00	47.8	4.78	0.00	—	167
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.91	0.91
Total	6.81	6.46	4.42	29.3	0.08	0.10	7.04	7.14	0.09	1.79	1.88	55.4	8,623	8,679	5.97	0.39	1.58	8,947
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	3.78	3.46	3.80	29.1	0.08	0.07	6.96	7.03	0.06	1.77	1.83	—	7,947	7,947	0.30	0.35	11.1	8,071
Area	3.31	3.29	0.03	3.36	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	8.98	8.98	< 0.005	< 0.005	—	9.01
Energy	0.05	0.02	0.39	0.16	< 0.005	0.03	—	0.03	0.03	—	0.03	—	822	822	0.10	0.01	—	826
Water	—	—	—	—	—	—	—	—	—	—	—	7.56	7.23	14.8	0.78	0.02	—	39.7
Waste	—	—	—	—	—	—	—	—	—	—	—	47.8	0.00	47.8	4.78	0.00	—	167

Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.91	0.91
Total	7.13	6.77	4.22	32.6	0.08	0.10	6.96	7.06	0.10	1.77	1.87	55.4	8,785	8,840	5.95	0.38	12.0	9,114
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.69	0.63	0.69	5.31	0.01	0.01	1.27	1.28	0.01	0.32	0.33	—	1,316	1,316	0.05	0.06	1.84	1,336
Area	0.60	0.60	0.01	0.61	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	1.49	1.49	< 0.005	< 0.005	—	1.49
Energy	0.01	< 0.005	0.07	0.03	< 0.005	0.01	—	0.01	0.01	—	0.01	—	136	136	0.02	< 0.005	—	137
Water	—	—	—	—	—	—	—	—	—	—	—	1.25	1.20	2.45	0.13	< 0.005	—	6.58
Waste	—	—	—	—	—	—	—	—	—	—	—	7.91	0.00	7.91	0.79	0.00	—	27.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.15	0.15
Total	1.30	1.24	0.77	5.95	0.01	0.02	1.27	1.29	0.02	0.32	0.34	9.16	1,454	1,464	0.98	0.06	1.99	1,509

3. Construction Emissions Details

3.1. Site Preparation (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.74	3.14	29.2	28.8	0.05	1.24	—	1.24	1.14	—	1.14	—	5,298	5,298	0.21	0.04	—	5,316
Dust From Material Movement	—	—	—	—	—	—	19.7	19.7	—	10.1	10.1	—	—	—	—	—	—	—
Onsite truck	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	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.40	0.39	< 0.005	0.02	—	0.02	0.02	—	0.02	—	72.6	72.6	< 0.005	< 0.005	—	72.8
Dust From Material Movement	—	—	—	—	—	—	0.27	0.27	—	0.14	0.14	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.07	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.0	12.0	< 0.005	< 0.005	—	12.1
Dust From Material Movement	—	—	—	—	—	—	0.05	0.05	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.04	0.85	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	191	191	< 0.005	< 0.005	0.63	192
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.38	2.38	< 0.005	< 0.005	< 0.005	2.41
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.39	0.39	< 0.005	< 0.005	< 0.005	0.40
Vendor	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	0.00
Hauling	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	0.00

3.3. Grading (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.96	1.65	15.0	17.4	0.03	0.65	—	0.65	0.59	—	0.59	—	2,960	2,960	0.12	0.02	—	2,970
Dust From Material Movement	—	—	—	—	—	—	7.08	7.08	—	3.42	3.42	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	0.04	0.04	0.33	0.38	< 0.005	0.01	—	0.01	0.01	—	0.01	—	64.9	64.9	< 0.005	< 0.005	—	65.1
Dust From Material Movement	—	—	—	—	—	—	0.16	0.16	—	0.08	0.08	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.7	10.7	< 0.005	< 0.005	—	10.8
Dust From Material Movement	—	—	—	—	—	—	0.03	0.03	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.03	0.73	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	164	164	< 0.005	< 0.005	0.54	165
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.26	3.26	< 0.005	< 0.005	0.01	3.31
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.54	0.54	< 0.005	< 0.005	< 0.005	0.55
Vendor	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	0.00
Hauling	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	0.00

3.5. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	0.42	3.86	5.07	0.01	0.15	—	0.15	0.14	—	0.14	—	938	938	0.04	0.01	—	941
Onsite truck	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	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.08	0.70	0.93	< 0.005	0.03	—	0.03	0.02	—	0.02	—	155	155	0.01	< 0.005	—	156
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.31	0.28	0.19	4.22	0.00	0.00	0.87	0.87	0.00	0.20	0.20	—	945	945	0.01	0.01	3.12	950
Vendor	0.01	0.01	0.46	0.12	< 0.005	< 0.005	0.09	0.10	< 0.005	0.03	0.03	—	359	359	< 0.005	0.05	0.87	376
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28	0.25	0.23	3.09	0.00	0.00	0.87	0.87	0.00	0.20	0.20	—	834	834	0.02	0.03	0.08	845
Vendor	0.01	0.01	0.49	0.13	< 0.005	< 0.005	0.09	0.10	< 0.005	0.03	0.03	—	359	359	< 0.005	0.05	0.02	375
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	0.09	1.23	0.00	0.00	0.34	0.34	0.00	0.08	0.08	—	336	336	0.01	0.01	0.53	340
Vendor	0.01	< 0.005	0.19	0.05	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	140	140	< 0.005	0.02	0.15	147
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.23	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	55.6	55.6	< 0.005	< 0.005	0.09	56.3
Vendor	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	23.2	23.2	< 0.005	< 0.005	0.02	24.3
Hauling	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	0.00

3.7. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29	0.24	2.21	3.04	0.01	0.08	—	0.08	0.07	—	0.07	—	563	563	0.02	< 0.005	—	565
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.40	0.55	< 0.005	0.01	—	0.01	0.01	—	0.01	—	93.2	93.2	< 0.005	< 0.005	—	93.5
Onsite truck	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	0.00

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.30	0.27	0.16	3.99	0.00	0.00	0.87	0.87	0.00	0.20	0.20	—	928	928	0.01	0.01	2.78	933
Vendor	0.01	0.01	0.44	0.12	< 0.005	< 0.005	0.09	0.10	< 0.005	0.03	0.03	—	351	351	< 0.005	0.05	0.77	367
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.27	0.24	0.22	2.89	0.00	0.00	0.87	0.87	0.00	0.20	0.20	—	820	820	0.02	0.03	0.07	831
Vendor	0.01	0.01	0.47	0.12	< 0.005	< 0.005	0.09	0.10	< 0.005	0.03	0.03	—	351	351	< 0.005	0.05	0.02	366
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.04	0.70	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	198	198	< 0.005	0.01	0.28	200
Vendor	< 0.005	< 0.005	0.11	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	82.4	82.4	< 0.005	0.01	0.08	86.1
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.13	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	32.7	32.7	< 0.005	< 0.005	0.05	33.2
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.6	13.6	< 0.005	< 0.005	0.01	14.3
Hauling	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	0.00

3.9. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	0.81	0.68	6.23	8.81	0.01	0.26	—	0.26	0.24	—	0.24	—	1,350	1,350	0.05	0.01	—	1,355
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.31	0.43	< 0.005	0.01	—	0.01	0.01	—	0.01	—	66.6	66.6	< 0.005	< 0.005	—	66.8
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.0	11.0	< 0.005	< 0.005	—	11.1
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.04	0.98	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	219	219	< 0.005	< 0.005	0.72	220
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	9.79	9.79	< 0.005	< 0.005	0.02	9.92
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.62	1.62	< 0.005	< 0.005	< 0.005	1.64
Vendor	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	0.00
Hauling	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	0.00

3.11. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	4.33	4.33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134

Architect Coatings	4.33	4.33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.31	0.41	< 0.005	0.01	—	0.01	0.01	—	0.01	—	48.6	48.6	< 0.005	< 0.005	—	48.8
Architectural Coatings	1.57	1.57	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.05	8.05	< 0.005	< 0.005	—	8.07
Architectural Coatings	0.29	0.29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.04	0.84	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	189	189	< 0.005	< 0.005	0.62	190
Vendor	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	0.00
Hauling	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	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.05	0.62	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	167	167	< 0.005	0.01	0.02	169
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.23	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	62.4	62.4	< 0.005	< 0.005	0.10	63.3
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.3	10.3	< 0.005	< 0.005	0.02	10.5
Vendor	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	0.00
Hauling	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	0.00

3.13. Architectural Coating (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	4.33	4.33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	4.33	4.33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.22	0.30	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	35.0	35.0	< 0.005	< 0.005	—	35.1
Architectural Coatings	1.13	1.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.80	5.80	< 0.005	< 0.005	—	5.82
Architectural Coatings	0.21	0.21	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.03	0.80	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	186	186	< 0.005	< 0.005	0.56	187
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.04	0.58	0.00	0.00	0.17	0.17	0.00	0.04	0.04	—	164	164	< 0.005	0.01	0.01	166
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.16	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	44.2	44.2	< 0.005	< 0.005	0.06	44.8
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.31	7.31	< 0.005	< 0.005	0.01	7.41
Vendor	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	0.00
Hauling	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	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	4.20	3.89	3.45	35.2	0.08	0.07	7.04	7.11	0.06	1.79	1.85	—	8,530	8,530	0.28	0.34	25.7	8,663
Total	4.20	3.89	3.45	35.2	0.08	0.07	7.04	7.11	0.06	1.79	1.85	—	8,530	8,530	0.28	0.34	25.7	8,663
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	3.77	3.44	4.03	29.2	0.08	0.07	7.04	7.11	0.06	1.79	1.85	—	7,794	7,794	0.32	0.37	0.67	7,912
Total	3.77	3.44	4.03	29.2	0.08	0.07	7.04	7.11	0.06	1.79	1.85	—	7,794	7,794	0.32	0.37	0.67	7,912
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.69	0.63	0.69	5.31	0.01	0.01	1.27	1.28	0.01	0.32	0.33	—	1,316	1,316	0.05	0.06	1.84	1,336
Total	0.69	0.63	0.69	5.31	0.01	0.01	1.27	1.28	0.01	0.32	0.33	—	1,316	1,316	0.05	0.06	1.84	1,336

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	332	332	0.05	0.01	—	335
Total	—	—	—	—	—	—	—	—	—	—	—	—	332	332	0.05	0.01	—	335

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	332	332	0.05	0.01	—	335
Total	—	—	—	—	—	—	—	—	—	—	—	—	332	332	0.05	0.01	—	335
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	54.9	54.9	0.01	< 0.005	—	55.5
Total	—	—	—	—	—	—	—	—	—	—	—	—	54.9	54.9	0.01	< 0.005	—	55.5

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.05	0.02	0.39	0.16	< 0.005	0.03	—	0.03	0.03	—	0.03	—	490	490	0.04	< 0.005	—	491
Total	0.05	0.02	0.39	0.16	< 0.005	0.03	—	0.03	0.03	—	0.03	—	490	490	0.04	< 0.005	—	491
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.05	0.02	0.39	0.16	< 0.005	0.03	—	0.03	0.03	—	0.03	—	490	490	0.04	< 0.005	—	491
Total	0.05	0.02	0.39	0.16	< 0.005	0.03	—	0.03	0.03	—	0.03	—	490	490	0.04	< 0.005	—	491
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Apartments Low Rise	0.01	< 0.005	0.07	0.03	< 0.005	0.01	—	0.01	0.01	—	0.01	—	81.1	81.1	0.01	< 0.005	—	81.3
Total	0.01	< 0.005	0.07	0.03	< 0.005	0.01	—	0.01	0.01	—	0.01	—	81.1	81.1	0.01	< 0.005	—	81.3

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	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
Consumer Products	2.72	2.72	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.27	0.27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.63	0.60	0.07	6.81	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	18.2	18.2	< 0.005	< 0.005	—	18.3
Total	3.63	3.59	0.07	6.81	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	18.2	18.2	< 0.005	< 0.005	—	18.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	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
Consumer Products	2.72	2.72	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architect Coatings	0.27	0.27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	2.99	2.99	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	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
Consumer Products	0.50	0.50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.05	0.05	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.06	0.05	0.01	0.61	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.49	1.49	< 0.005	< 0.005	—	1.49
Total	0.60	0.60	0.01	0.61	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	1.49	1.49	< 0.005	< 0.005	—	1.49

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	7.56	7.23	14.8	0.78	0.02	—	39.7
Total	—	—	—	—	—	—	—	—	—	—	—	7.56	7.23	14.8	0.78	0.02	—	39.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	7.56	7.23	14.8	0.78	0.02	—	39.7
Total	—	—	—	—	—	—	—	—	—	—	—	7.56	7.23	14.8	0.78	0.02	—	39.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	1.25	1.20	2.45	0.13	< 0.005	—	6.58
Total	—	—	—	—	—	—	—	—	—	—	—	1.25	1.20	2.45	0.13	< 0.005	—	6.58

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	47.8	0.00	47.8	4.78	0.00	—	167
Total	—	—	—	—	—	—	—	—	—	—	—	47.8	0.00	47.8	4.78	0.00	—	167
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	47.8	0.00	47.8	4.78	0.00	—	167
Total	—	—	—	—	—	—	—	—	—	—	—	47.8	0.00	47.8	4.78	0.00	—	167
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	7.91	0.00	7.91	0.79	0.00	—	27.7

Total	—	—	—	—	—	—	—	—	—	—	—	7.91	0.00	7.91	0.79	0.00	—	27.7

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.91	0.91
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.91	0.91
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.91	0.91
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.91	0.91
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.15	0.15
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.15	0.15

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	5/1/2026	5/7/2026	5.00	5.00	—
Grading	Grading	5/8/2026	5/19/2026	5.00	8.00	—
Building Construction	Building Construction	6/15/2026	4/30/2027	5.00	230	—

Paving	Paving	5/20/2026	6/12/2026	5.00	18.0	—
Architectural Coating	Architectural Coating	6/29/2026	5/14/2027	5.00	230	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Paving	Cement and Mortar Mixers	Diesel	Average	2.00	6.00	10.0	0.56
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	6.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	6.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	14.3	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.80	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	15.0	14.3	LDA,LDT1,LDT2
Grading	Vendor	—	8.80	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	86.4	14.3	LDA,LDT1,LDT2
Building Construction	Vendor	12.8	8.80	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	20.0	14.3	LDA,LDT1,LDT2
Paving	Vendor	—	8.80	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	17.3	14.3	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.80	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT

Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	257,580	85,860	0.00	0.00	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	—	—	7.50	0.00	—
Grading	—	—	8.00	0.00	—
Paving	0.00	0.00	0.00	0.00	—

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Apartments Low Rise	—	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2026	0.00	204	0.03	< 0.005
2027	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Apartments Low Rise	845	845	845	308,352	9,901	9,901	9,901	3,613,792

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Apartments Low Rise	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	120
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
257580	85,860	0.00	0.00	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Apartments Low Rise	593,802	204	0.0330	0.0040	1,528,330

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Low Rise	3,943,971	367,523

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)

Apartments Low Rise	88.7	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Apartments Low Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Low Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

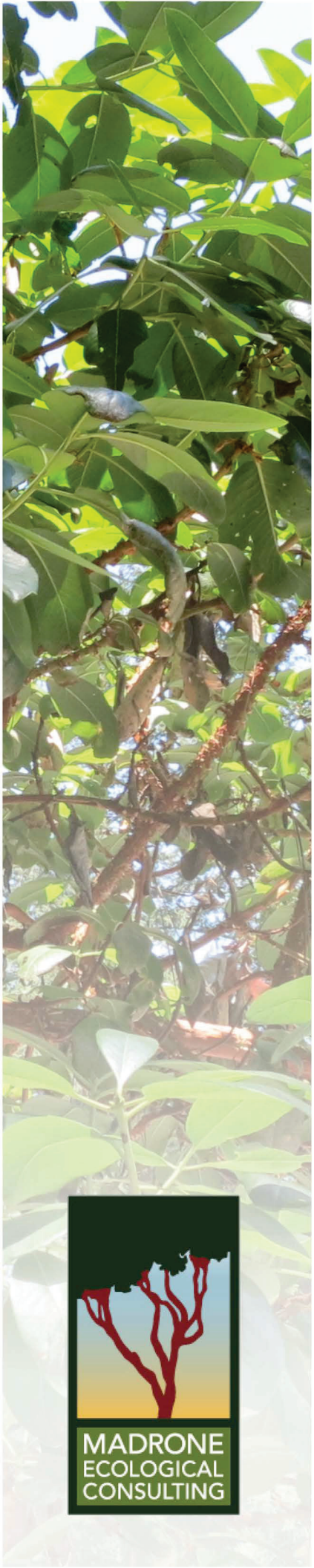
5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

8. User Changes to Default Data

Screen	Justification
Land Use	Lot acreage adjusted to represent overall acreage of the project site.
Construction: Construction Phases	Based on typical construction practices, architectural coating assumed to start two weeks after the start of building construction and last for the same number of days. Demolition not required for the proposed project.
Operations: Vehicle Data	Trip rates adjusted to be consistent with traffic data provided for the proposed project.
Operations: Hearths	Based on applicant provided information, all 120 units would not include fireplaces.

APPENDIX D



Biological Resources Assessment

Estia Dry Creek and Placer Creek Residential

Placer County, California
February 2026

MADRONE ECOLOGICAL CONSULTING

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CONTENTS

Biological Resources Assessment
Estia Dry Creek and Placer Creek Residential

1.0 INTRODUCTION 1
1.1 Project Description 1

2.0 REGULATORY SETTING 2
2.1 Federal Regulations 2
2.1.1 Federal Endangered Species Act 2
2.1.2 Clean Water Act, Section 404 2
2.1.3 Migratory Bird Treaty Act 3
2.2 State Regulations 3
2.2.1 California Environmental Quality Act 3
2.2.2 State Endangered Species Act 4
2.2.3 Native Plant Protection Act 4
2.2.4 Clean Water Act, Section 401 4
2.2.5 California Water Code, Porter-Cologne Act 5
2.2.6 California Fish and Game Code, Section 1600 – Streambed and Lake Alteration 5
2.2.7 California Fish and Game Code, Section 3503.5 - Raptor Nests 5
2.2.8 California Fully Protected Species 5
2.3 Local Regulations 6
2.3.1 Placer County Conservation Plan 6

3.0 METHODOLOGY 7
3.1 Literature Review 7
3.2 Field Surveys 7

4.0 EXISTING CONDITIONS 8
4.1 Terrestrial Vegetation Communities 9
4.1.1 Natural Communities 9
4.1.2 Urban (Non-Natural) Communities 10
4.2 Aquatic Resources 10
4.2.1 Irrigated Wetland 11
4.2.2 Seasonal Wetland 11
4.2.3 Seasonal Wetland Swale 11
4.2.4 Vernal Pool 12
4.2.5 Ephemeral Drainage 12
4.2.6 Intermittent Drainage 12
4.2.7 Roadside Ditch 12
4.3 Soils 12
4.4 PCCP Special Habitats and CARP Setbacks 13
4.4.1 Stream System 13

5.0 RESULTS 13

5.1 Plants 13
5.1.1 Big-Scale Balsamroot 24
5.1.2 Dwarf Downingia 24
5.1.3 Boggs Lake Hedge-Hyssop 24
5.1.4 Ahart's Dwarf Rush 25
5.1.5 Legenere 25
5.1.6 Pincushion Navarretia 25
5.1.7 Slender Orcutt Grass 26
5.1.8 Sacramento Orcutt Grass 26
5.1.9 Sanford's Arrowhead 26
5.2 Invertebrates 27
5.2.1 Crotch's Bumble Bee 27
5.2.2 Vernal Pool Fairy Shrimp 28
5.2.3 Valley Elderberry Longhorn Beetle 28
5.2.4 Vernal Pool Tadpole Shrimp 29
5.3 Fish 29
5.3.1 Central Valley Steelhead 29
5.3.2 Central Valley Fall-Run Chinook Salmon 30
5.4 Amphibians 30
5.4.1 Western Spadefoot 30
5.5 Reptiles 31
5.5.1 Northwestern Pond Turtle 31
5.6 Birds 31
5.6.1 Tricolored Blackbird 31
5.6.2 Golden Eagle 32
5.6.3 Burrowing Owl 32
5.6.4 Swainson's Hawk 32
5.6.5 Northern Harrier 33
5.6.6 Olive-Sided Flycatcher 33
5.6.7 White-Tailed Kite 33
5.6.8 Loggerhead Shrike 34
5.6.9 Yellow Warbler 34
5.7 Mammals 34
5.7.1 Pallid Bat 34
5.7.2 Silver-Haired Bat 35
5.7.3 Western Red Bat 35
5.7.4 Hoary Bat 35
6.0 IMPACTS TO SENSITIVE BIOLOGICAL RESOURCES 36
6.1 Aquatic Resources 36
6.2 Terrestrial Land Covers 37
6.3 Special-Status Plant Species 37
6.4 Crotch's Bumblebee 37

6.5 Vernal Pool Branchiopods 37
6.6 Valley Elderberry Longhorn Beetle 38
6.7 Western Spadefoot 38
6.8 Western Pond Turtle 38
6.9 Nesting Raptors and Songbirds 39
6.10 Foraging Birds 39
6.11 Burrowing Owl 39
6.12 Roosting Bats 39
6.13 Sensitive Natural Communities 39
6.14 Wildlife Corridors 40
6.15 PCCP Special Habitats, CARP Drainage Setbacks, and CARP Riparian Buffer 40

7.0 MITIGATION FOR IMPACTS TO SENSITIVE BIOLOGICAL RESOURCES 41
7.1 Aquatic Resources 41
7.2 PCCP Application 42
7.2.1 General Condition 1, Watershed Hydrology and Water Quality 42
7.2.3 General Condition 3, Land Conversion 43
7.2.4 General Condition 4, Temporary Effects 44
7.2.5 General Condition 5, Conduct Worker Training 44
7.2.6 Community Condition 1.1, Impacts to Vernal Pool Complex Constituent Habitat 44
7.2.7 Community Condition 1.2, Impacts to Aquatic/Wetland Complex Constituent Habitat 44
7.2.8 Community Condition 1.4, Salvage of Vernal Pool Constituent Habitat 44
7.2.9 Community Condition 2.1, Riverine and Riparian Avoidance and Minimization 45
7.2.10 Community Condition 2.2, Minimize Riverine and Riparian Effects 45
7.2.11 Community Condition 2.3, Riverine and Riparian Restoration 45
7.2.12 Community Condition 3, Valley Oak Woodland Avoidance and Minimization, and Mitigation Measures 46
7.2.13 Stream System Condition 1, Stream System Avoidance and Minimization 46
7.2.14 Stream System Condition 2, Stream System Mitigation and Restoration 46
7.2.15 Species Condition 1: Swainson's Hawk 46
7.2.16 Species Condition 3: Western Burrowing Owl 47
7.2.17 Species Condition 4: Tricolored Blackbird 49
7.2.18 Species Condition 6: Western Pond Turtle 51
7.2.19 Species Condition 8: Valley Elderberry Longhorn Beetle 52
7.2.20 Species Condition 10: Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp 52
7.2.21 CARP Authorization Conditions 52
7.3 Special-Status Plant Species 55
7.4 Crotch's Bumble Bee 56
7.5 Western Spadefoot 58
7.6 Nesting Raptors and Other Birds 58
7.6.1 Nesting Bird Survey 58
7.6.2 Survey Report 59
7.6.3 Increases to Buffers and Completion of Nesting 59

7.7 Roosting Bats 59

8.0 REFERENCES 61

Tables

Table 1. PCCP Land Cover Types within the Study Areas 9
Table 2. Aquatic Resources Delineated within the Study Areas 11
Table 3. Special-Status Species with Potential to Occur within the Study Areas 14
Table 4. Acres of Aquatic Resources Impacts within the Study Areas 36
Table 5. Acres of Terrestrial Land Cover Impacts within the Study Areas 37
Table 6. Impacts to PCCP Special Habitats and CARP Setbacks within the Study Areas 40

Figures

Figure 1. Site and Vicinity
Figure 2. California Natural Diversity Database Occurrences and Critical Habitat
Figure 3. Aquatic Resources, Terrestrial Land Covers, and Species Locations
Figure 4. Natural Resources Conservation Service Soils
Figure 5. PCCP-Specific Boundaries
Figure 6. Impacts to Aquatic Resources and Land Covers
Figure 7. Impacts to PCCP-Specific Boundaries

Attachments

Attachment A. Site Plan
Attachment B. IPaC Trust Resource Report for the Study Areas
Attachment C. CNPS Inventory of Rare and Endangered Plants Query for the "Citrus Heights, California" and "Roseville, California" USGS Quadrangle and 10 Surrounding Quadrangles
Attachment D. Wildlife List
Attachment E. Aquatic Resources Delineation Reports for the On-Site Study Area
Attachment F. Special-Status Plant Survey Report for the Fong Property
Attachment G. 90-Day Survey Report for 2024-25 Wet Season Surveys for Listed Large Branchiopods for Estia Dry Creek

1.0 INTRODUCTION

This report presents the results of a Biological Resources Assessment (BRA) conducted for Estia Dry Creek and Placer Creek Residential Project (Project). The Project has previously been referred to as the Fong Property. The residential development portion of the Project is referred to as the On-Site Study Area throughout this document, while the area where off-site sewer improvements are proposed is referred to as the Off-Site Study Area. The On-Site Study Area and Off-Site Study Area are collectively referred to as the Study Areas. The 95.5-acre On-Site Study Area is located south of Baseline Road, west of Crowder Lane, and both north and south of Walerga Road, in an unincorporated area of Placer County, California. A small portion of the On-Site Study Area extends north of Baseline Road, and extends into the City of Roseville. The 2.0-acre Off-Site Study Area is located south of Dry Creek and just east of Dry Creek Community Park in an unincorporated area of Placer County, California. The 97.4-acre Study Areas are located in portions of Sections 6 and 7, Township 10 North, Range 6 East (MDB&M) of the "Citrus Heights, California" and "Roseville, California" 7.5-Minute Series USGS Topographic Quadrangles (USGS 2023 and USGS 2021) (**Figure 1)**.

1.1 Project Description

The proposed Project would generally include the development of two single-family residential communities: Estia Apartments and Placer Creek Residential. The area north of Walerga consists of the Estia Apartments (which is shown as Phase 1 on the Conceptual Lotting Study included as **Attachment A**) and Phase 2 Placer Creek Residential site. Phases 3 and 4 Placer Creek Residential are located south of Walerga.

Estia is a 220-unit single-story apartment home community. Estia represents the first "missing middle" multi-family housing community of its kind in the County, which offers a single-family experience in a standard apartment community setting. Also known as "Horizontal Apartments", each unit is uniquely designed with private entries, at most a single shared wall, and private fenced backyards. There will be a mix of one-bedroom and two-bedroom units ranging from approximately 700 square feet to 1,100 square feet.

The Placer Creek Residential (PCR) element of the Project is proposed as three separate neighborhoods containing 212 single-family residential home sites, with trails, recreation areas, and open space along the "Placer Creek" riparian area separating the Phase 3 and 4 neighborhoods. The Phase 2 PCR neighborhood would contain 110 lots and be accessed from Walerga Road. This phase would connect to the existing stub streets of Springhill Drive and Wellbrook Place. South of Walerga Road, the Phase 3 PCR neighborhood would contain 55 lots. Phase 3 has a single entry at the existing Placer Vineyards 1A signalized intersection at Town Center Avenue. The southern Phase 4 PCR neighborhood would contain 47 lots and would be accessed from the western extension of Vineyard Road, between Sun Valley Oaks and Morgan Creek. One pedestrian trail crossing over the intermittent drainage will be constructed between Phases 3 and 4 as part of the Project.

The intermittent drainage and its associated riparian corridor and Stream System will be largely avoided by the Project (**Attachment A**).

The Project may be required to construct offsite sewer improvements located at the Dry Creek Regional Park adjacent to the existing Community Facility District #1 Sewer Lift Station. This offsite improvement would include construction of large, underground storage tanks in the southern Portion of the Off-site Study Area as required by Placer County's redundancy standards. The tank areas would require embankment work to raise the access and maintenance areas out of the adjacent Dry Creek 100-year floodplain. This embankment for flood protection would reduce Dry Creek floodwater storage in the area. To offset this and maintain the same volume of floodwater storage, this would also require commensurate excavation immediately north of the facility in an undeveloped area to mitigate impact to the creek water surface elevations. These compensatory excavation areas in the northern portion of the Off-Site Study Area would be minor in nature, estimated at 2-4' in depth, and be designed to re-establish natural drainage flow characteristics.

2.0 REGULATORY SETTING

This section describes federal, state and local laws and policies that are relevant to this assessment of biological resources.

2.1 Federal Regulations

2.1.1 Federal Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973 protects species that are federally listed as endangered or threatened with extinction. FESA prohibits the unauthorized "take" of listed wildlife species. Take includes harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species or any attempt to engage in such activities. Harm includes significant modifications or degradations of habitats that may cause death or injury to protected species by impairing their behavioral patterns. Harassment includes disruption of normal behavior patterns that may result in injury to or mortality of protected species. Civil or criminal penalties can be levied against persons convicted of unauthorized "take." In addition, FESA prohibits malicious damage or destruction of listed plant species on federal lands or in association with federal actions, and the removal, cutting, digging up, damage, or destruction of listed plant species in violation of state law. FESA does not afford any protections to federally listed plant species that are not also included on a state endangered species list on private lands with no associated federal action.

2.1.2 Clean Water Act, Section 404

Section 404 of the Federal Clean Water Act requires that a Department of the Army permit be issued prior to the discharge of dredged or fill material into waters of the United States, including some wetlands. The U.S. Army Corps of Engineers (USACE) administers this program, with oversight from the U. S. Environmental Protection Agency. As of the date of this document, waters of the United States (waters of the U.S.) are defined as follows (40 CFR 120.2):

(a) Waters of the United States means:

1. Waters which are:

i. Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
ii. The territorial seas; or
iii. Interstate waters;

2. Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under paragraph (a)(5) of this section;
3. Tributaries of waters identified in paragraph (a)(1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;
4. Wetlands adjacent to the following waters:
   i. Waters identified in paragraph (a)(1) of this section; or
   ii. Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;
5. Intrastate lakes and ponds not identified in paragraphs (a)(1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3) of this section

Under the current definition of waters of the U.S., "adjacent" means having a continuous surface connection.

2.1.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) prohibits the take, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase or barter, any native migratory bird, their eggs, parts, and nests, except as authorized under a valid permit (50 CFR 21.11.). Likewise, Section 3513 of the California Fish & Game Code prohibits the "take or possession" of any migratory non-game bird identified under the MBTA. Therefore, activities that may result in the injury or mortality of native migratory birds, including eggs and nestlings, would be prohibited under the MBTA.

2.2 State Regulations

2.2.1 California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires evaluations of project effects on biological resources. Determining the significance of those effects is guided by Appendix G of the CEQA guidelines. These evaluations must consider direct effects on a biological resource within the project site itself, indirect effects on adjacent resources, and cumulative effects within a larger area or region. Effects can be locally important but not significant according to CEQA if they would not substantially affect the regional population of the biological resource. Significant adverse impacts on biological resources would include the following:

- Substantial adverse effects on any species identified as candidate, sensitive, or special-status in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife

(CDFW) or the U.S. Fish and Wildlife Service (USFWS) (these effects could be either direct or via habitat modification);

- Substantial adverse impacts to species designated by the California Department of Fish and Game (2009) as Species of Special Concern;
- Substantial adverse effects on riparian habitat or other sensitive habitat identified in local or regional plans, policies, or regulations or by CDFW and USFWS;
- Substantial adverse effects on federally protected wetlands defined under Section 404 of the Clean Water Act (these effects include direct removal, filling, or hydrologic interruption of marshes, vernal pools, coastal wetlands, or other wetland types);
- Substantial interference with movements of native resident or migratory fish or wildlife species population, or with use of native wildlife nursery sites;
- Conflicts with local policies or ordinances protecting biological resources (e.g., tree preservation policies); and
- Conflict with provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan.

2.2.2 State Endangered Species Act

With limited exceptions, the California Endangered Species Act (CESA) of 1984 protects state-designated endangered and threatened species in a way similar to FESA. For projects on private property (i.e. that for which a state agency is not a lead agency), CESA enables CDFW to authorize take of a listed species that is incidental to carrying out an otherwise lawful project that has been approved under CEQA (Fish & Game Code Section 2081).

2.2.3 Native Plant Protection Act

The Native Plant Protection Act (NPPA) was enacted in 1977 and allows the Fish and Game Commission to designate plants as rare or endangered. There are 64 species, subspecies, and varieties of plants that are protected as rare under the NPPA. The NPPA prohibits take of endangered or rare native plants, but includes some exceptions for agricultural and nursery operations; emergencies; and after properly notifying CDFW for vegetation removal from canals, roads, and other sites, changes in land use, and in certain other situations.

2.2.4 Clean Water Act, Section 401

Section 401 of the Clean Water Act requires any applicant for a 404 permit in support of activities that may result in any discharge into waters of the United States to obtain a water quality certification with the Regional Water Quality Control Board (RWQCB). This program is meant to protect these waters and wetlands by ensuring that waste discharged into them meets state water quality standards. Because the water quality certification program is triggered by the need for a Section 404 permit (and both programs are a part of the Clean Water Act), the definition of waters of the United States under Section 401 is the same as that used by the USACE under Section 404.

2.2.5 California Water Code, Porter-Cologne Act

The Porter Cologne Act, from Division 7 of the California Water Code, requires any person discharging waste or proposing to discharge waste that could affect the quality of waters of the state to file a report of waste discharge (RWD) with the RWQCB. The RWQCB can waive the filing of a report, but once a report is filed, the RWQCB must either waive or adopt water discharge requirements (WDRs). "Waters of the state" are defined as any surface water or groundwater, including saline waters, within the boundaries of the state.

2.2.6 California Fish and Game Code, Section 1600 – Streambed and Lake Alteration

The CDFW is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the Fish and Game Code, Section 1602, requires notification to CDFW of any proposed activity that may substantially modify a river, stream, or lake. Notification is required by any person, business, state or local government agency, or public utility that proposes an activity that will:

- substantially divert or obstruct the natural flow of any river, stream or lake;
- substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or
- deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

For the purposes of Section 1602, rivers, streams and lakes must flow at least intermittently through a bed or channel. If notification is required and CDFW believes the proposed activity is likely to result in adverse harm to the natural environment, it will require that the parties enter into a Lake or Streambed Alteration Agreement (LSAA).

2.2.7 California Fish and Game Code, Section 3503.5 - Raptor Nests

Section 3503.5 of the Fish and Game Code makes it unlawful to take, possess, or destroy hawks or owls, unless permitted to do so, or to destroy the nest or eggs of any hawk or owl.

2.2.8 California Fully Protected Species

The State of California first began to designate species as "fully protected" prior to the creation of the federal and California ESAs. Lists of fully protected species were initially developed to provide protection to those animals that were rare or faced possible extinction and included fish, amphibians and reptiles, birds, and mammals. Most fully protected species have since been listed as threatened or endangered under the federal and/or California ESAs. The regulations that implement the Fully Protected Species Statute (California Fish and Game Code, § 4700 for mammals, § 3511 for birds, § 5050 for reptiles and amphibians, and § 5515 for fish) provide that fully protected species may not be taken or possessed at any time. Furthermore, CDFW prohibits any state agency from issuing incidental take permits for fully protected species. CDFW will issue licenses or permits for take of these species for necessary scientific research or live capture and relocation pursuant to the permit.

2.3 Local Regulations

2.3.1 Placer County Conservation Plan

The Western Placer County Conservation Plan (PCCP; also referred to as the Placer County Conservation Program) applies to all Covered Activities (as defined in the PCCP) within Placer County generally north of PFE Road, but outside of certain non-participating municipalities. The PCCP allows applicants to engage in a streamlined permitting process for mitigating project impacts to aquatic resources and sensitive wildlife species, where previously, applicants would need to obtain permits from the reviewing state and federal regulatory agencies (i.e., USACE, USFWS, CDFW). The PCCP is a multi-component program comprised of:

- Habitat Conservation Plan (HCP) under the Federal Endangered Species Act and a Natural Community Conservation Plan (NCCP) under the California Natural Community Conservation Planning Act,
- County Aquatic Resources Program (CARP) to fulfill the requirements of the federal Clean Water Act and state laws and regulations, and
- In-Lieu Fee Program to fulfill Clean Water Act Section 401/404 compensatory mitigation requirements for impacts to aquatic resources.

The PCCP addresses 14 Covered Species and several Covered Natural Communities and includes conservation measures to protect those Covered Species and their habitats. Projects that occur within the PCCP Plan Area are subject to applicable avoidance and minimization measures, which are intended to ensure that adverse effects on Covered Species and natural communities are avoided and minimized. Any conversion of natural or semi-natural lands, including oak woodland, grasslands, and wetlands will be subject to the applicable permits under the PCCP and associated impact fees. During the local impact authorization process, impact fees including Land Conversion fees and Aquatic/Wetland Special Habitat fees will be calculated utilizing land cover data.

Many of the conditions of the PCCP involve the Stream System. The Stream System boundary is the outermost of a variable-width buffer (50 feet or greater; detailed in Table 3-4 and Figure 3-8 of the PCCP) from the ordinary high-water mark of a drainage or the 100-year floodplain. The presence of the Stream System affects Covered Activities, informs land conversion and take of Covered Species, and guides the conservation strategy in the PCCP.

Within the Stream System, the CARP has a number of additional conditions for work within the vicinity of drainages and riparian vegetation. These conditions apply to certain defined areas (referred to as "CARP Drainage Setbacks" throughout this document); those that are relevant to this Project include:

- Disturbance within 50 feet of the edge of riparian vegetation shall be limited to exempt activities such as bridge crossings, recreational trails, and outfalls. This 50-foot restricted area is referred to throughout this document as the "Riparian Buffer".
- No structures are permitted within 50 feet of intermittent streams or within 100 feet of perennial streams unless authorized through an approved variance processed by Placer County.

3.0 METHODOLOGY

3.1 Literature Review

A list of special-status species with potential to occur within the Study Areas was developed by conducting a query of the following databases:

- California Natural Diversity Database (CNDDB) (CNDDB 2025) query of the Study Areas and all areas within 5 miles of the Study Areas (**Figure 2**);
- USFWS Information for Planning and Conservation (IPaC) (USFWS 2025) query for the Study Areas (**Attachment B**);
- California Native Plant Society (CNPS) Rare and Endangered Plant Inventory (CNPS 2025) query of the "Citrus Heights, California" and "Roseville, California" USGS topo quadrangles, and the ten surrounding quadrangles (**Attachment C**); and
- Western Bat Working Group (WBWG) Species Matrix (WBWG 2025).

In addition, any special-status species that are known to occur in the region, but that were not identified in any of the above database searches were also analyzed for their potential to occur within the Study Areas. For the purposes of this Biological Resources Assessment, special-status species are defined as those species that are:

- listed as threatened or endangered, or proposed or candidates for listing by the USFWS or National Marine Fisheries Service;
- listed as threatened or endangered and candidates for listing by CDFW;
- identified as Fully Protected species or species of special concern by CDFW;
- identified as Medium or High priority species by the WBWG (WBWG 2025); and
- plant species considered to be rare, threatened, or endangered in California by the CNPS and CDFW [California Rare Plant Rank (CRPR) 1, 2, and 3]:
    - CRPR 1A: Plants presumed extinct.
    - CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere.
    - CRPR 2A: Plants extirpated in California, but common elsewhere.
    - CRPR 2B: Plants rare, threatened, or endangered in California, but more common elsewhere.
    - CRPR 3: Plants about which the CNPS needs more information – a review list.

3.2 Field Surveys

Madrone Ecological Consulting, LLC (Madrone) senior biologists Daria Snider, Tara Collins, and Jinnah Benn conducted field surveys of various portions of the Study Areas on 3 September 2015, 15 March and 9 May 2018, 30 April and 16 May 2024, 4 and 31 March, 8 April and 15 April, 8 May, 9 and 26 June and 1 July 2025 to map vegetation communities/land covers and assess the suitability of habitats on-site to support special-status species. Meandering pedestrian surveys were performed on foot throughout the Study Areas. Vegetation communities were classified in accordance with the PCCP Land Covers, and plant taxonomy was based on the nomenclature in the *Jepson eFlora* (Jepson Flora Project 2025). A list of all wildlife species

observed during field surveys is included as **Attachment D**. The following protocol-level surveys have been conducted within the Study Areas:

- Protocol-level special-status plant surveys were conducted within the On-Site Study Area on 15 March and 9 May 2018, 30 April and 16 May 2024.
- Protocol-level Valley elderberry longhorn beetle (VELB) habitat surveys were conducted throughout the On-Site Study Area concurrent with the 2018 special-status plant surveys and again on 8 May 2025.
- An aquatic resources delineation of the On-Site Study Area was conducted in accordance with USACE protocol on 3 September 2015, 15 March and 9 May 2018, and 1 and 9 July 2025.
- Protocol-level aquatic resources delineation, special-status plant survey and VELB habitat survey of the Off-Site Study Area on 9 June 2025.
- Protocol-level Swainson's hawk nest surveys and tricolored blackbird nesting surveys were conducted for the On-Site Study Area and a 0.25 mile buffer around that area on 31 March, 4, 8, 15 and 30 April, and 25 June 2025.
- Protocol-level wet-season surveys for large branchiopods were conducted within the On-Site Study Area throughout the winter of 2024-2025 (there are no vernal pool constituent habitats that could support vernal pool branchiopods within the Off-Site Study Area).

The results of the protocol-level surveys outlined above were incorporated into this report, and are detailed in the following attached reports:

- *Aquatic Resources Delineation Report for Placer Christian High School* (Madrone 2018a) (**Attachment E**),
- *Aquatic Resources Delineation Report for Placer Creek Residential* (Madrone 2018b) (**Attachment E**),
- *Special-Status Plant Survey Report for Fong Property* (Madrone 2024) (**Attachment F**), and
- *90-Day Survey Report for 2024-25 Wet-Season Surveys for Listed Large Branchiopods for Estia Dry Creek* (Madrone 2025) (**Attachment G**).

4.0 EXISTING CONDITIONS

The On-Site Study Area is bounded by a developing area to the north (north of Baseline Road), where a Costco and Upland Drive are being constructed in the northwest quadrant of the Baseline Road/Walerga Road intersection; residential subdivisions to the east and south; and in-progress residential construction to the west. The On-Site Study Area is mostly undeveloped, with the exception of the Walerga Road corridor, which runs southwest to northeast through the site, and a paved bike path that crosses through the southern portion of the site. Undeveloped areas are comprised of ungrazed Annual Brome Grassland/VPC on gently rolling terrain interspersed with an assemblage of seasonal wetlands and vernal pools. Several of the seasonal wetlands along the eastern boundary appear to be man-made or existing as a result of past human disturbance. The bike path parallels the south side of an intermittent tributary drainage of Dry Creek that bisects the southern portion of the On-Site Study Area. The intermittent drainage is bordered by Valley Foothill Riparian Woodland that supports native Valley oak (*Quercus lobata*), blue oak (*Q. douglasii*), and interior live oak *(Q. wislizenii*). The On-Site Study Area is situated at an elevation of approximately 100 to 130 feet above mean sea level.

The Off-Site Study Area borders Dry Creek Community Park to the west and an undeveloped area to the east. This site includes a small section of an existing paved bike path. The northern portion of the Off-Site Study Area is comprised of Valley Foothill Riparian Woodland and portions of intermittent tributary drainages of Dry Creek. A storage yard is located just east of the Off-Site Study Area. The Off-Site Study Area elevation is similar to that of the On-Site Study Area.

4.1 Terrestrial Vegetation Communities

Table 1 summarizes the PCCP Land Cover Types mapped within the Study Areas, and the following sections provide narrative descriptions of each of them. Of the approximately 97.4-acre Study Areas, 2.16 of those acres are comprised of aquatic resources **(Figure 3**).

Table 1. PCCP Land Cover Types within the Study Areas

Land Covers / Vegetation Communities		Acres
Annual Brome Grassland/VPC	VPC Intermediate	82.0
	VPC Low	0.8
Road		8.1
Urban Parks		0.5
Urban/Suburban		2.2
Valley Foothill Riparian Woodland		3.8
Total		**97.4**

4.1.1 Natural Communities

4.1.1.1 Annual Brome Grassland / VPC Low and VPC Intermediate

The areas mapped as Vernal Pool Complex (VPC) Low and VPC Intermediate Land Covers by the PCCP are annual brome grasslands with varying densities of wetlands. The term Annual Brome Grassland/VPC is used to collectively describe these two types because it is more descriptive and more understandable to the reader. On the figures, these areas are reported as VPC Intermediate and VPC Low to meet the requirements of the PCCP.

The Annual Brome Grassland/VPC is dominated by non-native grasses and forbs such as wild oat (*Avena fatua*), soft brome (*Bromus hordeaceus*), medusa head (*Elymus caput-medusae*), ryegrass (*Festuca perennis*), winter vetch (*Vicia villosa*), and caley pea (*Lathyrus hirsutus*).

4.1.1.2 Valley Oak Riparian Woodland/Valley Foothill Riparian Woodland

Both sides of the intermittent drainage support a Valley oak woodland. The canopy of this community is comprised of Valley oak (*Quercus lobata*), blue oak (*Quercus douglasii*), and interior live oak (*Quercus wislizeni*). The understory is primarily comprised of western poison oak (*Toxicodendron diversilobum*), California pipevine (*Aristolochia californica*), and species found in the surrounding annual brome grassland.

The PCCP classifies Valley oak woodlands in riparian areas as Valley Foothill Riparian Woodland. As a result, this is referred to as Valley Foothill Riparian Woodland throughout this document.

4.1.2 Urban (Non-Natural) Communities

The following urban land covers do not support species habitat, and as such, are not subject to Land Conversion fees under the PCCP. These are categorized as "Previously Converted" areas in the impact section, as they were converted from natural to non-natural communities prior to Project initiation.

4.1.2.1 Road

The existing Walerga Road corridor, which runs southwest to northeast through the On-Site Study Area makes up 8.1 acres of the Study Areas.

4.1.2.2 Urban Parks

A 0.5-acre portion of Dry Creek Community Park is located within the Off-Site Study Area of the Project. This area was under active construction during the June 2025 field survey.

4.1.2.3 Urban/Suburban

Several areas within the Study Areas are mapped as Urban and Suburban. These include paved roadways/pathways and adjacent street landscaping. Most of these areas are paved or otherwise unvegetated, but some areas support maintained landscaping or ruderal vegetation. A paved bike bath occurs parallel to the intermittent drainage in the southern portion of the On-Site Study Area as well as a paved path along the western boundary of the northern portion of the On-Site Study Area.

4.2 Aquatic Resources

Figure 3 shows the locations of aquatic resources in the Study Areas. These locations are based on aquatic resource delineation maps completed by Madrone and verified by the U.S. Army Corps of Engineers on 26 March 2019 (north of Walerga Road) and 21 February 2019 (south of Walerga Road) (**Attachment E**), as well as an aquatic resources delineation of off-site areas conducted by Madrone utilizing the same methodology on 1 and 9 July 2025. **Table 2** summarizes the aquatic resources by type in the Study Areas. A total of 2.07 acres of aquatic resources were mapped within the Study Areas. A description of each of the aquatic resource types and PCCP classifications is included below.

Table 2. Aquatic Resources Delineated within the Study Areas

Resource Type	PCCP Classification	Acreage
Wetlands		
Irrigated Wetland	Aquatic/Wetland	0.03
Seasonal Wetland	Vernal Pool Constituent Habitat	0.26
Seasonal Wetland Swale	Vernal Pool Constituent Habitat	0.26
Vernal Pool	Vernal Pool Constituent Habitat	1.11
Other Waters		
Ephemeral Drainage	Aquatic/Wetland	0.01
Intermittent Drainage	Riverine	0.39
Roadside Ditch	Aquatic/Wetland	0.02
Total		**2.07**

Summation errors may occur due to rounding.

4.2.1 Irrigated Wetland

One irrigated wetland was mapped along the eastern boundary of the On-Site Study Area. This feature appears to be the result of irrigation runoff from adjacent residences. The fence around the adjacent residence has been designed to allow irrigation runoff to flow underneath, and into this wetland. Based on a review of historic aerial photography, it appears that this wetland formed between 2005 and 2006, shortly after the construction of adjacent houses. Because this wetland is supported by runoff during the dry season, a variety of plant species typical of prolonged saturation have become established, including tall flatsedge (*Cyperus eragrostis*), common rush (*Juncus effusus*), Gooding's black willow (*Salix gooddingii*), Bermuda grass (*Cynodon dactylon*), English plantain (*Plantago lanceolata*), and yellow bristlegrass (*Setaria pumila*).

4.2.2 Seasonal Wetland

Several seasonal wetlands occur within the On-Site Study Area. Seasonal wetlands are depressional wetlands that pond water seasonally. These features are often topographically and hydrologically similar to vernal pools, but have a short hydroperiod, and as a result, support a slightly different plant community that is not characterized by a dominance of vernal pool endemics. The seasonal wetlands within the On-Site Study Area are largely dominated by Mediterranean barley (*Hordeum marinum*) and hyssop loosestrife (*Lythrum hyssopifolia*).

4.2.3 Seasonal Wetland Swale

The On-Site Study Area supports multiple seasonal wetland swales. Seasonal wetland swales are sloping, linear seasonal wetlands that convey surface runoff, and may detain it for short periods of time. The dominant plant occurring within the wetland swales was ryegrass.

4.2.4 Vernal Pool

The On-Site Study Area supports five vernal pools. Vernal pools are topographic basins that are underlain with an impermeable or semi-permeable hardpan or duripan layer. Vernal pools inundate during the wet season, and typically dry by late spring and remain dry through the summer months. The vernal pool was differentiated from depressional seasonal wetlands within the On-Site Study Area based upon the predominance of vernal pool endemic plant species. The vernal pools were dominated by Mediterranean barley, smooth goldfields (*Lasthenia glaberrima*), low manna grass (*Glyceria declinata*), and great valley popcorn flower (*Plagiobothrys stipitatus*).

4.2.5 Ephemeral Drainage

Three reaches of ephemeral drainage occur within the On-Site Study Area. These are linear features that exhibit an Ordinary High Water Mark. The southern two features within the On-Site Study Area are the portions of a seasonal wetland swale that runs through large expanses of riprap on either side of a culvert. The third is an incised drainage that drains a vernal pool into a culvert to the north. These features convey runoff for short periods of time, during and immediately following rain events, and are not influenced by groundwater sources at any time during the year.

4.2.6 Intermittent Drainage

Three reaches of intermittent drainage were mapped within the Study Areas. The largest feature flows from east to west across the On-Site Study Area and is a tributary to Dry Creek. Two smaller reaches occur within the Off-Site Study Area, and are also tributary to Dry Creek. The intermittent drainages are largely unvegetated within the channel yet contain patches of vegetation including ryegrass, creeping spikerush (*Eleocharis macrostachya*), and common monkeyflower (*Erythranthe guttata*).

4.2.7 Roadside Ditch

Several roadside ditches are present along the eastern edge of Walerga Road, and along the south side of Baseline Road. These features are unvegetated, maintained ditches that convey stormwater flows off of Baseline and Walerga Roads.

4.3 Soils

According to the Natural Resources Conservation Service (NRCS) Soil Survey Database (NRCS 2025), nine soil mapping units occur within the Study Areas (**Figure 4**): (140) Cometa sandy loam, 1-5% slopes; (141) Cometa-Fiddyment complex, 1-5% slopes; (142) Cometa-Ramona sandy loams, 1-5% slopes; (146) Fiddyment loam, 1-8% slopes; (147) Fiddyment-Kaseberg loams, 2-9% slopes; (175) Ramona sandy loam, 2-9% slopes; (182) San Joaquin-Cometa sandy loams, 1-5% slopes; (193) Xerofluvents, occasionally flooded; and (194) Xerofluvents, frequently flooded (NRCS 2024). None of the soil map units within the Study Areas

are derived from serpentine parent material, and no alkaline or saline soils are present within the Study Areas (NRCS 2025).

4.4 PCCP Special Habitats and CARP Setbacks

Within the PCCP Area, the following PCCP Special Habitats and CARP Setbacks have been mapped consistent with the PCCP and CARP guidelines:

- Stream System along Dry Creek and its tributary drainages
- Riparian Buffers, which are any areas within 50 feet of riparian land cover
- CARP Drainage Setback along Dry Creek and its intermittent tributary drainages

4.4.1 Stream System

A 6.7-acre area of PCCP-defined Stream System is present along the intermittent drainage that passes through the southern portion of the On-Site Study Area and encompasses the entire Off-Site Study Area that is just to the south of Dry Creek (**Figure 5**). The Stream System in this location is defined by the limits of the 100-year floodplain and by the Stream System limits noted in Table 6.1 of the CARP, which is 50 feet for an intermittent drainage, and 400 feet for Dry Creek to the north of the Off-Site Study Area.

5.0 RESULTS

Table 3 provides a list of special-status species that were evaluated, including their listing status, habitat associations, and their potential to occur in the Study Areas. The following set of criteria was used to determine each species' potential for occurrence on the site:

- Present: Species occurs in the Study Areas based on CNDDB records, and/or was observed on the site during field surveys.
- High: The Study Areas are within the known range of the species and suitable habitat exists.
- Moderate: The Study Areas are within the known range of the species but very limited suitable habitat exists.
- Low: The Study Areas are within the known range of the species and there is marginally suitable habitat.
- Absent: The species was not observed during protocol-level surveys conducted in the Study Areas.
- No Habitat Present: The Study Areas do not contain suitable habitat for the species or the Study Areas are outside the known range of the species.

Figure 2 is an exhibit displaying CNDDB occurrences within five miles of the Study Areas. Below is a discussion of all special-status plant and animal species with potential to occur on the site.

5.1 Plants

Madrone biologists conducted rare plant surveys of the On-Site Study Area targeting the species listed below on 30 April and 16 May 2024, and of the Off-Site Study Area on 9 June 2025 in accordance with the

Table 3. Special-Status Species with Potential to Occur within the Study Areas

Scientific Name **(Common Name)**	**Federal Status[1]**	**State Status[1]**	**Habitat Requirements**	**Potential for Occurrence**
Plants				
Balsamorhiza macrolepis Big-scale balsamroot	--	CRPR 1B.2	Occurs in chaparral, cismontane woodland and valley and foothill grasslands between 150 and 5100 feet (CNPS 2025). Often associated with serpentine soils.	**Absent.** Marginally suitable habitat is present in the Annual Brome Grassland/VPC. Protocol-level surveys throughout the On-Site Study Area did not detect this species, and no suitable habitat is present within the Off-Site Study Area.
Calycadenia spicata Spicate calycadenia	--	CRPR 1B.3	Occurs in disturbed areas and openings in annual grasslands and cismontane woodland between 130 and 4,600 feet (CNPS 2025). Found on a variety of open habitats including adobe clay, rock outcrops, gravelly areas, and mine tailings (CNPS 2025).	**No Habitat Present.** The clayey, rocky areas this species prefers are not present within the Study Areas.
Chloropyron molle ssp. *hispidum* Hispid bird's-beak	--	CRPR 1B.1	Found in meadows and seeps, playas, and valley and foothill grasslands with alkaline soils between five and 510 feet in elevation (CNPS 2025).	**No Habitat Present.** No saline-alkali soils are present within the Study Areas.
Downingia pusilla Dwarf downingia	--	CRPR 2B.2	Strongly associated with vernal pools, depressional wetlands, and mesic valley and foothill grassland, and is found in elevations ranging from five to 1460 feet (CNPS 2025). Dwarf downingia is typically associated with areas that experience a moderate degree of disturbance.	**Absent.** The vernal pools, seasonal wetlands, and seasonal wetland swales within the On-Site Study Area represent suitable habitat for this species. Protocol-level surveys throughout the On-Site Study Area did not detect this species, and no suitable habitat is present within the Off-Site Study Area.

Table 3. Special-Status Species with Potential to Occur within the Study Areas

Scientific Name **(Common Name)**	**Federal Status[1]**	**State Status[1]**	**Habitat Requirements**	**Potential for Occurrence**
Gratiola heterosepala Boggs Lake hedge-hyssop	--	CE, CRPR 1B.2	Grows in vernal pools and around the perimeter of marshes and swamps between 35 and 7,790 feet (CNPS 2025). Known to favor clay soils.	**Absent.** The vernal pools and seasonal wetlands within the On-Site Study Area represent suitable habitat for this species. Protocol-level surveys throughout the On-Site Study Area did not detect this species, and no suitable habitat is present within the Off-Site Study Area.
Juncus leiospermus var. *ahartii* Ahart's dwarf rush	--	CRPR 1B.2	Grows along the edges of vernal pools and swales within mesic valley and foothill grassland habitat between elevations of approximately 100 and 750 feet (CNPS 2025).	**Absent.** The vernal pools and seasonal wetlands within the On-Site Study Area represent suitable habitat for this species. Protocol-level surveys throughout the On-Site Study Area did not detect this species, and no suitable habitat is present within the Off-Site Study Area.
Juncus leiospermus var. *leiospermus* Red Bluff dwarf rush	--	CRPR 1B.1	Grows in various habitats such as chaparral, cismontane woodland, valley and foothill grassland, meadows and seeps, as well as mesic vernal pools. Found between elevations of approximately 100 and 750 feet (CNPS 2025).	**No Habitat Present.** The Study Areas are outside of the range of the species. The nearby occurrence is widely considered to be erroneous.
Legenere limosa Legenere	--	CRPR 1B.1	Associated with vernal pools and found between five and 2,885 feet (CNPS 2025).	**Absent.** The vernal pools and seasonal wetlands within the On-Site Study Area represent marginal habitat for this species. Protocol-level surveys throughout the On-Site Study Area did not detect this species, and no suitable habitat is present within the Off-Site Study Area.

Table 3. Special-Status Species with Potential to Occur within the Study Areas

Scientific Name **(Common Name)**	**Federal Status[1]**	**State Status[1]**	**Habitat Requirements**	**Potential for Occurrence**
Navarretia myersii ssp. *myersii* Pincushion navarretia	--	CRPR 1B.1	Found in vernal pools, often in acidic micro habitats between approximately 65 and 1,085 feet (CNPS 2025).	**Absent.** The vernal pools and seasonal wetlands within the On-Site Study Area represent suitable habitat for this species. Protocol-level surveys throughout the On-Site Study Area did not detect this species, and no suitable habitat is present within the Off-Site Study Area.
Orcuttia tenuis Slender Orcutt grass	FT	CE, CRPR 1B.1	Found in vernal pools with gravelly substrates at elevations generally ranging between 115 and 5,775 feet (CNPS 2025).	**Absent.** The vernal pools within the On-Site Study Area represent marginal habitat for this species. Protocol-level surveys throughout the On-Site Study Area did not detect this species, and no suitable habitat is present within the Off-Site Study Area.
Orcuttia viscida Sacramento Orcutt grass	FE	CE, CRPR 1B.1	Favors vernal pool habitats and is found between elevations of 100 and 330 feet (CNPS 2025).	**Absent.** The vernal pools within the On-Site Study Area represent marginal habitat for this species. Protocol-level surveys throughout the On-Site Study Area did not detect this species, and no suitable habitat is present within the Off-Site Study Area.
Sagittaria sanfordii Sanford's arrowhead	--	CRPR 1B.2	Occurs in shallow freshwater habitats associated with drainages, canals, and larger ditches that sustain inundation and/or slow-moving water into early summer. Found from approximately sea level to 2,135 feet (CNPS 2023).	**Absent.** The intermittent drainages represent suitable habitat for this species. Protocol-level surveys of the Study Areas did not detect this species.
Invertebrates				
Bombus crotchii Crotch's bumble bee	--	CC	Occurs in open grasslands and scrub habitats. This species occurs primarily in California including the Mediterranean region, Pacific Coast, Western Desert,	**High.** The Annual Brome Grassland/VPC within the Study Areas represents suitable habitat for this species.

Table 3. Special-Status Species with Potential to Occur within the Study Areas

Scientific Name **(Common Name)**	**Federal Status[1]**	**State Status[1]**	**Habitat Requirements**	**Potential for Occurrence**
			Great Valley, and adjacent foothills through most of southwestern California (Williams et al 2014).	
Branchinecta conservatio **Conservancy fairy shrimp**	FE	--	Occurs in very large, turbid vernal pools.	**No Habitat Present.** None of the vernal pools within the Study Areas provide appropriate habitat for this species, which consists of large, deep, alkaline, clay-bottomed vernal pool playas with turbid water. Additionally, the Study Areas are not within the required survey area showing on Figure 5-7 of the PCCP nor do they encompass any of the ten localities known to support this species.
Branchinecta lynchi **Vernal pool fairy shrimp**	FT	--	Vernal pools.	**Low.** Suitable habitat for this species is present in the vernal pools within the On-Site Study Area. This species was not found on-site during a full year of protocol-level wet season surveys of all suitable habitat (Madrone 2025).
Danaus plexippus Monarch butterfly	FC	--	Migratory species; most prevalent in the Central Valley in summer and early fall. Dependent upon milkweed (*Asclepias* species) plants as their exclusive larval host.	**No Habitat Present.** No milkweed plants are present within the Study Areas.
Desmocerus californicus dimorphus **Valley elderberry longhorn beetle**	FT	--	Dependent upon elderberry *(Sambucus* species) shrubs as primary host species.	**Low.** One elderberry shrub occurs within the On-Site Study Area. No VELB exit holes were found during the protocol-level survey.

Table 3. Special-Status Species with Potential to Occur within the Study Areas

Scientific Name (Common Name)	Federal Status[1]	State Status[1]	Habitat Requirements	Potential for Occurrence
Lepidurus packardi **Vernal pool tadpole shrimp**	FE	--	Vernal pools.	**Low.** Suitable habitat for this species is present in the vernal pools within the On-Site Study Area. This species was not found on-site during a full year of protocol-level wet season surveys of all suitable habitat (Madrone 2025).
Fish				
Oncorhynchus mykiss irideus **pop. 11 Central Valley steelhead DPS**	FE	--	Anadromous species requiring freshwater water courses with gravelly substrates for breeding. The young remain in freshwater areas before migrating to estuarine and marine environments.	**No Habitat Present.** Dry Creek just north of the Off-Site Study Area is designated as Critical Habitat for Central Valley Steelhead. The intermittent drainages within the Study Areas are tributary to Dry Creek, but are unsuitable for spawning or rearing because they do not provide steady flow of cool, clear water or suitable substrate for spawning. Although it is possible that steelhead could swim through them occasionally, the intermittent drainages are not considered suitable habitat for this species.
Oncorhynchus tshawytscha **Central Valley fall-run chinook salmon**	--	CSC	Anadromous species requiring freshwater water courses with gravelly substrates for breeding. The young remain in freshwater areas before migrating to estuarine and marine environments.	**No Habitat Present.** Dry Creek just north of the Off-site Study Area serves as a migration corridor to spawning habitat upstream of the Project Area. The intermittent drainages within the Study Areas are tributary to Dry Creek, but are unsuitable for spawning or rearing because they do not provide steady flow of cool, clear water or suitable substrate for spawning. Although it is possible that chinook salmon could swim through them occasionally, the intermittent drainages are

Table 3. Special-Status Species with Potential to Occur within the Study Areas

Scientific Name **(Common Name)**	**Federal Status[1]**	**State Status[1]**	**Habitat Requirements**	**Potential for Occurrence**
				not considered suitable habitat for this species.
Amphibians				
Ambystoma californiense California tiger salamander	FT	CT, CSC	Breeds in ponds or other deeply ponded wetlands, and uses gopher holes and ground squirrel burrows in adjacent grasslands for upland refugia/foraging.	**No Habitat Present.** The Study Areas are outside of the known range of the species.
Spea hammondii Western spadefoot	FPT	CSC	Breeds in vernal pools, seasonal wetlands and associated swales. Forages and hibernates in adjacent grasslands.	**Moderate.** The seasonal wetlands and vernal pools within the On-Site Study Area represent suitable habitat for this species. No western spadefoot were observed within the Study Area during field surveys, including wet season surveys, which would have documented larval spadefoot if present.
Reptiles				
Actinemys marmorata **Northwestern pond turtle**	FPT	FPT, CSC	Ponds, rivers, streams, wetlands, and irrigation ditches with associated marsh habitat.	**High.** The intermittent drainages within the Study Areas represent marginally suitable habitat for this species. No northwestern pond turtles were observed within the intermittent drainages during field surveys.

Table 3. Special-Status Species with Potential to Occur within the Study Areas

Scientific Name **(Common Name)**	**Federal Status[1]**	**State Status[1]**	**Habitat Requirements**	**Potential for Occurrence**
Thamnophis gigas **Giant garter snake**	FT	CT	Rivers, canals, irrigation ditches, rice fields, and other aquatic habitats with slow moving water and heavy emergent vegetation.	**No Habitat Present.** The Study Areas are outside of the known range of the species.
Birds				
Agelaius tricolor **Tricolored blackbird**	--	CE, CSC	Colonial nester in cattails, bulrush, or blackberries associated with marsh habitats.	**Low.** Potential breeding habitat is not present within the Study Areas, but the Annual Brome Grassland/VPC provides marginal foraging habitat.
Ammodramus savannarum Grasshopper sparrow	--	CSC	Typically found in expansive short to middle-height, moderately open grasslands with scattered shrubs or other song perches (Shuford and Gardali 2008).	**Low.** The Annual Brome Grassland/VPC within the Study Areas are not sufficiently expansive to support this species.
Aquila chrysaetos Golden eagle	--	CFP	Forages in open areas including grasslands, savannahs, deserts, and early successional stages of shrub and forest communities. Nests in large trees and cliffs.	**Low.** The Annual Brome Grassland/VPC within the Study Areas is marginally suitable foraging habitat for this species due to the small patch size and relative isolation from other annual grassland areas.
Asio otus Long-eared owl	--	CSC	Inhabits woodlands and conifer groves with dense trees for nesting and roosting and open country for hunting.	**No Habitat Present.** The valley foothill riparian woodland within the Study Areas is not sufficiently dense to provide habitat for this species, and the site is outside the known range of this species.

Table 3. Special-Status Species with Potential to Occur within the Study Areas

Scientific Name **(Common Name)**	**Federal Status[1]**	**State Status[1]**	**Habitat Requirements**	**Potential for Occurrence**
Athene cunicularia **Burrowing owl**	--	CC, CSC	Nests in abandoned ground squirrel burrows associated with open grassland habitats.	**Low.** Potential burrows and debris scattered throughout the Study Areas could provide artificial burrows. The Annual Brome Grassland/VPC provides suitable foraging habitat.
Buteo swainsoni **Swainson's hawk**	--	CT	Nests in large trees, preferably in riparian areas. Forages in fields, cropland, irrigated pasture, and grassland near large riparian corridors.	**High.** The Annual Brome Grassland/VPC throughout the Study Areas represents suitable foraging habitat for Swainson's hawk, and the trees within the Study Areas provide suitable nesting habitat. Swainson's hawks were observed foraging on-site during field surveys.
Circus hudsonius Northern harrier	--	CSC	Nests in emergent wetland/marsh, open grasslands, or savannah habitats. Forages in open areas such as marshes, agricultural fields, and grasslands.	**Low.** The Annual Brome Grassland/VPC, throughout the Study Areas is marginally suitable nesting and foraging habitat for this species due to the small patch size and relative isolation from other annual grassland areas.
Contopus cooperi Olive-sided flycatcher	--	CSC	Summer resident in California. Nests in conifer forests. Spring and fall transient in the Central Valley.	**Low.** Suitable spring and fall foraging habitat is present in the valley foothill riparian woodlands within the Study Areas.
Elanus leucurus White-tailed kite	--	CFP	Open grasslands, fields, and meadows are used for foraging. Isolated trees in close proximity to foraging habitat are used for perching and nesting.	**High.** The Annual Brome Grassland/VPC throughout the Study Areas represents suitable foraging habitat for white-tailed kite, and the trees throughout the Study Areas provide suitable nesting habitat. A white-tailed kite was observed foraging on-site during a field survey.

Table 3. Special-Status Species with Potential to Occur within the Study Areas

Scientific Name **(Common Name)**	**Federal Status[1]**	**State Status[1]**	**Habitat Requirements**	**Potential for Occurrence**
Haliaeetus leucocephalus Bald eagle	FD	CE	Nest in large trees within 1 mile of lakes, rivers, or larger streams.	**No Habitat Present.** Suitable nesting and foraging habitat are not present within the Study Areas.
Lanius ludovicianus Loggerhead shrike	--	CSC	Occurs in open areas with sparse trees, shrubs, and other perches.	**High.** The Annual Brome Grassland/VPC within the Study Areas represent suitable foraging habitat for loggerhead shrike, and the trees and shrubs within the Study Areas provide suitable nesting habitat.
Laterallus jamaicensis coturniculus **California black rail**	--	CT	Nests and forages in salt, brackish, and fresh marshes with abundant vegetative cover.	**No Habitat Present.** No marshes occur within the Study Areas.
Progne subis Purple martin	--	CSC	Nests in tall bridges and overpasses near water and open areas.	**No Habitat Present.** No tall bridges or overpasses occur within the Study Areas, which are outside of the known range of this species.
Setophaga petechia Yellow warbler	--	CSC	Occupy riparian vegetation in close proximity to water along streams and in wet meadows. This species no longer breeds in the Central Valley, but occurs as a common migrant in the fall and winter months (Shuford and Gardali 2008).	**Low.** Although the Study Areas are outside of this species' breeding range, it has been documented along Dry Creek near the Off-site Study Area (eBird 2025), and suitable winter foraging habitat is present in the valley foothill riparian woodlands within the Study Areas.
Mammals				
Antrozous pallidus Pallid bat	--	CSC, WBWG H	Roosts in crevices in rocky outcrops and cliffs, caves, mines, trees, bridges, barns, porches, bat boxes, and human-occupied as well as vacant buildings (WBWG 2025).	**High.** Suitable roosting habitat for this species is present in tree hollows and under exfoliating bark on trees scattered throughout the Study Areas.

Table 3. Special-Status Species with Potential to Occur within the Study Areas

Scientific Name **(Common Name)**	**Federal Status[1]**	**State Status[1]**	**Habitat Requirements**	**Potential for Occurrence**
Lasionycteris noctivagans Silver-haired bat	--	WBWG M	Roosts in abandoned woodpecker holes, under bark, and occasionally in rock crevices. It forages in open wooded areas near water features (WBWG 2025).	**High.** Suitable roosting habitat for this species is present in tree hollows and under exfoliating bark on trees scattered throughout the Study Areas.
Lasiurus frantzii Western red bat	--	CSC, WBWG H	Roosts primarily in the foliage of trees or shrubs (WBWG 2025). There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores) (WBWG 2025).	**Low.** Trees scattered throughout the Study Areas are suitable roosting habitat for this species, but the lack of willows, cottonwoods and sycamores decreases the habitat suitability.
Lasiurus cinereus Hoary bat	--	WBWG M	Roosts primarily in foliage of both coniferous and deciduous trees at the edges of clearings (WBWG 2025).	**Low.** Trees within the valley foothill riparian woodland within the Study Areas are suitable roosting habitat for this species.
Taxidea taxus American badger	--	CSC	This species prefers dry open fields, grasslands, and pastures.	**No Habitat Present.** The Annual Brome Grassland/VPC within the Study Areas is not sufficiently expansive to support this species.

Species in **bold text** are PCCP Covered Species.

[1] Status Codes:

CC - CDFW Candidate for Listing
CE - CDFW Endangered
CFP - CDFW Fully Protected
CRPR - California Rare Plant Rank
CSC - CDFW Species of Concern
CT - CDFW Threatened
FC - Federal Candidate for Listing
FPT - Federal Proposed Threatened
WBWG M - Western Bat Working Group Medium Threat Rank
WBWG H - Western Bat Working Group High Threat Rank
FD - Federally Delisted
FE - Federally Endangered
FT - Federally Threatened

Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants (USFWS 2000), the *Botanical Survey Guidelines of the California Native Plant Society* (CNPS 2001), and *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018). No special-status plants were documented during these surveys (Madrone 2024) (**Attachment F**).

5.1.1 Big-Scale Balsamroot

Big-scale balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*) is not federally or state-listed, but it is classified as a CRPR List 1B.2 plant. It is a perennial herbaceous species that occurs in chaparral, cismontane woodland and valley and foothill grasslands between 295 and 4,600 feet. Big-scale balsamroot blooms from March through June and may be found on serpentine soils, though it is known to grow on other soil types as well (CNPS 2025).

The Annual Brome Grassland/VPC and Valley Foothill Riparian Woodlands throughout the On-Site Study Area provide marginally suitable habitat for this species. This species was not observed during the 2024 protocol-level special status plant survey of the On-Site Study Area (Madrone 2024). There is one record of big-scale balsamroot within five miles of the Study Area in the CNDDB (**Figure 2**). This record (CNDDB Occurrence #9) is located approximately 3.5 miles northeast of the site along Industrial Road (CNDDB 2025).

5.1.2 Dwarf Downingia

Dwarf downingia (*Downingia pusilla*) is not federally or state listed, but it is classified as a CRPR List 1B.2 plant. It is a diminutive annual herb that is strongly associated with vernal pools and other seasonally inundated features at elevations ranging from sea level to approximately 1,500 feet (CNPS 2025). Dwarf downingia is typically associated with areas that experience a moderate degree of disturbance, and it blooms from March to May.

The vernal pools, seasonal wetlands, and seasonal wetland swales within the On-Site Study Area represent suitable habitat for this species. This species was not observed during the 2024 protocol-level special status plant surveys of the On-Site Study Area (Madrone 2024). There are 15 records of dwarf downingia within five miles of the Study Areas in the CNDDB (**Figure 2**). The nearest of these (CNDDB Occurrence #142) is located approximately 1.4 miles northeast of the site in the Silverado Oaks Wetland Preserve (CNDDB 2025).

5.1.3 Boggs Lake Hedge-Hyssop

Boggs Lake hedge-hyssop (*Gratiola heterosepala*) is not federally listed, but it is a California endangered species and a CRPR List 1B.2 plant. Boggs Lake hedge-hyssop grows in vernal pools and around the perimeter of lakes and ponds between 30 and 7,800 feet (CNPS 2025). This small annual herb favors clay soils, and blooms from April to August (CNPS 2025).

The deeper portions of the vernal pools and seasonal wetlands within the On-Site Study Area represent suitable habitat for this species. This species was not observed during the 2024 protocol-level special status plant surveys of the On-Site Study Area (Madrone 2024). There are three records of Boggs Lake hedge-hyssop within five miles of the Study Areas in the CNDDB, two of which are presumed extant, and the last is possibly extirpated (**Figure 2**) (CNDDB 2025). The nearest of these (CNDDB Occurrence #113) is located approximately 1.4 miles northeast of the site in an open space preserve off Pleasant Grove and Foothills Boulevard (CNDDB 2025).

5.1.4 Ahart's Dwarf Rush

Ahart's dwarf rush (*Juncus leiospermus var. ahartii*) is not federally or state listed, but it is classified as a CRPR List 1B.2 plant. Ahart's dwarf rush grows along the edges of seasonal wet habitats such as vernal pools and swales within valley and foothill grasslands between elevations of approximately 100 feet and 750 feet (CNPS 2025). This annual herb blooms from March to May (CNPS 2025).

The vernal pools and seasonal wetlands within the On-Site Study Area represent suitable habitat for this species. This species was not observed during the 2024 protocol-level special status plant surveys of the On-Site Study Area (Madrone 2024). This species has not been documented within five miles of the Study Areas in the CNDDB (CNDDB 2025).

5.1.5 Legenere

Legenere (*Legenere limosa*) is not federally or state listed, but it is classified as a CRPR List 1B.1 species. This annual herb is primarily associated with seasonal wetlands with a long hydroperiod, such as vernal pools and marsh and pond edges (CNPS 2025). Legenere occurs at elevations between sea level and 2,600 feet, and blooms from April to June (CNPS 2025).

The deeper portions of vernal pools and seasonal wetlands within the On-Site Study Area represent suitable habitat for this species. This species was not observed during the 2024 protocol-level special status plant surveys of the On-Site Study Area (Madrone 2024). There is one record of Legenere within five miles of the Study Areas in the CNDDB (**Figure 2**) (CNDDB 2025). The nearest potentially extant occurrence (CNDDB Occurrence #32) is located approximately 3.3 miles southwest of the off-site area south of Elverta Road (CNDDB 2025).

5.1.6 Pincushion Navarretia

Pincushion navarretia (*Navarretia myersii ssp. myersii*) is not federally or state listed, but it is classified as a CRPR List 1B.1 plant. This species is found in vernal pools and other mesic areas in annual grasslands, often on acidic soils (CNPS 2025). Pincushion navarretia is found between approximately 65 and 1,100 feet and blooms in April and May (CNPS 2025).

The vernal pools, seasonal wetlands and seasonal wetland swales within the On-Site Study Area represent suitable habitat for this species. This species was not observed during the 2024 protocol-level special status plant surveys of the On-Site Study Area (Madrone 2024). This species has not been documented within five miles of the Study Areas in the CNDDB (CNDDB 2025).

5.1.7 Slender Orcutt Grass

Slender Orcutt grass (*Orcuttia tenuis*) is listed as threatened pursuant to the federal Endangered Species Act. A total of 82 occurrences are known, of which 76 are presumed to be extant (USFWS 2005). In addition to the counties listed in its historic range, slender Orcutt grass is also known from Lassen, Modoc, Butte, and Plumas Counties (USFWS 2005). The highest concentration of slender Orcutt grass occurs in Tehama County where 27 natural occurrences are found (USFWS 2005).

The vernal pools within the On-Site Study Area represent marginally suitable habitat for this species. This species was not observed during the 2024 protocol-level special status plant surveys of the On-Site Study Area (Madrone 2024). This species has not been documented within five miles of the Study Areas in the CNDDB (CNDDB 2025).

5.1.8 Sacramento Orcutt Grass

Sacramento Orcutt grass (*Orcuttia viscida*) is listed as endangered pursuant to the federal Endangered Species Act. The earliest collection of this species was in 1936 near Phoenix Field; however, by 1990, Sacramento Orcutt grass was known from seven natural occurrences and one introduction (USFWS 2005). The current distribution of the species is restricted to eight extant populations in Sacramento County. One additional population was discovered after 1990; but one known population and a portion of another have been extirpated (USFWS 2005). The highest concentration of occupied habitat occurs within a 2.3-square mile area near Rancho Cordova (USFWS 2005).

The vernal pools within the On-Site Study Area represent marginally suitable habitat for this species. This species was not observed during the 2024 protocol-level special status plant surveys of the On-Site Study Area (Madrone 2024). This species has not been documented within five miles of the Study Areas in the CNDDB (CNDDB 2025).

5.1.9 Sanford's Arrowhead

Sanford's arrowhead (*Sagittaria sanfordii*) is not federally or state listed, but it is classified as a CRPR List 1B.2 plant. It generally occurs in shallow freshwater habitats associated with drainages, canals, and larger ditches that sustain inundation and/or slow-moving water into early summer. This perennial rhizomatous species blooms from May to October and occurs from sea level to approximately 2,000 feet (CNPS 2025).

The intermittent drainages within the Study Areas represent suitable habitat for this species. This species was not observed during the 2024 or 2025 protocol-level special status plant surveys of the Study Areas

(Madrone 2024). There are three records of Sanford's arrowhead in the CNDDB within five miles of the Study Areas (**Figure 2**), the nearest of which (Occurrence #72) is located approximately 2.4 miles to the southwest of the Off-Site Study Area, in Goat Creek north of U Street (CNDDB 2025).

5.2 Invertebrates

5.2.1 Crotch's Bumble Bee

Crotch's bumble bee (*Bombus crotchii*) has a limited distribution in southwestern North America. This species occurs primarily in California, including the Mediterranean region, Pacific Coast, West Desert, Great Valley, and adjacent foothills through most of southwestern California. It also occurs in Mexico (Baja California and Baja California Sur) (Williams et al. 2014) and has been documented in southwest Nevada, near the California border. This species was historically common in the Central Valley of California, but now appears to be absent from most of it, especially in the center of its historic range (Williams et al. 2014; Richardson et al 2014). In California, *B. crotchii* inhabits open grasslands and scrub habitats.

All bumble bees have three basic requirements: suitable nesting sites for the colonies, availability of nectar and pollen from floral resources throughout the duration of the entirety of the colony period (spring, summer, and fall), and suitable overwintering sites for the queens. Nests are often located underground in abandoned holes made by ground squirrels, mice, and rats or occasionally abandoned bird nests (Osborne et al 2008). Some species nest on the surface of the ground (in tufts of grass) or in empty cavities. Bumble bees that nest aboveground may require undisturbed areas with nesting resources such as grass and hay to protect nests. Furthermore, areas with woody cover, or other sheltered areas provide bumble bees sites to build their nests (e.g., downed wood, rock walls, brush piles, etc.).

Bumble bees depend on the availability habitats with a rich supply of floral resources that bloom continuously during the entirety of the colony's life. The queen collects nectar and pollen from flowers to support the production of her eggs, which are fertilized by sperm she has stored from mating the previous fall. As generalist foragers, bumble bees do not depend on any one flower type. They generally prefer flowers that are purple, blue or yellow; they are essentially blind to the color red. The plant families most commonly associated with Crotch's bumblebee observations in California include Apocynaceae, Asteraceae, Boraginaceae, Fabaceae, and Lamiaceae (Xerces Society 2018). Very little is known about hibernacula, or overwintering sites utilized by most bumble bees. Generally, bumble bees overwinter in soft, disturbed soil (Goulson 2010), under leaf litter or other debris (Williams et al. 2014), in abandoned holes made by fossorial mammals or occasionally in abandoned bird nests (Osborne at all 2008). Some species nest on the surface of the ground (in grassy tussocks) or in empty cavities (hollow logs, dead trees, under rocks, etc.). Queens most likely overwinter in small cavities just below or on the ground surface.

The Annual Grassland/VPC within the Study Areas represents suitable habitat for Crotch's bumble bee. These areas contain some flowering plants for much of the year and scattered small burrows in which the species could nest and overwinter. There are no documented occurrences of this species in the CNDDB within 5 miles of the Study Areas (CNDDB 2025).

5.2.2 Vernal Pool Fairy Shrimp

The vernal pool fairy shrimp (*Branchinecta lynchi*) is listed as threatened pursuant to the federal Endangered Species Act and is a PCCP Covered Species. Historically, the range of vernal pool fairy shrimp extended throughout the Central Valley of California. Vernal pool fairy shrimp populations have been found in several locations throughout California, with habitat extending from Stillwater Plain in Shasta County through the Central Valley to Pixley in Tulare County, and along the Central Coast range from northern Solano County to Pinnacles National Monument in San Benito County (Eng et al. 1990, Fugate 1992). Additional populations occur in San Luis Obispo, Santa Barbara, and Riverside counties. The historic and current ranges of vernal pool fairy shrimp are very similar in extent; however, the remaining populations are more fragmented and isolated than during historical times (USFWS 2005). The life cycle of vernal pool fairy shrimp is adapted to seasonally inundated features such as vernal pools, seasonal wetlands, and seasonal wetland swales. Fairy shrimp embryos survive the dry season in cyst form. Cysts "hatch" soon after pools become inundated during the wet season. Fairy shrimp complete their life cycle quickly and feed on small particles of detritus, algae, and bacteria (Eriksen and Belk 1999).

The vernal pools within the On-Site Study Area represent suitable habitat for this species. There are twenty documented CNDDB occurrences of vernal pool fairy shrimp within 5 miles of the Study Areas, the nearest of which (Occurrence #309) is located 0.8 miles from the On-Site Study Area in the Woodcreek West Wetland Compensation Area (**Figure 2**) (CNDDB 2025). Wet-season surveys of the vernal pools for this species were conducted during the 2024-2025 wet season, and this species was not detected (Madrone 2025) (**Attachment G**).

5.2.3 Valley Elderberry Longhorn Beetle

The Valley elderberry longhorn beetle (VELB) is listed as threatened pursuant to the federal Endangered Species Act and is a PCCP Covered Species. The historic range of this beetle is limited to moist Valley oak woodlands along margins of rivers and streams in the lower Sacramento and lower San Joaquin Valleys (USFWS 1980). At the time of its listing, the beetle was known from less than 10 localities in Merced, Sacramento, and Yolo Counties (USFWS 1984). Its current distribution is patchy throughout California's Central Valley and associated foothills (USFWS 1999).

The Valley elderberry longhorn beetle is completely dependent on its host plant, elderberry (*Sambucus* species), which occurs in riparian and other woodland communities in California's Central Valley and the associated foothills (USFWS 1999). Female beetles lay their eggs in crevices on the stems or on the leaves of living elderberry plants. When the eggs hatch, larvae bore into the stems. The larval stages last for one to two years. The fifth instar larvae create emergence holes in the stems and then plug the holes and remain in the stems through pupation (Talley 2003). Adults emerge through the emergence holes from late March through June. The short-lived adult beetles forage on leaves and flowers of elderberry shrubs.

One elderberry shrub is present just north of the intermittent drainage in the On-Site Study Area (**Figure 3**). This shrub has two stems that are approximately 3" in diameter, but no exit holes typical of the Valley

elderberry longhorn beetle were observed on the shrub when surveyed by a qualified biologist on 8 May 2025. This survey was conducted to collect information for analysis of the shrubs consistent with *The Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)* (USFWS 2017). The shrub is in a riparian location. There are no documented occurrences of this species in the CNDDB within 5 miles of the Study Areas (CNDDB 2025).

5.2.4 Vernal Pool Tadpole Shrimp

The vernal pool tadpole shrimp (*Lepidurus packardi*) is listed as endangered pursuant to the federal Endangered Species Act and is a PCCP Covered Species. The historic range of the vernal pool tadpole shrimp likely extended throughout the Central Valley of California and has been documented from east of Redding in Shasta County south to Fresno County, and from the San Francisco Bay Wildlife Refuge in Alameda County. The historic and current ranges of vernal pool tadpole shrimp are very similar in extent; however, the remaining populations are more fragmented and isolated than during historical times (USFWS 2005).

This species is associated with long-duration seasonal pools in grasslands throughout the northern and eastern portions of the Central Valley (USFWS 2005). Suitable vernal pools and seasonal swales are generally underlain by hardpan or sandstone. Much like vernal pool fairy shrimp, vernal pool tadpole shrimp are adapted to seasonally inundated features such as vernal pools, seasonal wetlands, and seasonal wetland swales (USFWS 2005).

Large vernal pools within the On-Site Study Area represent suitable habitat for this species. There is one documented CNDDB occurrence of vernal pool tadpole shrimp within five miles of the Study Areas (**Figure 2**). This occurrence (CNDDB Occurrence #24) is located approximately 2.1 miles northeast of the On-Site Study Area in the Woodcreek Oaks Wetland Preserve and is considered potentially extirpated (CNDDB 2025). Wet-season surveys of the vernal pools for this species were conducted during the 2024-2025 wet season, and this species was not detected (Madrone 2025) (**Attachment G**).

5.3 Fish

5.3.1 Central Valley Steelhead

Steelhead (*Oncorhynchus mykiss irideus*) populations in the Central Valley ESU have been listed by the NMFS under the ESA as threatened and the population is a PCCP Covered Species. Steelhead, the anadromous form of rainbow trout, historically inhabited most tributaries to the Sacramento River. Juvenile steelhead may spend up to three years in freshwater prior to emigrating to the ocean as smolts. Typically, juvenile steelhead emigrate as age class 1+ fish (one year in fresh water) through the Sacramento River and the Sacramento-San Joaquin Estuary from November through May. Spawning steelhead require gravel or cobble substrates 0.2 to 5.1 inches in diameter for egg laying. Fine sediments (e.g., silt, fine sand, and clay) may suffocate eggs by preventing the transport of dissolved oxygen from the water to the eggs. The range of water temperatures for optimal survival and growth of rainbow trout is between 59 and 64°F (Moyle

2002). Both fry and older juveniles require instream object cover, cobble or boulders, large woody debris, undercut banks, or submerged and overhanging vegetation for protection against predators.

Dry Creek to the north of the Off-Site Study Area is Critical Habitat for Central Valley steelhead (CNDDB 2025). The intermittent drainages within the Study Areas are tributary to Dry Creek, but do not have appropriate substrate for spawning, and their intermittent nature renders them unsuitable for rearing habitat. Although it is possible that steelhead could swim through them occasionally, the intermittent drainages are not considered suitable habitat for this species.

5.3.2 Central Valley Fall-Run Chinook Salmon

Chinook salmon are an anadromous species which spawn in freshwater rivers but migrate to the ocean to rear (Moyle 2002). Chinook salmon typically return to their natal stream to spawn. Within the Central Valley there are four races of Chinook salmon: fall-run, late fall-run, winter-run, and spring-run. Adult fall-run Chinook salmon migrate through the Delta and into Central Valley rivers from July through December and spawn from October through December. Central Valley fall-run Chinook is not federally or state listed, but it is a PCCP Covered Species.

Chinook rely on suitable water temperature and substrate for successful spawning and incubation. Rearing habitat for juveniles includes riffles, runs, pools, and inundated floodplains. In streams, Chinook are opportunistic feeders. They eat aquatic insects, terrestrial insects and bottom invertebrates. Juvenile Chinook are significantly affected by predatory nonnative fish (Moyle 2002).

Dry Creek to the north of the Off-Site Study Area is Essential Fish Habitat for all Pacific Salmon, including the Central Valley fall-run Chinook (CNDDB 2025). The intermittent drainages within the Study Areas are tributary to Dry Creek, but do not have appropriate substrate for spawning, and their intermittent nature renders them unsuitable for rearing habitat. Although it is possible that Chinook could swim through them occasionally, the intermittent drainages are not considered suitable habitat for this species.

5.4 Amphibians

5.4.1 Western Spadefoot

The western spadefoot (*Spea hammondii*) is proposed for federal listing and is a CDFW species of special concern. This amphibian is a nocturnal animal that forages in grassland, open chaparral, and pine-oak woodlands for a variety of invertebrates such as insects and worms (USFWS 2005). Western Spadefoot breeds from January through May in variety of temporary wetlands including creeks, pools in intermittent drainages, vernal pools, and seasonal wetlands, and other fish-free water features. The tadpoles develop in 3 to 11 weeks and must complete their metamorphosis before the temporary pools dry. Post-metamorphic juveniles feed and then immediately seek underground refugia. Following metamorphosis, the adults are largely terrestrial in nature and will burrow into sandy or gravelly soils utilizing the "spades" on the hind feet. The majority of the adult's life is spent in underground burrows (USFWS 2005). In Placer County,

western spadefoot are known to breed in relatively deep man-made features, such as ponded areas adjacent to railroad tracks, and in intermittent drainage plunge pools or similar pools that hold water through late spring (CNDDB 2025).

Several of the seasonal wetlands and vernal pools within the On-Site Study Area represent suitable breeding habitat for western spadefoot and the surrounding Annual Brome Grasslands/VPC provide suitable dry-season habitat. There are four documented CNDDB occurrences of western spadefoot within five miles of the Study Areas, the nearest of which (CNDDB Occurrence #171) is located approximately 1.2 miles northeast of the site, in the Woodcreek Oaks Open Space Preserve (**Figure 2**) (CNDDB 2025). Western spadefoot was not observed on-site during numerous field surveys. These field surveys included a full wet-season of sampling all potential spadefoot breeding habitat with a dip-net every two weeks. Although the wet-season survey targeted federally listed vernal pool branchiopods, western spadefoot tadpoles would have been encountered and documented if present.

5.5 Reptiles

5.5.1 Northwestern Pond Turtle

The northwestern pond turtle (*Actinemys marmorata*) is proposed for federal listing, is a CDFW species of special concern, and is a PCCP Covered Species. Its favored habitats include streams, large rivers and canals with slow-moving water, aquatic vegetation, and open basking sites (Jennings and Hayes 1994). Although the turtles must live near water, they can tolerate drought by burrowing into the muddy beds of dried drainages. This species feeds mainly on invertebrates such as insects and worms, but will also consume small fish, frogs, mammals and some plants. Western pond turtle predators include raccoons, coyotes, raptors, weasels, large fish, and bullfrogs. This species breeds from mid to late spring in adjacent open grasslands or sandy banks (Jennings and Hayes 1994).

The intermittent drainages within the Study Areas provide marginally suitable habitat for northwestern pond turtle due to their relatively short duration of inundation. Northwestern pond turtle has not been documented in the processed records of the CNDDB within five miles of the Study Areas; however, an unprocessed CNDDB record of the species has been documented approximately 4 miles east of the site in Upper Linda Creek, a tributary of Dry Creek (**Figure 2**) (CNDDB 2025). Northwestern pond turtle was not observed on-site during reconnaissance level surveys.

5.6 Birds

5.6.1 Tricolored Blackbird

Tricolored blackbirds (*Agelaius tricolor*) are not federally listed but are state listed as threatened and it is a PCCP Covered Species. In addition, tricolored blackbird is listed by CDFW as a species of special concern. They are colonial nesters preferring to nest in dense stands of cattails, bulrush, or blackberry thickets associated with perennial water (Shuford and Gardali 2008).

Although nesting habitat for tricolored blackbird does not occur within the Study Areas, the Annual Brome Grassland/VPC within the Study Areas provide suitable foraging habitat. This species has not been documented within five miles of the Study Areas in the CNDDB (CNDDB 2025).

5.6.2 Golden Eagle

Golden eagle (*Aquila chrysaetos*) is not listed pursuant to either the California or federal Endangered Species Acts; however, it is categorized as a species of special concern and a fully protected species by the CDFW, and is protected under the federal Bald and Golden Eagle Protection Act. This species is a very large solitary raptor that feeds on mammals, carrion, and reptiles. It typically nests in large trees or cliffsides in rolling to mountainous terrain, and forages in large, expansive open grasslands and savannas (Shuford and Gardali 2008). Although its natural densities are generally believed to be low, it was once relatively common to the open areas of California. Today, golden eagles are rarely observed in the Central Valley. This species typically nests between February and August.

The Annual Brome Grassland/VPC within the Study Areas provides marginally suitable foraging habitat due the relatively small patch size and recent isolation of the habitat. This species has not been documented within five miles of the Study Areas in the CNDDB (CNDDB 2025).

5.6.3 Burrowing Owl

Burrowing owl (*Athene cunicularia*) is designated as a species of special concern by the CDFW, is a candidate for state listing, and is a PCCP covered species. This species typically inhabits dry open rolling hills, grasslands, desert floors, and open bare ground with gullies and arroyos. This species typically uses burrows created by fossorial mammals, most notably the California ground squirrel, but may also use man-made structures such as culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement (CDFG 1995). The breeding season extends from February 1 through August 31 (CBOC 1993, CDFG 1995).

Although few ground squirrel burrows and no evidence of burrowing owls (such as whitewash or feathers) were observed, debris scattered throughout the Study Areas could provide artificial burrows for burrowing owl. The Annual Brome Grassland/VPC provides suitable foraging habitat for this species. There is one documented CNDDB occurrence of burrowing owl within five miles of the Study Areas (**Figure 2**). This occurrence (CNDDB Occurrence #339) is located approximately 2.0 miles northeast of the On-Site Study Area, along Phillip Way (CNDDB 2025). This occurrence was most recently observed in May 2019, when two owls were observed utilizing the same burrow and exhibiting nesting behavior (CNDDB 2025).

5.6.4 Swainson's Hawk

Swainson's hawk (*Buteo swainsoni*) is a raptor species that is not federally listed, but is listed as threatened by CDFW and is a PCCP covered species. Breeding pairs typically nest in tall trees associated with riparian corridors, and forage in grassland, irrigated pasture, and cropland with a high density of rodents (Shuford

and Gardali 2008). The Central Valley populations breed and nest in the late spring through early summer before migrating to Central and South America for the winter (Shuford and Gardali 2008).

The Annual Brome Grassland/VPC throughout the Study Areas represents suitable foraging habitat for Swainson's hawk, and the trees within the Study Areas provide suitable nesting habitat. There are 13 documented CNDDB occurrences of Swainson's hawk within five miles of the Study Areas (**Figure 2**) (CNDDB 2025). The nearest occurrence (CNDDB Occurrence #791) is located approximately 1.5 miles northeast of the site, in the Roseville Public Golf Course (**Figure 2**) (CNDDB 2025).

5.6.5 Northern Harrier

The northern harrier (*Circus hudsonius*) is not listed pursuant to either the California or federal Endangered Species Acts; however, it is considered to be a species of special concern by the CDFW. This species is known to nest within the Central Valley, along the Pacific Coast, and in northeastern California (Shuford and Gardali 2008). The northern harrier is a ground nesting species, and typically nests in emergent wetland/marsh, open grasslands, or savannah habitats. Foraging occurs within a variety of open habitats such as marshes, agricultural fields, and grasslands (Shuford and Gardali 2008).

The Annual Brome Grassland/VPC throughout the Study Areas are suitable nesting and foraging habitat for this species. Northern harrier has not been documented in the CNDDB within five miles of the Study Areas (CNDDB 2025).

5.6.6 Olive-Sided Flycatcher

The olive-sided flycatcher (*Contopus cooperi*) is not listed and protected pursuant to either the California or federal Endangered Species Acts, but it is a CDFW species of special concern. The olive-sided flycatcher breeds in conifer forests in the coastal and mountainous regions of California and other areas to the east and north, winters in Central and South America, and occurs in California's Central Valley as an uncommon spring and fall migrant (Shuford and Gardali 2008). Olive-sided flycatchers are almost always associated with forests and woodlands, especially openings and edges (Shuford and Gardali 2008).

Suitable foraging habitat for this species is present in the Valley Foothill Riparian Woodland within the Study Areas. Olive-sided flycatcher has not been documented in the CNDDB within five miles of the Study Areas (CNDDB 2025).

5.6.7 White-Tailed Kite

White-tailed kite (*Elanus leucurus*) is not federally or state listed but is a CDFW fully protected species. This species is a yearlong resident in the Central Valley and is primarily found in or near foraging areas such as open grasslands, meadows, farmlands, savannahs, and emergent wetlands (Shuford and Gardali 2008). White-tailed kites typically nest from March through June in trees within riparian, oak woodland, and savannah habitats of the Central Valley and Coast Range (Shuford and Gardali 2008).

The Annual Brome Grassland/VPC throughout the Study Areas represents suitable foraging habitat for white-tailed kite, and the trees within the Study Areas provide suitable nesting habitat. There is one documented occurrence of white-tailed kite nests within five miles of the site in the CNDDB (**Figure 2**) (CNDDB 2025). The occurrence (CNDDB Occurrence #56), is located approximately 2.6 miles northeast of the On-Site Study Area, near the Woodcreek Golf Club (CNDDB 2025).

5.6.8 Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus*) is not listed and protected pursuant to either the California or federal Endangered Species Acts, but is a CDFW species of special concern. Loggerhead shrikes nest in small trees and shrubs in woodland and savannah vegetation communities, and forage in open habitats throughout California (Shuford and Gardali 2008). The nesting season ranges from March through June.

The trees and Annual Brome Grassland/VPC within the Study Areas provide suitable foraging and nesting habitat for loggerhead shrike. Loggerhead shrike has not been documented in the CNDDB within five miles of the Study Areas (CNDDB 2025).

5.6.9 Yellow Warbler

The yellow warbler (*Setophaga petechia*) is not listed and protected pursuant to either the California or federal Endangered Species Acts, but it is a CDFW species of special concern. The yellow warbler is largely extirpated as a breeder in the Sacramento Valley, but it is a common migrant during the fall and winter months (Shuford and Gardali 2008). Yellow warblers generally occupy riparian vegetation in close proximity to streams. Preferred habitat in northern California is dominated by willows (*Salix* spp.), cottonwoods (*Populus* spp.), and Oregon ash (*Fraxinus latifolia*) (Shuford and Gardali 2008).

Although the Study Areas are outside of this species' breeding range, it has been documented along Dry Creek near the Off-Site Study Area during the last few days of August and mid-September of several years (eBird 2025), during the beginning of fall migration. Suitable winter foraging habitat is present in the Valley Foothill Riparian Woodland within the Study Areas. Yellow warbler has not been documented in the CNDDB within five miles of the Study Areas (CNDDB 2025).

5.7 Mammals

5.7.1 Pallid Bat

Pallid bat (*Antrozous pallidus*) is not federally or state listed, but is considered a CDFW species of special concern, and is classified by the WBWG as a High priority species. It favors roosting sites in crevices in rock outcrops, caves, abandoned mines, hollow trees, and human-made structures such as barns, attics, and sheds (WBWG 2025). Though pallid bats are gregarious, they tend to group in smaller colonies of 10 to 100 individuals. It is a nocturnal hunter and captures prey in flight, but unlike most American bats, the species has been observed foraging for flightless insects, which it seizes after landing (WBWG 2025).

Tree hollows and exfoliating bark on trees throughout the Study Areas represent suitable day and maternity roosting habitat for pallid bat. Pallid bat has not been documented in the CNDDB within five miles of the Study Areas (CNDDB 2025).

5.7.2 Silver-Haired Bat

Silver-haired bat (*Lasionycteris noctivagans*) is not federally or state listed but is classified by the WBWG as a Medium priority species. Primarily considered a coastal and montane forest species, the silver-haired bat occurs in more xeric environments during winter and seasonal migrations (WBWG 2025). It roosts in abandoned woodpecker holes, under bark, and occasionally in rock crevices. This insectivore's favored foraging sites include open wooded areas near water features (WBWG 2025).

Tree hollows and exfoliating bark on trees throughout the Study Areas represent suitable day and maternity roosting habitat for silver-haired bat. Silver-haired bat has not been documented in the CNDDB within five miles of the Study Areas (CNDDB 2025).

5.7.3 Western Red Bat

Western red bat (*Lasiurus blossevillii*) is not federally or state listed but is considered a CDFW species of special concern, and is classified by the WBWG as a High priority species. Western red bat is typically solitary, roosting primarily in the foliage of trees or shrubs (WBWG 2025). Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores) (WBWG 2025).

Trees within the Valley Foothill Riparian Woodland represent suitable day and maternity roosting habitat for western red bat. Western red bat has not been documented in the CNDDB within five miles of the Study Areas (CNDDB 2025).

5.7.4 Hoary Bat

The hoary bat (*Lasiurus cinereus*) is not federally or state listed, but is classified by the WBWG as a Medium priority species. It is considered to be one of the most widespread of all American bats with a range extending from Canada to central Chile and Argentina as well as Hawaii (WBWG 2025). Hoary bats are solitary and roost primarily in foliage of both coniferous and deciduous trees, near the ends of branches at the edge of a clearing (WBWG 2025). This species may also occasionally roost in caves, beneath a rock ledge, in a woodpecker hole, in a grey squirrel nest, under a wood plank, or clinging to the side of a building (WBWG 2025).

Trees within the Valley Foothill Riparian Woodland represent suitable day and maternity roosting habitat for hoary bat. Hoary bat has not been documented in the CNDDB within five miles of the Study Areas (CNDDB 2025).

6.0 IMPACTS TO SENSITIVE BIOLOGICAL RESOURCES

This section details potential impacts to the biological resources discussed above associated with construction of the Project, as discussed in **Section 1.1** and shown on **Attachment A**.

Impacts analyzed within this section include 91.5-acres of permanent impacts (**Figure 6**). Permanent impacts range from mass grading and lot construction to construction of pedestrian trails (including an intermittent drainage multipurpose trail crossing), a sewer line crossing, Walerga road shoulder/frontage improvements, off-site sewer improvements, and detention basins. Temporary impacts may occur within the intermittent drainage where the multipurpose trail and sewer line crosses it.

6.1 Aquatic Resources

Of the 2.07 acres of mapped aquatic resources within the Study Areas, 1.84-acre will be permanently impacted by the Project, <0.01 acre (0.008-acre) will be temporarily impacted by the Project, and 0.23-acre will be avoided (**Table 4** and **Figure 6).**

Table 4. Acres of Aquatic Resources Impacts within the Study Areas

Aquatic Resources	Permanent Impacts	Temporary Impacts	Avoided	Total
Irrigated Wetland	0.03	0.00	0.00	**0.03**
Seasonal Wetland	0.26	0.00	0.00	**0.26**
Seasonal Wetland Swale	0.25	0.00	<0.01	**0.26**
Vernal Pool	1.11	0.00	0.00	**1.11**
Ephemeral Drainage	0.01	0.00	0.00	**0.01**
Intermittent Drainage	0.16	<0.01	0.23	**0.39**
Roadside Ditch	0.02	0.00	0.00	**0.02**
Total	**1.84**	**<0.01**	**0.23**	**2.07**

The PCCP emphasizes minimization of aquatic resource impacts within the Stream System; this Project has done this to the maximum extent practicable. Permanent aquatic resource impacts within the PCCP-defined Stream System are limited to intermittent drainage in both the On-Site and Off-Site Study Areas, a portion of ephemeral drainage in the On-Site Study Area, and small areas of seasonal wetland and seasonal wetland swale in the On-Site Study Area. All vernal pool impacts occur outside of the Stream System.

The unavoidable permanent intermittent drainage impacts include Walerga Road shoulder improvements and detention basin outfalls in the On-Site Area and Dry Creek floodwater expansion in the Off-Site Area. Temporary intermittent drainage impacts are associated with a sewer and adjacent trail crossing of the intermittent drainage in the On-Site Area. The irrigated wetland would be impacted by trail construction, and all other wetland, roadside ditch, and ephemeral drainage impacts would be associated with mass grading for development.

6.2 Terrestrial Land Covers

Of the 97.4-acres of mapped terrestrial land covers within the Study Areas, 81.1 acres of natural land covers will be permanently impacted by the Project, 10.8 acres will involve work within previously converted urban land covers, (as defined in **Section 4.1.2**) and 5.5 acres will be avoided and no land cover conversion will occur in this area (**Table 5** and **Figure 6**).

Table 5. Acres of Terrestrial Land Cover Impacts within the Study Areas

Land Covers	Permanent Impacts	Previously Converted	No Land Cover Conversion	Total
Natural Communities/Land Covers				
Valley Foothill Riparian Woodland	1.3	0.0	2.5	**3.8**
VPC Intermediate	79.0	0.0	3.0	**82.0**
VPC Low	0.8	0.0	0.0	**0.8**
Total Natural Land Covers	*81.1*	*0.0*	*5.5*	***86.6***
Urban Communities/Land Covers				
Road	0.0	8.1	0.0	**8.1**
Urban Parks	0.0	0.5	0.0	**0.5**
Urban/Suburban	0.0	2.2	0.0	**2.2**
Total Urban Land Covers	*0.0*	*10.8*	*0.0*	***10.8***
Total	**81.1**	**10.8**	**5.5**	**97.4**

6.3 Special-Status Plant Species

The vegetation communities proposed for impact represent suitable habitat for a variety of special-status plant species. Protocol-level special-status plant surveys were conducted throughout the Study Areas in 2024 and 2025, and no special-status plants were found. Based on the results of these surveys, no special-status plants are expected to be impacted by the Project.

6.4 Crotch's Bumblebee

The Annual Brome Grassland/VPC within the Study Areas represents suitable habitat for Crotch's bumblebee. Approximately 79.8 acres of suitable habitat for this species (Annual Brome Grassland/VPC) will be permanently impacted by the Project (**Figure 6**). The removal of this habitat could adversely affect this species, if construction activity results in the removal of active Crotch's bumblebee nests.

6.5 Vernal Pool Branchiopods

Surveys were conducted for vernal pool branchiopods in the vernal pools throughout the On-Site Study Area, and the results were negative. The 1.11 acre of vernal pool within the On-Site Study Area is potential habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp, and, as shown in **Table 5** above, all of

the vernal pools will be impacted by the Project (**Figure 6**). Therefore, 1.11 acres of vernal pool branchiopod habitat will be impacted by the Project.

6.6 Valley Elderberry Longhorn Beetle

A single elderberry shrub that represents potential habitat for Valley elderberry longhorn beetle is present on the northern edge of the intermittent drainage within the On-Site Study Area. This shrub was surveyed in accordance with USFWS protocol and no exit holes consistent with occupation of the shrub by VELB were observed. Project construction will encroach within five feet of the shrub. The intent is to avoid the shrub, but the potential need to transplant the shrub cannot be fully dismissed due to proximity of planned grading, and the final determination of preservation or removal will be made in the field. If the shrub must be removed, it will be transplanted to either the on-site open space, or a PCCP VELB mitigation area (as dictated by the County). Given the lack of evidence of VELB occupation and the lack of documented VELB occurrences in the vicinity of the Project, no impacts to Valley elderberry longhorn beetle are anticipated as part of this Project.

6.7 Western Spadefoot

The seasonal wetlands and vernal pools being impacted by the Project represent suitable breeding habitat for western spadefoot and the surrounding Annual Brome Grasslands/VPC within 300 feet provide suitable dry-season habitat. A total of 1.37 acres of suitable breeding habitat and 53.2 acres of suitable upland habitat will be permanently impacted by Project construction (**Figure 6**).

6.8 Western Pond Turtle

The intermittent drainages within the Study Areas provide marginally suitable aquatic habitat for western pond turtle, and the adjacent Valley Foothill Riparian Woodland provides potential movement habitat. Small portions of intermittent drainage and Valley Foothill Riparian Woodland will be temporarily and permanently impacted during Project construction (**Figure 6**). Permanent impacts will be associated with construction of the off-site sewer improvements, and Walerga Road frontage/shoulder improvements. The temporary impacts will be associated with installation of a pedestrian bridge and sewer crossing. If western pond turtles or their nests were present in those areas during construction, individual turtles could be injured or killed, or nests could be destroyed.

A total of 0.16 acre of western pond turtle aquatic habitat within the intermittent drainage will be permanently impacted by the Project, less than 0.01 acre of western pond turtle aquatic habitat within the intermittent drainage will be temporarily impacted by the Project, and 1.3 acre of movement habitat in Valley Foothill Riparian Woodlands will be permanently impacted by the Project (**Figure 6**).

6.9 Nesting Raptors and Songbirds

Swainson's hawk, white-tailed kite, northern harrier, and loggerhead shrike have the potential to nest within the Study Areas, as do other more common bird species protected by the MBTA (including colonial nesting water birds). If they were nesting on-site, removal of the nests would impact these species. Furthermore, birds nesting in avoided areas adjacent to construction could be disturbed by construction, which could result in nest abandonment.

6.10 Foraging Birds

The Annual Brome Grassland/VPC areas within the Study Areas provide suitable foraging habitat for tricolored blackbird, golden eagle, Swainson's hawk, white-tailed kite, northern harrier, loggerhead shrike, and other more common birds. The Valley Foothill Riparian Woodland provides suitable foraging habitat for olive-sided flycatcher and yellow warbler and other more common birds. Removal of this foraging habitat could indirectly impact these species by reducing food available to them.

A total of 79.8 acres of Annual Brome Grassland/VPC and 1.3 acres of Valley Foothill Riparian Woodland that currently provides bird foraging habitat will be permanently impacted by the Project (**Figure 6**).

6.11 Burrowing Owl

The Annual Brome Grassland/VPC within the Study Areas provides suitable foraging habitat for burrowing owl, and occasional ground-squirrel burrows and debris throughout the Study Areas provide marginally suitable burrow habitat. If ground disturbance occurred while burrowing owls were in burrows, individuals of this species could be killed.

A total of 79.8 acres of Annual Brome Grassland/VPC that currently provides marginal burrowing owl habitat will be permanently impacted by the Project (**Figure 6**).

6.12 Roosting Bats

Trees throughout the Study areas are habitat for various special-status bats species. If special-status bats were roosting in trees proposed to be removed by construction of the Project, they could be injured or killed during the removal.

6.13 Sensitive Natural Communities

One terrestrial land cover mapped on-site is considered to be a "Sensitive Natural Community" by CDFW: Valley Foothill Riparian Woodland. A total of 1.3 acres of Valley Foothill Riparian Woodland will be permanently impacted by the Project (**Table 5** and **Figure 6**). As detailed above in **Section 4.1.1.2**, these Valley Foothill Riparian Woodlands are Valley Oak Woodlands, and the PCCP has Community Conditions specifically targeted at protection of this community; these are detailed below in **Section 7.2**.

6.14 Wildlife Corridors

The Valley Foothill Riparian Woodland along either side of the intermittent drainage through the On-Site Study Area likely serves as a wildlife corridor for a wide variety of terrestrial wildlife. This wildlife corridor is being preserved within an avoidance area that maintains the On-Site Valley Foothill Riparian Woodland, and that is similar in width to the adjacent preserved corridor along this drainage to the west. The only potential barrier to wildlife movement along the intermittent drainage will be a single creek crossing for a pedestrian trail. This crossing will be designed to be large enough to accommodate terrestrial wildlife movement under the bridge.

Additionally, the Valley Foothill Riparian Woodland along Dry Creek in the northern portion of the Off-Site Study Area almost certainly functions as a wildlife corridor for terrestrial wildlife. The activity proposed in this area is excavation of the intermittent drainage in the area to expand Dry Creek floodwater storage (as described in **Section 1.1**). Although some trees may need to be removed for this excavation, relatively few trees will be removed, and following construction, the area will continue to provide habitat, and will not impede wildlife movement.

As such, negative impacts to wildlife corridors are not expected as a result of Project implementation.

6.15 PCCP Special Habitats, CARP Drainage Setbacks, and CARP Riparian Buffer

Impacts to PCCP Special Habitats, CARP Drainage Setbacks and CARP Riparian Buffer are summarized in **Table 6** and shown on **Figure 7**. As outlined in **Section 2.3.1**, impacts are allowed within the CARP Drainage Setbacks and CARP Riparian Buffer, but those impacts must be associated with certain allowable facilities. Although some permanent impacts within the CARP Drainage Setbacks and CARP Riparian Buffer have been proposed, all of the impacts in those areas are associated with a sewer line and trail creek crossing, floodwater detention, and roadway impacts that cannot be avoided. As some of the impacts are associated with a creek crossing and outfalls, some of the work occurs immediately adjacent to the drainage.

Table 6. Impacts to PCCP Special Habitats and CARP Setbacks within the Study Areas

Special Habitat/Setback	Permanent Impacts (acres)	Temporary Impacts (acres)	Total (acres)
PCCP Special Habitats			
Vernal Pool Constituent Habitat Direct Effects[1]	1.62	0.00	**1.62**
Other Aquatic/Wetland	0.03	0.00	**0.03**
Riverine/Riparian[3]	1.15	0.008[2]	**1.16**
Riverine/Riparian Buffer[3]	1.68	0.00	**1.68**
Stream System[3]	1.94	0.00	**1.94**
Salmonid Stream Channel (linear ft)	0.00	0.00	**0.00**
VP Immediate Watershed Effects	<0.01	0.00	**<0.01**

Table 7. Impacts to PCCP Special Habitats and CARP Setbacks within the Study Areas

Special Habitat/Setback	Permanent Impacts (acres)	Temporary Impacts (acres)	Total (acres)
CARP Setbacks			
CARP Drainage Setback	1.94	0.00	**1.94**
Riparian Buffer	1.97	0.00	**1.97**

[1] Vernal pool constituent direct effects include impacts to seasonal wetlands, seasonal wetland swales, and vernal pools only and do not include impacts to irrigated wetlands. Irrigated wetland effects are included under Other Aquatic/Wetland in the following entry.

[2] This impact is a crossing of an intermittent drainage. Although the drainage may be temporarily impacted during construction of the crossing, the drainage itself will ultimately be avoided by the Project.

[3] This excludes other special habitats that fall within the riverine/riparian and riparian buffer areas that would be subject to other special habitat fees.

Project impacts have been designed to avoid the vast majority of the Stream System. However, impacts would encroach into the Stream System in some areas. The majority of the Stream System impacts would be associated with Dry Creek floodwater expansion in the Off-Site Area, which lies entirely within Dry Creek's Stream System. Additional small impacts are primarily comprised of a sewer and adjacent trail crossing of the intermittent drainage, and smaller detention basins that outfall into the intermittent drainage. The Applicant has worked hard to design the Project to minimize impacts to the Stream System to the extent practicable. **Table 6** and **Figure 7** show Project-related Stream System impacts.

7.0 MITIGATION FOR IMPACTS TO SENSITIVE BIOLOGICAL RESOURCES

Mitigation for impacts to PCCP Covered Species and land covers, including riparian habitat and oak resources has been streamlined with participation in the PCCP, and impacts to Waters of the U.S. has been streamlined with participation in the CARP. This Project could result in impacts to special-status plant species, Crotch's bumble bee, western spadefoot, a number of special-status and more common birds, and roosting bats, none of which are PCCP Covered Species; therefore, mitigation for these species is detailed below.

The Project may be constructed in phases over several years. Planning level surveys under the PCCP as well as preconstruction surveys under both the PCCP and non-PCCP permitting frameworks (e.g., CEQA mitigation measures for resources not covered by the PCCP, CDFW streambed alteration agreement conditions) must be implemented according to the timing requirements outlined in each mitigation measure. Therefore, if such surveys are conducted for more than one phase but only a portion of that phase ends up going to construction in a given year, these surveys may have to be redone depending on the life of the survey.

7.1 Aquatic Resources

- The Project applicant shall apply for coverage under the PCCP Letter of Permission (LOP) procedures directly with the USACE using avoidance and minimization guidance from the CARP, a component of

the PCCP, and implement the conditions of the LOP. Note that the USACE may determine during the permitting process that some of the resources within the Study Areas are not subject to federal jurisdiction.

- The applicant shall submit an application to the RWQCB for water quality certification of the PCCP LOP, and adhere to the certification conditions.
- The applicant shall apply for a Section 1600 Lake or Streambed Alteration Agreement from CDFW for the entire Project or by phase as needed and implement the final Agreement measures. Mitigation shall result in no net loss of riparian habitat.

Note that the Lake and Streambed Alteration Agreement program is not fully integrated into the PCCP and must be applied for separate and apart from the PCCP. Impacts will be outlined in the notification and are expected to be in substantial conformance with the impacts to biological resources outlined in this document. Impacts for each activity will be broken down by temporary and permanent, and a description of the proposed mitigation for biological resource impacts will be outlined per activity and then by temporary and permanent. Information regarding Project-specific drainage and hydrology changes resulting from Project implementation will be provided as well as a description of storm water treatment methods. Minimization and avoidance measures are expected to follow the PCCP AMMs. CDFW may determine that evidence of payment of PCCP riparian land cover conversion fees is sufficient mitigation for impacts to riparian habitat. Alternatively, CDFW could request additional mitigation for impacts to riparian habitat, such as restoration or enhancement of resources on- or off-site, purchase of habitat credits from an agency-approved mitigation/conservation bank, working with a local land trust to preserve land, or any other method acceptable to CDFW.

7.2 PCCP Application

The Permittee shall apply for coverage under the PCCP to mitigate for all impacts to Covered Species, conversion of natural (habitat providing) land cover types, and sensitive natural communities. Prior to application approval, additional species surveys may be necessary, and land cover and special habitat fees shall be paid prior to construction. The Permittee shall comply with the terms of the PCCP Authorization Certificate, including compliance with all Avoidance and Minimization Measures/Conditions on Covered Activities, which may include pre-construction surveys, construction monitoring, and BMPs. Based on Project Impacts, the following PCCP measures will be required, subject to Placer Conservation Authority (PCA) confirmation:

7.2.1 General Condition 1, Watershed Hydrology and Water Quality

Prior to Improvement Plan approval, the Project shall obtain coverage under the *General Permit for Discharges of Storm Water Associated with Construction Activity* (Construction General Permit Order 2022-0057-DWQ); including requirements to develop a project-based Storm Water Pollution Prevention Plan (SWPPP); and applicable NPDES program requirements as implemented by the County. Construction activity subject to this permit includes clearing, grading and disturbances to the ground such as stockpiling, or excavation.

The Project shall comply with the West Placer Storm Water Quality Design Manual (Design Manual).

The Project shall implement the following BMPs. This list shall be included on the Notes page of the improvement/grading plans and shall be shown on the plans:

- When possible, vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas. When vehicle parking areas are to be established as a temporary facility, the site will be recovered to pre-project or ecologically improved conditions within 1 year of start of groundbreaking to ensure effects are temporary (refer to Section 6.3.1.4, *General Condition 4, Temporary Effects*, for the process to demonstrate temporary effects).
- Trash generated by Covered Activities will be promptly and properly removed from the site.
- Appropriate erosion control measures (e.g., fiber rolls, filter fences, vegetative buffer strips) will be used on site to reduce siltation and runoff of contaminants into avoided wetlands, ponds, streams, or riparian vegetation.
- Erosion control measures will be of material that will not entrap wildlife (i.e., no plastic monofilament). Erosion control blankets will be used as a last resort because of their tendency to biodegrade slowly and trap reptiles and amphibians.
- Erosion control measures will be placed between the area of disturbance and any avoided aquatic feature, within an area identified with highly visible markers (e.g., construction and erosion-control fencing, flagging, silt barriers) prior to commencement of construction activities. Such identification will be properly maintained until construction is completed and the soils have been stabilized.
- Fiber rolls used for erosion control will be certified by the California Department of Food and Agriculture or any agency that is a successor or receives delegated authority during the permit term as weed free.
- Seed mixtures applied for erosion control will not contain California Invasive Plant Council–designated invasive species (http://www.cal-ipc.org/paf/) but will be composed of native species appropriate for the site or sterile non-native species. If sterile non-native species are used for temporary erosion control, native seed mixtures must be used in subsequent treatments to provide long-term erosion control and slow colonization by invasive non-natives.
- If the runoff from the development will flow within 100 feet of a wetland or pond, vegetated storm water filtration features, such as rain gardens, grass swales, tree box filters, infiltration basins, or similar LID features to capture and treat flows, shall be installed consistent with local programs and ordinances.

7.2.3 General Condition 3, Land Conversion

The Project will result in a permanent land cover conversion from a natural condition to urban land covers. The Project shall pay a land conversion fee for the permanent conversion of approximately 81.1 acres of natural land cover including VPC Low, VPC Intermediate, and Valley Foothill Riparian Woodland. The fees to be paid shall be those in effect at the time of ground disturbance authorization for each Project phase and shall be the per acre fee based on the amount of land disturbance resulting from the activity.

In addition to land conversion, the Project would result in permanent direct effects and temporary effects to PCCP Special Habitats as detailed in **Table 6**. The total special habitat fee obligation including temporary effect fees shall be paid prior to issuance of a land conversion authorization that allows ground disturbance of a special habitat.

7.2.4 General Condition 4, Temporary Effects

The applicant shall restore all temporarily disturbed areas and, one year after Project groundbreaking, provide the County with a written assessment of how the performance standards were met. The Project will result in 0.008 acre of temporary effects to intermittent drainage (which is considered Riverine habitat). Prior to issuance of land conversion authorization, the Project shall pay a fee based on the acres of impact. The fee to be paid shall be that in effect at the time of land conversion authorization issuance. If it is determined by the County or the PCCP Program Biologist that the effects remain one year after groundbreaking activities have commenced, the effects shall be considered permanent and the County Project Lead shall reassess fees based on those effects.

7.2.5 General Condition 5, Conduct Worker Training

Prior to initiation of construction activities, all Project construction personnel shall participate in a worker environmental training program that will educate workers regarding the Covered Species and their habitats, the need to avoid impacts, state and federal protection, and the legal implications of violating environmental laws and regulations. At a minimum this training may be accomplished through tailgate presentations at the Project site and the distribution of informational brochures, with descriptions of sensitive biological resources and regulatory protections, to construction personnel prior to initiation of construction work.

7.2.6 Community Condition 1.1, Impacts to Vernal Pool Complex Constituent Habitat

Prior to land conversion authorization approval, the unavoidable effects to 1.62 acres of vernal pool constituent wetlands or their immediate watershed buffers shall be mitigated through payment of special habitat fees. The fees to be paid shall be that in effect at the time of land conversion authorization issuance.

7.2.7 Community Condition 1.2, Impacts to Aquatic/Wetland Complex Constituent Habitat

Prior to land conversion authorization approval, the unavoidable effects to 0.03 acres of non-vernal pool wetlands (irrigated wetland) shall be mitigated through payment of special habitat fees. The fees to be paid shall be that in effect at the time of land conversion authorization issuance.

7.2.8 Community Condition 1.4, Salvage of Vernal Pool Constituent Habitat

Prior to ground disturbance, the applicant shall schedule grading and construction in coordination with the PCA to provide the PCA the opportunity to salvage topsoil from the vernal pool wetlands to be impacted if

they choose to do so. The applicant shall notify the PCA of their construction schedule within 30 days of the construction start date to allow the PCA the opportunity to salvage soils while the pools are completely dry (generally July through September) and the PCA must make salvage plans sufficiently far in advance so as to not unreasonably impair construction.

7.2.9 Community Condition 2.1, Riverine and Riparian Avoidance and Minimization

To the maximum extent possible, the Project shall not modify any area within a buffer that extends 50 feet outward from the outermost bounds of the riparian vegetation. The improvement or grading plans shall show the location of the riverine/riparian buffer.

7.2.10 Community Condition 2.2, Minimize Riverine and Riparian Effects

Prior to land conversion authorization, the applicant shall coordinate with the PCA to determine which In-Stream and Stream System Best Management Practices (BMPs) from Table 7-1 of the PCCP User's Guide apply to the proposed Project. The applicant shall identify the applicable BMPs on the Project's (improvement or grading) plans. The selected BMPs will be incorporated into the Project's Land Conversion Authorization letter.

Prior to land conversion authorization approval, the unavoidable effects to 2.94 acres of riverine and riparian habitat and their buffers shall be mitigated through payment of special habitat fees. The fees to be paid shall be those in effect at the time of land conversion authorization.

7.2.11 Community Condition 2.3, Riverine and Riparian Restoration

Covered Activities that affect riverine or riparian constituent habitat shall contribute to restoration as mitigation to compensate for loss of riverine or riparian constituent habitat.

Projects that affect riverine and riparian shall contribute to replacement of these resources. Riverine restoration measures shall be located in the same watershed and salmonid habitat type (e.g., spawning or migrating if the effects occur in a salmonid stream) in which the effects occur.

Generally, restoration and replacement actions shall be undertaken by the PCA and funded by additional fees imposed on projects. Riverine and riparian restoration to offset project effects may be implemented on-site to replace the functions of the riparian woodland degraded or lost to the Covered Activity. Riparian restoration implemented on-site will be credited to Plan restoration targets if the restoration helps to meet the biological goals and objectives of the Plan. When it is deemed infeasible to implement restoration at the project site, in-kind restoration shall be required at an off-site location or through the payment of fees to the PCA. Stream enhancement shall be implemented in concert with Community Condition 2.2, Minimize Riverine and Riparian Effects.

7.2.12 Community Condition 3, Valley Oak Woodland Avoidance and Minimization, and Mitigation Measures

Although the project is avoiding most of the Valley oak woodland/Valley Foothill Riparian Woodland, significant impacts could occur to oak woodlands from modification of the onsite drainage from ground disturbance and landscaping irrigation. With implementation of the following mitigation measure, potential impacts would be less than significant.

Irrigation shall be prohibited in and around the avoided Valley oak woodland. Alteration of onsite hydrology (including from onsite sewage disposal system installation) shall be designed to ensure the Valley oak woodland receives no additional water than pre-project conditions. The Landscape Plans shall demonstrate that irrigation is not placed within the critical root zone of protected trees.

Unavoidable effects to individual Valley oak trees or Valley oak woodlands or their 50-foot buffers shall pay the Plan land conversion fee by quantifying impacts as described in Effects on Valley Oak Woodlands of the PCCP User's Guide.

7.2.13 Stream System Condition 1, Stream System Avoidance and Minimization

The Project shall be designed to minimize development activities within the stream system to the maximum extent possible.

7.2.14 Stream System Condition 2, Stream System Mitigation and Restoration

The Project's development footprint is directly impacting the Stream System. The area of encroachment (1.9 acres of permanent impact) is subject to the Stream System Encroachment Special Habitats Fee as described in Chapter 5 of the PCCP User's Guide. Fees must be paid prior to the issuance of any permit or authorization that results in ground disturbance within the Stream System.

7.2.15 Species Condition 1: Swainson's Hawk

If construction must occur during the nesting season (approximately February 1 to September 15), planning-level Swainson's hawk surveys are required a year in advance of construction using the survey guidelines developed for the PCCP. Planning-level surveys are intended to identify nest trees to guide avoidance during Project tree removal and construction.

Additionally, year of construction (starting in February) and pre-construction (no more than 15 days prior to ground disturbance) surveys shall be conducted within a 1,320-foot radius of the Project. Surveys shall be conducted consistent with PCCP guidelines (based on Swainson's Hawk Technical Advisory Committee 2000). In instances where an adjacent parcel is not accessible to survey, the qualified biologist shall scan all potential nest trees from the adjacent property, roadsides, or other safe, publicly accessible viewpoints, without trespassing, using binoculars and/or a spotting scope. Surveys are typically required from February

1 to September 15 (or sooner if it is determined that birds are nesting earlier in the year) so contact the PCA for assistance with survey timing. If a Swainson's hawk nest is located and presence confirmed, only one follow-up visit is required.

During the nesting season (approximately February 1 to September 15 or sooner if it is determined that birds are nesting earlier in the year), ground-disturbing activities within 1,320 feet of occupied nests or nests under construction shall be prohibited to minimize the potential for nest abandonment. While the nest is occupied, activities outside the buffer can take place provided they do not stress the breeding pair.

If the active nest site is shielded from view and noise from the Project site by other development, topography, or other features, the Project applicant can apply to the PCA for a reduction in the buffer distance or waiver. A qualified biologist shall be required to monitor the nest and determine that the reduced buffer does not cause nest abandonment. If a qualified biologist determines nestlings have fledged, PCCP Covered Activities can proceed normally.

Construction monitoring shall be conducted by a qualified biologist if work is to continue outside of the nest buffer, and shall focus on ensuring that activities do not occur within the buffer zone. The qualified biologist performing the construction monitoring shall ensure that effects on Swainson's hawks are minimized. If monitoring indicates that construction outside of the buffer is affecting nesting, the buffer shall be increased if space allows (e.g., move staging areas farther away). If space does not allow, all construction activities shall cease until the young have fledged from the nest (as confirmed by a qualified biologist).

The frequency of monitoring will be approved by the PCA and based on the frequency and intensity of construction activities and the likelihood of disturbance of the active nest. In most cases, monitoring will occur at least every other day, but in some cases, daily monitoring may be appropriate to ensure that direct effects on Swainson's hawks are minimized. The qualified biologist shall train construction personnel on the avoidance procedures and buffer zones.

7.2.16 Species Condition 3: Western Burrowing Owl

Two surveys shall be conducted within 15 days prior to ground disturbance to establish the presence or absence of burrowing owls. The surveys shall be conducted at least 7 days apart (if burrowing owls are detected on the first survey, a second survey is not needed) for both breeding and non-breeding season surveys. All burrowing owls observed shall be counted and mapped.

During the breeding season (February 1 to August 31), surveys shall document whether burrowing owls are nesting in or within 250 feet of the Project area.

During the non-breeding season (September 1 to January 31), surveys shall document whether burrowing owls are using habitat in or directly adjacent to any area to be disturbed. Survey results will be valid only for the season (breeding or non-breeding) during which the survey was conducted.

The qualified biologist shall survey the proposed footprint of disturbance and a 250-foot radius from the perimeter of the proposed footprint to determine the presence or absence of burrowing owls. The site will be surveyed by walking line transects, spaced 20 to 60 feet apart, adjusting for vegetation height and density. At the start of each transect and, at least, every 300 feet, the surveyor, with use of binoculars, shall scan the entire visible Project area for burrowing owls. During walking surveys, the surveyor shall record all potential burrows used by burrowing owls, as determined by the presence of one or more burrowing owls, pellets, prey remains, whitewash, or decoration. Some burrowing owls may be detected by their calls; therefore, observers will also listen for burrowing owls while conducting the survey. Adjacent parcels under different land ownership shall be surveyed only if access is granted. If portions of the survey area are on adjacent sites for which access has not been granted, the qualified biologist shall get as close to the non-accessible are as possible, and use binoculars to look for burrowing owls.

The presence of burrowing owl or their sign anywhere on the site or within the 250-foot accessible radius around the site shall be recorded and mapped. Surveys shall map all burrows and occurrence of sign of burrowing owl on the Project site. Surveys must begin 1 hour before sunrise and continue until 2 hours after sunrise (3 hours total) or begin 2 hours before sunset and continue until 1 hour after sunset. Additional time may be required for large project sites.

If burrowing owls are found during the breeding season (approximately February 1 to August 31, the Project applicant shall avoid all nest sites that could be disturbed by Project construction during the remainder of the breeding season or while the nest is occupied by adults or young (occupation includes individuals or family groups foraging on or near the site following fledging). The applicant shall establish a 250-foot non-disturbance buffer zone around nests. The buffer zone shall be flagged or otherwise clearly marked. Should construction activities cause the nesting bird to vocalize, make defensive flights at intruders, or otherwise display agitated behavior, then the exclusionary buffer will be increased such that activities are far enough from the nest so that the bird(s) no longer display this agitated behavior. The exclusionary buffer will remain in place until the chicks have fledged or as otherwise determined by a qualified biologist. Construction may only occur within the 250-foot buffer zone during the breeding season if a qualified raptor biologist monitors the nest and determines that the activities do not disturb nesting behavior, or the birds have not begun egg-laying and incubation, or that the juveniles from the occupied burrows have fledged and moved off site. Measures such as visual screens may be used to further reduce the buffer with Wildlife Agency approval and provided a biological monitor confirms that such measures do not cause agitated behavior.

If burrowing owls are found during the non-breeding season (approximately September 1 to January 31), the Project applicant shall establish a 160-foot buffer zone around active burrows. The buffer zone shall be flagged or otherwise clearly marked. Measures such as visual screens may be used to further reduce the buffer with Wildlife Agency approval and provided a biological monitor confirms that such measures do not cause agitated behavior.

After all alternative avoidance and minimization measures are exhausted as confirmed by the Wildlife Agencies, a qualified biologist may passively exclude birds from those burrows during the non-breeding season. A burrowing owl exclusion plan shall be developed by a qualified biologist consistent with the most

recent guidance from the Wildlife Agencies (e.g., California Department of Fish and Game 2012) and submitted to and approved by the PCA and the Wildlife Agencies. Burrow exclusion will be conducted for burrows located in the Project footprint and within a 160-foot buffer zone as necessary.

A biological monitor shall be present on site daily to ensure that no Covered Activities occur within the buffer zone. The qualified biologist performing the construction monitoring shall ensure that effects on burrowing owls are minimized. If monitoring indicates that construction outside of the buffer is affecting nesting, the buffer shall be increased if space allows (e.g., move staging areas farther away). If space does not allow, construction shall cease until the young have fledged from all the nests in the colony (as confirmed by a qualified biologist) or until the end of the breeding season, whichever occurs first.

A biological monitor shall conduct training of construction personnel on the avoidance procedures, buffer zones, and protocols in the event a burrowing owl flies into an active construction zone.

7.2.17 Species Condition 4: Tricolored Blackbird

Prior to initiation of PCCP Covered Activities, the qualified biologist(s) shall conduct preconstruction surveys to evaluate the presence of tricolored blackbird nesting colonies[1]. In instances where an adjacent parcel is not accessible to survey because the qualified biologist was not granted permission to enter, the qualified biologist shall scan all potential nest colony site(s) from the adjacent property, roadsides, or other safe, publicly accessible viewpoints, without trespassing, using binoculars and/or a spotting scope to look for tricolored blackbird nesting activity.

Surveys shall be conducted at least twice, with at least one month between surveys, during the nesting season one year prior to initial ground disturbance for the Covered Activity (if feasible), and the year of ground disturbance for the Covered Activity (required). If Covered Activities will occur in the Project work area during the nesting season, three surveys shall be conducted within 15 days prior to the Covered Activity, with one of the surveys occurring within five days prior to the start of the Covered Activity. The survey methods will be based on Kelsey (2008) or a similar protocol approved by the PCA and the Wildlife Agencies based on site-specific conditions.

If the first survey indicates that suitable nesting habitat is not present on the Project site or within 1,300 feet of the Project work area, additional surveys for nest colonies are not required.

If an active colony is known to occur within 3 miles of the Project site, a qualified biologist shall conduct two surveys of foraging habitat within the Project site and within a 1,300-foot radius around the Project site to determine whether foraging habitat is being actively used by foraging tricolored blackbirds. The qualified biologist shall map foraging habitat, as defined by the land cover types listed above, within a 1,300-foot radius around the Project site to delineate foraging habitat that will be surveyed. The surveys shall be

[1] Although there is no potential nesting habitat for tricolored blackbird within the Study Area, the PCCP requires this condition for all Projects with grassland habitat below 300 feet in elevation.

conducted approximately one week apart, with the second survey occurring no more than five calendar days prior to ground-disturbing activities.

Construction activity or other covered activities that may disturb an occupied nest colony site, as determined by a qualified biologist, will be prohibited during the nesting season (March 15 through July 31) or until the chicks have fledged or the colony has been abandoned on its own) within a 1,300-foot buffer zone around the nest colony, to the extent practicable. The intent of this condition is to prevent disturbance to occupied nest colony sites on or near project sites so they can complete their nesting cycle. This condition is not intended to preserve suitable breeding habitat on project sites but to ensure impacts to active colony sites only take place once the site is no longer occupied by the nesting colony. The buffer will be applied to extend beyond the nest colony site as follows: 1) if the colony is nesting in a wetland, the buffer must be established from the outer edge of all hydric vegetation associated with the colony, or 2) if the colony is nesting in non-wetland vegetation (e.g., Himalayan blackberry), the buffer must be established from the edge of the colony substrate. This buffer may be modified to a minimum of 300 feet, with written approval from the Wildlife Agencies, in areas with dense forest, buildings, or other features between the Covered Activities and the occupied active nest colony; where there is sufficient topographic relief to protect the colony from excessive noise or visual disturbance; where sound curtains have been installed; or other methods developed in consultation with the Wildlife Agencies where conditions warrant reduction of the buffer distance. If tricolored blackbirds colonize habitat adjacent to Covered Activities after the activities have been initiated, the Project applicant shall reduce disturbance through establishment of buffers or noise reduction techniques or visual screens, as determined in consultation with the Wildlife Agencies and PCA. The buffer must be clearly marked to prevent Project-related activities from occurring within the buffer zone.

Active nesting colonies that occur within the no-disturbance buffer shall be monitored by the qualified biologist(s) to verify the Covered Activity is not disrupting the nesting behavior of the colony. The frequency of monitoring will be approved by the PCA and based on the frequency and intensity of construction activities and the likelihood of disturbance of the active nest. In most cases, monitoring will occur at least every other day, but in some cases, daily monitoring may be appropriate to ensure that direct effects on tricolored blackbird are minimized. The biologist will train construction personnel on the avoidance procedures and buffer zones.

If the qualified biologist(s) determines that the Covered Activity is disrupting nesting and/or foraging behavior, the qualified biologist(s) shall notify the Project applicant immediately, and the Project applicant shall notify the PCA within 24 hours to determine additional protective measures that can be implemented. The qualified biologist(s) shall have the authority to stop Covered Activities until additional protective measures are implemented. Additional protective measures shall remain in place until the qualified biologist(s) determine(s) tricolored blackbird behavior has normalized. If additional protective measures are ineffective, the qualified biologist(s) shall have the authority to stop Covered Activities as needed until the additional protective measures are modified and nesting behavior of tricolored blackbird returns to normal.

Additional protective measures may include increasing the size of the buffer (within the constraints of the Project site), delaying Covered Activities (or the portion of Covered Activities causing the disruption) until the colony is finished breeding and chicks have left the nest site, temporarily relocating staging areas, or temporarily rerouting access to the Project work area. The Project proponent shall notify the PCA and Wildlife Agencies within 24 hours if nests or nestlings are abandoned. If the nestlings are still alive, the qualified biologist(s) shall work with the Wildlife Agencies to determine appropriate actions for salvaging the eggs or nestlings. Notification to PCA and Wildlife Agencies shall be via telephone or email, followed by a written incident report. Notification shall include the date, time, location, and circumstances of the incident.

Foraging habitat within the buffer shall be monitored by the qualified biologist(s) to verify that the Covered Activity is not disrupting tricolored blackbird foraging behavior. The frequency of monitoring will be approved by the PCA and based on the frequency and intensity of construction activities and the likelihood of disturbance of foraging tricolored blackbirds. In most cases, monitoring will occur at least every other day, but in some cases, daily monitoring may be appropriate to ensure that effects on tricolored blackbird are minimized. The biologist will train construction personnel on the avoidance procedures and buffer zones.

If the qualified biologist(s) determines that the Covered Activity is disrupting foraging behavior, the qualified biologist(s) shall notify Project applicant immediately, and the Project applicant shall notify the PCA within 24 hours to determine additional protective measures that can be implemented. The qualified biologist(s) shall have the authority to stop Covered Activities until additional protective measures are implemented. Additional protective measures shall remain in place until the qualified biologist(s) determine(s) tricolored blackbird behavior has normalized. If additional protective measures are ineffective, the qualified biologist(s) shall have the authority to stop Covered Activities as needed until the additional protective measures are modified and foraging behavior of tricolored blackbird returns to normal. Additional protective measures may include increasing the size of the buffer (within the constraints of the Project site), temporarily relocating staging areas, or temporarily rerouting access to the Project work area.

7.2.18 Species Condition 6: Western Pond Turtle

Impacts to this species are addressed through implementation of General Condition 1; Community Conditions 1.1, 1.2, 2 and 3; Stream System Condition 1; and Species Condition 4 (Species Condition 7, which addresses salmonid habitat and is identified in Species Condition 6, does not apply because the project would not affect salmonid habitat and/or fish passage). In addition, General Condition 3 (Land Conversion) provides the process for accounting for loss of natural and semi-natural land cover that is more encompassing than standard practice. This approach better addresses the piecemeal loss of high-quality contiguous habitat that would occur without a plan such as the HCP/NCCP. No additional avoidance and minimization measures specific to these species are required by the PCCP. If individual western pond turtles are identified on-site, the project proponent shall obtain an incidental take permit from CDFW and/or USFWS before relocating or otherwise impacting the species.

7.2.19 Species Condition 8: Valley Elderberry Longhorn Beetle

Planning surveys for valley elderberry longhorn beetle are required for Covered Activities within the following habitat features when below 650 feet elevation (above mean sea level)[2]:

1. Riparian constituent habitat
2. Valley oak woodland community
3. Stream System (excluding frequently disked or flooded agricultural lands such as rice that would not likely support elderberry shrubs)

The project applicant will apply avoidance and minimization measures as specified in the USFWS's *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (U.S. Fish and Wildlife Service 1999b) or the current Wildlife Agency–approved avoidance and minimization protocol. When take is authorized the project applicant must coordinate with the PCA to provide transplants and seedlings/cuttings for planting in suitable habitat on the Reserve System consistent with the USFWS Guidelines/Framework. Project-by-project mitigation requirements for valley elderberry longhorn beetle cannot be applied to the restoration requirements of 6.3.2.2.3 (Community Condition 2.3, Riverine and Riparian Restoration) for a project's associated riparian native trees/shrubs impacts to be planted as replacement habitat (i.e., mitigation for impacts to valley elderberry longhorn beetle [transplants and plantings of seedlings/cuttings] does not count as mitigation for impacts to riverine and riparian [restoration of riverine and riparian]). The distinction between valley elderberry longhorn beetle impacts and riverine/riparian impacts will be addressed through project-specific mitigation requirements that provide for restoration of natural communities, including riverine/riparian complex (i.e., restoration dependent on effects; see Table 5-4).

7.2.20 Species Condition 10: Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp

Wet season surveys to determine occupancy of vernal pools by vernal pool fairy shrimp and vernal pool tadpole shrimp are required if the Project is implemented while the PCCP is still in the Initial Survey Phase. These wet season surveys have been completed; therefore, this species condition has already been accomplished and no further mitigation for this species is necessary.

7.2.21 CARP Authorization Conditions

CARP Condition 1a: All work within the Plan Area that impacts Aquatic Resources of Placer County shall be completed according to the plans and documents included in the CARP application, Water Quality Certification, and, if applicable, WDRs. All changes to those plans shall be reported to Placer County. Minor changes may require an amendment to the CARP Authorization, Water Quality Certification, and, if applicable, WDRs. Substantial changes may render the authorization, Water Quality Certification, and, if applicable, WDRs, void, and a new application may be required.

[2] Although planning level surveys have already been conducted, and the elderberry shrub may be avoided, the PCCP requires this condition for all Projects with the listed habitats below 650 feet in elevation.

CARP Condition 1b: All deviations from plans and documents provided with the Application and approved by Placer County Community Development Resource Agency (CDRA) must be reported to Placer County CDRA immediately.

CARP Condition 2: Any construction within the Stream System shall be implemented in a way to avoid and minimize impacts to vegetation outside the construction area. All preserved wetlands, other Aquatic Resources of Placer County, and the Stream Zone shall be protected with bright construction fencing. Temporary fencing shall be removed immediately upon completion of the Project.

CARP Condition 3: Erosion control measures shall be specified as part of the CARP application, and the application shall not be complete without them. All erosion control specified in the permit application shall be in place and functional before the beginning of the rainy season and shall remain in place until the end of the season. Site supervisors shall be aware of weather forecasts year-round and shall be prepared to establish erosion control on short notice for unusual rain events. Erosion control features shall be inspected and maintained after each rainfall period. Maintenance includes, but is not limited to, removal of accumulated silt and the replacement of damaged barriers and other features.

CARP Condition 4: All required setbacks shall be implemented according to the HCP/NCCP Condition 4 (HCP/NCCP Section 6.1.2).

CARP Condition 5: All work in aquatic resources within the Stream System shall be restricted to periods of low flow and dry weather between April 15 and October 15, unless otherwise permitted by Placer County CDRA and approved by the appropriate State and federal regulatory agency. Work within aquatic resources in the Stream System outside of the specified periods may be permitted under some circumstances. The Applicant must provide Placer County CDRA with the following information: a) the extent of work already completed; b) specific details about the work yet to be completed; and c) an estimate of the time needed to complete the work in the Stream System.

CARP Condition 6: Weather forecasts should be monitored, and erosion control established before all storm events.

CARP Condition 7: Following work in a stream channel, the low flow channel shall be returned to its natural state to the extent possible. The shape and gradient of the streambed shall be restored to the same gradient that existed before the work to the extent possible.

CARP Condition 8: Except for site preparation for the installation and removal of dewatering structures, no excavation is allowed in flowing streams unless dredging WDRs are issued by the RWQCB. Detailed plans for dewatering must be part of the Application.

CARP Condition 9: Temporary crossings as described in the Application shall be installed no earlier than April 15 and shall be removed no later than October 15, unless otherwise permitted by Placer County CDRA

and approved by the appropriate State and federal regulatory agency. This work window could be modified at the discretion of Placer County and the CDFW.

CARP Condition 10: No vehicles other than necessary earth-moving and construction equipment shall be allowed within the Stream System after the section of stream where work is performed is dewatered. The equipment and vehicles used in the Stream System shall be described in the Application.

CARP Condition 11: Staging areas for equipment, materials, fuels, lubricants, and solvents shall be located outside the stream channel and banks and away from all preserved aquatic resources. All stationary equipment operated within the Stream System must be positioned over drip-pans. Equipment entering the Stream System must be inspected daily for leaks that could introduce deleterious materials into aquatic resources. All discharges, unintentional or otherwise, shall be reported immediately to Placer County CDRA. Placer County CDRA shall then immediately notify the appropriate state and federal agencies.

CARP Condition 12: Cement, concrete, washings, asphalt, paint, coating materials, oil, other petroleum products, and other materials that could be hazardous to aquatic life shall be prevented from reaching streams, lakes, or other water bodies. These materials shall be placed a minimum of 50 feet away from aquatic environments. All discharges, unintentional or otherwise, shall be reported immediately to Placer County CDRA. Placer County CDRA shall then immediately notify the appropriate state and federal agencies.

CARP Condition 13: During construction, no litter or construction debris shall be dumped into water bodies or other aquatic resources; nor shall it be placed in a location where it might be moved by wind or water into aquatic resources. All construction debris shall be removed from the site upon completion of the Project.

CARP Condition 14: Only herbicides registered with the California Department of Pesticide Regulation shall be used in streams, ponds, and lakes, and shall be applied in accordance with label instructions. A list of all pesticides that may be used in the Project area shall be submitted to Placer County CDRA before use. The PCCP does not authorize the use of herbicides; herbicide application is not a Covered Activity.

CARP Condition 15: Before beginning construction, the Project Applicant must have a valid CARP authorization or waiver notice. In order to obtain a permit, the Applicant must pay all mitigation fees or purchase appropriate credits from an agency-approved mitigation bank.

CARP Condition 16: A copy of the CARP conditions and Water Quality Certification and WDRs shall be given to individuals responsible for activities on the site. Site personnel, (employees, contractors, and subcontractors) shall be adequately informed and trained to implement all permit, Water Quality Certification, and WDR conditions and shall have a copy of all permits available onsite at all times for review by site personnel and agencies.

CARP Condition 17: Work shall not disturb active bird nests until young birds have fledged. To avoid impacts to nesting birds, any disturbance shall occur between September 1 and February 1 prior to the nesting

season. Tree removal, earthmoving or other disturbance at other times is at Placer County CDRA's discretion and will require surveys by a qualified biologist to determine the absence of nesting birds prior to the activity.

CARP Condition 18: All trees marked for removal within the Stream System must be shown on maps included with the Application. Native trees over five inches diameter at breast height (DBH) shall not be removed without the consent of Placer County CDRA.

CARP Condition 19: Placer County CDRA shall be notified immediately if threatened or endangered species that are not Covered Species are discovered during construction activities. Placer County CDRA shall suspend work and notify the USFWS, NMFS, and the CDFW for guidance.

CARP Condition 20: Wildlife entering the construction site shall be allowed to leave the area unharmed or shall be flushed or herded humanely in a safe direction away from the site.

CARP Condition 21: All pipe sections shall be capped or inspected for wildlife before being placed in a trench. Pipes within a trench shall be capped at the end of each day to prevent entry by wildlife, except for those pipes that are being used to divert stream flow.

CARP Condition 22: At the end of each workday, all open trenches will be provided with a ramp of dirt or wood to allow trapped animals to escape.

CARP Condition 23: If human remains or cultural artifacts are discovered during construction, the Applicant shall stop work in the area and notify Placer County CDRA immediately. Work will not continue in the area until the County coroner and a qualified archaeologist have evaluated the remains, conducted a survey, prepared an assessment, and required consultations are completed.

7.3 Special-Status Plant Species

Special-status plant surveys conducted throughout the Study Areas in 2024 and 2025 were negative. However, given enough time, plants may become established in areas where suitable habitat exists. If construction does not commence prior to March 15, 2027, another round of special-status plant surveys shall be conducted within 3 years prior to commencement of construction in areas proposed for impact. Surveys shall be conducted in accordance with the *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants* (USFWS 2000), the *Botanical Survey Guidelines of the California Native Plant Society* (CNPS 2001), and *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018). This protocol includes conducting surveys at the appropriate time of year, when plants are in bloom.

If no special-status plant species are found, no further mitigation would be required. If special status plants are found within proposed impact areas, and they are perennials, such as Sanford's arrowhead or big-scale balsamroot, then mitigation could consist of digging up the plants and transplanting them into a suitable

avoided area on-site prior to construction. If the plant found is an annual such as dwarf downingia, then mitigation could consist of collecting seed-bearing soil and spreading it into a suitable constructed wetland at a mitigation site. If special-status plants will be impacted, a qualified biologist shall prepare an avoidance and mitigation plan detailing protection and avoidance measures, transplantation procedures, success criteria, and long-term monitoring protocols. This plan shall be approved by the County, and shall ensure that mitigation for the impacts to rare plants will result in no net loss of individual plants after a five year monitoring period. Additionally, a pre-construction worker awareness training shall be conducted to alert workers to the presence of and protections for special-status plants.

7.4 Crotch's Bumble Bee

Crotch's bumble bee was designated as a candidate for listing under the CESA in 2019, but no decision on listing has been published. If, at the time of project implementation, the species is not a CESA candidate or CESA listed, and it does not fall into any of the other "special-status" categories defined in Section 3.0, then it would not qualify for protections under CEQA and no mitigation is necessary. Furthermore, as this is a candidate species, appropriate mitigation measures are still being developed and refined for these species. We have developed the following measure based on current literature and research. If at a later date, a different mitigation measure is determined to be more appropriate, that can be submitted to the County and CDFW at that time for review and approval.

- Initial ground-disturbing work (e.g., grading, vegetation removal, staging) shall take place between 1 September and 31 March (i.e., outside the colony active period), if feasible, to avoid impacts on Crotch's bumble bee.
- If completing all initial ground-disturbing work between 1 September and 31 March is not feasible, then a senior biologist with 10 or more years of experience conducting biological resource surveys within California shall conduct a pre-construction survey for Crotch's bumble bee in the area proposed for impact no more than 14 days prior to the commencement of construction activities. The survey shall occur during the period from one hour after sunrise to two hours before sunset, with temperatures between 65° F and 90° F, with low wind and no rain. If the timing of the start of construction makes the survey infeasible due to the temperature requirements, the surveying biologist shall select the most appropriate days based on the National Weather Service seven-day forecast and shall survey at a time of day that is closest to the temperature range stated above. The survey duration shall be commensurate with the extent of suitable floral resources (which represent foraging habitat) present within the area proposed for impact and the level of effort shall be based on the metric of a minimum of one person-hour of searching per three acres of suitable floral resources/foraging habitat. A meandering pedestrian survey shall be conducted throughout the area proposed for impact in order to identify patches of suitable floral resources. Suitable floral resources for Crotch's bumble bee include species in the following families: Apocynaceae, Asteraceae, Boraginaceae, Fabaceae, and Lamiaceae.
- At a minimum, pre-construction survey methods shall include the following:
    - Search areas with floral resources for foraging bumble bees. Observed foraging activity may indicate a nest is nearby, and therefore, the survey duration shall be increased when foraging bumble bees are present.

- If Crotch's bumble bee are observed, watch any Crotch's bumble bee present and observe their flight patterns. Attempt to track their movements between foraging areas and the nest.
- Visually look for nest entrances. Observe burrows, any other underground cavities, logs, or other possible nesting habitat.
- If floral resources or other vegetation preclude observance of the nest, small areas of vegetation may be removed via hand removal, line trimming, or mowing to a height of no less than 4 inches to assist with locating the nest.
- Look for concentrated special-status bumble bee activity.
- Listen for the humming of a nest colony.
- If bumble bees are observed, attempt to photograph the individual and identify it to species.

- The biologist conducting the survey shall record when the survey was conducted, a general description of any suitable foraging habitat/floral resources present, a description of observed bumble bee activity, a list of bumble bee species observed, a description of any vegetation removed to facilitate the survey, and their determination of if survey observations suggest a special-status bumble bee nest(s) may be present or if construction activities could result in take of Crotch's bumble bee. The report shall be submitted to the County prior to the commencement of construction activities.
- If no bumble bees are located during the pre-construction survey or the bumble bees located are definitively identified as common (i.e., not special-status) species, then no further mitigation or coordination with CDFW is required.
- If any sign(s) of a bumble bee nest is observed, and if it cannot be established the species present is not a special-status bumble bee, then construction shall not commence until either 1) the bumble bees present are positively identification as common (i.e., not special status) by an experienced bumble bee taxonomist, or 2) the completion of coordination with CDFW to identify appropriate mitigation measures, which may include but not be limited to: waiting until the colony active season ends, establishment of nest buffers, or obtaining an Incidental Take Permit (ITP) from CDFW.
- It is recommended, but not required that the Project Applicant also survey the proposed impact areas the year before construction begins in order to avoid potential last-minute delays associated with identifying Crotch's bumble bee on-site immediately prior to construction activities. To be most effective, this optional survey should follow the protocol outlined above.
- If special-status bees are located, and after coordination with CDFW take of Crotch's bumble bee cannot be avoided, the Applicant shall obtain an ITP from CDFW prior to County approval of permits authorizing construction, and the applicant shall implement all conditions identified in the ITP. Mitigation required by the ITP may include but will not be limited to, the Project Applicant translocating nesting substrate in accordance with the latest scientific research to another suitable location (i.e., a location that supports similar or better floral resources as the impact area), enhancing floral resources on areas of the Project site that will remain appropriate habitat, worker awareness training, and/or other measures specified by CDFW.

7.5 Western Spadefoot

The Applicant has surveyed all suitable aquatic habitat within the Project site (including features proposed for avoidance) by sampling the features thoroughly with dipnets during March or early April, when spadefoot tadpoles would be present.

Within the two years prior to construction, one nocturnal acoustic survey of all areas within 300 feet of vernal pools and seasonal wetlands shall be conducted during the end of the wet season, specifically March or April. Acoustic surveys consist of walking through the area and listening for the distinctive snore-like call of this species. Timing and methodology for the aquatic and acoustic surveys shall be based on those described in *Distribution of the Western Spadefoot* (Spea hammondii) *in the Northern Sacramento Valley of California, with Comments on Status and Survey Methodology* (Shedd 2017). If both the aquatic survey and the nocturnal acoustic survey are negative, no further mitigation is necessary (the aquatic survey was negative). If western spadefoot are observed within aquatic habitat proposed for impact, the tadpoles shall be captured and relocated to an off-site open space preserve with suitable habitat in the vicinity of the Project Area. If western spadefoot are observed within aquatic habitat proposed for avoidance, then the applicant may either: relocate the tadpoles to an off-site open space preserve with habitat of equivalent or greater value (e.g., vernal pools and seasonal wetlands in a grassland/woodland matrix) in the vicinity of the Project Area, or install silt fence along the edge of the proposed impact area within 300 feet of the occupied aquatic habitat to prevent metamorphosed individuals from dispersing into the construction area.

7.6 Nesting Raptors and Other Birds

The following nest survey requirements apply if construction activities take place during the typical bird breeding/nesting season (typically February 15 through August 31).

7.6.1 Nesting Bird Survey

A pre-construction nesting bird survey shall be conducted by the qualified biologist (Project Biologist) throughout the phase of the Project proposed for construction and all accessible areas within a 500-foot radius of proposed construction areas, no more than seven (7) days prior to the initiation of construction. If there is a break in construction activity of more than seven (7) days, then subsequent surveys shall be conducted. If no nests are observed, no further mitigation is required, unless there is a break in construction activity as noted above.

If an active raptor nest is found, no construction activities shall take place within 500 feet of the nest until the young have fledged. If active songbird nests are found, a 100-foot no disturbance buffer will be established. These no-disturbance buffers may be reduced if a smaller, sufficiently protective buffer is proposed by the Project Biologist and approved by the County after taking into consideration the natural history of the species of bird nesting, the proposed activity level adjacent to the nest, the nest occupants' habituation to existing or ongoing activity, and nest concealment (i.e., whether there are visual or acoustic barriers between the proposed activity and the nest). The Project Biologist can visit the nest as needed to

determine when the young have fledged the nest and are independent of the site or the nest can be left undisturbed until the end of the nesting season.

7.6.2 Survey Report

A report summarizing the survey(s) shall be provided to the County within 30 days of the completed survey and is valid for one construction season. If no nests are found, no further mitigation is required.

7.6.3 Increases to Buffers and Completion of Nesting

When a buffer has been set to protect an active nest and it is determined that the size of the no-disturbance buffer requires the Project Biologist to monitor the nest, that monitoring will include observations about the bird's behaviors relative to the construction activities. Should construction activities cause a nesting bird to do any of the following in a way that would be considered a result of construction activities: vocalize, make defensive flights at intruders, get up from a brooding position, or fly off the nest, then the exclusionary buffer shall be increased such that activities are far enough from the nest to stop this agitated behavior. The revised no-disturbance buffer will remain in place until the chicks have fledged or as otherwise determined by a qualified biologist in consultation with the County.

Construction activities may only resume within the no-disturbance buffer after a follow-up survey by the Project Biologist has been conducted and a report has been prepared indicating that the nest (or nests) is no longer active, and that no new nests have been identified.

7.7 Roosting Bats

A qualified biologist shall conduct a bat habitat assessment of all potential roosting habitat features, including trees, within the proposed impact footprint. This habitat assessment shall identify all potentially suitable roosting habitat and may be conducted up to one (1) year prior to the start of construction.

If potential roosting habitat is identified (cavities in trees or potential roosts within structures) within the areas proposed for impact, the biologist shall survey the potential roosting habitat during the active season (generally April through October or from January through March on days with temperatures in excess of 50 degrees F) to determine presence of roosting bats. These surveys are recommended to be conducted utilizing methods that are considered acceptable by CDFW and bat experts. Methods may include evening emergence surveys, acoustic surveys, inspecting potential roosting habitat with fiberoptic cameras or a combination thereof.

If roosting bats are identified within any of the trees planned for removal, or if presence is assumed, the trees shall be removed outside of pup season only on days with temperatures in excess of 50 degrees F. Pup season is generally during the months of May through August. Two-step tree removal shall be utilized under the supervision of the qualified biologist. Two-step tree removal involves removal of all branches of

the tree that do not provide roosting habitat on the first day, and then the next day cutting down the remaining portion of the tree.

Additionally, it is recommended that all other tree removal be conducted from January through March on days with temperatures in excess of 50 degrees F to avoid potential impacts to foliage-roosting bat species.

If roosting bats are identified within any structures planned for removal, a bat exclusion plan shall be prepared by a qualified bat biologist describing the methods to be used to humanely exclude bats prior to disturbance. Each exclusion is specific to the structure and no two are the same. All exclusions involve the installation of one-way doors or flaps during the non-breeding season that allow the bats to leave and not re-enter the structure. This plan shall be approved by the County and by CDFW and shall be implemented prior to the start of construction.

8.0 REFERENCES

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Figures

Figure 1. Site and Vicinity

Figure 2. California Natural Diversity Database Occurrences and Critical Habitat

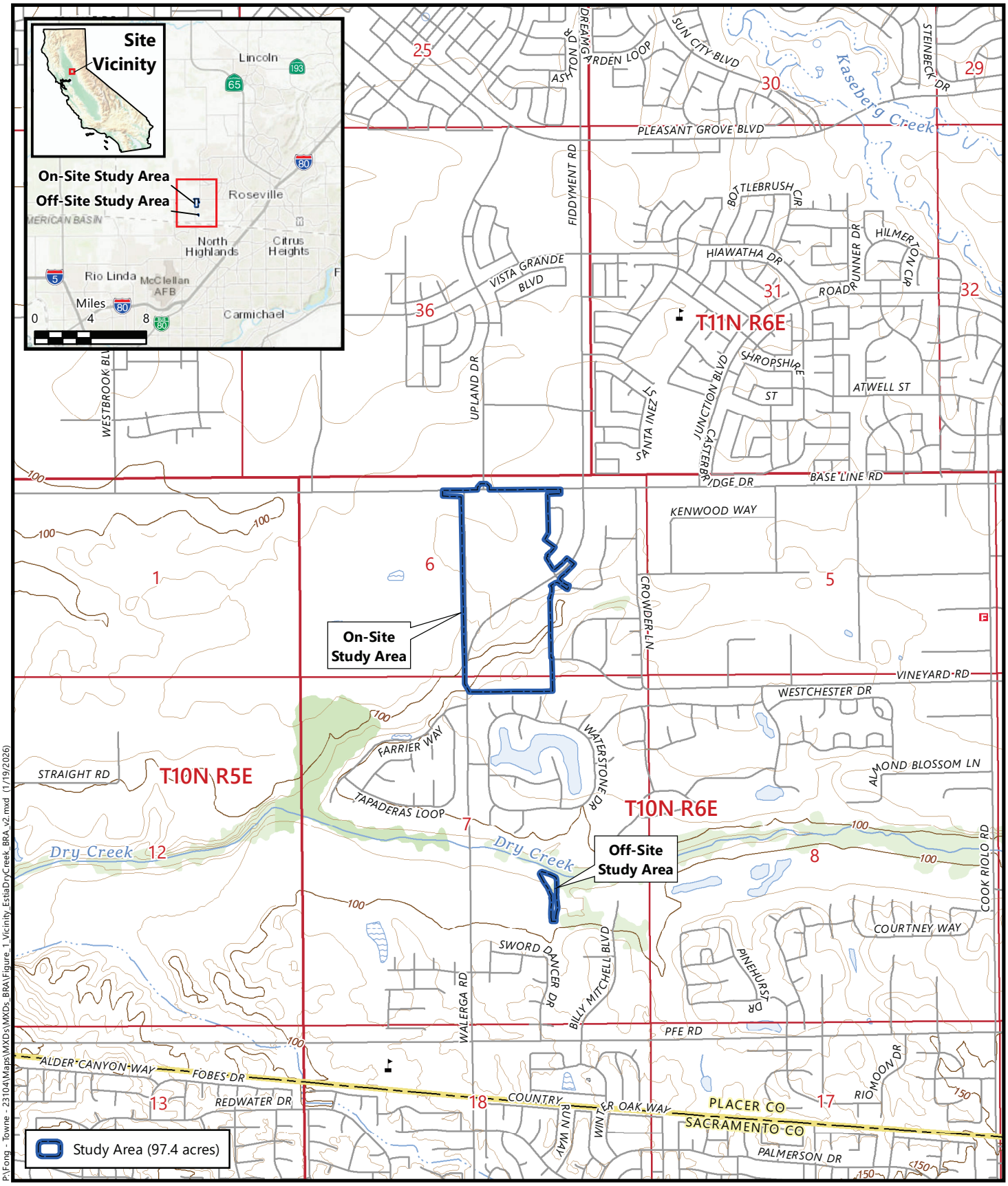
Figure 3. Aquatic Resources, Terrestrial Land Covers, and Species Locations

Figure 4. Natural Resources Conservation Service Soils

Figure 5. PCCP-Specific Boundaries

Figure 6. Impacts to Aquatic Resources and Land Covers

Figure 7. Impacts to PCCP-Specific Boundaries



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Figure 1
Site and Vicinity

Estia Dry Creek
Placer County, California

MADRONE ECOLOGICAL CONSULTING

Source: United States Geologic Survey, 2023 and 2021
"Citrus Heights, California and Roseville, California" 7.5-Minute Topographic Quadrangles
Sections 6-7, Township 10 North, Range 6 East, MDBM
Latitude (NAD83): 38.747602°, Longitude (NAD83): -121.362592°

* Figure not OCR Compatible

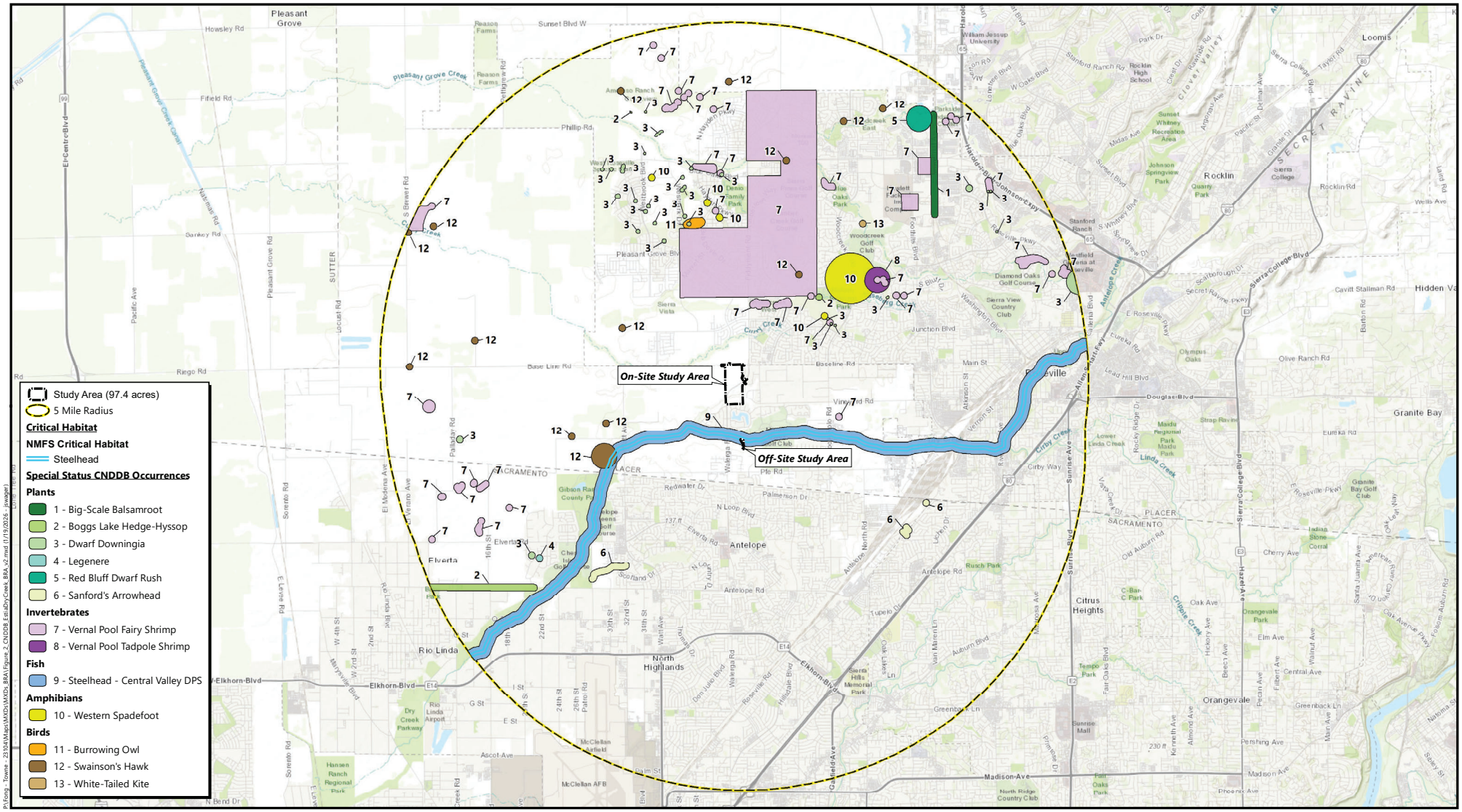


Figure 2
California Natural Diversity Database Occurrences and Critical Habitat

Estia Dry Creek
Placer County, California

Source: California Department of Fish and Wildlife, January 2026
Basemap Source: ESRI World Topographic Map

* Figure not OCR Compatible



Study Area (97.4 acres)

Observed Species Locations

Elderberry Shrub

Aquatic Resources (2.07 acres) *

Wetlands (1.65 acres)

- Irrigated Wetland (0.03 acre)
- Seasonal Wetland (0.26 acre)
- Seasonal Wetland Swale (0.26 acre)
- Vernal Pool (1.11 acres)

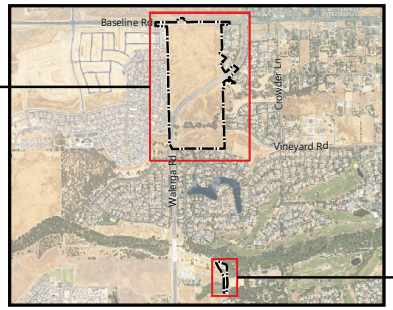
Other Waters (0.42 acre)

- Ephemeral Drainage (0.01 acre)
- Intermittent Drainage (0.39 acre)
- Roadside Ditch (0.02 acre)

Land Cover (97.4 acres) *

- Road (8.1 acres)
- Urban Parks (0.5 acre)
- Urban/Suburban (2.2 acres)
- Valley Foothill Riparian Woodland (3.8 acres)
- VPC Intermediate (82.0 acres)
- VPC Low (0.8 acre)

Study Area Locations





N

Feet

0 400

N

Feet

0 100

Figure 3
Aquatic Resources, Land Covers and Species Locations

Estia Dry Creek
Placer County, California

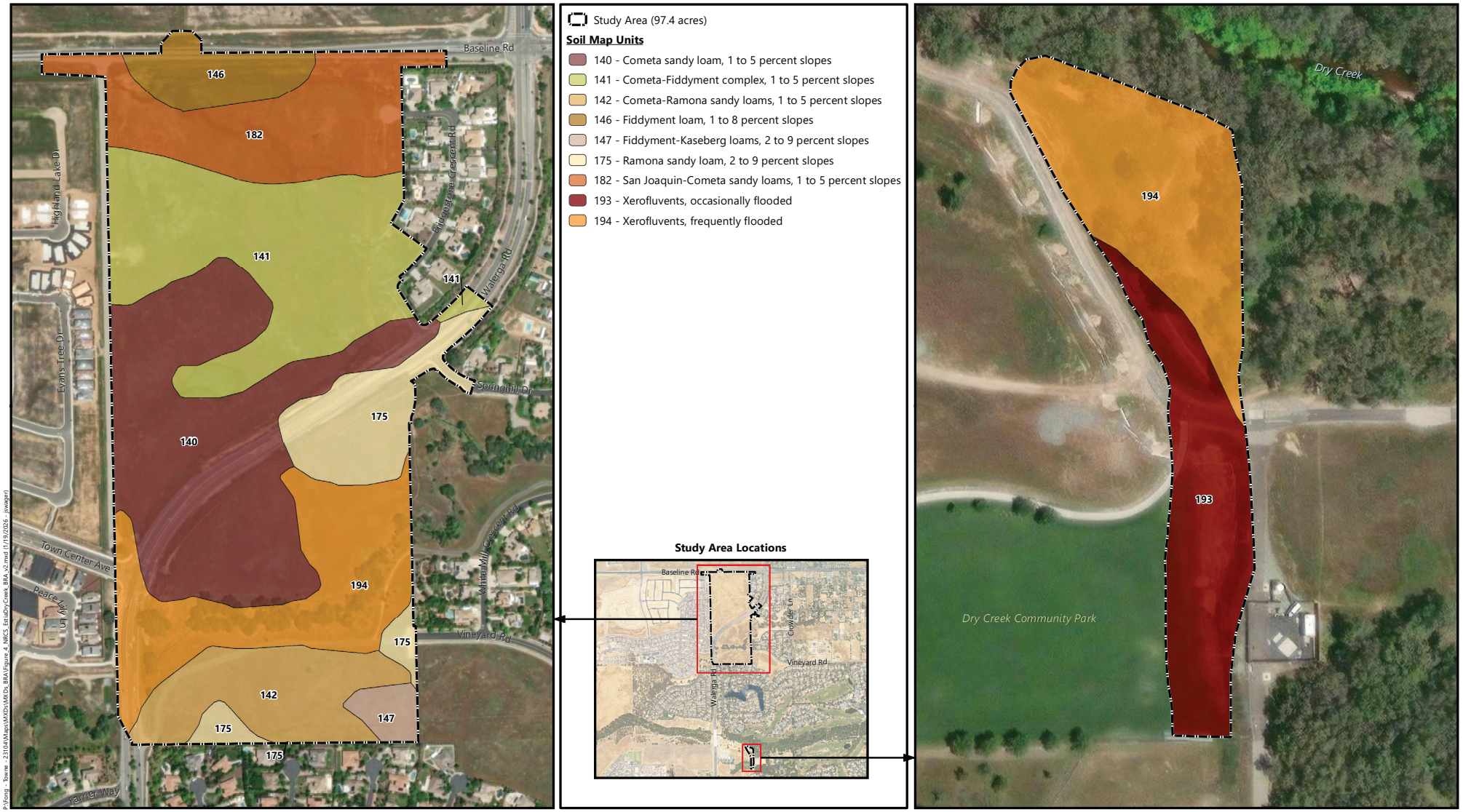
MADRONE ECOLOGICAL CONSULTING

** Small summation errors may occur due to rounding*

Boundary Source: King Engineering
Aerial Source: Maxar, 26 April 2022

* Figure not OCR Compatible

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Soil Survey Source: *USDA, Natural Resources Conservation Service Soil Survey Geographic (SSURGO) database for Placer County, California*
Aerial Source: Maxar, 26 April 2022

* Figure not OCR Compatible

Figure 4
Natural Resources Conservation Service Soils

Estia Dry Creek
Placer County, California

MADRONE ECOLOGICAL CONSULTING

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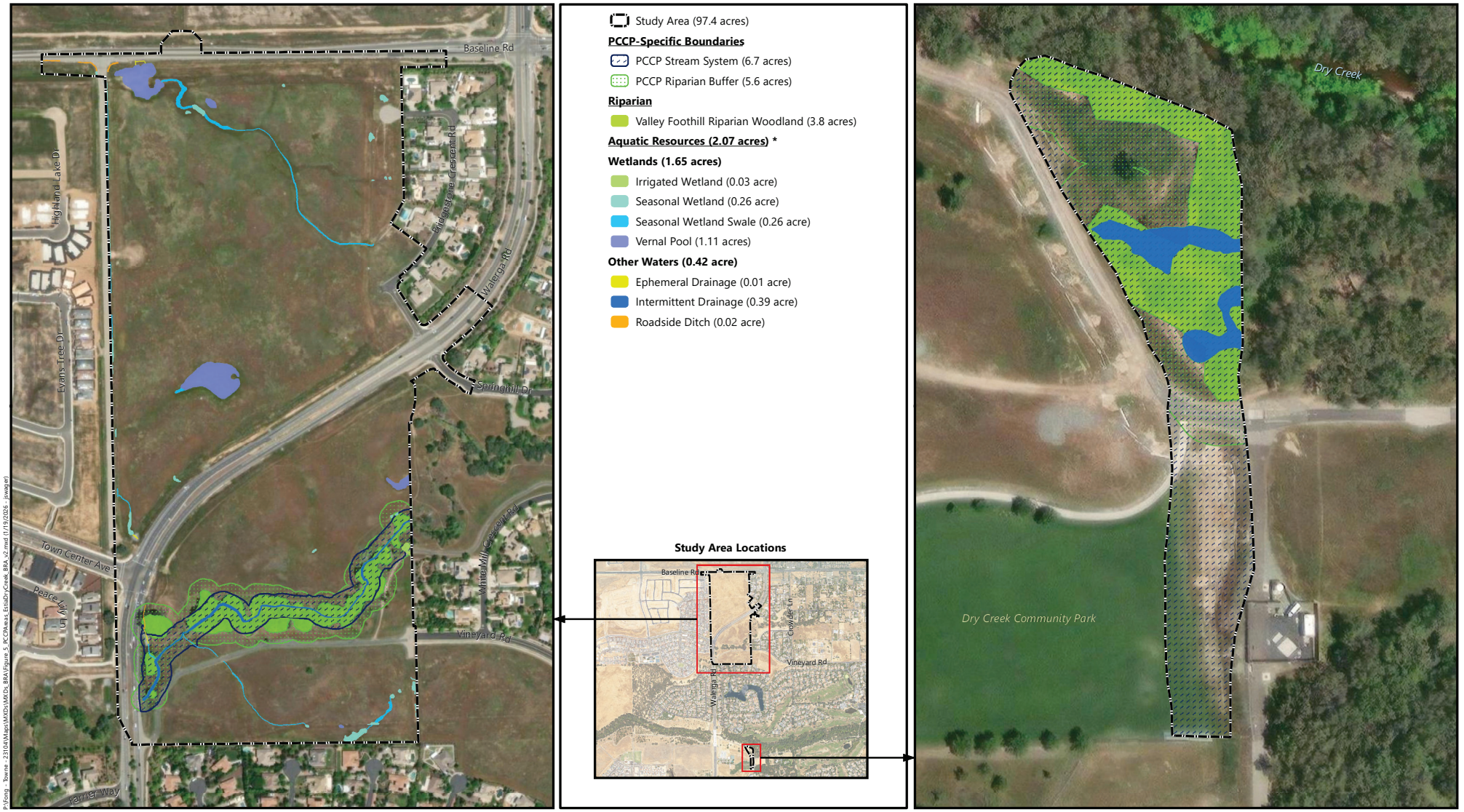


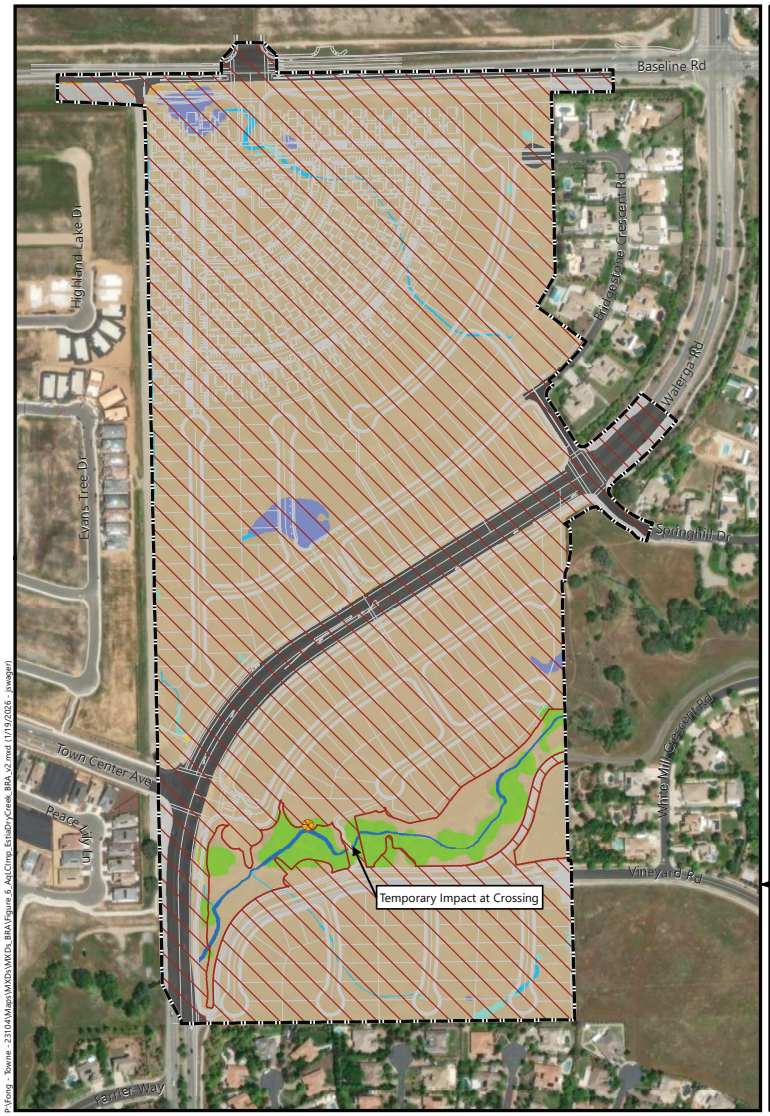
Figure 5
PCCP-Specific Boundaries

Estia Dry Creek
Placer County, California

MADRONE ECOLOGICAL CONSULTING

** Small summation errors may occur due to rounding*
Boundary Source: King Engineering
Aerial Source: Maxar, 26 April 2022

* Figure not OCR Compatible



Study Area (97.4 acres)
Permanent Impact Area (91.8 acres)

Observed Species Locations
Impacted Elderberry Shrub

Aquatic Resources (2.07 acres) *

Wetlands (1.65 acres)
Irrigated Wetland (0.03 acre)
Seasonal Wetland (0.26 acre)
Seasonal Wetland Swale (0.26 acre)
Vernal Pool (1.11 acres)

Other Waters (0.42 acre)
Ephemeral Drainage (0.01 acre)
Intermittent Drainage (0.39 acre)
Roadside Ditch (0.02 acre)

Land Cover (97.4 acres) *
Road (8.1 acres)
Urban Parks (0.5 acre)
Urban/Suburban (2.2 acres)
Valley Foothill Riparian Woodland (3.8 acres)
VPC Intermediate (82.0 acres)
VPC Low (0.8 acre)

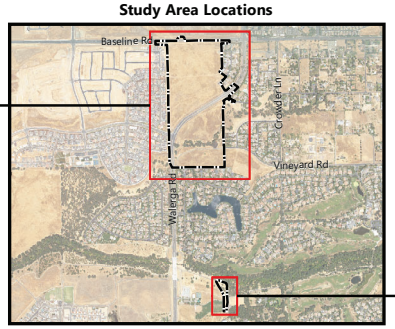
Impacts to Aquatic Resources*

Aquatic Resources	Permanent Impact (acres)	Temporary Impact (acres)	Avoided (acres)	Total (acres)
Irrigated Wetland	0.03	--	--	0.03
Seasonal Wetland	0.26	--	--	0.26
Seasonal Wetland Swale	0.25	--	<0.01	0.26
Vernal Pool	1.11	--	--	1.11
Ephemeral Drainage	0.01	--	--	0.01
Intermittent Drainage	0.16	<0.01	0.23	0.39
Roadside Ditch	0.02	--	--	0.02
Total	**1.84**	**0.01**	**0.23**	**2.07**

Land Cover Conversion *

Land Cover	Land Cover Conversion (acres)	No Land Cover Conversion (acres)	Previously Converted (acres)	Total (acres)
Road	--	--	8.1	8.1
Urban Parks	--	--	0.5	0.5
Urban/Suburban	--	--	2.2	2.2
Valley Foothill Riparian Woodland	1.3	2.5	--	3.8
VPC Intermediate	79.0	3.0	--	82.0
VPC Low	0.8	--	--	0.8
Total	**81.1**	**5.5**	**10.8**	**97.4**

Study Area Locations





N
Feet
0
400

N
Feet
0
100

* *Small summation errors may occur due to rounding*
Boundary Source: King Engineering
Aerial Source: Maxar, 26 April 2022

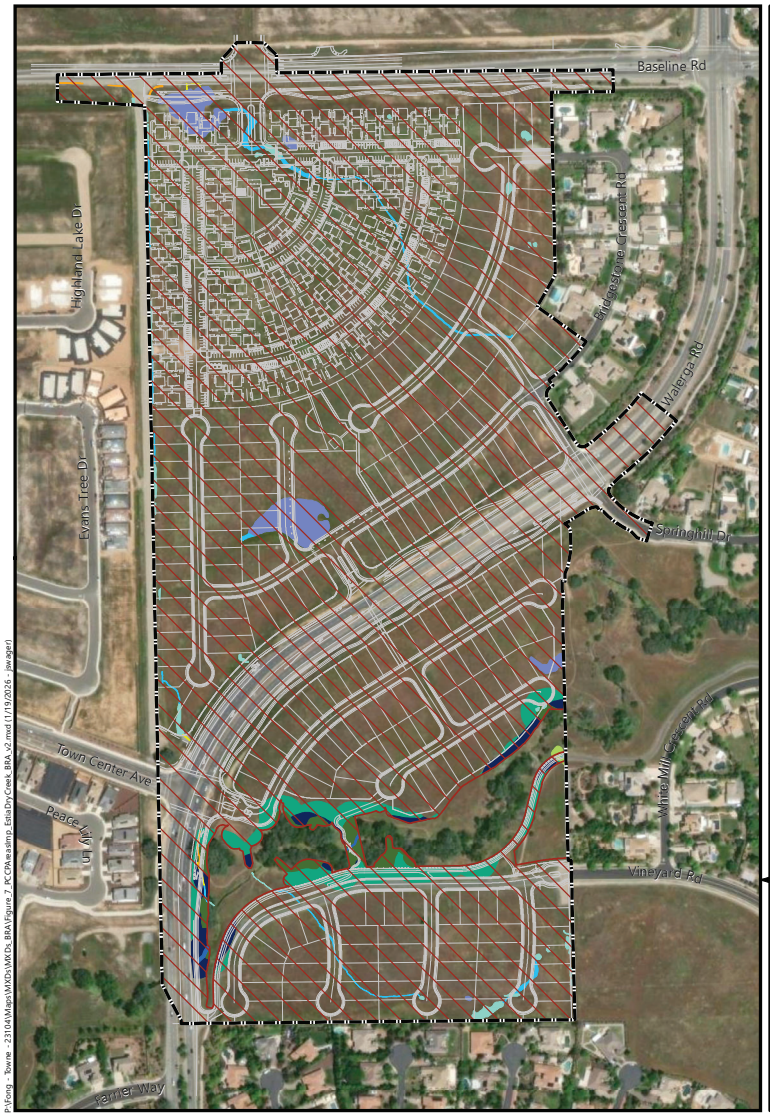
* Figure not OCR Compatible

Figure 6
Impacts to Aquatic Resources and Land Covers

Estia Dry Creek
Placer County, California

MADRONE ECOLOGICAL CONSULTING

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- Study Area (97.4 acres)
- Permanent Impact Area (91.8 acres)

Special Habitat Effects

Immediate Watershed Effects

- Seasonal Wetland Swale (<0.01 acre)

Aquatic Resource Type

- Seasonal Wetland (0.26 acre)
- Seasonal Wetland Swale (0.25 acre)
- Vernal Pool (1.11 acres)
- Irrigated Wetland (0.03 acre)
- Ephemeral Drainage (0.01 acre)
- Intermittent Drainage (0.17 acre)
- Roadside Ditch (0.02 acre)

Riparian Vegetation

- Valley Foothill Riparian Woodland (1.15 acres)

Stream System and Riparian Buffer

- Stream System (1.94 acres)
- Riparian Buffer (1.97 acres)

Special Habitat Effects *

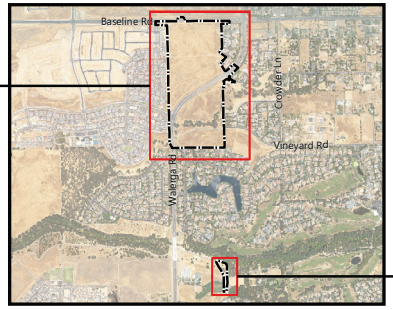
Immediate Watershed Effects	*Acres*
Seasonal Wetland Swale	<0.01

Riparian Vegetation	*Acres*
Valley Oak Woodland	1.15

Aquatic Resources	*Acres*
Seasonal Wetland	0.26
Seasonal Wetland Swale	0.25
Vernal Pool	1.11
Irrigated Wetland	0.03
Ephemeral Drainage	0.01
Intermittent Drainage	0.17
Roadside Ditch	0.02

Stream System and Riparian Buffer	*Acres*
Stream System	1.94
Riparian Buffer	1.97

Study Area Locations





N
Feet
0
400

N
Feet
0
100

Figure 7
Impacts to PCCP-Specific Boundaries

Estia Dry Creek
Placer County, California

MADRONE ECOLOGICAL CONSULTING

** Small summation errors may occur due to rounding*
Boundary Source: King Engineering
Aerial Source: Maxar, 26 April 2022

* Figure not OCR Compatible

Attachments

Attachment A. Site Plan

Attachment B. IPaC Trust Resource Report for the Study Areas

Attachment C. CNPS Inventory of Rare and Endangered Plants Query for the "Citrus Heights, California" and "Roseville, California" USGS Quadrangle and 10 Surrounding Quadrangles

Attachment D. Wildlife List

Attachment E. Aquatic Resources Delineation Reports for the On-Site Study Area

Attachment F. Special-Status Plant Survey Report for the Fong Property

Attachment G. 90-Day Survey Report for 2024-25 Wet Season Surveys for Listed Large Branchiopods for Estia Dry Creek

Attachment A

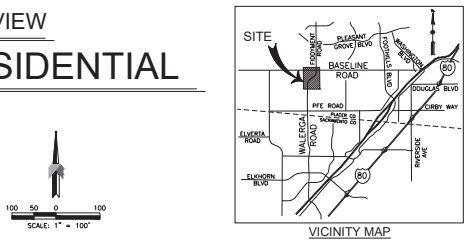
Site Plan

KING ENGINEERING
200 Auburn Folsom Road, Ste. 201 T: (530) 272-8328
Auburn, California 95603 E: info@King-Engineering-Inc.com

VESTING PHASED SMALL LOT TENTATIVE MAP OVERVIEW

ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

PLACER COUNTY STATE OF CALIFORNIA PLN24-00144
NOVEMBER 2025



VICINITY MAP
NOT TO SCALE

LAND USE SUMMARY

LOT #/UNITS	PHASE	LAND USE DESIGNATIONS	ZONING DESIGNATION	LAND USE	ACRES GROSS
Lot 1/220 Units	1	HDR	RM-Dc	HIGH DENSITY RESIDENTIAL	23.2
41-89	2A	MDR	RS-B-6	MEDIUM DENSITY RESIDENTIAL	8.2
LC-5	2A	LC	RS-B-6	LANDSCAPE CORRIDOR	0.8
LC-4	2A	LC	RS-B-6	LANDSCAPE CORRIDOR	0.5
LC-6	2A	LC	RS-B-6	LANDSCAPE CORRIDOR	0.1
PARK-1	2A	PR	RS-B-6	PARK	2.1
ROAD-2	2A	HE	RS-B-6	PUBLIC ROAD	2.2
WALERGA RD	2A	HE	RS-B-6	PUBLIC ROAD	3.1
1-40,90-110	2B	MDR	RS-B-6	MEDIUM DENSITY RESIDENTIAL	11.3
LC-4	2B	LC	RS-B-6	LANDSCAPE CORRIDOR	0.4
ROAD-2	2B	HE	RS-B-6	PUBLIC ROAD	2.4
WALERGA RD	2B	HE	RS-B-6	PUBLIC ROAD	0.5
1-55	3	MDR	RS-B-6	MEDIUM DENSITY RESIDENTIAL	9.4
LC-5	3	LC	RS-B-6	LANDSCAPE CORRIDOR	1.3
OS-1*	3	OS	O	OPEN SPACE	9.9
ROAD-3	3	MDR	RS-B-6	PRIVATE ROAD	2.3
WALERGA RD	3	HE	RS-B-6	PUBLIC ROAD	3.2
1-46	4	MDR	RS-B-6	MEDIUM DENSITY RESIDENTIAL	8.4
LC-6	4	LC	RS-B-6	LANDSCAPE CORRIDOR	0.06
LC-7	4	LC	RS-B-6	LANDSCAPE CORRIDOR	0.04
ROAD-4	4	MDR	RS-B-6	PRIVATE ROAD	2.6
TOTAL					92.2

* LOT CREATED BY THE LARGE LOT FINAL MAP

100 50 0 100
SCALE: 1" = 100'

SHEET INDEX:

SHEET #	DESCRIPTION
1	VESTING PHASED SMALL LOT TENTATIVE MAP OVERVIEW
2	VESTING PHASED SMALL LOT TENTATIVE MAP - PHASE 1
3	VESTING PHASED SMALL LOT TENTATIVE MAP - PHASE 2A & 2B
4	VESTING PHASED SMALL LOT TENTATIVE MAP - PHASES 3 & 4
5	TYPICAL SECTIONS AND DETAILS
6	TYPICAL SECTIONS AND DETAILS
7	PRELIMINARY SITE PLAN - PHASE 1
8	PRELIMINARY GRADING DRAINAGE UTILITY - PHASE 1
9	PRELIMINARY GRADING DRAINAGE UTILITY - PHASE 2A & 2B
10	PRELIMINARY GRADING DRAINAGE UTILITY - PHASES 3 & 4
11	PRELIMINARY GRADING DRAINAGE UTILITY - BACKBONE
12	PHOTO EXHIBIT
13	SIGNAGE AND STRIPING
14	SIGNAGE AND STRIPING - ULTIMATE
15	OFFSITE SEWER STORAGE TANK

LEGEND

EAE	EMERGENCY ACCESS EASEMENT
DAE	DRAINAGE ACCESS EASEMENT
DE	DRAINAGE EASEMENT
EVA	EMERGENCY VEHICLE ACCESS
ESMT	EASEMENT
HE	HIGHWAY EASEMENT
LC	LANDSCAPE CORRIDOR
LE	LANDSCAPE EASEMENT
MPE	MULTI PURPOSE EASEMENT
MPTE	MULTI PURPOSE TRAIL EASEMENT
PE	PEDESTRIAN EASEMENT
PRE	PRIVATE ROAD EASEMENT
PSE	PUBLIC SUPPORT EASEMENT
PUE	PUBLIC UTILITY EASEMENT
SDE	SLOPE AND DRAINAGE EASEMENT
SSE	SANITARY SEWER EASEMENT
SWPE	STORM WATER PRESERVATION EASEMENT
TCE	TEMPORARY CONSTRUCTION EASEMENT
(E)	EXISTING
(P)	PROPOSED
PL	PROPERTY LINE
PCA	PLACER CONSERVATION AUTHORITY

AVOIDED WATERS OF THE U.S.
TEMPORARY IMPACTS
PERMANENT IMPACTS
100 YEAR PRE-DEVELOPMENT FLOODPLAIN
100 YEAR FUTURE, FULLY-DEVELOPED, UNMITIGATED FLOODPLAIN
LINEAR CHANNEL
85 PROPOSED FINISHED GRADE CONTOUR
105 EXISTING GROUND CONTOUR
0.50% SLOPE OF FINISHED GRADE
FH (P) FH
(P) STREET LIGHT
MONUMENT WELL
EXISTING 3/4" IP WITH CAP
SECTION CORNER
QUARTER CORNER

OWNER
THE FONG FAMILY
C/O RYAN FONG
RIVER ROCK DEVELOPMENT
7700 COLLEGE TOWN DRIVE, SUITE 250
SACRAMENTO, CA 95826

ENGINEER
KING ENGINEERING, INC.
200 AUBURN FOLSOM ROAD, STE. 201
AUBURN, CALIFORNIA 95603
T: (530) 272-8328
E: info@King-Engineering-Inc.com

LAND USE DESIGNATIONS

MEDIUM DENSITY RESIDENTIAL	MDR
HIGH DENSITY RESIDENTIAL	HDR
PARKS AND RECREATION	PR
OPEN SPACE	OS
LANDSCAPE CORRIDOR	LC

NOTES:
1. SEE PRELIMINARY GRADING, DRAINAGE AND UTILITY PLAN FOR ADDITIONAL INFORMATION NOT SHOWN HEREON.
2. BIOLOGICAL RESOURCE AND WETLAND DELINEATION FEATURES AND LOCATIONS SHOWN HEREON PROVIDED BY MADRONE ECOLOGICAL CONSULTING, DATE OF WETLAND DELINEATION APRIL 4, 2024.
3. PRELIMINARY GEOTECHNICAL INVESTIGATION PROVIDED BY ENGEO DATED DECEMBER 26, 2023.
4. PUBLIC TRAILS SHALL NOT INCLUDE ANY GATES.
5. A MINIMUM DRIVEWAY LENGTH OF 20' IS REQUIRED AS MEASURED FROM THE BACK OF SIDEWALK TO THE FACE OF THE GARAGE DOOR OF EACH LOT.

TOTAL NUMBER OF PARCELS
212 - MEDIUM DENSITY RESIDENTIAL LOTS
1 - HIGH DENSITY RESIDENTIAL LOT - 220 UNITS
8 - LANDSCAPE CORRIDORS (LC-1 TO LC-8)
1 - PARKS (P)
2 - ROADS (ROAD-3 & ROAD-4)

MINIMUM LOT AREA
6,000 SF

CONTOUR INTERVAL
CONTOUR INTERVAL = 1 FOOT

TOTAL AREA
92.2± AC

SOURCE OF TOPOGRAPHY
BURRELL CONSULTING GROUP, INC

TOTAL AREA OF FEMA 100-YR FLOOD PLAIN
4.7 ACRES

HORIZONTAL DATUM
STATE PLANE COORDINATE SYSTEM (NAD-83) , ZONE 2

TOTAL AREA OF WETLANDS TO BE PROTECTED
0.23 ACRES

VERTICAL DATUM
ELEVATION: NT-25 DATUM NAVD 88
DESCRIPTION:(B.M. CIT-012) 3-1/4" CAP SET ON NORTH WEST CORNER OF NEW BRIDGE, APPROX. 2 FEET SOUTH OF NORTH END OF WALL ON APPROACH SLAB/PEDESTRIAN WALKWAY (NGVD 29=104.73' DIFFERENCE ± 2.52')

TOTAL AREA OF WETLANDS TO BE IMPACTED
1.84 ACRES

SECTION, TOWNSHIP and RANGE
BEING A PORTION OF SECTION 6, TOWNSHIP 10 NORTH, RANGE 6 EAST, M.D.M.

DATE OF PREPARATION
NOVEMBER 2025

ASSESSOR'S PARCEL NUMBERS
APN: 023-221-074 & 023-221-076 PLACER COUNTY

EXISTING ZONING

023-221-074:	RS-AG-B-40 PD=1, O PD=1
023-221-076:	RS-AG-B-40 PD=1

PROPOSED ZONING

023-221-074:	RS-B-6, 0
023-221-076:	RS-B-6, RM-Dc

OWNERSHIP AND MAINTENANCE

LAND USE	OWNED BY	MAINTAINED BY
LC LOTS	HOA	HOA
OS-1	COUNTY	COUNTY
P-1	COUNTY	COUNTY
ROAD-2	COUNTY	COUNTY
ROAD-3	HOA	HOA
ROAD-4	HOA	HOA

UTILITY INFORMATION
SERVICE PROVIDERS

SCHOOL DISTRICT:	CENTER JOINT UNIFIED SCHOOL DISTRICT (PHASE 1 & 2) DRY CREEK JOINT ELEMENTARY SCHOOL DISTRICT (PHASE 2 & 3) ROSEVILLE JOINT UNION HIGH SCHOOL DISTRICT (PHASE 2 & 3)
PARKS & RECREATION:	PLACER COUNTY DEPARTMENT OF PARKS, TRAILS AND OPEN SPACE
POLICE PROTECTION:	PLACER COUNTY SHERIFF'S DEPARTMENT/CHP
FIRE PROTECTION:	PLACER COUNTY FIRE/CALFIRE
SANITARY SEWER & STORM DRAIN	PLACER COUNTY DEPARTMENT OF PUBLIC WORKS AND FACILITIES
DOMESTIC WATER:	CAL-AMERICAN
ELECTRICITY:	PACIFIC GAS & ELECTRIC COMPANY
TELEPHONE:	CONSOLIDATED COMMUNICATIONS, AT&T AND COMCAST
GAS:	PACIFIC GAS & ELECTRIC COMPANY
CABLE:	CONSOLIDATED COMMUNICATIONS, AT&T AND COMCAST

POTENTIAL OFF-SITE EASEMENTS*

OWNER	APN	EASEMENT TYPE
LENNAR HOMES	023-430-081	TCE
LENNAR HOMES	023-221-083	HE, MPE, MPTE, TCE
DRY CREEK JOINT ELEMENTARY SCHOOL DISTRICT	029-010-020	SE
COUNTY	023-221-023	MPTE, MPE
-	-	-
-	-	-
-	-	-
-	-	-

* OFF-SITE EASEMENTS, IN ADDITION TO THOSE LISTED ABOVE, MAY BE REQUIRED PRIOR TO IMPROVEMENT PLAN APPROVAL.

PHASING PLAN NOTICE
THE SUBDIVIDER MAY FILE MULTIPLE FINAL MAPS FOR THIS PROJECT. THE SUBDIVIDER SHALL NOT BE REQUIRED TO DEFINE THE NUMBER OR CONFIGURATION OF THE PROPOSED MULTIPLE FINAL MAPS. (PER THE SUBDIVISION MAP ACT, SECTION 66456.1)

TENTATIVE MAP STATEMENT
"I HEREBY STATE THAT THIS TENTATIVE MAP ACCURATELY DEPICTS THE LOCATION, WIDTH, TYPE AND RECORDING INFORMATION OF ALL RECORD EASEMENTS LISTED IN THE PRELIMINARY TITLE REPORT (P-608408) ISSUED BY PLACER TITLE COMPANY, DATED SEPTEMBER 20, 2023. ALL EASEMENTS PROPOSED TO BE ABANDONED OR EXTINGUISHED ARE IDENTIFIED. EASEMENTS THAT CANNOT BE LOCATED FROM RECORD INFORMATION ARE LISTED IN THE NOTES.

JERRY APLASS, PLS 5876 DATE

ENGINEER'S CERTIFICATE
I HEREBY CERTIFY THAT TO THE BEST OF MY KNOWLEDGE THE LAND DEVELOPMENT KNOWN AS ESTIA DRY CREEK HAS BEEN DESIGNED IN ACCORDANCE WITH THE SPECIFICATIONS AND GUIDELINES ESTABLISHED BY PLACER COUNTY.

CURTIS J. KING, RCE 79801 DATE
EXP. 09-30-26

* Figure not OCR Compatible

Attachment B

IPaC Trust Resource Report
for the Study Areas

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Placer County, California



* Figure not OCR Compatible

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Reptiles

NAME	STATUS
Northwestern Pond Turtle Actinemys marmorata Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

Amphibians

NAME	STATUS
Western Spadefoot Spea hammondii No critical habitat has been designated for this species.	Proposed Threatened

Insects

NAME	STATUS

NOT FOR CONSULTATION

Monarch Butterfly Danaus plexippus Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened
Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp Branchinecta conservatio Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp Branchinecta lynchi Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp Lepidurus packardi Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2246	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

NOT FOR CONSULTATION

There are Bald Eagles and/or Golden Eagles in your project area.

Measures for Proactively Minimizing Eagle Impacts
For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the National Bald Eagle Management Guidelines. You may employ the timing and activity-specific distance recommendations in this document when designing your project/activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to Bald Eagle Nesting and Sensitivity to Human Activity.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an incidental take permit may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the Do I Need A Permit Tool. For assistance making this determination for golden eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

Ensure Your Eagle List is Accurate and Complete
If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

Review the FAQs
The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

NOT FOR CONSULTATION

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

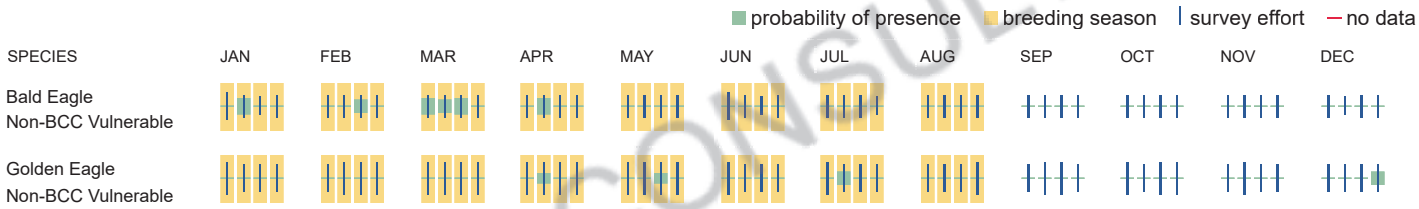
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle (Bald and Golden Eagle Protection Act requirements may apply).

Proper interpretation and use of your eagle report
On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

NOT FOR CONSULTATION

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Measures for Proactively Minimizing Migratory Bird Impacts

Your IPaC Migratory Bird list showcases birds of concern, including Birds of Conservation Concern (BCC), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the Nationwide avoidance and minimization measures for birds document, and any other project-specific avoidance and minimization measures suggested at the link Measures for avoiding and minimizing impacts to birds for the birds of concern on your list below.

Ensure Your Migratory Bird List is Accurate and Complete

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles document, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

Review the FAQs

NOT FOR CONSULTATION

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Belding's Savannah Sparrow Passerculus sandwichensis beldingi This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8	Breeds Apr 1 to Aug 15
Bullock's Oriole Icterus bullockii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25
California Gull Larus californicus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31
Common Yellowthroat Geothlypis trichas sinuosa This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Lawrence's Goldfinch Spinus lawrencei This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9464	Breeds Mar 20 to Sep 20
Long-eared Owl asio otus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3631	Breeds Mar 1 to Jul 15
Northern Harrier Circus hudsonius This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8350	Breeds Apr 1 to Sep 15
Nuttall's Woodpecker Dryobates nuttallii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9410	Breeds Apr 1 to Jul 20
Oak Titmouse Baeolophus inornatus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9656	Breeds Mar 15 to Jul 15

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Olive-sided Flycatcher Contopus cooperi This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Santa Barbara Song Sparrow Melospiza melodia graminea This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/5513	Breeds Mar 1 to Sep 5
Short-billed Dowitcher Limnodromus griseus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Tricolored Blackbird Agelaius tricolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3910	Breeds Mar 15 to Aug 10
Western Screech-owl Megascops kennicottii cardonensis This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 1 to Jun 30
Willet Tringa semipalmata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Wrentit Chamaea fasciata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 10
Yellow-billed Magpie Pica nuttalli This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9726	Breeds Apr 1 to Jul 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of

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presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

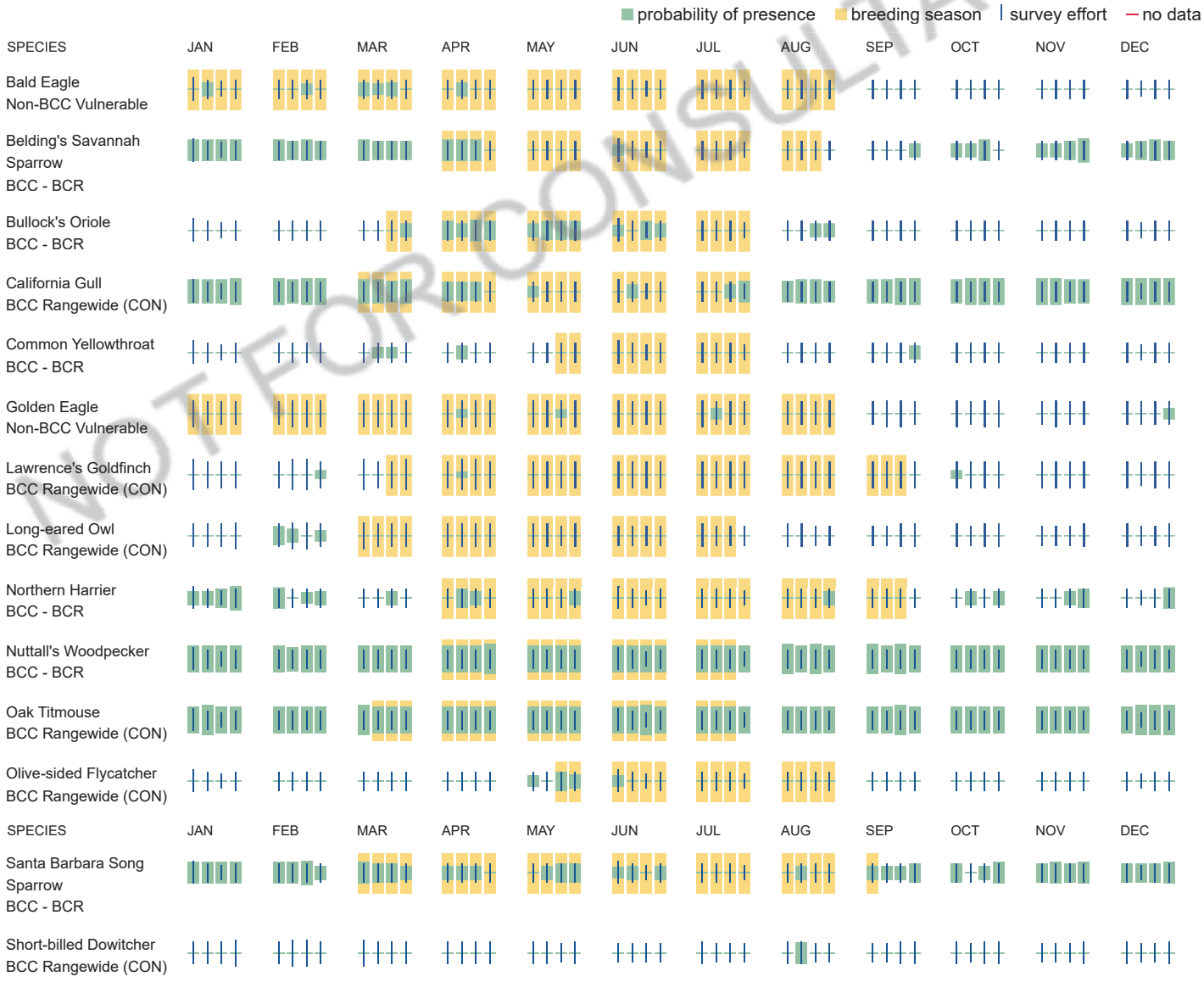
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

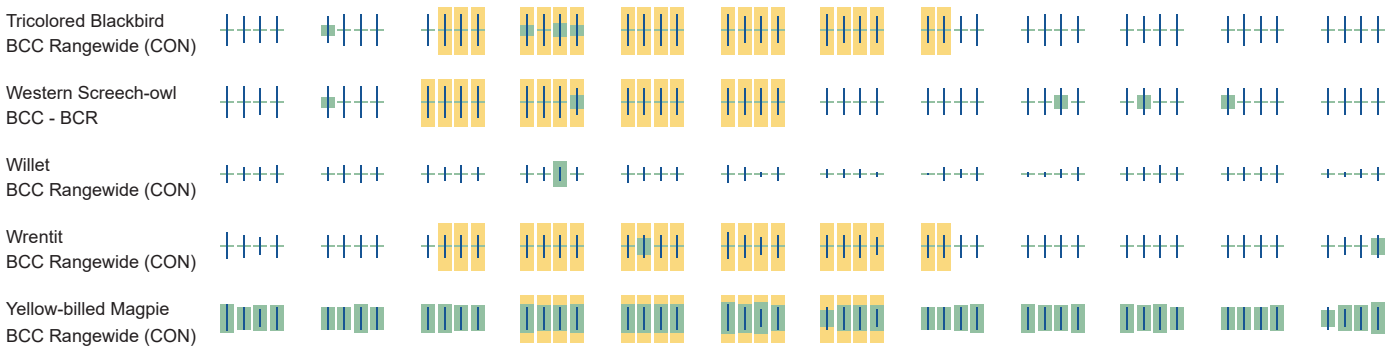
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



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Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Avoidance & Minimization Measures for Birds describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the Bald and Golden Eagle Protection Act and those species marked as "Vulnerable". See the FAQ "What are the levels of concern for migratory birds?" for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle (Bald and Golden Eagle Protection Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the Rapid Avian Information Locator (RAIL) Tool.

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

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1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Bald and Golden Eagle Protection Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ “Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds”.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs
Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

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Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

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Attachment C

CNPS Inventory of Rare and Endangered Plants Query for the "Citrus Heights, California" and "Roseville, California" USGS Quadrangle and 10 Surrounding Quadrangles

CALIFORNIA NATIVE PLANT SOCIETY

CNPS Rare Plant Inventory

Search Results

17 matches found. Click on scientific name for details

Search Criteria: , Quad is one of [**3812162:3812163:3812173:3812172:3812183:3812182:3812164:3812174:3812184:3812154:3812153:3812152**]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	CA RARE PLANT RANK
Balsamorhiza macrolepis	big-scale balsamroot	Asteraceae	perennial herb	Mar-Jun	None	None	1B.2
Brodiaea rosea ssp. *vallicola*	valley brodiaea	Themidaceae	perennial bulbiferous herb	Apr-May(Jun)	None	None	4.2
Calycadenia spicata	spicate calycadenia	Asteraceae	annual herb	May-Sep	None	None	1B.3
Chloropyron molle ssp. *hispidum*	hispid salty bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Sep	None	None	1B.1
Clarkia biloba ssp. *brandegeeae*	Brandegee's clarkia	Onagraceae	annual herb	(Mar)May-Jul	None	None	4.2
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	Mar-May	None	None	2B.2
Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	Mar-Jun	None	None	4.2
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	Apr-Aug	None	CE	1B.2
Hesperevax caulescens	hogwallow starfish	Asteraceae	annual herb	Mar-Jun	None	None	4.2
Juncus leiospermus var. *ahartii*	Ahart's dwarf rush	Juncaceae	annual herb	Mar-May	None	None	1B.2
Juncus leiospermus var. *leiospermus*	Red Bluff dwarf rush	Juncaceae	annual herb	Mar-Jun	None	None	1B.1
Legenere limosa	legenere	Campanulaceae	annual herb	Apr-Jun	None	None	1B.1
Leptosiphon aureus	bristly leptosiphon	Polemoniaceae	annual herb	Apr-Jul	None	None	4.2
Navarretia myersii ssp. *myersii*	pincushion navarretia	Polemoniaceae	annual herb	Apr-May	None	None	1B.1
Orcuttia tenuis	slender Orcutt grass	Poaceae	annual herb	May-Sep(Oct)	FT	CE	1B.1

Orcuttia viscida	Sacramento Orcutt grass	Poaceae	annual herb	Apr-Jul(Sep)	FE	CE	1B.1
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	None	None	1B.2

Showing 1 to 17 of 17 entries

Go to top

Suggested Citation:

California Native Plant Society, Rare Plant Program. 2025. Rare Plant Inventory (online edition, v9.5.1). Website https://www.rareplants.cnps.org [accessed 2 July 2025].

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Attachment D

Wildlife List

Wildlife Species Observed within the
Estia Dry Creek and Placer Creek Residential BRA Study Areas

Species Name	Common name
Birds	
Bubo virginianus	Great-horned owl
Buteo jamaicensis	Red-tailed Hawk
Buteo swainsoni	Swainson's hawk
Callipepla californica	California quail
Calypte anna	Anna's hummingbird
Cathartes aura	Turkey vulture
Charadrius vociferous	Killdeer
Elanus leucurus	White-tailed kite
Falco sparverius	American kestrel
Haemorhous mexicanus	House finch
Petrochelidon pyrrhonota	Cliff swallow
Picoides nuttallii	Nuttal's woodpecker
Pipilo maculatus	Spotted towhee
Pluvialis squatarola	Black-bellied plover
Psaltriparus minimus	Bushtit
Sayornis nigricans	Black phoebe
Sayornis saya	Say's phoebe
Setophaga coronata	Yellow-rumped warbler
Spinus psaltria	Lesser goldfinch
Sturnella neglecta	Western meadowlark
Sturnus vulgaris	European Starling
Thryomanes bewickii	Bewick's wren
Turdus migratorius	American robin
Zenaida macroura	Mourning dove
Zonotrichia albicollis	White-throated sparrow
Zonotrichia leucophrys	White-crowned sparrow
Mammals	
Lepus californicus	Black-tailed hare

Attachment E

Aquatic Resources Delineation Reports for the On-Site Study Area



Aquatic Resources Delineation Report

Placer Christian High School

Placer County, California

November 2018

MADRONE ECOLOGICAL CONSULTING

Prepared for:
Placer Christian School Association
c/o David L. Aton
1223 Pleasant Grove Blvd., #100
Roseville, CA 95678

Recommended Citation:
Madrone Ecological Consulting, LLC (Madrone). 2018. *Aquatic Resources Delineation Report for Placer Christian High School*. Prepared for Placer Christian School Association. Published on 5 November 2018.

CONTENTS

Aquatic Resources Delineation Report
Placer Christian High School

1.0 Introduction 1

1.1 Contact Information 1

2.0 Methodology 1

3.0 Existing Conditions 2

3.1 Terrestrial Plant Communities 2

3.2 Hydrology 2

3.3 Soils 3

3.4 Driving Directions 3

4.0 Results 3

4.1 Wetlands 4

4.1.1 Vernal Pool 4

4.1.2 Seasonal Wetlands 4

4.1.3 Seasonal Wetland Swales 5

4.2 Other Waters 5

4.2.1 Ephemeral Drainage 5

4.2.2 Intermittent Drainage 5

4.2.3 Roadside Ditch 6

5.0 Conclusion 6

6.0 References 6

Tables

Table 1. Aquatic Resources Delineated within the Study Area 4

Figures

Figure 1. Vicinity Map

Figure 2. Natural Resources Conservation Service Soils

Figure 3. Aquatic Resources Delineation

Attachments

Attachment A. Arid West Wetland Determination Data Forms

Attachment B. Aquatic Resources Delineation

Attachment C. Plant Species Observed within the Study Area

Attachment D. GIS Shapefiles and the Aquatic Resources Excel Spreadsheet (on CD)

Attachment E. Access Letter

1.0 INTRODUCTION

This report presents the results of a delineation of aquatic resources within the Placer Christian High School property (Study Area) conducted by Madrone Ecological Consulting, LLC (Madrone).

The approximately 67.9-acre Study Area is located north and west of Walerga Road, and south of Baseline Road in southwestern Placer County, California. The Study Area is located in portions of Sections 6 and 7, Township 10 North, Range 6 East and Section 36, Township 11N, Ranch 5E (MDB&M) of the "Citrus Heights, California" and "Roseville, California" 7.5-Minute Series USGS Topographic Quadrangles (USGS 1992a and USGS 1992b, respectively) (**Figure 1**).

Portions of the Study Area overlap adjacent proposed development projects, such as Placer Vineyards (SPK-1999-00737), Sierra Vista (SPK-2006-01050) and the concurrently submitted Placer Residential property. The overlap areas comprise 17.0 acres of the 67.9-acre Study Area, which includes the 52.3-acre Project area.

1.1 Contact Information

Applicant (controls the property)	***Agent***
Placer Christian School Association c/o David L. Aton 1223 Pleasant Grove Blvd., #100 Roseville, CA 95678	Sarah VonderOhe Madrone Ecological Consulting, LLC 8421 Auburn Blvd., Suite #248 Citrus Heights, CA 95610

2.0 METHODOLOGY

Madrone senior biologist Daria Snider conducted a delineation of aquatic resources within the Study Area on 3 September 2015, and follow-up surveys on 15 March and 9 May 2018. Water features and data points were mapped in the field with a GPS unit capable of sub-meter accuracy (Trimble GeoXT and Arrow 100). Three-parameter data (vegetation, soils, and hydrology) were collected at each data point, documenting wetland/waters or upland status, as appropriate. The delineation map was prepared in accordance with the *Updated Map and Drawing Standards for the South Pacific Division Regulatory Program* (USACE 2016a). The GPS data was overlayed on an ortho-rectified aerial photograph (NAIP 2014).

The delineation was performed in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008a), *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2008b), and the Sacramento District's *Minimum Standards for Acceptance of Preliminary Wetlands Delineations* (USACE 2016b). U.S. Army Corps of Engineers (USACE) regulations (33 CFR 328) were used to determine the presence of Waters of the United States other than wetlands. The most recent *National Wetland Plant List*

(Lichvar et al. 2016) was used to determine the wetland indicator status of plants observed in the Study Area. The *Jepson eFlora* (Jepson Flora Project 2018) was used for plant nomenclature, except where it conflicted with the nomenclature in the *National Wetland Plant List*, which was given priority on the data sheets.

As noted above, the delineation for this Study Area was conducted in 2015, and at the time, this Study Area was part of a larger Project Area that included an adjacent area to the south of Walerga Road that is now called the *Placer Creek Residential* property. One set of paired data points was collected for each aquatic resource feature type at that time. Following the split, there were not data points for each feature type within each Study Area, but as the features are largely similar between the two Study Areas, the off-site data points are representative of the aquatic resources within the Study Area. Therefore, we have included all of the data sheets for both Study Areas in **Attachment A**. The map in **Attachment B** shows which of these data points occur within this Study Area.

3.0 EXISTING CONDITIONS

The Study Area is primarily comprised of ungrazed annual grassland on gently rolling terrain. Two major transportation corridors run along the edges of the Study Area – Walerga Road along the south, and Baseline Road along the north. Roadside ditches adjacent to an abandoned roadway along the western edge of the Study Area have degraded somewhat, and portions now function as seasonal wetlands. The eastern portion of the Study Area has a number of constructed pits that are presumed to have been hand-dug by children from the adjacent residences. Several of these pond water and have been mapped as wetlands. An intermittent tributary to Dry Creek cuts across the southern portion of the Study Area. The Study Area is situated at an elevation of approximately 100 to 130 feet above mean sea level.

3.1 Terrestrial Plant Communities

The majority of the site is occupied by non-native annual grassland. This vegetation community is dominated by medusahead grass (*Elymus caput-medusae*) and soft brome (*Bromus hordeaceus*). Other plant species commonly occurring within this community within the Study Area include perennial ryegrass (*Lolium perenne*), winter vetch (*Vicia villosa*), hairy hawkbit (*Leontodon saxatilis*), rattail fescue (*Vulpia myuros*), hairgrass (*Aira caryophyllea*), slender tarweed (*Holocarpha virgata*), Fitch's spikeweed (*Centromadia fitchii*), yellow star-thistle (*Centaurea solstitialis*), rose clover (*Trifolium hirtum*), American deerweed (*Acmispon americanus*), and smooth cat's ear (*Hypochaeris glabra*).

3.2 Hydrology

Surface water runoff within the portion of the Study Area including and south of VP 5 drains south into the intermittent tributary of Dry Creek, which is a tributary of the Sacramento River. The southern portion of the Study Area is located in the *Dry Creek Watershed* (HUC 1802011101) (USGS 1978).

Surface water runoff in the northern portion of the Study Area drains to the northwest via a seasonal wetland swale and a series of disjunct roadside ditches that exit the Study Area through a culvert under Baseline Road. This culvert used to connect with a swale north of Baseline Road, which eventually drained to Pleasant Grove Creek, a tributary of the Sacramento River. Current development plans indicate that the development currently in process north of Baseline Road will maintain this connection. This portion of the Study Area is located in the *Curry Creek-Sacramento River Watershed* (HUC 1802016104) (USGS 1978).

3.3 Soils

According to the Natural Resources Conservation Service (NRCS) Soil Survey Database (NRCS 2018), six soil mapping units occur within the Study Area (**Figure 2**): (140) Cometa sandy loam, 1-5% slopes; (141) Cometa-Fiddyment complex, 1-5% slopes; (146) Fiddyment loam, 1-8% slopes; (175) Ramona sandy loam, 2-9% slopes; (182) San Joaquin-Cometa sandy loams, 1-5% slopes; and (194) Xerofluvents, frequently flooded. Xerofluvents, frequently flooded consists of hydric components, and all of the mapping units within the Study Area may contain hydric inclusions (NRCS 2018).

3.4 Driving Directions

To access the Study Area from Sacramento, drive east on Interstate 80 to Exit 98. Take Exit 98, and head west on Elkhorn Boulevard. Turn right on Walerga. The site is primarily on the north and west side of Walerga Road, north of Waterstone Drive.

4.0 RESULTS

A total of 1.613 acres of aquatic resources were delineated within the Study Area (**Table 1**). Data sheets are included in **Attachment A**, maps of the aquatic resources are included as **Figure 3** and **Attachment B**, and a list of the plant species observed in the Study Area with their wetland indicator status is included in **Attachment C**. GIS Shapefiles and the *Aquatic Resources Excel Spreadsheet* for the aquatic resources shown on **Figure 3** are included on a CD in **Attachment D**. Each of the feature types is described below. As shown on **Figure 3**, a number of the aquatic resources fall within the portions of the Study Area that overlap other adjacent projects. The acreage of these resources that fall within the overlap areas (0.400 acre) is broken out in **Table 1** and in **Attachment B**. Each aquatic resource was cut at the overlap line when calculating the acreages in **Table 1** and **Attachment B**.

Table 1. Aquatic Resources Mapped within the Study Area

Resource Type	Total Study Area Acreage	Overlap Area Acreage
Wetlands		
Seasonal Wetland	0.259	0.107
Seasonal Wetland Swale	0.198	0.003
Vernal Pool	1.027	0.214
Total of Wetlands	*1.484*	*0.325*
Other Waters		
Ephemeral Drainage	0.006	0.006
Intermittent Drainage	0.043	0.043
Roadside Ditch	0.080	0.026
Total of Other Waters	*0.129*	*0.075*
Total	**1.613**	**0.400**

4.1 Wetlands

4.1.1 Vernal Pool

Three vernal pools were mapped within the Study Area. Vernal pools are topographic basins within the grassland community that are typically underlain with an impermeable or semi-permeable hardpan or duripan layer. Vernal pools inundate during the wet season, and typically dry by late spring and remain dry through the summer months. Vernal pools were differentiated from depressional seasonal wetlands within the Study Area based upon the predominance of vernal pool endemic plant species. Plant species found in the vernal pools within the Study Area include double-horned calico flower (*Downingia bicornuta*), slender popcorn flower (*Plagiobothrys stipitatus* var. *micranthus*), bractless hedge hyssop (*Gratiola ebracteata*), smooth goldfields (*Lasthenia glaberrima*), Vasey's coyote-thistle (*Eryngium vaseyi*), Carter's buttercup (*Ranunculus bonariensis*), hyssop loosestrife (*Lythrum hyssopifolium*), pillwort (*Pilularia americana*), Mediterranean beard grass (*Polypogon maritimus*), and creeping spikerush (*Eleocharis macrostachya*).
Indicators of wetland hydrology observed in the vernal pools during the field survey included the presence of oxidized rhizospheres along live roots and deep soil cracks. The soil matrix color at Data Points 1 and 2 was 7.5YR3/2 with 20% 5YR4/6 redox concentrations along pore linings and as soft masses in the matrix. The soils at these data points were considered to be hydric based on the presence of field indicator F6 (redox dark surface).

4.1.2 Seasonal Wetlands

A number of seasonal wetlands were delineated within the Study Area. Seasonal wetlands are depressional wetlands that pond water seasonally. These features are often topographically and hydrologically similar to vernal pools, but have a short hydroperiod, and as a result, support a slightly different plant community that is not characterized by a dominance of vernal pool endemics. Plant species commonly occurring in the seasonal wetlands within the Study Area include Mediterranean barley (*Hordeum marinum*), perennial ryegrass, annual hairgrass (*Deschampsia danthonioides*), toad rush (*Juncus bufonius*), hyssop loosestrife, slender popcorn flower, hairy hawkbit, Fitch's spikeweed, and vinegarweed.

The only indicator of wetland hydrology observed in the seasonal wetlands during the field survey was the presence of oxidized rhizospheres along live roots. The soil matrix color at Data Point 8 was 7.5YR4/2 with 30% 7.5YR3/4 redox concentrations along pore linings and as soft masses in the matrix. The soil at this data point was considered to be hydric based on the presence of field indicator F3 (depleted matrix).

4.1.3 Seasonal Wetland Swales

Six seasonal wetland swales were mapped within the Study Area. Seasonal wetland swales are sloping, linear seasonal wetlands that convey surface runoff, and may detain it for short periods of time. Plant species occurring in the seasonal wetland swales.

The only indicator of wetland hydrology observed in the seasonal wetland swales during the field survey was the presence of oxidized rhizospheres along live roots. The soil matrix color at Data Point 9 was 7.5YR3/2 with 15% 7.5YR4/6 redox concentrations along pore linings and as soft masses in the matrix. The soil at this data point was considered to be hydric based on the presence of field indicator F6 (redox dark surface).

4.2 Other Waters

4.2.1 Ephemeral Drainage

Three ephemeral drainages were mapped within the Study Area. These features are primarily unvegetated, and adjacent vegetation is primarily comprised of upland, annual grassland species. Ephemeral drainages convey flow during and immediately following rain events, but are not supported by groundwater flows, and as such, are not inundated for a sufficient duration to support hydrophytic vegetation. The lateral limits of the ephemeral channels within the Study Area were mapped at the Ordinary High Water Mark (OHWM), which was identified based on the extent of scour and adjacent vegetation.

4.2.2 Intermittent Drainage

Two sections of one intermittent drainage were mapped within the Study Area. This feature flows under Walerga Road in the southern portion of the Study Area, and appears to be a tributary of Dry Creek. Although the intermittent drainage is almost completely unvegetated within the channel, some vegetation has encroached into the channel. Species found scattered within and along the edges of the channel include perennial ryegrass, pennyroyal (*Mentha pulegium*), seep spring monkeyflower (*Mimulus guttatus*), tall flatsedge, swamp pricklegrass (*Crypsis schoenoides*), creeping spikerush, Indian chickweed (*Mollugo verticillata*), and prostrate knotweed (*Polygonum aviculare* ssp. *depressum*). The edges of the intermittent channel within the Study Area were mapped at the OHWM, which was identified based primarily on the extent of scour.

4.2.3 Roadside Ditch

A number of roadside ditch (or drainage ditch) segments were mapped along the western edge of the Study Area adjacent to the abandoned roadway in that area. The roadside ditch appears to have been constructed in uplands concurrent with construction of that roadway, but after the roadway was abandoned, portions of the ditch have silted in or collapsed, resulting in a series of disjunct segments. These features are primarily unvegetated or occupied by upland ruderal vegetation, such as wild radish (*Raphanus sativus*) and Bermuda grass (*Cynodon dactylon*). The OHWM of the roadside ditch was identified in the field based on the extent of scour, sediment sorting, and changes in vegetation.

5.0 CONCLUSION

The applicant is requesting a Preliminary Jurisdictional Determination for the Aquatic Resources Delineation map included as **Attachment B**. A signed statement providing USACE staff accompanied access to the Study Area is included as **Attachment E**.

6.0 REFERENCES

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station. Vicksburg, Miss.

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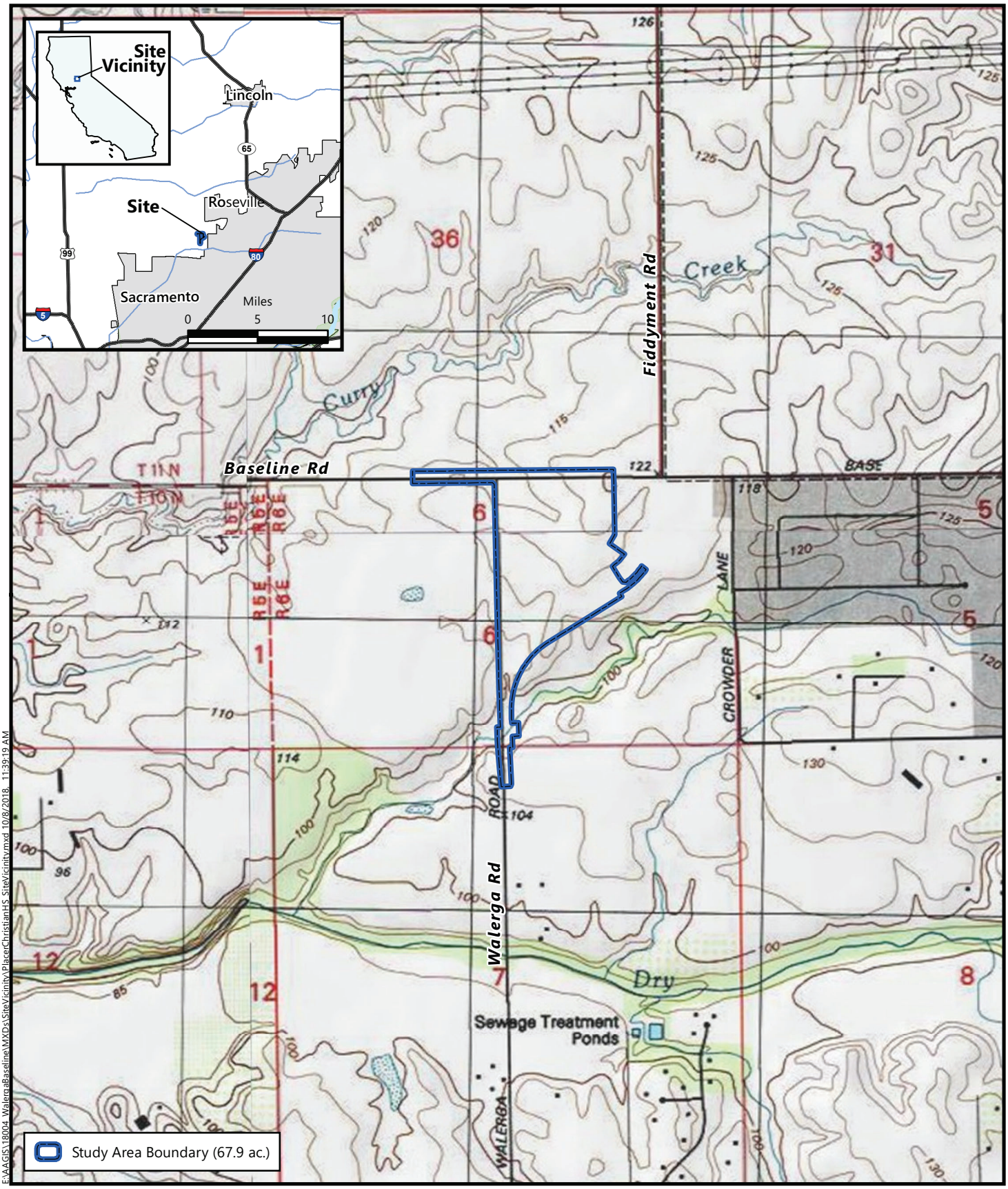
U.S. Department of the Interior, Geological Survey (USGS). 2013. *Citrus Heights, California* 7.5-minute Quadrangle. Geological Survey. Denver, Colorado.

Figures

Figure 1. Vicinity Map

Figure 2. Natural Resources Conservation Service Soils

Figure 3. Aquatic Resources Delineation



Citrus Heights, CA and Roseville, CA
7.5-Minute Topographic Quadrangles
United States Geologic Survey, 1992.

Sections 6 and 7, Township 10N, Range 6E and
Section 36, Township 11N, Range 5E, MDB&M
Longitude -121.362730, Latitude 38.749240

N

Feet
0 750 1,500

* Figure not OCR Compatible

Figure 1
Site and Vicinity

Placer Christian High School
Placer County, California

MADRONE ECOLOGICAL CONSULTING

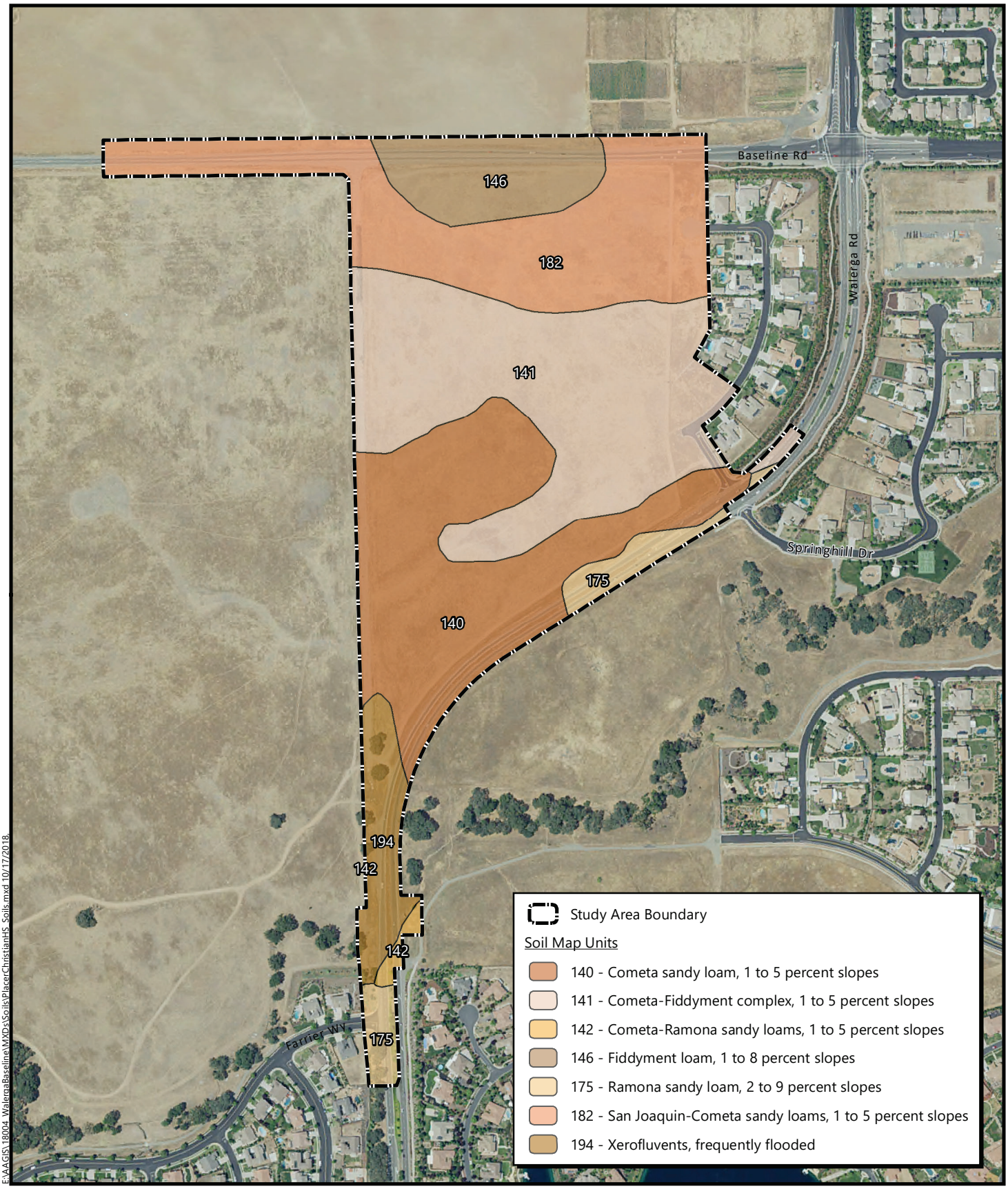


Figure 2
Natural Resources Conservation Service Soils

Placer Christian High School
Placer County, California

MADRONE ECOLOGICAL CONSULTING

Soil Survey Source: *USDA, Soil Conservation Service.*
Soil Survey Geographic (SSURGO) database for Placer County, Western Part, California
Aerial Source: *USDA, National Agriculture Imagery Program,* 7/13/2014.

* Figure not OCR Compatible

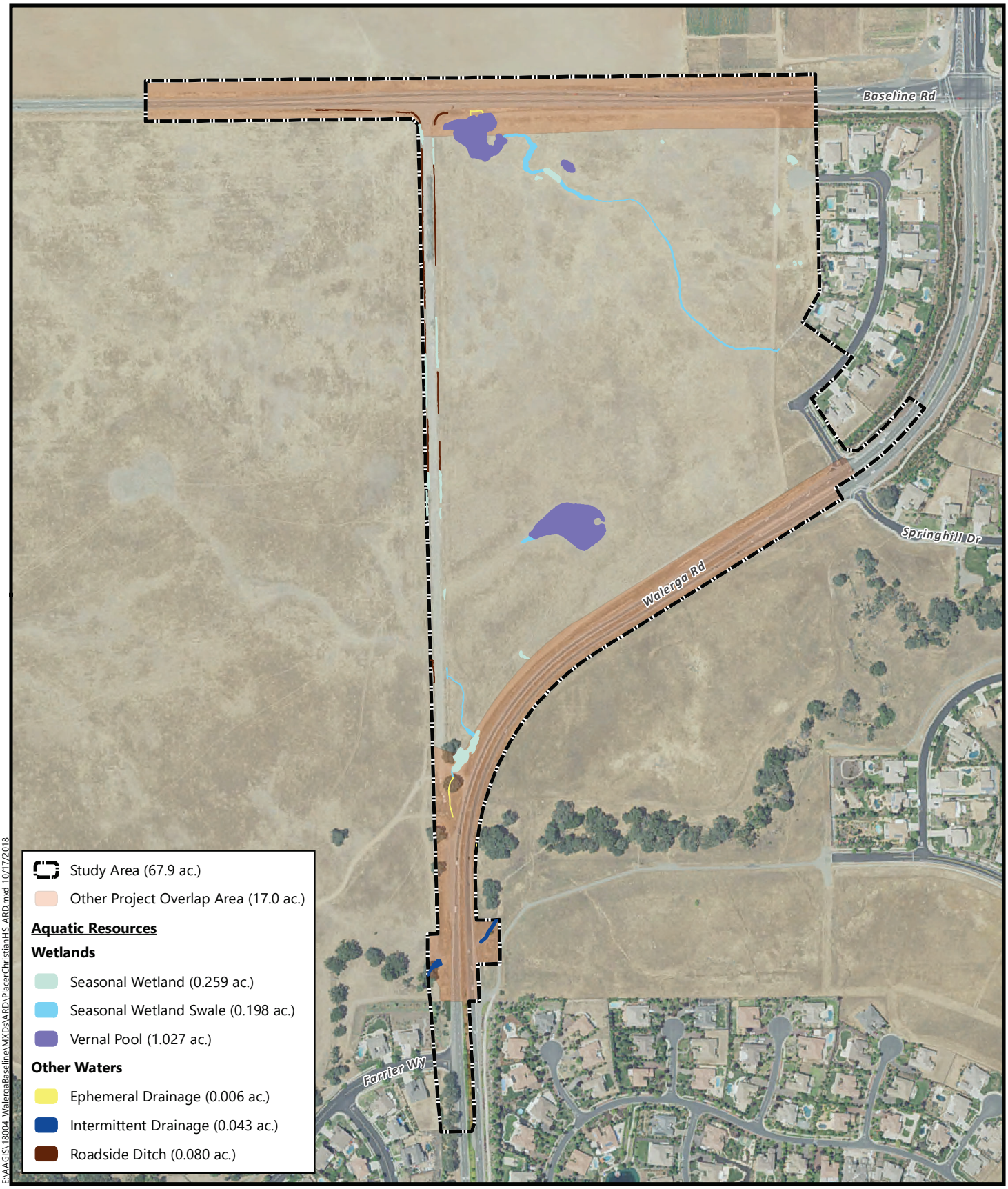


Figure 3
Aquatic Resources

Placer Christian High School
Placer County, California

MADRONE ECOLOGICAL CONSULTING

* Figure not OCR Compatible

Aerial Source: *USDA, National Agriculture Imagery Program*, 7/13/2014.

Attachments

Attachment A. Arid West Wetland Determination Data Forms

Attachment B. Aquatic Resources Delineation

Attachment C. Plant Species Observed within the Study Area

Attachment D. GIS Shapefiles and the Aquatic Resources Excel Spreadsheet (on CD)

Attachment E. Access Letter

Attachment A

Arid West Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Walerga Baseline Property City/County: Placer County Sampling Date: 09/03/15
Applicant/Owner: Mourier Investments, LLC State: CA Sampling Point: 1
Investigator(s): Daria Snider Section, Township, Range: Section 6, Township 10 North, Range 6 East
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.75136753 Long: -121.3644962 Datum: NAD 83
Soil Map Unit Name: San Joaquin-Cometa sandy loams, 1-5% slopes NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?**	**Yes X No ____**
Hydric Soil Present?	Yes X No ____		
Wetland Hydrology Present?	Yes X No ____		

Remarks:

Data point is in a vernal pool.

The region is currently experiencing a multi-year drought, and the climatic conditions are drier than normal.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Downingia species*	30	X	OBL
2. *Plagiobothrys stipitatus*	20	X	FACW
3. *Trichostema lanceolatum*	20	X	FACU
4. *Centromadia fitchii*	20	X	FACU
5. *Croton setiger*	5		UPL
6. *Lasthenia glabberima*	tr		OBL
7. *Gratiola ebracteata*	tr		OBL
8. *Lythrum hyssopifolium*	tr		OBL
	95	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	
% Bare Ground in Herb Stratum 50	% Cover of Biotic Crust 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **2** (A)

Total Number of Dominant Species Across All Strata: **4** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **50%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**30**	x1 = **30**
FACW species	**20**	x2 = **40**
FAC species	**0**	x3 = **0**
FACU species	**40**	x4 = **160**
UPL species	**5**	x5 = **25**
Column Totals:	**95** (A)	**255** (B)

Prevalence Index = B/A = **2.7**

Hydrophytic Vegetation Indicators:

- ____ Dominance Test is >50%
- **X** Prevalence Index is ≤3.0[1]
- ____ Morphological Adaptationd[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks:

Centromadia fitchii and *Trichostema lanceolatum* are late-season colonizers of seasonally wet areas in the Central Valley.

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	7.5YR3/2	80	5YR4/6	20	C	M, PL	sandy clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Walerga Baseline Property City/County: Placer County Sampling Date: 09/03/15
Applicant/Owner: Mourier Investments, LLC State: CA Sampling Point: 2
Investigator(s): Daria Snider Section, Township, Range: Section 6, Township 10 North, Range 6 East
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.75137009 Long: -121.3646449 Datum: NAD 83
Soil Map Unit Name: San Joaquin-Cometa sandy loams, 1-5% slopes NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?**	**Yes X No ____**
Hydric Soil Present?	Yes X No ____		
Wetland Hydrology Present?	Yes X No ____		

Remarks:

Data point is in a vernal pool.

The region is currently experiencing a multi-year drought, and the climatic conditions are drier than normal.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
	0	=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Lolium perenne*	30	X	FAC
2. *Hordeum marinum*	20	X	FAC
3. *Juncus bufonius*	15		FACW
4. *Ranunculus bonariensis*	10		OBL
5. *Centromadia fitchii*	10		FACU
6. *Lythrum hyssopifolium*	5		OBL
7. *Phalaris minor*	3		UPL
8. *Leontodon saxatilis*	3		FACU
9. *Trichostema lanceolatum*	2		FACU
10. *Juncus capitatus*	tr		FACU
	98	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **2** (A)

Total Number of Dominant Species Across All Strata: **2** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**15**	x1 = **15**
FACW species	**15**	x2 = **30**
FAC species	**50**	x3 = **150**
FACU species	**15**	x4 = **60**
UPL species	**3**	x5 = **15**
Column Totals:	**98** (A)	**270** (B)

Prevalence Index = B/A = **2.8**

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

____ Morphological Adaptationd[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks:

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6"	7.5YR3/2	80	5YR4/6	20	C	M, PL	sandy clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Walerga Baseline Property City/County: Placer County Sampling Date: 09/03/15
Applicant/Owner: Mourier Investments, LLC State: CA Sampling Point: 3
Investigator(s): Daria Snider Section, Township, Range: Section 6, Township 10 North, Range 6 East
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 2
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.75134337 Long: -121.3647247 Datum: NAD 83
Soil Map Unit Name: San Joaquin-Cometa sandy loams, 1-5% slopes NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No **X**	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No** **X**
Hydric Soil Present?	Yes ____ No **X**		
Wetland Hydrology Present?	Yes ____ No **X**		

Remarks:

Upland comparison to DPs 1 and 2

The region is currently experiencing a multi-year drought, and the climatic conditions are drier than normal.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Elymus caput-medusae*	85	X	UPL
2. *Bromus hordeaceus*	3		FACU
3. *Lolium perenne*	2		FAC
4.			
5.			
6.			
7.			
8.			
	90	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	
% Bare Ground in Herb Stratum 10	% Cover of Biotic Crust 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x1 = **0**
FACW species	**0**	x2 = **0**
FAC species	**2**	x3 = **6**
FACU species	**3**	x4 = **12**
UPL species	**85**	x5 = **425**
Column Totals:	**90** (A)	**443** (B)

Prevalence Index = B/A = **4.9**

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptationd[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

Remarks:

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6"	7.5YR4/3	98	7.5YR4/6	2	C	M	sandy clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

No hydric soil indicators detected.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators detected.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Walerga Baseline Property City/County: Placer County Sampling Date: 09/03/15
Applicant/Owner: Mourier Investments, LLC State: CA Sampling Point: 4
Investigator(s): Daria Snider Section, Township, Range: Section 6, Township 10 North, Range 6 East
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 2
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.74747109 Long: -121.3641866 Datum: NAD 83
Soil Map Unit Name: Cometa sandy loam, 1-5% slopes NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?**	**Yes** ____	**No X**
Hydric Soil Present?	Yes ____	No X			
Wetland Hydrology Present?	Yes ____	No X			

Remarks:

Suspect point due to it's location in a topographic swale.

The region is currently experiencing a multi-year drought, and the climatic conditions are drier than normal.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Elymus caput-medusae*	85	X	UPL
2. *Hypochaeris glabra*	10		UPL
3. *Bromus hordeaceus*	5		FACU
4. *Centromadia fitchii*	2		FACU
5. *Lolium perenne*	tr		FAC
6. *Briza minor*	tr		FAC
7.			
8.			
	102	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	
% Bare Ground in Herb Stratum 5	% Cover of Biotic Crust 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x1 = **0**
FACW species	**0**	x2 = **0**
FAC species	**0**	x3 = **0**
FACU species	**7**	x4 = **28**
UPL species	**95**	x5 = **475**
Column Totals:	**102** (A)	**503** (B)

Prevalence Index = B/A = **4.9**

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptationd[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No X**

Remarks:

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	7.5YR3/3	100					sandy loam	No redox features observed

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

No hydric soil indicators detected.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators detected.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Walerga Baseline Property City/County: Placer County Sampling Date: 09/03/15
Applicant/Owner: Mourier Investments, LLC State: CA Sampling Point: 7
Investigator(s): Daria Snider Section, Township, Range: Section 6, Township 10 North, Range 6 East
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.74394467 Long: -121.3605776 Datum: NAD 83
Soil Map Unit Name: Fiddyment-Kaseberg loams, 2-9% slopes NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No **X**	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No** **X**
Hydric Soil Present?	Yes ____ No **X**		
Wetland Hydrology Present?	Yes ____ No **X**		

Remarks:

Upland comparison to DP 8.

The region is currently experiencing a multi-year drought, and the climatic conditions are drier than normal.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Elymus caput-medusae*	95	X	UPL
2. *Bromus hordeaceus*	5		FACU
3. *Lactuca serriola*	tr		FACU
4. *Centromadia fitchii*	tr		FACU
5. *Trichostema lanceolatum*	tr		FACU
6.			
7.			
8.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0** x1 =	**0**
FACW species	**0** x2 =	**0**
FAC species	**0** x3 =	**0**
FACU species	**5** x4 =	**20**
UPL species	**95** x5 =	**475**
Column Totals:	**100** (A)	**495** (B)

Prevalence Index = B/A = **5.0**

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptationd[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

Remarks:

SOIL

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6"	10YR3/2	100					sandy clay loam	No redox features observed

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

No hydric soil indicators observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators observed

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Walerga Baseline Property City/County: Placer County Sampling Date: 09/03/15
Applicant/Owner: Mourier Investments, LLC State: CA Sampling Point: 11
Investigator(s): Daria Snider Section, Township, Range: Section 6, Township 10 North, Range 6 East
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1
Subregion (LRR): Mediterranean California (LRR C) Lat: Long: Datum: NAD 83
Soil Map Unit Name: Fiddyment-Kaseberg loams, 2-9% slopes NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes No X (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?**	**Yes X No**
Hydric Soil Present?	Yes X No		
Wetland Hydrology Present?	Yes X No		

Remarks:

Data point is located in a seasonal wetland.

The region is currently experiencing a multi-year drought, and the climatic conditions are drier than normal.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	=Total Cover	

Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	

Herb Stratum (Plot size:)			
1. *Centromadia fitchii*	40	X	FACU
2. *Plagiobothrys stipitatus*	40	X	FACW
3. *Leontodon saxatilis*	30	X	FACU
4. *Hordeum marinum*	20		FAC
5. *Gratiola ebracteata*	20		OBL
6. *Deschampsia danthonioides*	5		FACW
7. *Lythrum hyssopifolium*	tr		OBL
8.			
	155	=Total Cover	

Woody Vine Stratum (Plot size:)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **1** (A)

Total Number of Dominant Species Across All Strata: **3** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **33%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**20** x1 =	**20**
FACW species	**45** x2 =	**90**
FAC species	**20** x3 =	**60**
FACU species	**70** x4 =	**280**
UPL species	**0** x5 =	**0**
Column Totals:	**155** (A)	**450** (B)

Prevalence Index = B/A = **2.9**

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- **X** Prevalence Index is ≤3.0[1]
- Morphological Adaptationd[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No**

Remarks:

SOIL

Sampling Point: 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	7.5YR4/2	70	7.5YR3/4	30	C	M, PL	sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Walerga Baseline Property City/County: Placer County Sampling Date: 09/03/15
Applicant/Owner: Mourier Investments, LLC State: CA Sampling Point: 9
Investigator(s): Daria Snider Section, Township, Range: Section 6, Township 10 North, Range 6 East
Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): None Slope (%): 2
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.7436908 Long: -121.3615849 Datum: NAD 83
Soil Map Unit Name: Cometa-Ramona sandy loams, 1-5% slopes NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No **X**	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No** **X**
Hydric Soil Present?	Yes ____ No **X**		
Wetland Hydrology Present?	Yes ____ No **X**		

Remarks:

Suspect point due to its location in a topographic swale. However, none of the wetland criteria are satisfied in this location.

The region is currently experiencing a multi-year drought, and the climatic conditions are drier than normal.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Elymus caput-medusae*	100	X	UPL
2. *Holocarpha virgata*	tr		UPL
3. *Bromus hordeaceus*	tr		FACU
4. *Lolium perenne*	tr		FAC
5.			
6.			
7.			
8.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	
% Bare Ground in Herb Stratum 0	% Cover of Biotic Crust 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x1 = **0**
FACW species	**0**	x2 = **0**
FAC species	**0**	x3 = **0**
FACU species	**0**	x4 = **0**
UPL species	**100**	x5 = **500**
Column Totals:	**100** (A)	**500** (B)

Prevalence Index = B/A = **5.0**

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptationd[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

Remarks:

SOIL

Sampling Point: 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8"	7.5YR3/3	100					sandy clay loam	No redox features observed

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

No hydric soil indicators observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators observed

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Walerga Baseline Property City/County: Placer County Sampling Date: 09/03/15
Applicant/Owner: Mourier Investments, LLC State: CA Sampling Point: 10
Investigator(s): Daria Snider Section, Township, Range: Section 6, Township 10 North, Range 6 East
Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): None Slope (%): 2
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.74374438 Long: -121.3627577 Datum: NAD 83
Soil Map Unit Name: Cometa-Ramona sandy loams, 1-5% slopes NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?**	**Yes X No ____**
Hydric Soil Present?	Yes X No ____		
Wetland Hydrology Present?	Yes X No ____		

Remarks:

Data point is in a seasonal wetland swale.

The region is currently experiencing a multi-year drought, and the climatic conditions are drier than normal.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Lolium perenne*	85	X	FAC
2. *Bromus hordeaceus*	15		FACU
3. *Mimulus guttatus*	tr		OBL
4. *Briza minor*	tr		FAC
5. *Centromadia fitchii*	tr		FACU
6.			
7.			
8.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	
% Bare Ground in Herb Stratum 0	% Cover of Biotic Crust 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **1** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species		x1 = **0**
FACW species		x2 = **0**
FAC species	**85**	x3 = **255**
FACU species	**15**	x4 = **60**
UPL species		x5 = **0**
Column Totals:	**100** (A)	**315** (B)

Prevalence Index = B/A = **3.2**

Hydrophytic Vegetation Indicators:

- **X** Dominance Test is >50%
- ____ Prevalence Index is ≤3.0[1]
- ____ Morphological Adaptationd[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks:

SOIL

Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	7.5YR3/2	85	7.5YR4/6	15	C	M, PL	sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Walerga Baseline Property City/County: Placer County Sampling Date: 09/03/15
Applicant/Owner: Mourier Investments, LLC State: CA Sampling Point: 11
Investigator(s): Daria Snider Section, Township, Range: Section 6, Township 10 North, Range 6 East
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 10-Aug
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.74375898 Long: -121.3627451 Datum: NAD 83
Soil Map Unit Name: Cometa-Ramona sandy loams, 1-5% slopes NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No **X**	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No** **X**
Hydric Soil Present?	Yes ____ No **X**		
Wetland Hydrology Present?	Yes ____ No **X**		

Remarks:

Upland comparison to DP 10.

The region is currently experiencing a multi-year drought, and the climatic conditions are drier than normal.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Bromus diandrus*	70	X	UPL
2. *Bromus hordeaceus*	15		FACU
3. *Acmispon americanus*	15		UPL
4. *Erodium botrys*	5		FACU
5.			
6.			
7.			
8.			
	105	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	
% Bare Ground in Herb Stratum 0	% Cover of Biotic Crust 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	____	x1 = **0**
FACW species	____	x2 = **0**
FAC species	____	x3 = **0**
FACU species	**20**	x4 = **80**
UPL species	**85**	x5 = **425**
Column Totals:	**105** (A)	**505** (B)

Prevalence Index = B/A = **4.8**

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptationd[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

Remarks:

SOIL

Sampling Point: 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6"	10YR3/2	100					sandy loam	No redox features

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

No hydric soil indicators observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

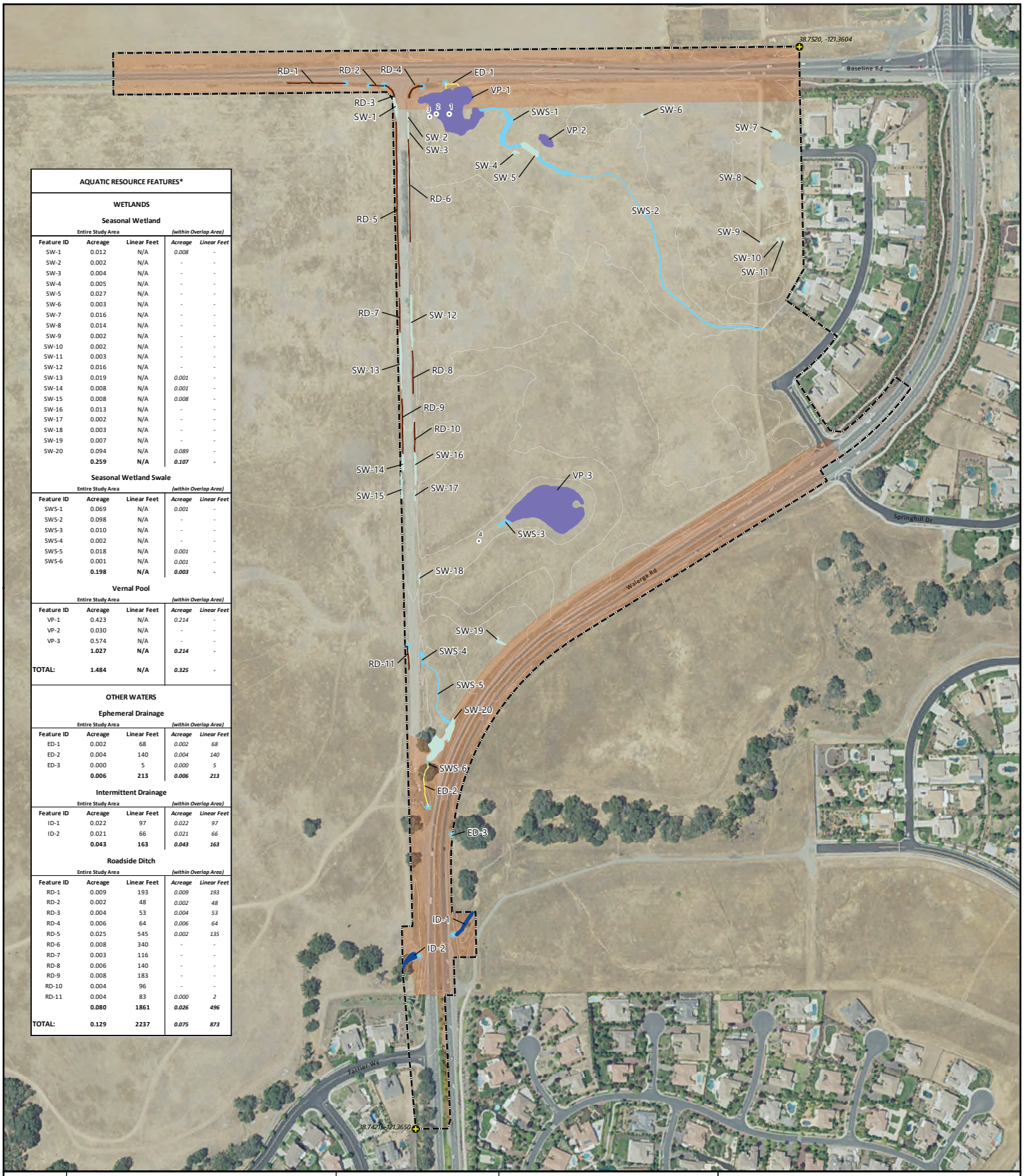
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators observed.

Attachment B

Aquatic Resources Delineation



AQUATIC RESOURCE FEATURES*

WETLANDS

Seasonal Wetland

	Entire Study Area		(within Overlap Area)	
Feature ID	Acreage	Linear Feet	Acreage	Linear Feet
SW-1	0.012	N/A	0.008	-
SW-2	0.002	N/A	-	-
SW-3	0.004	N/A	-	-
SW-4	0.005	N/A	-	-
SW-5	0.027	N/A	-	-
SW-6	0.003	N/A	-	-
SW-7	0.016	N/A	-	-
SW-8	0.014	N/A	-	-
SW-9	0.002	N/A	-	-
SW-10	0.002	N/A	-	-
SW-11	0.003	N/A	-	-
SW-12	0.016	N/A	-	-
SW-13	0.019	N/A	0.001	-
SW-14	0.008	N/A	0.001	-
SW-15	0.008	N/A	0.008	-
SW-16	0.013	N/A	-	-
SW-17	0.002	N/A	-	-
SW-18	0.003	N/A	-	-
SW-19	0.007	N/A	-	-
SW-20	0.094	N/A	0.089	-
	0.259	**N/A**	**0.107**	-

Seasonal Wetland Swale

	Entire Study Area		(within Overlap Area)	
Feature ID	Acreage	Linear Feet	Acreage	Linear Feet
SWS-1	0.069	N/A	0.001	-
SWS-2	0.098	N/A	-	-
SWS-3	0.010	N/A	-	-
SWS-4	0.002	N/A	-	-
SWS-5	0.018	N/A	0.001	-
SWS-6	0.001	N/A	0.001	-
	0.198	**N/A**	**0.003**	-

Vernal Pool

	Entire Study Area		(within Overlap Area)	
Feature ID	Acreage	Linear Feet	Acreage	Linear Feet
VP-1	0.423	N/A	0.214	-
VP-2	0.030	N/A	-	-
VP-3	0.574	N/A	-	-
	1.027	**N/A**	**0.214**	-
TOTAL:	**1.484**	**N/A**	**0.325**	-

OTHER WATERS

Ephemeral Drainage

	Entire Study Area		(within Overlap Area)	
Feature ID	Acreage	Linear Feet	Acreage	Linear Feet
ED-1	0.002	68	0.002	68
ED-2	0.004	140	0.004	140
ED-3	0.000	5	0.000	5
	0.006	**213**	**0.006**	**213**

Intermittent Drainage

	Entire Study Area		(within Overlap Area)	
Feature ID	Acreage	Linear Feet	Acreage	Linear Feet
ID-1	0.022	97	0.022	97
ID-2	0.021	66	0.021	66
	0.043	**163**	**0.043**	**163**

Roadside Ditch

	Entire Study Area		(within Overlap Area)	
Feature ID	Acreage	Linear Feet	Acreage	Linear Feet
RD-1	0.009	193	0.009	193
RD-2	0.002	48	0.002	48
RD-3	0.004	53	0.004	53
RD-4	0.006	64	0.006	64
RD-5	0.025	545	0.002	135
RD-6	0.008	340	-	-
RD-7	0.003	116	-	-
RD-8	0.006	140	-	-
RD-9	0.008	183	-	-
RD-10	0.004	96	-	-
RD-11	0.004	83	0.000	2
	0.080	**1861**	**0.026**	**496**
TOTAL:	**0.129**	**2237**	**0.075**	**873**

Notes:

*Rounding may result in small summation errors.

Map Scale: 1 inch = 225 feet

Coordinate System: California State Plane Zone II (FIPS 0402)

Datum: NAD83

Projection: Lambert Conformal Conic

Aerial Base: USDA, *National Agriculture Imagery Program*

Aerial Base Flown: 7/13/2014

Date Map Prepared: 10/17/2018

Map Prepared by: D. Wagnon

Delineation Performed by: D. Snider

N

0 225

Feet

Reference Point (Latitude, Longitude)

5-Ft. Contour Interval

Prepared For:
David L. Aton
1223 Pleasant Grove Blvd. #100
Roseville, CA 95678

Study Area (67.9 ac.)

Other Project Overlap Area (17.0 ac.)

Data Points

Culverts

Aquatic Resources (1.613 ac.)

Wetlands (1.484 ac.)

Seasonal Wetland (0.259 ac.)

Seasonal Wetland Swale (0.198 ac.)

Vernal Pool (1.027 ac.)

Other Waters (0.129 ac.)

Ephemeral Drainage (0.006 ac.)

Intermittent Drainage (0.043 ac.)

Roadside Ditch (0.080 ac.)

Aquatic Resources Delineation
Placer Christian High School

Placer County, California

MADRONE ECOLOGICAL CONSULTING
8421 Auburn Boulevard, Suite 248
Citrus Heights, California 95610
(916) 822.3220 | www.madroneeco.com

Project Name: Placer Christian High School
Map Title: Aquatic Resources Delineation
Path: K:\AGS\2006\Maps\Current\MXD\PDF\Plan\Check\ARJD_ASD.mxd
Date Map Prepared: 10/17/2018

* Figure not OCR Compatible

Attachment C

Plant Species Observed within the Study Area

Plant Species Observed within the Placer Christian High School Study Area 3 September 2015, 15 March 2018, and 9 May 2018

Species Name	Common Name	Wetland Indicator Status
Achyrachaena mollis	Blow wives	FAC
Acmispon americanus	American deerweed	UPL
Aira caryophyllea	Hairgrass	FACU
Aira elegans	Elegant hair grass	UPL
Alopecurus saccatus	Pacific foxtail	OBL
Amsinckia menziesii	Common fiddleneck	UPL
Avena fatua	Wild oat	UPL
Briza maxima	Rattlesnake grass	UPL
Briza minor	Little quaking grass	FAC
Brodiaea elegans subsp. elegans	Harvest brodiaea	FACU
Bromus diandrus	Ripgut brome	UPL
Bromus hordeaceus	Soft brome	FACU
Calandrinia menziesii	Red maids	FACU
Callitriche marginata	Winged water starwort	OBL
Carduus pycnocephalus	Italian thistle	UPL
Castilleja attenuata	Valley tassels	UPL
Centaurea solstitialis	Yellow star-thistle	UPL
Centromadia fitchii	Fitch's spikeweed	FACU
Cerastium glomeratum	Sticky mouse-ear chickweed	UPL
Chondrilla juncea	Skeleton weed	UPL
Clarkia purpurea	Winecup clarkia	UPL
Clarkia unguiculata	Elegant clarkia	UPL
Claytonia perfoliata	Miner's lettuce	FAC
Convolvulus arvensis	Bindweed	UPL
Crassula aquatica	Water pygmy weed	OBL
Croton setiger	Turkey mullein	UPL
Crypsis schoenoides	Swamp pricklegrass	OBL
Cynodon dactylon	Bermuda grass	FACU
Cyperus eragrostis	Tall flatsedge	FACW
Deschampsia danthonioides	Annual hair grass	FACW
Dichelostemma capitatum	Blue dicks	FACU
Dittrichia graveolens	Stinkwort	UPL
Downingia bicornuta	Double-horned downingia	OBL
Downingia ornatissima var. ornatissima	Horned downingia	OBL
Eleocharis macrostachya	Creeping spikerush	OBL
Elymus caput-medusae	Medusahead grass	UPL
Elymus triticoides	Beardless wild rye	FAC
Epilobium brachycarpum	Panicled willow-herb	UPL

Species Name	Common Name	Wetland Indicator Status
Epilobium campestre	Smooth willow-herb	OBL
Erodium botrys	Filaree	FACU
Eryngium castrense	Great Valley coyote thistle	FACW
Eschscholzia californica	California poppy	UPL
Festuca bromoides	Brome fescue	FACU
Festuca myuros	Rattail sixweeks grass	FACU
Galium aparine	Sticky willy	FACU
Glyceria declinata	Low manna grass	FACW
Gratiola ebracteata	Bractless hedge-hyssop	OBL
Heterotheca grandiflora	Telegraph weed	UPL
Hirschfeldia incana	Short-podded mustard	UPL
Holocarpha virgata	Slender tarweed	UPL
Hordeum marinum	Mediterranean barley	FAC
Hordeum murinum	Wall barley	FACU
Hypochaeris glabra	Smooth cat's ear	UPL
Isoetes howellii	Howell's quillwort	OBL
Juncus bufonius	Toad rush	FACW
Juncus capitatus	Capped rush	FACU
Juncus effusus	Common rush	FACW
Lactuca serriola	Prickly wild lettuce	FACU
Lasthenia glaberrima	Smooth goldfields	OBL
Lathyrus angulatus	Angled pea	UPL
Leontodon saxatilis	Hairy hawkbit	FACU
Lolium perenne	Perennial ryegrass	FAC
Logfia gallica	Daggerleaf cottonrose	UPL
Lupinus bicolor	Miniature lupine	UPL
Lupinus microcarpus	Chick lupine	UPL
Lysimachia arvensis	Scarlet pimpernel	FAC
Lythrum hyssopifolium	Hyssop loosestrife	OBL
Marrubium vulgare	Horehound	FACU
Medicago polymorpha	California burclover	FACU
Mentha pulegium	Pennyroyal	OBL
Mimulus guttatus	Seep spring monkeyflower	OBL
Mollugo verticillata	Indian chickweed	FACU
Parentucellia viscosa	Yellow gland weed	FAC
Phalaris lemmonii	Lemmon's canary grass	FACW
Phalaris minor	Little canarygrass	UPL
Phalaris paradoxa	Hood canary grass	FAC
Pilularia americana	American pillwort	OBL
Plagiobothrys canescens	Valley popcornflower	UPL
Plagiobothrys greenei	Greene's popcornflower	FACW
Plagiobothrys stipitatus var. micranthus	Great Valley popcornflower	FACW
Plagiobothrys undulatus	Wavy-stemmed popcornflower	OBL

Species Name	Common Name	Wetland Indicator Status
Plantago coronopus	Cut-leaved plantain	FAC
Plantago lanceolata	English plantain	FAC
Poa annua	Annual blue grass	FAC
Polygonum aviculare ssp. *depressum*	Knotweed	FACW
Polypogon maritimus	Mediterranean beard grass	FACW
Polypogon monspeliensis	Annual rabbitfoot grass	FACW
Pseudognaphalium luteoalbum	Pearly everlasting	FAC
Psilocarphus oregonus	Oregon woollyheads	OBL
Quercus douglasii	Blue oak	UPL
Quercus lobata	Valley oak	FACU
Quercus wislizenii	Interior live oak	UPL
Ranunculus bonariensis	Carter's buttercup	OBL
Ranunculus muricatus	Spiny fruit buttercup	FACW
Raphanus sativus	Radish	UPL
Rumex conglomeratus	Green dock	FACW
Rumex crispus	Curly dock	FAC
Rumex pulcher	Fiddle dock	FAC
Rumex salicifolius	Willow dock	FACW
Setaria pumila	Yellow bristlegrass	FAC
Senecio vulgaris	Common groundsel	FACU
Sherardia arvensis	Field madder	UPL
Silene gallica	Small-flower catchfly	UPL
Silybum marianum	Milk thistle	UPL
Spergula arvensis	Starwort	UPL
Spergularia rubra	Red sand-spurrey	FAC
Torilis arvensis	Tall sock-destroyer	UPL
Torilis nodosa	Short sock-destroyer	UPL
Trichostema lanceolatum	Vinegarweed	FACU
Trifolium campestre	Hop clover	UPL
Trifolium dubium	Little hop clover	UPL
Trifolium fragiferum	Strawberry clover	FAC
Trifolium glomeratum	Clustered clover	UPL
Trifolium hirtum	Rose clover	UPL
Trifolium subterraneum	Subterranean clover	UPL
Trifolium tomentosum	Woolly clover	UPL
Triteleia hyacinthina	White brodiaea	FAC
Triteleia laxa	Ithuriel's spear	UPL
Veronica peregrina subsp. xalapensis	Purslane speedwell	FAC
Vicia sativa	Spring vetch	FACU
Vicia villosa	Winter vetch	UPL
Xanthium strumarium	Rough cocklebur	FAC

Attachment D

GIS Shapefiles and the Aquatic Resources Excel Spreadsheet (on CD)

Attachment E

Access Letter

PLACER † Christian
SCHOOL ASSOCIATION

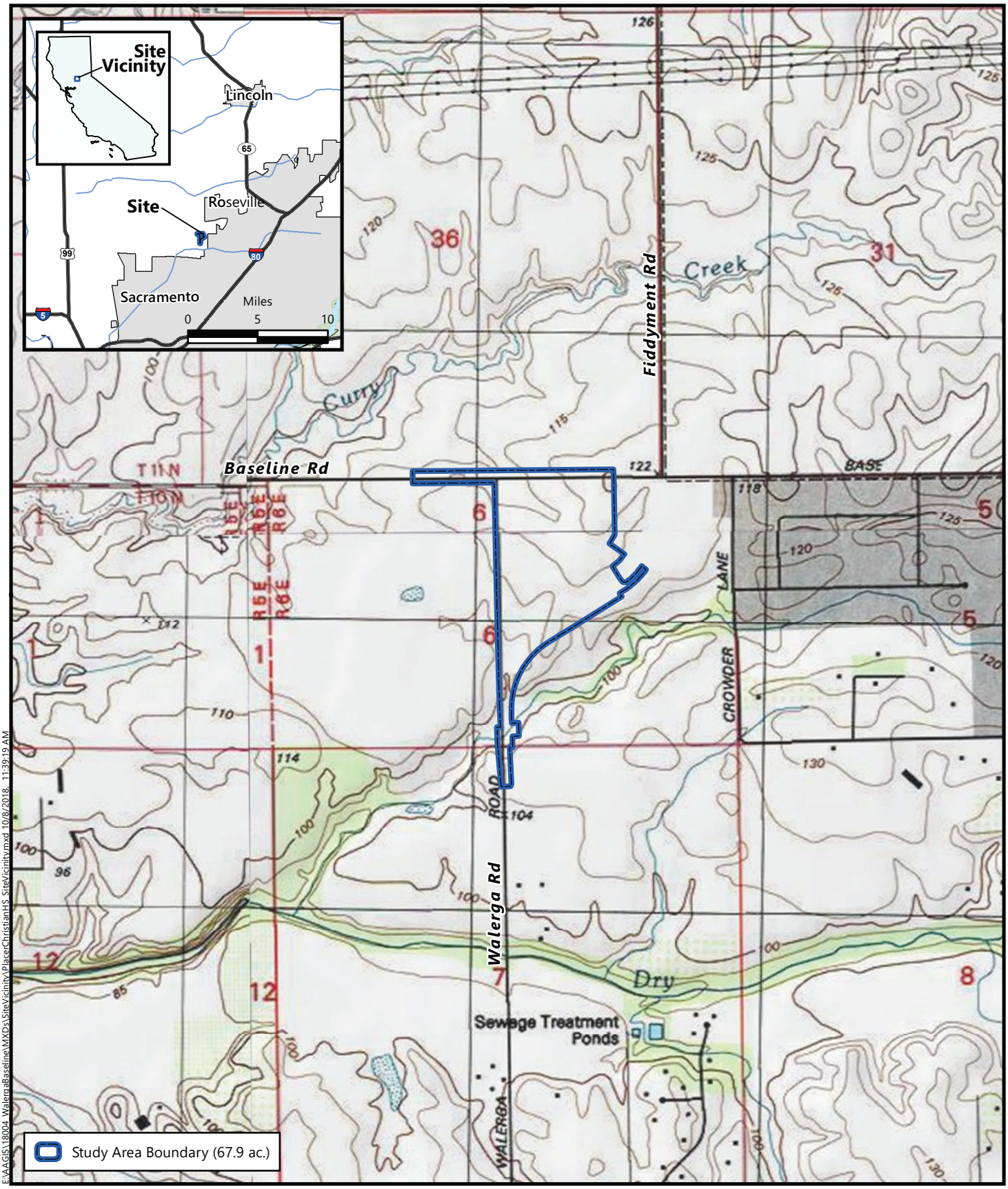
Project Manager
Regulatory Division
U.S. Army Corps of Engineers
1325 J Street, Room 1350
Sacramento, California 95814-2922

Re: Placer Christian High School Access

This letter serves as written permission to enter the Placer Christian High School property shown on the attached Figure 1 when accompanied by Madrone Ecological Consulting, LLC (Madrone) staff. When accompanied by Madrone staff, you may dig soil pits by hand and collect plant materials related to the verification of potential Waters of the U.S. on the Placer Christian High School property. If you have any questions, please contact Sarah VonderOhe at Madrone (916) 822-3230 or svonderohe@madroneeco.com.

Sincerely,

David L Aton



Citrus Heights, CA and Roseville, CA
7.5-Minute Topographic Quadrangles
United States Geologic Survey, 1992.

Sections 6 and 7, Township 10N, Range 6E and
Section 36, Township 11N, Range 5E, MDB&M
Longitude -121.362730, Latitude 38.749240

* Figure not OCR Compatible

Figure 1
Site and Vicinity

Placer Christian High School
Placer County, California

MADRONE ECOLOGICAL CONSULTING

E:\AAGIS\18004_WalergaBaseline\MXDs\SiteVicinity\PlacerChristianHS_SiteVicinity.mxd 10/8/2018, 11:39:19 AM



Aquatic Resources Delineation Report

Placer Creek Residential

Placer County, California

November 2018

MADRONE ECOLOGICAL CONSULTING

Prepared for:
Placer Christian School Association
c/o David L. Aton
1223 Pleasant Grove Blvd., #100
Roseville, CA 95678

Recommended Citation:
Madrone Ecological Consulting, LLC (Madrone). 2018. *Aquatic Resources Delineation Report for Placer Creek Residential*. Prepared for Placer Christian School Association. Published on 5 November 2018.

CONTENTS

Aquatic Resources Delineation Report
Placer Creek Residential

1.0 Introduction 1

1.1 Contact Information 1

2.0 Methodology 1

3.0 Existing Conditions 2

3.1 Terrestrial Plant Communities 2

3.1.1 Annual Grassland 2

3.1.2 Oak Woodland 2

3.2 Hydrology 3

3.3 Soils 3

3.4 Driving Directions 3

4.0 Results 3

4.1 Wetlands 4

4.1.1 Vernal Pool 4

4.1.2 Seasonal Wetlands 4

4.1.3 Seasonal Wetland Swales 5

4.1.4 Irrigated Wetland 5

4.2 Other Waters 5

4.2.1 Ephemeral Drainage 5

4.2.2 Intermittent Drainage 6

5.0 Conclusion 6

6.0 References 6

Tables

Table 1. Aquatic Resources Mapped within the Study Area 4

Figures

Figure 1. Vicinity Map

Figure 2. Natural Resources Conservation Service Soils

Figure 3. Aquatic Resources Delineation

Attachments

Attachment A. Arid West Wetland Determination Data Forms

Attachment B. Aquatic Resources Delineation

Attachment C. Plant Species Observed within the Study Area

Attachment D. GIS Shapefiles and the Aquatic Resources Excel Spreadsheet (on CD)

Attachment E. Access Letter

1.0 INTRODUCTION

This report presents the results of a delineation of aquatic resources within the Placer Creek Residential property (Study Area) conducted by Madrone Ecological Consulting, LLC (Madrone).

The approximately 44.3-acre Study Area is located along and south and east of Walerga Road, west of White Mill Crescent and north of Waterstone Drive in southwestern Placer County, California. The Study Area is located in a portion of Sections 6 and 7, Township 10 North, Range 6 East (MDB&M) of the "Citrus Heights, California" 7.5-Minute Series USGS Topographic Quadrangle (USGS 1992) (**Figure 1**).

Portions of the Study Area overlap adjacent proposed development projects, such as Placer Vineyards (SPK-1999-00737) and the concurrently submitted Placer Christian High School. The overlap area comprises 7.2 acres of the 44.3-acre Study Area, which includes a 35.5 acre parcel for residential development.

1.1 Contact Information

Applicant (controls the property)

Placer Christian School Association
c/o David L. Aton
1223 Pleasant Grove Blvd., #100
Roseville, CA 95678

Agent

Sarah VonderOhe
Madrone Ecological Consulting, LLC
8421 Auburn Blvd., Suite #248
Citrus Heights, CA 95610

2.0 METHODOLOGY

Madrone senior biologist Daria Snider conducted a delineation of aquatic resources within the Study Area on 3 September 2015, and follow-up surveys on 15 March and 9 May 2018. Water features and data points were mapped in the field with a GPS unit capable of sub-meter accuracy (Trimble GeoXT and Arrow 100). Three-parameter data (vegetation, soils, and hydrology) were collected at each data point, documenting wetland/waters or upland status, as appropriate. The delineation map was prepared in accordance with the *Updated Map and Drawing Standards for the South Pacific Division Regulatory Program* (USACE 2016a). The GPS data was overlayed on an ortho-rectified aerial photograph (City of Roseville 2015).

The delineation was performed in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008a), *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2008b), and the Sacramento District's *Minimum Standards for Acceptance of Preliminary Wetlands Delineations* (USACE 2016b). U.S. Army Corps of Engineers (USACE) regulations (33 CFR 328) were used to determine the presence of Waters of the United States other than wetlands. The most recent *National Wetland Plant List* (Lichvar et al. 2016) was used to determine the wetland indicator status of plants observed in the Study Area. The *Jepson eFlora* (Jepson Flora Project 2018) was used for plant nomenclature, except where it

conflicted with the nomenclature in the *National Wetland Plant List*, which was given priority on the data sheets.

As noted above, the delineation for this Study Area was conducted in 2015, and at the time, this Study Area was part of a larger Project Area that included an adjacent area to the north of Walerga Road that is now called the *Placer Christian High School* property. One set of paired data points was collected for each aquatic resource feature type at that time. Following the split, there were not data points for each feature type within each Study Area, but as the features are largely similar between the two Study Areas, the off-site data points are representative of the aquatic resources within the Study Area. Therefore, we have included all of the data sheets for both Study Areas in **Attachment A**. The map in **Attachment B** shows which of these data points occur within this Study Area.

3.0 EXISTING CONDITIONS

The Study Area is primarily comprised of ungrazed annual grassland with scattered seasonal wetlands on gently rolling terrain. An intermittent tributary to Dry Creek that bisects the southern portion of the Study Area, and flows from east to west, is bordered by a mixed oak woodland. Walerga Road runs along the northern and western edge of the Study Area. The Study Area is situated at an elevation of approximately 100 to 120 feet above mean sea level.

3.1 Terrestrial Plant Communities

3.1.1 Annual Grassland

The majority of the site is occupied by non-native annual grassland. This vegetation community is dominated by medusahead grass (*Elymus caput-medusae*) and soft brome (*Bromus hordeaceus*). Other plant species commonly occurring within this community within the Study Area include perennial ryegrass (*Lolium perenne*), winter vetch (*Vicia villosa*), hairy hawkbit (*Leontodon saxatilis*), rattail fescue (*Vulpia myuros*), hairgrass (*Aira caryophyllea*), slender tarweed (*Holocarpha virgata*), Fitch's spikeweed (*Centromadia fitchii*), yellow star-thistle (*Centaurea solstitialis*), rose clover (*Trifolium hirtum*), American deerweed (*Acmispon americanus*), and smooth cat's ear (*Hypochaeris glabra*).

3.1.2 Oak Woodland

A mixed oak woodland borders both sides of the intermittent drainage. The overstory of this community is comprised of Valley oak (*Quercus lobata*), blue oak (*Q. douglasii*), and interior live oak (*Q. wislizenii*). The understory is primarily comprised of species found in the surrounding annual grasslands, with the addition of occasionally dense stands of poison-oak (*Toxicodendron diversilobum*), pipevine (*Aristolochia californica*), and several prominent stands of milk thistle (*Silybum marianum*).

3.2 Hydrology

Surface water runoff within the Study Area all drains into the intermittent drainage. The intermittent drainage is a tributary of Dry Creek, which is a tributary of the Sacramento River. The Study Area is located in the *Dry Creek Watershed* (HUC 1802011101) (USGS 1978).

3.3 Soils

According to the Natural Resources Conservation Service (NRCS) Soil Survey Database (NRCS 2018), six soil mapping units occur within the Study Area (**Figure 2**): (140) Cometa sandy loam, 1-5% slopes; (141) Cometa-Fiddyment complex, 1-5% slopes; (142) Cometa-Ramona sandy loams, 1-5% slopes; (147) Fiddyment-Kaseberg loams, 2-9% slopes; (175) Ramona sandy loam, 2-9% slopes; and (194) Xerofluvents, frequently flooded. Xerofluvents, frequently flooded consists of hydric components, and all of the mapping units within the Study Area may contain hydric inclusions (NRCS 2018).

3.4 Driving Directions

To access the Study Area from Sacramento, drive east on Interstate 80 to Exit 98. Take Exit 98, and head west on Elkhorn Boulevard. Turn right on Walerga. The site is on the east side of Walerga Road, just north of Waterstone Drive.

4.0 RESULTS

A total of 0.578 acre of aquatic resources were delineated within the Study Area (**Table 1**). Data sheets are included in **Attachment A**, maps of the aquatic resources are included as **Figure 3** and **Attachment B**, and a list of the plant species observed in the Study Area with their wetland indicator status is included in **Attachment C**. GIS Shapefiles and the *Aquatic Resources Excel Spreadsheet* for the aquatic resources shown on **Figure 3** are included on a CD in **Attachment D**. Each of the feature types is described below. As shown on **Figure 3**, a number of the aquatic resources fall within the portion of the Study Area that overlaps other adjacent projects. The acreage of these resources that fall within the overlap area (0.047 acre) is broken out in **Table 1** and in **Attachment B**. Each aquatic resource was cut at the overlap line when calculating the acreages in **Table 1** and **Attachment B**.

Table 1. Aquatic Resources Mapped within the Study Area

Resource Type	Total Study Area Acreage	Overlap Area Acreage
Wetlands		
Irrigated Wetland	0.028	0.000
Seasonal Wetland	0.129	0.000
Seasonal Wetland Swale	0.047	0.000
Vernal Pool	0.091	0.000
Total of Wetlands	*0.294*	0.000
Other Waters		
Ephemeral Drainage	0.013	0.004
Intermittent Drainage	0.271	0.043
Total of Other Waters	*0.284*	*0.047*
Total	**0.578**	**0.047**

4.1 Wetlands

4.1.1 Vernal Pool

Two vernal pools were mapped within the Study Area. Vernal pools are topographic basins within the grassland community that are typically underlain with an impermeable or semi-permeable hardpan or duripan layer. Vernal pools inundate during the wet season, and typically dry by late spring and remain dry through the summer months. Vernal pools were differentiated from depressional seasonal wetlands within the Study Area based upon the predominance of vernal pool endemic plant species. Plant species found in the vernal pools within the Study Area include double-horned calico flower (*Downingia bicornuta*), slender popcorn flower (*Plagiobothrys stipitatus* var. *micranthus*), bractless hedge hyssop (*Gratiola ebracteata*), smooth goldfields (*Lasthenia glaberrima*), Vasey's coyote-thistle (*Eryngium vaseyi*), Carter's buttercup (*Ranunculus bonariensis*), hyssop loosestrife (*Lythrum hyssopifolium*), pillwort (*Pilularia americana*), Mediterranean beard grass (*Polypogon maritimus*), and creeping spikerush (*Eleocharis macrostachya*).

Indicators of wetland hydrology observed in the vernal pools during the field survey included the presence of oxidized rhizospheres along live roots and deep soil cracks. The soil matrix color at Data Points 1 and 2 was 7.5YR3/2 with 20% 5YR4/6 redox concentrations along pore linings and as soft masses in the matrix. The soils at these data points were considered to be hydric based on the presence of field indicator F6 (redox dark surface).

4.1.2 Seasonal Wetlands

Ten seasonal wetlands were delineated within the Study Area. Seasonal wetlands are depressional wetlands that pond water seasonally. These features are often topographically and hydrologically similar to vernal pools, but have a short hydroperiod, and as a result, support a slightly different plant community that is not characterized by a dominance of vernal pool endemics. Plant species commonly occurring in the seasonal wetlands within the Study Area include Mediterranean barley (*Hordeum marinum*), perennial ryegrass,

annual hairgrass (*Deschampsia danthonioides*), toad rush (*Juncus bufonius*), hyssop loosestrife, slender popcorn flower, hairy hawkbit, Fitch's spikeweed, and vinegarweed.

The only indicator of wetland hydrology observed in the seasonal wetlands during the field survey was the presence of oxidized rhizospheres along live roots. The soil matrix color at Data Point 8 was 7.5YR4/2 with 30% 7.5YR3/4 redox concentrations along pore linings and as soft masses in the matrix. The soil at this data point was considered to be hydric based on the presence of field indicator F3 (depleted matrix).

4.1.3 Seasonal Wetland Swales

Three seasonal wetland swales were mapped within the Study Area. Seasonal wetland swales are sloping, linear seasonal wetlands that convey surface runoff, and may detain it for short periods of time. Plant species occurring in the seasonal wetland swales are largely similar to those found in the seasonal wetlands.

The only indicator of wetland hydrology observed in the seasonal wetland swales during the field survey was the presence of oxidized rhizospheres along live roots. The soil matrix color at Data Point 9 was 7.5YR3/2 with 15% 7.5YR4/6 redox concentrations along pore linings and as soft masses in the matrix. The soil at this data point was considered to be hydric based on the presence of field indicator F6 (redox dark surface).

4.1.4 Irrigated Wetland

One irrigated wetland was mapped in the southeastern portion of the Study Area. This feature appears to be the result of irrigation runoff from adjacent residences. The fence around the adjacent residence has been designed to allow irrigation runoff to flow underneath, and into this wetland. Based on a review of historic aerial photography, it appears that this wetland formed between 2005 and 2006, shortly after the construction of the adjacent houses. Because this wetland is supported by runoff during the dry season, a variety of plant species typical of prolonged saturation have become established, including tall flatsedge (*Cyperus eragrostis*), common rush (*Juncus effusus*), Gooding's black willow (*Salix gooddingii*), Bermuda grass (*Cynodon dactylon*), English plantain (*Plantago lanceolata*), and yellow bristlegrass (*Setaria pumila*).

Indicators of wetland hydrology observed during the field survey included the presence of oxidized rhizospheres along live roots and soil cracks. The soil matrix color at Data Points 1 and 2 was 7.5YR3/2 with 5YR4/6 redox concentrations along pore linings and as soft masses in the matrix. The soil at these data points was considered to be hydric based on the presence of field indicator F6 (redox dark surface).

4.2 Other Waters

4.2.1 Ephemeral Drainage

Two ephemeral drainages were mapped within the Study Area. These features are almost entirely unvegetated, and adjacent vegetation is primarily comprised of upland, annual grassland species.

Ephemeral drainages convey flow during and immediately following rain events, but are not supported by groundwater flows, and as such, are not inundated for a sufficient duration to support hydrophytic vegetation. The lateral limits of the ephemeral channels within the Study Area were mapped at the Ordinary High Water Mark (OHWM), which was identified based on the extent of scour and adjacent vegetation.

4.2.2 Intermittent Drainage

Two sections of one intermittent drainage were mapped within the Study Area. This feature flows from east to west across the Study Area, and appears to be a tributary of Dry Creek. The intermittent drainage is almost completely unvegetated within the channel, due to the scouring effects of water. Adjacent vegetation is comprised of the oak woodland described in detail in Section 3.1.2. Near the western edge of the Study Area, the intermittent channel broadens, and some vegetation has encroached into the channel. Species found in the channel in this reach include perennial ryegrass, pennyroyal (*Mentha pulegium*), seep spring monkeyflower (*Mimulus guttatus*), tall flatsedge, swamp pricklegrass (*Crypsis schoenoides*), creeping spikerush, Indian chickweed (*Mollugo verticillata*), and prostrate knotweed (*Polygonum aviculare* ssp. *depressum*). Further to the east, adjacent vegetation is primarily annual grassland species, although common sedge (*Carex praegracilis*) also occurs intermittently along the banks. The edges of the intermittent channel within the Study Area were mapped at the OHWM, which was identified based primarily on the extent of scour.

5.0 CONCLUSION

The applicant is requesting a Preliminary Jurisdictional Determination for the Aquatic Resources Delineation map included as **Attachment B**. A signed statement providing USACE staff accompanied access to the Study Area is included as **Attachment E**.

6.0 REFERENCES

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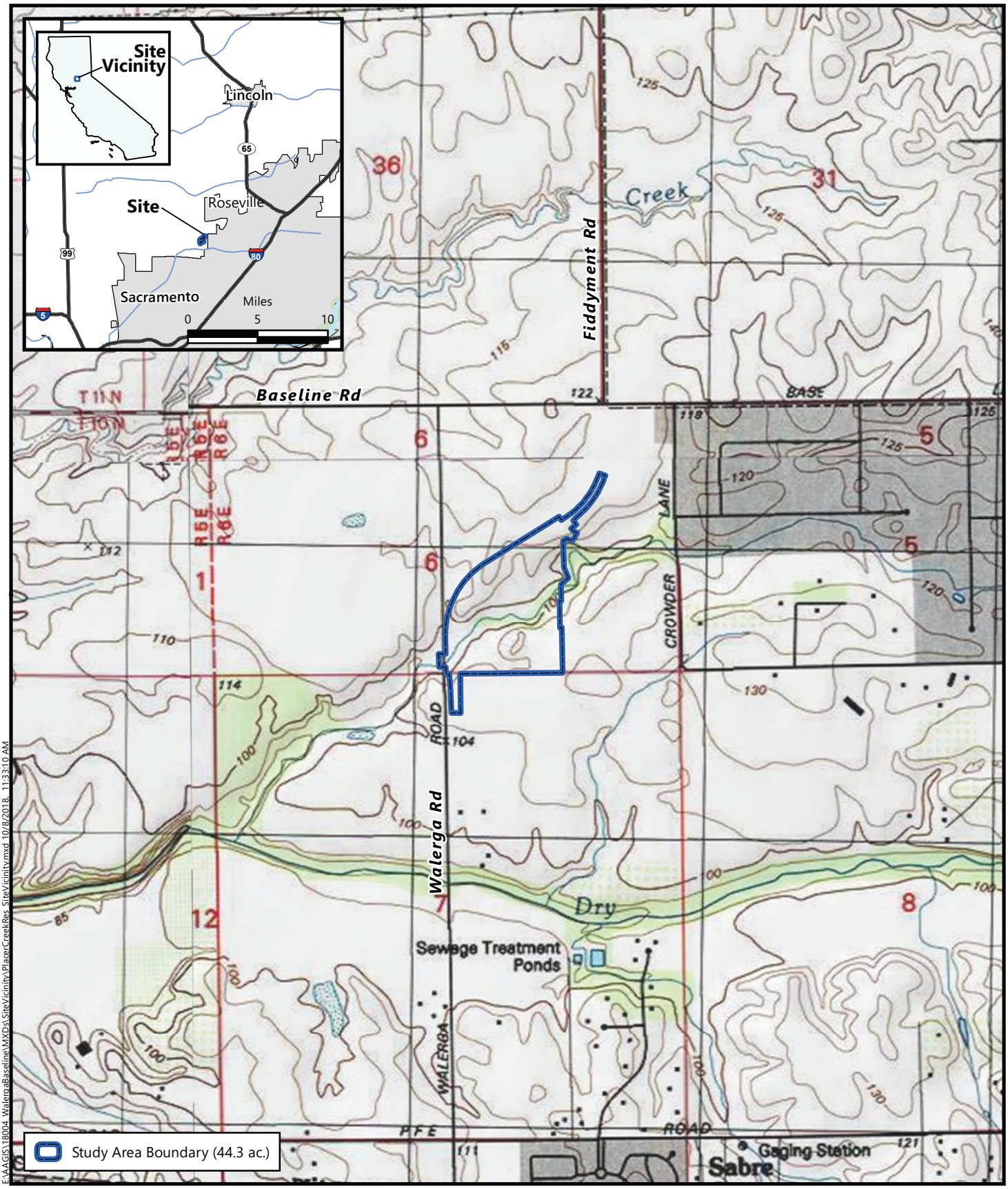
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Figures

Figure 1. Vicinity Map

Figure 2. Natural Resources Conservation Service Soils

Figure 3. Aquatic Resources Delineation



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Citrus Heights, CA
7.5-Minute Topographic Quadrangle
United States Geologic Survey, 1992.

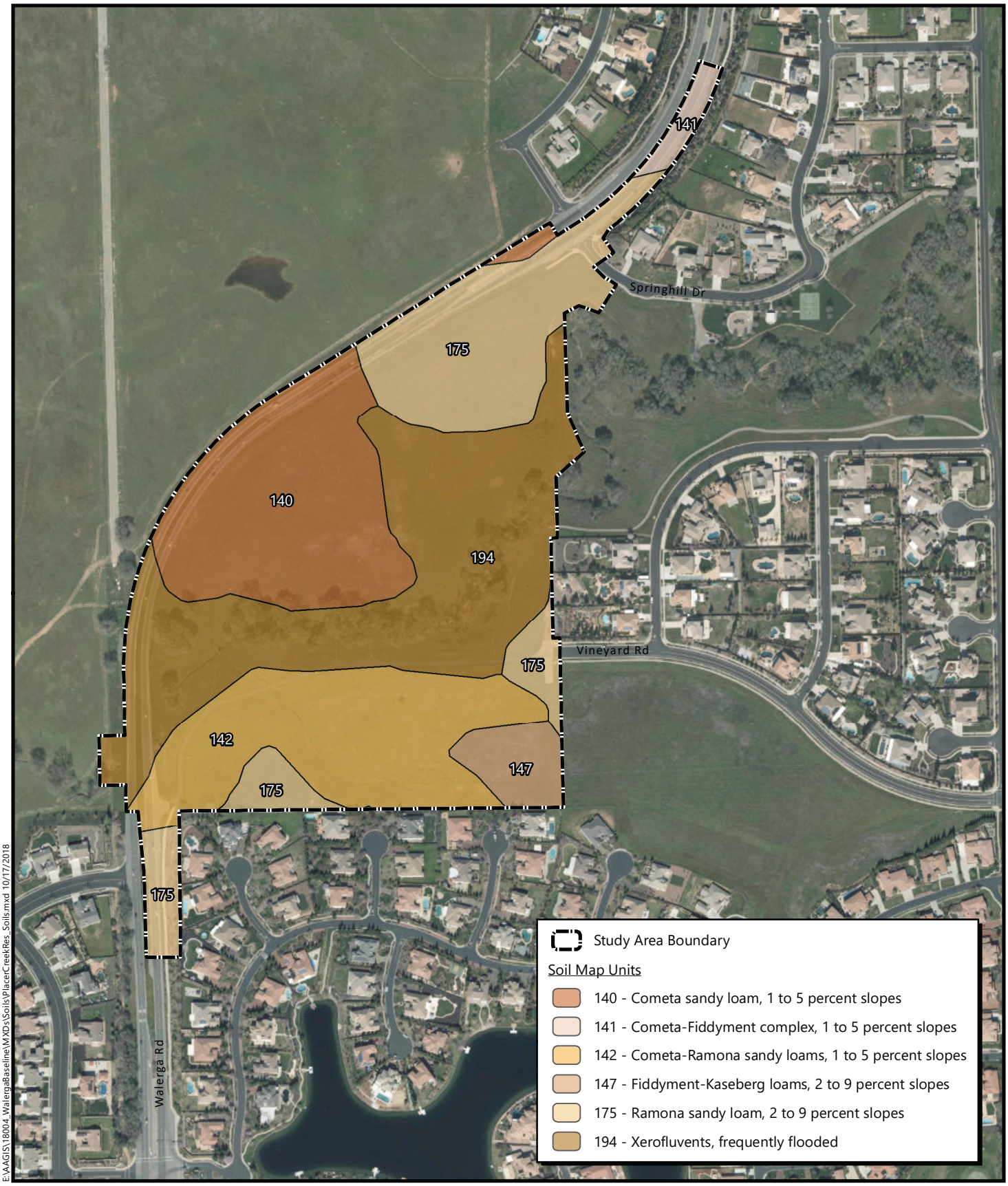
Sections 6 & 7, Township 10N, Range 6E, MDB&M
Longitude -121.362450, Latitude 38.745198

* Figure not OCR Compatible

Figure 1
Site and Vicinity

Placer Creek Residential
Placer County, California

MADRONE ECOLOGICAL CONSULTING



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N

Feet
0 200 400

Figure 2
Natural Resources Conservation Service Soils

Placer Creek Residential
Placer County, California

MADRONE ECOLOGICAL CONSULTING

Soil Survey Source: *USDA, Soil Conservation Service.*
Soil Survey Geographic (SSURGO) database for Placer County, Western Part, California
Aerial Source: *City of Roseville, orthophoto taken 3/4/2015.*

* Figure not OCR Compatible



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Figure 3
Aquatic Resources

Placer Creek Residential
Placer County, California

MADRONE ECOLOGICAL CONSULTING

Aerial Source: *City of Roseville, orthophoto taken 3/4/2015*

* Figure not OCR Compatible

Attachments

Attachment A. Arid West Wetland Determination Data Forms

Attachment B. Aquatic Resources Delineation

Attachment C. Plant Species Observed within the Study Area

Attachment D. GIS Shapefiles and the Aquatic Resources Excel Spreadsheet (on CD)

Attachment E. Access Letter

Attachment A

Arid West Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Walerga Baseline Property City/County: Placer County Sampling Date: 09/03/15
Applicant/Owner: Mourier Investments, LLC State: CA Sampling Point: 1
Investigator(s): Daria Snider Section, Township, Range: Section 6, Township 10 North, Range 6 East
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.75136753 Long: -121.3644962 Datum: NAD 83
Soil Map Unit Name: San Joaquin-Cometa sandy loams, 1-5% slopes NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?**	**Yes X No ____**
Hydric Soil Present?	Yes X No ____		
Wetland Hydrology Present?	Yes X No ____		

Remarks:

Data point is in a vernal pool.

The region is currently experiencing a multi-year drought, and the climatic conditions are drier than normal.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Downingia species*	30	X	OBL
2. *Plagiobothrys stipitatus*	20	X	FACW
3. *Trichostema lanceolatum*	20	X	FACU
4. *Centromadia fitchii*	20	X	FACU
5. *Croton setiger*	5		UPL
6. *Lasthenia glabberima*	tr		OBL
7. *Gratiola ebracteata*	tr		OBL
8. *Lythrum hyssopifolium*	tr		OBL
	95	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	
% Bare Ground in Herb Stratum 50	% Cover of Biotic Crust 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **2** (A)

Total Number of Dominant Species Across All Strata: **4** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **50%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**30**	x1 = **30**
FACW species	**20**	x2 = **40**
FAC species	**0**	x3 = **0**
FACU species	**40**	x4 = **160**
UPL species	**5**	x5 = **25**
Column Totals:	**95** (A)	**255** (B)

Prevalence Index = B/A = **2.7**

Hydrophytic Vegetation Indicators:

- ____ Dominance Test is >50%
- **X** Prevalence Index is ≤3.0[1]
- ____ Morphological Adaptationd[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks:

Centromadia fitchii and *Trichostema lanceolatum* are late-season colonizers of seasonally wet areas in the Central Valley.

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	7.5YR3/2	80	5YR4/6	20	C	M, PL	sandy clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Walerga Baseline Property City/County: Placer County Sampling Date: 09/03/15
Applicant/Owner: Mourier Investments, LLC State: CA Sampling Point: 2
Investigator(s): Daria Snider Section, Township, Range: Section 6, Township 10 North, Range 6 East
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.75137009 Long: -121.3646449 Datum: NAD 83
Soil Map Unit Name: San Joaquin-Cometa sandy loams, 1-5% slopes NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?**	**Yes X No ____**
Hydric Soil Present?	Yes X No ____		
Wetland Hydrology Present?	Yes X No ____		

Remarks:

Data point is in a vernal pool.

The region is currently experiencing a multi-year drought, and the climatic conditions are drier than normal.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
	0	=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Lolium perenne*	30	X	FAC
2. *Hordeum marinum*	20	X	FAC
3. *Juncus bufonius*	15		FACW
4. *Ranunculus bonariensis*	10		OBL
5. *Centromadia fitchii*	10		FACU
6. *Lythrum hyssopifolium*	5		OBL
7. *Phalaris minor*	3		UPL
8. *Leontodon saxatilis*	3		FACU
9. *Trichostema lanceolatum*	2		FACU
10. *Juncus capitatus*	tr		FACU
	98	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **2** (A)

Total Number of Dominant Species Across All Strata: **2** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**15**	x1 = **15**
FACW species	**15**	x2 = **30**
FAC species	**50**	x3 = **150**
FACU species	**15**	x4 = **60**
UPL species	**3**	x5 = **15**
Column Totals:	**98** (A)	**270** (B)

Prevalence Index = B/A = **2.8**

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

____ Morphological Adaptationd[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks:

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6"	7.5YR3/2	80	5YR4/6	20	C	M, PL	sandy clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Walerga Baseline Property City/County: Placer County Sampling Date: 09/03/15
Applicant/Owner: Mourier Investments, LLC State: CA Sampling Point: 3
Investigator(s): Daria Snider Section, Township, Range: Section 6, Township 10 North, Range 6 East
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 2
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.75134337 Long: -121.3647247 Datum: NAD 83
Soil Map Unit Name: San Joaquin-Cometa sandy loams, 1-5% slopes NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No **X**	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No** **X**
Hydric Soil Present?	Yes ____ No **X**		
Wetland Hydrology Present?	Yes ____ No **X**		

Remarks:

Upland comparison to DPs 1 and 2

The region is currently experiencing a multi-year drought, and the climatic conditions are drier than normal.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Elymus caput-medusae*	85	X	UPL
2. *Bromus hordeaceus*	3		FACU
3. *Lolium perenne*	2		FAC
4.			
5.			
6.			
7.			
8.			
	90	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	
% Bare Ground in Herb Stratum 10	% Cover of Biotic Crust 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x1 = **0**
FACW species	**0**	x2 = **0**
FAC species	**2**	x3 = **6**
FACU species	**3**	x4 = **12**
UPL species	**85**	x5 = **425**
Column Totals:	**90** (A)	**443** (B)

Prevalence Index = B/A = **4.9**

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptationd[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

Remarks:

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6"	7.5YR4/3	98	7.5YR4/6	2	C	M	sandy clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

No hydric soil indicators detected.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators detected.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Walerga Baseline Property City/County: Placer County Sampling Date: 09/03/15
Applicant/Owner: Mourier Investments, LLC State: CA Sampling Point: 4
Investigator(s): Daria Snider Section, Township, Range: Section 6, Township 10 North, Range 6 East
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 2
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.74747109 Long: -121.3641866 Datum: NAD 83
Soil Map Unit Name: Cometa sandy loam, 1-5% slopes NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?**	**Yes** ____	**No X**
Hydric Soil Present?	Yes ____	No X			
Wetland Hydrology Present?	Yes ____	No X			

Remarks:

Suspect point due to it's location in a topographic swale.

The region is currently experiencing a multi-year drought, and the climatic conditions are drier than normal.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Elymus caput-medusae*	85	X	UPL
2. *Hypochaeris glabra*	10		UPL
3. *Bromus hordeaceus*	5		FACU
4. *Centromadia fitchii*	2		FACU
5. *Lolium perenne*	tr		FAC
6. *Briza minor*	tr		FAC
7.			
8.			
	102	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	
% Bare Ground in Herb Stratum 5	% Cover of Biotic Crust 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x1 = **0**
FACW species	**0**	x2 = **0**
FAC species	**0**	x3 = **0**
FACU species	**7**	x4 = **28**
UPL species	**95**	x5 = **475**
Column Totals:	**102** (A)	**503** (B)

Prevalence Index = B/A = **4.9**

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptationd[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No X**

Remarks:

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	7.5YR3/3	100					sandy loam	No redox features observed

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

No hydric soil indicators detected.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators detected.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Walerga Baseline Property City/County: Placer County Sampling Date: 09/03/15
Applicant/Owner: Mourier Investments, LLC State: CA Sampling Point: 5
Investigator(s): Daria Snider Section, Township, Range: Section 6, Township 10 North, Range 6 East
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.74571753 Long: -121.3604468 Datum: NAD 83
Soil Map Unit Name: Xerofluvents, frequently flooded NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?**	**Yes X No ____**
Hydric Soil Present?	Yes X No ____		
Wetland Hydrology Present?	Yes X No ____		

Remarks:

Data point is located in an irrigated wetland. This feature appears to be the result of excess irrigation water runoff from the adjacent residences. Based on the size of the few willows that have established in this feature, and a review of aerial photography, this has been occuring since the houses were built. The region is currently experiencing a multi-year drought, and the climatic conditions are drier than normal.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Cyperus eragrostis*	50	X	FACW
2. *Juncus effusus*	40	X	FACW
3. *Cynodon dactylon*	10		FACU
4.			
5.			
6.			
7.			
8.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	
% Bare Ground in Herb Stratum 0	% Cover of Biotic Crust 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **2** (A)

Total Number of Dominant Species Across All Strata: **2** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0** x1 =	**0**
FACW species	**90** x2 =	**180**
FAC species	**0** x3 =	**0**
FACU species	**10** x4 =	**40**
UPL species	**0** x5 =	**0**
Column Totals:	**100** (A)	**220** (B)

Prevalence Index = B/A = **2.2**

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

____ Morphological Adaptationd[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks:

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	10YR3/2	98	7.5YR3/4	5	C	M, PL	sandy clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Walerga Baseline Property City/County: Placer County Sampling Date: 09/03/15
Applicant/Owner: Mourier Investments, LLC State: CA Sampling Point: 6
Investigator(s): Daria Snider Section, Township, Range: Section 6, Township 10 North, Range 6 East
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.74572046 Long: -121.3604843 Datum: NAD 83
Soil Map Unit Name: Xerofluvents, frequently flooded NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No **X**	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No** **X**
Hydric Soil Present?	Yes ____ No **X**		
Wetland Hydrology Present?	Yes ____ No **X**		

Remarks:

Upland comparison to DP 5.

The region is currently experiencing a multi-year drought, and the climatic conditions are drier than normal.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Centaurea solstitialis*	60	X	UPL
2. *Vicia sativa*	60	X	FACU
3.			
4.			
5.			
6.			
7.			
8.			
	120	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		=Total Cover	
% Bare Ground in Herb Stratum 0	% Cover of Biotic Crust 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **0** (A)

Total Number of Dominant Species Across All Strata: **2** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0** x1 =	**0**
FACW species	**0** x2 =	**0**
FAC species	**0** x3 =	**0**
FACU species	**60** x4 =	**240**
UPL species	**60** x5 =	**300**
Column Totals:	**120** (A)	**540** (B)

Prevalence Index = B/A = **4.5**

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptationd[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

Remarks:

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6"	10YR3/2	100					sandy clay loam	No redox features observed

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

No hydric soil indicators observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators observed

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Walerga Baseline Property City/County: Placer County Sampling Date: 09/03/15
Applicant/Owner: Mourier Investments, LLC State: CA Sampling Point: 7
Investigator(s): Daria Snider Section, Township, Range: Section 6, Township 10 North, Range 6 East
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.74394467 Long: -121.3605776 Datum: NAD 83
Soil Map Unit Name: Fiddyment-Kaseberg loams, 2-9% slopes NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No **X**	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No** **X**
Hydric Soil Present?	Yes ____ No **X**		
Wetland Hydrology Present?	Yes ____ No **X**		

Remarks:

Upland comparison to DP 8.

The region is currently experiencing a multi-year drought, and the climatic conditions are drier than normal.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Elymus caput-medusae*	95	X	UPL
2. *Bromus hordeaceus*	5		FACU
3. *Lactuca serriola*	tr		FACU
4. *Centromadia fitchii*	tr		FACU
5. *Trichostema lanceolatum*	tr		FACU
6.			
7.			
8.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0** x1 =	**0**
FACW species	**0** x2 =	**0**
FAC species	**0** x3 =	**0**
FACU species	**5** x4 =	**20**
UPL species	**95** x5 =	**475**
Column Totals:	**100** (A)	**495** (B)

Prevalence Index = B/A = **5.0**

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptationd[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

Remarks:

SOIL

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6"	10YR3/2	100					sandy clay loam	No redox features observed

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

No hydric soil indicators observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators observed

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Walerga Baseline Property City/County: Placer County Sampling Date: 09/03/15
Applicant/Owner: Mourier Investments, LLC State: CA Sampling Point: 11
Investigator(s): Daria Snider Section, Township, Range: Section 6, Township 10 North, Range 6 East
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1
Subregion (LRR): Mediterranean California (LRR C) Lat: Long: Datum: NAD 83
Soil Map Unit Name: Fiddyment-Kaseberg loams, 2-9% slopes NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes No X (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?**	**Yes X No**
Hydric Soil Present?	Yes X No		
Wetland Hydrology Present?	Yes X No		

Remarks:

Data point is located in a seasonal wetland.

The region is currently experiencing a multi-year drought, and the climatic conditions are drier than normal.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	=Total Cover	

Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	

Herb Stratum (Plot size:)			
1. *Centromadia fitchii*	40	X	FACU
2. *Plagiobothrys stipitatus*	40	X	FACW
3. *Leontodon saxatilis*	30	X	FACU
4. *Hordeum marinum*	20		FAC
5. *Gratiola ebracteata*	20		OBL
6. *Deschampsia danthonioides*	5		FACW
7. *Lythrum hyssopifolium*	tr		OBL
8.			
	155	=Total Cover	

Woody Vine Stratum (Plot size:)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **1** (A)

Total Number of Dominant Species Across All Strata: **3** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **33%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**20** x1 =	**20**
FACW species	**45** x2 =	**90**
FAC species	**20** x3 =	**60**
FACU species	**70** x4 =	**280**
UPL species	**0** x5 =	**0**
Column Totals:	**155** (A)	**450** (B)

Prevalence Index = B/A = **2.9**

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- **X** Prevalence Index is ≤3.0[1]
- Morphological Adaptationd[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No**

Remarks:

SOIL

Sampling Point: 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	7.5YR4/2	70	7.5YR3/4	30	C	M, PL	sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Walerga Baseline Property City/County: Placer County Sampling Date: 09/03/15
Applicant/Owner: Mourier Investments, LLC State: CA Sampling Point: 9
Investigator(s): Daria Snider Section, Township, Range: Section 6, Township 10 North, Range 6 East
Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): None Slope (%): 2
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.7436908 Long: -121.3615849 Datum: NAD 83
Soil Map Unit Name: Cometa-Ramona sandy loams, 1-5% slopes NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No **X**	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No** **X**
Hydric Soil Present?	Yes ____ No **X**		
Wetland Hydrology Present?	Yes ____ No **X**		

Remarks:

Suspect point due to its location in a topographic swale. However, none of the wetland criteria are satisfied in this location.

The region is currently experiencing a multi-year drought, and the climatic conditions are drier than normal.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Elymus caput-medusae*	100	X	UPL
2. *Holocarpha virgata*	tr		UPL
3. *Bromus hordeaceus*	tr		FACU
4. *Lolium perenne*	tr		FAC
5.			
6.			
7.			
8.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	
% Bare Ground in Herb Stratum 0	% Cover of Biotic Crust 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x1 = **0**
FACW species	**0**	x2 = **0**
FAC species	**0**	x3 = **0**
FACU species	**0**	x4 = **0**
UPL species	**100**	x5 = **500**
Column Totals:	**100** (A)	**500** (B)

Prevalence Index = B/A = **5.0**

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptationd[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

Remarks:

SOIL

Sampling Point: 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8"	7.5YR3/3	100					sandy clay loam	No redox features observed

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

No hydric soil indicators observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators observed

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Walerga Baseline Property City/County: Placer County Sampling Date: 09/03/15
Applicant/Owner: Mourier Investments, LLC State: CA Sampling Point: 10
Investigator(s): Daria Snider Section, Township, Range: Section 6, Township 10 North, Range 6 East
Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): None Slope (%): 2
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.74374438 Long: -121.3627577 Datum: NAD 83
Soil Map Unit Name: Cometa-Ramona sandy loams, 1-5% slopes NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?**	**Yes X No ____**
Hydric Soil Present?	Yes X No ____		
Wetland Hydrology Present?	Yes X No ____		

Remarks:

Data point is in a seasonal wetland swale.

The region is currently experiencing a multi-year drought, and the climatic conditions are drier than normal.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Lolium perenne*	85	X	FAC
2. *Bromus hordeaceus*	15		FACU
3. *Mimulus guttatus*	tr		OBL
4. *Briza minor*	tr		FAC
5. *Centromadia fitchii*	tr		FACU
6.			
7.			
8.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	
% Bare Ground in Herb Stratum 0	% Cover of Biotic Crust 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **1** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species		x1 = **0**
FACW species		x2 = **0**
FAC species	**85**	x3 = **255**
FACU species	**15**	x4 = **60**
UPL species		x5 = **0**
Column Totals:	**100** (A)	**315** (B)

Prevalence Index = B/A = **3.2**

Hydrophytic Vegetation Indicators:

- **X** Dominance Test is >50%
- ____ Prevalence Index is ≤3.0[1]
- ____ Morphological Adaptationd[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks:

SOIL

Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	7.5YR3/2	85	7.5YR4/6	15	C	M, PL	sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Walerga Baseline Property City/County: Placer County Sampling Date: 09/03/15
Applicant/Owner: Mourier Investments, LLC State: CA Sampling Point: 11
Investigator(s): Daria Snider Section, Township, Range: Section 6, Township 10 North, Range 6 East
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 10-Aug
Subregion (LRR): Mediterranean California (LRR C) Lat: 38.74375898 Long: -121.3627451 Datum: NAD 83
Soil Map Unit Name: Cometa-Ramona sandy loams, 1-5% slopes NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No **X**	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No** **X**
Hydric Soil Present?	Yes ____ No **X**		
Wetland Hydrology Present?	Yes ____ No **X**		

Remarks:

Upland comparison to DP 10.

The region is currently experiencing a multi-year drought, and the climatic conditions are drier than normal.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Bromus diandrus*	70	X	UPL
2. *Bromus hordeaceus*	15		FACU
3. *Acmispon americanus*	15		UPL
4. *Erodium botrys*	5		FACU
5.			
6.			
7.			
8.			
	105	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	
% Bare Ground in Herb Stratum 0	% Cover of Biotic Crust 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	____	x1 = **0**
FACW species	____	x2 = **0**
FAC species	____	x3 = **0**
FACU species	**20**	x4 = **80**
UPL species	**85**	x5 = **425**
Column Totals:	**105** (A)	**505** (B)

Prevalence Index = B/A = **4.8**

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptationd[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

Remarks:

SOIL

Sampling Point: 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6"	10YR3/2	100					sandy loam	No redox features

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

No hydric soil indicators observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

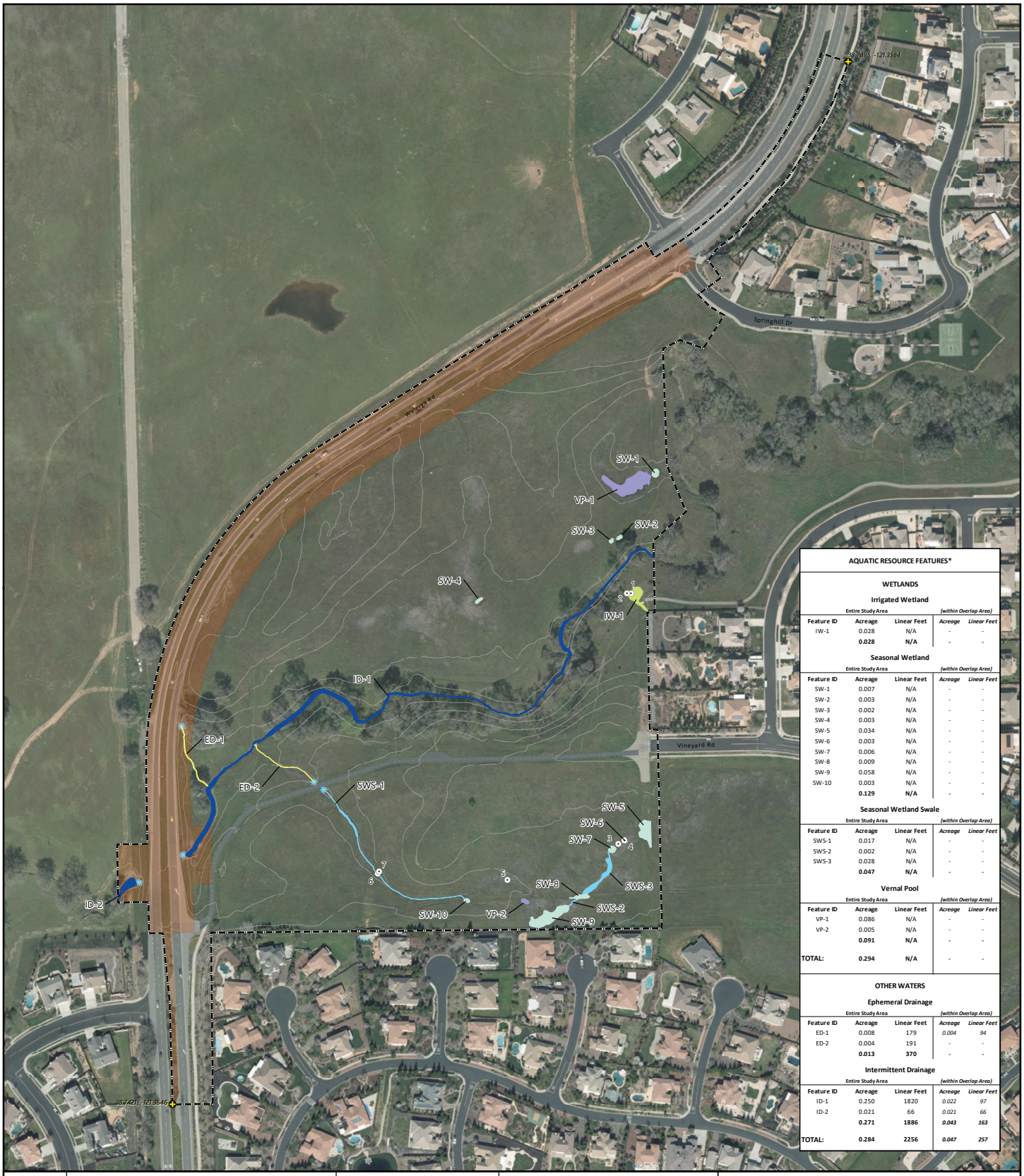
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators observed.

Attachment B

Aquatic Resources Delineation



AQUATIC RESOURCE FEATURES*

WETLANDS

Irrigated Wetland

	Entire Study Area		(within Overlap Area)	
Feature ID	Acreage	Linear Feet	Acreage	Linear Feet
IW-1	0.028	N/A	-	-
	0.028	**N/A**	-	-

Seasonal Wetland

	Entire Study Area		(within Overlap Area)	
Feature ID	Acreage	Linear Feet	Acreage	Linear Feet
SW-1	0.007	N/A	-	-
SW-2	0.003	N/A	-	-
SW-3	0.002	N/A	-	-
SW-4	0.003	N/A	-	-
SW-5	0.034	N/A	-	-
SW-6	0.003	N/A	-	-
SW-7	0.006	N/A	-	-
SW-8	0.009	N/A	-	-
SW-9	0.058	N/A	-	-
SW-10	0.003	N/A	-	-
	0.129	**N/A**	-	-

Seasonal Wetland Swale

	Entire Study Area		(within Overlap Area)	
Feature ID	Acreage	Linear Feet	Acreage	Linear Feet
SWS-1	0.017	N/A	-	-
SWS-2	0.002	N/A	-	-
SWS-3	0.028	N/A	-	-
	0.047	**N/A**	-	-

Vernal Pool

	Entire Study Area		(within Overlap Area)	
Feature ID	Acreage	Linear Feet	Acreage	Linear Feet
VP-1	0.086	N/A	-	-
VP-2	0.005	N/A	-	-
	0.091	**N/A**	-	-
TOTAL:	**0.294**	**N/A**	-	-

OTHER WATERS

Ephemeral Drainage

	Entire Study Area		(within Overlap Area)	
Feature ID	Acreage	Linear Feet	Acreage	Linear Feet
ED-1	0.008	179	*0.004*	*94*
ED-2	0.004	191	-	-
	0.013	**370**	-	-

Intermittent Drainage

	Entire Study Area		(within Overlap Area)	
Feature ID	Acreage	Linear Feet	Acreage	Linear Feet
ID-1	0.250	1820	*0.022*	*97*
ID-2	0.021	66	*0.021*	*66*
	0.271	**1886**	***0.043***	***163***
TOTAL:	**0.284**	**2256**	***0.047***	***257***

Project Name: Placer Creek Residential
Map Title: Aquatic Resources Delineation
Path: X:\AA\2018\Misc Maps\Aerial\MXD\PlacerCreek.MXD 10/5/2018
Date Map Prepared: 10/17/2018

Notes:
*Rounding may result in small summation errors.
Map Scale: 1 inch = 175 feet
Coordinate System: California State Plane Zone II (FIPS 0402)
Datum: NAD83
Projection: Lambert Conformal Conic
Aerial Base: City of Roseville
Aerial Base Flown: 3/4/2015
Date Map Prepared: 10/17/2018
Map Prepared by: D. Wagnon
Delineation Performed by: D. Snider

N

0 175
Feet

Reference Point (Latitude, Longitude)
5-Ft. Contour Interval

Prepared For:
David L. Aton
1223 Pleasant Grove Blvd. #100
Roseville, CA 95678

Study Area (44.3 ac.)
Other Project Overlap Area (7.2 ac.)
Data Points
Culverts

Aquatic Resources (0.578 ac.)

Wetlands (0.294 ac.)
Irrigated Wetland (0.028 ac.)
Seasonal Wetland (0.129 ac.)
Seasonal Wetland Swale (0.047 ac.)
Vernal Pool (0.091 ac.)

Other Waters (0.284 ac.)
Ephemeral Drainage (0.013 ac.)
Intermittent Drainage (0.271 ac.)

Aquatic Resources Delineation
Placer Creek Residential

Placer County, California

MADRONE ECOLOGICAL CONSULTING
8421 Auburn Boulevard, Suite 248
Citrus Heights, California 95610
(916) 822.3220 | www.madroneeco.com

* Figure not OCR Compatible

Attachment C

Plant Species Observed within the Study Area

Plant Species Observed within the Placer Creek Residential Study Area 3 September 2015, 15 March 2018, and 9 May 2018

Species Name	Common Name	Wetland Indicator Status
Achyrachaena mollis	Blow wives	FAC
Acmispon americanus	American deerweed	UPL
Aira caryophyllea	Hairgrass	FACU
Aira elegans	Elegant hair grass	UPL
Alisma triviale	Northern water plantain	OBL
Alopecurus saccatus	Pacific foxtail	OBL
Amsinckia menziesii	Common fiddleneck	UPL
Aristolochia californica	Pipevine	UPL
Artemisia douglasiana	Mugwort	FAC
Avena fatua	Wild oat	UPL
Baccharis pilularis	Coyote brush	UPL
Briza maxima	Rattlesnake grass	UPL
Briza minor	Little quaking grass	FAC
Brodiaea elegans subsp. elegans	Harvest brodiaea	FACU
Bromus diandrus	Ripgut brome	UPL
Bromus hordeaceus	Soft brome	FACU
Calandrinia menziesii	Red maids	FACU
Callitriche marginata	Winged water starwort	OBL
Carduus pycnocephalus	Italian thistle	UPL
Carex praegracilis	Common sedge	FACW
Castilleja attenuata	Valley tassels	UPL
Centaurea solstitialis	Yellow star-thistle	UPL
Centromadia fitchii	Fitch's spikeweed	FACU
Cerastium glomeratum	Sticky mouse-ear chickweed	UPL
Chondrilla juncea	Skeleton weed	UPL
Clarkia purpurea	Winecup clarkia	UPL
Clarkia unguiculata	Elegant clarkia	UPL
Claytonia perfoliata	Miner's lettuce	FAC
Convolvulus arvensis	Bindweed	UPL
Crassula aquatica	Water pygmy weed	OBL
Croton setiger	Turkey mullein	UPL
Crypsis schoenoides	Swamp pricklegrass	OBL
Cynodon dactylon	Bermuda grass	FACU
Cyperus eragrostis	Tall flatsedge	FACW
Deschampsia danthonioides	Annual hair grass	FACW
Dichelostemma capitatum	Blue dicks	FACU
Dittrichia graveolens	Stinkwort	UPL
Downingia bicornuta	Double-horned downingia	OBL

Species Name	Common Name	Wetland Indicator Status
Downingia ornatissima var. ornatissima	Horned downingia	OBL
Eleocharis macrostachya	Creeping spikerush	OBL
Elymus caput-medusae	Medusahead grass	UPL
Elymus triticoides	Beardless wild rye	FAC
Epilobium brachycarpum	Panicled willow-herb	UPL
Epilobium campestre	Smooth willow-herb	OBL
Erodium botrys	Filaree	FACU
Eryngium castrense	Great Valley coyote thistle	FACW
Eschscholzia californica	California poppy	UPL
Festuca bromoides	Brome fescue	FACU
Festuca myuros	Rattail sixweeks grass	FACU
Galium aparine	Sticky willy	FACU
Glyceria declinata	Low manna grass	FACW
Gratiola ebracteata	Bractless hedge-hyssop	OBL
Heterotheca grandiflora	Telegraph weed	UPL
Hirschfeldia incana	Short-podded mustard	UPL
Holocarpha virgata	Slender tarweed	UPL
Hordeum marinum	Mediterranean barley	FAC
Hordeum murinum	Wall barley	FACU
Hypochaeris glabra	Smooth cat's ear	UPL
Isoetes howellii	Howell's quillwort	OBL
Juncus bufonius	Toad rush	FACW
Juncus capitatus	Capped rush	FACU
Juncus effusus	Common rush	FACW
Lactuca serriola	Prickly wild lettuce	FACU
Lasthenia glaberrima	Smooth goldfields	OBL
Lathyrus angulatus	Angled pea	UPL
Leontodon saxatilis	Hairy hawkbit	FACU
Lolium perenne	Perennial ryegrass	FAC
Logfia gallica	Daggerleaf cottonrose	UPL
Lupinus bicolor	Miniature lupine	UPL
Lupinus microcarpus	Chick lupine	UPL
Lysimachia arvensis	Scarlet pimpernel	FAC
Lythrum hyssopifolium	Hyssop loosestrife	OBL
Marrubium vulgare	Horehound	FACU
Medicago polymorpha	California burclover	FACU
Mentha pulegium	Pennyroyal	OBL
Mimulus guttatus	Seep spring monkeyflower	OBL
Mollugo verticillata	Indian chickweed	FACU
Parentucellia viscosa	Yellow gland weed	FAC
Pentagramma triangularis	Goldback fern	UPL
Phalaris lemmonii	Lemmon's canary grass	FACW
Phalaris minor	Little canarygrass	UPL

Species Name	Common Name	Wetland Indicator Status
Phalaris paradoxa	Hood canary grass	FAC
Pilularia americana	American pillwort	OBL
Plagiobothrys canescens	Valley popcornflower	UPL
Plagiobothrys greenei	Greene's popcornflower	FACW
Plagiobothrys stipitatus var. micranthus	Great Valley popcornflower	FACW
Plagiobothrys undulatus	Wavy-stemmed popcornflower	OBL
Plantago coronopus	Cut-leaved plantain	FAC
Plantago lanceolata	English plantain	FAC
Poa annua	Annual blue grass	FAC
Polygonum aviculare ssp. *depressum*	Knotweed	FACW
Polypogon maritimus	Mediterranean beard grass	FACW
Polypogon monspeliensis	Annual rabbitfoot grass	FACW
Populus fremontii	Fremont cottonwood	FAC
Prunus dulcis	Almond	UPL
Pseudognaphalium luteoalbum	Pearly everlasting	FAC
Psilocarphus oregonus	Oregon woollyheads	OBL
Quercus douglasii	Blue oak	UPL
Quercus lobata	Valley oak	FACU
Quercus wislizenii	Interior live oak	UPL
Ranunculus bonariensis	Carter's buttercup	OBL
Ranunculus muricatus	Spiny fruit buttercup	FACW
Raphanus sativus	Radish	UPL
Rumex conglomeratus	Green dock	FACW
Rumex crispus	Curly dock	FAC
Rumex pulcher	Fiddle dock	FAC
Rumex salicifolius	Willow dock	FACW
Salix gooddingii	Black willow	FACW
Sambucus nigra	Black elderberry	FACU
Setaria pumila	Yellow bristlegrass	FAC
Senecio vulgaris	Common groundsel	FACU
Sherardia arvensis	Field madder	UPL
Silene gallica	Small-flower catchfly	UPL
Silybum marianum	Milk thistle	UPL
Spergula arvensis	Starwort	UPL
Spergularia rubra	Red sand-spurrey	FAC
Torilis arvensis	Tall sock-destroyer	UPL
Torilis nodosa	Short sock-destroyer	UPL
Toxicodendron diversilobum	Poison-oak	FACU
Trichostema lanceolatum	Vinegarweed	FACU
Trifolium campestre	Hop clover	UPL
Trifolium dubium	Little hop clover	UPL
Trifolium fragiferum	Strawberry clover	FAC
Trifolium glomeratum	Clustered clover	UPL

Species Name	Common Name	Wetland Indicator Status
Trifolium hirtum	Rose clover	UPL
Trifolium subterraneum	Subterranean clover	UPL
Trifolium tomentosum	Woolly clover	UPL
Triteleia hyacinthina	White brodiaea	FAC
Triteleia laxa	Ithuriel's spear	UPL
Veronica peregrina subsp. xalapensis	Purslane speedwell	FAC
Vicia sativa	Spring vetch	FACU
Vicia villosa	Winter vetch	UPL
Xanthium strumarium	Rough cocklebur	FAC

Attachment D

GIS Shapefiles and the Aquatic Resources Excel Spreadsheet (on CD)

Attachment E

Access Letter

PLACER † Christian
SCHOOL ASSOCIATION

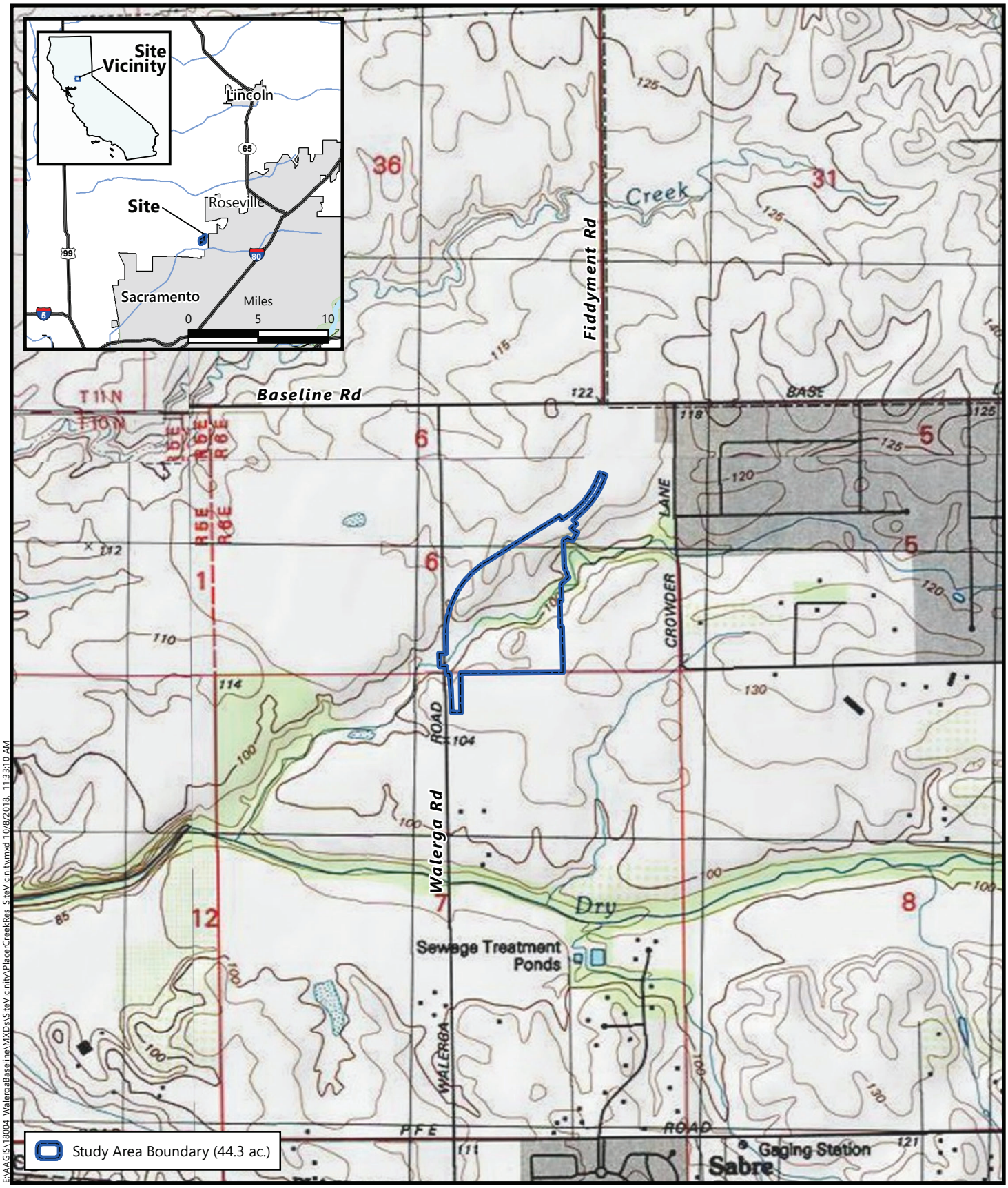
Project Manager
Regulatory Division
U.S. Army Corps of Engineers
1325 J Street, Room 1350
Sacramento, California 95814-2922

Re: Placer Christian High School Access

This letter serves as written permission to enter the Placer Christian High School property shown on the attached Figure 1 when accompanied by Madrone Ecological Consulting, LLC (Madrone) staff. When accompanied by Madrone staff, you may dig soil pits by hand and collect plant materials related to the verification of potential Waters of the U.S. on the Placer Christian High School property. If you have any questions, please contact Sarah VonderOhe at Madrone (916) 822-3230 or svonderohe@madroneeco.com.

Sincerely,

David L Aton



E:\AAGIS\18004_WalergaBaseline\MXDs\SiteVicinity\PlacerCreekRes_SiteVicinity.mxd 10/8/2018, 1:33:10 AM

N

Feet
0 750 1,500

Citrus Heights, CA
7.5-Minute Topographic Quadrangle
United States Geologic Survey, 1992.

Sections 6 & 7, Township 10N, Range 6E, MDB&M
Longitude -121.362450, Latitude 38.745198

* Figure not OCR Compatible

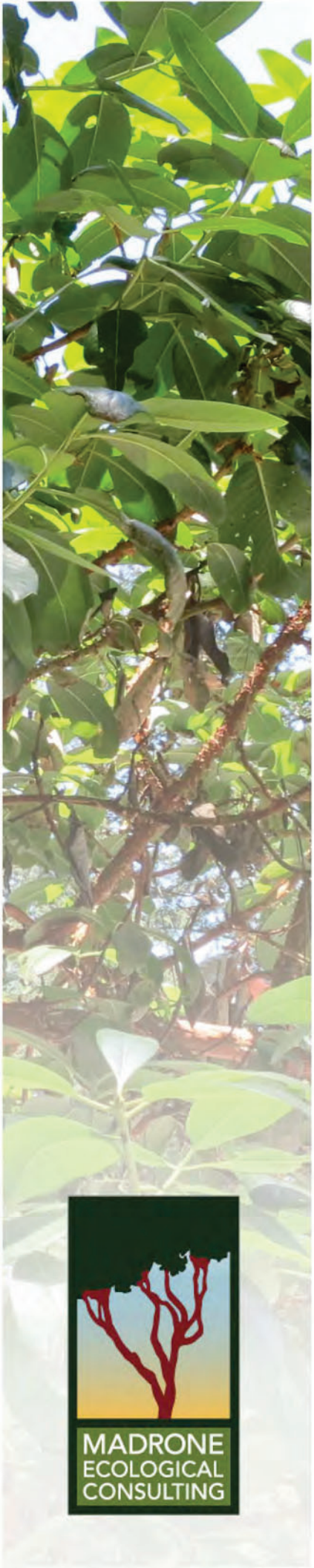
Figure 1
Site and Vicinity

Placer Creek Residential
Placer County, California

MADRONE ECOLOGICAL CONSULTING

Attachment F

Special-Status Plant Survey Report
For the Fong Property



Special-Status Plant Survey Report

Fong Property

Placer County

November 2024

MADRONE ECOLOGICAL CONSULTING

Prepared for:
Chris Dickinson
Towne Development of Sacramento
11060 White Rock Road, #150
Rancho Cordova, CA 95670

Recommended Citation:
Madrone Ecological Consulting, LLC (Madrone). 2024. *Special-Status Plant Survey Report for the Fong Property*. Prepared for Chris Dickinson. Published on 15 November 2024.

CONTENTS

Special-Status Plant Survey Report
Fong Property

1.0 INTRODUCTION 1

2.0 METHODOLOGY 1

3.0 EXISTING SITE CONDITIONS 2

3.1 Terrestrial Plant Communities 2

3.1.1 Annual Brome Grassland 2

3.1.2 Valley Oak Woodland 2

3.2 Soils 2

3.3 Aquatic Resources 3

3.2.1 Irrigated Wetland 3

3.2.2 Seasonal Wetland 3

3.2.3 Seasonal Wetland Swale 3

3.2.4 Vernal Pool 4

3.2.5 Intermittent Drainage 4

4.0 SURVEY RESULTS 4

4.1 Big-Scale Balsamroot 4

4.2 Dwarf Downingia 4

4.3 Boggs Lake Hedge-Hyssop 5

4.4 Ahart's Dwarf Rush 5

4.5 Legenere 5

4.6 Slender Orcutt Grass 5

4.8 Sanford's Arrowhead 6

5.0 CONCLUSION 6

6.0 REFERENCES 6

Tables:

Table 1. Aquatic Resources Mapped within the Study Area 3

Figures:

Figure 1. Site and Vicinity

Figure 2. Natural Resources Conservation Service Soils

Figure 3. Aquatic Resources

Attachments:

Attachment A: Botanist Qualifications

Attachment B: Target Plant Species Reference Population Information

Attachment C: Plant Species Observed within the Fong Property Study Area

1.0 INTRODUCTION

This report presents the results of special-status plant surveys conducted for the approximately 80-acre Fong Property Project (Study Area). The Study Area is located generally north and south of Walerga Road, and south of Baseline Road in southwestern Placer County, California. The Study Area is located in portion of Section 6-7, Township 10 North, Range 6 East (MDB&M) of the "Citrus Heights, California" and "Roseville, California" 7.5-Minute Series USGS Topographic Quadrangles (USGS 2023 and USGS 2021) (**Figure 1**).

2.0 METHODOLOGY

Madrone Ecological Consulting, LLC (Madrone) botanist Tara Collins conducted special-status plant surveys of the Study Area on 30 April and 16 May 2024. The special-status plant surveys were conducted in accordance with the U.S. Fish and Wildlife Service's *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants* (USFWS 2000), the California Department of Fish and Wildlife's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018), and the *CNPS Botanical Survey Guidelines* (CNPS 2001).

A list of special-status plant species with potential to occur within the Study Area was developed by reviewing the following literature, and then refining the list based on habitats present within the Study Area:

- California Native Plant Society (CNPS) Rare and Endangered Plant Inventory (CNPS 2024a) query of CRPR Lists 1A, 1B, 2A, 2B, and 3 within the "Citrus Heights and Roseville, California" (USGS 2023 and 2021) and eight surrounding quadrangles; and
- The California Natural Diversity Database occurrences of special-status plant species within five miles of the Study Area (CNDDB 2024).

The target species for this survey were:

- Big-scale balsamroot (*Balsamorhiza macrolepis*);
- Dwarf downingia (*Downingia pusilla*);
- Boggs Lake hedge-hyssop (*Gratiola heterosepala*);
- Ahart's dwarf rush (*Juncus leiospermus var. ahartii*);
- Legenere (*Legenere limosa*);
- Slender Orcutt grass (*Orcuttia tenuis*);
- Sacramento Orcutt grass (*Orcuttia viscida*); and
- Sanford's arrowhead (*Sagittaria sanfordii*).

Meandering pedestrian surveys were conducted throughout the Study Area. The surveys were floristic in nature, which means that all plant species observed on-site were identified to the taxonomic level necessary to determine rarity. Thus, if a special-status plant was present but not on the target list, it would have been detected and documented. Plant taxonomy was based on the nomenclature in the *Jepson eFlora* (Jepson Flora Project 2024). Vegetation communities were classified according to the *Manual of California Vegetation, Second Edition* as updated online (CNPS 2024b). Qualifications for the botanist that conducted the surveys are included in **Attachment A,** a list of reference populations of target plants visited is included

in **Attachment B**, and a comprehensive list of all plant species observed during surveys of the Study Area is included in **Attachment C**.

3.0 EXISTING SITE CONDITIONS

The Study Area is characterized by gently rolling topography supporting ungrazed annual grassland interspersed with seasonal wetlands. Several of the seasonal wetlands along the eastern boundary appear to be man-made or existing as a result of past human disturbance. An intermittent tributary to Dry Creek bisects the southern portion of the Study Area from west to east and is bordered by a valley oak woodland. A major transportation corridor runs along the center of the Study Area, Walerga Road. The Study Area is situated at an elevation of approximately 100 to 130 feet above mean sea level.

3.1 Terrestrial Plant Communities

3.1.1 Annual Brome Grassland

The majority of the site supports the Wild Oats (*Avena* spp.) and Annual Brome (*Bromus* spp.) Herbaceous Semi-Natural Alliance as described in *A California Manual of Vegetation* (CNPS 2024b) (hereafter "annual brome grassland"). This vegetation community is dominated by medusa head (*Elymus caput-medusae*), soft brome (*Bromus hordeaceus*), ryegrass (*Festuca perennis*), winter vetch (*Vicia villosa*), and caley pea (*Lathyrus hirsutus*).

3.1.2 Valley Oak Woodland

Both sides of the intermittent drainage support the Valley Oak (*Quercus lobata*) woodland Alliance as described in *A California Manual of Vegetation* (CNPS 2024b) (hereafter "valley oak woodland") . The overstory of this community is comprised of valley oak (*Quercus lobata*), blue oak (*Quercus douglasii*), and interior live oak (*Quercus wislizeni*). The understory is primarily comprised of western poison oak (*Toxicodendron diversilobum*), California pipevine (*Aristolochia californica*), and species found in the surrounding annual brome grassland.

3.2 Soils

According to the Natural Resources Conservation Service (NRCS) Soil Survey Database (NRCS 2024), eight soil mapping units occur within the Study Area: (140) Cometa sandy loam, 1-5% slopes; (141) Cometa-Fiddyment complex, 1-5% slopes; (142) Cometa-Ramona sandy loams, 1-5% slopes; (146) Fiddyment loam, 1-8% slopes; (147) Fiddyment-Kaseberg loams, 2-9% slopes; (175) Ramona sandy loam, 2-9% slopes; (182) San Joaquin-Cometa sandy loams, 1-5% slopes; and (194) Xerofluvents, frequently flooded (NRCS 2024). None of the soil map units within the Study Area are derived from serpentine parent material, and no alkaline or saline soils are present within the Study Area (NRCS 2024).

3.3 Aquatic Resources

A protocol-level aquatic resources delineation was conducted for the Study Area (Madrone 2018a, 2018b). Aquatic resources mapped within the Study Area during this survey are depicted in **Figure 2**. **Table 1** summarizes these mapped aquatic resource types and a description by type is included below.

Table 1. Aquatic Resources Mapped within the Study Area

Waters Type	Acreage
Wetlands	
Irrigated Wetland	0.03
Seasonal Wetland	0.20
Seasonal Wetland Swale	0.25
Vernal Pool	1.01
Other Waters	
Intermittent Drainage	0.24
Total	**1.73**

3.2.1 Irrigated Wetland

One irrigated wetland was mapped in the southeastern portion of the Study Area. This feature appears to be the result of irrigation runoff from adjacent residences. Because this wetland is supported by runoff during the dry season, a variety of plant species typical of prolonged saturation have become established, including soft brome, toad rush (*Juncus bufonius*), yellow star-thistle (*Centaurea solstitialis*), and starwort (*Spergula arvensis*).

3.2.2 Seasonal Wetland

A number of seasonal wetlands occur within the Study Area. Seasonal wetlands are depressional wetlands that pond water seasonally. These features are often topographically and hydrologically similar to vernal pools, but have a short hydroperiod, and as a result, support a slightly different plant community that is not characterized by a dominance of vernal pool endemics. The seasonal wetlands within the Study Area are largely dominated by Mediterranean barley (*Hordeum marinum*) and hyssop loosestrife (*Lythrum hyssopifolia*).

3.2.3 Seasonal Wetland Swale

The Study Area supports multiple seasonal wetland swales. Seasonal wetland swales are sloping, linear seasonal wetlands that convey surface runoff, and may detain it for short periods of time. The dominant plant occurring within the wetland swales was ryegrass.

3.2.4 Vernal Pool

The Study Area supports five vernal pools. Vernal pools are topographic basins that are underlain with an impermeable or semi-permeable hardpan or duripan layer. Vernal pools inundate during the wet season, and typically dry by late spring and remain dry through the summer months. The vernal pool was differentiated from depressional seasonal wetlands within the Study Area based upon the predominance of vernal pool endemic plant species. The vernal pools were dominated by Mediterranean barley, smooth goldfields (*Lasthenia glaberrima*), low manna grass (*Glyceria declinata*), and great valley popcorn flower (*Plagiobothrys stipitatus*).

3.2.5 Intermittent Drainage

Two sections of one intermittent drainage were mapped within the Study Area. This feature flows from east to west across the Study Area and is a tributary to Dry Creek. The intermittent drainage is largely unvegetated within the channel yet contains patches of vegetation including ryegrass, creeping spikerush (*Eleocharis macrostachya*), and common monkeyflower (*Erythranthe guttata*).

4.0 SURVEY RESULTS

4.1 Big-Scale Balsamroot

Big-scale balsamroot (*Balsamorhiza macrolepis*) is not federally or state listed, but it is classified as a CRPR List 1B.2 plant. It is a perennial herbaceous species that occurs in chaparral, cismontane woodland and valley and foothill grasslands between 150 and 5,100 feet (CNPS 2024a). Big-scale balsamroot blooms from March through June and may be found on serpentine soils, though it is known to grow on other soil types as well (CNPS 2024a).

The annual brome grassland throughout the Study Area represents marginally suitable habitat for this species. This species was not observed during the 2024 protocol-level special status plant surveys of the Study Area.

4.2 Dwarf Downingia

Dwarf downingia (*Downingia pusilla*) is not federally or state listed, but it is classified as a CRPR List 2B.2 plant. It is a diminutive annual herb that is strongly associated with vernal pools mesic valley and foothill grassland habitats at elevations ranging from five to 1,460 feet (CNPS 2024a). Dwarf downingia is typically associated with areas that experience a moderate degree of disturbance, and it blooms from March to May.

The vernal pools, seasonal wetlands, seasonal wetland swales, and portions of the intermittent drainages within the Study Area represent suitable habitat for this species. This species was not observed during the 2024 protocol-level special status plant surveys of the Study Area.

4.3 Boggs Lake Hedge-Hyssop

Boggs Lake hedge-hyssop (*Gratiola heterosepala*) is not federally listed, but it is a California endangered species and a CRPR List 1B.2 plant. Boggs Lake hedge-hyssop grows in vernal pools and around the perimeter of marshes and swamps between 35 and 7,790 feet (CNPS 2024a). This small annual herb favors clay soils, and blooms from April to August (CNPS 2024a).

The deeper portions of the vernal pools and seasonal wetlands within the Study Area represent suitable habitat for this species. This species was not observed during the 2024 protocol-level special status plant surveys of the Study Area.

4.4 Ahart's Dwarf Rush

Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*) is not federally or state listed, but it is classified as a CRPR List 1B.2 plant. Ahart's dwarf rush grows in mesic valley and foothill grassland habitats between elevations of approximately 100 feet and 750 feet (CNPS 2024a). This annual herb blooms from March to May (CNPS 2024a).

The vernal pools, seasonal wetlands, and seasonal wetland swales within the Study Area represent suitable habitat for this species. This species was not observed during the 2024 protocol-level special status plant surveys of the Study Area.

4.5 Legenere

Legenere (*Legenere limosa*) is not federally or state listed, but it is classified as a CRPR List 1B.1 species. This annual herb is primarily associated with vernal pools (CNPS 2024a). Legenere occurs at elevations between 5 and 2,885 feet, and blooms from April to June (CNPS 2024a).

The deeper portions of the vernal pools and seasonal wetlands within the Study Area represent suitable habitat for this species. This species was not observed during the 2024 protocol-level special status plant surveys of the Study Area.

4.6 Slender Orcutt Grass

Slender Orcutt grass (*Orcuttia tenuis*) is listed as threatened under CESA and endangered under FESA. This annual herb is found in vernal pools, often with gravelly substrates, at elevations generally ranging between 85 and 5,775 feet. Categorized as a CRPR 1B.1 plant, the slender Orcutt grass bloom period usually extends from May to September, but it is identifiable until the winter rains or cattle cause the seed heads to shatter.

The deeper portions of the vernal pools and seasonal wetlands within the Study Area represent suitable habitat for this species. This species was not observed during the 2024 special-status plant surveys of the Study Area.

4.7 Sacramento Orcutt Grass

Sacramento Orcutt grass (*Orcuttia viscida*) is a CRPR 1B.1 plant that is listed as endangered under the Federal Endangered Species Act (FESA) and CESA. This herbaceous annual favors vernal pool habitats and is found between elevations of 95 and 330 feet. Sacramento Orcutt grass typically blooms from April to July, but it is identifiable until the winter rains or cattle cause the seed heads to shatter. This plant species has previously been documented within the Cordova Hills Project site outside of the current Study Area.

The deeper portions of the vernal pools and seasonal wetlands within the Study Area represent suitable habitat for this species. This species was not observed during the 2024 special-status plant surveys of the Study Area.

4.8 Sanford's Arrowhead

Sanford's arrowhead (*Sagittaria sanfordii*) is not federally or state listed, but it is classified as a CRPR List 1B.2 plant. It generally occurs in shallow freshwater habitats associated with marshes and swamps, including drainages, canals, and larger ditches that sustain inundation and/or slow moving water into early summer. This emergent perennial rhizomatous species blooms from May to October (November), and occurs from sea level to 2,135 feet (CNPS 2024a)

The intermittent drainage within the Study Area represents suitable habitat for this species. This species was not observed during the 2024 protocol-level special status plant surveys of the Study Area.

5.0 CONCLUSION

No special-status plant species were observed during the 2024 protocol-level special-status plant surveys of the Fong Property Study Area.

6.0 REFERENCES

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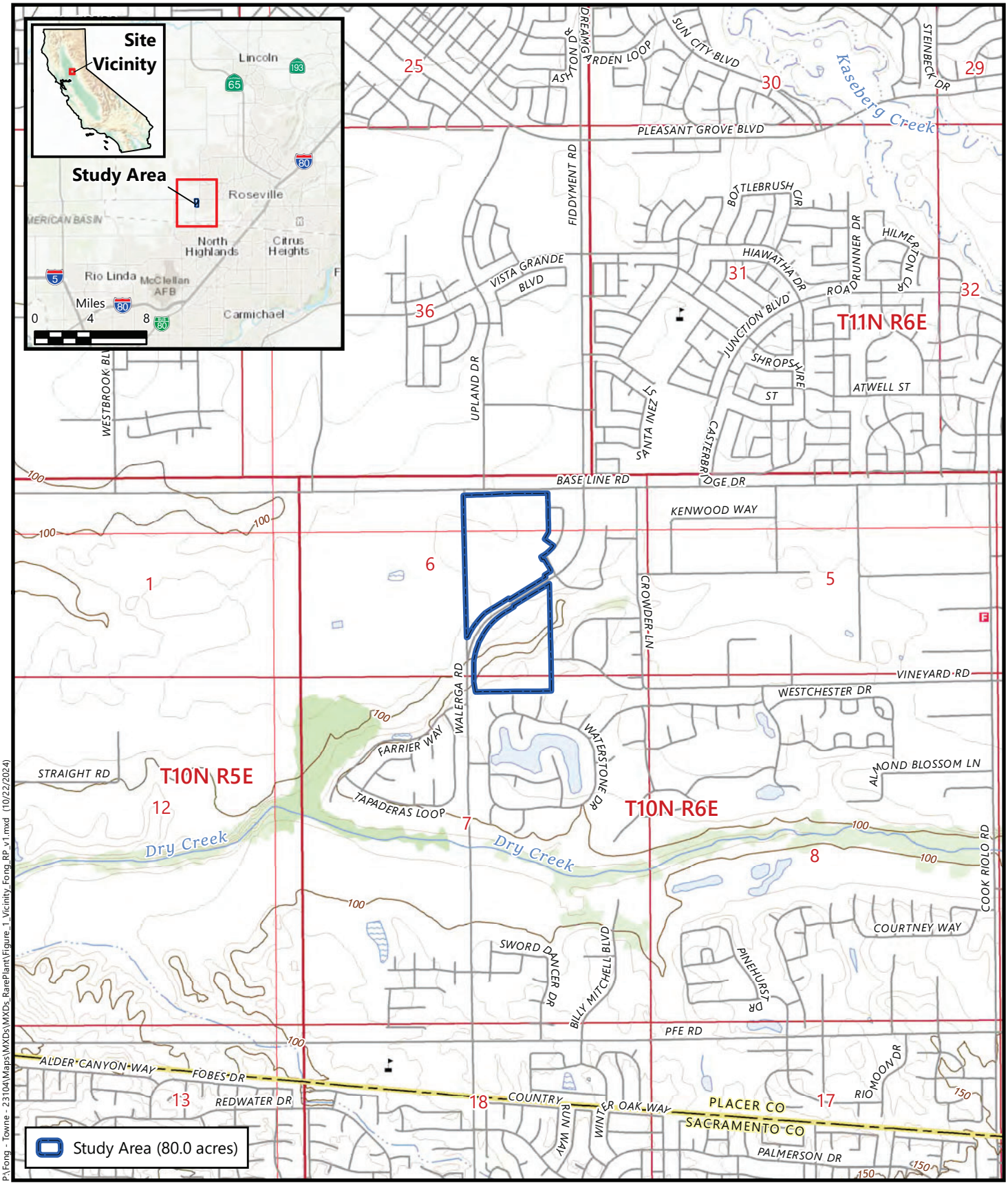
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Figures

Figure 1. Site and Vicinity

Figure 2. Natural Resources Conservation Service Soils

Figure 3. Aquatic Resources



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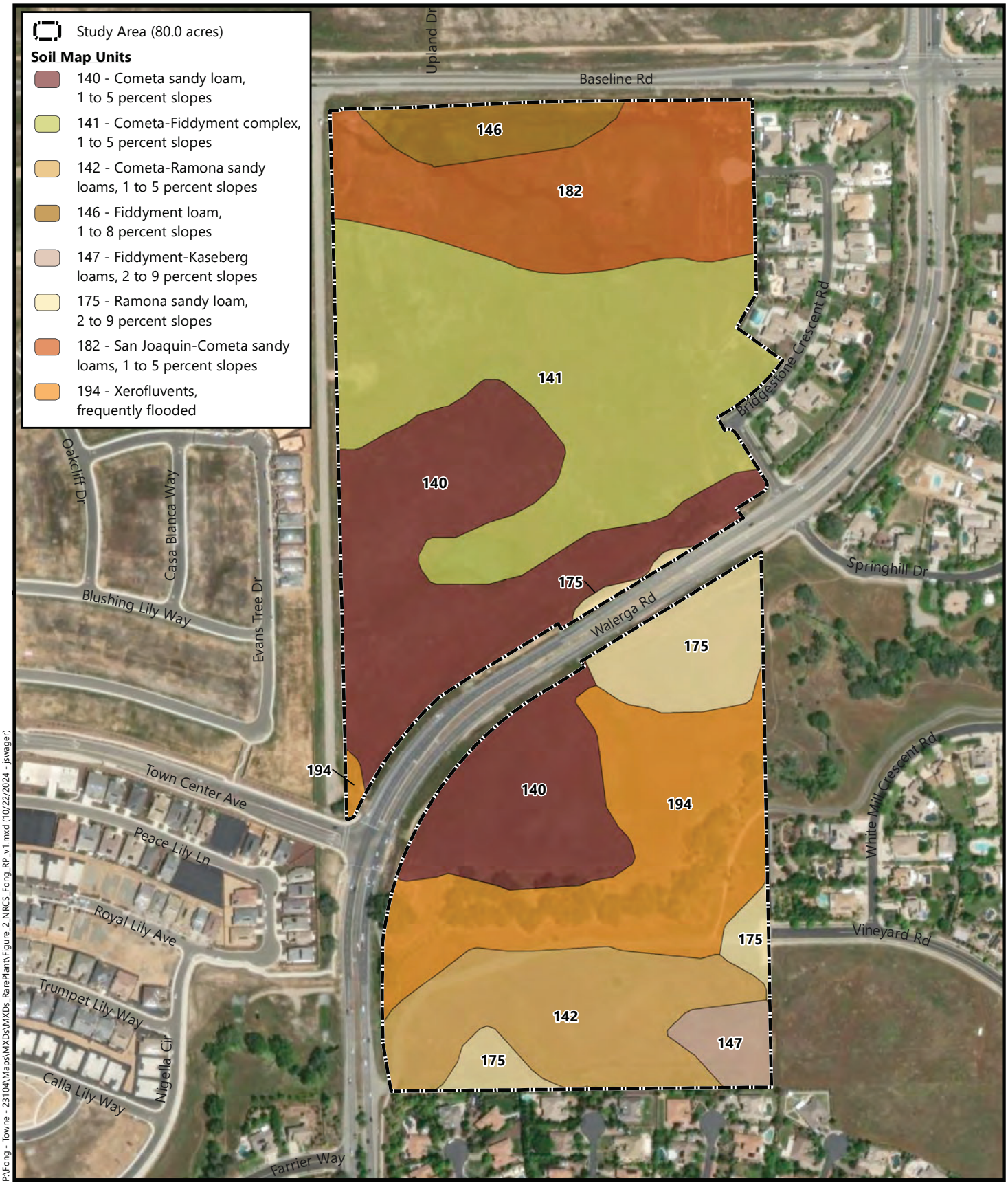
Source: United States Geologic Survey, 2023 and 2021
"Citrus Heights and Roseville, California" 7.5-Minute Topographic Quadrangles
Sections 6-7, Township 10 North, Range 6 East, MDBM
Latitude (NAD83): 38.747561°, Longitude (NAD83): -121.36253°

Figure 1
Site and Vicinity

Fong Property
Placer County, California

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* Figure not OCR Compatible



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Soil Survey Source: *USDA, Natural Resources Conservation Service Soil Survey Geographic (SSURGO) database for Placer County, California*
Aerial Source: Maxar, 26 April 2022

* Figure not OCR Compatible

Figure 2
Natural Resources Conservation Service Soils

Fong Property
Placer County, California

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Figure 3
Aquatic Resources

Fong Property
Placer County, California

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** Small summation errors may occur due to rounding*

Boundary Source: Placer County GIS Parcels
Aerial Source: Maxar, 26 April 2022

* Figure not OCR Compatible

Attachments

Attachment A: Botanist Qualifications

Attachment B: Target Plant Species Reference Population Information

Attachment C: Plant Species Observed within the Fong Property Study Area

Attachment A

Botanist Qualifications

Special-Status Plant Survey Botanist Qualifications

Tara Collins

Ms. Collins has a B.S. in Botany from Humboldt State University and more than 24 years of experience conducting botanical inventories. As a senior biologist, she specializes in rare plant surveys, constructed/restored wetland floristic monitoring, and open space preserve management. In addition to rare plant surveys, her botanical experience includes general vegetation surveys, aerial and field vegetation mapping, CRAM assessments, measuring and monitoring special-status species plant populations, and invasive species identification and mapping. Ms. Collins' experience includes a wide variety of upland and wetland vegetation communities including annual grassland, vernal pool complex, ephemeral and emergent wetlands, preserved and created/restored vernal pools, seasonal marshes, floodplain wetlands, managed marshes, oak woodlands, riparian woodland/scrub, chaparral, coastal sage scrub, Mojave Desert scrub, desert riparian, iodine bush scrub, alkali sink habitat, and coniferous forests. Her geographic expertise covers much of California, from Shasta County in the north to the Mojave Desert and San Gabriel Mountains in the south, and from Contra Costa County in the west to the Sierra Nevada foothills in the east. Her primary focus is on the Sacramento Valley and San Joaquin Valley.

Attachment B

Target Plant Species
Reference Population Information

Target Plant Species Reference Population Information for the Fong Property Special-Status Plant Survey

Plant Species	Location of Reference Population	Date of Visit	Phenology of Reference Population/ Distinctive Characteristics
Balsamorhiza macrolepis Big-scale balsamroot	Herbarium specimen at UC Davis Center for Plant Diversity Online Jepson Manual and Calflora	23 April 2019 March through May 2024	Pressed specimen. Similar to *Wyethia*, but with grey, dissected leaves. Leaves are mostly basal (as opposed to *Wyethia*, which has basal and cauline leaves).
Downingia pusilla Dwarf downingia	Woodcreek Oaks Open Space Preserve (CNDDB #142)	10 April 2024	Plants are just coming into bloom below *Plagiobothrys stipitatus* and *Ranunculus bonariensis*. Should be in full bloom in about a week.
Gratiola heterosepala Boggs Lake hedge-hyssop	Churchill Downs Wetland Preserve (CNDDB Occurrence #35)	29 April 2024	Hundreds to thousands of *Gratiola heterosepala* plants were observed in this location this year. About half were in bud and half in full bloom. Pool was not inundated, but soil was still saturated. Individuals of this species were also observed in an adjacent pool. That feature was drier, and the plants were half in bloom and half in fruit.
Juncus leiospermus var. *ahartii* Ahart's dwarf rush	Mather Regional Park (CNDDB Occurrence #8)	12 April 2024	A few plants scattered within the area; seems like a decent year for this species, but all of the plants are quite small. The plants were all in fruit, but the long style was still readily apparent on the top of the fruits.
Legenere limosa Legenere	Sacramento County (CNDDB Occurrence #27)	17 April 2024 20 May 2024	Pool is still inundated, but millions of plants are present, above the water level. Plants were still green and identifiable, with most in fruit but some still in flower.
Orcuttia tenuis Slender Orcutt grass	Herbarium specimen at UC Davis Center for Plant Diversity	23 April 2019	Pressed specimen. Leaves and leaf sheaths are continuous with no ligule, and lemmas are toothed.

Plant Species	Location of Reference Population	Date of Visit	Phenology of Reference Population/ Distinctive Characteristics
	Online Jepson Manual and Calflora	March through May 2024	Inflorescences are tall and slender in comparison to *Orcuttia viscida*, the only other *Orcuttia* species known to occur in the area.
Orcuttia viscida Sacramento Orcutt grass	Population at Phoenix Park in Sacramento County (CNDDB Occurrence #15)	5 June 2024	Only four plants were observed in this pool, where thousands have been observed in past years. An exhaustive search was not conducted, but there are clearly fewer plants, and those that are present are small. They were still green and identifiable to species. Other botanists state that populations at other locations did not decline as substantially this year.
Sagittaria sanfordii Sanford's arrowhead	Population in Laguna Creek north of Elk Grove Blvd in Elk Grove (CNDDB Occurrence #43)	20 May 2024	Plants were in early bloom, with some plants still entirely aquatic. Those that had terrestrial leaves exhibited the typical triangular cross-section, and the blooms and fruit made blooming plants readily identifiable to species.

Attachment C

Plant Species Observed within the Fong Property Study Area

Plant Species Observed within the Fong Property Study Area
30 April and 16 May 2024

Family / Species Name	Common Name	Native / Non-Native
ANACARDIACEAE		
Toxicodendron diversilobum	Western poison oak	Native
APIACEAE		
Anthriscus caucalis	Bur-chervil	Non-Native
Eryngium castrense	Great valley coyote-thistle	Native
ARISTOLOCHIACEAE		
Aristolochia californica	California pipevine	Native
ASTERACEAE		
Artemisia douglasiana	Mugwort	Native
Baccharis pilularis	Coyote brush	Native
Bidens frondosa	Sticktight	Native
Carduus pycnocephalus	Italian thistle	Non-Native
Centaurea solstitialis	Yellow star-thistle	Non-Native
Centromadia fitchii	Fitch's spikeweed	Native
Chondrilla juncea	Skeleton weed	Non-Native
Erigeron canadensis	Horseweed	Native
Holocarpha virgata	Slender tarweed	Native
Hypochaeris glabra	Smooth cat's-ear	Non-Native
Lactuca serriola	Prickly lettuce	Non-Native
Lasthenia glaberrima	Smooth goldfields	Native
Leontodon saxatilis	Hairy hawkbit	Non-Native
Logfia gallica	Daggerleaf cottonrose	Non-Native
Pseudognaphalium luteoalbum	Jersey cudweed	Non-Native
Psilocarphus chilensis	Round woolly-marbles	Native
Senecio vulgaris	Common groundsel	Non-Native
Sonchus asper	Prickly sow thistle	Non-Native
Sonchus oleraceus	Common sow thistle	Non-Native
BORAGINACEAE		
Amsinckia menziesii	Small-flowered fiddleneck	Native
Plagiobothrys stipitatus	Great valley popcorn flower	Native
BRASSICACEAE		
Brassica nigra	Black mustard	Non-Native
Raphanus sativus	Radish	Non-Native

Plant Species Observed within the Fong Property Study Area
30 April and 16 May 2024

Family / Species Name	Common Name	Native / Non-Native
CAMPANULACEAE		
Downingia bicornuta	Double-horned downingia	Native
Downingia ornatissima	Ornate downingia	Native
CARYOPHYLLACEAE		
Silene gallica	Windmill pink	Non-Native
Spergula arvensis	Starwort	Non-Native
CONVOLVULACEAE		
Convolvulus arvensis	Bindweed	Non-Native
CRASSULACEAE		
Crassula aquatica	Water pygmy weed	Native
Crassula tillaea	Moss pygmy weed	Non-Native
CYPERACEAE		
Carex praegracilis	Freeway sedge	Native
Cyperus eragrostis	Tall nutsedge	Native
Eleocharis macrostachya	Creeping spikerush	Native
EUPHORBIACEAE		
Croton setiger	Turkey-mullein	Native
FABACEAE		
Acmispon americanus	Spanish lotus	Native
Acmispon parviflorus	Hill lotus	Native
Lathyrus hirsutus	Caley pea	Non-Native
Lupinus bicolor	Miniature lupine	Native
Medicago polymorpha	Burclover	Non-Native
Melilotus indicus	Sour clover	Non-Native
Trifolium campestre	Hop clover	Non-Native
Trifolium cernuum	Nodding clover	Native
Trifolium dubium	Little hop clover	Non-Native
Trifolium glomeratum	Clustered clover	Non-Native
Trifolium hirtum	Rose clover	Non-Native
Trifolium incarnatum	Crimson clover	Non-Native
Trifolium subterraneum	Subterranean clover	Non-Native
Trifolium tomentosum	Woolly clover	Non-Native

Plant Species Observed within the Fong Property Study Area
30 April and 16 May 2024

Family / Species Name	Common Name	Native / Non-Native
FABACEAE, cont.		
Vicia sativa	Spring vetch	Non-Native
Vicia villosa	Winter vetch	Non-Native
FAGACEAE		
Quercus douglasii	Blue oak	Native
Quercus lobata	Valley oak	Native
Quercus wislizeni	Interior live oak	Native
GENTIANACEAE		
Zeltnera muehlenbergii	Monterey centaury	Native
GERANIACEAE		
Erodium botrys	Filaree	Non-Native
Geranium dissectum	Cut leaf geranium	Non-Native
ISOETACEAE		
Isoetes howellii	Howell's quillwort	Native
JUNCACEAE		
Juncus bufonius	Toad rush	Native
Juncus capitatus	Dwarf rush	Non-Native
Juncus effusus	Pacific rush	Native
LAMIACEAE		
Marrubium vulgare	White horehound	Non-Native
Mentha pulegium	Pennyroyal	Non-Native
Trichostema lanceolatum	Vinegar weed	Native
LYTHRACEAE		
Lythrum hyssopifolia	Hyssop loosestrife	Non-Native
MARSILEACEAE		
Pilularia americana	American pillwort	Native
MONTIACEAE		
Claytonia perfoliata	Miner's lettuce	Native

Plant Species Observed within the Fong Property Study Area
30 April and 16 May 2024

Family / Species Name	Common Name	Native / Non-Native
MORACEAE		
Morus alba	White mulberry	Non-Native
MYRSINACEAE		
Lysimachia arvensis	Scarlet pimpernel	Non-Native
ONAGRACEAE		
Clarkia purpurea	Purple clarkia	Native
Clarkia unguiculata	Woodland clarkia	Native
Epilobium campestre	Smooth Boisduvalia	Native
Epilobium ciliatum	Slender willow herb	Native
OROBANCHACEAE		
Castilleja attenuata	Valley tassels	Native
PAPAVERACEAE		
Eschscholzia californica	California poppy	Native
PHRYMACEAE		
Erythranthe guttata	Common monkeyflower	Native
PLANTAGINACEAE		
Callitriche marginata	Winged water starwort	Native
Gratiola ebracteata	Bractless hedge-hyssop	Native
Kickxia spuria	Fluellin	Non-Native
Veronica peregrina	Purslane speedwell	Native
POACEAE		
Aira caryophyllea	Silver hair grass	Non-Native
Alopecurus saccatus	Pacific foxtail	Native
Avena barbata	Slender wild oat	Non-Native
Briza maxima	Large quaking grass	Non-Native
Briza minor	Small quaking grass	Non-Native
Bromus diandrus	Ripgut grass	Non-Native
Bromus hordeaceus	Soft brome	Non-Native
Cynodon dactylon	Bermuda grass	Non-Native
Deschampsia danthonioides	Annual hair grass	Native
Elymus caput-medusae	Medusa head	Non-Native

Plant Species Observed within the Fong Property Study Area
30 April and 16 May 2024

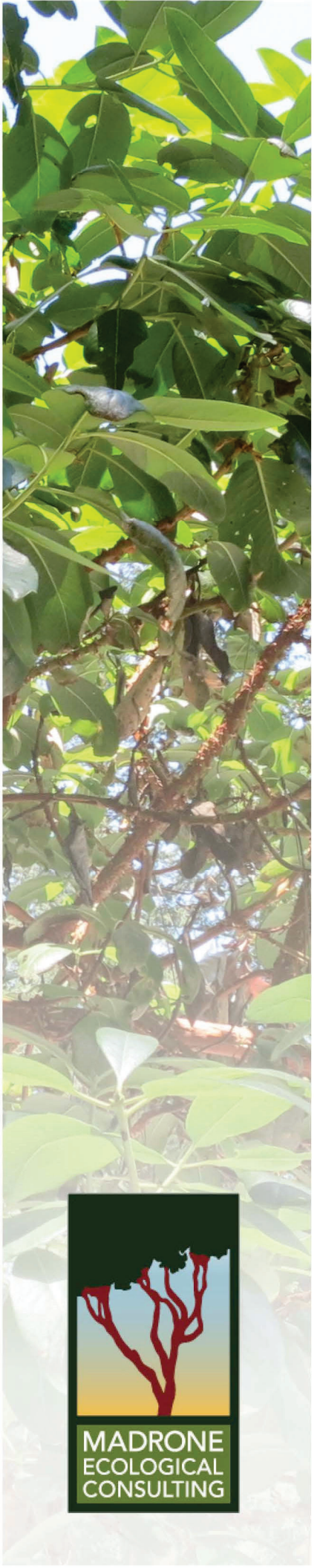
Family / Species Name	Common Name	Native / Non-Native
POACEAE, cont.		
Elymus triticoides	Beardless wild-rye	Native
Festuca myuros	Rattail fescue	Non-Native
Festuca perennis	Ryegrass	Non-Native
Glyceria declinata	Low manna grass	Non-Native
Hordeum marinum	Mediterranean barley	Non-Native
Hordeum murinum	Wall barley	Non-Native
Phalaris lemmonii	Lemmon's canary grass	Native
Polypogon monspeliensis	Annual beard grass	Non-Native
Stipa pulchra	Purple needle grass	Native
POLYGONACEAE		
Polygonum aviculare	Prostrate knotweed	Non-Native
Rumex californicus	California dock	Native
Rumex crispus	Curly dock	Non-Native
PTERIDACEAE		
Pentagramma triangularis	Goldback fern	Native
RANUNCULACEAE		
Ranunculus bonariensis	Vernal pool buttercup	Native
ROSACEAE		
Prunus dulcis	Almond	Non-Native
RUBIACEAE		
Galium aparine	Goose grass	Native
Sherardia arvensis	Field madder	Non-Native
SALICACEAE		
Populus fremontii	Fremont’s cottonwood	Native
THEMIDACEAE		
Brodiaea elegans	Harvest brodiaea	Native
Dipterostemon capitatus	Blue dicks	Native
Triteleia hyacinthina	White brodiaea	Native
Triteleia laxa	Ithuriel's spear	Native

Plant Species Observed within the Fong Property Study Area
30 April and 16 May 2024

Family / Species Name	Common Name	Native / Non-Native
VIBURNACEAE		
Sambucus mexicana	Elderberry	Native

Attachment G

90-Day Survey Report for 2024-25 Wet Season Surveys for Listed Large Branchiopods for Estia Dry Creek



90-Day Survey Report For 2024-2025 Wet Season Surveys for Listed Large Branchiopods

Estia Dry Creek

Placer County, California
July 2025

"I certify that the information in this survey report and attached exhibits fully and accurately represents my work."

Daria Snider, 11 July 2025
Permittee's USFWS Recovery Permit # 89994 B
Phone: (916) 822-3230

MADRONE ECOLOGICAL CONSULTING

Prepared for:

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Town Development of Sacramento
11060 White Rock Road, #150
Rancho Cordova, CA 95670
Email: CDickinson@hbtsac.com

Recommended Citation:

Madrone Ecological Consulting, LLC (Madrone). 2025. 90-*Day Survey Report for 2024-2025 Wet Season Surveys for Vernal Pool Branchiopods for Estia Dry Creek*. Prepared for Towne Development of Sacramento. Published on 11 July 2025.

CONTENTS

90-Day Survey Report
2024-2025 Wet Season Surveys for
Listed Large Branchiopods
Estia Dry Creek

1.0 INTRODUCTION ____ **1**

2.0 LOCATION ____ **1**

3.0 SURVEY AUTHORIZATION ____ **1**

4.0 SURVEY METHODS ____ **1**

5.0 GENERAL SITE CONDITIONS AND HABITATS ____ **3**

6.0 RESULTS ____ **3**

7.0 REFERENCES ____ **4**

Figures:

Figure 1. Site and Vicinity

Figure 2. Aquatic Resources

Attachments:

Attachment A. USFWS Survey Authorization

Attachment B. 2024-2025 Wet Season Survey Data Sheets

Attachment C. Representative Site Photographs

1.0 INTRODUCTION

The purpose of this report is to provide the results of wet season surveys for federally-listed large vernal pool branchiopods (listed large branchiopods) conducted by Madrone Ecological Consulting, LLC (Madrone) within the Estia Dry Creek Project (Study Area) during the 2024-2025 wet season. This report is intended to fulfill the mandatory reporting requirements of the U.S. Fish and Wildlife Service (USFWS) Recovery Permit issued to the permittee as listed on the cover page of this report and as described further below. Conditions within the Study Area during the 2024-2025 wet season were suitable for conducting surveys for listed large branchiopods. Target species included the federally endangered Conservancy fairy shrimp (*Branchinecta conservatio*) and vernal pool tadpole shrimp (*Lepidurus packardi*), as well as the federally-threatened vernal pool fairy shrimp (*Branchinecta lynchi*).

2.0 LOCATION

The combined area of the two parcels (Study Area) is approximately 80 acres. The Study Area is located south of Baseline Road, west of Crowder Lane, and both north and south of Walerga Road, in an unincorporated area of Placer County, California. Baseline Road marks the southern limit of the City of Roseville in the area. The Study Area is within Sections 6-7, Township 10 North, Range 6 East (MDB&M) of the "Citrus Heights, California" and "Roseville, California" 7.5-Minute Series USGS Topographic Quadrangles (USGS 2023 and 2021) (**Figure 1**). The approximate center of the Study Area is latitude 38.747561° and longitude -121.36253°. The property owner contact information is provided on the cover sheets of this report.

3.0 SURVEY AUTHORIZATION

Wet season surveys for listed large branchiopods were conducted under the authority of USFWS Recovery Permit for Madrone senior biologist Daria Snider (89994 B) issued under Section 10(a)(1)(A) of the Endangered Species Act, 16 U.S. Code 1531 et seq. and in accordance with the 13 November 2017 *Survey Guidelines for the Listed Large Branchiopods* (Guidelines) (USFWS 2017). Authorization to conduct wet season surveys was issued by the USFWS in an email from the Sacramento Fish and Wildlife Office on 4 December 2024 (**Attachment A).**

4.0 SURVEY METHODS

All "vernal pools" (as defined by Placer County below) within the Study Area were sampled. **Figure 2** is an exhibit of the sampled habitat features within the Study Area. Five vernal pools were sampled.

The HCP/PCCP requires that during implementation of the initial survey phase, all existing vernal pools be sampled to establish branchiopod occupancy rates for a future reserve system. This requirement modifies the survey methods of the Guidelines as outlined below:

- All vernal pools at a site be surveyed, rather than allowing for the survey to be terminated when presence on a project site is confirmed. If presence is confirmed for vernal pool fairy shrimp and

vernal pool tadpole shrimp in an individual vernal pool, surveys may be stopped for that vernal pool.

- All vernal pools on the project site must be surveyed. Surveys cannot be suspended prior to completion, as allowed by the Guidelines, if one or more of the six listed large branchiopods, identified in the Guidelines is determined to be present.
- The Guidelines define a complete survey as consisting of one wet-season and one dry-season survey conducted and completed in accordance with the Guidelines within a 3-year period. For the purposes of the HCP/PCCP, only one wet-season survey is required; dry-season surveys are not required.
- Data that will be collected at each vernal pool surveyed during the wet season survey will include the presence or absence of vernal pool fairy shrimp and vernal pool tadpole shrimp, species identity and the estimated abundance (10s, 100s, 1,000s) of immature and mature vernal pool fairy shrimp and vernal pool tadpole shrimp present and estimated maximum surface area of the vernal pool. Other information on the USFWS data sheet is not required to be collected (i.e., air and water temperature, average and estimated maximum depth of the vernal pool, presence of non-target crustaceans, insects, and platyhelminths, and habitat condition).
- Information will be recorded on the PCA-provided data sheet, which will be the USFWS data sheet (included as Appendix A to the Guidelines), modified to include the above information.
- Voucher specimens will not be collected during wet season surveys unless the identity of the mature shrimp is uncertain and cannot be identified in the field. The Guidelines allow for a limited number of voucher specimens to be collected for each vernal pool. For the purpose of the HCP/PCCP, the modified survey protocol further limits the collection of voucher specimens to instances where identity is uncertain.

A total of ten field surveys were conducted during the 2024-2025 wet season by Ms. Snider with the assistance of Lily Kalachik on the following dates: 5 December, 18 December 2024, 1 January, 15 January, 29 January, 12 February, 26 February, 10 March, 24 March, and 7 April 2025. As the Study Area lies within Survey Zone A (Southern Oregon, Sacramento Valley, San Francisco Bay Area, North Coast Ranges, Northern Sierra Valley Foothills, Cascade Range foothills, and South Coast Ranges) as defined in the Guidelines, surveys were timed to occur at 14-day intervals after initial inundation of habitat and continued until each potential habitat dried or a minimum of 90 consecutive days of inundation had occurred. Sampling was reinstated within 14 days of an individual habitat drying and inundating during the same wet season.

Sampling methods for features inundated during the survey dates were as follows: each sampled feature was first visually inspected for the presence of listed large branchiopods. Next, the habitat was sampled using a 5-foot-long dip net equipped with a 12-inch D-ring and 650-micron mesh. Net sampling involved making a series of pulls through the ponded habitat by extending the net out and pulling it back in a sweeping or zig-zag motion, occasionally gently bouncing the net at the bottom of the feature. The net was visually examined for captured organisms and then cleaned of debris between pulls. The number of pulls made in each feature was commensurate to feature size and ponding depth. All captured organisms were visually identified to the extent possible and were returned to the habitat they were captured from; no voucher specimens were collected. Data collected during each survey included date, air temperature, water temperature, weather conditions (e.g., sunny, overcast), present maximum depth of each sampled

feature, and hydrology/ponding. If listed large branchiopods were captured, the number of individuals in each feature was estimated in an order of magnitude (e.g., 10s, 100s, 1000s) and recorded.

5.0 GENERAL SITE CONDITIONS AND HABITATS

The Study Area is bounded by an undeveloped area to the north (north of Baseline Road), residential subdivisions to the east and south, and to the west by in-progress residential construction. The Study Area is mostly undeveloped, with the exception of the Walerga Road corridor, which runs southwest to northeast through the site, and a paved bike path that crosses through the southern portion of the site. Undeveloped areas are comprised of non-native annual grassland on gently rolling terrain. The bike path parallels the south side of an intermittent tributary drainage of Dry Creek that bisects the southern portion of the Study Area. The intermittent drainage is bordered by mixed oak woodland that supports native valley oak (*Quercus lobata*), blue oak (*Q. douglasii*), and interior live oak *(Q. wislizenii*).

The Study Area is dominated by annual grassland that is interspersed with an assemblage of vernal pools and seasonal wetlands. Vegetation within the annual grassland is dominated by non-native grasses and forbs such as wild oat (*Avena fatua*), soft brome (*Bromus hordeaceus*), medusa head (*Elymus caput-medusae*), ryegrass (*Festuca perennis*), winter vetch (*Vicia villosa*), and caley pea (*Lathyrus hirsutus*). The understory is primarily comprised of western poison oak (*Toxicodendron diversilobum*), California pipevine (*Aristolochia californica*), and species found in the surrounding annual brome grassland.

6.0 RESULTS

Wet season surveys for large vernal pool branchiopods were conducted within the Estia Dry Creek Study Area by a permitted Madrone biologist during the 2024-2025 wet season. Wet season conditions were suitable for conducting surveys for listed large branchiopods and surveys were conducted following the Survey Zone A protocol outlined in the Guidelines. All captured organisms were visually identified to the extent possible and were returned to the habitat they were captured from; no voucher specimens were collected.

Attachment B contains the wet season data sheets from each sampling event and provides detailed sampling data. **Attachment C** includes the representative photographs taken of the Study Area during the 2024-2025 wet season surveys.

No listed large branchiopods were observed within the Study Area during the 2024-2025 wet season surveys. Other large branchiopods observed during the surveys included the common California fairy shrimp (*Linderiella occidentalis*) which was documented in two features. Aquatic invertebrates observed included micro-turbellaria, ostracods, cladocera, and copepods.

7.0 REFERENCES

Eriksen, C.H., and D. Belk. 1999. *Fairy Shrimps of California's Puddles, Pools, and Playas*. Mad River Press, Inc., Eureka, California.

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U.S. Department of the Interior, Geological Survey (USGS). 2021. "Roseville, California" 7.5-minute Quadrangle. Geological Survey. Denver, Colorado.

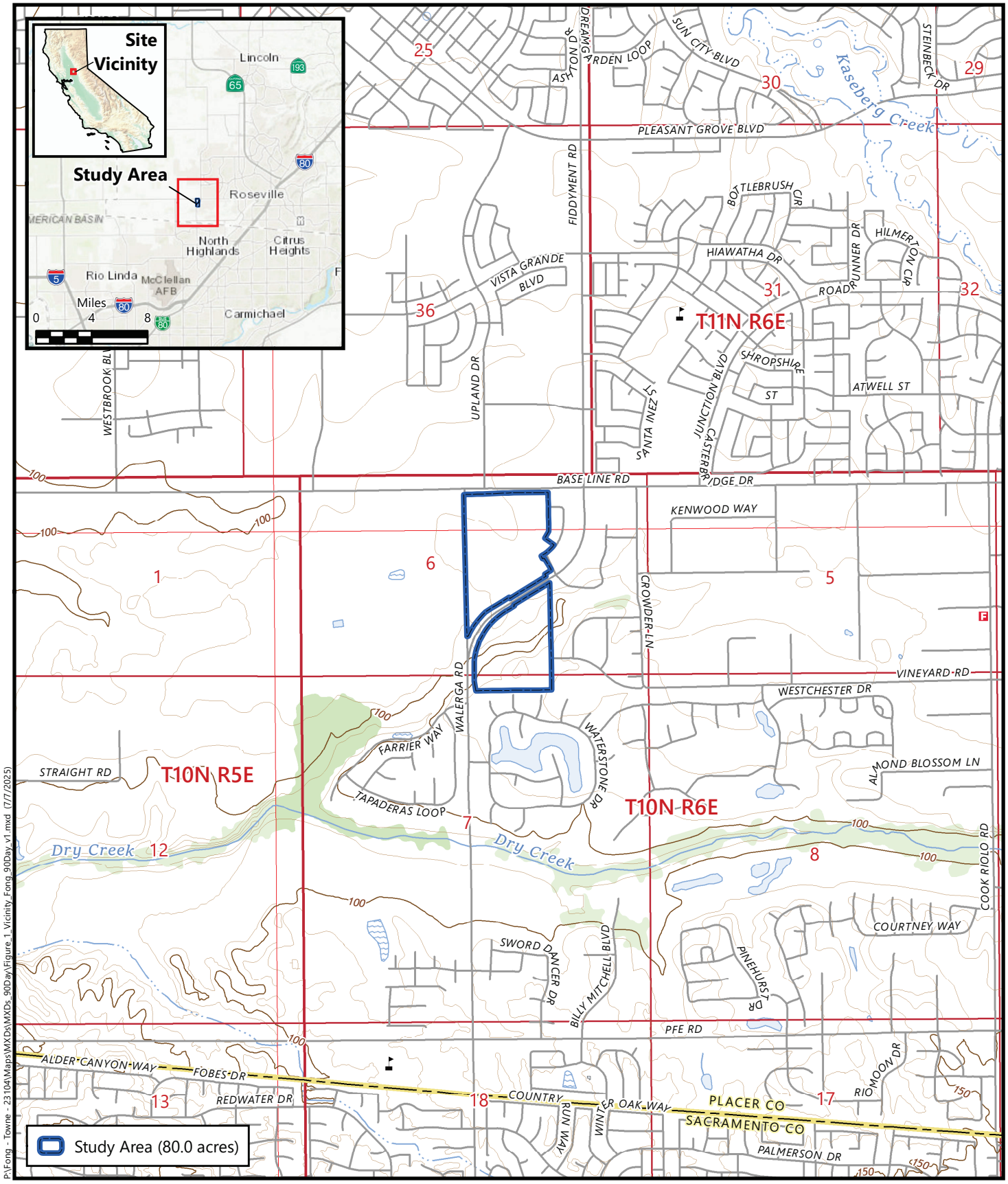
U.S. Department of the Interior, Geological Survey (USGS). 2023. "Citrus Heights, California" 7.5-minute Quadrangle. Geological Survey. Denver, Colorado.

U.S. Department of the Interior, Fish and Wildlife Service. 2017. Survey *Guidelines for the Listed Large Branchiopods*. Sacramento, California. Revised 13 November 2017.

Figures

Figure 1. Site and Vicinity

Figure 2. Aquatic Resources



P:\Fong - Towne - 23104\Maps\MXDs\MXDs_90Day\Figure_1_Vicinity_Fong_90Day_v1.mxd (7/7/2025)

Source: United States Geologic Survey, 2023 and 2021
"Citrus Heights and Roseville, California" 7.5-Minute Topographic Quadrangles
Sections 6-7, Township 10 North, Range 6 East, MDBM
Latitude (NAD83): 38.747561°, Longitude (NAD83): -121.36253°

Figure 1
Site and Vicinity

Estia Dry Creek
Placer County, California

MADRONE ECOLOGICAL CONSULTING

* Figure not OCR Compatible



P:\Fong - Towne - 23104\Maps\MXDs\MXDs_90Day\Figure_2_AquaticRes_Fong_90Day_v1.mxd (7/7/2025 - jswager)

Figure 2
Aquatic Resources

Estia Dry Creek
Placer County, California

MADRONE ECOLOGICAL CONSULTING

** Small summation errors may occur due to rounding*

Boundary Source: Placer County GIS Parcels
Aerial Source: Maxar, 26 April 2022

* Figure not OCR Compatible

Attachments

Attachment A. USFWS Survey Authorization

Attachment B. 2024-2025 Wet Season Survey Data Sheets

Attachment C. Representative Site Photographs

Attachment A

USFWS Survey Authorization

From:	SFWO Permits, FW8
To:	Daria Snider
Cc:	Sarah Vonderohe; Cook, Megan T;
Subject:	Re: [EXTERNAL] Request to Conduct Wet-Season and Dry-Season Vernal Pool Branchiopod Surveys - Estia Dry Creek
Sent:	12/4/2024 1:33:48 PM

Hello,

Thank you for the email. We have reviewed your request and approve the wet season survey with vernal pool branchiopods. By conducting activities with listed species under the recovery permit, you agree to follow the Special Terms and Conditions of the permit. Failure to do so will result in suspension or revocation of the recovery permit. Please remember to carry a copy of the permit while performing authorized activities. This authorization does not include access to the property, which must be arranged with the landowner or manager.

Within 90 days following completion of the final presence/absence survey for the vernal pool branchiopods, a report shall be submitted to fw8_sfwo_permits@fws.gov and the Sacramento Valley Division Supervisor, Megan Cook (megan_cook@fws.gov). The report will include all reporting criteria specified in the Survey Guidelines for the Listed Large Branchiopods. For surveys with negative results and for incomplete surveys (e.g., projects put on hold or withdrawn) a survey report is still required. Survey reports shall include:

1. i) Title, ii) permit number, iv) permittee name and their respective contact details, v) the location/GPS coordinates, vi) number and dates of surveys, vii) the activities completed, and viii) date of preparation on the report;
2. GIS data or GPS coordinates. The location of the listed vernal pool branchiopods (i.e., pools, swales, ponds) shall be plotted in as precise a manner as possible on 1:24,000 or closer scale map(s) of the survey area. Maps shall be either topographic or aerial photography with roads and place names identified (where available). Surface features on the map shall be readable and not masked out by other information. Maps shall identify the scale and include a North Arrow;
3. All vernal pool data sheets should be included as attachments to this final report. Vernal pool datasheets will not solely be submitted as a final report for any one project site;
4. The following certification statement signed by each surveyor performing activities in independent status pursuant to this permit: “I certify that the information in this survey report and attached exhibits fully and accurately represents my work.” The date of signature and the surveyor’s permit number shall be included; and
5. All other information required in the Survey Guidelines for the Listed Large Branchiopods and 90-Day Survey Report section of the permit.

Please email fw8_sfwo_permits@fws.gov if you have additional questions.

Thank you,

Sacramento Fish and Wildlife Office

10(a)(1)(A) Recovery Permitting | **Sacramento Fish and Wildlife Office**
Pacific Southwest Region | U.S. Fish and Wildlife Service

Helpful Links: ePermits | Pacific Southwest Recovery Permitting | Minimum Qualifications | Survey Protocols | Vernal Pool Branchiopod Practical Exams

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From: Daria Snider <dsnider@MadroneEco.com>
Sent: Friday, November 22, 2024 12:11 PM
To: SFWO Permits, FW8 <FW8_SFWO_Permits@fws.gov>
Cc: Sarah Vonderohe <svonderohe@MadroneEco.com>; Cook, Megan T <megan_cook@fws.gov>
Subject: [EXTERNAL] Request to Conduct Wet-Season and Dry-Season Vernal Pool Branchiopod Surveys - Estia Dry Creek

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Hi,

I would like to request permission to conduct wet season sampling for federally listed vernal pool branchiopods within the Estia Dry Creek Survey Area in Placer County, California (**Figure 1**). The Survey Area is located within the Placer County Conservation Plan (PCCP) Area and the results of the surveys will be reported to the PCCP (County) per the Plan guidance. We will only be surveying the depressional vernal pools and any seasonal wetlands that function as vernal pools within the PCCP Area, as swales are not

required to be surveyed according to the PCCP guidance. Please see the request to sample below and let me know if you have any questions. The authorized work would be conducted under the following permits: Dustin Brown (TE85084C-0; pending), Bonnie Peterson (TE205600-1), Daria Snider (TE89994B-0), Tara Collins (ESPER0121456) and Matthew Shaffer (ESPER4207925).

Purpose

The purpose of the survey is to determine the abundance of federally-listed vernal pool branchiopods within the Survey Area. Knowing which species are present within the Survey Area will assist the PCCP in mitigation planning.

Methods

The surveys will be conducted according to the *Survey Guidelines for the Listed Large Branchiopods* (Guidelines), updated in November 2017; with the modification that only vernal pools and any seasonal wetlands that function as vernal pools will be sampled.

Proposed Survey Schedule

Wet-season sampling of 4 vernal pools totaling 1.01 acres and up to 20 seasonal wetlands totaling 0.20 acre will commence following approval from the Service and when sufficient rain has fallen to inundate the features and will occur every 14-days until the feature has dried or has been inundated for 90-consecutive days. The final number of wetlands (and associated acreage) sampled will depend on how many of the seasonal wetlands appear to be functioning as vernal pools.

Location/UTM Coordinates

The approximately 80-acre Survey Area is located south of Baseline Road and north and south of Walerga Road in western Placer County, California and corresponds to portions of Sections 6 and 7, Township 10 North, and Range 6 East of the "Citrus Heights, California" and "Roseville, California" 7.5-minute quadrangles (U.S. Geological Survey 2023 and 2021). The approximate center of the Study Area is located at Longitude -121.36253, Latitude 38.747561 (**Figure 1**).

Site Description and Proposed Survey Features/Wetland Acreages

The Survey Area is located in the Sacramento Valley at an elevation of approximately 100 feet above mean sea level. It is comprised of ungrazed annual brome grasslands. There are 4 vernal pools totaling 1.01 acres and 20 seasonal wetlands totaling 0.20 acre within the Survey Area that may represent potential habitat for federally-listed vernal pool branchiopods (**Figure 2**).

Land Owner

The contact information for the Survey Area land owner is:

Fong Family Trust
7919 Folsom Blvd #340
Sacramento, CA 95826

Recovery of the Species

By conducting branchiopod surveys within the Survey Area, we will potentially provide additional species distribution data. An accumulation of such information may enhance the understanding of the biology and ecology of vernal pool crustaceans, and allow us to better manage, protect, and promote the recovery of these species.

If you have any questions or need additional information, please do not hesitate to contact me at (916) 822-3230 or dsnider@madroneeco.com.

Daria Snider
Senior Biologist

MADRONE ECOLOGICAL CONSULTING

8421 Auburn Blvd.
Suite #248,
Citrus Heights, CA 95610

Office: (916) 822-3230
Direct: (916) 822-2998
Cell: (916) 206-1686
www.madroneeco.com

DGS SBE, SBA WOSB,
CPUC WBE, and SMUD SEED

Attachment B

2024-2025 Wet Season Survey Data Sheets

Detailed Sampling Data			
Feature No.	Latitude (°N)	Longitude (°W)	Feature Surface Area (sq ft)
South VP1	38.746478	-121.360478	3,121
South VP2	38.743162	-121.361297	197
North VP1	38.751659	-121.364503	14,295
North VP2	38.751663	-121.363377	1,300
North VP3	38.747798	-121.363378	25,025

Wet Season Survey Data Sheet

MADRONE ECOLOGICAL CONSULTING

Project Name: Estia Dry Creek

Survey Date: 12/5/2024 | **Weather Conditions: Partly cloudy** | **Permit #: 89994 B**

Start Time: 9:20am | **Start Air Temperature (°C): 11.5** | **Permitted Biologist: Daria Snider**

End Time: 10:45am | **End Air Temperature (°C): 14.4** | **Assisted By:**

					Crustacea										Insecta													Herps		Habitat Condition				Land Use					
									Large Branchiopods						Coleoptera			Diptera			Hemiptera			Odonata								Disturbed				Grazed				
Feature No.	Water Temperature (°C)	Present Ponded Depth (cm)	Current % Surface Area	Micro-Turbellaria	Amphipoda	Cladocera	Copepoda	Ostracoda	BRLY	BRME	CYCA	LEPA	LIOC	LYBR	Dytiscidae	Hydrophilidae	Haliplidae	Chironomidae	Culicidae	Ephemeroptera	Corixidae	Notonectidae	Limnephilidae	Zygoptera	Anisoptera	Gastropoda	Hydracaini	*Bufo boreas*	*Pseudacris sierra*	Undisturbed	Tire Ruts	Garbage	Plowed or Disked	Fallow	Agriculture	Light	Moderate	Heavy
South																																							
VP2	0	0	Dry																											X			X					
VP1	0	0	Dry																											X				X				
North																																							
VP3	0	0	Dry																													X		X					
VP2	10.6	12	25				X	X																								X							
VP1	9.3	18	50				X																							X				X				

Wet Season Survey Data Sheet

MADRONE ECOLOGICAL CONSULTING

Project Name: Estia Dry Creek

Survey Date: 12/18/2024 | **Weather Conditions: cloudy** | **Permit #: 89994 B**

Start Time: 10:11 am | **Start Air Temperature (°C): 10.2** | **Permitted Biologist: Daria Snider**

End Time: 11:50 am | **End Air Temperature (°C): 11.2** | **Assisted By: Lily Kalachik**

					Crustacea										Insecta													Herps		Habitat Condition				Land Use				
									Large Branchiopods						Coleoptera			Diptera			Hemiptera			Odonata							Disturbed				Grazed			
Feature No.	Water Temperature (°C)	Present Ponded Depth (cm)	Current % Surface Area	Micro-Turbellaria	Amphipoda	Cladocera	Copepoda	Ostracoda	BRLY	BRME	CYCA	LEPA	LIOC	LYBR	Dytiscidae	Hydrophilidae	Haliplidae	Chironomidae	Culicidae	Ephemeroptera	Corixidae	Notonectidae	Limnephilidae	Zygoptera	Anisoptera	Gastropoda	Hydracaini	*Bufo boreas*	*Pseudacris sierra*	Undisturbed	Tire Ruts	Garbage	Plowed or Disked	Fallow	Agriculture	Light	Moderate	Heavy
South																																						
VP2	9.5	21	100	NAIO																									X				X				
VP1	9.5	12	20	NAIO																								E	X				X				
North																																						
VP1	10.7	23	100	X			X	X											X		X							E		X			X				
VP2	10.4	19	90	X			X																						X				X				
VP3	11.3	18	100			X										X													X				X				

Wet Season Survey Data Sheet

MADRONE ECOLOGICAL CONSULTING

Project Name: Estia Dry Creek

Survey Date: 1/1/25 | **Weather Conditions: overcast, calm** | **Permit #: 89994 B**

Start Time: 11:30 am | **Start Air Temperature (°C): 14.6** | **Permitted Biologist: Daria Snider**

End Time: 1:30 pm | **End Air Temperature (°C): 14.4** | **Assisted By:**

					Crustacea										Insecta													Herps		Habitat Condition				Land Use					
									Large Branchiopods						Coleoptera			Diptera			Hemiptera			Odonata							Disturbed				Grazed				
Feature No.	Water Temperature (°C)	Present Ponded Depth (cm)	Current % Surface Area	Micro-Turbellaria	Amphipoda	Cladocera	Copepoda	Ostracoda	BRLY	BRME	CYCA	LEPA	LIOC	LYBR	Dytiscidae	Hydrophilidae	Haliplidae	Chironomidae	Culicidae	Ephemeroptera	Corixidae	Notonectidae	Limnephilidae	Zygoptera	Anisoptera	Gastropoda	Hydracaini	*Bufo boreas*	*Pseudacris sierra*	Undisturbed	Tire Ruts	Garbage	Plowed or Disked	Fallow	Agriculture	Light	Moderate	Heavy
North																																							
VP1	13.2	5	75	X			X	X								X													X				X				
VP2	13.4	7	85	X																									X				X				
VP3	12.3	9	70	X		X		X																					X				X				
South																																							
VP1	11.5	6.5	80	X		X		X																					X				X				
VP2	11.8	9	90	X		X		X					X 1000s immature																X				X				

Large Branchiopods: BRLY = *Branchinecta lynchi,* BRME = *Branchinecta mesovallensis,* LIOC = *Linderiella occidentalis,* LEPA = *Lepidurus packardi,* CYCA = *Cyzicus californicus,* LYBR = *Lynceus brachyurus*

Land Use: Grazed (C = cattle, H = horse, S = sheep, O = other)

Hydrology: S = saturated, N/P = not ponded

X = species present, **Large Branchiopods abundance =** (1's, 10's, 100's, 1000's)

Wet Season Survey Data Sheet

MADRONE ECOLOGICAL CONSULTING

Project Name: Estia Dry Creek

Survey Date: 1/15/25 | **Weather Conditions: sunny** | **Permit #: 89994 B**

Start Time: 2:00 pm | **Start Air Temperature (°C): 17.3** | **Permitted Biologist: Daria Snider**

End Time: 4:08 pm | **End Air Temperature (°C):16.1** | **Assisted By:**

					Crustacea										Insecta														Herps		Habitat Condition				Land Use					
									Large Branchiopods						Coleoptera			Diptera			Hemiptera			Odonata								Disturbed					Grazed				
Feature No.	Water Temperature (°C)	Present Ponded Depth (cm)	Current % Surface Area	Micro-Turbellaria	Amphipoda	Cladocera	Copepoda	Ostracoda	BRLY	BRME	CYCA	LEPA	LIOC	LYBR	Dytiscidae	Hydrophilidae	Haliplidae	Chironomidae	Culicidae	Ephemeroptera	Corixidae	Notonectidae	Limnephilidae	Zygoptera	Anisoptera	Gastropoda	Hydracaini	*Bufo boreas*	*Pseudacris sierra*	Undisturbed	Tire Ruts	Garbage	Plowed or Disked	Fallow	Agriculture	Light	Moderate	Heavy
North																																							
VP1	15	16	60	X		X	X	X							X				X		X												X	X					
VP2	15.2	18	75	X		X	X	X					1s		X																X		X						
VP3	14	26	99	X		X	X	X								X		X			X								14L	X				X					
South																																							
VP2	11	12	30	X			X	X					1000s																		X				X					
VP1	13.3	22	98	X		X	X																						8L	X				X					

Wet Season Survey Data Sheet

MADRONE ECOLOGICAL CONSULTING

Project Name: Estia Dry Creek

Survey Date: 1/29/25 | **Weather Conditions: sunny** | **Permit #: 89994 B**

Start Time: 11:00 am | **Start Air Temperature (°C): 13.0** | **Permitted Biologist: Daria Snider**

End Time: 12:30 pm | **End Air Temperature (°C): 16.1** | **Assisted By:**

Feature No.	Water Temperature (°C)	Present Ponded Depth (cm)	Current % Surface Area	Micro-Turbellaria	Crustacea										Insecta												Herps		Habitat Condition				Land Use					
									Large Branchiopods						Coleoptera			Diptera			Hemiptera			Odonata							Disturbed				Grazed				
					Amphipoda	Cladocera	Copepoda	Ostracoda	BRLY	BRME	CYCA	LEPA	LIOC	LYBR	Dytiscidae	Hydrophilidae	Haliplidae	Chironomidae	Culicidae	Ephemeroptera	Corixidae	Notonectidae	Limnephilidae	Zygoptera	Anisoptera	Gastropoda	Hydracaini	*Bufo boreas*	*Pseudacris sierra*	Undisturbed	Tire Ruts	Garbage	Plowed or Disked	Fallow	Agriculture	Light	Moderate	Heavy
South																																						
VP2	Dry	--	--																																			
VP1	8.3	12	50	X		X	X	X																				22L		X			X					
North																																						
VP1	13.2	13	30	X		X	X	X							X				X			X							X				X					
VP2	Dry	--	--																																			
VP3	10.5	22	80	X		X	X	X							X	X			X									12L	X				X					

Large Branchiopods: BRLY = *Branchinecta lynchi,* BRME = *Branchinecta mesovallensis,* LIOC = *Linderiella occidentalis,* LEPA = *Lepidurus packardi,* CYCA = *Cyzicus californicus,* LYBR = *Lynceus brachyurus*

Land Use: Grazed (C = cattle, H = horse, S = sheep, O = other)

Hydrology: S = saturated, N/P = not ponded

X = species present, **Large Branchiopods abundance =** (1's, 10's, 100's, 1000's)

Wet Season Survey Data Sheet

MADRONE ECOLOGICAL CONSULTING

Project Name: Estia Dry Creek

Survey Date: 2/12/25 | **Weather Conditions: partly cloudy** | **Permit #: 89994 B**

Start Time: 10:00 am | **Start Air Temperature (°C): 9.0** | **Permitted Biologist: Daria Snider**

End Time: 11:45 am | **End Air Temperature (°C): 8.6** | **Assisted By: Lily Kalachik**

					Crustacea										Insecta													Herps		Habitat Condition				Land Use					
									Large Branchiopods						Coleoptera			Diptera			Hemiptera			Odonata								Disturbed					Grazed		
Feature No.	Water Temperature (°C)	Present Ponded Depth (cm)	Current % Surface Area	Micro-Turbellaria	Amphipoda	Cladocera	Copepoda	Ostracoda	BRLY	BRME	CYCA	LEPA	LIOC	LYBR	Dytiscidae	Hydrophilidae	Haliplidae	Chironomidae	Culicidae	Ephemeroptera	Corixidae	Notonectidae	Limnephilidae	Zygoptera	Anisoptera	Gastropoda	Hydracaini	*Bufo boreas*	*Pseudacris sierra*	Undisturbed	Tire Ruts	Garbage	Plowed or Disked	Fallow	Agriculture	Light	Moderate	Heavy
South																																						
VP2	4.5	19	95	X			X	X																					X				X				
VP1	5.2	20	100			X	X	X											X									70L		X			X				
North																																						
VP1	8.2	23	100	X		X	X	X							X													1L	X				X				
VP2	8.0	21	100	X				X																							X		X					
VP3	8.3	33	100			X	X								X													30L/40E					X				

Wet Season Survey Data Sheet

MADRONE ECOLOGICAL CONSULTING

Project Name: Estia Dry Creek

Survey Date: 2/26/25 | **Weather Conditions: sunny, light breeze** | **Permit #: 89994 B**

Start Time: 9:00 am | **Start Air Temperature (°C): 14.5** | **Permitted Biologist: Daria Snider**

End Time: 10:50 am | **End Air Temperature (°C): 17.3** | **Assisted By:**

					Crustacea										Insecta													Herps		Habitat Condition				Land Use					
									Large Branchiopods						Coleoptera			Diptera			Hemiptera			Odonata							Disturbed				Grazed				
Feature No.	Water Temperature (°C)	Present Ponded Depth (cm)	Current % Surface Area	Micro-Turbellaria	Amphipoda	Cladocera	Copepoda	Ostracoda	BRLY	BRME	CYCA	LEPA	LIOC	LYBR	Dytiscidae	Hydrophilidae	Haliplidae	Chironomidae	Culicidae	Ephemeroptera	Corixidae	Notonectidae	Limnephilidae	Zygoptera	Anisoptera	Gastropoda	Hydracaini	*Bufo boreas*	*Pseudacris sierra*	Undisturbed	Tire Ruts	Garbage	Plowed or Disked	Fallow	Agriculture	Light	Moderate	Heavy
South																																							
VP2	9.0	14	70	X			X	X					X 100s/12imm.																X				X				
VP1	9.9	26	100	X		X	X	X							X														70L		X			X				
North																																							
VP1	12	22	95	X		X		X							X				X		X								1L	X				X				
VP2	13.0	17	60	X		X	X	X																								X		X				
VP3	13.6	40	100	X		X	X	X							X	X						X							14L	X				X				

Wet Season Survey Data Sheet

MADRONE ECOLOGICAL CONSULTING

Project Name: Estia Dry Creek

Survey Date: 3/10/25 | **Weather Conditions: sunny** | **Permit #: 89994 B**

Start Time: 1:00 pm | **Start Air Temperature (°C): 18.6** | **Permitted Biologist: Daria Snider**

End Time: 2:30 pm | **End Air Temperature (°C): 22.3** | **Assisted By:**

Feature No.	Water Temperature (°C)	Present Ponded Depth (cm)	Current % Surface Area	Micro-Turbellaria	Crustacea										Insecta												Herps		Habitat Condition				Land Use					
									Large Branchiopods						Coleoptera			Diptera			Hemiptera			Odonata							Disturbed				Grazed				
					Amphipoda	Cladocera	Copepoda	Ostracoda	BRLY	BRME	CYCA	LEPA	LIOC	LYBR	Dytiscidae	Hydrophilidae	Haliplidae	Chironomidae	Culicidae	Ephemeroptera	Corixidae	Notonectidae	Limnephilidae	Zygoptera	Anisoptera	Gastropoda	Hydracaini	*Bufo boreas*	*Pseudacris sierra*	Undisturbed	Tire Ruts	Garbage	Plowed or Disked	Fallow	Agriculture	Light	Moderate	Heavy
South																																						
VP2	Dry	--	--																																			
VP1	17.5	25	85	X		X		X							X							X							36L		X			X					
North																																						
VP1	29.6	11	30	X		X		X							X													12L			X		X					
VP2	Dry	--	--																																			
VP3	18.6	37	85	X		X	X	X							X				X		X								38L			X		X					

Large Branchiopods: BRLY = *Branchinecta lynchi,* BRME = *Branchinecta mesovallensis,* LIOC = *Linderiella occidentalis,* LEPA = *Lepidurus packardi,* CYCA = *Cyzicus californicus,* LYBR = *Lynceus brachyurus*

Land Use: Grazed (C = cattle, H = horse, S = sheep, O = other)

Hydrology: S = saturated, N/P = not ponded

X = species present, **Large Branchiopods abundance =** (1's, 10's, 100's, 1000's)

Wet Season Survey Data Sheet

MADRONE ECOLOGICAL CONSULTING

Project Name: Estia Dry Creek

Survey Date: 3/24/25 | **Weather Conditions: sunny** | **Permit #: 89994 B**

Start Time: 9:30 am | **Start Air Temperature (°C): 18.1** | **Permitted Biologist: Daria Snider**

End Time: 11:15 am | **End Air Temperature (°C): 16** | **Assisted By:**

Feature No.	Water Temperature (°C)	Present Ponded Depth (cm)	Current % Surface Area	Micro-Turbellaria	Crustacea										Insecta												Gastropoda	Hydracaini	Herps		Habitat Condition				Land Use				
									Large Branchiopods						Coleoptera			Diptera		Ephemeroptera	Hemiptera		Limnephilidae	Odonata								Disturbed						Grazed		
					Amphipoda	Cladocera	Copepoda	Ostracoda	BRLY	BRME	CYCA	LEPA	LIOC	LYBR	Dytiscidae	Hydrophilidae	Haliplidae	Chironomidae	Culicidae		Corixidae	Notonectidae		Zygoptera	Anisoptera			*Bufo boreas*	*Pseudacris sierra*	Undisturbed	Tire Ruts	Garbage	Plowed or Disked	Fallow	Agriculture	Light	Moderate	Heavy
South																																						
VP2	15.0	11	50	X			X	X					X 10s imm.						X											X				X				
VP1	13.8	30	98	X		X		X																					46L		X			X				
North																																						
VP1	16.8	16	100												X				X											X				X				
VP2	16.2	14	70				X									X													X				X				
VP3	18.0	30	85	X		X		X							X				X		X	X							1L	X		X		X				

Wet Season Survey Data Sheet

MADRONE ECOLOGICAL CONSULTING

Project Name: Estia Dry Creek

Survey Date: 4/7/25 | **Weather Conditions: partly cloudy** | **Permit #: 89994 B**

Start Time: 5:00 pm | **Start Air Temperature (°C): 22.9** | **Permitted Biologist: Daria Snider**

End Time: 6:00 pm | **End Air Temperature (°C): 21.1** | **Assisted By:**

					Crustacea										Insecta													Herps		Habitat Condition				Land Use					
									Large Branchiopods						Coleoptera			Diptera			Hemiptera			Odonata							Disturbed				Grazed				
Feature No.	Water Temperature (°C)	Present Ponded Depth (cm)	Current % Surface Area	Micro-Turbellaria	Amphipoda	Cladocera	Copepoda	Ostracoda	BRLY	BRME	CYCA	LEPA	LIOC	LYBR	Dytiscidae	Hydrophilidae	Haliplidae	Chironomidae	Culicidae	Ephemeroptera	Corixidae	Notonectidae	Limnephilidae	Zygoptera	Anisoptera	Gastropoda	Hydracaini	*Bufo boreas*	*Pseudacris sierra*	Undisturbed	Tire Ruts	Garbage	Plowed or Disked	Fallow	Agriculture	Light	Moderate	Heavy
South																																							
VP2	Dry	--	--																																				
VP1	22.7		20			X	X	X							X	X					X								75L	X				X					
North																																							
VP1	Dry	--	--																																				
VP2	Dry	--	--																																				
VP3	22.9	24	55	X				X							X	X			X			X							36L	X				X					

Attachment C

Representative Site Photographs



Photograph 1. Taken from east of VP-2 South facing west on 24 March 2025. DS. (38.74358, -121.361369) Thousands of *Linderiella occidentalis* were found in this feature.



Photograph 2. Taken from south of VP-1 South facing north on 24 March 2025. DS. (38.746412, -121.360313)

* Figures not OCR Compatible



Photograph 3. Taken from north of VP-3 North facing south on 24 March 2025. DS. (38.74812, -121.36401).



Photograph 4 Taken from northeast of VP-3 North facing southwest on 7 April 2025. DS (38.747836, -121.36299).

* Figures not OCR Compatible



Photograph 5. Taken from south of VP-1 South facing north on 7 April 2025. DS. (38.740283, -121.35863).

* Figure not OCR Compatible

APPENDIX E

Project No.
24860.000.001

December 26, 2023

Mr. Chris Dickinson
Towne Development of Sacramento, Inc.
1640 Lead Hill Blvd., Suite 220
Roseville, CA 95661

Subject: Estia Walerga
Walerga Road and Baseline Road
Placer County, California

GEOTECHNICAL DUE DILIGENCE REVIEW

Dear Mr. Dickinson:

At your request, we prepared this due diligence letter to summarize our geotechnical findings and provide preliminary considerations for your site acquisition. As outlined in our agreement dated November 30, 2023, you authorized ENGEO to conduct the following scope of services.

- Review relevant data from the provided geotechnical report
- Review geologic maps, historic aerial photographs, topographic maps, and other nearby geotechnical data in our files
- Visit the site to observe the current surface conditions and collect several near-surface soil samples for visual classification and laboratory testing
- Perform plasticity index and sieve analysis in our laboratory on representative soil samples
- Prepare a geotechnical due diligence review letter with an overview of the geologic and geotechnical issues that may impact site development

For our use, we were provided a Geotechnical Engineering Report for the Vineyard Christian School Project, prepared by Wallace Kuhl and Associates, and dated August 2, 2018. This document is referenced in the Selected References List at the end of this letter.

PROJECT LOCATION

The approximately 88-acre Estia Walerga site is identified as Assessor's Parcel Numbers (APNs) 023-221-076 and 023-221-076. The site is bisected by Walerga Road and is located south of Baseline Road in unincorporated Placer County, California. A tributary to Dry Creek is located in the southern portion of the site, oriented approximately northeast–southwest. As shown in Exhibit 1, the site is bound by Baseline Road to the north and bordered by residential subdivisions.

EXHIBIT 1: Site Vicinity Map



Aerial image by Google Earth. * Figure not OCR Compatible

PROJECT DESCRIPTION

While a conceptual plan is still being developed, we understand the project will likely consist of a combination of single-family residential houses and single-story duets on either side of Walerga Road.

We anticipate the buildings will be one- to three-story wood-framed residential structures and one- to two-story duets. We expect associated improvements could include roadways, sidewalks, parking lots, underground utilities, stormwater basins, and landscaping. Structural loads and grading are yet to be determined; however, we assume that structural loads will be representative of this type of construction and that cut and fill of less than roughly 5 feet may be required for construction.

SITE BACKGROUND

We reviewed topographic maps, aerial photographs, and satellite imagery of the site for the years summarized in Table 1 below.

TABLE 1: Historical Review Summary

HISTORICAL MAP/PHOTOGRAPH	YEARS
Topographic Maps	1891-1893, 1902, 1911, 1947, 1951, 1954, 1956, 1957, 1967, 1975, 1980, 1992, 1994
Aerial Photographs and Satellite Imagery	1947, 1957, 1958, 1964, 1966, 1984, 1993, 1998, 2002–2023

The majority of the site has remained undeveloped since at least 1947, with a tributary to Dry Creek located in the southern portion of the site, oriented approximately northeast–southwest. Grading for Walerga Road, which bisects the site, was first shown on the May 2002 aerial photograph as shown in Exhibit 2; the road was shown to be in use in the November 2002 photograph. Additional grading was shown south of the Dry Creek tributary on the May through December 2002 aerial photographs in what appears to be a future extension to Vineyard Road. This area is currently a bike trail with underground utilities. The remainder of the site appears to have remained vacant and unused.

EXHIBIT 2: May 2002 Satellite Image Showing Grading and Earthwork.



EXHIBIT 3: December 2002 Satellite Image Showing Walerga Road and Other Improvements



* Figures not OCR Compatible

GEOLOGY AND SEISMIC HAZARDS

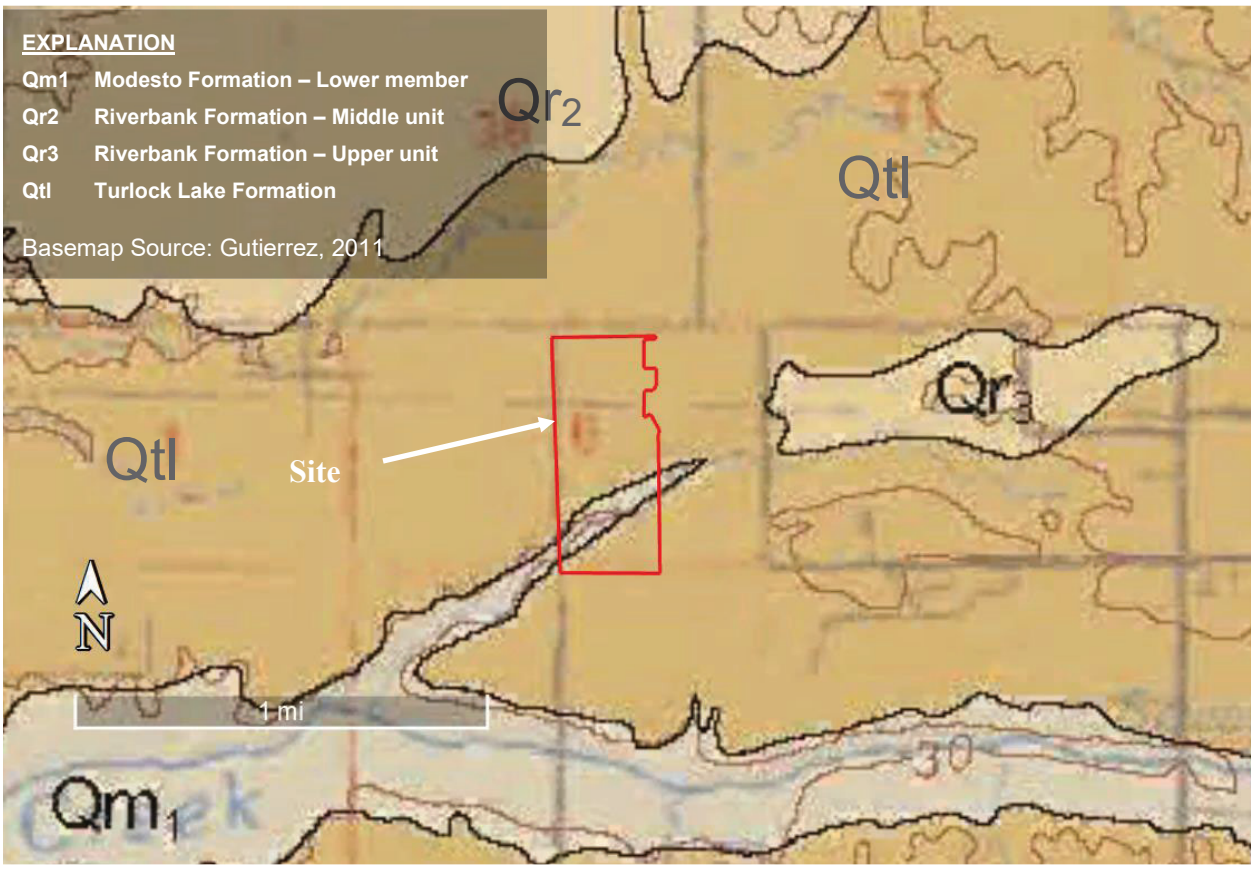
The site is located in the Great Valley Geomorphic Province. The Great Valley is an elongate, northwest-trending structural trough bound by the Coast Ranges on the west and the Sierra Nevada on the east. The Great Valley has been and is presently being filled with sediment primarily derived from surrounding mountain ranges.

As shown in Exhibit 4, Regional Geologic Map, the site is mapped as Pleistocene alluvial deposits. Gutierrez (2011) mapped the underlying geologic formation as the Turlock Lake Formation (Qtl). The Turlock Lake Formation consists of deeply weathered gravel, sand, and silt derived from the

western slopes of the Sierra Nevada, and is older than 700,000 years (Helley and Harwood, 1985). Overlying the Turlock Lake Formation along the unnamed Dry Creek tributary, Gutierrez mapped the lower member of the Pleistocene Modesto Formation. The Modesto Formation consists of unconsolidated, slightly weathered, tan to light gray alluvium composed of gravel, sand, silt, and clay derived from surrounding mountains.

EXHIBIT 4: Regional Geologic Map

* Figure not OCR Compatible



No State of California Landslide and/or Liquefaction Zones of Required Investigations maps for the site have been published.

The site is not located within a currently designated Alquist-Priolo Earthquake Fault Zone and no known surface expression of active faults is believed to exist within the site. The site does lie within a seismically active region, as California has numerous faults that are known to be active.

SITE RECONNAISSANCE AND FIELD SAMPLING

We visited the site on December 8, 2023, to perform a site reconnaissance and observe the current site conditions. We also collected shallow soil samples for laboratory testing. The sample locations are shown on the Site Plan, Figure 1.

The site generally consisted of relatively level grass land with some areas of low hilly terrain, with a moderate growth of seasonal grasses. A tributary to Dry Creek was observed in the southern portion of the site and was dry at the time of our site visit. Walerga Road bisects the site and a

paved bike path was observed in the southern portion of the site. We observed the following additional site features during our reconnaissance.

- Numerous large trees in the southern portion of the site along the Dry Creek tributary riparian corridor
- A paved extension to Vineyard Road that entered the site from the east and extended a short distance
- Culverts and other drainage diversions near Walerga Road

PHOTO 1: Southern Portion of Site, Showing Bike Path and Dry Creek Tributary



PHOTO 2: Southwestern Portion of Site, Showing Walerga Road and Bike Path, Looking North



PHOTO 3: Typical Conditions in Northern Portion of the Site, Looking South



PHOTO 4: Typical Conditions at Dry Creek Tributary



While no topographic information was provided, Google Earth (WGS 84) indicates that site grades range from approximately Elevation 125 feet in the east to approximately Elevation 95 feet in the southwestern corner at the Dry Creek tributary invert. The topography generally slopes toward the Dry Creek tributary in the southern portion of the site, and to the north in the northern portion of the site (north of Walerga Road).

* Photos not OCR Compatible

SUBSURFACE CONDITIONS

We collected seven near-surface soil samples at the locations indicated on Figure 1, Site Plan, for visual classification in general accordance with the Unified Soil Classification System (USCS) and laboratory testing, as summarized in Table 2 below. The near-surface soil generally consisted of silty or clayey sand or sandy lean clay. Plasticity index (PI) tests on representative soil samples of the clayey material resulted in PIs of 14 and 15, indicating low to moderate swell potential with variations in moisture content. This is generally consistent with tests performed by others at other locations on the site.

TABLE 2: Near-Surface Soil Samples

SAMPLE NO.	USCS SOIL DESCRIPTION	LABORATORY TEST RESULTS
SS-1	SILTY SAND (SM), dark reddish brown, slightly moist, fine-grained sand, approx. 40% fines	
SS-2	SANDY LEAN CLAY (CL), dark brown, slightly moist, medium plasticity, fine- to medium-grained sand	64.5% FINES; LL 31, PL 16, PI 15
SS-3	SILTY SAND (SM), dark yellowish brown, slightly moist, fine- to medium-grained sand, approx. 15% fines, traces of fine to coarse subangular to subrounded gravel	
SS-4	SILTY SAND (SM), dark brown, slightly moist, fine- to coarse-grained sand, approx. 20% fines	
SS-5	CLAYEY SAND (SC), dark yellowish brown, fine- to coarse-grained sand, medium plasticity fines	32% FINES; LL 29, PL 15, PI 14
SS-6	SILTY SAND (SM), dark reddish brown, slightly moist, fine- to coarse-grained sand, approx. 30% fines	
SS-7	SILTY SAND (SM), dark reddish brown, slightly moist, fine- to medium-grained sand, approx. 20% fines, traces of fine to coarse subangular to subrounded gravel	

USCS=United Soil Classification System per ASTM D 2487-06
LL=Liquid Limit; PL=Plastic Limit; PI=Plasticity Index per ASTM D4318-17e1

Previous subsurface explorations by others generally encountered medium dense to very dense, fine to coarse silty and clayey sand interbedded with sandy silt from the ground surface to the maximum depth explored of approximately 21½ feet below the ground surface. The three borings located between Walerga Road and the Dry Creek tributary (Borings D7, D8, and D9) encountered a surficial layer of loose to medium dense silty or clayey sand. The surficial layer was between approximately 4 and 8 feet in thickness and was underlain by medium dense to very dense sand and silty sand. Boring logs and laboratory test reports prepared by others are included in Appendix B.

LABORATORY TESTING

We performed laboratory tests on selected soil samples to evaluate their engineering properties. For this project, we performed plasticity index and sieve analysis. Laboratory data sheets are included in Appendix A. Data from laboratory tests performed by others are included in Appendix B.

GROUNDWATER CONDITIONS

Groundwater was not encountered in the previous subsurface exploration performed by others. We reviewed the Sustainable Groundwater Management Act (SGMA) Data Viewer

(https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer#gwlevels), a website maintained by the State of California Department of Water Resources, for local groundwater levels. The data viewer plotted groundwater contours that indicated groundwater in the vicinity occurred at depths of 110 to 120 feet in fall 2021 and 100 to 110 feet in spring 2022.

Fluctuations in the level of groundwater may occur due to variations in rainfall, irrigation practice, and other factors not evident at the time measurements were made.

GEOTECHNICAL CONSIDERATIONS

Based on our review of the existing information and site conditions, the primary geotechnical concerns that may impact site development are expansive soil and loose surficial soil. We describe these and other considerations below.

Expansive Soil - We observed potentially expansive lean clay and clayey sand at shallow depths during our site reconnaissance. Our laboratory testing and previous laboratory testing by others indicate that this soil exhibits low to moderate shrink/swell potential with variations in moisture content. Based on our observations and experience with the underlying geologic formation, we anticipate that expansive clay layers may be discontinuous on the site.

Expansive soil changes in volume with changes in moisture. It can shrink or swell and cause heaving and cracking of slabs-on-grade, pavements, and structures founded on shallow foundations. Damage due to volume changes associated with expansive soil can be reduced by capping the expansive soil with a blanket of low-expansive soil or by using a rigid mat foundation that is designed to resist the settlement and heave of expansive soil.

To mitigate potential damage from expansive soil, selective grading or blending would be necessary to create relatively low expansion potential surface conditions. Selective grading typically involves careful planning of cut and fill, along with blending and disking to mix soil types and create low expansion soil conditions. Creating low expansion conditions can necessitate more complicated cut/fill operations and multiple blending operations that can increase earthwork costs. As an alternative to selective grading, properly designed post-tensioned mat foundations bearing on competent native soil or compacted fill could be used for building foundations to mitigate the effects of expansive soil.

Loose Surficial Soil – Portions of the site appear to have been disced and the upper approximately ½ to 1 foot of soil appears to consist of loose/disturbed clay, silt, and sand. General site clearing, stripping, and compaction of subgrade will likely mitigate loose soil conditions of 1 foot or less.

Loose Soil Near the Creek - Previous explorations indicate that portions of the site are underlain by between approximately 4 and 8 feet of loose soil. Borings D7, D8, and D9 encountered this soil horizon that was markedly less dense than at the other portions of the site. Fill or loose soil horizons greater than 1 foot thick may need to be partially overexcavated and recompacted in areas to be developed. We recommend that a design-level geotechnical exploration be performed to further evaluate the depth and extent of the loose soil to determine if mitigation is necessary for development.

FUTURE DESIGN-LEVEL STUDIES

A design-level geotechnical exploration will need to be performed when development plans are finalized. The design-level geotechnical report would likely include:

- Additional subsurface exploration based upon the development plans to evaluate the extent of loose soil south of Walerga Road.
- Design-level foundation and earthwork recommendations.
- Pavement recommendations.
- Slab-on-grade and exterior flatwork recommendations.
- California Building Code seismic design parameters.

LIMITATIONS

The recommendations provided in this letter are professional opinions developed for site acquisition purposes. We strive to perform our professional services in accordance with generally accepted principles and practices currently employed in the area; there is no warranty, express or implied. We developed this letter with limited subsurface data by others and assumed that the subsurface exploration data prepared by others are representative of the actual subsurface conditions at the site. If changes occur in the nature or design of the project, we should be allowed to review this report and provide additional recommendations, if any.

If you have any questions or comments regarding this letter, please call and we will be glad to discuss them with you.

Sincerely,

ENGEO Incorporated

Stephen Blakely, CEG

Mark Gilbert, GE



sb/mmg/jg

Attachments: List of Selected References
Figure 1 – Site Plan
Appendix A - Laboratory Test Data (ENGEO, 2023)
Appendix B – Exploration Logs and Laboratory Test Data (by others)

SELECTED REFERENCES

Google Earth (https://earth.google.com/web/).

Gutierrez, C.I. 2011. California Geological Survey (CGS). Preliminary Geologic Map of the Sacramento 30' x 60' Quadrangle, California [map]. 1:100,000.

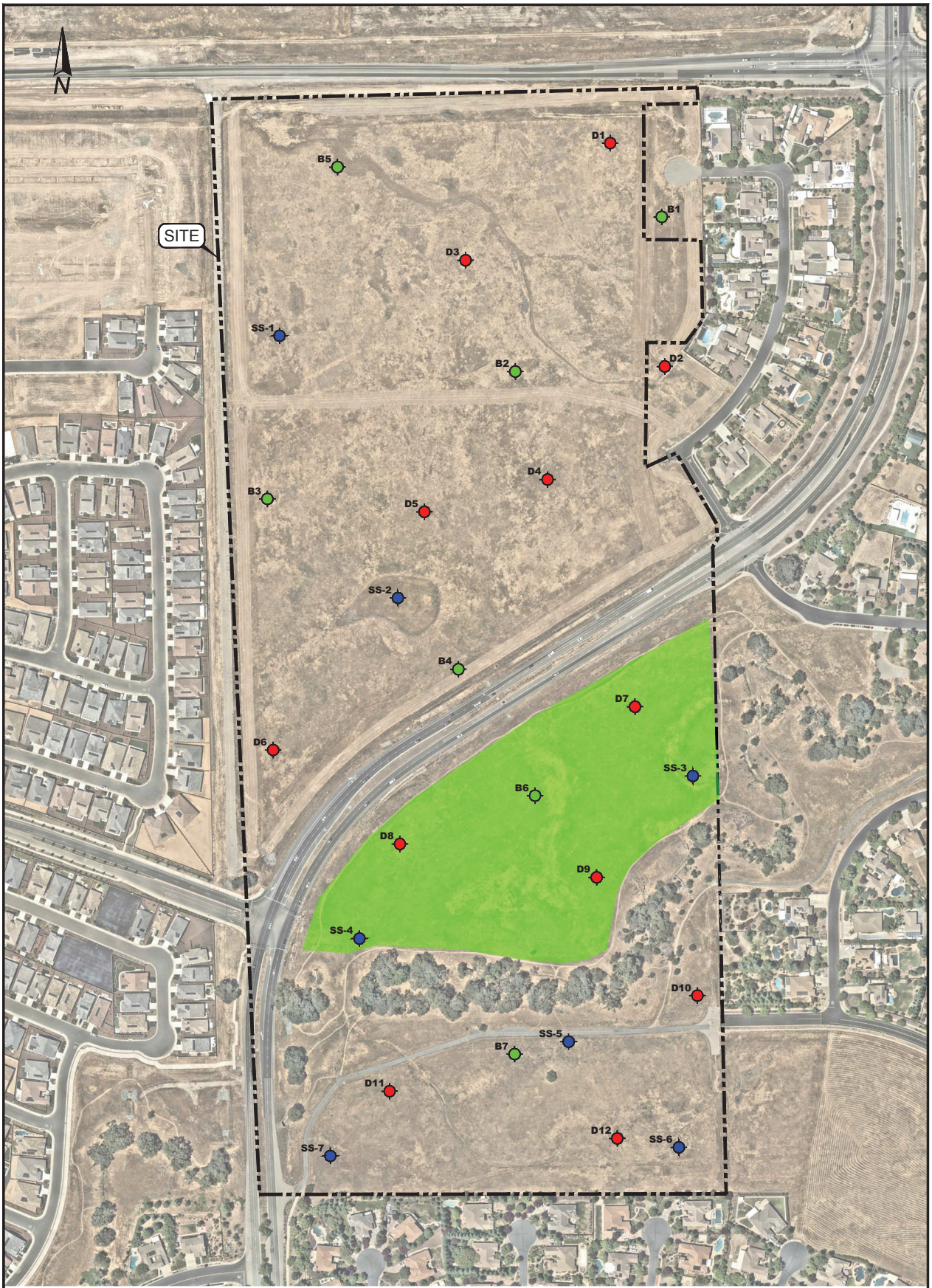
Wallace Kuhl and Associates. 2018. Geotechnical Engineering Report, Vineyard Christian School, Placer County, California. WKA No. 11930.01. August 2, 2018.

FIGURES

Figure 1 – Site Plan

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FILE PATH: G:\Drafting\PROJECTS_24000 to 25999\24860\ENVIRONMENTAL\24860000001_SP_1_1223.dwg SAVE DATE: 12/22/2023 1:01:22 PM SAVED BY: CGulbertson



* Figure not OCR Compatible

EXPLANATION

ALL LOCATIONS ARE APPROXIMATE

- SS-7 — Soil Sample (ENGEO, 2023)
- B7 — Bulk Sample (By Others, 2018)
- D12 — Soil Boring (By Others, 2018)
- Estimated Potential Extent of Loose Soil

BASE MAP SOURCE: NEARMAP MAPPING SERVICE

0 250 FEET

ENGEO Expect Excellence

SITE PLAN
ESTIA WALERGA
PLACER COUNTY, CALIFORNIA

PROJECT NO.: 24860.000.001	FIGURE NO. 1
SCALE: AS SHOWN	
DRAWN BY: CC	CHECKED BY: MG

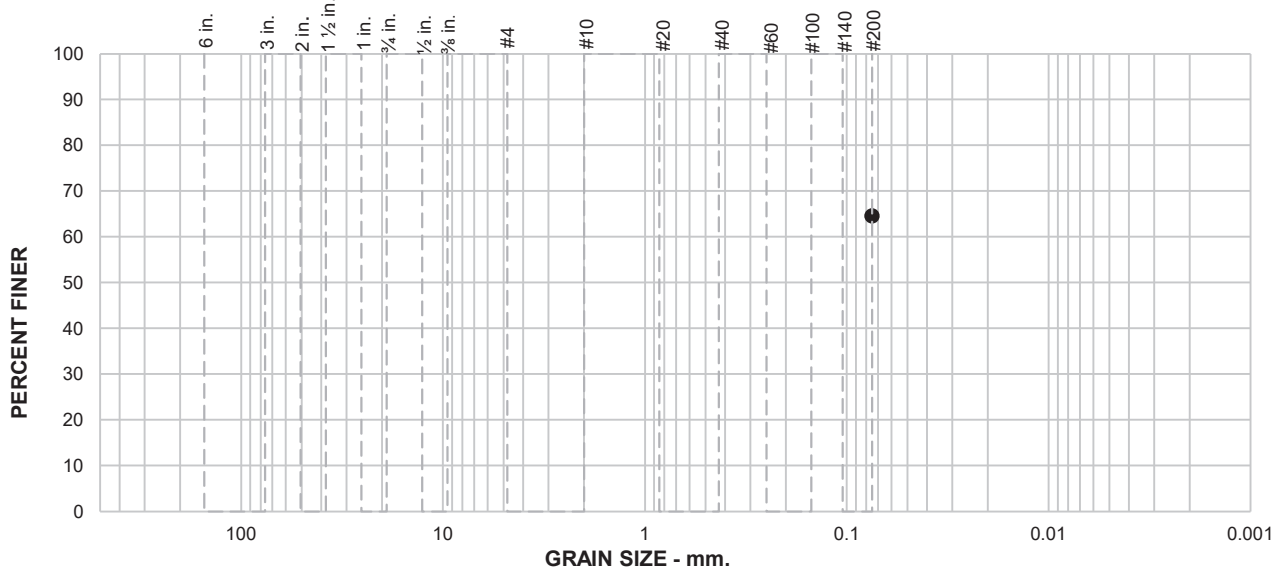
ORIGINAL FIGURE PRINTED IN COLOR

APPENDIX A

Laboratory Test Data (ENGEO, 2023)

PARTICLE SIZE DISTRIBUTION REPORT

ASTM D1140, Method B



SAMPLE ID: SS-2@0

DEPTH (ft): 0

% +75mm	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
						65	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#200	65		

SOIL DESCRIPTION

Dark brown sandy lean CLAY (CL)

ATTERBERG LIMITS

PL = 16 LL = 31 PI = 15

COEFFICIENTS

D_{90} = D_{85} = D_{60} =
D_{50} = D_{30} = D_{15} =
D_{10} = C_u = C_c =

CLASSIFICATION

USCS = CL

REMARKS

PI: ASTM D4318, Wet Method
USCS: ASTM D2488

Soak time = 180 min
Dry sample weight = 755.5 g
Largest particle size ≥ No. 4 Sieve

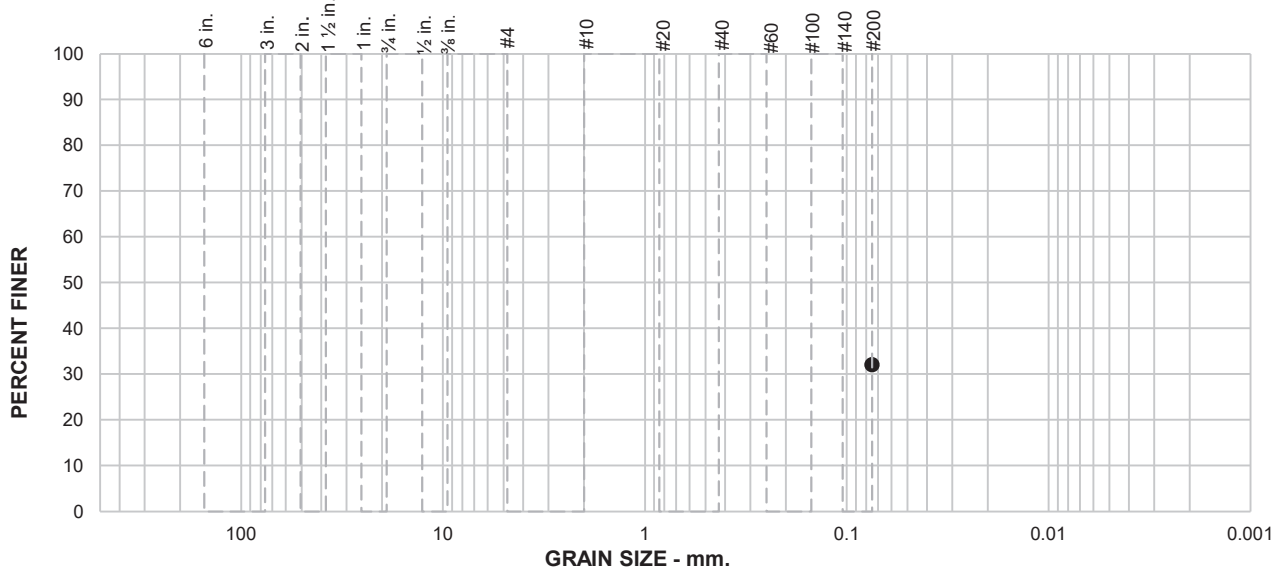
* (no specification provided)

ENGEO
Expect Excellence

CLIENT: Towne Development of Sacramento, Inc.
PROJECT NAME: Estia Walerga
PROJECT NO: 24860.000.001 PH001
PROJECT LOCATION: Placer County, CA
REPORT DATE: 12/21/2023
TESTED BY: L. Schmitz
REVIEWED BY: M. Gilbert

PARTICLE SIZE DISTRIBUTION REPORT

ASTM D1140, Method B



SAMPLE ID: SS-5@0

DEPTH (ft): 0

% +75mm	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
						32	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#200	32		

SOIL DESCRIPTION

Dark yellowish brown clayey SAND (SC)

ATTERBERG LIMITS

PL = 15 LL = 29 PI = 14

COEFFICIENTS

D_{90} = D_{85} = D_{60} =
D_{50} = D_{30} = D_{15} =
D_{10} = C_u = C_c =

CLASSIFICATION

USCS =

REMARKS

PI: ASTM D4318, Wet Method
USCS: ASTM D2488

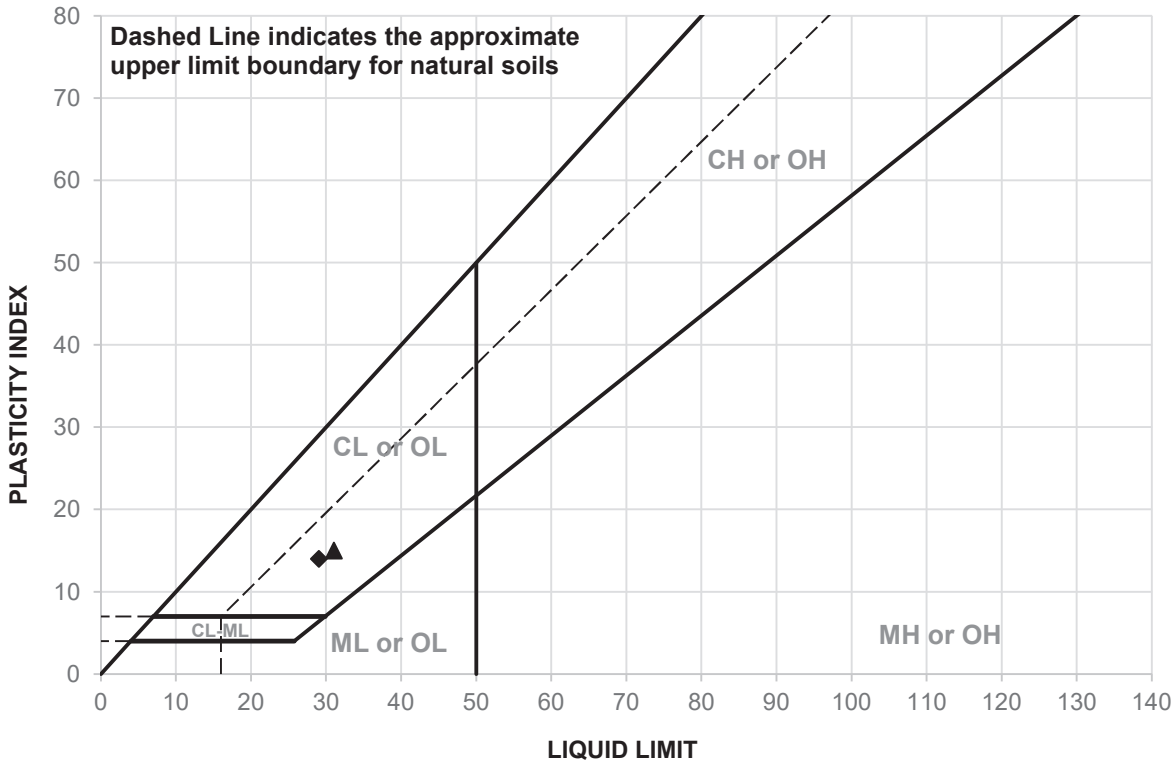
Soak time = 180 min
Dry sample weight = 1147.1 g
Largest particle size ≥ No. 4 Sieve

* (no specification provided)

ENGEO
Expect Excellence

CLIENT: Towne Development of Sacramento, Inc.
PROJECT NAME: Estia Walerga
PROJECT NO: 24860.000.001 PH001
PROJECT LOCATION: Placer County, CA
REPORT DATE: 12/21/2023
TESTED BY: L. Schmitz
REVIEWED BY: M. Gilbert

LIQUID AND PLASTIC LIMITS TEST REPORT
ASTM D4318



	SAMPLE ID	DEPTH (ft)	MATERIAL DESCRIPTION	LL	PL	PI
▲	SS-2@0	0	Dark brown lean CLAY with sand (CL)	31	16	15
◆	SS-5@0	0	Dark yellowish brown clayey SAND (SC)	29	15	14

	SAMPLE ID	TEST METHOD	REMARKS
▲	SS-2@0	PI: ASTM D4318, Wet Method	
◆	SS-5@0	PI: ASTM D4318, Wet Method	

ENGEO
Expect Excellence

CLIENT: Towne Development of Sacramento, Inc.
PROJECT NAME: Estia Walerga
PROJECT NO: 24860.000.001 PH001
PROJECT LOCATION: Placer County, CA
REPORT DATE: 12/20/2023
TESTED BY: L. Schmitz
REVIEWED BY: M. Gilbert

APPENDIX B

Exploration Logs and Laboratory Test Data (by others)

Project: Vineyard Christian School
Project Location: Placer County, California
WKA Number: 11930.01

LOG OF SOIL BORING D1

Sheet 1 of 1

Date(s) Drilled	**5/23/18**	Logged By	**DMB**	Checked By	**MMW**
Drilling Method	**6" Solid Flight Auger**	Drilling Contractor	**V&W Drilling**	Total Depth of Drill Hole	**21.5 feet**
Drill Rig Type	**CME 75**	Diameter(s) of Hole, inches	**6**	Approx. Surface Elevation, ft MSL	**119.0**
Groundwater Depth [Elevation], feet	**Not Encountered**	Sampling Method(s)	**Modified California**	Drill Hole Backfill	**Soil Cuttings**
Remarks				Driving Method and Drop	**140-lb automatic hammer, 30 inch drop**

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Gray brown, moist, very dense, silty SAND (SM) with cementation, fine grained sand, and trace clay						
					D1-1	50/6"	30.2	89	
115	5				D1-2	50/6"			FC= 17.6%
110	10				D1-3	50/4"	34.7	82	
105	15		Gray brown, moist, very dense, silty fine SAND with cementation (SM)		D1-4	50/3"			FC= 14.6%
100	20		Gray, moist, very dense, fine to medium SAND (SP) with trace silt		D1-5	68			
			Boring terminated at about 21.5 feet below existing site grade Groundwater was not encountered						

BORING LOG 11930.01 - VINEYARD CHRISTIAN SCHOOL.GPJ WKA.GDT 7/18/18 9:43 AM

Wallace Kuhl & ASSOCIATES

FIGURE 3

Project: Vineyard Christian School
Project Location: Placer County, California
WKA Number: 11930.01

LOG OF SOIL BORING D2

Sheet 1 of 1

Date(s) Drilled	**5/23/18**	Logged By	**DMB**	Checked By	**MMW**
Drilling Method	**6" Solid Flight Auger**	Drilling Contractor	**V&W Drilling**	Total Depth of Drill Hole	**11.5 feet**
Drill Rig Type	**CME 75**	Diameter(s) of Hole, inches	**6**	Approx. Surface Elevation, ft MSL	**118.0**
Groundwater Depth [Elevation], feet	**Not Encountered**	Sampling Method(s)	**Modified California**	Drill Hole Backfill	**Soil Cuttings**
Remarks				Driving Method and Drop	**140-lb automatic hammer, 30 inch drop**

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Red brown, moist, very dense, silty fine SAND with cementation (SM)						
115				■	D2-1	50/3"			
	5		Gray brown, very dense, fine to coarse SAND (SP)	■	D2-2	50/3"			
110			Brown, moist, dense, clayey SAND with silt (SC)						
	10			■	D2-3	48			
			Boring terminated at about 11.5 feet below existing site grade Groundwater was not encountered						

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Wallace Kuhl & ASSOCIATES

FIGURE 4

Project: Vineyard Christian School
Project Location: Placer County, California
WKA Number: 11930.01

LOG OF SOIL BORING D3

Sheet 1 of 1

Date(s) Drilled	**5/23/18**	Logged By	**DMB**	Checked By	**MMW**
Drilling Method	**6" Solid Flight Auger**	Drilling Contractor	**V&W Drilling**	Total Depth of Drill Hole	**16.5 feet**
Drill Rig Type	**CME 75**	Diameter(s) of Hole, inches	**6**	Approx. Surface Elevation, ft MSL	**116.0**
Groundwater Depth [Elevation], feet	**Not Encountered**	Sampling Method(s)	**Modified California**	Drill Hole Backfill	**Soil Cuttings**
Remarks				Driving Method and Drop	**140-lb automatic hammer, 30 inch drop**

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
115			Brown, moist, very dense, clayey fine to coarse SAND (SC)						
			red brown	■	D3-1	68			TR FC=42%
	5		Gray brown, moist, very hard, clayey SILT (ML) with fine sand	■	D3-2	57			
110									
	10			■	D3-3	50/6"			
105			Gray brown, moist, dense, silty fine SAND (SM) with trace clay						
	15			■	D3-4	46			
100			Boring terminated at about 16.5 feet below existing site grade Groundwater was not encountered						

BORING LOG 11930.01 - VINEYARD CHRISTIAN SCHOOL.GPJ WKA.GDT 7/18/18 9:43 AM

Wallace Kuhl & ASSOCIATES

FIGURE 5

Project: Vineyard Christian School
Project Location: Placer County, California
WKA Number: 11930.01

LOG OF SOIL BORING D4

Sheet 1 of 1

Date(s) Drilled	**5/23/18**	Logged By	**DMB**	Checked By	**MMW**
Drilling Method	**6" Solid Flight Auger**	Drilling Contractor	**V&W Drilling**	Total Depth of Drill Hole	**16.5 feet**
Drill Rig Type	**CME 75**	Diameter(s) of Hole, inches	**6**	Approx. Surface Elevation, ft MSL	**119.0**
Groundwater Depth [Elevation], feet	**Not Encountered**	Sampling Method(s)	**Modified California**	Drill Hole Backfill	**Soil Cuttings**
Remarks				Driving Method and Drop	**140-lb automatic hammer, 30 inch drop**

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Red brown, moist, dense, silty fine to coarse SAND with cementation (SM)						
				■	D4-1	39	6.3	110	
115	5		Medium dense, no cementation	■	D4-2	17			
110	10		Dense, fine to medium grained	■	D4-3	37	14.4	113	
			Brown, moist, medium dense, fine silty SAND (SM)						
105	15			■	D4-4	32			
			Boring terminated at about 16.5 feet below existing site grade Groundwater was not encountered						

BORING LOG 11930.01 - VINEYARD CHRISTIAN SCHOOL.GPJ WKA.GDT 7/18/18 9:43 AM

Wallace Kuhl & ASSOCIATES

FIGURE 6

Project: Vineyard Christian School
Project Location: Placer County, California
WKA Number: 11930.01

LOG OF SOIL BORING D5

Sheet 1 of 1

Date(s) Drilled	**5/23/18**	Logged By	**DMB**	Checked By	**MMW**
Drilling Method	**6" Solid Flight Auger**	Drilling Contractor	**V&W Drilling**	Total Depth of Drill Hole	**16.5 feet**
Drill Rig Type	**CME 75**	Diameter(s) of Hole, inches	**8**	Approx. Surface Elevation, ft MSL	**122.0**
Groundwater Depth [Elevation], feet	**Not Encountered**	Sampling Method(s)	**Modified California**	Drill Hole Backfill	**Soil Cuttings**
Remarks				Driving Method and Drop	**140-lb automatic hammer, 30 inch drop**

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Red brown, moist, hard, fine sandy CLAY (CL)						
120					D5-1	25			UCC= 4.23 TSF PI
			Gray brown, moist, dense, silty fine SAND (SM)						
	5				D5-2	52	14.3	119	
115									
			Gray brown, moist, medium dense, clayey fine SAND (SC)						
	10				D5-3	35			
110									
			Brown, moist, medium dense, fine to coarse SAND (SP)						
	15				D5-4	36			
			Boring terminated at about 16.5 feet below existing site grade Groundwater was not encountered						

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Wallace Kuhl & ASSOCIATES

FIGURE 7

Project: Vineyard Christian School
Project Location: Placer County, California
WKA Number: 11930.01

LOG OF SOIL BORING D6

Sheet 1 of 1

Date(s) Drilled	**5/23/18**	Logged By	**DMB**	Checked By	**MMW**
Drilling Method	**6" Solid Flight Auger**	Drilling Contractor	**V&W Drilling**	Total Depth of Drill Hole	**11.5 feet**
Drill Rig Type	**CME 75**	Diameter(s) of Hole, inches	**6**	Approx. Surface Elevation, ft MSL	**108.0**
Groundwater Depth [Elevation], feet	**Not Encountered**	Sampling Method(s)	**Modified California**	Drill Hole Backfill	**Soil Cuttings**
Remarks				Driving Method and Drop	**140-lb automatic hammer, 30 inch drop**

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Red brown, moist, medium dense, clayey SAND (SC) with silt, variable cementation						
					D6-1	26			
105									
	5		Decreased fines content, fine to coarse grained sand		D6-2	30			
100									
			Olive gray with black mottling, moist, hard, clayey SILT (ML) with fine sand						
	10				D6-3	32			
			Boring terminated at about 11.5 feet below existing site grade Groundwater was not encountered						

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Wallace Kuhl & ASSOCIATES

FIGURE 8

Project: Vineyard Christian School
Project Location: Placer County, California
WKA Number: 11930.01

LOG OF SOIL BORING D7

Sheet 1 of 1

Date(s) Drilled	**5/23/18**	Logged By	**DMB**	Checked By	**MMW**
Drilling Method	**6" Solid Flight Auger**	Drilling Contractor	**V&W Drilling**	Total Depth of Drill Hole	**11.5 feet**
Drill Rig Type	**CME 75**	Diameter(s) of Hole, inches	**6**	Approx. Surface Elevation, ft MSL	**116.0**
Groundwater Depth [Elevation], feet	**Not Encountered**	Sampling Method(s)	**Modified California**	Drill Hole Backfill	**Soil Cuttings**
Remarks				Driving Method and Drop	**140-lb automatic hammer, 30 inch drop**

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
115			Red brown, moist, medium dense, silty fine SAND (SM)	■	D7-1	15	4.1	97	
	5		Red brown, moist, loose to medium dense, fine to coarse SAND (SP) with clay	■	D7-2	11	9.1	116	
110									
	10		dense, increased coarse sand	■	D7-3	50	12.7	122	
105			Boring terminated at about 11.5 feet below existing site grade Groundwater was not encountered						

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FIGURE 9

Project: Vineyard Christian School
Project Location: Placer County, California
WKA Number: 11930.01

LOG OF SOIL BORING D8

Sheet 1 of 1

Date(s) Drilled	**5/23/18**	Logged By	**DMB**	Checked By	**MMW**
Drilling Method	**6" Solid Flight Auger**	Drilling Contractor	**V&W Drilling**	Total Depth of Drill Hole	**16.5 feet**
Drill Rig Type	**CME 75**	Diameter(s) of Hole, inches	**6**	Approx. Surface Elevation, ft MSL	**119.0**
Groundwater Depth [Elevation], feet	**Not Encountered**	Sampling Method(s)	**Modified California**	Drill Hole Backfill	**Soil Cuttings**
Remarks				Driving Method and Drop	**140-lb automatic hammer, 30 inch drop**

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Red brown, moist, medium dense, fine to coarse SAND (SP) with variable fines content						
				■	D8-1	18	9.3	109	
115			Dark gray, moist, very loose to loose, silty fine to medium SAND (SM) with a musty odor						
	5			■	D8-2	5	7.1	103	
			Red brown, moist, medium dense, fine to coarse SAND (SP) with variable fines content						
110									
	10			■	D8-3	27			
			Gray brown, moist, very dense, silty fine SAND (SM)						
105									
	15			■	D8-4	63			
			Boring terminated at about 16.5 feet below existing site grade Groundwater was not encountered						

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FIGURE 10

Project: Vineyard Christian School
Project Location: Placer County, California
WKA Number: 11930.01

LOG OF SOIL BORING D9

Sheet 1 of 1

Date(s) Drilled	**5/23/18**	Logged By	**DMB**	Checked By	**MMW**
Drilling Method	**6" Solid Flight Auger**	Drilling Contractor	**V&W Drilling**	Total Depth of Drill Hole	**16.5 feet**
Drill Rig Type	**CME 75**	Diameter(s) of Hole, inches	**6**	Approx. Surface Elevation, ft MSL	**106.0**
Groundwater Depth [Elevation], feet	**Not Encountered**	Sampling Method(s)	**Modified California**	Drill Hole Backfill	**Soil Cuttings**
Remarks				Driving Method and Drop	**140-lb automatic hammer, 30 inch drop**

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
105			Red brown, moist, loose, clayey fine SAND (SC)	■	D9-1	9	11.8	111	
	5		Olive brown, moist, very dense, silty SAND (SM) with fine sand, variable cementation	■	D9-2	90/10"			FC= 35.9%
100									
	10			■	D9-3	89			
95			Brown, moist, hard, fine sandy SILT (ML)						
	15			■	D9-4	35			
90			Boring terminated at about 16.5 feet below existing site grade Groundwater was not encountered						

BORING LOG 11930.01 - VINEYARD CHRISTIAN SCHOOL.GPJ WKA.GDT 7/18/18 9:43 AM

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FIGURE 11

Project: Vineyard Christian School
Project Location: Placer County, California
WKA Number: 11930.01

LOG OF SOIL BORING D10

Sheet 1 of 1

Date(s) Drilled	**5/23/18**	Logged By	**DMB**	Checked By	**MMW**
Drilling Method	**6" Solid Flight Auger**	Drilling Contractor	**V&W Drilling**	Total Depth of Drill Hole	**11.5 feet**
Drill Rig Type	**CME 75**	Diameter(s) of Hole, inches	**6**	Approx. Surface Elevation, ft MSL	**120.0**
Groundwater Depth [Elevation], feet	**Not Encountered**	Sampling Method(s)	**Modified California**	Drill Hole Backfill	**Soil Cuttings**
Remarks				Driving Method and Drop	**140-lb automatic hammer, 30 inch drop**

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Red brown, moist, medium dense, silty fine to coarse SAND with cementation (SM)						
				■	D10-1	35	9.1	113	UCC= 2.28 TSF
			no cementation						
115	5			■	D10-2	12			
			Gray brown, moist, very dense, silty fine SAND (SM)						
110	10			■	D10-3	59			
			Boring terminated at about 11.5 feet below existing site grade Groundwater was not encountered						

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FIGURE 12

Project: Vineyard Christian School
Project Location: Placer County, California
WKA Number: 11930.01

LOG OF SOIL BORING D11

Sheet 1 of 1

Date(s) Drilled	**5/23/18**	Logged By	**DMB**	Checked By	**MMW**
Drilling Method	**6" Solid Flight Auger**	Drilling Contractor	**V&W Drilling**	Total Depth of Drill Hole	**11.5 feet**
Drill Rig Type	**CME 75**	Diameter(s) of Hole, inches	**6**	Approx. Surface Elevation, ft MSL	**107.0**
Groundwater Depth [Elevation], feet	**Not Encountered**	Sampling Method(s)	**Modified California**	Drill Hole Backfill	**Soil Cuttings**
Remarks				Driving Method and Drop	**140-lb automatic hammer, 30 inch drop**

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Red brown, moist, medium dense, fine to coarse SAND with gravel (SP)						
105				■	D11-1	17			
	5		very dense, variable cementation	■	D11-2	64			
100									
			Gray brown, moist, very dense, silty fine SAND (SM) with trace clay						
	10			■	D11-3	59			
			Boring terminated at about 11.5 feet below existing site grade Groundwater was not encountered						

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Wallace Kuhl & ASSOCIATES

FIGURE 13

Project: Vineyard Christian School
Project Location: Placer County, California
WKA Number: 11930.01

LOG OF SOIL BORING D12

Sheet 1 of 1

Date(s) Drilled	**5/23/18**	Logged By	**DMB**	Checked By	**MMW**
Drilling Method	**6" Solid Flight Auger**	Drilling Contractor	**V&W Drilling**	Total Depth of Drill Hole	**20.5 feet**
Drill Rig Type	**CME 75**	Diameter(s) of Hole, inches	**6**	Approx. Surface Elevation, ft MSL	**114.0**
Groundwater Depth [Elevation], feet	**Not Encountered**	Sampling Method(s)	**Modified California**	Drill Hole Backfill	**Soil Cuttings**
Remarks				Driving Method and Drop	**140-lb automatic hammer, 30 inch drop**

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	NUMBER OF BLOWS	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Red brown, moist, very dense, silty fine to medium SAND with cementation (SM)						
				■	D12-1	50/4"			
110	5		increased clay content	■	D12-2	50/3"			
105	10		decreased clay content	■	D12-3	65			
			Gray brown, moist, very hard, clayey SILT (ML)						
100	15			■	D12-4	90/10"			
95	20		increaesd fine grained sand	■	D12-5	50/6"			
			Boring terminated at about 20.5 feet below existing site grade Groundwater was not encountered						

BORING LOG 11930.01 - VINEYARD CHRISTIAN SCHOOL.GPJ WKA.GDT 7/18/18 9:43 AM

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FIGURE 14

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2487)

MAJOR DIVISIONS		USCS[4]	CODE	CHARACTERISTICS
COARSE GRAINED SOILS (More than 50% of soil > no. 200 sieve size)	GRAVELS[1] (More than 50% of coarse fraction > no. 4 sieve size)	GW		Well-graded gravels or gravel - sand mixtures, trace or no fines
		GP		Poorly graded gravels or gravel - sand mixtures, trace or no fines
		GM		Silty gravels, gravel - sand - silt mixtures, containing little to some fines[2]
		GC		Clayey gravels, gravel - sand - clay mixtures, containing little to some fines[2]
	SANDS[1] (50% or more of coarse fraction < no. 4 sieve size)	SW		Well-graded sands or sand - gravel mixtures, trace or no fines
		SP		Poorly graded sands or sand - gravel mixtures, trace or no fines
		SM		Silty sands, sand - gravel - silt mixtures, containing little to some fines[2]
		SC		Clayey sands, sand - gravel - clay mixtures, containing little to some fines[2]
FINE GRAINED SOILS (50% or more of soil < no. 200 sieve size)	SILTS & CLAYS LL < 50	ML		Inorganic silts, gravely silts, and sandy silts that are non-plastic or with low plasticity
		CL		Inorganic lean clays, gravelly lean clays, sandy lean clays of low to medium plasticity[3]
		OL		Organic silts, organic lean clays, and organic silty clays
	SILTS & CLAYS LL ≥ 50	MH		Inorganic elastic silts, gravelly elastic silts, and sandy elastic silts
		CH		Inorganic fat clays, gravelly fat clays, sandy fat clays of medium to high plasticity
		OH		Organic fat clays, gravelly fat clays, sandy fat clays of medium to high plasticity
HIGHLY ORGANIC SOILS		PT		Peat
ROCK		RX		Rocks, weathered to fresh
FILL		FILL		Artificially placed fill material

OTHER SYMBOLS

= Drive Sample: 2-1/2" O.D. Modified California sampler

= Drive Sampler: no recovery

= SPT Sampler

= Initial Water Level

= Final Water Level

— — — = Estimated or gradational material change line

——— = Observed material change line

Laboratory Tests

CR = Corrosion
PI = Plasticity Index
EI = Expansion Index
UCC = Unconfined Compression Test (TSF)
TR = Triaxial Compression Test
GR = Gradational Analysis (Sieve/Hydro)
FC = Wash (Fines Content)
PP = Pocket Penetrometer Test (TSF)
PID = Photo Ionization Detector Test (PPM)
RV = Resistance ("R") Value

REF = Refusal (>50 blows in 6 inches)

GRAIN SIZE CLASSIFICATION

CLASSIFICATION	RANGE OF GRAIN SIZES	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS (b)	Above 12"	Above 300
COBBLES (c)	12" to 3"	300 to 75
GRAVEL (g) coarse fine	3" to No. 4 3" to 3/4" 3/4" to No. 4	75 to 4.75 75 to 19 19 to 4.75
SAND coarse medium fine	No. 4 to No. 200 No. 4 to No. 10 No. 10 to No. 40 No. 40 to No. 200	4.75 to 0.075 4.75 to 2.00 2.00 to 0.425 0.425 to 0.075
SILT & CLAY	Below No. 200	Below 0.075

Trace - Less than 5 percent
Few - 5 to 10 percent
Little - 15 to 25 percent
Some - 35 to 45 percent
Mostly - 50 to 100 percent

* Percents as given in ASTM D2488

NOTES:

1. Coarse grained soils containing 5% to 12% fines, use dual classification symbol (ex. SP-SM).
2. If fines classify as CL-ML (4<PI<7), use dual symbol (ex. SC-SM).
3. Silty Clays, use dual symbol (CL-ML).
4. Borderline soils with uncertain classification list both classifications (ex. CL/ML).

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UNIFIED SOIL CLASSIFICATION SYSTEM

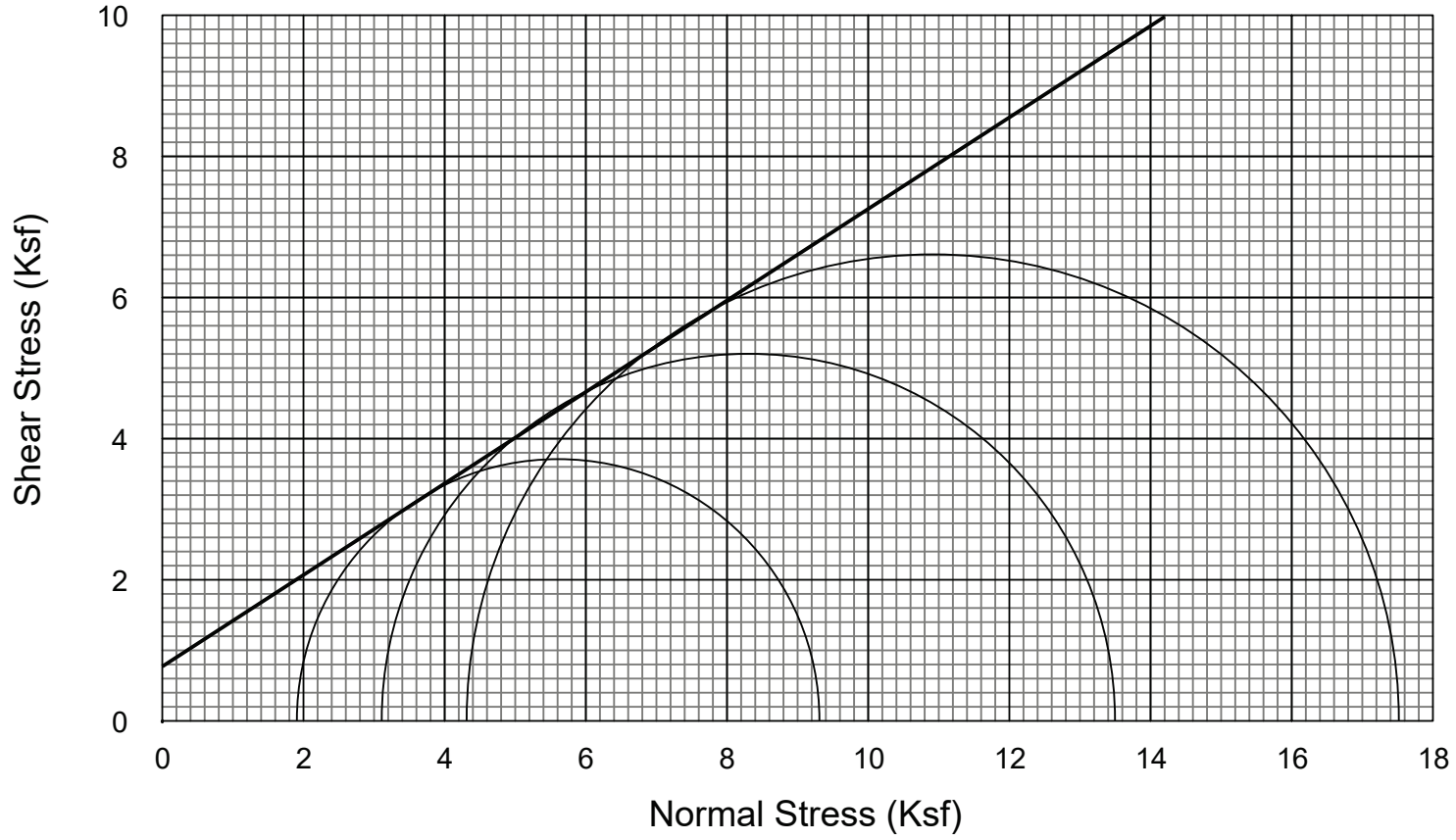
VINEYARD CHRISTIAN SCHOOL

Placer County, California

FIGURE	15
DRAWN BY	RWO
CHECKED BY	TCD
PROJECT MGR	MMW
DATE	07/18
WKA NO.	11930.01

TRIAXIAL COMPRESSION TEST

ASTM D4767



SAMPLE NO. : D3-1I

SAMPLE CONDITION : Undisturbed

SAMPLE DESCRIPTION : Brown, clayey sand

DRY DENSITY (PCF) : 119
INITIAL MOISTURE (%) : 8.8
FINAL MOISTURE (%) : 15.5

ANGLE OF INTERNAL FRICTION (ø) : 33°
COHESION (PSF) : 742

WallaceKuhl & ASSOCIATES

TRIAXIAL COMPRESSION TEST RESULTS

VINEYARD CHRISTIAN SCHOOL

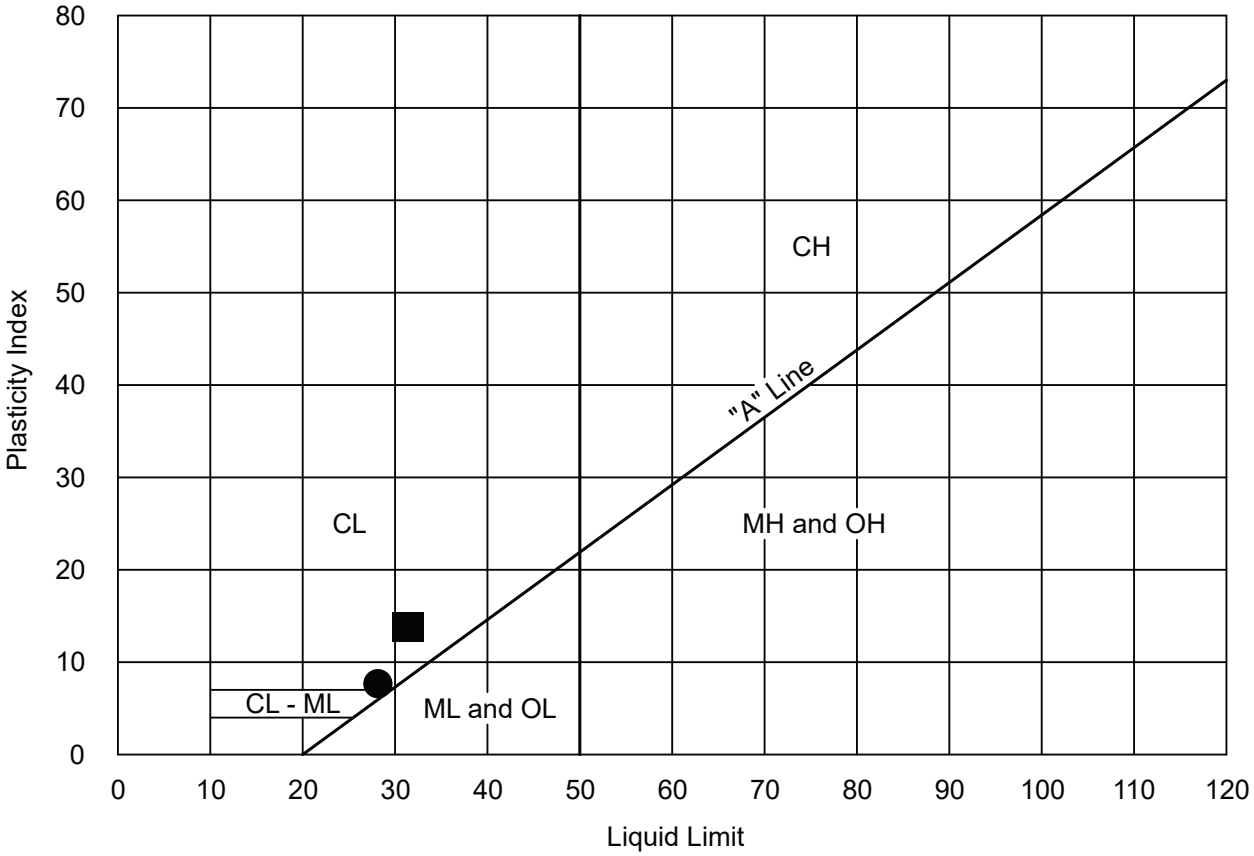
Placer County, California

FIGURE	A1
DRAWN BY	RWO
CHECKED BY	TCD
PROJECT MGR	MMW
DATE	07/01
WKA NO. 11930.01	

* Figure not OCR Compatible

ATTERBERG LIMITS

ASTM D4318



KEY SYMBOL	LOCATION	SAMPLE DEPTH	NATURAL WATER CONTENT (%)	ATTERBERG LIMITS		PASSING No. 200 SIEVE (%)	UNIFIED SOIL CLASSIFI-CATION SYMBOL
				LIQUID LIMIT (%)	PLASTICITY INDEX (%)		
●	B1	0' - 5'	---	29	8	---	CL
■	D5 - 1I	0' - 2'	---	31	15	---	CL

Wallace Kuhl & ASSOCIATES

ATTERBERG LIMITS

VINEYARD CHRISTIAN SCHOOL

Placer County, California

FIGURE	A2
DRAWN BY	RWO
CHECKED BY	TCD
PROJECT MGR	MMW
DATE	07/18
WKA NO. 11930.01	

* Figure not OCR Compatible

EXPANSION INDEX TEST RESULTS

ASTM D4829

MATERIAL DESCRIPTION: Brown, clayey sand

LOCATION: B5

Sample Depth	Pre-Test Moisture (%)	Post-Test Moisture (%)	Dry Density (pcf)	Expansion Index
0’ - 5’	10.9	24.9	108	**89**

CLASSIFICATION OF EXPANSIVE SOIL *

EXPANSION INDEX	POTENTIAL EXPANSION
0 - 20	Very Low
21 - 50	Low
51 - 90	**Medium**
91 - 130	High
Above 130	Very High

* From ASTM D4829, Table 1

Wallace Kuhl & ASSOCIATES

EXPANSION INDEX

VINEYARD CHRISTIAN SCHOOL

Placer County, California

FIGURE	A3
DRAWN BY	RWO
CHECKED BY	TCD
PROJECT MGR	MMW
DATE	07/18

WKA NO. 11930.01

EXPANSION INDEX TEST RESULTS

ASTM D4829

MATERIAL DESCRIPTION: Red brown, silty sand

LOCATION: B6

Sample Depth	Pre-Test Moisture (%)	Post-Test Moisture (%)	Dry Density (pcf)	Expansion Index
0' - 5'	11.0	18.6	107	**9**

CLASSIFICATION OF EXPANSIVE SOIL *

EXPANSION INDEX	POTENTIAL EXPANSION
0 - 20	**Very Low**
21 - 50	Low
51 - 90	Medium
91 - 130	High
Above 130	Very High

* From ASTM D4829, Table 1

Wallace Kuhl & ASSOCIATES

EXPANSION INDEX

VINEYARD CHRISTIAN SCHOOL

Placer County, California

FIGURE	A4
DRAWN BY	RWO
CHECKED BY	TCD
PROJECT MGR	MMW
DATE	07/18

WKA NO. 11930.01

RESISTANCE VALUE TEST RESULTS

(California Test 301)

MATERIAL DESCRIPTION: Light Brown, Sandy Clayey Silt

LOCATION: B1 (0' - 5')

Specimen No.	Dry Unit Weight (pcf)	Moisture @ Compaction (%)	Exudation Pressure (psi)	Expansion (dial, inches x 1000)	Expansion (psf)	R Value
1	102	20.9	136	13	56	5
2	109	17.4	369	73	316	33
3	107	18.2	204	51	221	25

R-Value at 300 psi exudation pressure = **27**

MATERIAL DESCRIPTION: Red Brown, Silty Sand

LOCATION: B4 (0' - 5')

Specimen No.	Dry Unit Weight (pcf)	Moisture @ Compaction (%)	Exudation Pressure (psi)	Expansion (dial, inches x 1000)	Expansion (psf)	R Value
1	131	9.8	204	42	182	12
2	134	8.3	379	38	165	64
3	134	7.4	787	81	351	71

R-Value at 300 psi exudation pressure = **34**

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RESISTANCE VALUE TEST RESULTS

VINEYARD CHRISTIAN SCHOOL

Placer County, California

FIGURE	A5
DRAWN BY	RWO
CHECKED BY	TCD
PROJECT MGR	MMW
DATE	07/18
WKA NO.	11930.01

RESISTANCE VALUE TEST RESULTS

(California Test 301)

MATERIAL DESCRIPTION: Brown, Silty Sand

LOCATION: B7 (0' - 5')

Specimen No.	Dry Unit Weight (pcf)	Moisture @ Compaction (%)	Exudation Pressure (psi)	Expansion (dial, inches x 1000)	Expansion (psf)	R Value
1	129	9.0	780	16	69	78
2	127	10.5	253	24	104	29
3	131	9.6	398	15	65	54

R-Value at 300 psi exudation pressure = **37**

WallaceKuhl & ASSOCIATES

RESISTANCE VALUE TEST RESULTS

VINEYARD CHRISTIAN SCHOOL

Placer County, California

FIGURE	A6
DRAWN BY	RWO
CHECKED BY	TCD
PROJECT MGR	MMW
DATE	07/18
WKA NO.	11930.01

Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 06/27/2018
Date Submitted 06/22/2018

To: Tom DeSimone
Wallace-Kuhl & Assoc.
3050 Industrial Blvd
West Sacramento, CA 95691

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 11930.01 Site ID : B1 @ 0-5 FT.
Thank you for your business.

* For future reference to this analysis please use SUN # 77316-161401.

EVALUATION FOR SOIL CORROSION

Soil pH	6.56	
Minimum Resistivity	2.49 ohm-cm (x1000)	
Chloride	10.4 ppm	00.00104 %
Sulfate	17.1 ppm	00.00171 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

WallaceKuhl & ASSOCIATES

CORROSION TEST RESULTS

VINEYARD CHRISTIAN SCHOOL

Placer County, California

FIGURE	A7
DRAWN BY	RWO
CHECKED BY	TCD
PROJECT MGR	MMW
DATE	07/18
WKA NO.	11930.01

Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 06/27/2018
Date Submitted 06/22/2018

To: Tom DeSimone
Wallace-Kuhl & Assoc.
3050 Industrial Blvd
West Sacramento, CA 95691

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 11930.01 Site ID : B2 @ 0-5 FT.
Thank you for your business.

* For future reference to this analysis please use SUN # 77316-161400.

EVALUATION FOR SOIL CORROSION

Soil pH	6.15		
Minimum Resistivity	3.22 ohm-cm (x1000)		
Chloride	3.6 ppm	00.00036	%
Sulfate	11.1 ppm	00.00111	%

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

WallaceKuhl & ASSOCIATES

CORROSION TEST RESULTS

VINEYARD CHRISTIAN SCHOOL

Placer County, California

FIGURE	A8
DRAWN BY	RWO
CHECKED BY	TCD
PROJECT MGR	MMW
DATE	07/18
WKA NO. 11930.01	

APPENDIX F

Environmental Risk Assessors

Phase I Environmental Site Assessment Report

Fong Property
Old Walerga Road and Baseline Road
Roseville, California 95747



November 23, 2023

Prepared for:

Towne Development of Sacramento, Inc.
11060 White Rock Road, Suite 150
Rancho Cordova, California 95670

Prepared by:

Environmental Risk Assessors
5098 Foothills Boulevard
#3-146
Roseville, California 95747

ERA Project No. 01-2023-400-003

Environmental Risk Assessors

November 23, 2023

Towne Development of Sacramento, Inc.
11060 White Rock Road, Suite 150
Rancho Cordova, CA 95670
Attn: Mr. Chris Dickinson

SUBJECT: Phase I Environmental Site Assessment
Fong Property
Old Walerga Road and Baseline Road
Roseville, California 95747
ERA Project No. 01-2023-400-003

Dear Mr. Dickinson,

Environmental Risk Assessors (ERA) is pleased to present this Phase I Environmental Site Assessment (Phase I ESA) Report for the above-referenced property (the Site).

The Phase I ESA was conducted in general accordance with the processes prescribed in the American Society for Testing Materials International (ASTM) E 1527-21 guidelines and the Code of Federal Regulations (CFR) 40 CFR Part 312 *Standards and Practices for All Appropriate Inquiries: Final Rule*. The primary purpose of the Phase I ESA was to identify recognized environmental conditions (RECs) in connection with the Site. Our scope of work and findings are presented in the attached report.

It has been a pleasure working with you on this project. Please do not hesitate to contact me via email at litafreeman@gmail.com or telephone at (916) 677-9897 if you have any questions or comments regarding this assessment.

Sincerely,

Environmental Risk Assessors

Lita D. Freeman, PG
Professional Geologist

5098 Foothills Boulevard
Suite 3-146
Roseville, California 95747

Tel 916-677-9897
litafreeman@gmail.com

Table of Contents

1. EXECUTIVE SUMMARY 1

1.1 On-Site Findings 1

1.2 Off-Site Findings 2

1.3 Opinion 2

1.4 Limiting Factors/Data Gaps 3

1.5 Conclusions 3

1.6 Recommendations 3

2. INTRODUCTION 3

2.1 Purpose 3

2.2 Detailed Scope of Services 4

2.3 Significant Assumptions 4

2.4 Limitations and Exceptions 4

2.5 Special Terms and Conditions 5

2.6 User Reliance 6

2.7 Qualifications 6

3. SITE SETTING 6

3.1 Site Location and Description 6

3.2 Adjacent Property Use 6

3.3 Topography, Geology, Hydrogeology 7

4. User-Provided Information 9

4.1 Title Record 9

4.2 Environmental Liens or Activity and Use Limitations 9

4.3 Specialized Knowledge 9

5. SITE HISTORY 9

6. REGULATORY AGENCY RESEARCH 10

6.1 Regulatory Database Research 10

6.1.1 Site 12

6.1.2 Off-Site Properties 12

6.1.3 Orphan Properties 12

6.1.4 Vapor Encroachment Condition 12

Table of Contents

6.2 Agency Research 13

6.3 Radon 14

7. PREVIOUS ENVIRONMENTAL REPORTS 14

8. SITE RECONNAISSANCE 14

8.1 Methodology and Limiting Conditions 14

8.2 Site Description 15

9. INTERVIEWS 16

10. FINDINGS 17

10.1 On-Site Findings 17

10.2 Off-Site Findings 18

11. OPINION 18

11.1 Known or Suspect Recognized Environmental Conditions 19

11.2 Known or Suspect Controlled Recognized Environmental Conditions 19

11.3 Known or Suspect Historical Recognized Environmental Conditions 19

11.4 De Minimis Conditions 19

12. CONCLUSIONS 19

13. RECOMMENDATIONS 19

14. DEVIATIONS/DATA GAPS 19

15. ADDITIONAL SERVICES 20

16. REFERENCES 20

Tables *(embedded in text)*

3.1-1 General Site Information

3.2-1 Site Vicinity Reconnaissance

3.3-1 Site Setting

5-1 Historical Information Reviewed/Agency Records Summary

6.1-1 Regulatory Agency Databases/Lists Reviewed

6.2-1 Agency Files/Records Summary

8.2-1 Site Observations

9-1 Interviews

Figures

1 Site Location Map

2 Site Plan

Appendices

A Site Photographs

B Regulatory Agency Documentation

C Historical Research Documentation

D EDR Radius Map Report

1. EXECUTIVE SUMMARY

Environmental Risk Assessors (ERA) is pleased to present this Phase I Environmental Site Assessment (ESA) Report (the "Report") to Towne Development of Sacramento, Inc. (Towne) for the approximately 86-acre property located to the southwest of the intersection of Walerga Road and Baseline Road in Roseville, Placer County, California (the "Site"; Figure 1). The Site consists of two parcels of land that are identified by Placer County Assessor Parcel Numbers (APNs) 023-221-076-000 (the *northern parcel*; approximately 51 acres) and 023-221-074-000 (the sou*thern parcel*; approximately 35 acres). The Site is currently vacant land (Site Plan; Figure 2).

The objective of the Phase I ESA was to identify recognized environmental conditions (RECs) in connection with the Site, to the extent feasible pursuant to the processes prescribed in the American Society for Testing Materials International (ASTM) E 1527-21 guidelines entitled *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*, and U.S. Environmental Protections Agency's *All Appropriate Inquires (AAI) Final Rule* (Code of Federal Regulations [CFR] 40 CFR Part 312).

1.1 On-Site Findings

The following information was obtained by ERA from our review of regulatory agency files and databases, our site observations, and interviews:

- No structures were apparent on site in the historical sources reviewed during this assessment. Historical resources reveal that most of the Site was used for agricultural purposes (dry-land farming) with the remainder as undeveloped land between at least 1910 and the early 1990s. According to the *Interim Guidance for Sampling Agricultural Properties (Third Revision)* dated August 7, 2008, by the California Environmental Protection Agency Department of Toxic Substances Control (DTSC), crops grown using dry-land methods are generally not treated with agricultural chemicals including environmentally persistent pesticides. The northern portion was used for cattle grazing in 2018 and 2019. Historical resources reveal that the Site's southern portion has been undeveloped land since at least 1910. Walerga Road (aka Old Walerga Road) has been present along the Site's western side since at least 1910; Walerga Road was realigned to cross the Site by 2006.
- No evidence of former structures was observed on the Site and no paved area or possible covers for underground utilities (as noted in the 1984 aerial photo; see Section 5) was observed at the Site's northwestern corner during the site visit. Small debris piles (household trash, furniture, children's toys, etc.) and several small piles of asphalt rubble were observed along Old Walerga Road. A small soil and gravel stockpile was observed on the Site's western portion just off Old Walerga Road. Also, a soil stockpile was observed near the Site's northeastern corner and appeared to be related to grading activities along the Site's northern border. Two large construction equipment size vehicle tires, reportedly used as cattle water troughs, were located on the Site's central portion. No evidence of chemical or fuel releases was noted in these areas. Markers for a buried fiber optic cable were observed along the east side of Old Walerga Road and several Placer Waterworks utility boxes were located across the Site. A tree-lined creek, a paved walking path with several underground utility covers (marked as *Sanitary Sewer*) located along the walking path, and several unpaved paths cross the Site's southern portion.
- Wetlands have not been mapped on site by the U.S. Fish and Wildlife Service; however, the California Department of Fish and Wildlife has mapped state wetlands on the Site's northern portion. During the site visit, this area had a generally level topography.

- The Site is not located within a Federal Emergency Management Agency 1% Special Flood Hazard Area (100-year) zone and is not located within a 0.2% Annual Chance Flood Hazard (500-year) zone except a small area on the Site's southwestern corner along the creek.
- According to Environmental Data Resources, Inc. (EDR) and ERA's review of online databases, the site location has not been included in the regulatory agency databases reviewed for this assessment. EDR's search did not reveal environmental liens or activity and use limitations for the Site.

1.2 Off-Site Findings

- Based on review of available historical resources, the surrounding areas were predominantly undeveloped land or used for agricultural purposes (dry-land farming) between at least 1910 and the late 1990s with Baseline Road along the Site's northern border and Walerga Road along the Site's western border. By the mid-2000s, the existing single-family residences had been constructed on the east adjoining properties with Walerga Road realigned to its' current configuration. No significant changes were noted in the site vicinity since the mid-2000s except a residential development is currently being constructed on the west adjoining property and Baseline Road is being widened.
- According to EDR, several regulated facilities were identified within the ASTM search distances during the regulatory agency databases review with none located within a 1,000-foot radius of the Site except the Rutan Environmental Safety Services Corporation property located approximately 675 feet east of the Site. This business has been included in the Resources Conservation and Recovery Act (RCRA) NonGen/ No Longer Regulated (RCRA NonGen/NLR) database. Based on the lack of reported releases at this property, this facility does not appear to present a significant environmental concern to the Site.
- Regulated properties that could not be located because of insufficient address information are referred to by EDR as "orphan" facilities. Several orphan facilities/properties were reported by EDR but, based on observations during the site visit and ERA's knowledge of the site vicinity, these facilities/properties are not located within close proximity to the Site.

1.3 Opinion

A *recognized environmental condition (REC)* refers to the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: due to release to the environment; under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment. The following was identified during the course of this assessment:

- ERA did not identify *RECs* during the course of this assessment.

A *controlled recognized environmental condition (CREC)* refers to a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls.

The following was identified during the course of this assessment:

- ERA did not identify *CRECs* during the course of this assessment.

A *historical recognized environmental condition (HREC)* refers to 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 use

criteria established by a regulatory authority, without subjecting the property to any required controls. The following was identified during the course of this assessment:

- ERA did not identify *HRECs* during the course of this assessment.

A *de minimis* condition is a condition that generally does not present a material risk of harm to public 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 following was identified during the course of this assessment:

- ERA did not identify a *de minimis* condition during the course of this assessment.

1.4 Limiting Factors/Data Gaps

The following limiting factors were documented during this assessment: a 50-year chain-of-title report was not provided to ERA for review, intervals between aerial photographs/topographic maps were more than 5 years, surface soil could not be observed in some on-site areas because of thick vegetation, and site observations were limited due to the size of the Site.

These limiting factors represent data gaps but do not represent significant data gaps and are unlikely to impact ERA's ability to identify RECs. Based on information obtained by ERA during our review of historical sources and observation of site conditions during our visit, these limiting factors would not appear to be significant and we do not anticipate that the information that could be obtained from these sources would change the conclusions of this report.

1.5 Conclusions

ERA has performed this assessment in conformance with the scope and limitations of ASTM Practice E 1527-21 for Phase I ESAs.

Based on the available information, this assessment has revealed no RECs, CRECs, HRECs, de minimis conditions, or significant data gaps in connection with the Site.

1.6 Recommendations

Based on the findings of this Phase I ESA, no further assessment appears warranted at the Site.

2. INTRODUCTION

ERA is pleased to present this Phase I ESA Report to Towne for the approximately 86-acre rectangular shaped property located southwest of the intersection of Walerga Road and Baseline Road in Roseville, Placer County, California (the "Site"; Figure 1). The Site is currently vacant land (Site Plan; Figure 2) and consists of two parcels of land that are identified by the Placer County APNs 023-221-076-000 (the *northern parcel*) and 023-221-074-000 (the *southern parcel*).

This assessment included review of information gathered from federal, State of California ("the State"), and local regulatory agencies, and a site visit conducted by ERA staff. The findings and conclusions presented in this Report are based on the results of a reconnaissance-level site visit, review of regulatory records, and our review of available and pertinent background information.

2.1 Purpose

Towne requested that ERA conduct a Phase I ESA of the Site to facilitate their evaluation of the Site for potential environmental concerns.

The purpose of this assessment has been to identify RECs in connection with the Site to the extent feasible pursuant to the processes prescribed in ASTM's *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM Designation E 1527-21), and CFR 40 CFR Part 312 *Standards and Practices for All Appropriate Inquiries: Final Rule* of November 1, 2005, as amended December 30, 2013. RECs, as defined by ASTM Standard Practice E1527-21, are the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or the material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property.

The term includes the presence or release of hazardous substances or petroleum products that occur under conditions that are in compliance with environmental laws. The term is not intended to include *de minimis* conditions that generally do not present a material risk of harm to public 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. *De minimis* conditions are not RECs.

ASTM Standard Practice E1527-21 includes an evaluation of vapor encroachment potential as noted in ASTM's Vapor Encroachment Standard (ASTM E 2600-10).

2.2 Detailed Scope of Services

The Phase I ESA conducted by ERA included, but was not limited to, the following services:

- Conducting a reconnaissance-level site visit to look for visual evidence of the release(s) of hazardous materials and/or petroleum products, and to assess the potential for on-site releases of hazardous materials and/or petroleum products;
- Conducting a drive-by reconnaissance of adjacent properties and the site vicinity;
- Reviewing regulatory agency files;
- Reviewing historical documents; and
- Preparing this report presenting our findings, including conclusions and recommendations, as warranted.

2.3 Significant Assumptions

The purpose of the assessment is to provide appropriate inquiry into the ownership and use of the Site, consistent with good commercial and customary practice, in an effort to minimize liability. ERA assumes that the information provided by Towne, the regulatory database provider, and the regulatory agencies is correct, true and reliable.

2.4 Limitations and Exceptions

The opinions and recommendations presented in the Report are based upon the scope of services, information obtained through the performance of the services, and the schedule as agreed upon by ERA and the party for whom this report was originally prepared. This Report is an instrument of professional service and was prepared in accordance with the generally accepted standards and level of skill and care under similar conditions and circumstances established by the environmental consulting industry. No representation, warranty, or guarantee, express or implied, is intended or given. To the extent that ERA relied upon information prepared by other parties not under contract to ERA, ERA makes no representation as to the accuracy or completeness of such information.

This Report is expressly for the sole and exclusive use of the parties for which this Report was originally prepared for a particular purpose. Only the parties for which this Report was originally prepared and/or other specifically named parties, may make use of and rely upon the information in this Report, in its entirety, for a period not to exceed 180 days in accordance with ASTM's *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* ASTM Designation E 1527-00 dated May 10, 2000, ASTM's *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* ASTM Designation E 1527-21, and/or 40 CFR Part 312 *Standards and Practices for All Appropriate Inquiries: Final Rule* of November 1, 2005 as amended December 30, 2013. After 180 days, and prior to using the information contained herein, the report should be updated in accordance with ASTM standards and federal regulations. Reuse of this Report or any portion thereof for other than its intended purpose, or if modified, or if used by third parties without proper authorization, shall be at the user's sole risk.

The findings presented in this Report apply solely to site conditions existing at the time when ERA's assessment was performed. It must be recognized, however, that a Phase I ESA is conducted for the purpose of evaluating the potential for contamination through limited research and investigative activities and in no way represents a conclusive or complete site characterization. Conditions in other parts of the project Site may vary from those at the locations where data were collected. ERA's ability to interpret investigation results is related to the availability of the data and the extent of the investigation activities. Therefore, 100 percent confidence in Phase I ESA conclusions cannot reasonably be achieved.

ERA, therefore, does not provide any guarantees, certifications, or warranties that a property is free from environmental contamination. Furthermore, nothing contained in this document shall relieve any other party of its responsibility to abide by contract documents and applicable laws, codes, regulations, or standards.

The following limiting factors were documented during this assessment: 1) a 50-year chain-of-title report was not provided to ERA for review; 2) intervals between aerial photographs/topographic maps were more than 5 years; 3) surface soil could not be observed in some on-site areas because of thick vegetation, and 4) visual observations were limited due to the size of the Site. These limiting factors represent data gaps but do not represent significant data gaps and are unlikely to impact ERA's ability to identify RECs. Based on information obtained by ERA during our review of historical sources and observation of site conditions during our visit, these limiting factors would not appear to be significant and we do not anticipate that the information that could be obtained from these sources would change the conclusions of this report.

Pertinent data, if any, obtained by the Client following the issuance of this report should be reviewed by an environmental professional and an addendum prepared presenting an evaluation of the data and any changes to the conclusions of this report, as warranted by the data.

2.5 Special Terms and Conditions

The Phase I ESA scope of work was presented in the contract executed on October 25, 2023.

The scope of work for this assessment did not include testing of electrical equipment for the potential presence of polychlorinated biphenyls (PCBs) or the assessment of natural hazards such as naturally occurring asbestos, radon gas, or methane gas, assessment of the potential presence of radionuclides, or assessment of non-chemical hazards such as the potential for damage from earthquakes or floods. This Phase I ESA also did not include an extensive assessment of the

environmental compliance status of the Site or of the businesses operating at the Site or a health-based risk assessment.

2.6 User Reliance

This Report is for the exclusive use of the parties for which it was prepared, their agents, and assignees, and for such other parties as ERA agrees may rely on the Report. Use of this Report by any other party shall be at such party's sole risk.

2.7 Qualifications

A summary of the ERA personnel who worked on this project follows:

- Ms. Lita Freeman, California Professional Geologist and California Asbestos Consultant, has over 25 years of experience providing site assessment services. This has included evaluating potential impacts from historical on- and off-site operations, conducting subsurface investigations, and implementing remediation plans. Ms. Freeman works with property owners, attorneys, and regulators to mitigate and resolve environmental issues.

3. SITE SETTING

3.1 Site Location and Description

General site information is presented in Table 3.1-1.

Table 3.1-1. General Site Information

Project Name: Fong Property		**Owner(s):** As noted below
Address(es): Not assigned		**Past/Associated Address(es):** None identified
APN(s) – Current: 023-221-076-000, 023-221-074-000		**County:** Placer
APN(s) - Former: 023-221-046 (now 023-221-076-000)		**Location:** Southwest of Baseline Road and Walerga Road in Roseville, CA
Property Size: Approximately 86 acres	**Current Use:** Undeveloped land	**Occupant:** None
Heating/Cooling Equipment: None	**Domestic Water Provider:** None	**Sanitary Sewer:** None
Property Manager/Contact Information: Mr. Chris Dickinson, Towne Development		

The Site is reportedly owned by the following individuals/entities: Edward G.H. Fong; Roger G.F. Fong, Trustee of The Fong Family Trust Dated June 18, 2009; Ryan C. Fong; Rachelle K. Fong; Alisa R. Fong; EDPR Family Limited Partnership, a California limited partnership; and Bellory Fong, Trustee of the William Fong Family Trust dated May 26, 2010.

Photographs of the Site are included in Appendix A.

3.2 Adjacent Property Use

ERA staff performed a drive-by and walk-by reconnaissance of adjacent properties from public areas (e.g. sidewalks) to observe current businesses or land uses that may use, store, generate, or dispose of hazardous materials. Current activities at the adjacent properties do not appear to be of potential environmental concern to the Site based on the observations during the reconnaissance.

Walerga Road crosses the Site in a generally east to southwest direction (see Figures 1 and 2). Specific observations of adjacent property use are presented in Table 3.2-1, considering the Site as a whole.

Table 3.2-1. Site Vicinity Reconnaissance	
Direction	**Land Use**
North	Baseline Road, beyond which is vacant land
East	Single-family residences and open space/undeveloped land; a meandering creek is present within the open space to the east and crosses the southern portion of the Site in an east to west direction; Vineyard Road currently terminates to the east of the Site.
South	Single-family residences
West	Residential development under construction

3.3 Topography, Geology, Hydrogeology

Information on topography was obtained from the United States Geological Survey (USGS) 7.5-Minute Series Topographic Map of the Citrus Heights, California Quadrangle dated 2015, and the regional and local surface hydrology, geology, and hydrogeology information was obtained from various sources.

Information on topography, regional and local surface hydrology, geology, and hydrogeology is presented in Table 3.3-1.

Table 3.3-1. Site Setting	
Topography	The topography on the Site's northern portion slopes gently downward towards the northwest from a high of approximately 90 feet above mean sea level (amsl) near the southeastern corner to about 80 feet at the northwestern corner. The Site's southern portion slopes moderately downward towards the creek from a high of approximately 130 feet amsl along Walerga Road to 100 feet amsl near the creek bank with a gradual slope upward to an elevation of approximately 110 feet amsl along the Site's southern border.
Surface Features	The Site is vacant land with no evidence of former or current structures. Two large construction equipment size vehicle tires are located in the Site's central portion with a polyvinyl chloride (PVC) pipe between the tires; the tires appeared to have formerly been used as water troughs for cattle. No evidence of a water-supply well was observed in this area and no information was available on the water source to fill the troughs. An asphalt-paved cul-de-sac is present on the Site's northeastern portion and markers for a buried fiber optic cable were observed along the east side of Old Walerga Road. An asphalt-paved walking path is present across the Site's southern portion with several underground utility manhole covers (marked with *Sanitary Sewer*) observed along the walking path. Several Placer Waterworks utility boxes were located across the Site. Storm water at the Site infiltrates into the ground or flows across the ground surface. According to available information from EDR, the Site is not located within a Federal Emergency Management Agency (FEMA) 1% Special Flood Hazard Area (100-year) zone or within a 0.2% Annual Chance Flood Hazard (500-year) zone except a small area on the Site's southwestern corner along the creek (see EDR's report in Appendix D). Wetlands have not been mapped on site by the U.S. Fish and Wildlife Service, as shown on the copy of the National Wetland Inventory Map presented in Appendix B. However, wetlands have been mapped on the Site's northern portion by the State of California, according to EDR's research of the State Wetlands Data: Wetland Inventory maintained by the California Department of Fish and Wildlife (see EDR's report in Appendix D). Surface water on the Site is limited to the creek that crosses the Site's southern portion. The nearest off-site surface water is Curry Creek is located approximately 2,000 feet northwest of the Site. Dry Creek is located approximately 2,200 feet south of the Site.

Table 3.3-1. Site Setting	
Regional Geology	The Site is located within the Great Valley Geomorphic Province. The Great Valley is an elongated sedimentary trough that is characterized by thick Jurassic through Holocene-aged sedimentary deposits, overlain by younger Quaternary-aged sedimentary deposits composed of alluvial gravel, sand and silt. The Great Valley is bounded by the Klamath and Cascade Mountain Ranges to the north, the Sierra Nevada Mountains to the east, and the California Coast Mountain Range to the west. Overlying the bedrock in many places is a mantle of alluvial, lake, playa, and terrace deposits that are unconsolidated to semi-consolidated. The sediments in this portion of the Great Valley are mostly of non-marine origin (California Geologic Survey 2010).
Local Geology	Near-surface sediments in the site vicinity consist primarily of alluvial interbedded sequences of silts and clays with poorly sorted sands to gravels derived from highlands to the east. These sediments represent Quaternary alluvial deposits that originated in the Sierra Nevada mountains (California Geological Survey 2010). A *Custom Soil Resource Report* (Appendix B) was obtained for the property from the U. S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS; HTTP://WEBSOILSURVEY.NRCS.USDA.GOV). According to the NRCS, surface soil on site is classified as: 1) *Fiddyment loam* (146) on the north-central portion that is described as well drained soil consisting of loam, clay loam, indurated, and weathered bedrock (alluvium derived from siltstone) on 1% to 8 % slopes; 2) *San Joaquin-Cometa sandy loams* (182) on the northern portion that is described as well drained soil consisting of sandy loam, clay loam, indurated, and stratified sandy loam to loam (alluvium derived from granite) on 1% to 5% slopes; 3) *Cometa-Fiddyment complex* (141) on the central portion that is described as well drained soil consisting of sandy loam and clay (alluvium derived from granite) on 1% to 5% slopes; 4) *Cometa sandy loam* (140) on the central, southern, and western portions that is described as well drained soil consisting of sandy loam and clay (alluvium derived from granite) on 1% to 5% slopes; 5) *Ramona sandy loam* (175) on the eastern and southern portions that is described as well drained soil consisting of sandy loam, sandy clay loam, and gravelly sandy loam (alluvium derived from granite) on 2% to 9% slopes; 6) *Xerofluvents* (194) on the southern portion that is described as frequently flooded somewhat poorly drained soil consisting of stratified loamy sand to fine sandy loam, stratified loamy sand to fine sandy loam to silt loam, and stratified loam to silty clay loam to clay with parent material that is alluvium; 7) *Cometa-Ramona sandy loams* (142) on the southern portion that is described as well drained soil consisting of sandy loam and clay (alluvium derived from granite) on 1% to 5% slopes; and 8) *Fiddyment-Kaseberg loams* (147) on the southeastern corner that is described as well drained soil consisting of loam, clay loam, and weathered bedrock (alluvium derived from siltstone) on 2% to 9% slopes.
Hydrogeology	The Site is located in the Sacramento County Basin of the Sacramento Basin Hydrologic Study Area (California Department of Water Resources, Bulletin 118-80 1980 and Bulletin 118-6 1978). This basin generally is drained by the Sacramento River and its tributaries. The principal water-bearing units of the basin includes younger and older alluvium, and older volcanic formations. Data collected in 2010 by the Sacramento Groundwater Authority (SGA 2011) indicated that depth to water in the site vicinity was approximately 130 to 160 feet bgs. Based on surface topography, groundwater flow direction beneath the Site is assumed to be with regional groundwater flow direction (westward). Actual local groundwater flow direction can be influenced by factors such as local surface topography, underground structures, seasonal fluctuations, soil and bedrock geology, and production wells, none of which were considered during this study.

Table 3.3-1. Site Setting	
Wells	No water-supply wells were observed on site during the site visit. No oil and gas wells were observed on site during the site visit and no oil and gas wells have been mapped on site. A map for oil and gas wells in the area obtained from the California Department of Conservation Geologic Energy Management Division (https://www.conservation.ca.gov/calgem) is presented in Appendix B.

4. User-Provided Information

4.1 Title Record

ERA was not provided with a 50-year chain-of-title report by Towne.

4.2 Environmental Liens or Activity and Use Limitations

There were no environmental liens or activity or use limitations documentation provided for this report based on review of the SWRCB Geotracker database and DTSC ENVIROSTOR database. These databases did not indicate that environmental liens or activity or use limitations had been filed against the Site.

4.3 Specialized Knowledge

Towne representatives had no specialized knowledge of the Site.

5. SITE HISTORY

Historical information obtained during this Phase I ESA is summarized in Table 5-1. Copies of supporting documents are presented in Appendix C.

Table 5-1. Historical Information Reviewed/Agency Records Summary		
Source	**Date**	**Information Obtained**
Sanborn® Fire Insurance Maps	November 2023	EDR searched their collection of Sanborn® Fire Insurance Maps for maps of the site vicinity. Sanborn maps are not available for the site vicinity indicating that the area was not considered a “high” fire risk for insurance purposes.
Topographic Maps	1910/1911, 1962/1967, 1980/1981, 2015	**Site.** The Site is depicted as undeveloped land on the 1910/1911 through 1980/1981 maps with Walerga Road (aka Old Walerga Road) on the Site’s western side. The Site is depicted as undeveloped land on the 2015 map but Walerga Road (aka Old Walerga Road) is not depicted on the Site’s western side. **Off Site.** The area is depicted as undeveloped land on the 1910/1911 through 1980/1981 maps with Baseline Road along the Site’s northern border and Walerga Road (aka Old Walerga Road) along the Site’s western border. Only landmark buildings are depicted on the 2015 map and no structures are depicted in the site vicinity. On the 2015 map, Baseline Road is depicted along the Site’s northern border and streets within the residential development adjoining to the east are depicted with Walerga Road in its’ current alignment.

Table 5-1. Historical Information Reviewed/Agency Records Summary		
Aerial Photographs	EDR 1937, 1947, 1952, 1957, 1962, 1966, 1972, 1975, 1984, 1993, 1998, 2006, 2009, 2012, 2016, 2020 Google Earth 2020, 2021, 2022	**Site.** In the 1937 photo, the Site is undeveloped with a dry pond on the central portion. Walerga Road is visible along the western side of the Site and terminates at Baseline Road located immediately north of the Site. A line of trees is visible along the path of the creek that traverses the Site's southern portion in an east to west direction in 1937. The Site is used for agricultural purposes (dryland farming) in the 1947 and 1952 photos. The Site appears as fallow land in the 1957 photo. Only the Site's northern portion is shown in the 1962 photo with this area used for dryland farming. The Site continues to be used for dryland farming in the 1966 through 1993 photos except in the area of the creek that crosses the Site's southern portion. In the 1984 photo, the Site appears as fallow land with a dirt track crossing the Site's northern portion and accessing Old Walerga Road at the Site's northwestern corner. The Site appears as fallow land in the 1998 and later photos. In the 1998 and 2006 photos, an unpaved walking pathway is present on the Site's southern portion. By 2006, the walking pathway appears to be paved with several underground utility covers visible along the walking pathway and Walerga Road is under construction across the center of the Site in an east to southwest direction. The Site is undeveloped land in the 2009 through 2016 photos with what appears to be cattle trailers on the Site's central western portion in the 2009 photo. The area along the Site's northern border was graded in the 2020 photo; this work appeared to be associated with the widening of Baseline Road. What appeara to be a small soil stockpile is visible near the Site's northeastern corner in the 2020 photo but is not visible in the 2021 photo. By 2022, vegetation had grown over this area and what appeared to be a small, paved area and possibly covers for underground utilities were visible at the Site's northwestern corner. **Off Site.** In the 1937 through 1998 photos, the site vicinity is predominantly undeveloped land or used for dryland farming with Baseline Road along the Site's northern border. In the 2006 photo, the surrounding properties to the north (across Baseline Road) and west are undeveloped land, the existing residential developments are visible to the east and south, and Walerga Road is in its' current configuration and divides the Site into two parcels. No significant changes are noted in the 2009 through 2020 photos. In the 2020 and 2021 photos, the are appears as it currently with the residential development under construction to the west.

6. REGULATORY AGENCY RESEARCH

As part of this assessment, ERA reviewed regulatory databases and available agency files and records for the Site. Information from these sources is discussed in the following sections.

6.1 Regulatory Database Research

An environmental database report prepared by EDR was reviewed for local, state, and federal listings for properties within the site area. Included in EDR's report are regulatory databases reviewed by EDR for cases pertaining to leaking underground storage tanks (USTs) and ASTs, hazardous waste sites, and abandoned sites within ASTM-specified radii (Table 6.1-1).

EDR also reviewed selected databases generated by the United States Environmental Protection Agency (U.S. EPA). Explanations of the regulatory agency databases reviewed and acronyms used by EDR are presented in EDR's report in Appendix D.

Table 6.1-1. Regulatory Agency Databases/Lists Reviewed			
Search Radius	**Agency**	**Database**	**Type of Records in Database**
1 mile	U.S. EPA	NPL	Sites designated for Superfund cleanup by the U.S. EPA
	DTSC	RESPONSE	State equivalent NPL: Site with confirmed releases 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
	DTSC	ENVIROSTOR	State equivalent CERCLIS: Sites that have known contamination or sites for which there may be a reason to investigate
	U.S. EPA	CORRACTS	RCRA facilities undergoing "corrective actions"
	DHS	BEP	Specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds
0.5 mile	U.S. EPA	CERCLIS	Sites under review by the U.S. EPA
	U.S. EPA	TSD	Facilities that treat, store and/or dispose of hazardous waste
	RWQCB	LUST	Sites with LUSTs
0.5 mile	IWMB	SWLF/SWAT	Sites permitted as solid waste landfills, incinerators or transfer stations
	SWRCB	WMUDS/ SWAT	Tracking and inventory of waste management units
	U.S. EPA	CERCLIS – NFRAP	CERCLIS sites with no further remedial actions planned.
Site and Adjacent Properties	U.S. EPA	RCRA Generator	Sites that generate large or small quantities of hazardous waste
	U.S. EPA and OES	ERNS	Sites with reported accidental releases of oil and hazardous substances
	SWRCB	UST	Sites with registered USTs

Notes:

AST=aboveground storage tank
BEP=Bond Expenditure Plan
CERCLIS=Comprehensive Environmental Response, Compensation and Liability Information System
CORRACTS=Corrective Action Report
DPH=Department of Public Health
DTSC=Department of Toxic Substances Control
ERNS= Emergency Response Notification System
IWMB=Integrated Waste Management Board
LUST=Leaking Underground Storage Tank
NFRAP=No Further Remedial Action Planned
NPL=National Priorities List
OES=Office of Emergency Services
RCRA=Resource Conservation and Recovery Act
RWQCB=Regional Water Quality Control Board
SCL=CORTESE List
SWAT=Solid Waste Assessment Test
SWIS=Solid Waste Information System
SWLF=Solid Waste Landfills
SWRCB=State Water Resources Control Board
U.S. EPA=U.S. Environmental Protection Agency
UST=underground storage tank
WMUDS=Waste Management Unit Database

6.1.1 Site

The Site has not been assigned a street address but review of EDR's Radius Map Report indicates that the site location has not been included in the regulatory agency databases reviewed for this assessment.

6.1.2 Off-Site Properties

According to EDR, several regulated facilities were identified within the ASTM search distances during the regulatory agency databases review with none located within a 1,000-foot radius of the Site except as noted below. Additional regulated facilities were located within the ASTM search radius; however, based on their downgradient locations with respect to assumed groundwater flow direction (regionally to the west) and the Site, distance from the Site, and lack of reported releases, these facilities do not appear to present environmental concerns to the Site.

Rutan Environmental Safety Services Corporation. This business, located approximately 640 feet east of the Site at 8575 Parkwood Court, has been included in the RCRA NonGen/No Longer Regulated (RCRA NonGen/NLR) database. The business was established to be a non-generator of hazardous waste in 2018. Several administrative-type violations were reported in 2019. No chemical or fuel releases have been reported at this property. Based on the lack of reported releases at this property, this facility does not appear to present a significant environmental concern to the Site.

6.1.3 Orphan Properties

Regulated properties that could not be located because of insufficient address information are referred to by EDR as "orphan" facilities. Several orphan facilities/properties were reported by EDR. Based observations during the site visit, distances of these facilities/properties from the Site (based on ERA's knowledge of the site vicinity), these facilities/properties are not located within close proximity to the Site and do not appear to present significant environmental concerns to the Site.

6.1.4 Vapor Encroachment Condition

Vapor encroachment occurs when vapors from volatile chemicals in soil or groundwater intrude upon another property where they may migrate upwards into the indoor air of overlying buildings. The chemicals responsible for vapor encroachment include VOC, semi-volatile organic compounds (SVOCs), and volatile inorganic compounds such as mercury. Once contaminant vapors enter a structure, they may accumulate and potentially pose health hazards for building occupants.

The ASTM released its Vapor Encroachment Standard (ASTM E 2600-10) in 2010 to provide guidance on evaluating vapor encroachment when performing a Phase I ESA. In accordance with the new ASTM standard, two conditions are evaluated: Vapor Encroachment Condition (VEC) and potential Vapor Encroachment Condition (pVEC). A VEC results from "the presence or likely presence of any chemicals of concern in the indoor air environment of existing or planned structures on a property caused by the release of vapor from contaminated soil or groundwater on the property or within close proximity to the property, at a concentration that presents or may present an unacceptable health risk to occupants." A pVEC is "a condition that exists when screening indicates the possibility of a VEC, but where there is insufficient data to ascertain the presence or likely presence of compounds of concern (COCs) in the indoor air environment." "Chemicals of Concern" are defined by the ASTM to be "chemicals in the subsurface environment that are known or reasonably expected to be present, that can potentially migrate as a vapor into

an existing or planned structure on a property, and that are generally recognized as having the potential for an adverse impact on human health."

ERA has found no evidence of a potential release of vapor encroachment contaminants of concern (as identified in ASTM E 2600-10) into the subsurface due to the current or past on-site operations discussed elsewhere in this Phase I ESA report. Considering there was no evidence of a release, a vapor encroachment condition due to on-site sources is unlikely to exist.

6.2 Agency Research

Files and records available at the agencies listed in Table 6.2-1 were reviewed for site information. Copies of pertinent documents are included in Appendix B.

Table 6.2-1. Agency Files/Records Summary

Source	Date	Information Obtained
Cal-EPA State Water Resources Control Board (SWRCB)	November 2023	Available information maintained on the RWQCB website (http://geotracker.swrcb.ca.gov) was reviewed for records concerning hazardous substance/waste spills, USTs, and LUSTs at the Site. Records for the Site were not identified.
SWRCB Storm Water Multiple Applications & Report Tracking System (SMARTS)	November 2023	ERA searched the SMARTS website. Records for the Site were not identified for the Site.
Cal-EPA Department of Toxic Substances Control (DTSC)	November 2023	Review of DTSC's website (http://www.envirostor.dtsc.ca.gov/public/) for spills, releases, and cleanup actions. Records for the Site were not identified.
Department of Water Resources	November 2023	The Department of Water Resources (DWR) was contact for records for on-site water-supply well. DWR had no records for on-site water-supply wells.
Geologic Energy Management Division	November 2023	ERA searched the CalGEM Well Finder website. No oil and gas wells are located on the Site or adjoining properties. A copy of the map is presented in Appendix B.
Placer County Assessor Office	November 2023	The Site is identified by Placer County Assessor as 023-221-076-000 (formerly 023-221-046) and 023-221-074-000. A copy of the parcel map is presented in Appendix B.
Placer County Fire Department	November 2023	According to the PCFD public information clerk, records on hazardous materials and tanks are maintained by PCEHD or the City of Roseville.
Roseville Fire Department	November 2023	According to the Roseville Fire Department public information clerk, no records on hazardous materials or tanks are available for the Site.
Placer County Environmental Health Department (PCEHD)	November 2023	PCEHD maintains records on chemical storage/usage, USTs, ASTs, and releases for some cities and outlying areas in Placer County. No records were available for the Site's APNs.

Table 6.2-1. Agency Files/Records Summary		
Source	**Date**	**Information Obtained**
Placer County Community Development Department, Building Division	November 2023	ERA's representative requested records on file for the current and past site APNs. According to the Building Division administrative clerk and our review of the online database, building permits were not available as records are maintained by street address and street addresses have not been assigned to the Site.

No environmental concerns were noted with regards to the records available for review.

6.3 Radon

Radon is a colorless, tasteless radioactive gas with a half-life of 3.8 days. The health risk potential of radon is associated with its rate of accumulation within confined areas, particularly those near or in the ground, such as basements, where vapors can readily transfer to indoor air from the ground through foundation cracks or other pathways. The U.S. EPA-specified action level is 4.0 picocuries per liter of air (pCi/L) with radon levels above 4.0 pCi/L of air considered to be unhealthy.

According to the U.S. EPA, the Site is located in U.S. EPA-designated Zone 2. Average radon concentrations within this zone are predicted to have an average indoor screening level of equal to or greater than 2 pCi/L and less than or equal to 4 pCi/L. The U.S. EPA conducted 68 radon tests within Placer County and 100% of the tests showed radon levels at less than 4 pCi/L for the 1st floor and 2nd floor living areas; 71% of the tests showed radon levels at less than 4 pCi/L for the basement and 29% of the tests showed radon levels at between 4 pCi/L and 20 pCi/L for the basement with the average activity in the basement reported as slightly over 3 pCi/L.

Based on ERA's review of available information; it is unlikely that elevated radon levels represent a potential environmental risk for the Site.

7. PREVIOUS ENVIRONMENTAL REPORTS

Previous environmental reports for the Site were not provided to ERA.

8. SITE RECONNAISSANCE

On November 9, 2023, Ms. Lita Freeman, performed a reconnaissance-level assessment of the Site to observe general site conditions and indications of the possible release(s) of chemicals to the subsurface. A walkover site reconnaissance was conducted to identify visible evidence of RECs. At the time of the site reconnaissance (2:00 p.m. to 3:45 p.m.), the climate at the Site was sunny and dry with temperatures in the mid- to high-60^{o}s Fahrenheit and dry surfaces. Photographs taken during the site reconnaissance are included in Appendix A.

Ms. Freeman was not accompanied during the site reconnaissance.

8.1 Methodology and Limiting Conditions

ERA notes that the Site is a large approximately 86-acre, undeveloped tract of land comprised of dense vegetation. Therefore, the entire Site was not reasonably accessible at the time of the site reconnaissance. Prior to the site reconnaissance, aerial photographs were reviewed to identify areas of potential environmental concern historically and/or currently present at the subject property. Those identified (if any) were observed at the time of the site reconnaissance to the best of our ability.

The methodology for the site visit included walking the Site and observing current site conditions.

8.2 Site Description

At the time of ERA' site visit, the Site was vacant land and divided by Walerga Road which crosses the Site in an east to southwest direction. An area approximately 20 feet wide between Old Walerga Road and the middle of the Site's northern border was graded for the widening of Baseline Road and erosion control material (hydroseed spray over weed barrier blanket) was observed across the surface; the remainder of this area along Baseline Road appeared to have been recently disced but erosion control materials were not present across this area. A paved cul-de-sac extending onto the Site from the residential development to the east was observed on the Site's northeastern portion.

A tree-lined creek, a paved walking path with several underground utility covers (marked as *Sanitary Sewer*), and several unpaved paths cross the Site's southern portion.

No evidence of former structures was observed on the Site and no paved area or possible covers for underground utilities (as noted in the 1984 aerial photo; see discussion in Section 5) was observed at the Site's northwestern corner during the site visit.

Small debris piles were observed along Old Walerga Road. The debris piles were limited to household trash, furniture, children's toys, etc. Several small piles of broken asphalt (asphalt rubble) were also observed along Old Walerga Road. A small stockpile of soil and gravel was observed on the Site's western portion at an access point from Old Walerga Road. Also, a soil stockpile was observed near the northeastern corner of the Site and appeared to be related to grading activities along the Site's northern border. No evidence of chemical or fuel releases was noted in these areas.

Two large construction equipment size vehicle tires were located on the Site's central portion with a PVC pipe between the tires. ERA understands that the tires were formerly used as water troughs for cattle. No information was available on the water source to fill the troughs and no evidence of a water-supply well was observed on the Site.

Markers for a buried fiber optic cable were observed on the Site's western portion (just east of Old Walerga Road) and several Placer Waterworks utility boxes were located across the Site.

No evidence of former on-site farm dumps was noted during the site visit.

Site observations are documented in Table 8-1.

Table 8-1. Site Observations

Item	Observations/Comments
Evidence of Past Site Use(s)	None revealed by our reconnaissance
Evidence of Past Use(s) of Adjoining Properties	None revealed by our reconnaissance
Storm Water	Storm water infiltrates the ground
Stressed Vegetation	None revealed by our reconnaissance
Stained Soil or Pavement	None revealed by our reconnaissance

Table 8-1. Site Observations	
Solid Waste Disposal/Fill Placement	None revealed by our reconnaissance except soil, gravel, and asphalt rubble observed on site as noted above
Pits, Ponds, Lagoons	None revealed by our reconnaissance
Pools of Liquid/Standing Water	None revealed by our reconnaissance except within the creek
Strong, Pungent, or Noxious Odors	None revealed by our reconnaissance
Existing/Former USTs, Vent/Fill Pipes	None revealed by our reconnaissance
Existing/Former ASTs	None revealed by our reconnaissance
Drums/Containers with Hazardous Liquids/Solids, Hazardous Waste, Petroleum Products	None revealed by our reconnaissance
Unidentified Substance Containers	None revealed by our reconnaissance
Sumps/Trenches/Floor Drains	None revealed by our reconnaissance
Stained Floors	None revealed by our reconnaissance
Petroleum Pipelines	None revealed by our reconnaissance
Hydraulic Fluid-Containing Equipment	None revealed by our reconnaissance
Equipment Containing Polychlorinated Biphenyls (PCBs)	None revealed by our reconnaissance
Wastewater/Treatment	None revealed by our reconnaissance
Heating/Cooling Method	No on-site structures
Water-Supply/Oil and Gas Wells	No oil or gas wells, water-supply wells, or groundwater monitoring wells were observed on the Site.
Potable Water Supply	None revealed by our reconnaissance
Septic Systems/Sanitary District	None revealed by our reconnaissance
Electricity	No on-site structures
Natural Gas	No on-site structures
Other	Not Applicable

No environmental concerns were noted during the site reconnaissance.

9. INTERVIEWS

The individuals noted in Table 9-1 were contacted in person, by phone, or by written communication to obtain information relevant to the environmental status and condition of the Site.

Specific information provided by the individuals contacted is presented below Table 9-1.

Table 9-1. Interviews	
Relationship to Property	**Name/Affiliation**
Key Site Manager/Owner Representative	Mr. Ryan Fong
User Representative	Mr. Chris Dickinson, Towne
Tenants/Former Owner	Mr. Kirk Doyle
Local Government Agency	As noted in Section 6.2

Mr. Ryan Fong was interviewed by ERA and noted that the Site has been vacant and fallow land, that construction of roadways for utility improvements have occurred on the site boundary and through the middle of the Site, and that the Site was used for cattle grazing in 2018 and 2019. Mr. Fong noted that the two large construction equipment size vehicle tires that are located on the Site's central portion were likely formerly used as water troughs for cattle. ERA understands that low-lying areas on the Site's northern portion were graded to level the ground surface across the Site and that no "imported fill material" was brought to the Site.

Mr. Kirk Doyle, a previous owner of the Site, informed ERA that his family owned the Site as part of an approximately 540-acre property between at least 1940 and 2007. Mr. Doyle noted that his family used the Site for dry land farming with crops generally limited to wheat and oats. Farming of the Site by Mr. Doyle's family ceased in the late 1980s. A small residence was located on the property until about 1999, according to Mr. Doyle. ERA's research indicated that no structures such as residences, barns, outbuildings, etc. were located on site in the past and that the residence referred to by Mr. Doyle was likely located on another portion of the 540-acre property.

Information obtained from others noted in Table 8-1 is presented throughout this report.

10. FINDINGS

This section discusses information was obtained by ERA from our review of regulatory agency files and databases, our site observations, and interviews during the Phase I ESA.

10.1 On-Site Findings

- No structures were apparent on site in the historical sources reviewed during this assessment. Historical resources reveal that most of the Site was used for agricultural purposes (dry-land farming) with the remainder as undeveloped land between at least 1910 and the early 1990s. According to the *Interim Guidance for Sampling Agricultural Properties (Third Revision)* dated August 7, 2008, by the DTSC, crops grown using dry-land methods are generally not treated with agricultural chemicals including environmentally persistent pesticides. The northern portion was used for cattle grazing in 2018 and 2019. Historical resources reveal that the Site's southern portion has been undeveloped land since at least 1910. Walerga Road (aka Old Walerga Road) has been present along the Site's western side since at least 1910; Walerga Road was realigned to cross the Site by 2006.
- No evidence of former structures was observed on the Site and no paved area or possible covers for underground utilities (as noted in the 1984 aerial photo; see Section 5) was observed at the Site's northwestern corner during the site visit. Small debris piles (household trash, furniture, children's toys, etc.) and several small piles of asphalt rubble were observed along Old Walerga Road. A small soil and gravel stockpile was observed on the Site's

western portion just off Old Walerga Road. Also, a soil stockpile was observed near the Site's northeastern corner and appeared to be related to grading activities along the Site's northern border. Two large construction equipment size vehicle tires, reportedly used as cattle water troughs, were located on the Site's central portion. No evidence of chemical or fuel releases was noted in these areas. Markers for a buried fiber optic cable were observed along the east side of Old Walerga Road and several Placer Waterworks utility boxes were located across the Site. A tree-lined creek, a paved walking path with several underground utility covers (marked as *Sanitary Sewer*) located along the walking path, and several unpaved paths cross the Site's southern portion.

- Wetlands have not been mapped on site by the U.S. Fish and Wildlife Service; however, the California Department of Fish and Wildlife has mapped state wetlands on the Site's northern portion. During the site visit, this area had a generally level topography.
- The Site is not located within a Federal Emergency Management Agency 1% Special Flood Hazard Area (100-year) zone and is not located within a 0.2% Annual Chance Flood Hazard (500-year) zone except a small area on the Site's southwestern corner along the creek.
- According to EDR and ERA's review of online databases, the site location has not been included in the regulatory agency databases reviewed for this assessment. EDR's search did not reveal environmental liens or activity and use limitations for the Site.

10.2 Off-Site Findings

- Based on review of available historical resources, the surrounding areas were predominantly undeveloped land or used for agricultural purposes (dry-land farming) between at least 1910 and the late 1990s with Baseline Road along the Site's northern border and Walerga Road along the Site's western border. By the mid-2000s, the existing single-family residences had been constructed on the east adjoining properties with Walerga Road realigned to its' current configuration. No significant changes were noted in the site vicinity since the mid-2000s except a residential development is currently being constructed on the west adjoining property and Baseline Road is being widened.
- According to EDR, several regulated facilities were identified within the ASTM search distances during the regulatory agency databases review with none located within a 1,000-foot radius of the Site except the Rutan Environmental Safety Services Corporation property located approximately 675 feet east of the Site. This business has been included in the RCRA NonGen/ No Longer Regulated (RCRA NonGen/NLR) database. Based on the lack of reported releases at this property, this facility does not appear to present a significant environmental concern to the Site.
- Regulated properties that could not be located because of insufficient address information are referred to by EDR as "orphan" facilities. Several orphan facilities/properties were reported by EDR but, based on observations during the site visit and ERA's knowledge of the site vicinity, these facilities/properties are not located within close proximity to the Site.

11. OPINION

This section discusses known or suspect environmental concerns, historical environmental concerns, and *de minimis* conditions identified during the ESA.

11.1 Known or Suspect Recognized Environmental Conditions

A *REC* refers to the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: due to release to the environment; under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment.

The following was identified during the course of this assessment:

- ERA did not identify *RECs* during the course of this assessment.

11.2 Known or Suspect Controlled Recognized Environmental Conditions

A *CREC* refers to a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. The following was identified during the course of this assessment:

- ERA did not identify *CRECs* during the course of this assessment.

11.3 Known or Suspect Historical Recognized Environmental Conditions

A *HREC* refers to 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 use criteria established by a regulatory authority, without subjecting the property to any required controls. The following was identified during the course of this assessment:

- ERA did not identify *HRECs* during the course of this assessment.

11.4 De Minimis Conditions

A *de minimis* condition is a condition that generally does not present a material risk of harm to public 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 following was identified during the course of this assessment:

- ERA did not identify a *de minimis* condition during the course of this assessment.

12. CONCLUSIONS

ERA has performed a Phase I ESA of the Site in conformance with the scope and limitations of ASTM Practice E 1527-21.

Based on the available information, this assessment has revealed no RECs, CRECs, HRECs, de minimis conditions, or significant data gaps in connection with the Site.

13. RECOMMENDATIONS

Based on the findings of this Phase I ESA, no further assessment appears warranted at the Site.

14. DEVIATIONS/DATA GAPS

ERA has performed this Phase I ESA in conformance with the scope and limitations of ASTM Practice E 1527-21 and 40 CFR Part 312. Any additions to or deletions from this practice are described in Section 2.4.

The following limiting factors were documented during this assessment:

- A 50-year chain-of-title report was not provided to ERA for review;
- Intervals between aerial photographs/topographic maps were more than 5 years;
- Surface soil could not be observed in some on-site areas because of thick vegetation; and
- Site observations were limited due to the size of the Site.

These limiting factors represent data gaps but do not represent significant data gaps and are unlikely to impact ERA' ability to identify RECs. Based on information obtained by ERA during our review of historical sources and observation of site conditions during our visit, these limiting factors would not appear to be significant and we do not anticipate that the information that could be obtained from these sources would change the conclusions of this report.

No significant data gaps were identified during this assessment.

15. ADDITIONAL SERVICES

No additional services were provided as part of this assessment.

16. REFERENCES

America Society for Testing and Materials International (ASTM). 2013. *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, ASTM Designation E 1527-21*.

_____. 2010. *Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions*. June.

California Environmental Protection Agency (Cal-EPA) Department of Toxic Substances Control (DTSC). 2008. *Interim Guidance for Sampling Agricultural Properties (Third Revision)*. August 7.

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Environmental Data Resources, Inc. (EDR). 2023. *The EDR Radius Map Report*. Inquiry Number 7489725.2s. November 6.

_____. 2023. EDR – *The EDR Aerial Photo Decade Package*. 7489725.5. November 6.

_____. 2023. EDR - *Certified Sanborn Map Report*. 7489725.3. November 6.

United States Department of Agriculture, Web Soil Survey, http://websoilsurvey.nrcs.usda.gov

United States Fish and Wildlife Service, https://www.fws.gov/wetlands/Data/Mapper

United States Geological Survey, *Topographic Maps, 1910, 1962, 1981, and 2015 Roseville, CA Quadrangle; 1911 Antelope, CA Quadrangle; and 1967, 1980, and 2015 Citrus Heights, CA Quadrangle.*

SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

The environmental assessment described herein was conducted by the undersigned employee of ERA. ERA's assessment was conducted in accordance with the American Society for Testing Materials International (ASTM) E 1527 - 21 guidelines, and the Code of Federal Regulations (CFR) 40 CFR Part 312 *Standards and Practices for All Appropriate Inquiries: Final Rule* which became effective on November 1, 2006. This assessment consisted solely of the activities described in the Introduction of this report, and the contract signed by ERA and the client prior to initiation of the assessment.

I declare that, to the best of my professional knowledge and belief, I meet the definition of environmental professional as defined in §312.10 of 40 C.F.R. 312. I, have the specific qualifications based on education, training, and experience to assess a property of the nature, and setting of the subject property. I have developed and performed all the appropriate inquiries in conformance with the standards and practices set forth in 40 C.F.R. Part 312.*

Report Prepared By:



November 23, 2023

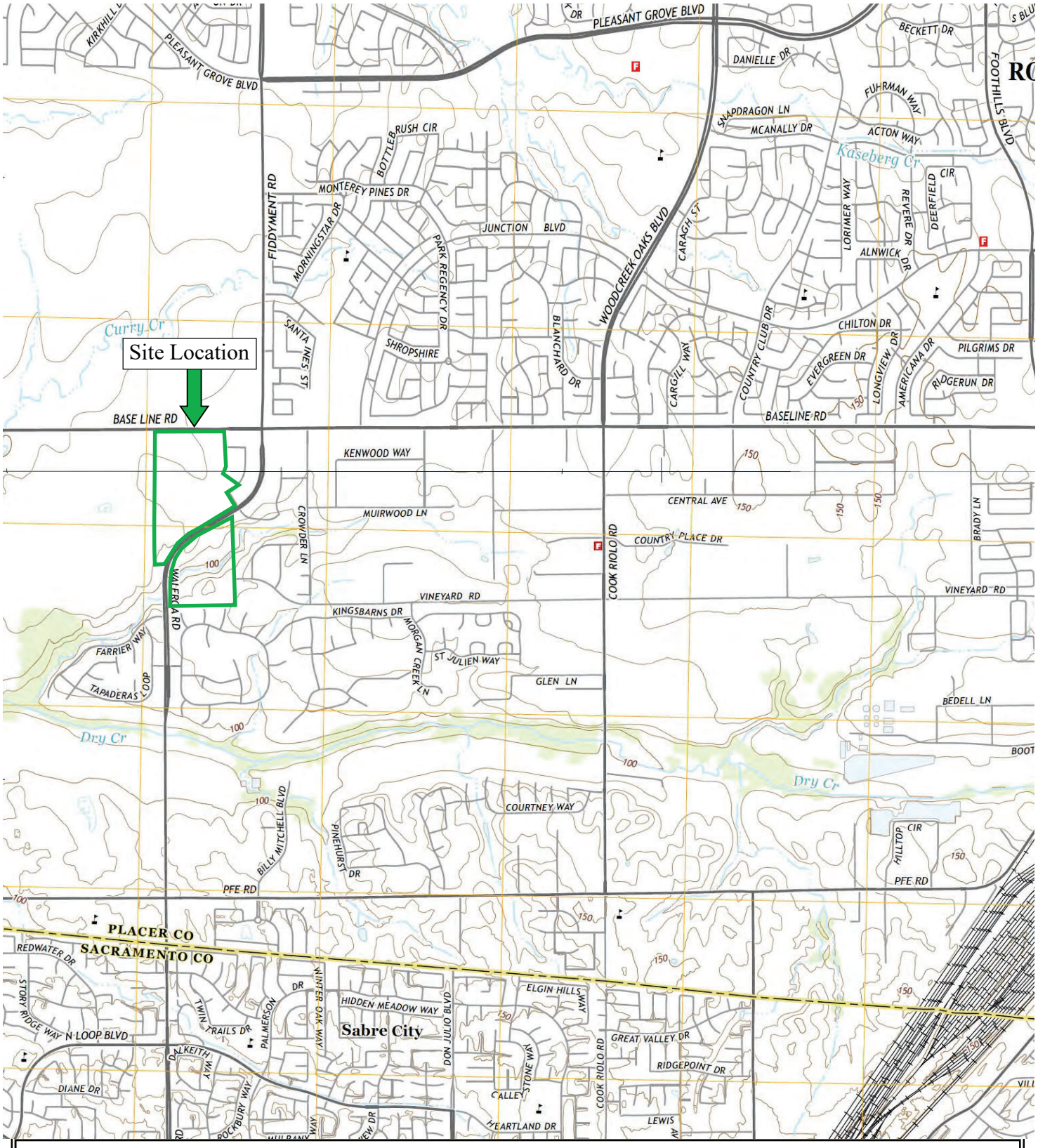
Lita D. Freeman, P.G. Date
Principal Geologist
California Professional Geologist No. 7368

* A professional geologist's or registered environmental assessor's certification of conditions comprises a declaration of his or her professional judgment. It does not constitute a warranty or guarantee, expressed or implied, nor does it relieve any other party of its responsibility to abide by contract documents, applicable codes, standards, regulations, and ordinances.

This Phase I ESA is assumed to be viable within 180 days of the components noted in the following table.

Component	Date
Interview with owner, operator, and/or occupant	11/14/2023
Search for environmental liens and AULs	11/8/2023
Regulatory database report	11/6/2023
Site reconnaissance	11/9/2023
EP Declaration	11/23/2023

Figures



Legend

— Site (boundaries approximate)

Source: USGS 2015 Roseville and Citrus Heights, CA Quadrangle Topographic Maps

* Figure not OCR Compatible

North

ERA soil-water-vapor	**Site Location Map**	PN: 01-2023-400-003
		Date: November 23, 2023
	PHASE I ENVIRONMENTAL SITE ASSESSMENT	EP: Lita Freeman
	Old Walerga Road at Baseline Road, Roseville, California	**Figure 1**



Legend

Site Boundary (approximate)

Creek

North

0 500 1,000

Scale (approximate, feet)
Based on Google Earth

ERA soil-water-vapor	**Site Plan**	PN: 01-2023-400-003
	PHASE I ENVIRONMENTAL SITE ASSESSMENT	Date: November 23, 2023
		EP: Lita Freeman
	Old Walerga Road at Baseline Road, Roseville, California	**Figure 2**

* Figure not OCR Compatible

Appendix A

Site Photographs

Photographic Log
Fong Property
Old Walerga Road at Baseline Road
Roseville, California 95747
ERA Project No. 01-2023-400-003

Photograph: 1 **Description:** Photo depicts view to the south across the northern portion of the Site with Old Walerga Road on far right of photo.	

Photograph: 2 **Description:** Photo depicts view to the southeast across the northern portion of the Site from near the intersection of Old Walerga Road and Baseline Road. The residences and trees in the background are along Walerga Road.	

* Figures not OCR Compatible

Photographs taken by L. Freeman on November 9, 2023

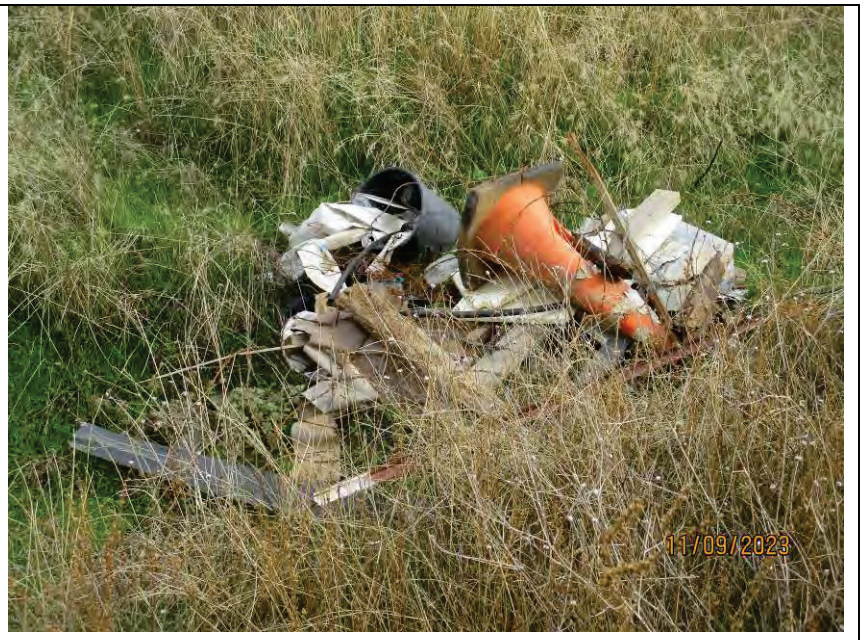
Photographic Log
Fong Property
Old Walerga Road at Baseline Road
Roseville, California 95747
ERA Project No. 01-2023-400-003

Photograph: 3 **Description:** Photo depicts view to the southwest across the northern portion of the Site.	
Photograph: 4 **Description:** Photo depicts the area near the Site's northwestern corner being prepared for construction of new lanes for Baseline Road. Note k-rails in background associated with road widening project. View to the west.	

* Figures not OCR Compatible

Photographic Log
Fong Property
Old Walerga Road at Baseline Road
Roseville, California 95747
ERA Project No. 01-2023-400-003

Photograph: 5 **Description:** Photo depicts landscaping debris on the western side of the Site along Old Walerga Road.	

Photograph: 6 **Description:** Photo depicts debris on the western side of the Site along Old Walerga Road.	

* Figures not OCR Compatible

Photographic Log
Fong Property
Old Walerga Road at Baseline Road
Roseville, California 95747
ERA Project No. 01-2023-400-003

Photograph: 7 **Description:** Photo depicts pile of asphalt rubble on the western portion of the Site along Old Walerga Road.	

Photograph: 8 **Description:** Photo depicts turn-out off Old Walerga Road on the western portion of the Site. Note the soil stockpile at arrow.	

* Figures not OCR Compatible

Photographic Log
Fong Property
Old Walerga Road at Baseline Road
Roseville, California 95747
ERA Project No. 01-2023-400-003

Photograph: 9 **Description:** Photo depicts tires located on the southern portion of the Site. The tires appear to have been used as water troughs for cattle. No water supply (e.g., water-supply well) was observed in this area. Residences in the background are located off site.	
Photograph: 10 **Description:** Photo depicts drainage on the southern portion of the Site. Drainage crosses under Walerga Road.	

* Figures not OCR Compatible

Photographic Log
Fong Property
Old Walerga Road at Baseline Road
Roseville, California 95747
ERA Project No. 01-2023-400-003

Photograph: 11 **Description:** Photo depicts view to the east across the southern portion of the Site from Walerga Road.	
Photograph: 12 **Description:** Photo depicts view to the north across the Site's southern portion.	

* Figures not OCR Compatible

Photographs taken by L. Freeman on November 9, 2023

Photographic Log
Fong Property
Old Walerga Road at Baseline Road
Roseville, California 95747
ERA Project No. 01-2023-400-003

Photograph: 13 **Description:** Photo depicts view to the northwest from the southern portion of the Site across Walerga Road of the northern portion of the Site. Residences on the left in the photo are off site.	
Photograph: 14 **Description:** Photo depicts view to the south across the southern portion of the Site. Residences in background are off site.	

* Figures not OCR Compatible

Photographic Log
Fong Property
Old Walerga Road at Baseline Road
Roseville, California 95747
ERA Project No. 01-2023-400-003

Photograph: 15 **Description:** Photo depicts Placer Waterworks infrastructure (one of several located on the Site).	

Photograph: 16 **Description:** Photo depicts marker for buried fiber optic cable located on the east side of Old Walerga Road.	

* Figures not OCR Compatible

Photographic Log
Fong Property
Old Walerga Road at Baseline Road
Roseville, California 95747
ERA Project No. 01-2023-400-003

Photograph: 17 **Description:** Photo depicts view to the north across Baseline Road of undeveloped land on north adjoining property.	

Photograph: 18 **Description:** Photo depicts view to the north of residences on the east adjoining properties.	

* Figures not OCR Compatible

Photographic Log
Fong Property
Old Walerga Road at Baseline Road
Roseville, California 95747
ERA Project No. 01-2023-400-003

Photograph: 19 **Description:** Photo depicts view to the northeast of undeveloped land and residences on east adjoining properties.	
Photograph: 20 **Description:** Photo depicts view to the southeast and off-site residences to the south.	

* Figures not OCR Compatible

Photographic Log
Fong Property
Old Walerga Road at Baseline Road
Roseville, California 95747
ERA Project No. 01-2023-400-003

Photograph: 21 **Description:** Photo depicts view to the south with Walerga Road on left, Old Walerga Road on right, and residential development under construction in background.	
Photograph: 22 **Description:** Photo depicts view to the west of undeveloped land and new residential development.	

* Figures not OCR Compatible

Appendix B

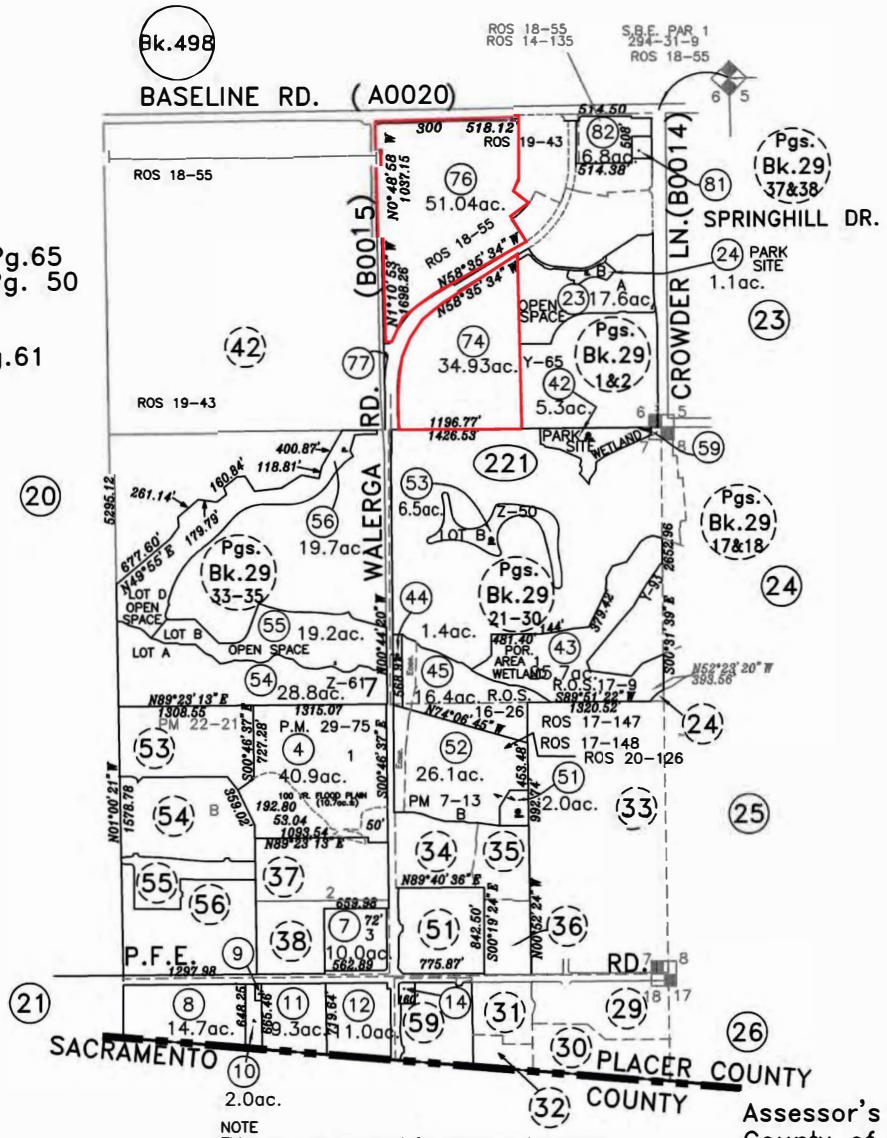
Regulatory Agency Documentation

Provided by:
PARCELQUEST

T. 10 N. R.6 E. M.D.B. & M.

23–22

Survey M.O.R. Bk.2, Pg.67
Survey M.O.R. Bk.5, Pg.74
Survey M.O.R. Bk.14, Pg.135
Parcel Map M.O.R. Bk. 7, Pg.13
Parcel Map M.O.R. Bk.10, Pg.91
Parcel Map M.O.R. Bk.22, Pg.21
Parcel Map M.O.R. Bk.29, Pg.75
Survey M.O.R. Bk.16, Pg.26, No.2209
Survey M.O.R. Bk.17, Pg.9, No.2308
Sun Valley Oaks, Phase I, M.O.R. Bk.Y, Pg.65
Morgan Creek, Village P, M.O.R. Bk. Z, Pg. 50
Survey M.O.R. Bk.17, Pg.147, No.2522
Survey M.O.R. Bk.17, Pg.148, No.2535
Doyle Ranch Tr. No. 912 M.O.R. Bk.Z, Pg.61
Survey M.O.R. Bk.18, Pg.55, No.2600
Survey M.O.R. Bk.19, Pg.43, No.2759
Survey M.O.R. Bk.20, Pg.126, No.3045
Morgan Place, M.O.R. Bk. GG, Pg. 19



08-09-2022
03-08-2022
03-07-2022
02-17-2022
02-16-2022
10-06-2021
10-06-2020
10-05-2020
06-26-20 0 PQ
06-26-20 9
06-25-201 9
02-25-201 9
02-13-201 9
12-08-201 7
04-30-201 4
04-29-201 4
04-21-201 4
03-19-2007
08-23-2004
07-13-2004
01-28-200 4
11-13-200 3
10-06-200 3
05-06-200 3
04-25-200 3
04-22-200 3
02-06-200 3
02-05-2003
07-19-2002
03-22-2002
11-19-2001
09-10-2001
05-21-2001
07-17-2000
12-08-98 BMJ
Redrawn From Base Map Information

NOTE
All distances on curved lines are chord measurements.

NOTE
This map was prepared for assessment purposes only, and is not intended to illustrate legal building sites or establish precedence over local ordinances. Official information concerning size or use of any parcel should be obtained from recorded documents and local governing agencies.

Assessor's Map Bk. 23 Pg.22
County of Placer, Calif.

NOTE
Assessor's Block Numbers Shown in Ellipses.
Assessor's Parcel Numbers Shown in Circles.

* Figure not OCR Compatible

U.S. Fish and Wildlife Service
National Wetlands Inventory

Fong Property



November 20, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

* Figure not OCR Compatible

United States Department of Agriculture

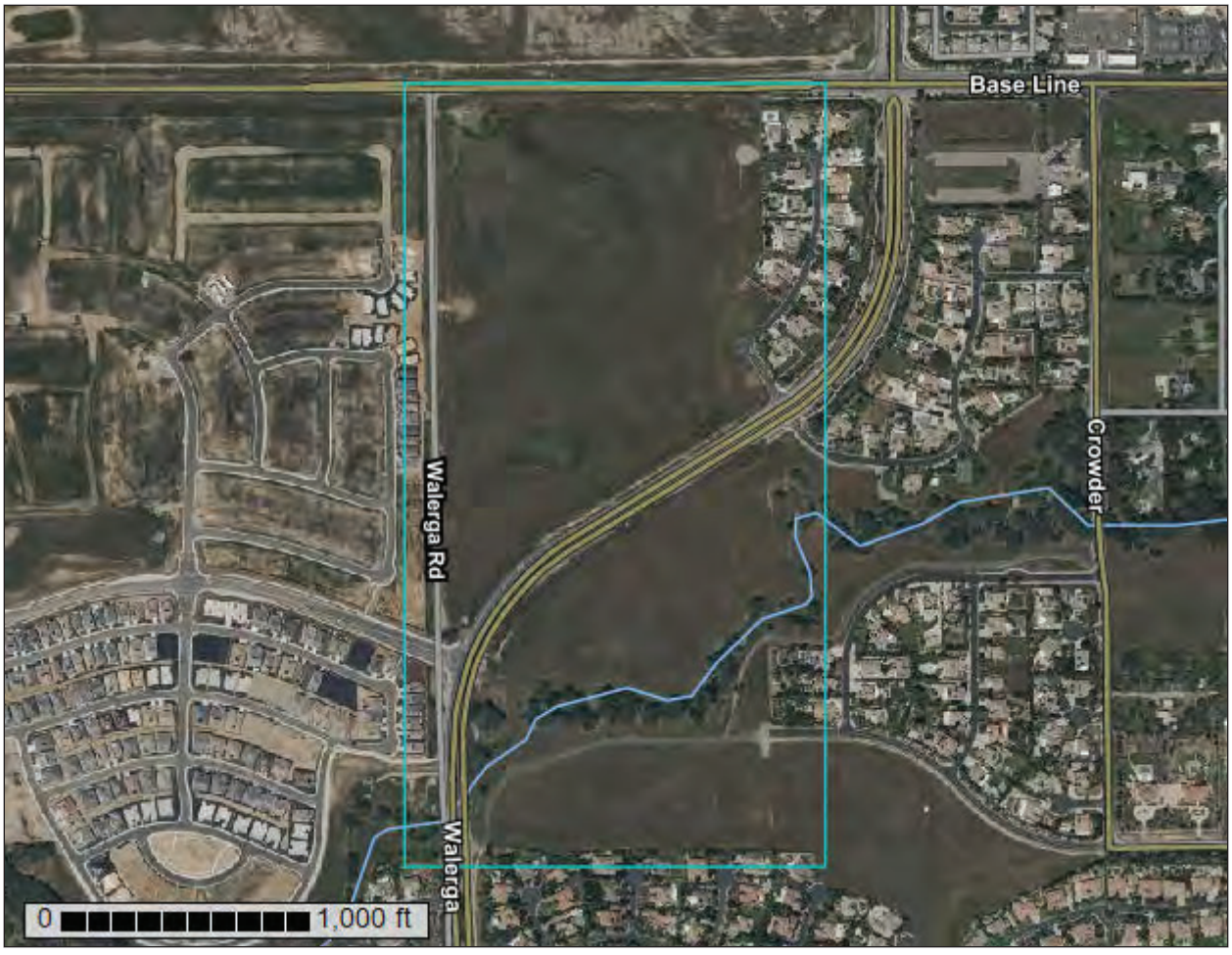
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Placer County, California, Western Part

Fong Property



* Figure not OCR Compatible

November 20, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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Contents

Preface..... 2
Soil Map..... 5
Soil Map.....6
Legend.....7
Map Unit Legend..... 8
Map Unit Descriptions..... 8
Placer County, California, Western Part.....10
140—Cometa sandy loam, 1 to 5 percent slopes..... 10
141—Cometa-Fiddyment complex, 1 to 5 percent slopes.....11
142—Cometa-Ramona sandy loams, 1 to 5 percent slopes.....13
146—Fiddyment loam, 1 to 8 percent slopes.....15
147—Fiddyment-Kaseberg loams, 2 to 9 percent slopes..... 16
175—Ramona sandy loam, 2 to 9 percent slopes..... 18
182—San Joaquin-Cometa sandy loams, 1 to 5 percent slopes..... 19
194—Xerofluvents, frequently flooded..... 21
References.....23

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:5,580 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

* Figure not OCR Compatible

* Figure not OCR Compatible

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Placer County, California, Western Part
Survey Area Data: Version 15, Aug 31, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 23, 2022—Apr 24, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
140	Cometa sandy loam, 1 to 5 percent slopes	28.0	23.1%
141	Cometa-Fiddyment complex, 1 to 5 percent slopes	26.4	21.7%
142	Cometa-Ramona sandy loams, 1 to 5 percent slopes	11.4	9.4%
146	Fiddyment loam, 1 to 8 percent slopes	4.1	3.4%
147	Fiddyment-Kaseberg loams, 2 to 9 percent slopes	2.6	2.2%
175	Ramona sandy loam, 2 to 9 percent slopes	12.9	10.7%
182	San Joaquin-Cometa sandy loams, 1 to 5 percent slopes	16.2	13.4%
194	Xerofluvents, frequently flooded	19.8	16.3%
Totals for Area of Interest		**121.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a

given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Placer County, California, Western Part

140—Cometa sandy loam, 1 to 5 percent slopes

Map Unit Setting

National map unit symbol: hfzj
Elevation: 20 to 400 feet
Mean annual precipitation: 10 to 23 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 260 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Cometa and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cometa

Setting

Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 18 inches: sandy loam
H2 - 18 to 29 inches: clay
H3 - 29 to 60 inches: sandy loam

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Kaseberg

Percent of map unit: 5 percent
Hydric soil rating: No

Fiddyment
Percent of map unit: 5 percent
Hydric soil rating: No

San joaquin
Percent of map unit: 4 percent
Hydric soil rating: No

Alamo
Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

141—Cometa-Fiddyment complex, 1 to 5 percent slopes

Map Unit Setting
National map unit symbol: hfzk
Elevation: 20 to 400 feet
Mean annual precipitation: 10 to 23 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 230 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition
Cometa and similar soils: 40 percent
Fiddyment and similar soils: 30 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cometa

Setting
Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile
H1 - 0 to 18 inches: sandy loam
H2 - 18 to 29 inches: clay
H3 - 29 to 60 inches: sandy loam

Properties and qualities
Slope: 1 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R017XD093CA - CLAYPAN
Hydric soil rating: No

Description of Fiddyment

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from siltstone

Typical profile

H1 - 0 to 12 inches: loam
H2 - 12 to 28 inches: clay loam
H3 - 28 to 35 inches: indurated
H4 - 35 to 39 inches: weathered bedrock

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: 20 to 35 inches to duripan; 35 to 39 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R017XD093CA - CLAYPAN
Hydric soil rating: No

Minor Components

San joaquin, sandy loam

Percent of map unit: 10 percent
Hydric soil rating: No

Kaseberg, loam

Percent of map unit: 10 percent
Hydric soil rating: No

Ramona, sandy loam
Percent of map unit: 5 percent
Hydric soil rating: No

Alamo, clay
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

142—Cometa-Ramona sandy loams, 1 to 5 percent slopes

Map Unit Setting
National map unit symbol: hfzl
Elevation: 20 to 3,500 feet
Mean annual precipitation: 10 to 23 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 230 to 320 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Cometa and similar soils: 50 percent
Ramona and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cometa

Setting
Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile
H1 - 0 to 18 inches: sandy loam
H2 - 18 to 29 inches: clay
H3 - 29 to 60 inches: sandy loam

Properties and qualities
Slope: 1 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Description of Ramona

Setting

Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 6 inches: sandy loam
H2 - 6 to 14 inches: loam
H3 - 14 to 55 inches: sandy clay loam
H4 - 55 to 73 inches: gravelly sandy loam

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

San joaquin

Percent of map unit: 5 percent
Hydric soil rating: No

Fiddyment

Percent of map unit: 5 percent
Hydric soil rating: No

Alamo

Percent of map unit: 5 percent
Landform: Depressions

Hydric soil rating: Yes

Xerofluvent

Percent of map unit: 5 percent
Landform: Drainageways
Hydric soil rating: Yes

146—Fiddyment loam, 1 to 8 percent slopes

Map Unit Setting

National map unit symbol: hfzq
Elevation: 50 to 280 feet
Mean annual precipitation: 19 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 230 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Fiddyment and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fiddyment

Setting

Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from siltstone

Typical profile

H1 - 0 to 12 inches: loam
H2 - 12 to 28 inches: clay loam
H3 - 28 to 35 inches: indurated
H4 - 35 to 39 inches: weathered bedrock

Properties and qualities

Slope: 1 to 8 percent
Depth to restrictive feature: 20 to 35 inches to duripan; 35 to 39 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: No

Minor Components

Cometa

Percent of map unit: 5 percent
Hydric soil rating: No

Kaseberg

Percent of map unit: 5 percent
Hydric soil rating: No

San joaquin

Percent of map unit: 3 percent
Hydric soil rating: No

Alamo

Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

147—Fiddyment-Kaseberg loams, 2 to 9 percent slopes

Map Unit Setting

National map unit symbol: hfzr
Elevation: 50 to 280 feet
Mean annual precipitation: 16 to 22 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 230 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Fiddyment and similar soils: 50 percent
Kaseberg and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fiddyment

Setting

Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from siltstone

Typical profile

H1 - 0 to 12 inches: loam
H2 - 12 to 28 inches: clay loam
H3 - 28 to 35 inches: indurated
H4 - 35 to 39 inches: weathered bedrock

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: 20 to 35 inches to duripan; 35 to 39 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: No

Description of Kaseberg

Setting

Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from siltstone

Typical profile

H1 - 0 to 16 inches: loam
H2 - 16 to 17 inches: indurated
H3 - 17 to 21 inches: weathered bedrock

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: 16 to 17 inches to duripan; 17 to 21 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: D
Ecological site: R017XE109CA - SHALLOW LOAMY
Hydric soil rating: No

Minor Components

Unnamed, gravelly
Percent of map unit: 10 percent
Hydric soil rating: No

Alamo
Percent of map unit: 10 percent
Landform: Depressions
Hydric soil rating: Yes

175—Ramona sandy loam, 2 to 9 percent slopes

Map Unit Setting
National map unit symbol: hg0n
Elevation: 250 to 3,500 feet
Mean annual precipitation: 10 to 20 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 230 to 320 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Ramona and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ramona

Setting
Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile
H1 - 0 to 6 inches: sandy loam
H2 - 6 to 14 inches: fine sandy loam
H3 - 14 to 55 inches: sandy clay loam
H4 - 55 to 73 inches: gravelly sandy loam

Properties and qualities
Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained

Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups
Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Cometa
Percent of map unit: 5 percent
Hydric soil rating: No

Kilaga
Percent of map unit: 5 percent
Hydric soil rating: No

San joaquin
Percent of map unit: 4 percent
Hydric soil rating: No

Unnamed
Percent of map unit: 1 percent
Landform: Drainageways
Hydric soil rating: Yes

182—San Joaquin-Cometa sandy loams, 1 to 5 percent slopes

Map Unit Setting
National map unit symbol: hg0w
Elevation: 20 to 500 feet
Mean annual precipitation: 10 to 23 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition
San joaquin and similar soils: 40 percent
Cometa and similar soils: 30 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Joaquin

Setting

Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 15 inches: sandy loam
H2 - 15 to 35 inches: clay loam
H3 - 35 to 50 inches: indurated
H4 - 50 to 60 inches: stratified sandy loam to loam

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: More than 80 inches; 35 to 50 inches to duripan
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R017XD093CA - CLAYPAN
Hydric soil rating: No

Description of Cometa

Setting

Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 18 inches: sandy loam
H2 - 18 to 29 inches: clay
H3 - 29 to 60 inches: sandy loam

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R017XD093CA - CLAYPAN
Hydric soil rating: No

Minor Components

Ramona

Percent of map unit: 10 percent
Hydric soil rating: No

Fiddyment

Percent of map unit: 10 percent
Hydric soil rating: No

Alamo

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Kaseberg

Percent of map unit: 5 percent
Hydric soil rating: No

194—Xerofluvents, frequently flooded

Map Unit Setting

National map unit symbol: hg18
Elevation: 0 to 1,500 feet
Mean annual precipitation: 14 to 20 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 250 to 270 days
Farmland classification: Not prime farmland

Map Unit Composition

Xerofluvents, frequently flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Xerofluvents, Frequently Flooded

Setting

Landform: Drainageways
Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 15 inches: stratified loamy sand to fine sandy loam
H2 - 15 to 37 inches: stratified loamy sand to fine sandy loam to silt loam
H3 - 37 to 55 inches: stratified loam to silty clay loam to clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 30 to 57 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: Yes

Minor Components

Unnamed

Percent of map unit: 10 percent
Landform: Drainageways
Hydric soil rating: Yes

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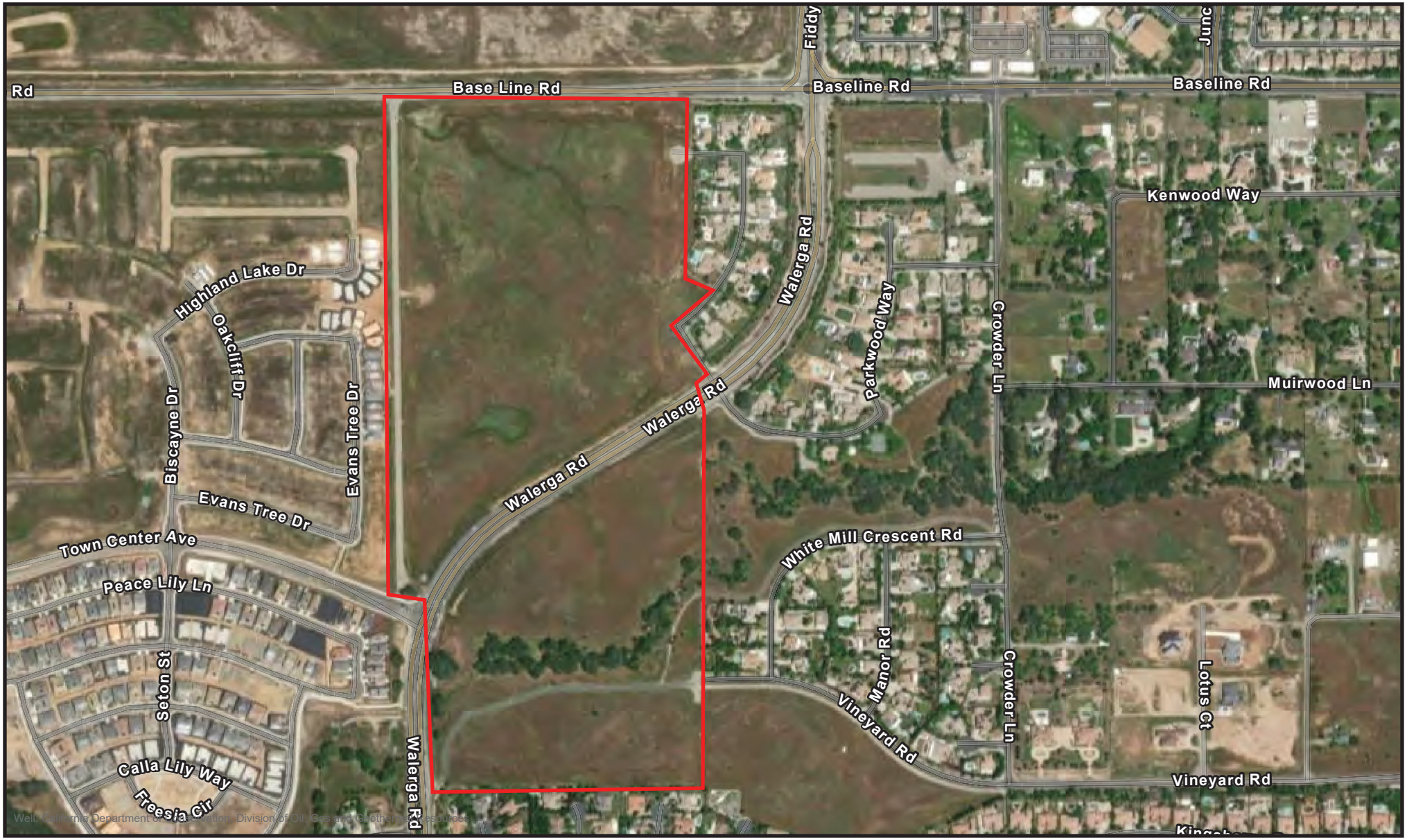
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0 0.2 0.4 mi

0 0.25 0.5 km

* Figure not OCR Compatible

Geologic Energy Management Division
715 P Street, MS 1803
Sacramento, CA 95814
Phone: (916) 445-9686
Email: calgem_webmaster@conservation.ca.gov
www.conservation.ca.gov/calgem

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California Natural Resources Agency
Department of Conservation

Well Status & Type

Active	Oil & Gas	Observation
Idle	Gas	Multi-purpose
New	Dry Hole	Water Source
Plugged	Injection	Unknown
Canceled	Cyclic Steam	Core Hole
Unknown	Gas Storage	

Appendix C

Historical Research Documentation

Fong Property

Baseline Road and Walerga Road

Roseville, CA 95747

Inquiry Number: 7489725.3

November 06, 2023

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

11/06/23

Site Name:

Fong Property
Baseline Road and Walerga Rc
Roseville, CA 95747
EDR Inquiry # 7489725.3

Client Name:

Environmental Risk Assessors
5098 Foothills Boulevard Suite 3-146
Roseville, CA 95747
Contact: Lita Freeman

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Project Fong Property

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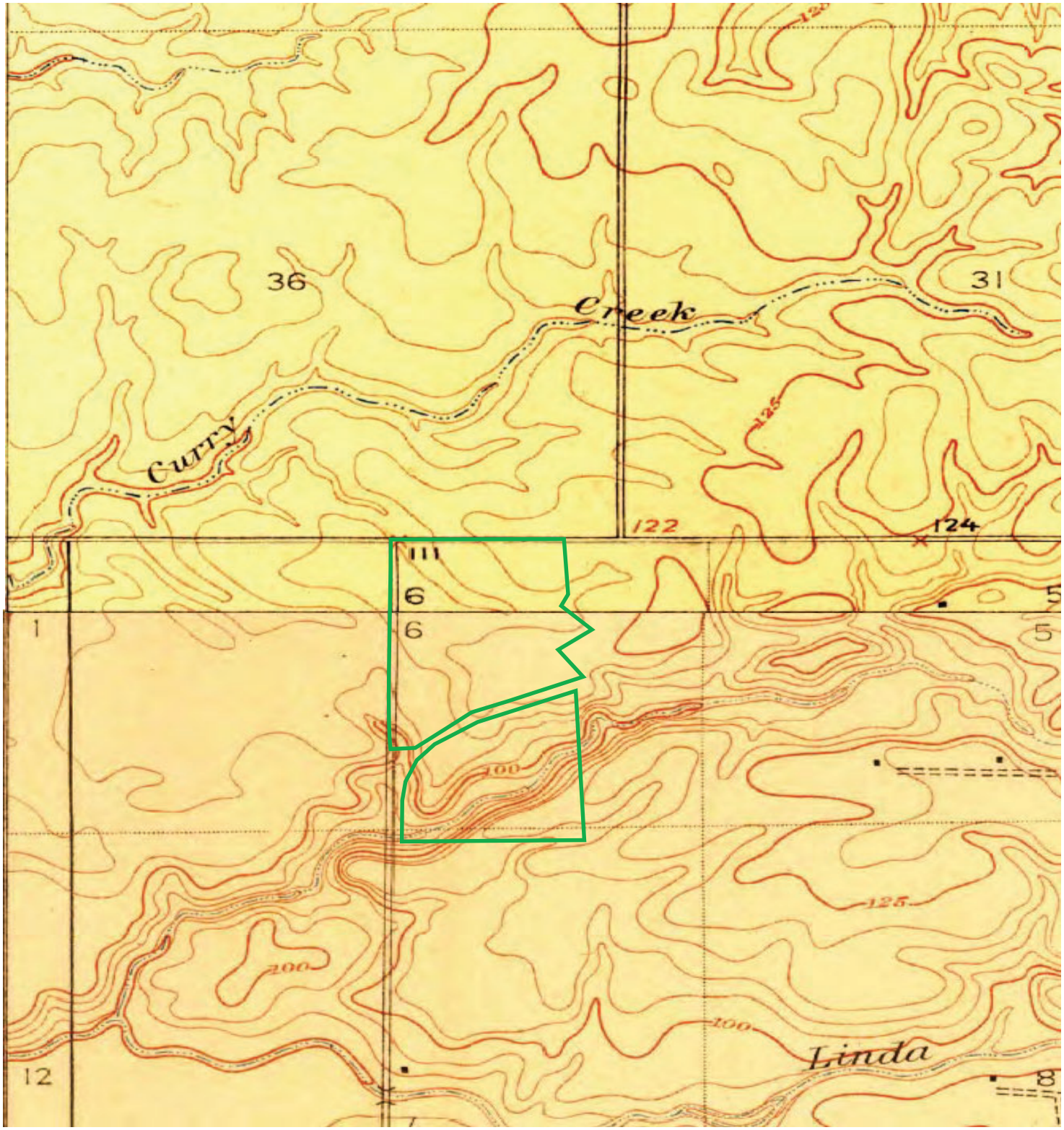
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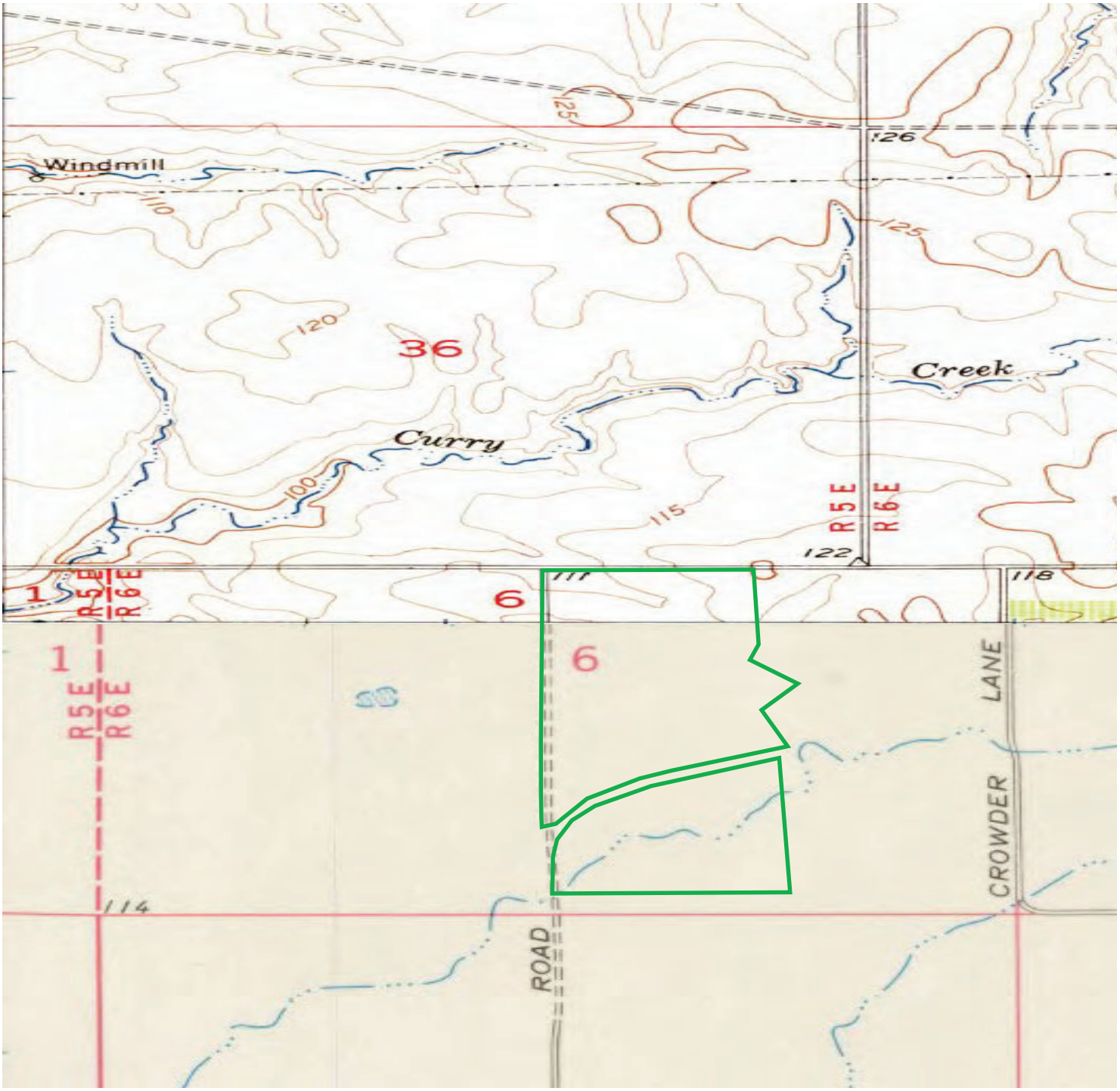
Legend

— Site (boundaries approximate)

North

* Figure not OCR Compatible

ERA soil-water-vapor	**1911 Antelope and 1910 Roseville, CA Quadrangle Topographic Maps**	PN: 01-2023-400-003
		Date: November 23, 2023
	PHASE I ENVIRONMENTAL SITE ASSESSMENT Old Walerga Road at Baseline Road, Roseville, California	EP: Lita Freeman

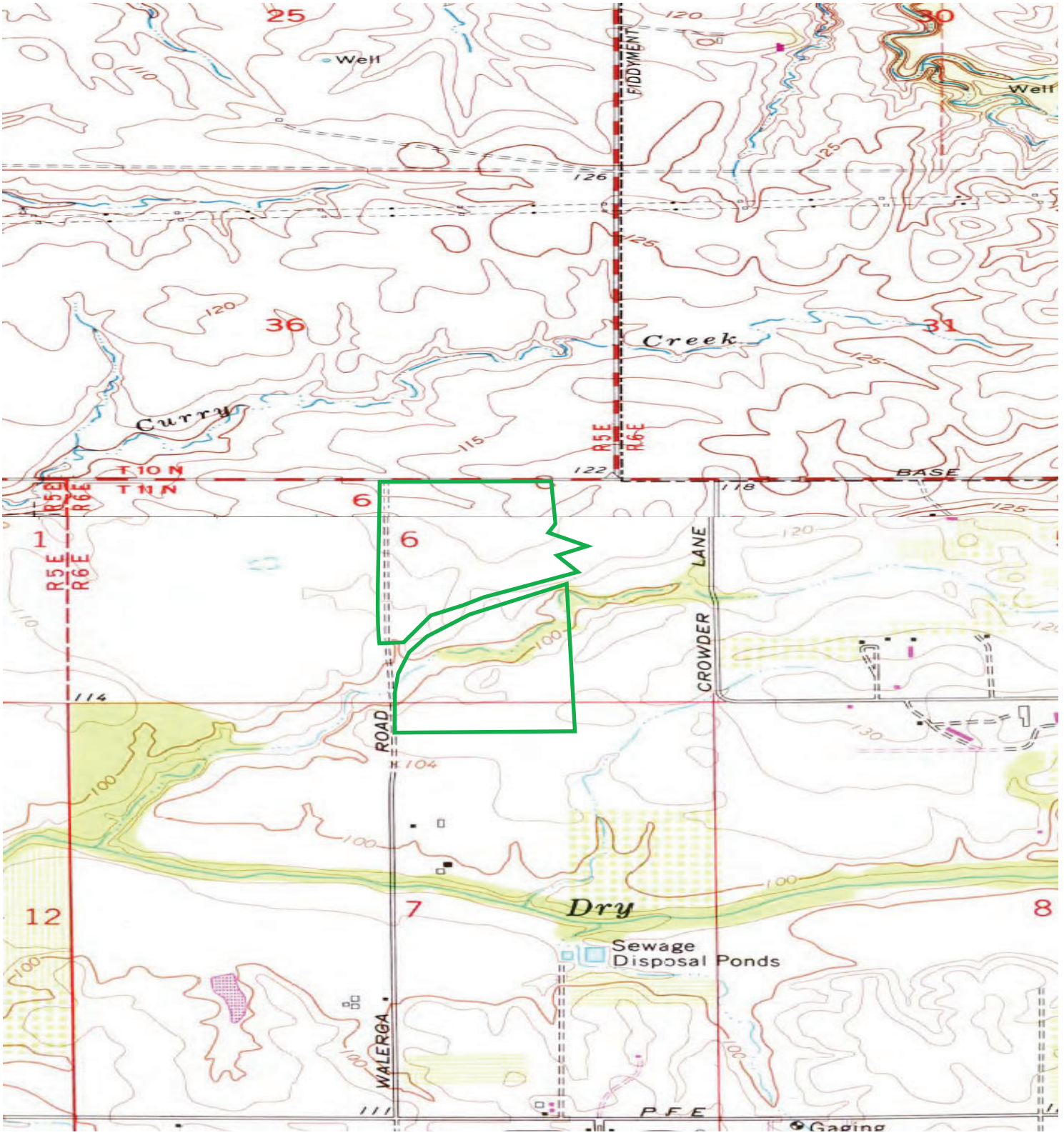


* Figure not OCR Compatible

Legend
— Site (boundaries approximate)

North

ERA soil-water-vapor	**1967 Citrus Heights and 1962 Roseville, CA Quadrangle Topographic Maps**	PN: 01-2023-400-003
		Date: November 23, 2023
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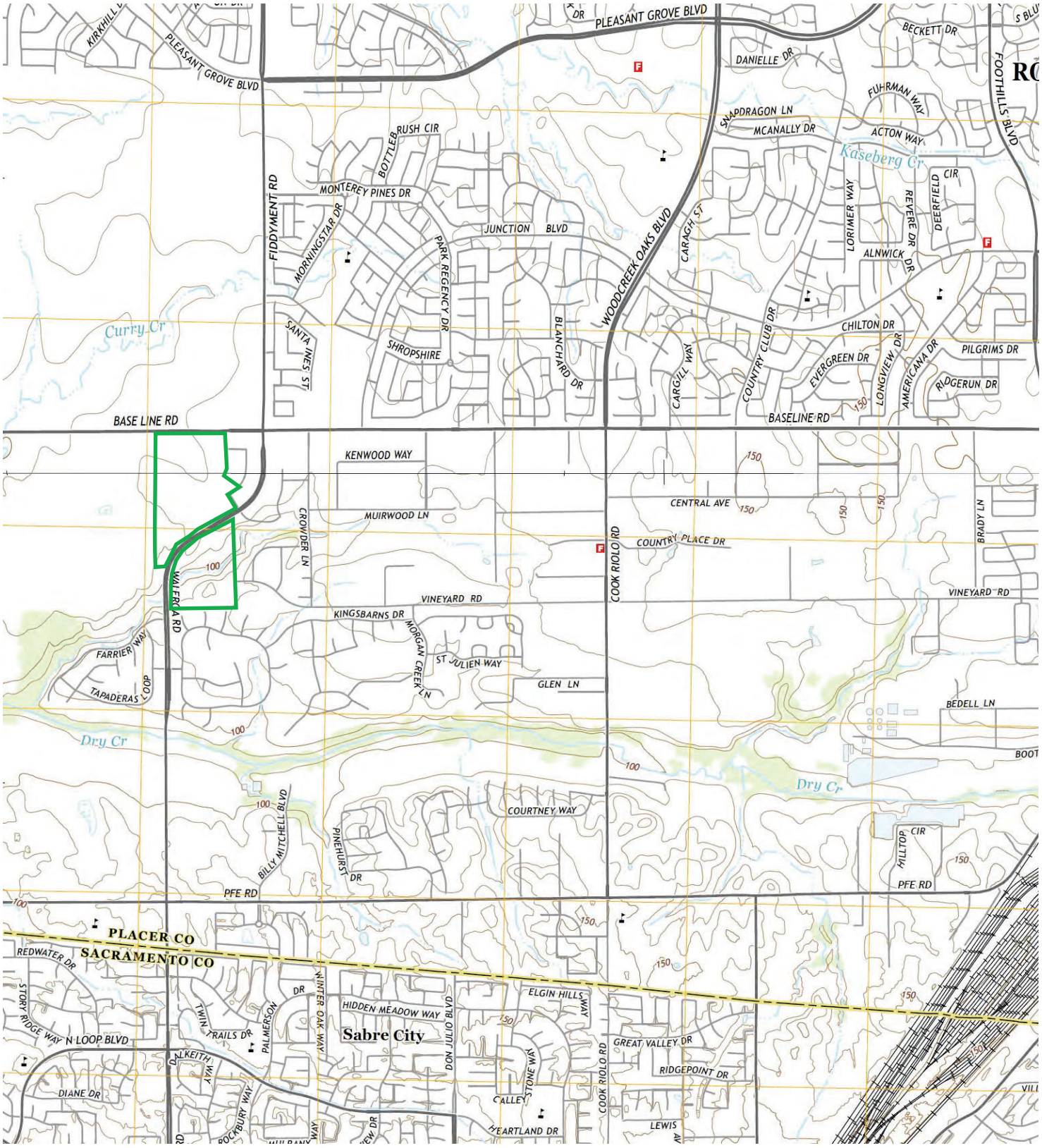
Legend

Site (boundaries approximate)

* Figure not OCR Compatible

North

ERA soil-water-vapor	**1980 Citrus Heights and 1981 Roseville, CA Quadrangle Topographic Maps**	PN: 01-2023-400-003
		Date: November 23, 2023
	PHASE I ENVIRONMENTAL SITE ASSESSMENT	EP: Lita Freeman
	Old Walerga Road at Baseline Road, Roseville, California	



Legend

— Site (boundaries approximate) * Figure not OCR Compatible ⇧ North

ERA soil-water-vapor	**2015 Roseville and Citrus Heights, CA Quadrangle Topographic Maps**	PN: 01-2023-400-003
		Date: November 23, 2023
	PHASE I ENVIRONMENTAL SITE ASSESSMENT	EP: Lita Freeman
	Old Walerga Road at Baseline Road, Roseville, California	

Fong Property

Baseline Road and Walerga Road

Roseville, CA 95747

Inquiry Number: 7489725.5

November 06, 2023

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

11/06/23

Site Name:

Fong Property
Baseline Road and Walerga Rc
Roseville, CA 95747
EDR Inquiry # 7489725.5

Client Name:

Environmental Risk Assessors
5098 Foothills Boulevard Suite 3-146
Roseville, CA 95747
Contact: Lita Freeman

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	*Scale*	*Details*	*Source*
2020	1"=500'	Flight Year: 2020	USDA/NAIP
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
1998	1"=500'	Acquisition Date: January 01, 1998	USGS/DOQQ
1993	1"=500'	Acquisition Date: May 23, 1993	USGS/DOQQ
1984	1"=500'	Flight Date: June 08, 1984	USDA
1975	1"=500'	Flight Date: August 25, 1975	USGS
1972	1"=500'	Flight Date: June 28, 1972	USDA
1966	1"=500'	Flight Date: August 04, 1966	USGS
1962	1"=500'	Flight Date: July 28, 1962	USGS
1957	1"=500'	Flight Date: September 09, 1957	USDA
1952	1"=500'	Flight Date: July 18, 1952	USDA
1947	1"=500'	Flight Date: July 28, 1947	USGS
1937	1"=500'	Flight Date: September 01, 1937	USDA

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* Figure not OCR Compatible



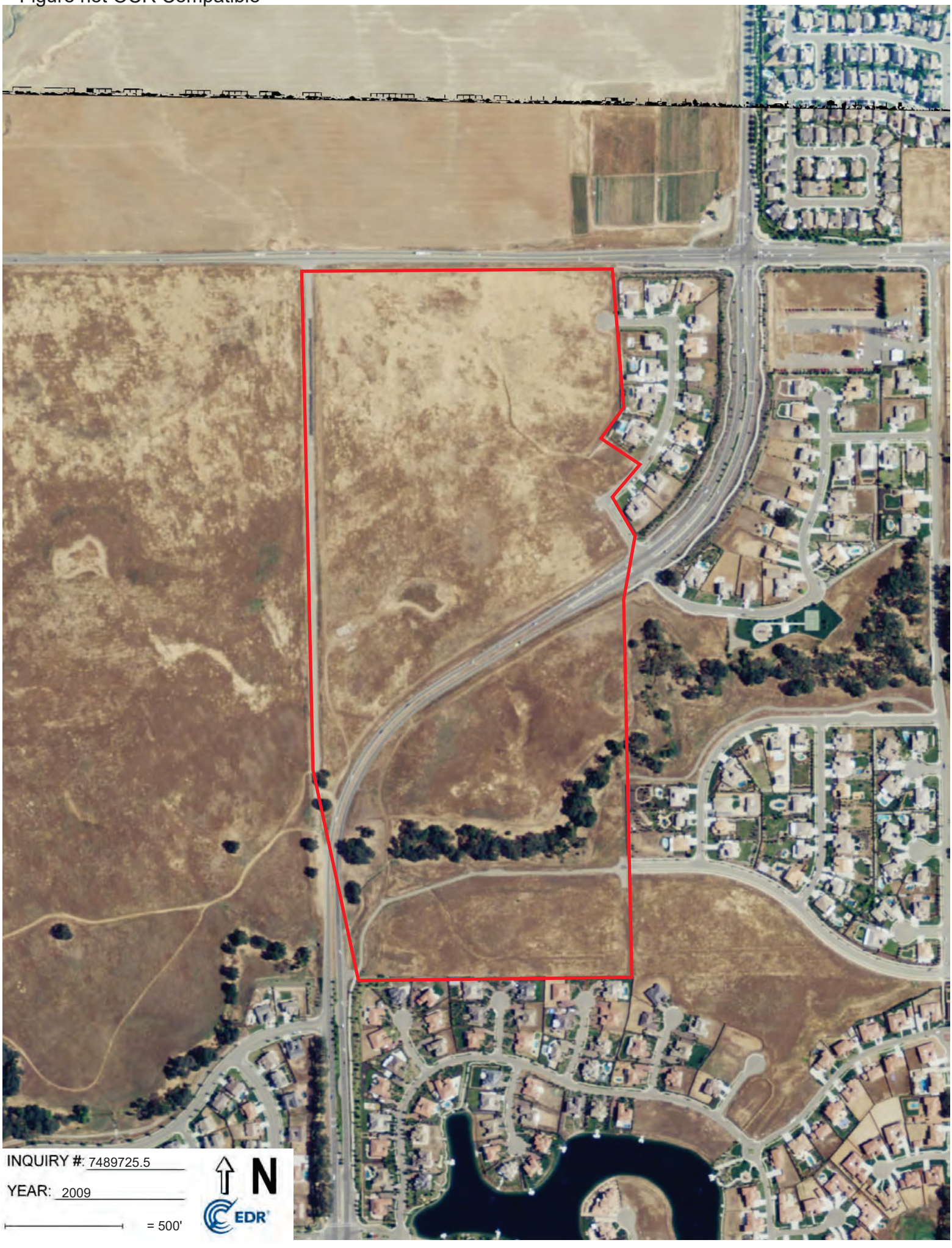
* Figure not OCR Compatible



* Figure not OCR Compatible



* Figure not OCR Compatible



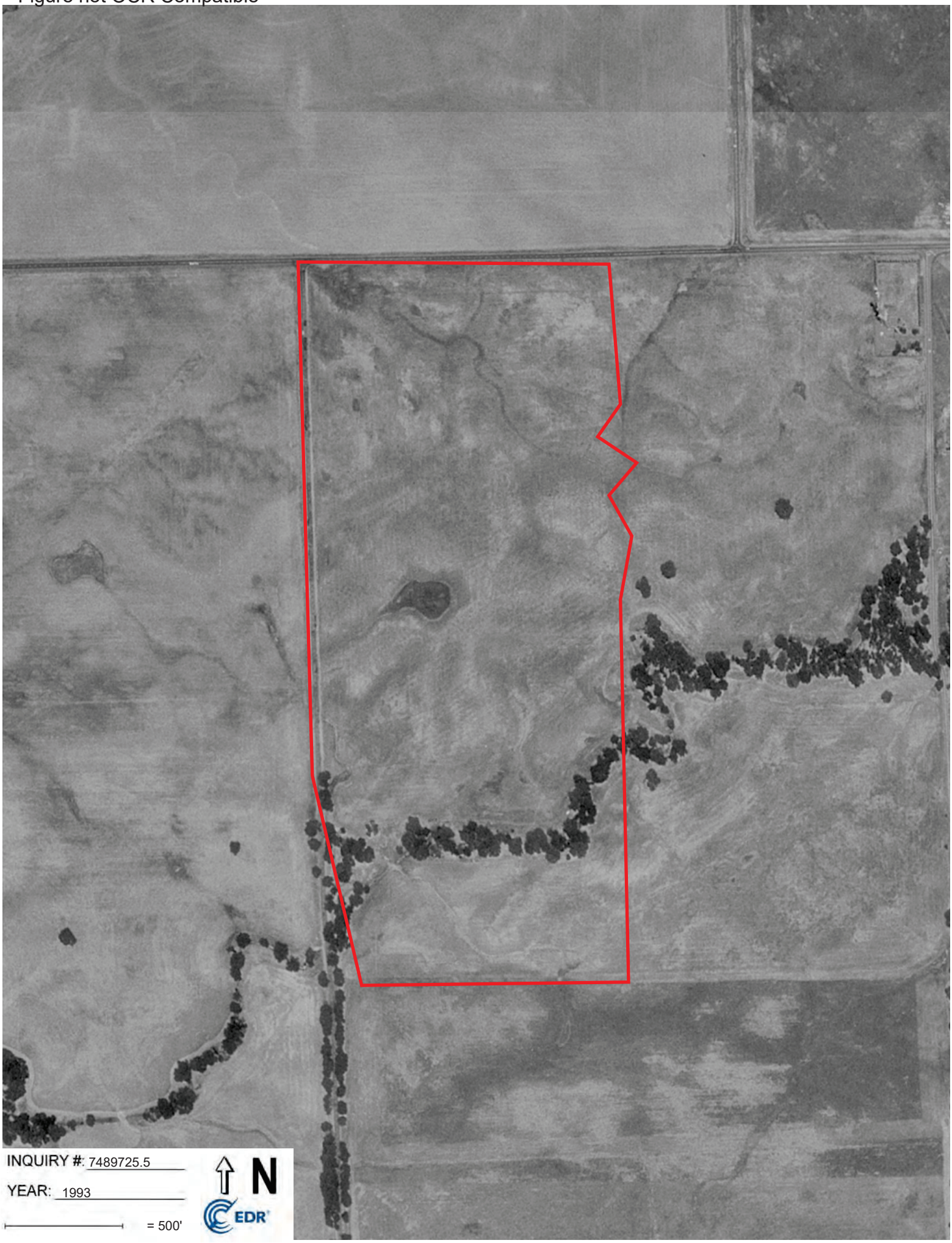
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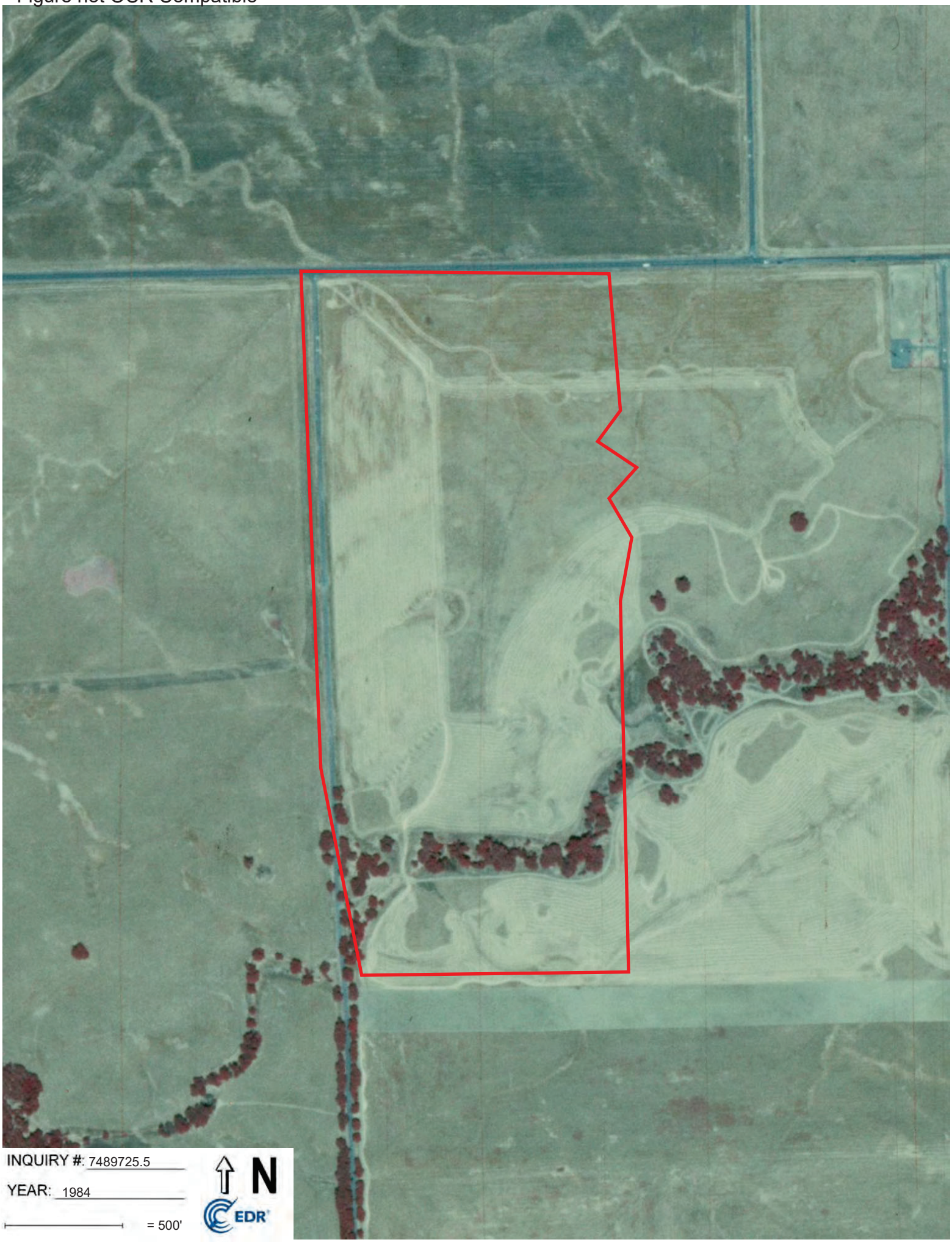
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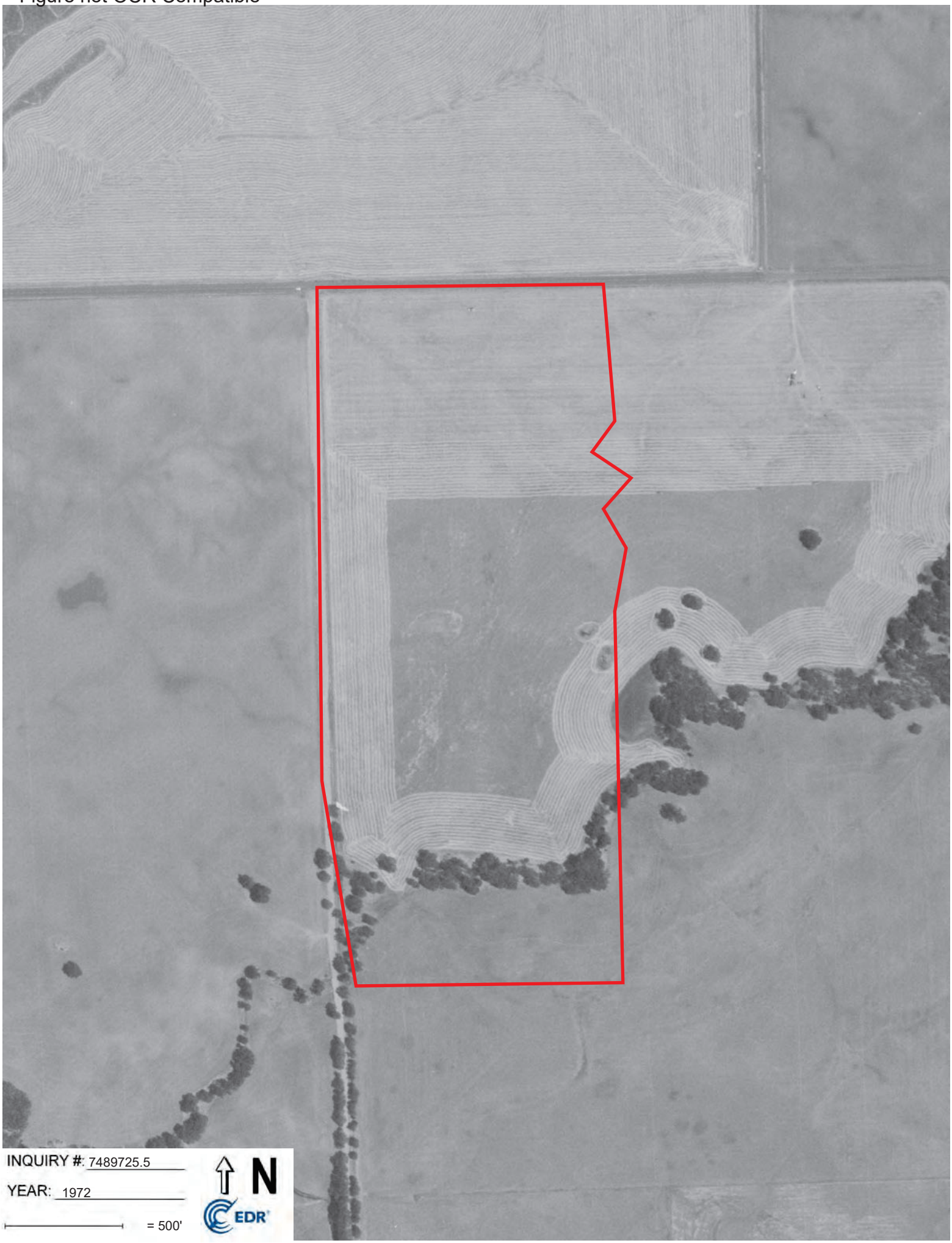
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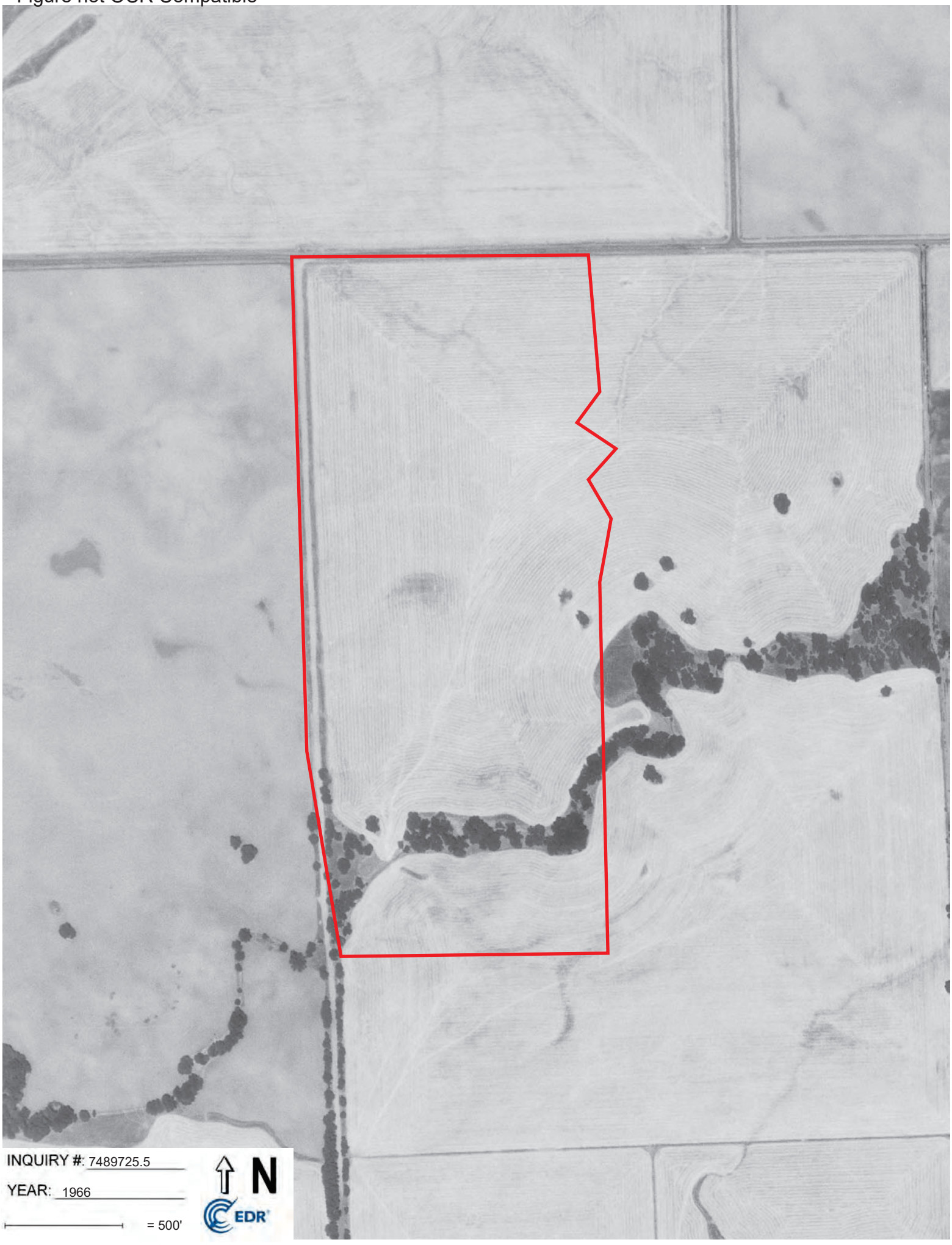
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INQUIRY #: 7489725.5

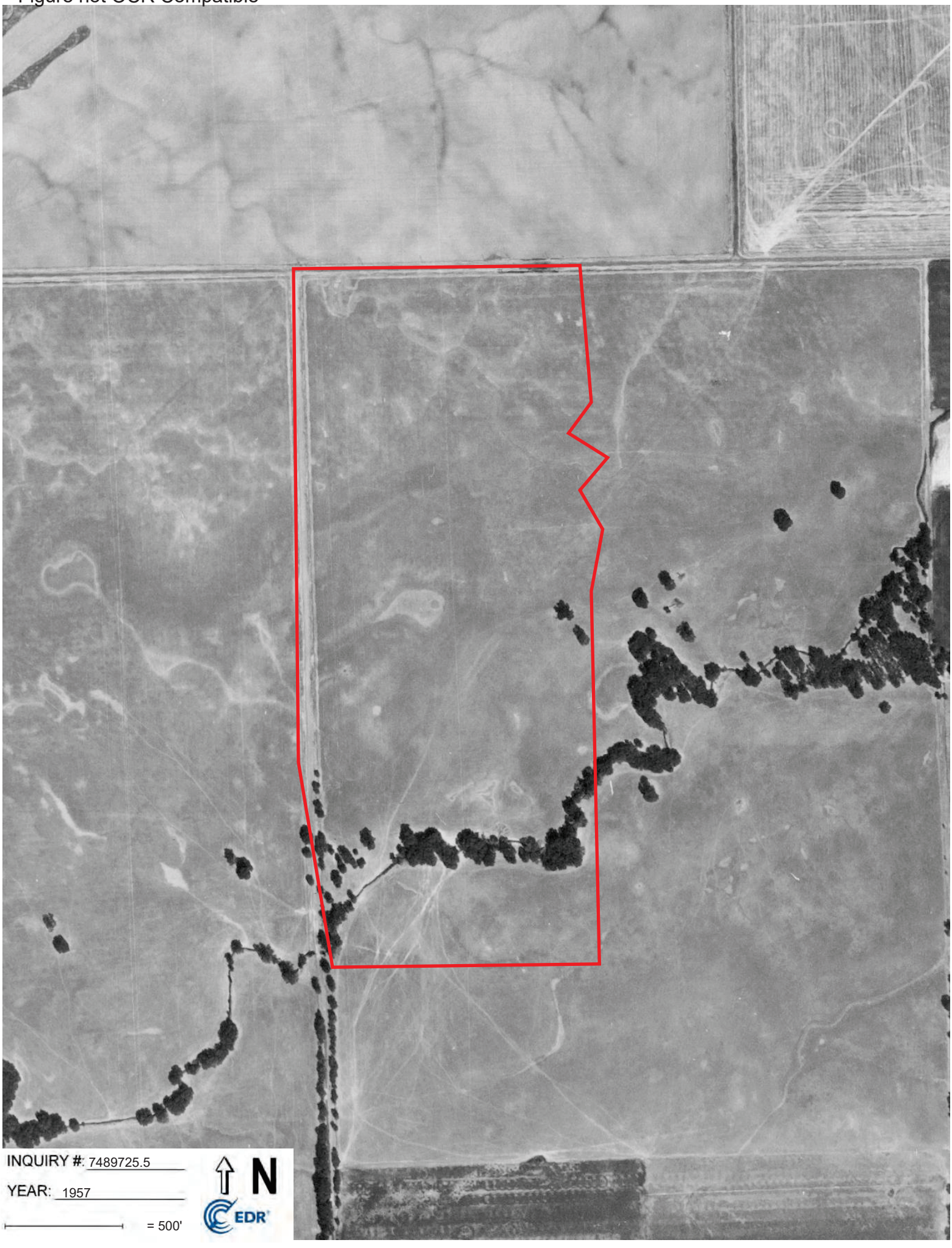
YEAR: 1962

= 500'

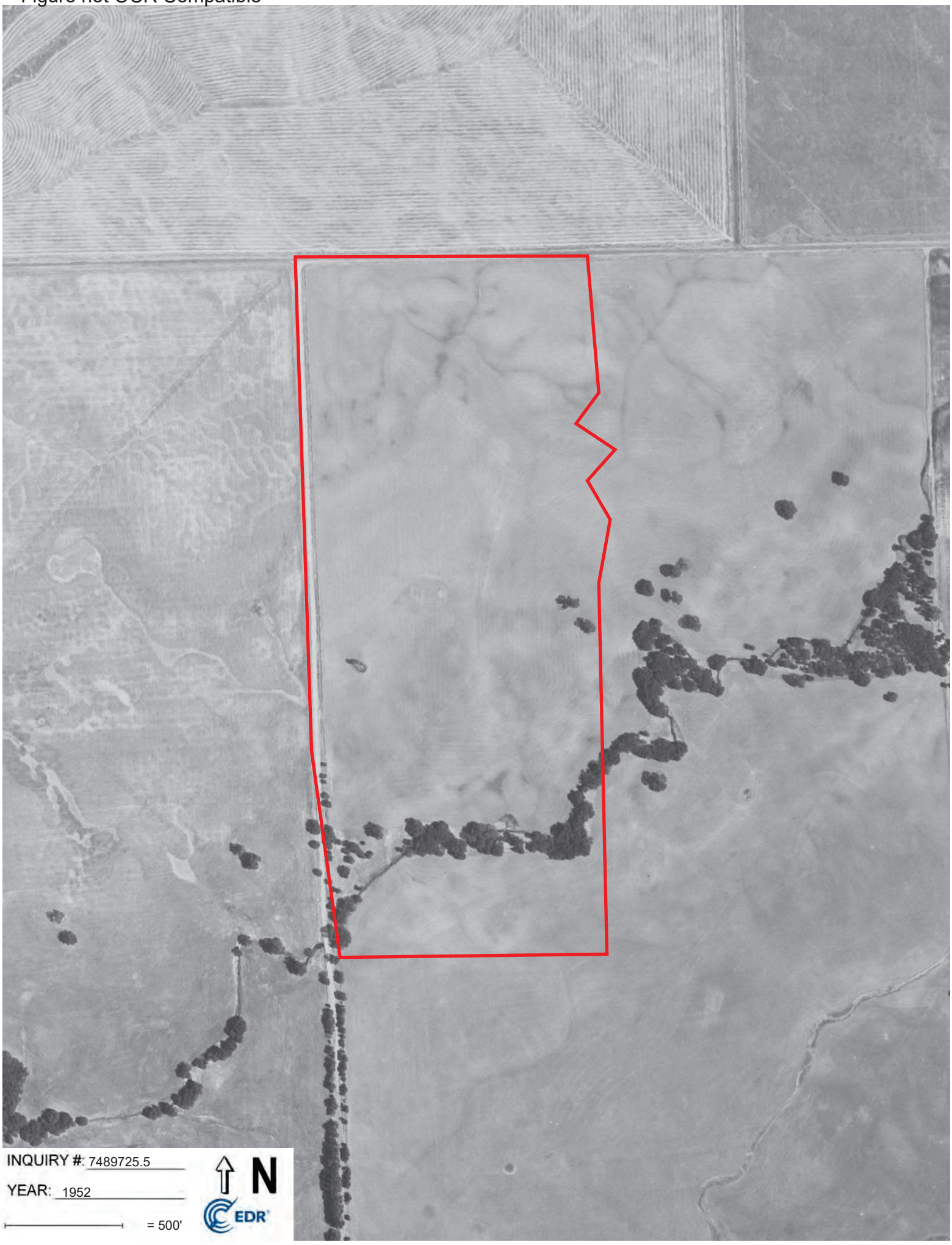
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EDR

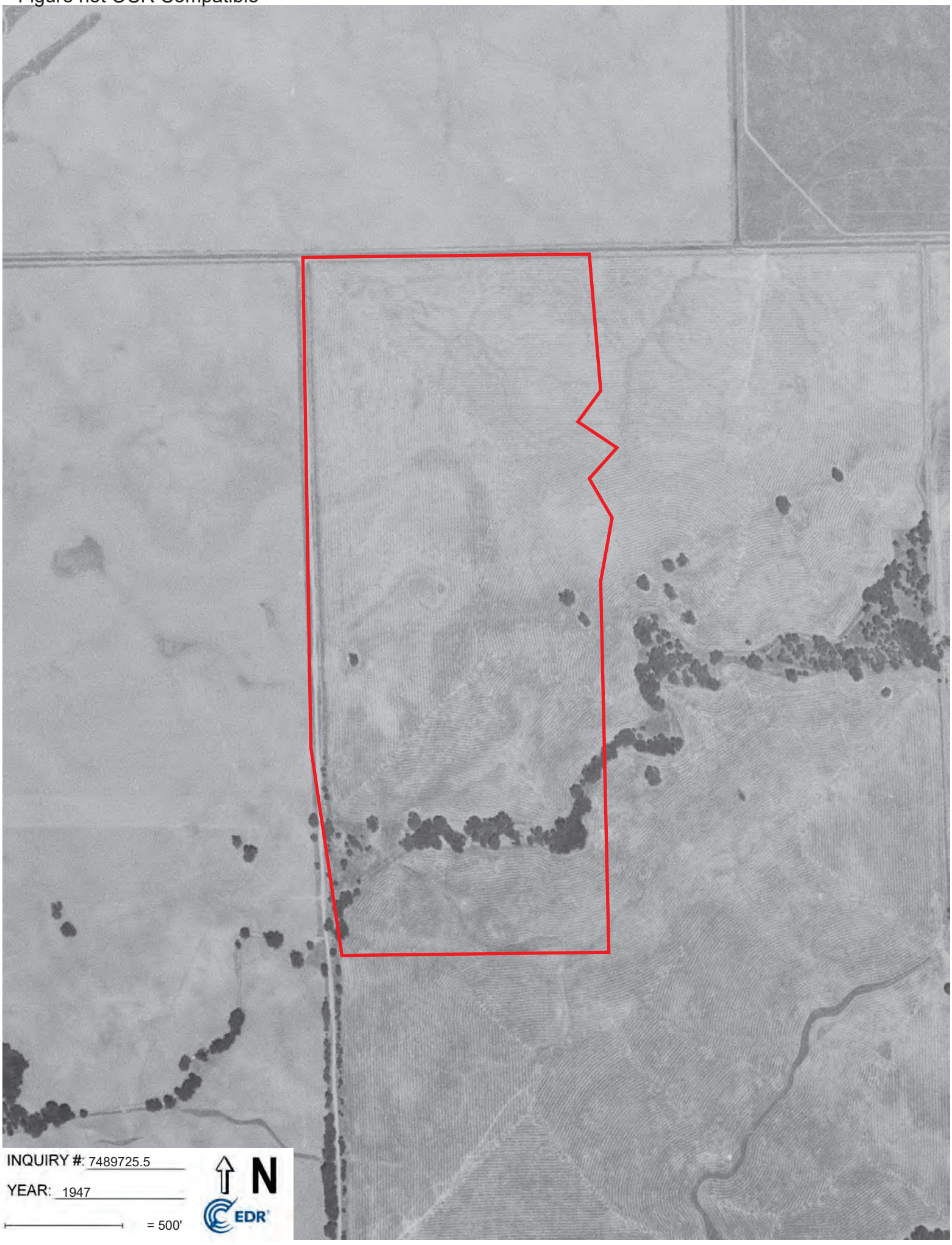
* Figure not OCR Compatible



* Figure not OCR Compatible



* Figure not OCR Compatible



* Figure not OCR Compatible



Appendix D

EDR Radius Map Report

Fong Property
Baseline Road and Walerga Road
Roseville, CA 95747

Inquiry Number: 7489725.2s
November 06, 2023

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	9
Orphan Summary	41
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-13
Physical Setting Source Map Findings	A-15
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.

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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 (E1527 - 21), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E2247 - 16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E1528 - 22) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

BASELINE ROAD AND WALERGA ROAD
ROSEVILLE, CA 95747

COORDINATES

Latitude (North):	38.7492800 - 38˚ 44' 57.40''
Longitude (West):	121.3628370 - 121˚ 21' 46.21''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	642271.6
UTM Y (Meters):	4290019.5
Elevation:	133 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	12021727 CITRUS HEIGHTS, CA
Version Date:	2018
Northeast Map:	12021643 ROSEVILLE, CA
Version Date:	2018
Southwest Map:	12021639 RIO LINDA, CA
Version Date:	2018
Northwest Map:	12021637 PLEASANT GROVE, CA
Version Date:	2018

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20200617
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
BASELINE ROAD AND WALERGA ROAD
ROSEVILLE, CA 95747

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	RUTAN ENVIRONMENTAL	8575 PARKWOOD CT	RCRA NonGen / NLR	Lower	639, 0.121, East
2	CITY OF ROSEVILLE	6725 FIDDYMINT ROAD	RCRA NonGen / NLR	Lower	1162, 0.220, NE
A3	VERIZON WIRELESS - R	8000 CROWDER LANE	EMI, CA PLACER CO. MS, CERS	Lower	1274, 0.241, ENE
A4	SUREWEST TELEPHONE A	8000 CROWDER LN	CA PLACER CO. MS	Lower	1274, 0.241, ENE
A5	CONSOLIDATED PHONE O	8000 CROWDER LANE	EMI, CA PLACER CO. MS	Lower	1274, 0.241, ENE
6	WEST PLACER ELEM. SC	CROWDER LANE/VINEYAR	ENVIROSTOR, SCH	Lower	1396, 0.264, SE
7	DEL WEBB SUN CITY RO	FIDDYMENT ROAD	CPS-SLIC	Lower	2004, 0.380, NE
8	DRY CREEK COMMUNITY	9245 WALERGA ROAD	ENVIROSTOR, CIWQS	Lower	2807, 0.532, South
9	SIERRA VISTA ELEMENT	4601 UPLAND DRIVE	ENVIROSTOR, SCH, NPDES, CIWQS, CERS	Lower	3621, 0.686, North
10	SILVER CREEK	4300 PFE ROAD AND 92	ENVIROSTOR, VCP	Lower	5262, 0.997, South

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

Lists of Federal NPL (Superfund) sites

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Lists of Federal Delisted NPL sites

Delisted NPL ---------- National Priority List Deletions

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS ---------- Corrective Action Report

Lists of Federal RCRA TSD facilities

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Lists of Federal RCRA generators

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-VSQG ---------- RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System

US ENG CONTROLS ..... Engineering Controls Sites List
US INST CONTROLS ..... Institutional Controls Sites List

Federal ERNS list

ERNS ..... Emergency Response Notification System

Lists of state- and tribal (Superfund) equivalent sites

RESPONSE ..... State Response Sites

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF ..... Solid Waste Information System

Lists of state and tribal leaking storage tanks

LUST ..... Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land

Lists of state and tribal registered storage tanks

FEMA UST ..... Underground Storage Tank Listing
UST ..... Active UST Facilities
AST ..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST ..... Underground Storage Tanks on Indian Land

Lists of state and tribal voluntary cleanup sites

INDIAN VCP ..... Voluntary Cleanup Priority Listing
VCP ..... Voluntary Cleanup Program Properties

Lists of state and tribal brownfield 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
DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
ODI ..... Open Dump Inventory
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
CERS HAZ WASTE	California Environmental Reporting System Hazardous Waste
Toxic Pits	Toxic Pits Cleanup Act Sites
US CDL	National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

SWEEPS UST	SWEEPS UST Listing
HIST UST	Hazardous Substance Storage Container Database
CA FID UST	Facility Inventory Database
CERS TANKS	California Environmental Reporting System (CERS) Tanks

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

EXECUTIVE SUMMARY

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
MINES MRDS	Mineral Resources Data System
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
PFAS NPL	Superfund Sites with PFAS Detections Information
PFAS FEDERAL SITES	Federal Sites PFAS Information
PFAS TRIS	List of PFAS Added to the TRI
PFAS TSCA	PFAS Manufacture and Imports Information
PFAS RCRA MANIFEST	PFAS Transfers Identified In the RCRA Database Listing
PFAS ATSDR	PFAS Contamination Site Location Listing
PFAS WQP	Ambient Environmental Sampling for PFAS
PFAS NPDES	Clean Water Act Discharge Monitoring Information
PFAS ECHO	Facilities in Industries that May Be Handling PFAS Listing
PFAS ECHO FIRE TRAINING	Facilities in Industries that May Be Handling PFAS Listing
PFAS PART 139 AIRPORT	All Certified Part 139 Airports PFAS Information Listing
AQUEOUS FOAM NRC	Aqueous Foam Related Incidents Listing
BIOSOLIDS	ICIS-NPDES Biosolids Facility Data
PFAS	PFAS Contamination Site Location Listing
AQUEOUS FOAM	Former Fire Training Facility Assessments Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
CHROME PLATING	Chrome Plating Facilities Listing
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
ICE	Inspection, Compliance and Enforcement
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
HWTS	Hazardous Waste Tracking System
HAZNET	Facility and Manifest Data
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
HAZMAT	Hazardous Material Facilities
UIC	UIC Listing
UIC GEO	UIC GEO (GEOTRACKER)
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)

EXECUTIVE SUMMARY

PROJECT PROJECT (GEOTRACKER)
WDR Waste Discharge Requirements Listing
CIWQS California Integrated Water Quality System
CERS CERS
NON-CASE INFO NON-CASE INFO (GEOTRACKER)
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

Lists of state- and tribal hazardous waste facilities

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 07/24/2023 has revealed that there are 4 ENVIROSTOR sites within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
WEST PLACER ELEM. SC Facility Id: 31010015 Status: No Action Required	***CROWDER LANE/VINEYAR***	***SE 1/4 - 1/2 (0.264 mi.)***	***6***	***27***
DRY CREEK COMMUNITY Facility Id: 31490006 Status: Refer: Other Agency	***9245 WALERGA ROAD***	***S 1/2 - 1 (0.532 mi.)***	***8***	***30***
SIERRA VISTA ELEMENT Facility Id: 60003001 Status: No Action Required	***4601 UPLAND DRIVE***	***N 1/2 - 1 (0.686 mi.)***	***9***	***32***
SILVER CREEK Facility Id: 60000292 Status: No Further Action	***4300 PFE ROAD AND 92***	***S 1/2 - 1 (0.997 mi.)***	***10***	***37***

Lists of state and tribal leaking storage tanks

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 is 1 CPS-SLIC site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
DEL WEBB SUN CITY RO Database: CPS-SLIC, Date of Government Version: 06/05/2023 Facility Status: Completed - Case Closed Global Id: SLT5S1183158	FIDDYMENT ROAD	NE 1/4 - 1/2 (0.380 mi.)	7	29

ADDITIONAL ENVIRONMENTAL RECORDS

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 07/24/2023 has revealed that

there are 2 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
RUTAN ENVIRONMENTAL EPA ID:: CAL000403629	8575 PARKWOOD CT	E 0 - 1/8 (0.121 mi.)	1	9
CITY OF ROSEVILLE EPA ID:: CAC003120162	6725 FIDDYMINT ROAD	NE 1/8 - 1/4 (0.220 mi.)	2	13

CA PLACER CO. MS: Placer County Master List of Facilities includes Aboveground Hazardous Material tanks, Underground Storage tanks, Site Clean-up sites.

A review of the CA PLACER CO. MS list, as provided by EDR, and dated 08/26/2022 has revealed that there are 3 CA PLACER CO. MS sites within approximately 0.25 miles of the target property.

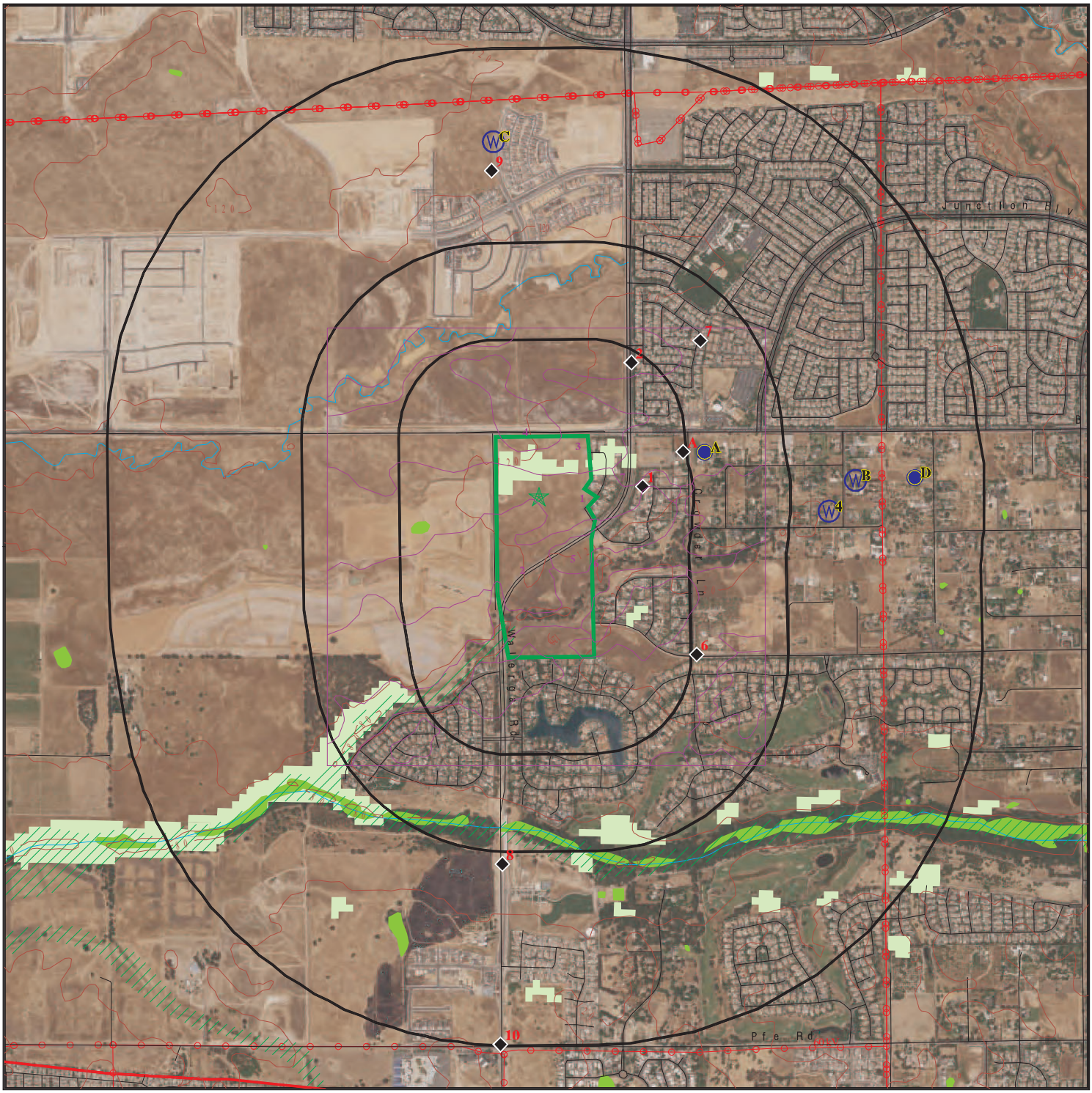
Lower Elevation	Address	Direction / Distance	Map ID	Page
VERIZON WIRELESS - R Facility Status: Active Facility Status: Closed Facility Id: FA0004534 Facility Id: FA0005860 Facility Id: FA0017118 Facility Id: FA0017497 Facility Id: FA0019050	***8000 CROWDER LANE***	***ENE 1/8 - 1/4 (0.241 mi.)***	***A3***	***15***
SUREWEST TELEPHONE A Facility Status: Active Facility Id: FA0001919	8000 CROWDER LN	ENE 1/8 - 1/4 (0.241 mi.)	A4	25
CONSOLIDATED PHONE O Facility Status: Active Facility Id: FA0020579	***8000 CROWDER LANE***	***ENE 1/8 - 1/4 (0.241 mi.)***	***A5***	***25***

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 4 records.

Site Name	Database(s)
DEL WEBB SUN CITY ROSEVILLE DEVELO	CDL
WILBURN PROPERTY	CPS-SLIC
WILBURN PROPERTY (CHP REFERRAL SIT	RGA LF
	RGA LF

OVERVIEW MAP - 7489725.2S



0 1/4 1/2 1 Miles

- 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
- Indian Reservations BIA
- County Boundary
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

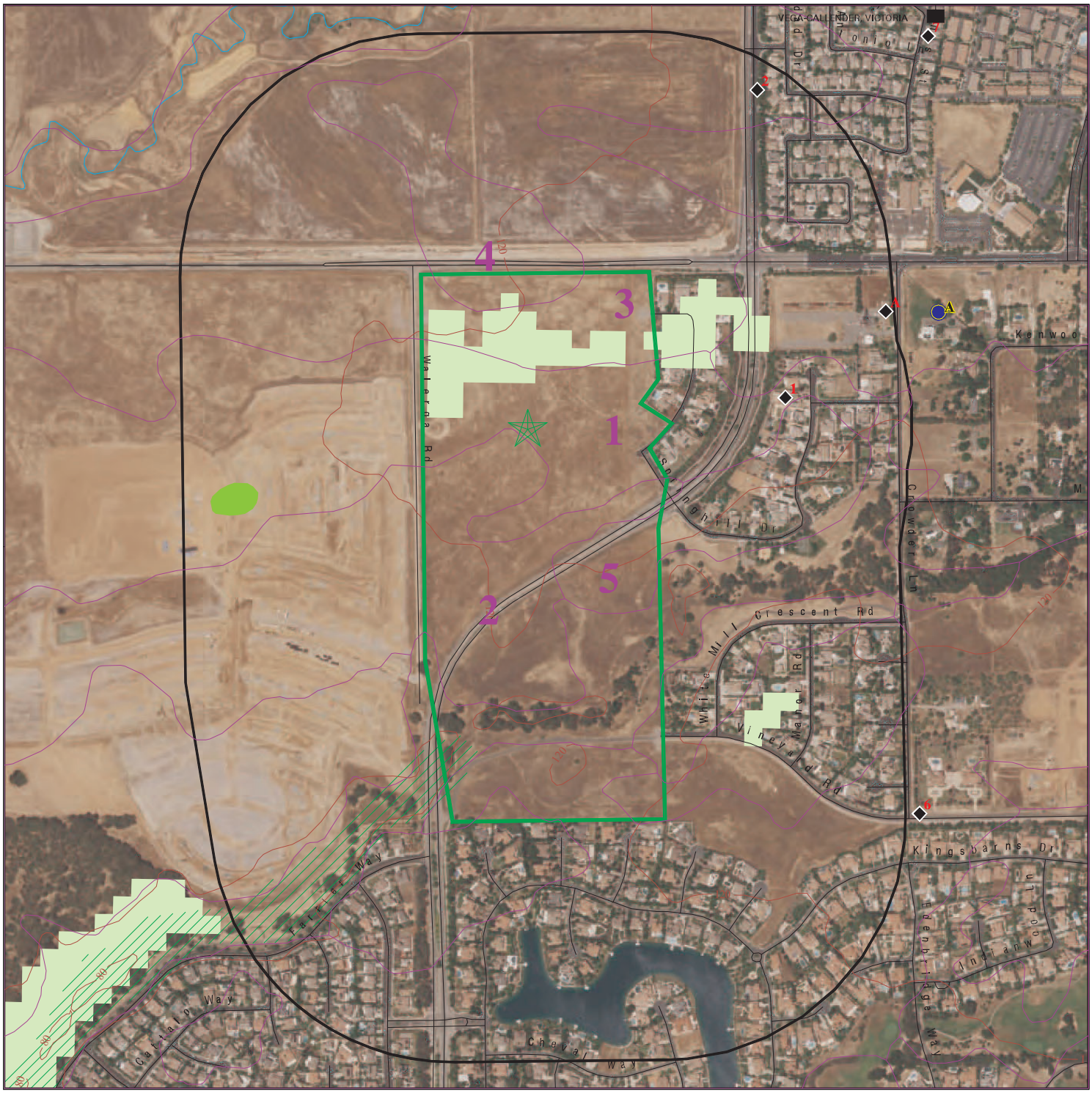
This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

* Figure not OCR Compatible

SITE NAME: Fong Property	CLIENT: Environmental Risk Assessors
ADDRESS: Baseline Road and Walerga Road Roseville CA 95747	CONTACT: Lita Freeman
LAT/LONG: 38.74928 / 121.362837	INQUIRY #: 7489725.2s DATE: November 06, 2023 3:30 pm

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DETAIL MAP - 7489725.2S



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

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

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.

* Figure not OCR Compatible

SITE NAME:	Fong Property	CLIENT:	Environmental Risk Assessors
ADDRESS:	Baseline Road and Walerga Road Roseville CA 95747	CONTACT:	Lita Freeman
LAT/LONG:	38.74928 / 121.362837	INQUIRY #:	7489725.2s
		DATE:	November 06, 2023 3:31 pm

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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								
Lists of Federal NPL (Superfund) sites								
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
Lists of Federal Delisted NPL sites								
Delisted NPL	1.000		0	0	0	0	NR	0
Lists of Federal sites subject to CERCLA removals and CERCLA orders								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Lists of Federal CERCLA sites with NFRAP								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA facilities undergoing Corrective Action								
CORRACTS	1.000		0	0	0	0	NR	0
Lists of Federal RCRA TSD facilities								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA generators								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	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 CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
Lists of state- and tribal (Superfund) equivalent sites								
RESPONSE	1.000		0	0	0	0	NR	0
Lists of state- and tribal hazardous waste facilities								
ENVIROSTOR	1.000		0	0	1	3	NR	4
Lists of state and tribal landfills and solid waste disposal facilities								
SWF/LF	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
Lists of state and tribal leaking storage tanks								
LUST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	1	NR	NR	1
Lists of state and tribal registered storage tanks								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
Lists of state and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
Lists of state and tribal brownfield 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	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	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	0.001		0	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	0.001		0	NR	NR	NR	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	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		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	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	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		1	1	NR	NR	NR	2
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	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	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	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
MINES MRDS	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
PFAS NPL	0.250		0	0	NR	NR	NR	0
PFAS FEDERAL SITES	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
PFAS TRIS	0.250		0	0	NR	NR	NR	0
PFAS TSCA	0.250		0	0	NR	NR	NR	0
PFAS RCRA MANIFEST	0.250		0	0	NR	NR	NR	0
PFAS ATSDR	0.250		0	0	NR	NR	NR	0
PFAS WQP	0.250		0	0	NR	NR	NR	0
PFAS NPDES	0.250		0	0	NR	NR	NR	0
PFAS ECHO	0.250		0	0	NR	NR	NR	0
PFAS ECHO FIRE TRAINING	0.250		0	0	NR	NR	NR	0
PFAS PART 139 AIRPORT	0.250		0	0	NR	NR	NR	0
AQUEOUS FOAM NRC	0.250		0	0	NR	NR	NR	0
BIOSOLIDS	0.001		0	NR	NR	NR	NR	0
PFAS	0.250		0	0	NR	NR	NR	0
AQUEOUS FOAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
CHROME PLATING	0.500		0	0	0	NR	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	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	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
HWTS	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
CA PLACER CO. MS	0.250		0	3	NR	NR	NR	3
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
HAZMAT	0.250		0	0	NR	NR	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	1.000		0	0	0	0	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
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	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	1	4	2	3	0	10

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1
East
< 1/8
0.121 mi.
639 ft.

RUTAN ENVIRONMENTAL SAFETY SERVICES CORPORATION
8575 PARKWOOD CT
ROSEVILLE, CA 95747

RCRA NonGen / NLR

1024848207
CAL000403629

Relative:
Lower

Actual:
126 ft.

RCRA Listings:

Date Form Received by Agency:	20150113
Handler Name:	Rutan Environmental Safety Services Corporation
Handler Address:	8575 PARKWOOD CT
Handler City,State,Zip:	ROSEVILLE, CA 95747
EPA ID:	CAL000403629
Contact Name:	DAN RUTAN
Contact Address:	4056 CINCINNATI AVE
Contact City,State,Zip:	ROCKLIN, CA 95765
Contact Telephone:	408-807-8671
Contact Fax:	916-244-0407
Contact Email:	DAN@RES2INC.COM
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Not a generator, verified
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Handler Activities
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	4056 CINCINNATI AVE
Mailing City,State,Zip:	ROCKLIN, CA 95765-0000
Owner Name:	Dan Rutan
Owner Type:	Other
Operator Name:	Dan Rutan
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	Yes
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	Yes
Universal Waste Destination Facility:	Yes
Federal Universal Waste:	No
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
202 GPRA Corrective Action Baseline:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No

RUTAN ENVIRONMENTAL SAFETY SERVICES CORPORATION (Continued) **1024848207**

Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	20180906
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Operator
Owner/Operator Name: DAN RUTAN	
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	4056 CINCINNATI AVE
Owner/Operator City,State,Zip:	ROCKLIN, CA 95765
Owner/Operator Telephone:	408-807-8671
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Owner
Owner/Operator Name: DAN RUTAN	
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	4056 CINCINNATI AVE.
Owner/Operator City,State,Zip:	ROSEVILLE, CA 95747
Owner/Operator Telephone:	408-807-8671
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	20150113
Handler Name:	RUTAN ENVIRONMENTAL SAFETY SERVICES CORPORATION
Federal Waste Generator Description:	Not a generator, verified
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

RUTAN ENVIRONMENTAL SAFETY SERVICES CORPORATION (Continued) **1024848207**

List of NAICS Codes and Descriptions:
NAICS Code: 56121
NAICS Description: FACILITIES SUPPORT SERVICES

Has the Facility Received Notices of Violations:

Found Violation:	Yes
Agency Which Determined Violation:	State
Violation Short Description:	State Statute or Regulation
Date Violation was Determined:	20191106
Actual Return to Compliance Date:	20191224
Return to Compliance Qualifier:	Documented
Violation Responsible Agency:	State
Scheduled Compliance Date:	Not reported
Enforcement Identifier:	500
Date of Enforcement Action:	20191106
Enforcement Responsible Agency:	State
Enforcement Docket Number:	Not reported
Enforcement Attorney:	Not reported
Corrective Action Component:	No
Appeal Initiated Date:	Not reported
Appeal Resolution Date:	Not reported
Disposition Status Date:	Not reported
Disposition Status:	Not reported
Disposition Status Description:	Not reported
Consent/Final Order Sequence Number:	Not reported
Consent/Final Order Respondent Name:	Not reported
Consent/Final Order Lead Agency:	Not reported
Enforcement Type:	Not reported
Enforcement Responsible Person:	Not reported
Enforcement Responsible Sub-Organization:	Not reported
SEP Sequence Number:	Not reported
SEP Expenditure Amount:	Not reported
SEP Scheduled Completion Date:	Not reported
SEP Actual Date:	Not reported
SEP Defaulted Date:	Not reported
SEP Type:	Not reported
SEP Type Description:	Not reported
Proposed Amount:	Not reported
Final Monetary Amount:	Not reported
Paid Amount:	Not reported
Final Count:	Not reported
Final Amount:	Not reported

Found Violation:	Yes
Agency Which Determined Violation:	State
Violation Short Description:	State Statute or Regulation
Date Violation was Determined:	20191106
Actual Return to Compliance Date:	20191224
Return to Compliance Qualifier:	Documented
Violation Responsible Agency:	State
Scheduled Compliance Date:	Not reported
Enforcement Identifier:	300
Date of Enforcement Action:	20191106
Enforcement Responsible Agency:	State
Enforcement Docket Number:	Not reported
Enforcement Attorney:	Not reported

RUTAN ENVIRONMENTAL SAFETY SERVICES CORPORATION (Continued) **1024848207**

Corrective Action Component: No
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: WRITTEN INFORMAL
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Evaluation Action Summary:
Evaluation Date: 20191106
Evaluation Responsible Agency: State
Found Violation: Yes
Evaluation Type Description: COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier: Not reported
Evaluation Responsible Sub-Organization: Not reported
Actual Return to Compliance Date: 20191224
Scheduled Compliance Date: Not reported
Date of Request: Not reported
Date Response Received: Not reported
Request Agency: Not reported
Former Citation: Not reported

Evaluation Date: 20191106
Evaluation Responsible Agency: State
Found Violation: Yes
Evaluation Type Description: COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier: Not reported
Evaluation Responsible Sub-Organization: Not reported
Actual Return to Compliance Date: 20191224
Scheduled Compliance Date: Not reported
Date of Request: Not reported
Date Response Received: Not reported
Request Agency: Not reported
Former Citation: Not reported

2
NE
1/8-1/4
0.220 mi.
1162 ft.

CITY OF ROSEVILLE
6725 FIDDYMINT ROAD
ROSEVILLE, CA 95747

RCRA NonGen / NLR **1026807868** **CAC003120162**

Relative:
Lower

Actual:
121 ft.

RCRA Listings:

Date Form Received by Agency:	20210518
Handler Name:	City Of Roseville
Handler Address:	6725 FIDDYMINT ROAD
Handler City,State,Zip:	ROSEVILLE, CA 95747
EPA ID:	CAC003120162
Contact Name:	MATT OCKO
Contact Address:	2005 HILLTOP CIRCLE
Contact City,State,Zip:	ROSEVILLE, CA 95747
Contact Telephone:	916-233-3258
Contact Fax:	Not reported
Contact Email:	MOCKO@ROSEVILLE.CA.US
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Not a generator, verified
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Not reported
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	2005 HILLTOP CIRCLE
Mailing City,State,Zip:	ROSEVILLE, CA 95747
Owner Name:	Sutter Terrace Apartments
Owner Type:	Other
Operator Name:	Matt Ocko
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	No
Universal Waste Destination Facility:	No
Federal Universal Waste:	No
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
202 GPRA Corrective Action Baseline:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No

CITY OF ROSEVILLE (Continued) **1026807868**

Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	20210521
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Owner
Owner/Operator Name: SUTTER TERRACE APARTMENTS	
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	6725 FIDDYMINT ROAD
Owner/Operator City,State,Zip:	ROSEVILLE, CA 95747
Owner/Operator Telephone:	916-233-3258
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name: MATT OCKO	
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	2005 HILLTOP CIRCLE
Owner/Operator City,State,Zip:	ROSEVILLE, CA 95747
Owner/Operator Telephone:	916-233-3258
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	20210518
Handler Name: CITY OF ROSEVILLE	
Federal Waste Generator Description:	Not a generator, verified
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	No
Electronic Manifest Broker:	No

CITY OF ROSEVILLE (Continued) **1026807868**

List of NAICS Codes and Descriptions:
NAICS Code: 623311
NAICS Description: CONTINUING CARE RETIREMENT COMMUNITIES

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

A3 **VERIZON WIRELESS - ROSEVILLE W** **EMI** **S110504181**
ENE **8000 CROWDER LANE** **CA PLACER CO. MS** **N/A**
1/8-1/4 **ROSEVILLE, CA 95678** **CERS**
0.241 mi.
1274 ft. **Site 1 of 3 in cluster A**

Relative: **Lower**
Actual: **122 ft.**

EMI:
Name: VERIZON WIRELESS - ROSEVILLE W
Address: 8000 CROWDER LANE
City,State,Zip: ROSEVILLE, CA 95678
Year: 2008
County Code: 31
Air Basin: SV
Facility ID: 1028
Air District Name: PLA
SIC Code: 4813
Air District Name: PLACER COUNTY APCD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: .0003584319349826700
Reactive Organic Gases Tons/Yr: .0002999
Carbon Monoxide Emissions Tons/Yr: .0169909
NOX - Oxides of Nitrogen Tons/Yr: .0033131
SOX - Oxides of Sulphur Tons/Yr: 0
Particulate Matter Tons/Yr: 0
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0

Name: VERIZON WIRELESS - ROSEVILLE W
Address: 8000 CROWDER LANE
City,State,Zip: ROSEVILLE, CA 95678
Year: 2009
County Code: 31
Air Basin: SV
Facility ID: 1028
Air District Name: PLA
SIC Code: 4813
Air District Name: PLACER COUNTY APCD
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: 4.1649999999999999E-4
Carbon Monoxide Emissions Tons/Yr: 2.3596300000000001E-2
NOX - Oxides of Nitrogen Tons/Yr: 4.6011000000000003E-3
SOX - Oxides of Sulphur Tons/Yr: 0
Particulate Matter Tons/Yr: 0

VERIZON WIRELESS - ROSEVILLE W (Continued) **S110504181**

Part. Matter 10 Micrometers and Smllr Tons/Yr:0

Name:	VERIZON WIRELESS - ROSEVILLE W
Address:	8000 CROWDER LANE
City,State,Zip:	ROSEVILLE, CA 95678
Year:	2010
County Code:	31
Air Basin:	SV
Facility ID:	1028
Air District Name:	PLA
SIC Code:	4813
Air District Name:	PLACER COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	5.5910123102665202E-4
Reactive Organic Gases Tons/Yr:	4.6779999999999999E-4
Carbon Monoxide Emissions Tons/Yr:	2.6499600000000002E-2
NOX - Oxides of Nitrogen Tons/Yr:	5.1672999999999997E-3
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	VERIZON WIRELESS - ROSEVILLE W
Address:	8000 CROWDER LANE
City,State,Zip:	ROSEVILLE, CA 95678
Year:	2011
County Code:	31
Air Basin:	SV
Facility ID:	1028
Air District Name:	PLA
SIC Code:	4813
Air District Name:	PLACER COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.00055910123103
Reactive Organic Gases Tons/Yr:	0.0004678
Carbon Monoxide Emissions Tons/Yr:	0.0264996
NOX - Oxides of Nitrogen Tons/Yr:	0.0051673
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	VERIZON WIRELESS - ROSEVILLE W
Address:	8000 CROWDER LANE
City,State,Zip:	ROSEVILLE, CA 95678
Year:	2012
County Code:	31
Air Basin:	SV
Facility ID:	1028
Air District Name:	PLA
SIC Code:	4813
Air District Name:	PLACER COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.00055910123103
Reactive Organic Gases Tons/Yr:	0.0004678
Carbon Monoxide Emissions Tons/Yr:	0.0264996

VERIZON WIRELESS - ROSEVILLE W (Continued) **S110504181**

NOX - Oxides of Nitrogen Tons/Yr:	0.0051673
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	VERIZON WIRELESS - ROSEVILLE W
Address:	8000 CROWDER LANE
City,State,Zip:	ROSEVILLE, CA 95678
Year:	2013
County Code:	31
Air Basin:	SV
Facility ID:	1028
Air District Name:	PLA
SIC Code:	4813
Air District Name:	PLACER COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.00055910123103
Reactive Organic Gases Tons/Yr:	0.0004678
Carbon Monoxide Emissions Tons/Yr:	0.0264996
NOX - Oxides of Nitrogen Tons/Yr:	0.0051673
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	VERIZON WIRELESS - ROSEVILLE W
Address:	8000 CROWDER LANE
City,State,Zip:	ROSEVILLE, CA 95678
Year:	2014
County Code:	31
Air Basin:	SV
Facility ID:	1028
Air District Name:	PLA
SIC Code:	4813
Air District Name:	PLACER COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.00053249857712
Reactive Organic Gases Tons/Yr:	0.0004678
Carbon Monoxide Emissions Tons/Yr:	0.0264996
NOX - Oxides of Nitrogen Tons/Yr:	0.0051673
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	VERIZON WIRELESS - ROSEVILLE W
Address:	8000 CROWDER LANE
City,State,Zip:	ROSEVILLE, CA 95678
Year:	2015
County Code:	31
Air Basin:	SV
Facility ID:	1028
Air District Name:	PLA
SIC Code:	4813
Air District Name:	PLACER COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported

VERIZON WIRELESS - ROSEVILLE W (Continued) **S110504181**

Total Organic Hydrocarbon Gases Tons/Yr:	0.00053249857712
Reactive Organic Gases Tons/Yr:	0.0004678
Carbon Monoxide Emissions Tons/Yr:	0.0264996
NOX - Oxides of Nitrogen Tons/Yr:	0.0051673
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	VERIZON WIRELESS - ROSEVILLE W
Address:	8000 CROWDER LANE
City,State,Zip:	ROSEVILLE, CA 95678
Year:	2016
County Code:	31
Air Basin:	SV
Facility ID:	1028
Air District Name:	PLA
SIC Code:	4813
Air District Name:	PLACER COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.00053249857712
Reactive Organic Gases Tons/Yr:	0.0004678
Carbon Monoxide Emissions Tons/Yr:	0.0264996
NOX - Oxides of Nitrogen Tons/Yr:	0.0051673
SOX - Oxides of Sulphur Tons/Yr:	Not reported
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	VERIZON WIRELESS - ROSEVILLE WEST
Address:	8000 CROWDER LANE
City,State,Zip:	ROSEVILLE, CA 95678
Year:	2017
County Code:	31
Air Basin:	SV
Facility ID:	1028
Air District Name:	PLA
SIC Code:	4813
Air District Name:	PLACER COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.00053249857712
Reactive Organic Gases Tons/Yr:	0.0004678
Carbon Monoxide Emissions Tons/Yr:	0.0264996
NOX - Oxides of Nitrogen Tons/Yr:	0.0051673
SOX - Oxides of Sulphur Tons/Yr:	Not reported
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	VERIZON WIRELESS - ROSEVILLE WEST
Address:	8000 CROWDER LANE
City,State,Zip:	ROSEVILLE, CA 95678
Year:	2018
County Code:	31
Air Basin:	SV
Facility ID:	1028
Air District Name:	PLA
SIC Code:	4813

VERIZON WIRELESS - ROSEVILLE W (Continued) **S110504181**

Air District Name:	PLACER COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.00053249857712
Reactive Organic Gases Tons/Yr:	0.0004678
Carbon Monoxide Emissions Tons/Yr:	0.0264996
NOX - Oxides of Nitrogen Tons/Yr:	0.0051673
SOX - Oxides of Sulphur Tons/Yr:	Not reported
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	VERIZON WIRELESS - ROSEVILLE WEST
Address:	8000 CROWDER LANE
City,State,Zip:	ROSEVILLE, CA 95678
Year:	2019
County Code:	31
Air Basin:	SV
Facility ID:	1028
Air District Name:	PLA
SIC Code:	4813
Air District Name:	PLACER COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.00053249857712
Reactive Organic Gases Tons/Yr:	0.0004678
Carbon Monoxide Emissions Tons/Yr:	0.0264996
NOX - Oxides of Nitrogen Tons/Yr:	0.0051673
SOX - Oxides of Sulphur Tons/Yr:	Not reported
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	VERIZON WIRELESS - ROSEVILLE WEST
Address:	8000 CROWDER LANE
City,State,Zip:	ROSEVILLE, CA 95678
Year:	2020
County Code:	31
Air Basin:	SV
Facility ID:	1028
Air District Name:	PLA
SIC Code:	4813
Air District Name:	PLACER COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.00053249857712
Reactive Organic Gases Tons/Yr:	0.0004678
Carbon Monoxide Emissions Tons/Yr:	0.0264996
NOX - Oxides of Nitrogen Tons/Yr:	0.0051673
SOX - Oxides of Sulphur Tons/Yr:	Not reported
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	VERIZON WIRELESS - ROSEVILLE WEST
Address:	8000 CROWDER LANE
City,State,Zip:	ROSEVILLE, CA 95678
Year:	2021
County Code:	31
Air Basin:	SV

VERIZON WIRELESS - ROSEVILLE W (Continued) **S110504181**

Facility ID:	1028
Air District Name:	PLA
SIC Code:	4813
Air District Name:	PLACER COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.00042964554243
Reactive Organic Gases Tons/Yr:	4e-005
Carbon Monoxide Emissions Tons/Yr:	0.00015
NOX - Oxides of Nitrogen Tons/Yr:	0.00111
SOX - Oxides of Sulphur Tons/Yr:	1e-005
Particulate Matter Tons/Yr:	3.0181086519e-005
Part. Matter 10 Micrometers and Smllr Tons/Yr:	3e-005

Name:	AMERICAN TOWER (370509 - CROWDER LANE)
Address:	8000 CROWDER LANE
City,State,Zip:	ROSEVILLE, CA 95747
Year:	2021
County Code:	31
Air Basin:	SV
Facility ID:	100059
Air District Name:	PLA
SIC Code:	4812
Air District Name:	PLACER COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.00038702333523
Reactive Organic Gases Tons/Yr:	0.00034
Carbon Monoxide Emissions Tons/Yr:	0.00169
NOX - Oxides of Nitrogen Tons/Yr:	0.00641
SOX - Oxides of Sulphur Tons/Yr:	0.00036
Particulate Matter Tons/Yr:	0.00029175050302
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.00029

PLACER CO. MS:

Name:	VERIZON WIRELESS (RSVL WEST)
Address:	8000 CROWDER LN
City,State,Zip:	ROSEVILLE, CA 95678
Facility ID:	FA0004534
Facility Status:	Active
Program Element Code:	2105
Program:	HAZMAT BUSINESS PLAN
Record Num:	PR0007749
District Code:	130
Decode for Fstatus:	Active

Name:	NEXTEL COMM (SITE 1918)
Address:	8000 CROWDER LN
City,State,Zip:	ROSEVILLE, CA 95747
Facility ID:	FA0005860
Facility Status:	Closed
Program Element Code:	2105
Program:	HAZMAT BUSINESS PLAN
Record Num:	PR0008305
District Code:	130
Decode for Fstatus:	Closed

VERIZON WIRELESS - ROSEVILLE W (Continued) **S110504181**

Name: SPRINT (CROWDER FS18XC009)
Address: 8000 CROWDER LN
City,State,Zip: ROSEVILLE, CA 95747
Facility ID: FA0017118
Facility Status: Closed
Program Element Code: 2105
Program: HAZMAT BUSINESS PLAN
Record Num: PR0013220
District Code: 130
Decode for Fstatus: Closed

Name: AT&T MOBILITY-MISTY LANE & VINEYARD USID47717
Address: 8000 CROWDER LN
City,State,Zip: ROSEVILLE, CA 95747
Facility ID: FA0017497
Facility Status: Active
Program Element Code: 2105
Program: HAZMAT BUSINESS PLAN
Record Num: PR0013549
District Code: 130
Decode for Fstatus: Active

Name: METRO-PCS SC90066M
Address: 8000 CROWDER LN
City,State,Zip: ROSEVILLE, CA 95747
Facility ID: FA0019050
Facility Status: Closed
Program Element Code: 2105
Program: HAZMAT BUSINESS PLAN
Record Num: PR0016123
District Code: 130
Decode for Fstatus: Closed

CERS:
Name: VERIZON WIRELESS - ROSEVILLE WEST
Address: 8000 CROWDER LANE
City,State,Zip: ROSEVILLE, CA 95678
Site ID: 503177
CERS ID: 110054207657
CERS Description: US EPA Air Emission Inventory System (EIS)

Affiliation:
Affiliation Type Desc: Facility Owner
Entity Name: VERIZON WIRELESS
Entity Title: OWNER
Affiliation Address: 255 PARKSHORE DRIVE
Affiliation City: FOLSOM
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

Affiliation Type Desc: Environmental Contact
Entity Name: ENVIR COMPLIANCE
Entity Title: ENVIRONMENTAL CONTACT
Affiliation Address: 255 PARKSHORE DRIVE
Affiliation City: FOLSOM

VERIZON WIRELESS - ROSEVILLE W (Continued) **S110504181**

Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

Affiliation Type Desc: Environmental Contact
Entity Name: NETWORK OPR CONTRL CTR
Entity Title: NOCC
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

Affiliation Type Desc: Operator
Entity Name: VERIZON WIRELESS
Entity Title: OPERATOR
Affiliation Address: 255 PARKSHORE DRIVE
Affiliation City: FOLSOM
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

Affiliation Type Desc: Environmental Contact
Entity Name: NOCC
Entity Title: Network Operations Control Center
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

Name: AT&T MOBILITY - MISTY LANE & VINEYARD (USID47717)
Address: 8000 CROWDER LN
City,State,Zip: ROSEVILLE, CA 95747
Site ID: 573071
CERS ID: 10866616
CERS Description: Chemical Storage Facilities

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-07-2021
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: On site with Mike Miller for the facility's initial routine hazardous materials business plan (HMBP) inspection. Verified materials and quantities on site. The facility's submitted the initial HMBP in CERS on 02/27/2021. The facility's HMBP is complete and accurate at this time. The facility's annual HMBP certification is due on or before 02/27/2022. Reviewed employee training records. Employee training records were available and complete at time of inspection. Facility is located on leased property. AT&T notifies the property owner of HMBP requirements in the property lease contract. No violations observed on this date. Due to COVID, the operator's signature was not captured at

VERIZON WIRELESS - ROSEVILLE W (Continued) **S110504181**

time of inspection. The inspection report was emailed to the operator.

Eval Division: Placer County Environmental Health
Eval Program: HMRRP
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-19-2023
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: On site for a routine hazardous materials business plan (HMBP) inspection. Consent for inspection given by Mike Miller. Facility is up to date with HMBP reporting to CERS- last submittal was 9/27/2022. Owner/ operator information was confirmed as accurate. Verified materials and quantities on site. Batteries located on site are under HMBP reporting thresholds. Site map and emergency response/ contingency plan were confirmed as complete and accurate. Three years of employee training records were available and were reviewed. Spill kits are available in technicians trucks. No violations observed on this date.
Eval Division: Placer County Environmental Health
Eval Program: HMRRP
Eval Source: CERS,

Coordinates:
Site ID: 573071
Facility Name: AT&T Mobility - MISTY LANE & VINEYARD (USID47717)
Env Int Type Code: HMBP
Program ID: 10866616
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.,
Latitude: 38.750860
Longitude: -121.356240

Affiliation:
Affiliation Type Desc: Document Preparer
Entity Name: Peter Burnell, Sigma Consultants, 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: ,

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: 311 S. Akard Street, Floor 12
Affiliation City: Dallas
Affiliation State: TX
Affiliation Country: Not reported
Affiliation Zip: 75202
Affiliation Phone: ,

Affiliation Type Desc: Legal Owner
Entity Name: New Cingular Wireless PCS, LLC dba AT&T Mobility

VERIZON WIRELESS - ROSEVILLE W (Continued) **S110504181**

Entity Title:	Not reported
Affiliation Address:	311 S. Akard Street, Floor 12
Affiliation City:	Dallas
Affiliation State:	TX
Affiliation Country:	United States
Affiliation Zip:	75202
Affiliation Phone:	(469) 295-2319,
Affiliation Type Desc:	Environmental Contact
Entity Name:	AT&T EH&S Hotline - Option #1
Entity Title:	Not reported
Affiliation Address:	311 S. Akard Street, Floor 12
Affiliation City:	Dallas
Affiliation State:	TX
Affiliation Country:	Not reported
Affiliation Zip:	75202
Affiliation Phone:	,
Affiliation Type Desc:	Parent Corporation
Entity Name:	AT&T Mobility
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:	,
Affiliation Type Desc:	CUPA District
Entity Name:	Placer County Env Health
Entity Title:	Not reported
Affiliation Address:	3091 County Center Drive
Affiliation City:	Auburn
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	95603
Affiliation Phone:	(530) 745-2300,
Affiliation Type Desc:	Identification Signer
Entity Name:	Jeremy McGrue
Entity Title:	National EPCRA Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,
Affiliation Type Desc:	Operator
Entity Name:	AT&T Mobility
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) 566-9347,

A4 **SUREWEST TELEPHONE A CCI COMPANY (CROWDER)** **CA PLACER CO. MS** **S117979181**
ENE **8000 CROWDER LN** **N/A**
1/8-1/4 **ROSEVILLE, CA 95747**
0.241 mi.
1274 ft. **Site 2 of 3 in cluster A**

Relative: **Lower**
Actual: **122 ft.**

PLACER CO. MS:

Name:	SUREWEST TELEPHONE A CCI COMPANY (CROWDER)
Address:	8000 CROWDER LN
City,State,Zip:	ROSEVILLE, CA 95747
Facility ID:	FA0001919
Facility Status:	Active
Program Element Code:	2105
Program:	HAZMAT BUSINESS PLAN
Record Num:	PR0017618
District Code:	130
Decode for Fstatus:	Active

A5 **CONSOLIDATED PHONE OFFICE** **EMI** **S124452273**
ENE **8000 CROWDER LANE** **CA PLACER CO. MS** **N/A**
1/8-1/4 **ROSEVILLE, CA 95678**
0.241 mi.
1274 ft. **Site 3 of 3 in cluster A**

Relative: **Lower**
Actual: **122 ft.**

EMI:

Name:	CONSOLIDATED PHONE OFFICE
Address:	8000 CROWDER LANE
City,State,Zip:	ROSEVILLE, CA 95678
Year:	2017
County Code:	31
Air Basin:	SV
Facility ID:	11024
Air District Name:	PLA
SIC Code:	4813
Air District Name:	PLACER COUNTY APCD
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:	0
SOX - Oxides of Sulphur Tons/Yr:	Not reported
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	CONSOLIDATED PHONE OFFICE
Address:	8000 CROWDER LANE
City,State,Zip:	ROSEVILLE, CA 95678
Year:	2018
County Code:	31
Air Basin:	SV
Facility ID:	11024
Air District Name:	PLA
SIC Code:	4813
Air District Name:	PLACER COUNTY APCD
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

CONSOLIDATED PHONE OFFICE (Continued) **S124452273**

NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	Not reported
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	CONSOLIDATED PHONE OFFICE
Address:	8000 CROWDER LANE
City,State,Zip:	ROSEVILLE, CA 95678
Year:	2019
County Code:	31
Air Basin:	SV
Facility ID:	11024
Air District Name:	PLA
SIC Code:	4813
Air District Name:	PLACER COUNTY APCD
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:	0
SOX - Oxides of Sulphur Tons/Yr:	Not reported
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	CONSOLIDATED PHONE OFFICE
Address:	8000 CROWDER LANE
City,State,Zip:	ROSEVILLE, CA 95678
Year:	2020
County Code:	31
Air Basin:	SV
Facility ID:	11024
Air District Name:	PLA
SIC Code:	4813
Air District Name:	PLACER COUNTY APCD
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:	0
SOX - Oxides of Sulphur Tons/Yr:	Not reported
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	CONSOLIDATED PHONE OFFICE
Address:	8000 CROWDER LANE
City,State,Zip:	ROSEVILLE, CA 95678
Year:	2021
County Code:	31
Air Basin:	SV
Facility ID:	11024
Air District Name:	PLA
SIC Code:	4813
Air District Name:	PLACER COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported

CONSOLIDATED PHONE OFFICE (Continued) **S124452273**

Total Organic Hydrocarbon Gases Tons/Yr:	0.00025042686397
Reactive Organic Gases Tons/Yr:	0.00022
Carbon Monoxide Emissions Tons/Yr:	0.00252
NOX - Oxides of Nitrogen Tons/Yr:	0.00972
SOX - Oxides of Sulphur Tons/Yr:	0.00058
Particulate Matter Tons/Yr:	0.00025150905433
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.00025

PLACER CO. MS:

Name:	PCS STRUCTURES TOWERS LLC - CROWDER LANE CA - SITE #370509
Address:	8000 CROWDER LN
City,State,Zip:	ROSEVILLE, CA 95747
Facility ID:	FA0020579
Facility Status:	Active
Program Element Code:	2105
Program:	HAZMAT BUSINESS PLAN
Record Num:	PR0018258
District Code:	130
Decode for Fstatus:	Active

6
SE
1/4-1/2
0.264 mi.
1396 ft.

WEST PLACER ELEM. SCHOOL/MORGAN CREEK **ENVIROSTOR** **S118756674**
CROWDER LANE/VINEYARD ROAD **SCH** **N/A**
ROSEVILLE, CA 95747

Relative:
Lower

Actual:
124 ft.

ENVIROSTOR:

Name:	WEST PLACER ELEM. SCHOOL/MORGAN CREEK
Address:	CROWDER LANE/VINEYARD ROAD
City,State,Zip:	ROSEVILLE, CA 95747
Facility ID:	31010015
Status:	No Action Required
Status Date:	04/08/2004
Site Code:	104394
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	14
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Jose Luevano
Supervisor:	Mark Malinowski
Division Branch:	Northern California Schools & Santa Susana
Assembly:	05
Senate:	06
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	38.74345
Longitude:	-121.3553
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	NONE SPECIFIED No Contaminants found
Confirmed COC:	NONE SPECIFIED
Potential Description:	NMA
Alias Name:	DRY CREEK JOINT ESD-WEST PLACER ELEM SCL

WEST PLACER ELEM. SCHOOL/MORGAN CREEK (Continued) **S118756674**

Alias Type: Alternate Name
Alias Name: MORGAN CREEK
Alias Type: Alternate Name
Alias Name: 104394
Alias Type: Project Code (Site Code)
Alias Name: 31010015
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: 05/19/2004
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 04/08/2004
Comments: DTSC approved the Phase I with a no action determination.

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:

Name: WEST PLACER ELEM. SCHOOL/MORGAN CREEK
Address: CROWDER LANE/VINEYARD ROAD
City,State,Zip: ROSEVILLE, CA 95747
Facility ID: 31010015
Site Type: School Investigation
Site Type Detail: School
Site Mgmt. Req.: NONE SPECIFIED
Acres: 14
National Priorities List: NO
Cleanup Oversight Agencies: SMBRP
Lead Agency: SMBRP
Lead Agency Description: DTSC - Site Cleanup Program
Project Manager: Jose Luevano
Supervisor: Mark Malinowski
Division Branch: Northern California Schools & Santa Susana
Site Code: 104394
Assembly: 05
Senate: 06
Special Program Status: Not reported
Status: No Action Required
Status Date: 04/08/2004
Restricted Use: NO
Funding: School District
Latitude: 38.74345

WEST PLACER ELEM. SCHOOL/MORGAN CREEK (Continued) **S118756674**

Longitude:	-121.3553
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	NONE SPECIFIED, No Contaminants found
Confirmed COC:	NONE SPECIFIED
Potential Description:	NMA
Alias Name:	DRY CREEK JOINT ESD-WEST PLACER ELEM SCL
Alias Type:	Alternate Name
Alias Name:	MORGAN CREEK
Alias Type:	Alternate Name
Alias Name:	104394
Alias Type:	Project Code (Site Code)
Alias Name:	31010015
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:	05/19/2004
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	04/08/2004
Comments:	DTSC approved the Phase I with a no action determination.
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

7
NE
1/4-1/2
0.380 mi.
2004 ft.

DEL WEBB SUN CITY ROSEVILLE DEVELOPMENT **CPS-SLIC** **S106486437**
FIDDYMENT ROAD **N/A**
ROSEVILLE, CA

Relative:
Lower

Actual:
126 ft.

CPS-SLIC:

Name:	DEL WEBB SUN CITY ROSEVILLE DEVELOPMENT
Address:	FIDDYMENT ROAD
City,State,Zip:	ROSEVILLE, CA
Region:	STATE
Facility Status:	**Completed - Case Closed**
Status Date:	03/05/1994
Global Id:	SLT5S1183158
Lead Agency:	CENTRAL VALLEY RWQCB (REGION 5S)
Lead Agency Case Number:	Not reported
Latitude:	38.7551676796413
Longitude:	-121.355137645379
Case Type:	Cleanup Program Site
Case Worker:	ZZZ

DEL WEBB SUN CITY ROSEVILLE DEVELOPMENT (Continued) **S106486437**

Local Agency:	ROSEVILLE, CITY OF
RB Case Number:	SLT5S118
File Location:	All Files are on GeoTracker or in the Local Agency Database
Potential Media Affected:	Other Groundwater (uses other than drinking water), Soil
Potential Contaminants of Concern:	Waste Oil / Motor / Hydraulic / Lubricating, Diesel, Gasoline
EPA Region:	9
Coordinate Source:	Google Map Move
Cuf Case:	NO
Quantity Released Gallons:	Not reported
Begin Date:	03/03/1994
Leak Reported Date:	03/03/1994
How Discovered:	Not reported
How Discovered Description:	Not reported
Discharge Source:	Not reported
Discharge Cause:	Not reported
Stop Method:	Not reported
Stop Description:	Not reported
No Further Action Date:	03/05/1994
CA Water Watershed Name:	Valley-American - Coon-American - Pleasant Grove (519.22)
Dwr Groundwater Subbasin Name:	Sacramento Valley - North American (5-021.64)
Disadvantaged Community:	Not reported
CA Enviroscreen 3 Score:	1-5% (lowest scores)
CA Enviroscreen 4 Score:	5-10%
Military DOD Site:	No
Facility Project Subtype:	Not reported
RWQCB Region:	CENTRAL VALLEY RWQCB (REGION 5S)
Site History:	During the development of Sun City, Well G was found. It s a hand dug well, partially collapsed with household debris in it. A soil sample from 60 feet contained 250 mg/kg diesel, 61 mg/kg motor oil, and 210 mg/kg lead. A soil sample from 78 feet did not contain fuel contaminants, but did contain 28 mg/kg lead. A groundwater sample from 60 feet contained 69 ug/L motor oil, and 85 ug/L diesel, both below the water quality objective.

Click here to access the California GeoTracker records for this facility:

8
South
1/2-1
0.532 mi.
2807 ft.

DRY CREEK COMMUNITY PARK **ENVIROSTOR** **S101481512**
9245 WALERGA ROAD **CIWQS** **N/A**
ROSEVILLE, CA 95747

Relative:
Lower

Actual:
93 ft.

ENVIROSTOR:

Name:	HOLTSMAN PROPERTY
Address:	9245 WALERGA ROAD
City,State,Zip:	ROSEVILLE, CA 95678
Facility ID:	31490006
Status:	Refer: Other Agency
Status Date:	03/26/1991
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:	Referred - Not Assigned

DRY CREEK COMMUNITY PARK (Continued) **S101481512**

Division Branch: Cleanup Sacramento
Assembly: 05
Senate: 06
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 38.73267
Longitude: -121.3625
APN: NONE SPECIFIED
Past Use: NONE SPECIFIED
Potential COC: NONE SPECIFIED
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED
Alias Name: 31490006
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Discovery
Completed Date: 01/17/1991
Comments: Facility Drive-by (Local Agency): Local agency informed Department of Health Services of possible illegally buried waste.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 03/26/1991
Comments: Site Screening Done: Local Health Department overseeing removal of soild waste. Site Listed on Cortese--contaminated soils on site.

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

CIWQS:
Name: DRY CREEK COMMUNITY PARK
Address: 9245 WALERGA ROAD
City,State,Zip: ROSEVILLE, CA 95747
Agency: Placer County Deptartment of Public Works
Agency Address: 3091 County Center Dr Ste 220, Auburn, CA 95603
Place/Project Type: Construction - Other: Developed Community Park
SIC/NAICS: Not reported
Region: 5S
Program: CONSTW
Regulatory Measure Status: Terminated
Regulatory Measure Type: Storm water construction
Order Number: 2009-0009-DWQ
WDID: 5S31C358706
NPDES Number: CAS000002

DRY CREEK COMMUNITY PARK (Continued) **S101481512**

Adoption Date:	Not reported
Effective Date:	06/22/2010
Termination Date:	08/30/2013
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:	38.7344
Longitude:	-121.3627

9
North
1/2-1
0.686 mi.
3621 ft.

SIERRA VISTA ELEMENTARY SCHOOL (PROPOSED)
4601 UPLAND DRIVE
ROSEVILLE, CA 95747

ENVIROSTOR
SCH
NPDES
CIWQS
CERS

S126330260
N/A

Relative:
Lower

Actual:
122 ft.

ENVIROSTOR:

Name:	SIERRA VISTA ELEMENTARY SCHOOL (PROPOSED)
Address:	4601 UPLAND DRIVE
City,State,Zip:	ROSEVILLE, CA 95747
Facility ID:	60003001
Status:	No Action Required
Status Date:	07/22/2020
Site Code:	104826
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	11.8
NPL:	NO
Regulatory Agencies:	PLACER COUNTY
Lead Agency:	PLACER COUNTY
Program Manager:	Elizabeth Tisdale
Supervisor:	Jose Salcedo
Division Branch:	Northern California Schools & Santa Susana
Assembly:	05
Senate:	06
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	38.76152
Longitude:	-121.3650
APN:	NONE SPECIFIED
Past Use:	NONE SPECIFIED
Potential COC:	NONE SPECIFIED No Contaminants found
Confirmed COC:	31000-NO
Potential Description:	NMA
Alias Name:	104826
Alias Type:	Project Code (Site Code)
Alias Name:	60003001
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1

SIERRA VISTA ELEMENTARY SCHOOL (PROPOSED) (Continued) **S126330260**

Completed Date:	07/22/2020
Comments:	DTSC issued a no action determination for the Site in a letter dated 22 July 2020.
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:

Name:	SIERRA VISTA ELEMENTARY SCHOOL (PROPOSED)
Address:	4601 UPLAND DRIVE
City,State,Zip:	ROSEVILLE, CA 95747
Facility ID:	60003001
Site Type:	School Investigation
Site Type Detail:	School
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	11.8
National Priorities List:	NO
Cleanup Oversight Agencies:	PLACER COUNTY
Lead Agency:	PLACER COUNTY
Lead Agency Description:	PLACER COUNTY
Project Manager:	Elizabeth Tisdale
Supervisor:	Jose Salcedo
Division Branch:	Northern California Schools & Santa Susana
Site Code:	104826
Assembly:	05
Senate:	06
Special Program Status:	Not reported
Status:	No Action Required
Status Date:	07/22/2020
Restricted Use:	NO
Funding:	School District
Latitude:	38.76152
Longitude:	-121.3650
APN:	NONE SPECIFIED
Past Use:	NONE SPECIFIED
Potential COC:	NONE SPECIFIED, No Contaminants found
Confirmed COC:	31000-NO
Potential Description:	NMA
Alias Name:	104826
Alias Type:	Project Code (Site Code)
Alias Name:	60003001
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	07/22/2020
Comments:	DTSC issued a no action determination for the Site in a letter dated

SIERRA VISTA ELEMENTARY SCHOOL (PROPOSED) (Continued) **S126330260**

22 July 2020.

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

NPDES:

Name:	REX FORTUNE ELEMENTARY SCHOOL
Address:	4601 UPLAND DRIVE
City,State,Zip:	ROSEVILLE, CA 95747
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:	5S31C395910
Regulatory Measure Type:	Construction
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:	12/10/2021
Operator Name:	Center Unified School District
Operator Address:	8408 Watt Ave
Operator City:	Antelope
Operator State:	California
Operator Zip:	95843

Name:	REX FORTUNE ELEMENTARY SCHOOL
Address:	4601 UPLAND DRIVE
City,State,Zip:	ROSEVILLE, CA 95747
Facility Status:	Active
NPDES Number:	CAS000002
Region:	5S
Agency Number:	0
Regulatory Measure ID:	542173
Place ID:	Not reported
Order Number:	2009-0009-DWQ
WDID:	5S31C395910
Regulatory Measure Type:	Enrollee
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported

SIERRA VISTA ELEMENTARY SCHOOL (PROPOSED) (Continued) **S126330260**

Effective Date Of Regulatory Measure:	12/10/2021
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	8408 Watt Ave
Discharge Name:	Center Unified School District
Discharge City:	Antelope
Discharge State:	California
Discharge Zip:	95843
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

CIWQS:

Name:	REX FORTUNE ELEMENTARY SCHOOL
Address:	4601 UPLAND DRIVE
City,State,Zip:	ROSEVILLE, CA 95747
Agency:	Center Unified School District
Agency Address:	8408 Watt Ave, Antelope, CA 95843
Place/Project Type:	Construction - Commercial
SIC/NAICS:	Not reported
Region:	5S
Program:	CONSTW
Regulatory Measure Status:	Active
Regulatory Measure Type:	Storm water construction
Order Number:	2009-0009-DWQ
WDID:	5S31C395910
NPDES Number:	CAS000002
Adoption Date:	Not reported
Effective Date:	12/10/2021
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:	1
Violations within 5 years:	1
Latitude:	38.76151
Longitude:	-121.36484

CERS:

Name:	REX FORTUNE ELEMENTARY SCHOOL
Address:	4601 UPLAND DRIVE
City,State,Zip:	ROSEVILLE, CA 95747
Site ID:	598307
CERS ID:	898692
CERS Description:	Construction Storm Water

Violations:

Site ID:	598307
Site Name:	Rex Fortune Elementary School
Violation Date:	03-14-2023
Citation:	2009-0009-DWQ - Construction General Permit

SIERRA VISTA ELEMENTARY SCHOOL (PROPOSED) (Continued) **S126330260**

Violation Description: SW - Deficient BMP Implementation
Violation Notes: No erosion control BMPs during a storm event and discharges did not meet BAT/BCT permit requirements
Violation Division: Water Boards
Violation Program: CONSTW
Violation Source: SMARTS,

Enforcement Action:
Site ID: 598307
Site Name: Rex Fortune Elementary School
Site Address: 4601 UPLAND DRIVE
Site City: ROSEVILLE
Site Zip: 95747
Enf Action Date: 03-17-2023
Enf Action Type: Notice of Violation
Enf Action Description: Notice of Violation
Enf Action Notes: NOV
Enf Action Division: Water Boards
Enf Action Program: CONSTW
Enf Action Source: SMARTS,

Affiliation:
Affiliation Type Desc: Owner/Operator
Entity Name: Center Unified School District
Entity Title: Operator
Affiliation Address: 8408 Watt Ave
Affiliation City: Antelope
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 95843
Affiliation Phone: ,

Name: SIERRA VISTA ELEMENT
Address: 4601 UPLAND DRIVE
City,State,Zip: ROSEVILLE, CA 95747
Site ID: 610110
CERS ID: 60003001
CERS Description: School Investigation

Affiliation:
Affiliation Type Desc: Lead Project Manager
Entity Name: Elizabeth Tisdale
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: ,

Affiliation Type Desc: Supervisor
Entity Name: Jose Salcedo
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported

SIERRA VISTA ELEMENTARY SCHOOL (PROPOSED) (Continued) **S126330260**

Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

10
South
1/2-1
0.997 mi.
5262 ft.

SILVER CREEK **ENVIROSTOR** **S107737341**
4300 PFE ROAD AND 9245 WALERGA ROAD (ADJOINING PROPERTIES) **VCP** **N/A**
ROSEVILLE, CA 95747

Relative:
Lower

Actual:
114 ft.

ENVIROSTOR:
Name: SILVER CREEK
Address: 4300 PFE ROAD AND 9245 WALERGA ROAD (ADJOINING PROPERTIES)
City,State,Zip: ROSEVILLE, CA 95747
Facility ID: 60000292
Status: No Further Action
Status Date: 06/27/2006
Site Code: 101788
Site Type: Voluntary Cleanup
Site Type Detailed: Voluntary Agreement
Acres: 28.6
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: Not reported
Supervisor: Steven Becker
Division Branch: Cleanup San Joaquin
Assembly: 05
Senate: 06
Special Program: Voluntary Agreement - Standard Voluntary Agreement
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Responsible Party
Latitude: 38.72964
Longitude: -121.3611
APN: 023-0221-016, 023-0221-050, 023-221-016-000
Past Use: AGRICULTURAL - LIVESTOCK, AGRICULTURAL - ORCHARD
Potential COC: NONE SPECIFIED No Contaminants found
Confirmed COC: No Contaminants found
Potential Description: NMA
Alias Name: 023-0221-016
Alias Type: APN
Alias Name: 023-0221-050
Alias Type: APN
Alias Name: 023-221-016-000
Alias Type: APN
Alias Name: 110033608460
Alias Type: EPA (FRS #)
Alias Name: SL0606104857
Alias Type: GeoTracker Global ID
Alias Name: 101788
Alias Type: Project Code (Site Code)
Alias Name: 60000292
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE

SILVER CREEK (Continued) **S107737341**

Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 06/27/2006
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 07/13/2006
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Standard Voluntary Agreement
Completed Date: 05/02/2006
Comments: A Voluntary Cleanup Agreement was executed. The agreement calls for the completion of a Preliminary Endangerment Assessment.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 06/27/2006
Comments: Pre-existing data was received and no further action was deemed necessary.

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

VCP:
Name: SILVER CREEK
Address: 4300 PFE ROAD AND 9245 WALERGA ROAD (ADJOINING PROPERTIES)
City,State,Zip: ROSEVILLE, CA 95747
Facility ID: 60000292
Site Type: Voluntary Cleanup
Site Type Detail: Voluntary Agreement
Site Mgmt. Req.: NONE SPECIFIED
Acres: 28.6
National Priorities List: NO
Cleanup Oversight Agencies: SMBRP
Lead Agency: SMBRP
Lead Agency Description: DTSC - Site Cleanup Program
Project Manager: Not reported
Supervisor: Steven Becker
Division Branch: Cleanup San Joaquin
Site Code: 101788
Assembly: 05
Senate: 06
Special Programs Code: Voluntary Agreement - Standard Voluntary Agreement
Status: No Further Action
Status Date: 06/27/2006

SILVER CREEK (Continued) **S107737341**

Restricted Use:	NO
Funding:	Responsible Party
Lat/Long:	38.72964 / -121.3611
APN:	023-0221-016, 023-0221-050, 023-221-016-000
Past Use:	AGRICULTURAL - LIVESTOCK, AGRICULTURAL - ORCHARD
Potential COC:	NONE SPECIFIED,31000
Confirmed COC:	31000
Potential Description:	NMA
Alias Name:	023-0221-016
Alias Type:	APN
Alias Name:	023-0221-050
Alias Type:	APN
Alias Name:	023-221-016-000
Alias Type:	APN
Alias Name:	110033608460
Alias Type:	EPA (FRS #)
Alias Name:	SL0606104857
Alias Type:	GeoTracker Global ID
Alias Name:	101788
Alias Type:	Project Code (Site Code)
Alias Name:	60000292
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Correspondence
Completed Date:	06/27/2006
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	07/13/2006
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Standard Voluntary Agreement
Completed Date:	05/02/2006
Comments:	A Voluntary Cleanup Agreement was executed. The agreement calls for the completion of a Preliminary Endangerment Assessment.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Report
Completed Date:	06/27/2006
Comments:	Pre-existing data was received and no further action was deemed necessary.
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

SILVER CREEK (Continued) **S107737341**

Schedule Revised Date: Not reported

Count: 4 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
PLACER COUNTY	S107538244		CROWDER RD, 1/2 MI S OF BASELI		CDL
ROSEVILLE	S114734387	WILBURN PROPERTY	9990 BASELINE ROAD		RGA LF
ROSEVILLE	S114734386	WILBURN PROPERTY (CHP REFERRAL SIT	9990 BASELINE ROAD		RGA LF
ROSEVILLE	S106230343	DEL WEBB SUN CITY ROSEVILLE DEVELO	FIDDEYMENT RD NORTH OF BASE LI		CPS-SLIC

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

Lists of Federal NPL (Superfund) sites

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: 09/19/2023
Date Data Arrived at EDR: 10/03/2023
Date Made Active in Reports: 10/19/2023
Number of Days to Update: 16

Source: EPA
Telephone: N/A
Last EDR Contact: 11/01/2023
Next Scheduled EDR Contact: 01/08/2024
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 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 5
Telephone 312-886-6686

EPA Region 6
Telephone: 214-655-6659

EPA Region 7
Telephone: 913-551-7247

EPA Region 8
Telephone: 303-312-6774

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: 09/19/2023
Date Data Arrived at EDR: 10/03/2023
Date Made Active in Reports: 10/19/2023
Number of Days to Update: 16

Source: EPA
Telephone: N/A
Last EDR Contact: 11/01/2023
Next Scheduled EDR Contact: 01/08/2024
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

Lists of Federal Delisted NPL sites

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: 09/19/2023
Date Data Arrived at EDR: 10/03/2023
Date Made Active in Reports: 10/19/2023
Number of Days to Update: 16

Source: EPA
Telephone: N/A
Last EDR Contact: 11/01/2023
Next Scheduled EDR Contact: 01/08/2024
Data Release Frequency: Quarterly

Lists of Federal sites subject to CERCLA removals and CERCLA orders

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: 06/23/2023
Date Data Arrived at EDR: 06/23/2023
Date Made Active in Reports: 09/20/2023
Number of Days to Update: 89

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 09/26/2023
Next Scheduled EDR Contact: 01/08/2024
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: 09/19/2023
Date Data Arrived at EDR: 10/03/2023
Date Made Active in Reports: 10/19/2023
Number of Days to Update: 16

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 11/02/2023
Next Scheduled EDR Contact: 01/22/2024
Data Release Frequency: Quarterly

Lists of Federal CERCLA sites with NFRAP

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: 09/19/2023
Date Data Arrived at EDR: 10/03/2023
Date Made Active in Reports: 10/19/2023
Number of Days to Update: 16

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 11/02/2023
Next Scheduled EDR Contact: 01/22/2024
Data Release Frequency: Quarterly

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 07/24/2023
Date Data Arrived at EDR: 07/31/2023
Date Made Active in Reports: 08/14/2023
Number of Days to Update: 14

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/20/2023
Next Scheduled EDR Contact: 01/01/2024
Data Release Frequency: Quarterly

Lists of Federal RCRA TSD facilities

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: 07/24/2023
Date Data Arrived at EDR: 07/31/2023
Date Made Active in Reports: 08/14/2023
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/20/2023
Next Scheduled EDR Contact: 01/01/2024
Data Release Frequency: Quarterly

Lists of Federal RCRA generators

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: 07/24/2023
Date Data Arrived at EDR: 07/31/2023
Date Made Active in Reports: 08/14/2023
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/20/2023
Next Scheduled EDR Contact: 01/01/2024
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: 07/24/2023
Date Data Arrived at EDR: 07/31/2023
Date Made Active in Reports: 08/14/2023
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/20/2023
Next Scheduled EDR Contact: 01/01/2024
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly 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). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 07/24/2023
Date Data Arrived at EDR: 07/31/2023
Date Made Active in Reports: 08/14/2023
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/20/2023
Next Scheduled EDR Contact: 01/01/2024
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: 08/03/2023
Date Data Arrived at EDR: 08/07/2023
Date Made Active in Reports: 10/10/2023
Number of Days to Update: 64

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 11/02/2023
Next Scheduled EDR Contact: 02/19/2024
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: 05/22/2023
Date Data Arrived at EDR: 05/23/2023
Date Made Active in Reports: 07/24/2023
Number of Days to Update: 62

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/21/2023
Next Scheduled EDR Contact: 12/04/2023
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

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: 05/22/2023
Date Data Arrived at EDR: 05/23/2023
Date Made Active in Reports: 07/24/2023
Number of Days to Update: 62

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/21/2023
Next Scheduled EDR Contact: 12/04/2023
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: 06/12/2023
Date Data Arrived at EDR: 06/20/2023
Date Made Active in Reports: 08/14/2023
Number of Days to Update: 55

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 09/20/2023
Next Scheduled EDR Contact: 01/01/2024
Data Release Frequency: Quarterly

Lists of state- and tribal (Superfund) equivalent sites

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: 07/24/2023
Date Data Arrived at EDR: 07/25/2023
Date Made Active in Reports: 10/11/2023
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/24/2023
Next Scheduled EDR Contact: 02/05/2024
Data Release Frequency: Quarterly

Lists of state- and tribal hazardous waste facilities

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: 07/24/2023
Date Data Arrived at EDR: 07/25/2023
Date Made Active in Reports: 10/11/2023
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/24/2023
Next Scheduled EDR Contact: 02/05/2024
Data Release Frequency: Quarterly

Lists of state and tribal landfills and solid waste disposal facilities

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: 08/07/2023
Date Data Arrived at EDR: 08/08/2023
Date Made Active in Reports: 10/26/2023
Number of Days to Update: 79

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 08/08/2023
Next Scheduled EDR Contact: 11/20/2023
Data Release Frequency: Quarterly

Lists of state and tribal leaking storage tanks

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 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: 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

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: No Update Planned

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: 06/05/2023
Date Data Arrived at EDR: 06/05/2023
Date Made Active in Reports: 08/28/2023
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
Data Release Frequency: Quarterly

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 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

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 05/09/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 66

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 10/11/2023
Next Scheduled EDR Contact: 01/29/2024
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: 04/14/2023
Date Data Arrived at EDR: 05/09/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 66

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 10/11/2023
Next Scheduled EDR Contact: 01/29/2024
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: 04/20/2023
Date Data Arrived at EDR: 05/09/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 66

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/11/2023
Next Scheduled EDR Contact: 01/29/2024
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: 04/19/2023
Date Data Arrived at EDR: 05/09/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 66

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 10/11/2023
Next Scheduled EDR Contact: 01/29/2024
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: 04/20/2023
Date Data Arrived at EDR: 05/09/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 66

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 10/11/2023
Next Scheduled EDR Contact: 01/29/2024
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: 04/20/2023
Date Data Arrived at EDR: 05/09/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 66

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/11/2023
Next Scheduled EDR Contact: 01/29/2024
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: 04/25/2023
Date Data Arrived at EDR: 05/09/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 66

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/11/2023
Next Scheduled EDR Contact: 01/29/2024
Data Release Frequency: Varies

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: 04/19/2023
Date Data Arrived at EDR: 05/09/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 66

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 10/11/2023
Next Scheduled EDR Contact: 01/29/2024
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: 06/05/2023
Date Data Arrived at EDR: 06/05/2023
Date Made Active in Reports: 08/28/2023
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

Lists of state and tribal registered storage tanks

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 03/08/2023
Date Data Arrived at EDR: 03/09/2023
Date Made Active in Reports: 05/30/2023
Number of Days to Update: 82

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 10/10/2023
Next Scheduled EDR Contact: 01/15/2024
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 06/05/2023
Date Data Arrived at EDR: 06/05/2023
Date Made Active in Reports: 08/28/2023
Number of Days to Update: 84

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
Data Release Frequency: Semi-Annually

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: 05/31/2023
Date Data Arrived at EDR: 06/02/2023
Date Made Active in Reports: 08/23/2023
Number of Days to Update: 82

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
Data Release Frequency: Varies

MILITARY UST SITES: Military UST Sites (GEOTRACKER)
Military ust sites

Date of Government Version: 06/05/2023
Date Data Arrived at EDR: 06/05/2023
Date Made Active in Reports: 08/28/2023
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
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: 09/07/2023
Next Scheduled EDR Contact: 12/25/2023
Data Release Frequency: Varies

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: 04/20/2023
Date Data Arrived at EDR: 05/09/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 66

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 10/11/2023
Next Scheduled EDR Contact: 01/29/2024
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: 04/25/2023
Date Data Arrived at EDR: 05/09/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 66

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/11/2023
Next Scheduled EDR Contact: 01/29/2024
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: 04/20/2023
Date Data Arrived at EDR: 05/09/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 66

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/11/2023
Next Scheduled EDR Contact: 01/29/2024
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: 04/19/2023
Date Data Arrived at EDR: 05/09/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 66

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 10/11/2023
Next Scheduled EDR Contact: 01/29/2024
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: 04/26/2023
Date Data Arrived at EDR: 05/09/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 66

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 10/11/2023
Next Scheduled EDR Contact: 01/29/2024
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: 04/14/2023
Date Data Arrived at EDR: 05/09/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 66

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 10/11/2023
Next Scheduled EDR Contact: 01/29/2024
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: 04/20/2023
Date Data Arrived at EDR: 05/09/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 66

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/11/2023
Next Scheduled EDR Contact: 01/29/2024
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: 04/20/2023
Date Data Arrived at EDR: 05/09/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 66

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 10/11/2023
Next Scheduled EDR Contact: 01/29/2024
Data Release Frequency: Varies

Lists of state and tribal voluntary cleanup sites

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: 07/08/2021
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

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: 09/12/2023
Next Scheduled EDR Contact: 01/01/2024
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: 07/24/2023
Date Data Arrived at EDR: 07/25/2023
Date Made Active in Reports: 10/11/2023
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/24/2023
Next Scheduled EDR Contact: 02/05/2024
Data Release Frequency: Quarterly

Lists of state and tribal brownfield 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: 06/14/2023
Date Data Arrived at EDR: 06/14/2023
Date Made Active in Reports: 09/06/2023
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 09/20/2023
Next Scheduled EDR Contact: 01/01/2024
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: 04/06/2023
Date Data Arrived at EDR: 04/13/2023
Date Made Active in Reports: 04/19/2023
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 08/30/2023
Next Scheduled EDR Contact: 12/25/2023
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: 10/20/2023
Next Scheduled EDR Contact: 02/05/2024
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 06/02/2023
Date Data Arrived at EDR: 06/02/2023
Date Made Active in Reports: 08/23/2023
Number of Days to Update: 82

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 11/16/2022
Date Data Arrived at EDR: 11/22/2022
Date Made Active in Reports: 02/13/2023
Number of Days to Update: 83

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 11/02/2023
Next Scheduled EDR Contact: 02/19/2024
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: 10/23/2023
Next Scheduled EDR Contact: 02/05/2024
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: 10/10/2023
Next Scheduled EDR Contact: 01/29/2024
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: 10/28/2023
Next Scheduled EDR Contact: 02/05/2024
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: 05/22/2023
Date Data Arrived at EDR: 05/23/2023
Date Made Active in Reports: 07/10/2023
Number of Days to Update: 48

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/21/2023
Next Scheduled EDR Contact: 12/04/2023
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: 07/24/2023
Date Data Arrived at EDR: 07/25/2023
Date Made Active in Reports: 10/11/2023
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/24/2023
Next Scheduled EDR Contact: 02/05/2024
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: 12/31/2020
Date Data Arrived at EDR: 11/30/2022
Date Made Active in Reports: 02/09/2023
Number of Days to Update: 71

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 10/25/2023
Next Scheduled EDR Contact: 02/12/2024
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: California Environmental Reporting System Hazardous 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: 07/17/2023
Date Data Arrived at EDR: 07/18/2023
Date Made Active in Reports: 10/06/2023
Number of Days to Update: 80
Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 10/17/2023
Next Scheduled EDR Contact: 01/29/2024
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: 05/22/2023
Date Data Arrived at EDR: 05/23/2023
Date Made Active in Reports: 07/10/2023
Number of Days to Update: 48
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/21/2023
Next Scheduled EDR Contact: 12/04/2023
Data Release Frequency: Quarterly

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

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: 08/04/2023
Date Data Arrived at EDR: 08/08/2023
Date Made Active in Reports: 10/25/2023
Number of Days to Update: 78
Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 10/25/2023
Next Scheduled EDR Contact: 02/12/2024
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: 07/17/2023
Date Data Arrived at EDR: 07/18/2023
Date Made Active in Reports: 10/06/2023
Number of Days to Update: 80

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/17/2023
Next Scheduled EDR Contact: 01/29/2024
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: 06/06/2023
Date Data Arrived at EDR: 06/07/2023
Date Made Active in Reports: 08/25/2023
Number of Days to Update: 79

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/22/2023
Next Scheduled EDR Contact: 12/11/2023
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: 09/19/2023
Date Data Arrived at EDR: 10/03/2023
Date Made Active in Reports: 10/19/2023
Number of Days to Update: 16

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 11/01/2023
Next Scheduled EDR Contact: 01/08/2024
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: 05/25/2023
Date Data Arrived at EDR: 05/25/2023
Date Made Active in Reports: 08/14/2023
Number of Days to Update: 81

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 08/29/2023
Next Scheduled EDR Contact: 12/11/2023
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: 06/19/2023
Date Data Arrived at EDR: 06/23/2023
Date Made Active in Reports: 09/20/2023
Number of Days to Update: 89

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 09/20/2023
Next Scheduled EDR Contact: 01/01/2024
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: 06/01/2023
Date Data Arrived at EDR: 07/18/2023
Date Made Active in Reports: 10/05/2023
Number of Days to Update: 79

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 10/20/2023
Next Scheduled EDR Contact: 01/29/2024
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: 06/05/2023
Date Data Arrived at EDR: 06/05/2023
Date Made Active in Reports: 08/25/2023
Number of Days to Update: 81

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
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: 06/05/2023
Date Data Arrived at EDR: 06/05/2023
Date Made Active in Reports: 08/25/2023
Number of Days to Update: 81

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
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: 07/24/2023
Date Data Arrived at EDR: 07/31/2023
Date Made Active in Reports: 08/14/2023
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/20/2023
Next Scheduled EDR Contact: 01/01/2024
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: 08/07/2023
Date Data Arrived at EDR: 08/15/2023
Date Made Active in Reports: 10/10/2023
Number of Days to Update: 56

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 08/15/2023
Next Scheduled EDR Contact: 11/27/2023
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: 06/07/2021
Date Data Arrived at EDR: 07/13/2021
Date Made Active in Reports: 03/09/2022
Number of Days to Update: 239

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 10/09/2023
Next Scheduled EDR Contact: 01/22/2024
Data Release Frequency: Varies

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: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 10/04/2023
Next Scheduled EDR Contact: 01/15/2024
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: 07/30/2021
Date Data Arrived at EDR: 02/03/2023
Date Made Active in Reports: 02/10/2023
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 08/01/2023
Next Scheduled EDR Contact: 11/20/2023
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: 06/19/2023
Date Data Arrived at EDR: 06/20/2023
Date Made Active in Reports: 08/14/2023
Number of Days to Update: 55

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 09/20/2023
Next Scheduled EDR Contact: 01/01/2024
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: 10/31/2023
Next Scheduled EDR Contact: 02/12/2024
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: 11/03/2023
Next Scheduled EDR Contact: 02/12/2024
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: 12/31/2020
Date Data Arrived at EDR: 06/14/2022
Date Made Active in Reports: 03/24/2023
Number of Days to Update: 283

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 09/15/2023
Next Scheduled EDR Contact: 12/25/2023
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: 12/31/2021
Date Data Arrived at EDR: 02/16/2023
Date Made Active in Reports: 05/02/2023
Number of Days to Update: 75

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/18/2023
Next Scheduled EDR Contact: 11/27/2023
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: 07/17/2023
Date Data Arrived at EDR: 07/18/2023
Date Made Active in Reports: 10/10/2023
Number of Days to Update: 84

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 10/20/2023
Next Scheduled EDR Contact: 01/29/2024
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: 09/19/2023
Date Data Arrived at EDR: 10/03/2023
Date Made Active in Reports: 10/19/2023
Number of Days to Update: 16

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 11/01/2023
Next Scheduled EDR Contact: 12/11/2023
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: 05/09/2023
Date Data Arrived at EDR: 06/29/2023
Date Made Active in Reports: 09/25/2023
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 09/26/2023
Next Scheduled EDR Contact: 01/29/2024
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: 09/19/2023
Date Data Arrived at EDR: 10/03/2023
Date Made Active in Reports: 10/19/2023
Number of Days to Update: 16

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 11/01/2023
Next Scheduled EDR Contact: 02/12/2024
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: 03/20/2023
Date Data Arrived at EDR: 04/04/2023
Date Made Active in Reports: 06/09/2023
Number of Days to Update: 66

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 10/06/2023
Next Scheduled EDR Contact: 01/15/2024
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: 09/27/2023
Next Scheduled EDR Contact: 01/15/2024
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: No Update Planned

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: No Update Planned

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: 07/20/2023
Date Data Arrived at EDR: 09/01/2023
Date Made Active in Reports: 09/20/2023
Number of Days to Update: 19

Source: Nuclear Regulatory Commission
Telephone: 301-415-0717
Last EDR Contact: 10/10/2023
Next Scheduled EDR Contact: 01/29/2024
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: 12/31/2021
Date Data Arrived at EDR: 04/14/2023
Date Made Active in Reports: 07/10/2023
Number of Days to Update: 87

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 09/01/2023
Next Scheduled EDR Contact: 12/11/2023
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: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 08/28/2023
Next Scheduled EDR Contact: 12/11/2023
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: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 11/03/2023
Next Scheduled EDR Contact: 02/12/2024
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: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 09/22/2023
Next Scheduled EDR Contact: 01/08/2024
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: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80
Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 10/04/2023
Next Scheduled EDR Contact: 02/05/2024
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: 06/30/2023
Date Data Arrived at EDR: 07/19/2023
Date Made Active in Reports: 10/10/2023
Number of Days to Update: 83
Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 10/03/2023
Next Scheduled EDR Contact: 01/15/2024
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: 12/31/2021
Date Data Arrived at EDR: 03/09/2023
Date Made Active in Reports: 03/20/2023
Number of Days to Update: 11
Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 09/20/2023
Next Scheduled EDR Contact: 01/01/2024
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: 10/02/2023
Next Scheduled EDR Contact: 01/15/2024
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: 03/03/2023
Date Data Arrived at EDR: 03/03/2023
Date Made Active in Reports: 06/09/2023
Number of Days to Update: 98
Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 10/25/2023
Next Scheduled EDR Contact: 02/12/2024
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: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74
Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 08/10/2023
Next Scheduled EDR Contact: 11/27/2023
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 09/19/2023
Date Data Arrived at EDR: 10/03/2023
Date Made Active in Reports: 10/19/2023
Number of Days to Update: 16
Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 11/01/2023
Next Scheduled EDR Contact: 01/08/2024
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

MINES VIOLATIONS: MSHA Violation Assessment Data

Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 07/05/2023
Date Data Arrived at EDR: 07/05/2023
Date Made Active in Reports: 09/25/2023
Number of Days to Update: 82

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 10/04/2023
Next Scheduled EDR Contact: 11/20/2023
Data Release Frequency: Quarterly

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: 05/01/2023
Date Data Arrived at EDR: 05/24/2023
Date Made Active in Reports: 07/24/2023
Number of Days to Update: 61

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 08/22/2023
Next Scheduled EDR Contact: 12/04/2023
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: 01/07/2022
Date Data Arrived at EDR: 02/24/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 82

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/24/2023
Next Scheduled EDR Contact: 12/04/2023
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: 08/24/2023
Next Scheduled EDR Contact: 12/04/2023
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: 06/13/2023
Date Data Arrived at EDR: 06/14/2023
Date Made Active in Reports: 08/14/2023
Number of Days to Update: 61

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 09/12/2023
Next Scheduled EDR Contact: 12/18/2023
Data Release Frequency: Quarterly

MINES MRDS: Mineral Resources Data System

Mineral Resources Data System

Date of Government Version: 08/23/2022
Date Data Arrived at EDR: 11/22/2022
Date Made Active in Reports: 02/28/2023
Number of Days to Update: 98

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 08/24/2023
Next Scheduled EDR Contact: 12/04/2023
Data Release Frequency: Varies

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: 05/04/2023
Date Data Arrived at EDR: 05/25/2023
Date Made Active in Reports: 07/24/2023
Number of Days to Update: 60

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 09/28/2023
Next Scheduled EDR Contact: 12/11/2023
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: 06/24/2023
Date Data Arrived at EDR: 06/29/2023
Date Made Active in Reports: 09/25/2023
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 10/03/2023
Next Scheduled EDR Contact: 01/15/2024
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 11/09/2021
Date Data Arrived at EDR: 10/20/2022
Date Made Active in Reports: 01/10/2023
Number of Days to Update: 82

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 09/13/2023
Next Scheduled EDR Contact: 01/22/2024
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: 05/06/2021
Date Data Arrived at EDR: 05/21/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 08/15/2023
Next Scheduled EDR Contact: 12/04/2023
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: 08/14/2023
Date Data Arrived at EDR: 08/15/2023
Date Made Active in Reports: 10/19/2023
Number of Days to Update: 65

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 08/15/2023
Next Scheduled EDR Contact: 11/27/2023
Data Release Frequency: Quarterly

PFAS NPL: Superfund Sites with PFAS Detections Information

EPA's Office of Land and Emergency Management and EPA Regional Offices maintain data describing what is known about site investigations, contamination, and remedial actions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) where PFAS is present in the environment.

Date of Government Version: 07/05/2023
Date Data Arrived at EDR: 07/05/2023
Date Made Active in Reports: 10/02/2023
Number of Days to Update: 89

Source: Environmental Protection Agency
Telephone: 703-603-8895
Last EDR Contact: 10/03/2023
Next Scheduled EDR Contact: 01/15/2024
Data Release Frequency: Varies

PFAS FEDERAL SITES: Federal Sites PFAS Information

Several federal entities, such as the federal Superfund program, Department of Defense, National Aeronautics and Space Administration, Department of Transportation, and Department of Energy provided information for sites with known or suspected detections at federal facilities.

Date of Government Version: 07/05/2023
Date Data Arrived at EDR: 07/05/2023
Date Made Active in Reports: 10/02/2023
Number of Days to Update: 89

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 10/03/2023
Next Scheduled EDR Contact: 01/15/2024
Data Release Frequency: Varies

PFAS TSCA: PFAS Manufacture and Imports Information

EPA issued the Chemical Data Reporting (CDR) Rule under the Toxic Substances Control Act (TSCA) and requires chemical manufacturers and facilities that manufacture or import chemical substances to report data to EPA. EPA publishes non-confidential business information (non-CBI) and includes descriptive information about each site, corporate parent, production volume, other manufacturing information, and processing and use information.

Date of Government Version: 07/05/2023
Date Data Arrived at EDR: 07/05/2023
Date Made Active in Reports: 10/02/2023
Number of Days to Update: 89

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 10/03/2023
Next Scheduled EDR Contact: 01/15/2024
Data Release Frequency: Varies

PFAS TRIS: List of PFAS Added to the TRI

Section 7321 of the National Defense Authorization Act for Fiscal Year 2020 (NDAA) immediately added certain per- and polyfluoroalkyl substances (PFAS) to the list of chemicals covered by the Toxics Release Inventory (TRI) under Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) and provided a framework for additional PFAS to be added to TRI on an annual basis.

Date of Government Version: 07/05/2023
Date Data Arrived at EDR: 07/05/2023
Date Made Active in Reports: 10/02/2023
Number of Days to Update: 89

Source: Environmental Protection Agency
Telephone: 202-566-0250
Last EDR Contact: 10/03/2023
Next Scheduled EDR Contact: 01/15/2024
Data Release Frequency: Varies

PFAS RCRA MANIFEST: PFAS Transfers Identified In the RCRA Database Listing

To work around the lack of PFAS waste codes in the RCRA database, EPA developed the PFAS Transfers dataset by mining e-Manifest records containing at least one of these common PFAS keywords: PFAS, PFOA, PFOS, PERFL, AFFF, GENX, GEN-X (plus the VT waste codes). These keywords were searched for in the following text fields: Manifest handling instructions (MANIFEST_HANDLING_INSTR), Non-hazardous waste description (NON_HAZ_WASTE_DESCRIPTION), DOT printed information (DOT_PRINTED_INFORMATION), Waste line handling instructions (WASTE_LINE_HANDLING_INSTR), Waste residue comments (WASTE_RESIDUE_COMMENTS).

Date of Government Version: 07/05/2023
Date Data Arrived at EDR: 07/05/2023
Date Made Active in Reports: 10/02/2023
Number of Days to Update: 89

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 10/03/2023
Next Scheduled EDR Contact: 01/15/2024
Data Release Frequency: Varies

PFAS ATSDR: PFAS Contamination Site Location Listing

PFAS contamination site locations from the Department of Health & Human Services, Center for Disease Control & Prevention. ATSDR is involved at a number of PFAS-related sites, either directly or through assisting state and federal partners. As of now, most sites are related to drinking water contamination connected with PFAS production facilities or fire training areas where aqueous film-forming firefighting foam (AFFF) was regularly used.

Date of Government Version: 06/24/2020
Date Data Arrived at EDR: 03/17/2021
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 601

Source: Department of Health & Human Services
Telephone: 202-741-5770
Last EDR Contact: 10/23/2023
Next Scheduled EDR Contact: 02/05/2024
Data Release Frequency: Varies

PFAS WQP: Ambient Environmental Sampling for PFAS

The Water Quality Portal (WQP) is a part of a modernized repository storing ambient sampling data for all environmental media and tissue samples. A wide range of federal, state, tribal and local governments, academic and non-governmental organizations and individuals submit project details and sampling results to this public repository. The information is commonly used for research and assessments of environmental quality.

Date of Government Version: 09/23/2023
Date Data Arrived at EDR: 10/03/2023
Date Made Active in Reports: 10/10/2023
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 10/03/2023
Next Scheduled EDR Contact: 01/15/2024
Data Release Frequency: Varies

PFAS NPDES: Clean Water Act Discharge Monitoring Information

Any discharger of pollutants to waters of the United States from a point source must have a National Pollutant Discharge Elimination System (NPDES) permit. The process for obtaining limits involves the regulated entity (permittee) disclosing releases in a NPDES permit application and the permitting authority (typically the state but sometimes EPA) deciding whether to require monitoring or monitoring with limits. Caveats and Limitations: Less than half of states have required PFAS monitoring for at least one of their permittees and fewer states have established PFAS effluent limits for permittees. New rulemakings have been initiated that may increase the number of facilities monitoring for PFAS in the future.

Date of Government Version: 07/05/2023
Date Data Arrived at EDR: 07/05/2023
Date Made Active in Reports: 10/02/2023
Number of Days to Update: 89

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 10/03/2023
Next Scheduled EDR Contact: 01/15/2024
Data Release Frequency: Varies

PFAS ECHO: Facilities in Industries that May Be Handling PFAS Listing

Regulators and the public have expressed interest in knowing which regulated entities may be using PFAS. EPA has developed a dataset from various sources that show which industries may be handling PFAS. Approximately 120,000 facilities subject to federal environmental programs have operated or currently operate in industry sectors with processes that may involve handling and/or release of PFAS.

Date of Government Version: 07/05/2023
Date Data Arrived at EDR: 07/05/2023
Date Made Active in Reports: 09/25/2023
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 10/03/2023
Next Scheduled EDR Contact: 01/15/2024
Data Release Frequency: Varies

PFAS ECHO FIRE TRAINING: Facilities in Industries that May Be Handling PFAS Listing

A list of fire training sites was added to the Industry Sectors dataset using a keyword search on the permitted facilitys name to identify sites where fire-fighting foam may have been used in training exercises. Additionally, you may view an example spreadsheet of the subset of fire training facility data, as well as the keywords used in selecting or deselecting a facility for the subset. as well as the keywords used in selecting or deselecting a facility for the subset. These keywords were tested to maximize accuracy in selecting facilities that may use fire-fighting foam in training exercises, however, due to the lack of a required reporting field in the data systems for designating fire training sites, this methodology may not identify all fire training sites or may potentially misidentify them.

Date of Government Version: 07/05/2023
Date Data Arrived at EDR: 07/05/2023
Date Made Active in Reports: 09/25/2023
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 10/03/2023
Next Scheduled EDR Contact: 01/15/2024
Data Release Frequency: Varies

PFAS PART 139 AIRPORT: All Certified Part 139 Airports PFAS Information Listing

Since July 1, 2006, all certified part 139 airports are required to have fire-fighting foam onsite that meet military specifications (MIL-F-24385) (14 CFR 139.317). To date, these military specification fire-fighting foams are fluorinated and have been historically used for training and extinguishing. The 2018 FAA Reauthorization Act has a provision stating that no later than October 2021, FAA shall not require the use of fluorinated AFFF. This provision does not prohibit the use of fluorinated AFFF at Part 139 civilian airports; it only prohibits FAA from mandating its use. The Federal Aviation Administration?s document AC 150/5210-6D - Aircraft Fire Extinguishing Agents provides guidance on Aircraft Fire Extinguishing Agents, which includes Aqueous Film Forming Foam (AFFF).

Date of Government Version: 07/05/2023
Date Data Arrived at EDR: 07/05/2023
Date Made Active in Reports: 09/25/2023
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 10/03/2023
Next Scheduled EDR Contact: 01/15/2024
Data Release Frequency: Varies

AQUEOUS FOAM NRC: Aqueous Foam Related Incidents Listing

The National Response Center (NRC) serves as an emergency call center that fields initial reports for pollution and railroad incidents and forwards that information to appropriate federal/state agencies for response. The spreadsheets posted to the NRC website contain initial incident data that has not been validated or investigated by a federal/state response agency. Response center calls from 1990 to the most recent complete calendar year where there was indication of Aqueous Film Forming Foam (AFFF) usage are included in this dataset. NRC calls may reference AFFF usage in the ?Material Involved? or ?Incident Description? fields.

Date of Government Version: 07/05/2023
Date Data Arrived at EDR: 07/06/2023
Date Made Active in Reports: 09/25/2023
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 202-267-2675
Last EDR Contact: 10/03/2023
Next Scheduled EDR Contact: 01/15/2024
Data Release Frequency: Varies

PCS ENF: Enforcement data
No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 09/28/2023
Next Scheduled EDR Contact: 01/15/2024
Data Release Frequency: Varies

PCS: Permit Compliance System
PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 09/28/2023
Next Scheduled EDR Contact: 01/15/2024
Data Release Frequency: No Update Planned

BIOSOLIDS: ICIS-NPDES Biosolids Facility Data
The data reflects compliance information about facilities in the biosolids program.

Date of Government Version: 07/16/2023
Date Data Arrived at EDR: 07/18/2023
Date Made Active in Reports: 08/28/2023
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: 202-564-4700
Last EDR Contact: 10/03/2023
Next Scheduled EDR Contact: 01/29/2024
Data Release Frequency: Varies

PFAS: PFAS Contamination Site Location Listing
A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 06/02/2023
Date Data Arrived at EDR: 06/02/2023
Date Made Active in Reports: 08/23/2023
Number of Days to Update: 82

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
Data Release Frequency: Varies

AQUEOUS FOAM: Former Fire Training Facility Assessments Listing
Airports shown on this list are those believed to use Aqueous Film Forming Foam (AFFF), and certified by the Federal Aviation Administration (FAA) under Title 14, Code of Federal Regulations (CFR), Part 139 (14 CFR Part 139). This list was created by SWRCB using information available from the FAA. Location points shown are from the latitude and longitude listed on the FAA airport master record.

Date of Government Version: 06/02/2023
Date Data Arrived at EDR: 06/02/2023
Date Made Active in Reports: 08/23/2023
Number of Days to Update: 82

Source: State Water Resources Control Board
Telephone: 916-341-5455
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
Data Release Frequency: Varies

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

CHROME PLATING: Chrome Plating Facilities Listing

This listing represents chrome plating facilities the California State Water Resources Control Board staff identified as possibly being a source of Per- and polyfluoroalkyl substance (PFAS) contamination. Sites and locations were identified by staff with the Division of Water Quality in the California State Water Board. Data was collected from the CA Air Resources Board 2013 and 2018 - Cr VI emission survey, CA Emission Inventory, CA HAZ Waste discharge database and by reviewing storm water permits. Former chrome plating sites are also included that are open site investigation or remediation cases with the Regional Water Quality Control Boards and the Department of Toxic Substances Control.

Date of Government Version: 06/08/2023
Date Data Arrived at EDR: 06/08/2023
Date Made Active in Reports: 09/26/2023
Number of Days to Update: 110

Source: State Water Resources Control Board
Telephone: 916-341-5455
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
Data Release Frequency: Varies

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: 06/14/2023
Date Data Arrived at EDR: 06/14/2023
Date Made Active in Reports: 09/06/2023
Number of Days to Update: 84

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 09/20/2023
Next Scheduled EDR Contact: 01/01/2024
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing

list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 03/31/2023
Date Data Arrived at EDR: 05/08/2023
Date Made Active in Reports: 07/31/2023
Number of Days to Update: 84

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 08/10/2023
Next Scheduled EDR Contact: 11/20/2023
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: 08/18/2023
Date Data Arrived at EDR: 08/18/2023
Date Made Active in Reports: 11/01/2023
Number of Days to Update: 75

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 08/15/2023
Next Scheduled EDR Contact: 12/04/2023
Data Release Frequency: Varies

DRYCLEAN FEATHER RIVER DIST: Feather River Air Quality Management District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Feather River Air Quality Management District.

Date of Government Version: 03/08/2023
Date Data Arrived at EDR: 03/09/2023
Date Made Active in Reports: 06/05/2023
Number of Days to Update: 88

Source: Feather River Air Quality Management District
Telephone: 530-634-7659
Last EDR Contact: 06/08/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SAN JOAQ VAL DIST: San Joaquin Valley Air Pollution Control District District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the San Joaquin Valley Air Pollution Control District.

Date of Government Version: 05/24/2023
Date Data Arrived at EDR: 05/30/2023
Date Made Active in Reports: 08/21/2023
Number of Days to Update: 83

Source: San Joaquin Valley Air Pollution Control District
Telephone: 559-230-6001
Last EDR Contact: 05/11/2023
Next Scheduled EDR Contact: 09/11/2023
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: 08/27/2021
Date Data Arrived at EDR: 09/01/2021
Date Made Active in Reports: 11/19/2021
Number of Days to Update: 79

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 08/22/2023
Next Scheduled EDR Contact: 12/11/2023
Data Release Frequency: Annually

DRYCLEAN EAST KERN DIST: Eastern Kern Air Pollution Control District District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Eastern Kern Air Pollution Control District.

Date of Government Version: 01/12/2023
Date Data Arrived at EDR: 04/26/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 79

Source: Eastern Kern Air Pollution Control District
Telephone: 661-862-9684
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN IMPERIAL CO DIST: Imperial County Air Pollution Control District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Imperial County Air Pollution Control District

Date of Government Version: 04/25/2023
Date Data Arrived at EDR: 04/26/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 79

Source: Imperial County Air Pollution Control District
Telephone: 442-265-1800
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN MENDO CO DIST: Mendocino County Air Quality Management District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Mendocino County Air Quality Management District.

Date of Government Version: 04/27/2023
Date Data Arrived at EDR: 04/28/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 77

Source: Mendocino County Air Quality Management District
Telephone: 707-463-4354
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN MOJAVE DESERT DIST: Mojave Desert Air Quality Management District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Mojave Desert Air Quality Management District.

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 04/27/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 78

Source: Mojave Desert Air Quality Management District
Telephone: 760-245-1661
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN MONTEREY BAY DIST: Monterey Bay Air Quality Management District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Monterey Bay Air Quality Management District.

Date of Government Version: 04/25/2023
Date Data Arrived at EDR: 04/26/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 79

Source: Monterey Bay Air Quality Management District
Telephone: 831-647-9411
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SHASTA CO DIST: Shasta County Air Quality Management District District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Shasta County Air Quality Management District.

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 04/27/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 78
Source: Shasta County Air Quality Management District
Telephone: 530-225-5674
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN YOLO-SOLANO DIST: Yolo-Solano Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Yolo-Solano Air Quality Management District.

Date of Government Version: 04/25/2023
Date Data Arrived at EDR: 04/27/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 78
Source: Yolo-Solano Air Quality Management District
Telephone: 530-757-3650
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

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: 05/22/2023
Date Data Arrived at EDR: 05/24/2023
Date Made Active in Reports: 08/14/2023
Number of Days to Update: 82
Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 08/22/2023
Next Scheduled EDR Contact: 12/11/2023
Data Release Frequency: Varies

DRYCLEAN PLACER CO DIST: Placer County Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Placer County Air Quality Management District.

Date of Government Version: 05/15/2023
Date Data Arrived at EDR: 05/17/2023
Date Made Active in Reports: 08/14/2023
Number of Days to Update: 89
Source: Placer County Air Quality Management District
Telephone: 530-745-2335
Last EDR Contact: 05/11/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN BAY AREA DIST: Bay Area Air Quality Management District Drycleaner Facility Listing
Bay Area Air Quality Management District Drycleaner Facility Listing.

Date of Government Version: 02/20/2019
Date Data Arrived at EDR: 05/30/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1432
Source: Bay Area Air Quality Management District
Telephone: 415-516-1916
Last EDR Contact: 07/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN BUTTE CO DIST: Butte County Air Quality Management DistrictDrycleaner Facility Listing
Butte County Air Quality Management DistrictDrycleaner Facility Listing.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1469
Source: Butte County Air Quality Management District
Telephone: 530-332-9400
Last EDR Contact: 10/03/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN CALAVERAS CO DIST: Calaveras County Environmental Management Agency Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Calaveras County Environmental Management Agency.

Date of Government Version: 06/17/2019
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1412
Source: Calaveras County Environmental Management Agency
Telephone: 209-754-6399
Last EDR Contact: 04/24/2023
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Varies

DRYCLEAN GRANT: Grant Recipients List

Assembly Bill 998 (AB 998) established the Non-Toxic Dry Cleaning Incentive Program to provide financial assistance to the dry cleaning industry to switch from systems using perchloroethylene (Perc), an identified toxic air contaminant and potential human carcinogen, to non-toxic and non-smog forming alternatives.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 02/04/2021
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 816

Source: California Air Resources Board
Telephone: 916-323-0006
Last EDR Contact: 10/28/2023
Next Scheduled EDR Contact: 02/05/2024
Data Release Frequency: Varies

DRYCLEAN LAKE CO DIST: Lake County Air Quality Management District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Lake County Air Quality Management District,

Date of Government Version: 04/29/2019
Date Data Arrived at EDR: 05/07/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1455

Source: Lake County Air Quality Management District
Telephone: 707-263-7000
Last EDR Contact: 05/11/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN NO COAST UNIFIED DIST: North Coast Unified Air Quality Management District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the North Coast Unified Air Quality Management District.

Date of Government Version: 11/30/2016
Date Data Arrived at EDR: 04/19/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1473

Source: North Coast Unified Air Quality Management District
Telephone: 707-443-3093
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN NO SIERRA DIST: Northern Sierra Air Quality Management District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Northern Sierra Air Quality Management District,

Date of Government Version: 05/07/2019
Date Data Arrived at EDR: 05/07/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1455

Source: Northern Sierra Air Quality Management District
Telephone: 530-274-9350
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN NO SONOMA CO DIST: Norther Sonoma County County Air Pollution Control District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Northern Sonoma County Air Pollution Control District.,

Date of Government Version: 04/17/2019
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1475

Source: Santa Barbara County Air Pollution Control District
Telephone: 707-433-5911
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SANTA BARB CO DIST: Santa Barbara County Air Pollution Control District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Santa Barbara County Air Pollution Control District.

Date of Government Version: 02/19/2019
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1475

Source: Santa Barbara County Air Pollution Control District
Telephone: 805-961-8867
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN TEHAMA CO DIST: Tehama County Air Pollution Control District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Tehama County Air Pollution Control District.

Date of Government Version: 04/24/2019
Date Data Arrived at EDR: 04/24/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1468

Source: Tehama County Air Pollution Control District
Telephone: 530-527-3717
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN VENTURA CO DIST: Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Ventura County Air Pollution Control District.

Date of Government Version: 04/16/2019
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1475
Source: Ventura County Air Pollution Control District
Telephone: 805-645-1421
Last EDR Contact: 10/11/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SACRAMENTO METO DIST: Sacramento Metropolitan Air Quality Management DistrictDrycleaner Facility Listing
A listing of drycleaner facility locations, for the Sacramento Metropolitan Air Quality Management District.

Date of Government Version: 08/15/2023
Date Data Arrived at EDR: 08/17/2023
Date Made Active in Reports: 10/31/2023
Number of Days to Update: 75
Source: Sacramento Metropolitan Air Quality Management District
Telephone: 916-874-3958
Last EDR Contact: 08/15/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN AMADOR: Amador Air District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Amador Air Quality Management District

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 04/27/2023
Date Made Active in Reports: 07/13/2023
Number of Days to Update: 77
Source: Amador Air Quality Management District
Telephone: 209-257-0112
Last EDR Contact: 04/24/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN GLENN CO DIST: Glenn County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Glenn County Air Pollution Control District.

Date of Government Version: 05/02/2023
Date Data Arrived at EDR: 05/03/2023
Date Made Active in Reports: 07/25/2023
Number of Days to Update: 83
Source: Glenn County Air Pollution Control District
Telephone: 530-934-6500
Last EDR Contact: 05/03/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SAN DIEGO CO DIST: San Diego County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the San Diego County Air Pollution Control District.

Date of Government Version: 08/08/2023
Date Data Arrived at EDR: 08/09/2023
Date Made Active in Reports: 10/26/2023
Number of Days to Update: 78
Source: San Diego County Air Pollution Control District
Telephone: 858-586-2616
Last EDR Contact: 08/08/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SAN LUIS OB CO DIST: San Luis Obispo County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the San Luis Obispo County Air Pollution Control District.

Date of Government Version: 07/26/2023
Date Data Arrived at EDR: 07/27/2023
Date Made Active in Reports: 10/13/2023
Number of Days to Update: 78
Source: San Luis Obispo County Air Pollution Control District
Telephone: 805-781-5756
Last EDR Contact: 07/25/2023
Next Scheduled EDR Contact: 09/11/2023
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: 12/31/2021
Date Data Arrived at EDR: 06/09/2023
Date Made Active in Reports: 08/30/2023
Number of Days to Update: 82
Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 09/15/2023
Next Scheduled EDR Contact: 12/25/2023
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: 07/17/2023
Date Data Arrived at EDR: 07/18/2023
Date Made Active in Reports: 10/05/2023
Number of Days to Update: 79
Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 10/17/2023
Next Scheduled EDR Contact: 01/29/2024
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 09/13/2023
Date Data Arrived at EDR: 09/14/2023
Date Made Active in Reports: 09/21/2023
Number of Days to Update: 7
Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 09/13/2023
Next Scheduled EDR Contact: 01/29/2024
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: 08/03/2023
Date Data Arrived at EDR: 08/16/2023
Date Made Active in Reports: 11/01/2023
Number of Days to Update: 77
Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 11/02/2023
Next Scheduled EDR Contact: 02/19/2024
Data Release Frequency: Varies

ICE: Inspection, Compliance and Enforcement
Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 08/14/2023
Date Data Arrived at EDR: 08/14/2023
Date Made Active in Reports: 10/31/2023
Number of Days to Update: 78
Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 08/14/2023
Next Scheduled EDR Contact: 11/27/2023
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: 08/14/2023
Date Data Arrived at EDR: 08/14/2023
Date Made Active in Reports: 10/31/2023
Number of Days to Update: 78
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/14/2023
Next Scheduled EDR Contact: 11/27/2023
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: 06/29/2023
Date Data Arrived at EDR: 06/29/2023
Date Made Active in Reports: 09/19/2023
Number of Days to Update: 82

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 10/04/2023
Next Scheduled EDR Contact: 01/15/2024
Data Release Frequency: Quarterly

HWTS: Hazardous Waste Tracking System

DTSC maintains the Hazardous Waste Tracking System that stores ID number information since the early 1980s and manifest data since 1993. The system collects both manifest copies from the generator and destination facility.

Date of Government Version: 08/04/2023
Date Data Arrived at EDR: 08/09/2023
Date Made Active in Reports: 10/26/2023
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-324-2444
Last EDR Contact: 09/27/2023
Next Scheduled EDR Contact: 01/15/2024
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: 12/31/2021
Date Data Arrived at EDR: 07/05/2022
Date Made Active in Reports: 09/19/2022
Number of Days to Update: 76

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 07/05/2022
Next Scheduled EDR Contact: 01/15/2024
Data Release Frequency: Annually

MINES: Mines Site Location Listing

A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 06/02/2023
Date Data Arrived at EDR: 06/02/2023
Date Made Active in Reports: 08/23/2023
Number of Days to Update: 82

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
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: 05/08/2023
Date Data Arrived at EDR: 05/25/2023
Date Made Active in Reports: 08/16/2023
Number of Days to Update: 83

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 08/29/2023
Next Scheduled EDR Contact: 12/11/2023
Data Release Frequency: Varies

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 08/07/2023
Date Data Arrived at EDR: 08/08/2023
Date Made Active in Reports: 10/26/2023
Number of Days to Update: 79

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/08/2023
Next Scheduled EDR Contact: 11/20/2023
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: 05/25/2023
Date Data Arrived at EDR: 05/25/2023
Date Made Active in Reports: 08/16/2023
Number of Days to Update: 83

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 08/29/2023
Next Scheduled EDR Contact: 12/11/2023
Data Release Frequency: Quarterly

PROC: Certified Processors Database

A listing of certified processors.

Date of Government Version: 06/02/2023
Date Data Arrived at EDR: 06/02/2023
Date Made Active in Reports: 08/23/2023
Number of Days to Update: 82

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
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: 06/06/2023
Date Data Arrived at EDR: 06/07/2023
Date Made Active in Reports: 08/25/2023
Number of Days to Update: 79

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 09/07/2023
Next Scheduled EDR Contact: 12/25/2023
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities

Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 11/03/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 01/26/2021
Number of Days to Update: 82

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 10/25/2023
Next Scheduled EDR Contact: 02/12/2024
Data Release Frequency: Annually

SANTA CRUZ CO SITE MITI: Site Mitigation Listing

Sites may become contaminated with toxic chemicals through illegal dumping or disposal, from leaking underground storage tanks, or through industrial or commercial activities.The goal of the site mitigation program is to protect the public health and the environment while facilitating completion of contaminated site clean-up projects in a timely manner.

Date of Government Version: 12/03/2018
Date Data Arrived at EDR: 06/23/2023
Date Made Active in Reports: 07/13/2023
Number of Days to Update: 20

Source: Santa Cruz Environmental Health Services
Telephone: 831-454-2761
Last EDR Contact: 08/09/2023
Next Scheduled EDR Contact: 11/27/2023
Data Release Frequency: Varies

UIC: UIC Listing

A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 06/02/2023
Date Data Arrived at EDR: 06/02/2023
Date Made Active in Reports: 08/23/2023
Number of Days to Update: 82

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 06/05/2023
Date Data Arrived at EDR: 06/05/2023
Date Made Active in Reports: 08/28/2023
Number of Days to Update: 84

Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
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: 02/11/2021
Date Data Arrived at EDR: 07/01/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 90

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 10/06/2023
Next Scheduled EDR Contact: 01/15/2024
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: 08/09/2023
Next Scheduled EDR Contact: 11/27/2023
Data Release Frequency: No Update Planned

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: 09/12/2023
Next Scheduled EDR Contact: 01/01/2024
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 06/05/2023
Date Data Arrived at EDR: 06/05/2023
Date Made Active in Reports: 08/28/2023
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 06/05/2023
Date Data Arrived at EDR: 06/05/2023
Date Made Active in Reports: 08/28/2023
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
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: 06/02/2023
Date Data Arrived at EDR: 06/02/2023
Date Made Active in Reports: 08/23/2023
Number of Days to Update: 82

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
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: 05/25/2023
Date Data Arrived at EDR: 05/25/2023
Date Made Active in Reports: 08/14/2023
Number of Days to Update: 81

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 08/29/2023
Next Scheduled EDR Contact: 12/11/2023
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: 07/17/2023
Date Data Arrived at EDR: 07/18/2023
Date Made Active in Reports: 10/06/2023
Number of Days to Update: 80

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/17/2023
Next Scheduled EDR Contact: 01/29/2024
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 06/05/2023
Date Data Arrived at EDR: 06/05/2023
Date Made Active in Reports: 08/28/2023
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 06/05/2023
Date Data Arrived at EDR: 06/05/2023
Date Made Active in Reports: 08/28/2023
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)

Produced water ponds sites

Date of Government Version: 06/05/2023
Date Data Arrived at EDR: 06/05/2023
Date Made Active in Reports: 08/28/2023
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)

Sampling point - public sites

Date of Government Version: 06/05/2023
Date Data Arrived at EDR: 06/05/2023
Date Made Active in Reports: 08/28/2023
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
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: 06/05/2023
Date Data Arrived at EDR: 06/05/2023
Date Made Active in Reports: 08/28/2023
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
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: 09/27/2023
Next Scheduled EDR Contact: 01/15/2024
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 06/27/2023
Date Data Arrived at EDR: 06/28/2023
Date Made Active in Reports: 09/14/2023
Number of Days to Update: 78

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 09/27/2023
Next Scheduled EDR Contact: 01/15/2024
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 04/27/2023
Date Data Arrived at EDR: 04/27/2023
Date Made Active in Reports: 07/13/2023
Number of Days to Update: 77

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 10/25/2023
Next Scheduled EDR Contact: 02/12/2024
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: 09/27/2023
Next Scheduled EDR Contact: 01/15/2024
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 06/27/2023
Date Data Arrived at EDR: 06/28/2023
Date Made Active in Reports: 09/14/2023
Number of Days to Update: 78

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 09/12/2023
Next Scheduled EDR Contact: 01/01/2024
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 78

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 10/25/2023
Next Scheduled EDR Contact: 02/12/2024
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: 07/05/2023
Date Data Arrived at EDR: 07/20/2023
Date Made Active in Reports: 10/05/2023
Number of Days to Update: 77

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 10/20/2023
Next Scheduled EDR Contact: 02/05/2024
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 08/02/2023
Date Data Arrived at EDR: 08/03/2023
Date Made Active in Reports: 10/19/2023
Number of Days to Update: 77

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 10/20/2023
Next Scheduled EDR Contact: 02/05/2024
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/08/2022
Date Data Arrived at EDR: 08/09/2022
Date Made Active in Reports: 09/01/2022
Number of Days to Update: 23

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 10/20/2023
Next Scheduled EDR Contact: 02/05/2024
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: 06/28/2021
Date Data Arrived at EDR: 12/21/2021
Date Made Active in Reports: 03/03/2022
Number of Days to Update: 72

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 09/28/2023
Next Scheduled EDR Contact: 01/08/2024
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: 10/10/2023
Next Scheduled EDR Contact: 01/29/2024
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/12/2021
Date Data Arrived at EDR: 08/12/2021
Date Made Active in Reports: 11/08/2021
Number of Days to Update: 88

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 08/09/2023
Next Scheduled EDR Contact: 11/27/2023
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 07/11/2023
Date Data Arrived at EDR: 07/12/2023
Date Made Active in Reports: 09/26/2023
Number of Days to Update: 76

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 10/10/2023
Next Scheduled EDR Contact: 01/29/2024
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: 08/09/2023
Next Scheduled EDR Contact: 11/27/2023
Data Release Frequency: Varies

KERN COUNTY:

CUPA KERN: CUPA Facility List
A listing of sites included in the Kern County Hazardous Material Business Plan.

Date of Government Version: 07/26/2023
Date Data Arrived at EDR: 07/27/2023
Date Made Active in Reports: 08/09/2023
Number of Days to Update: 13

Source: Kern County Public Health
Telephone: 661-321-3000
Last EDR Contact: 10/25/2023
Next Scheduled EDR Contact: 02/12/2024
Data Release Frequency: Varies

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 07/26/2023
Date Data Arrived at EDR: 07/27/2023
Date Made Active in Reports: 08/03/2023
Number of Days to Update: 7

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 10/25/2023
Next Scheduled EDR Contact: 02/12/2024
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: 12/03/2020
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/14/2021
Number of Days to Update: 78

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 08/09/2023
Next Scheduled EDR Contact: 11/27/2023
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 04/27/2023
Date Made Active in Reports: 05/31/2023
Number of Days to Update: 34

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 10/04/2023
Next Scheduled EDR Contact: 01/22/2024
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 07/31/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 80

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 10/10/2023
Next Scheduled EDR Contact: 01/29/2024
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: 09/07/2023
Next Scheduled EDR Contact: 12/25/2023
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 06/21/2023
Date Data Arrived at EDR: 06/28/2023
Date Made Active in Reports: 09/14/2023
Number of Days to Update: 78

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 09/27/2023
Next Scheduled EDR Contact: 01/15/2024
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 07/10/2023
Date Data Arrived at EDR: 07/10/2023
Date Made Active in Reports: 09/27/2023
Number of Days to Update: 79

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 10/09/2023
Next Scheduled EDR Contact: 01/22/2024
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: 12/31/2022
Date Data Arrived at EDR: 01/12/2023
Date Made Active in Reports: 03/29/2023
Number of Days to Update: 76

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 10/04/2023
Next Scheduled EDR Contact: 01/22/2024
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: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 09/19/2023
Next Scheduled EDR Contact: 01/01/2024
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: 04/13/2023
Date Data Arrived at EDR: 07/13/2023
Date Made Active in Reports: 09/27/2023
Number of Days to Update: 76
Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 10/04/2023
Next Scheduled EDR Contact: 01/22/2024
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: 06/20/2023
Date Data Arrived at EDR: 06/22/2023
Date Made Active in Reports: 08/09/2023
Number of Days to Update: 48
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 09/20/2023
Next Scheduled EDR Contact: 01/01/2024
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: 06/20/2023
Date Data Arrived at EDR: 06/22/2023
Date Made Active in Reports: 09/12/2023
Number of Days to Update: 82
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 09/20/2023
Next Scheduled EDR Contact: 01/01/2024
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: 03/02/2023
Date Data Arrived at EDR: 04/18/2023
Date Made Active in Reports: 07/07/2023
Number of Days to Update: 80
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 10/17/2023
Next Scheduled EDR Contact: 01/29/2024
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: 10/04/2023
Next Scheduled EDR Contact: 01/22/2024
Data Release Frequency: No Update Planned

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: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 10/10/2023
Next Scheduled EDR Contact: 01/29/2024
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/12/2023
Date Data Arrived at EDR: 05/02/2023
Date Made Active in Reports: 06/13/2023
Number of Days to Update: 42

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 10/10/2023
Next Scheduled EDR Contact: 01/29/2024
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: 08/10/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 72

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 08/09/2023
Next Scheduled EDR Contact: 11/27/2023
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: 09/21/2023
Next Scheduled EDR Contact: 01/08/2024
Data Release Frequency: Semi-Annually

MENDOCINO COUNTY:

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/22/2021
Date Data Arrived at EDR: 11/18/2021
Date Made Active in Reports: 11/22/2021
Number of Days to Update: 4

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 08/15/2023
Next Scheduled EDR Contact: 12/04/2023
Data Release Frequency: Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 07/25/2023
Date Data Arrived at EDR: 08/03/2023
Date Made Active in Reports: 10/19/2023
Number of Days to Update: 77

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 07/25/2023
Next Scheduled EDR Contact: 11/27/2023
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 02/22/2021
Date Data Arrived at EDR: 03/02/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 78

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 08/15/2023
Next Scheduled EDR Contact: 12/04/2023
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 10/04/2021
Date Data Arrived at EDR: 10/06/2021
Date Made Active in Reports: 12/29/2021
Number of Days to Update: 84

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 11/02/2023
Next Scheduled EDR Contact: 01/08/2024
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: 08/15/2023
Next Scheduled EDR Contact: 12/04/2023
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: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/15/2023
Next Scheduled EDR Contact: 12/04/2023
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 07/21/2023
Date Data Arrived at EDR: 07/25/2023
Date Made Active in Reports: 10/11/2023
Number of Days to Update: 78

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 10/20/2023
Next Scheduled EDR Contact: 02/05/2024
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 05/15/2023
Date Data Arrived at EDR: 07/31/2023
Date Made Active in Reports: 08/09/2023
Number of Days to Update: 9

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/01/2023
Next Scheduled EDR Contact: 02/12/2024
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 05/15/2023
Date Data Arrived at EDR: 07/31/2023
Date Made Active in Reports: 08/09/2023
Number of Days to Update: 9

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/01/2023
Next Scheduled EDR Contact: 02/12/2024
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 04/01/2023
Date Data Arrived at EDR: 05/18/2023
Date Made Active in Reports: 06/14/2023
Number of Days to Update: 27

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/01/2023
Next Scheduled EDR Contact: 02/12/2024
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: 08/26/2022
Date Data Arrived at EDR: 08/29/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 78

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 11/01/2023
Next Scheduled EDR Contact: 12/11/2023
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 10/10/2023
Next Scheduled EDR Contact: 01/29/2024
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: 07/10/2023
Date Data Arrived at EDR: 07/11/2023
Date Made Active in Reports: 09/26/2023
Number of Days to Update: 77

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/07/2023
Next Scheduled EDR Contact: 12/25/2023
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 07/10/2023
Date Data Arrived at EDR: 07/11/2023
Date Made Active in Reports: 09/26/2023
Number of Days to Update: 77

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/07/2023
Next Scheduled EDR Contact: 12/25/2023
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: 11/07/2022
Date Data Arrived at EDR: 12/21/2022
Date Made Active in Reports: 03/16/2023
Number of Days to Update: 85

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 09/25/2023
Next Scheduled EDR Contact: 01/08/2024
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: 11/07/2022
Date Data Arrived at EDR: 12/09/2022
Date Made Active in Reports: 03/01/2023
Number of Days to Update: 82

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 09/25/2023
Next Scheduled EDR Contact: 01/08/2024
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 05/02/2023
Date Data Arrived at EDR: 05/04/2023
Date Made Active in Reports: 07/25/2023
Number of Days to Update: 82

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 10/18/2023
Next Scheduled EDR Contact: 02/12/2024
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: 08/15/2023
Date Data Arrived at EDR: 08/16/2023
Date Made Active in Reports: 11/01/2023
Number of Days to Update: 77

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 10/26/2023
Next Scheduled EDR Contact: 02/12/2024
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: 05/25/2023
Date Data Arrived at EDR: 05/25/2023
Date Made Active in Reports: 08/16/2023
Number of Days to Update: 83

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 08/29/2023
Next Scheduled EDR Contact: 12/11/2023
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 04/04/2023
Date Data Arrived at EDR: 04/05/2023
Date Made Active in Reports: 06/27/2023
Number of Days to Update: 83

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 10/10/2023
Next Scheduled EDR Contact: 01/29/2024
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: 07/22/2021
Date Data Arrived at EDR: 10/19/2021
Date Made Active in Reports: 01/13/2022
Number of Days to Update: 86

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 10/10/2023
Next Scheduled EDR Contact: 01/29/2024
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: 08/22/2023
Next Scheduled EDR Contact: 12/11/2023
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 08/04/2023
Date Data Arrived at EDR: 08/08/2023
Date Made Active in Reports: 10/26/2023
Number of Days to Update: 79

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 10/25/2023
Next Scheduled EDR Contact: 02/12/2024
Data Release Frequency: Varies

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: 10/25/2023
Next Scheduled EDR Contact: 02/12/2024
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 08/04/2023
Date Data Arrived at EDR: 08/08/2023
Date Made Active in Reports: 10/25/2023
Number of Days to Update: 78

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 10/25/2023
Next Scheduled EDR Contact: 02/12/2024
Data Release Frequency: Quarterly

SAN FRANCISO COUNTY:

SAN FRANCISCO MAHER: Maher Ordinance Property Listing
a listing of properties that fall within a Maher Ordinance, for all of San Francisco

Date of Government Version: 07/17/2023
Date Data Arrived at EDR: 07/18/2023
Date Made Active in Reports: 10/05/2023
Number of Days to Update: 79

Source: San Francisco Planning
Telephone: 628-652-7483
Last EDR Contact: 10/17/2023
Next Scheduled EDR Contact: 01/29/2024
Data Release Frequency: Varies

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: 09/07/2023
Next Scheduled EDR Contact: 12/25/2023
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 08/09/2023
Date Data Arrived at EDR: 08/10/2023
Date Made Active in Reports: 10/27/2023
Number of Days to Update: 78

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 08/09/2023
Next Scheduled EDR Contact: 11/27/2023
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: 02/20/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 64
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/08/2023
Next Scheduled EDR Contact: 12/18/2023
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: 08/29/2023
Next Scheduled EDR Contact: 12/18/2023
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: 08/09/2023
Next Scheduled EDR Contact: 11/27/2023
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 05/10/2023
Date Data Arrived at EDR: 05/11/2023
Date Made Active in Reports: 07/31/2023
Number of Days to Update: 81
Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 10/31/2023
Next Scheduled EDR Contact: 11/27/2023
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: 08/15/2023
Next Scheduled EDR Contact: 12/04/2023
Data Release Frequency: No Update Planned

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: 08/09/2023
Next Scheduled EDR Contact: 11/27/2023
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: 08/09/2023
Next Scheduled EDR Contact: 11/27/2023
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: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 08/22/2023
Next Scheduled EDR Contact: 12/11/2023
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 09/15/2021
Date Data Arrived at EDR: 09/16/2021
Date Made Active in Reports: 12/09/2021
Number of Days to Update: 84

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 08/22/2023
Next Scheduled EDR Contact: 12/11/2023
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 07/02/2021
Date Data Arrived at EDR: 07/06/2021
Date Made Active in Reports: 07/14/2021
Number of Days to Update: 8

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 09/12/2023
Next Scheduled EDR Contact: 01/01/2024
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: 06/30/2021
Date Data Arrived at EDR: 06/30/2021
Date Made Active in Reports: 09/24/2021
Number of Days to Update: 86

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 09/12/2023
Next Scheduled EDR Contact: 01/01/2024
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 02/08/2022
Date Data Arrived at EDR: 02/10/2022
Date Made Active in Reports: 05/04/2022
Number of Days to Update: 83

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 10/04/2023
Next Scheduled EDR Contact: 01/22/2024
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 08/03/2023
Date Data Arrived at EDR: 08/24/2023
Date Made Active in Reports: 09/12/2023
Number of Days to Update: 19

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 08/22/2023
Next Scheduled EDR Contact: 12/11/2023
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 08/01/2023
Date Data Arrived at EDR: 08/02/2023
Date Made Active in Reports: 10/19/2023
Number of Days to Update: 78

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 10/25/2023
Next Scheduled EDR Contact: 02/12/2024
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 07/11/2023
Date Data Arrived at EDR: 07/12/2023
Date Made Active in Reports: 09/26/2023
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 10/10/2023
Next Scheduled EDR Contact: 01/29/2024
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 10/07/2022
Date Data Arrived at EDR: 10/07/2022
Date Made Active in Reports: 12/21/2022
Number of Days to Update: 75

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 10/25/2023
Next Scheduled EDR Contact: 02/12/2024
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: 10/10/2023
Next Scheduled EDR Contact: 01/29/2024
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: 06/26/2023
Date Data Arrived at EDR: 07/20/2023
Date Made Active in Reports: 10/03/2023
Number of Days to Update: 75

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 10/16/2023
Next Scheduled EDR Contact: 01/29/2024
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: 09/21/2023
Next Scheduled EDR Contact: 01/08/2024
Data Release Frequency: No Update Planned

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: 11/02/2023
Next Scheduled EDR Contact: 02/19/2024
Data Release Frequency: No Update Planned

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: 06/26/2023
Date Data Arrived at EDR: 07/25/2023
Date Made Active in Reports: 10/13/2023
Number of Days to Update: 80

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 10/16/2023
Next Scheduled EDR Contact: 01/29/2024
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: 05/26/2023
Date Data Arrived at EDR: 06/02/2023
Date Made Active in Reports: 06/14/2023
Number of Days to Update: 12

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 09/06/2023
Next Scheduled EDR Contact: 12/18/2023
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: 04/03/2023
Date Data Arrived at EDR: 04/18/2023
Date Made Active in Reports: 06/13/2023
Number of Days to Update: 56

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 09/21/2023
Next Scheduled EDR Contact: 01/08/2024
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 07/24/2023
Date Data Arrived at EDR: 07/26/2023
Date Made Active in Reports: 10/11/2023
Number of Days to Update: 77

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 10/20/2023
Next Scheduled EDR Contact: 02/05/2024
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: 08/07/2023
Date Data Arrived at EDR: 08/08/2023
Date Made Active in Reports: 10/24/2023
Number of Days to Update: 77

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/08/2023
Next Scheduled EDR Contact: 11/20/2023
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: 09/28/2023
Next Scheduled EDR Contact: 01/15/2024
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: 10/29/2021
Date Made Active in Reports: 01/19/2022
Number of Days to Update: 82

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 10/28/2023
Next Scheduled EDR Contact: 02/05/2024
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 10/05/2023
Next Scheduled EDR Contact: 01/22/2024
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/18/2022
Number of Days to Update: 80

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 08/10/2022
Next Scheduled EDR Contact: 11/27/2023
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 08/30/2023
Next Scheduled EDR Contact: 12/18/2023
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
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 Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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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.

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, 2010 and 2015 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

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

FONG PROPERTY
BASELINE ROAD AND WALERGA ROAD
ROSEVILLE, CA 95747

TARGET PROPERTY COORDINATES

Latitude (North):	38.74928 - 38˚ 44’ 57.41’’
Longitude (West):	121.362837 - 121˚ 21’ 46.21’’
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	642271.6
UTM Y (Meters):	4290019.5
Elevation:	133 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	12021727 CITRUS HEIGHTS, CA
Version Date:	2018
Northeast Map:	12021643 ROSEVILLE, CA
Version Date:	2018
Southwest Map:	12021639 RIO LINDA, CA
Version Date:	2018
Northwest Map:	12021637 PLEASANT GROVE, CA
Version Date:	2018

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).

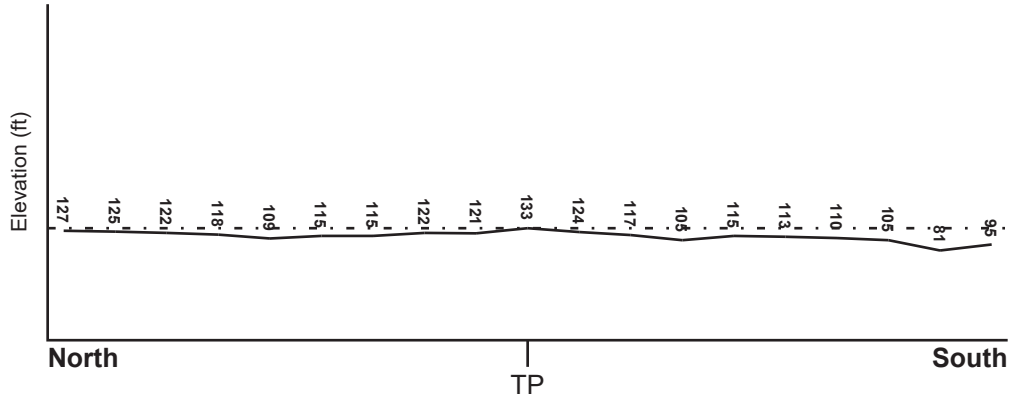
TOPOGRAPHIC INFORMATION

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.

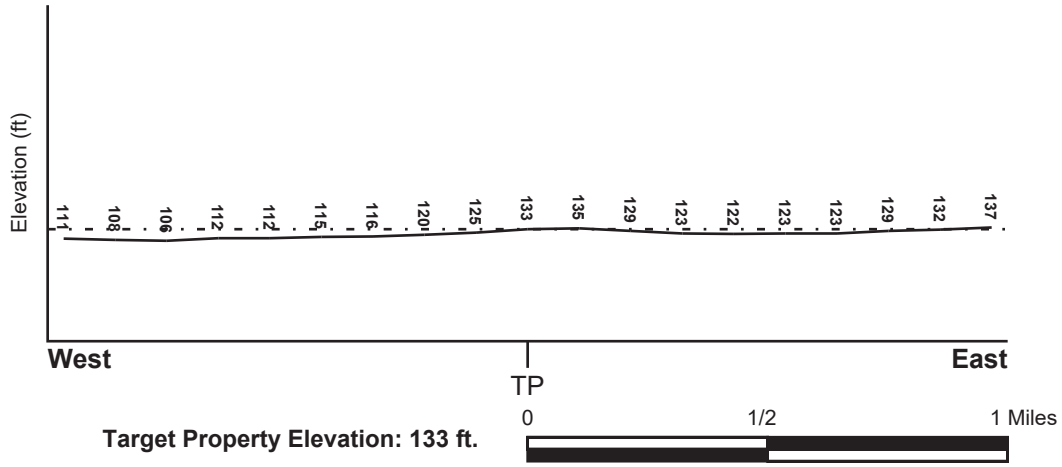
TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General SW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



* Figure not OCR Compatible



Target Property Elevation: 133 ft.

* Figure not OCR Compatible

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
06067C0076H	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
0602390475E	FEMA Q3 Flood data
0602430003D	FEMA Q3 Flood data
0602430011D	FEMA Q3 Flood data
06067C0060H	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
CITRUS HEIGHTS	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

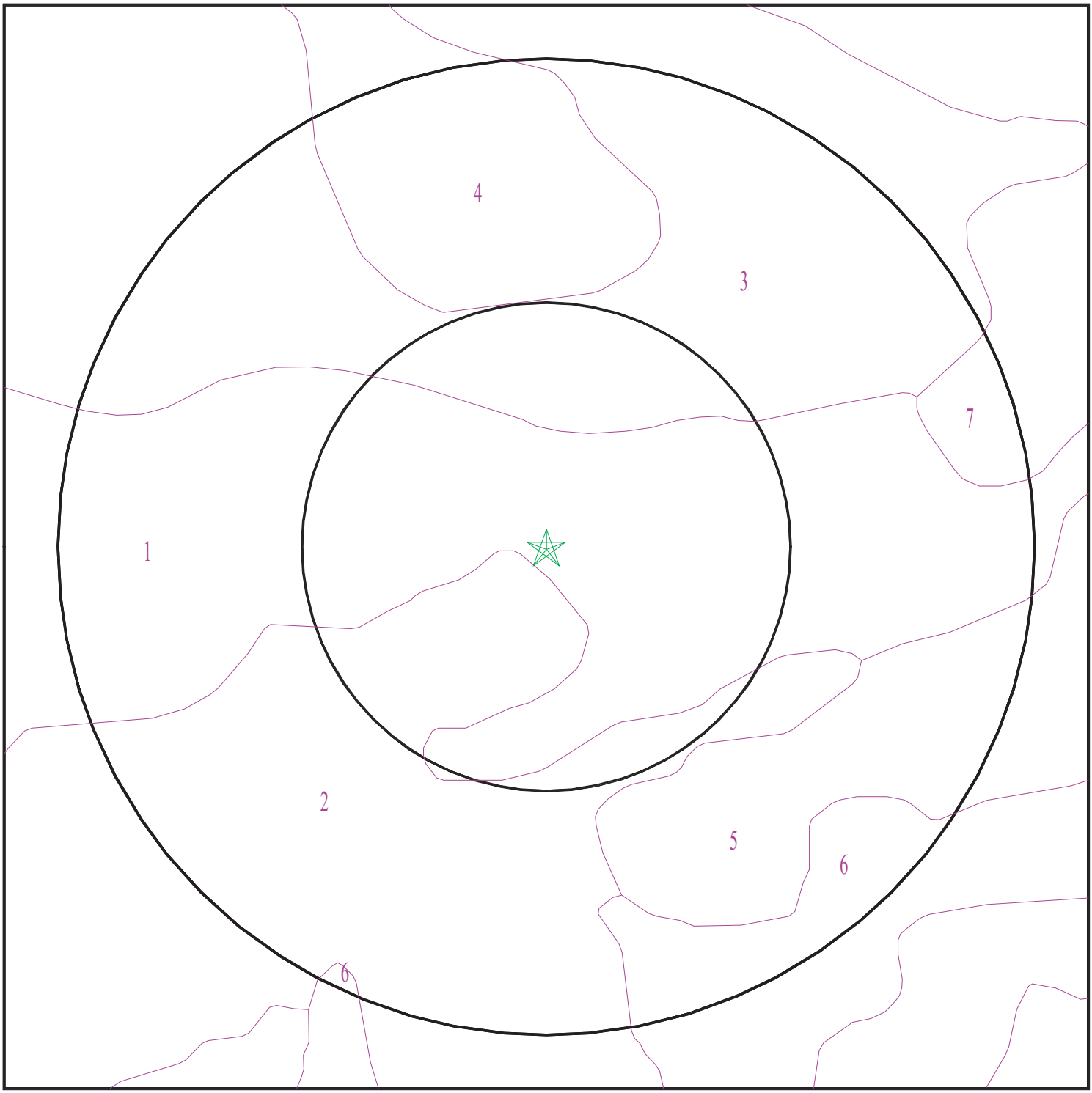
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

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 - 7489725.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

* Figure not OCR Compatible

SITE NAME:	Fong Property	CLIENT:	Environmental Risk Assessors
ADDRESS:	Baseline Road and Walerga Road Roseville CA 95747	CONTACT:	Lita Freeman
LAT/LONG:	38.74928 / 121.362837	INQUIRY #:	7489725.2s
		DATE:	November 06, 2023 3:31 pm

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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: COMETA

Soil Surface Texture: sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

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	18 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.3 Min: 6.6
2	18 inches	29 inches	clay	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.3 Min: 6.6
3	29 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.3 Min: 6.6

Soil Map ID: 2

Soil Component Name: COMETA

Soil Surface Texture: sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

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	18 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.3 Min: 6.6
2	18 inches	29 inches	clay	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.3 Min: 6.6
3	29 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.3 Min: 6.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 3

Soil Component Name: SAN JOAQUIN

Soil Surface Texture: sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

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	14 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1
2	14 inches	35 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1
3	35 inches	50 inches	indurated	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1
4	50 inches	59 inches	stratified sandy loam to loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.8 Min: 6.1

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 4

Soil Component Name: FIDDYMENT

Soil Surface Texture: loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

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.	Not reported	Max: 0.42 Min: 0	Max: Min:
2	11 inches	27 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:
3	27 inches	35 inches	indurated	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:
4	35 inches	38 inches	weathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Map ID: 5

Soil Component Name: RAMONA

Soil Surface Texture: sandy 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: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

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	5 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 7.3 Min: 6.6
2	5 inches	14 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 7.3 Min: 6.6
3	14 inches	55 inches	sandy clay loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 7.3 Min: 6.6
4	55 inches	72 inches	gravelly sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 7.3 Min: 6.6

Soil Map ID: 6

Soil Component Name: Xerofluvents

Soil Surface Texture: stratified loamy sand to fine sandy 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: Somewhat poorly drained

Hydric Status: All hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 111 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	14 inches	stratified loamy sand to fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 14 Min: 1.4	Max: 8.4 Min: 7.9
2	14 inches	37 inches	stratified loamy sand to fine sandy loam to silt loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 14 Min: 1.4	Max: 8.4 Min: 7.9
3	37 inches	55 inches	stratified loam to silty clay loam to clay	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 14 Min: 1.4	Max: 8.4 Min: 7.9

Soil Map ID: 7

Soil Component Name: FIDDYMENT

Soil Surface Texture: loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

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.	Not reported	Max: 0.42 Min: 0	Max: Min:
2	11 inches	27 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:
3	27 inches	35 inches	indurated	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:
4	35 inches	38 inches	weathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	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

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	USGS40000190088	1/4 - 1/2 Mile ENE
A2	USGS40000190087	1/4 - 1/2 Mile ENE
D11	USGS40000190083	1/2 - 1 Mile East

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

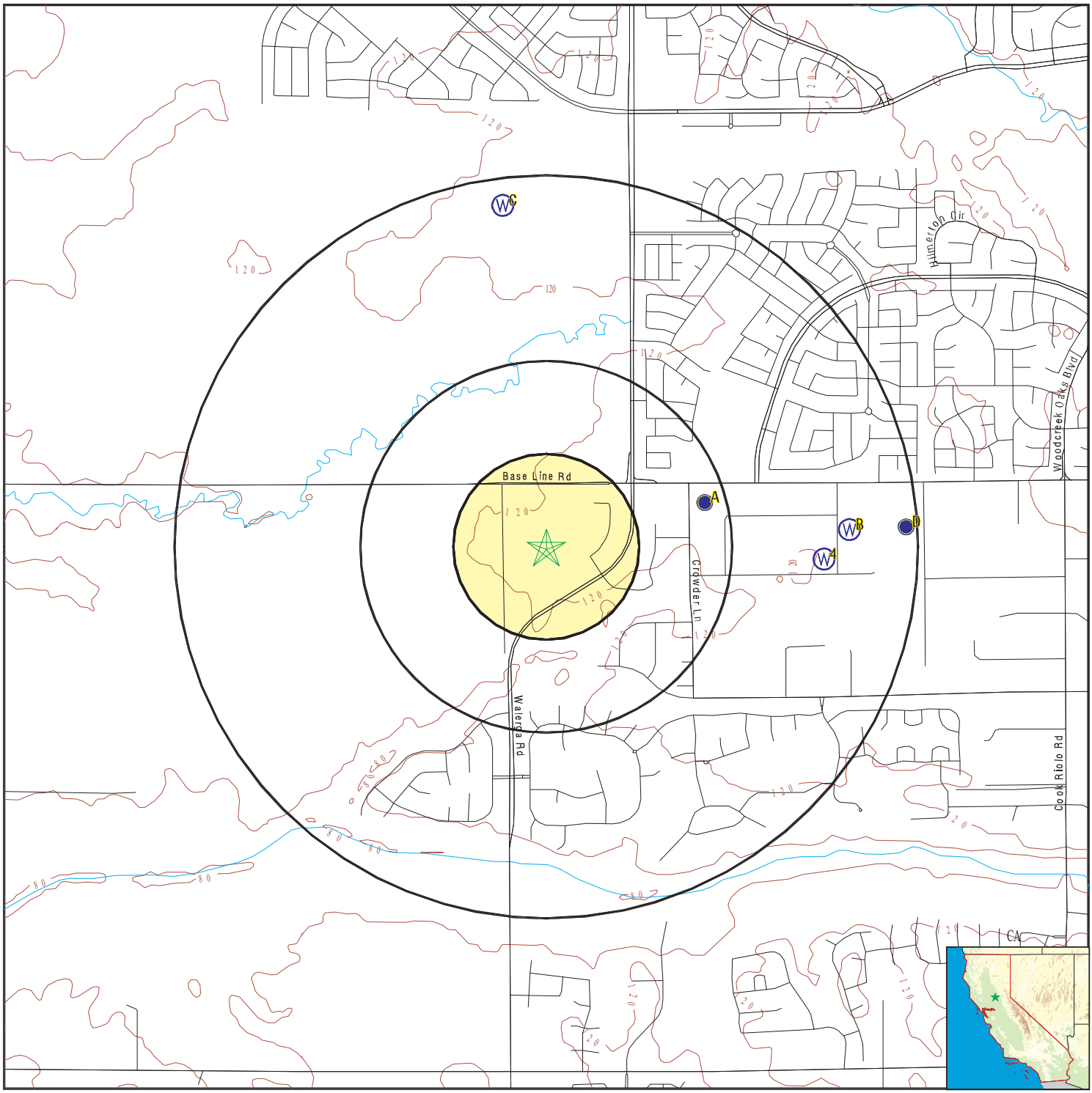
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A3	CAUSGSN00018838	1/4 - 1/2 Mile ENE
4	CADWR9000040298	1/2 - 1 Mile East
B5	9882	1/2 - 1 Mile East
B6	CADDW0000010454	1/2 - 1 Mile East
C7	CADWR9000038463	1/2 - 1 Mile North
C8	CADWR9000040352	1/2 - 1 Mile North
C9	CADWR9000040353	1/2 - 1 Mile North
D10	9883	1/2 - 1 Mile East
D12	CAUSGSN00007546	1/2 - 1 Mile East

PHYSICAL SETTING SOURCE MAP - 7489725.2s



- 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

* Figure not OCR Compatible

SITE NAME: Fong Property ADDRESS: Baseline Road and Walerga Road Roseville CA 95747 LAT/LONG: 38.74928 / 121.362837	CLIENT: Environmental Risk Assessors CONTACT: Lita Freeman INQUIRY #: 7489725.2s DATE: November 06, 2023 3:31 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A1
ENE
1/4 - 1/2 Mile
Lower

FED USGS **USGS40000190088**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	010N006E05L004M	Type:	Well
Description:	Not Reported	HUC:	18020109
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19791012	Well Depth:	335
Well Depth Units:	ft	Well Hole Depth:	380
Well Hole Depth Units:	ft		

A2
ENE
1/4 - 1/2 Mile
Lower

FED USGS **USGS40000190087**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	010N006E05L003M	Type:	Well
Description:	Not Reported	HUC:	18020109
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Merten Formation (Pliocene-Miocene)		
Aquifer Type:	Not Reported	Construction Date:	19790924
Well Depth:	400	Well Depth Units:	ft
Well Hole Depth:	400	Well Hole Depth Units:	ft

A3
ENE
1/4 - 1/2 Mile
Lower

CA WELLS **CAUSGSN00018838**

Well ID:	USGS-384504121211401	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-384504121211401	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&samp_date=&global_id=&assigned_name=USGS-384504121211401&store_num=		
GeoTracker Data:	Not Reported		

4
East
1/2 - 1 Mile
Lower

CA WELLS **CADWR9000040298**

State Well #:	10N06E05L001M	Station ID:	13660
Well Name:	Not Reported	Basin Name:	North American
Well Use:	Irrigation	Well Type:	Unknown

Well Depth:	400	Well Completion Rpt #:	Not Reported

B5
East
1/2 - 1 Mile
Lower

CA WELLS **9882**

Seq:	9882	Prim sta c:	10N/06E-05L03 M
Frds no:	3110040001	County:	31
District:	09	User id:	TEN
System no:	3110040	Water type:	G
Source nam:	WELL 01 - WEST	Station ty:	WELL/AMBNT/MUN/INTAKE
Latitude:	384500.0	Longitude:	1212050.0
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:	3110040	System nam:	Placer Cwa - Bianchi Estates
Hqname:	PLACER COUNTY WATER AGENCY	Address:	P.O. Box 6570
City:	Auburn	State:	CA
Zip:	95604	Zip ext:	Not Reported
Pop serv:	140	Connection:	47
Area serve:	BIANCHI ESTATES		

B6
East
1/2 - 1 Mile
Lower

CA WELLS **CADDW0000010454**

Well ID:	3110040-001	Well Type:	MUNICIPAL
Source:	Department of Health Services		
Other Name:	WELL 01 - WEST - ABANDONED		
GAMA PFAS Testing:	Not Reported		
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DHS&samp_date=&global_id=&assigned_name=3110040-001&store_num=		
GeoTracker Data:	Not Reported		

C7
North
1/2 - 1 Mile
Lower

CA WELLS **CADWR9000038463**

State Well #:	Not Reported	Station ID:	48577
Well Name:	SVMW East-2B	Basin Name:	North American
Well Use:	Observation		
Well Type:	Part of a nested/multi-completion well		
Well Depth:	525	Well Completion Rpt #:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

C8
North
1/2 - 1 Mile
Lower

CA WELLS **CADWR9000040352**

State Well #:	Not Reported	Station ID:	48576
Well Name:	SVMW East-2A	Basin Name:	North American
Well Use:	Observation	Well Type:	Single Well
Well Depth:	140	Well Completion Rpt #:	Not Reported

C9
North
1/2 - 1 Mile
Lower

CA WELLS **CADWR9000040353**

State Well #:	Not Reported	Station ID:	48578
Well Name:	SVMW East-2C	Basin Name:	North American
Well Use:	Observation		
Well Type:	Part of a nested/multi-completion well		
Well Depth:	670	Well Completion Rpt #:	Not Reported

D10
East
1/2 - 1 Mile
Higher

CA WELLS **9883**

Seq:	9883	Prim sta c:	10N/06E-05L04 M
Frds no:	3110040002	County:	31
District:	09	User id:	TEN
System no:	3110040	Water type:	G
Source nam:	WELL 02 - EAST	Station ty:	WELL/AMBNT/MUN/INTAKE
Latitude:	384500.0	Longitude:	1212040.0
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:	3110040	System nam:	Placer Cwa - Bianchi Estates
Hqname:	PLACER COUNTY WATER AGENCY	Address:	P.O. Box 6570
City:	Auburn	State:	CA
Zip:	95604	Zip ext:	Not Reported
Pop serv:	140	Connection:	47
Area serve:	BIANCHI ESTATES		

D11
East
1/2 - 1 Mile
Higher

FED USGS **USGS40000190083**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	010N006E05K001M	Type:	Well
Description:	Not Reported	HUC:	18020111
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported

Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19540628	Well Depth:	126
Well Depth Units:	ft	Well Hole Depth:	337
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	2	Level reading date:	1982-06-24
Feet below surface:	142.93	Feet to sea level:	Not Reported
Note:	Not Reported		
Level reading date:	1954-06-28	Feet below surface:	84.00
Feet to sea level:	Not Reported	Note:	Not Reported

D12
East
1/2 - 1 Mile
Higher

CA WELLS **CAUSGSN00007546**

Well ID:	USGS-384501121203701	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-384501121203701	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&samp_date=&global_id=&assigned_name=USGS-384501121203701&store_num=		
GeoTracker Data:	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
95747	15	0

Federal EPA Radon Zone for PLACER 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 PLACER COUNTY, CA

Number of sites tested: 68

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.466 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.500 pCi/L	100%	0%	0%
Basement	3.043 pCi/L	71%	29%	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, 2010 and 2015 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.

OTHER STATE DATABASE INFORMATION

Groundwater Ambient Monitoring & Assessment Program
State Water Resources Control Board
Telephone: 916-341-5577
The GAMA Program is Californias comprehensive groundwater quality monitoring program. GAMA collects data by testing the untreated, raw water in different types of wells for naturally-occurring and man-made chemicals. The GAMA data includes Domestic, Monitoring and Municipal well types from the following sources, Department of Water Resources, Department of Heath Services, EDF, Agricultural Lands, Lawrence Livermore National Laboratory, Department of Pesticide Regulation, United States Geological Survey, Groundwater Ambient Monitoring and Assessment Program and Local Groundwater Projects.

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.

California Oil and Gas Well Locations
Source: Dept of Conservation, Geologic Energy Management Division
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

PHYSICAL SETTING SOURCE RECORDS SEARCHED

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.

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

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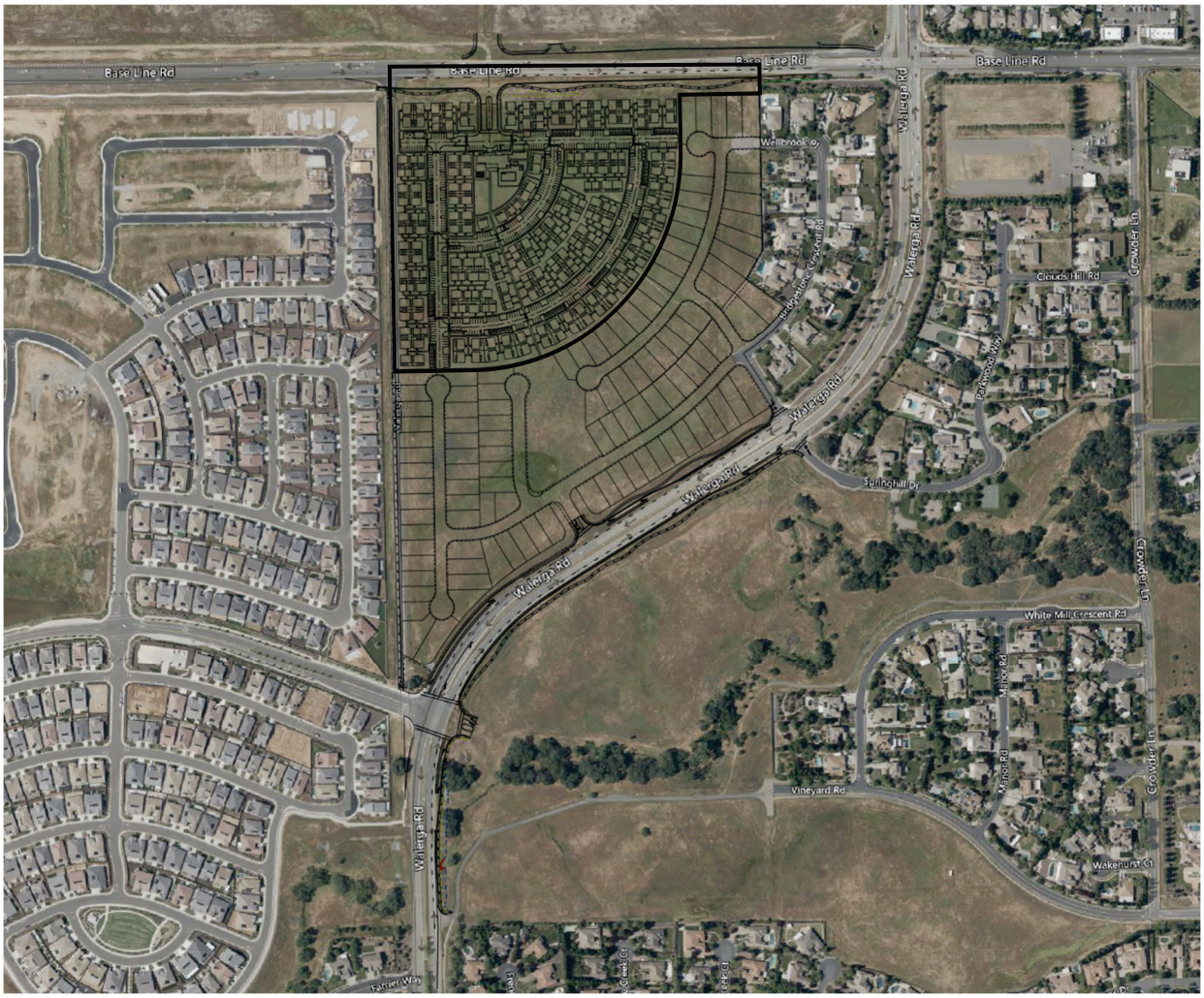
APPENDIX G

ESTIA DRY CREEK PHASE 1
PRELIMINARY DRAINAGE REPORT

PLN24-00144

JUNE 2026

Prepared For
HOMES BY TOWNE



* Figure not OCR Compatible

KING ENGINEERING
200 Auburn Folsom Road, Ste. 201
Auburn, California 95603

TABLE OF CONTENTS

Contents Page

Introduction 1

Project Description 1

Scope of the Report 1

FEMA Information 2

ULOP Applicability 2

Existing Conditions 3

Design Criteria 3

Hydrology & Hydraulics 4

Detention & Retention 6

Water Quality 6

References 7

Exhibit A: FIRM Panel

Exhibit B: Web Soil Survey Map

Exhibit C: Drainage Peak Flow Calculations

Table 1 – Estia Dry Creek Pre-Development Peak Flow Worksheet

Table 2 – Estia Dry Creek Post-Development Peak Flow Worksheet

Table 3 – Bypass Flow Table

Table 4 – Pre-Development to Post-Development Comparison

Table 5 – Retention Table

Exhibit D: Hydraulic Data and Profiles – 10-Year and 100-Year

Exhibit E: Drainage Maps

Drainage Map #1 – Pre-Development Shed Map - Overall

Drainage Map #2 – Post-Development Shed Map - Phase 1

Drainage Map #3 – Project Index - Phase 1

Drainage Map #4 – Blocked Inlet Scenario - Phase 1

Drainage Map #5 – Site Assessment and Drainage Management Area Map - Phase 1

Exhibit F: Post-Construction Storm Water Quality Plan Workbook

Exhibit G: Retention Exhibit

Exhibit H: Storm Drain Alternative Routing

Exhibit I: Storm Drain Pump Alternative

Exhibit J: Storm Drain Alternative Profile

INTRODUCTION

Project Description

The proposed "Estia Dry Creek & Placer Creek Residential" (Project) includes a total of approximately 88 acres, comprised of a 52.3-acre parcel (Assessor's Parcel No. 023-221-046) located on the north side of Walerga Road and a 35.3 -acre parcel (APN 023-221-061) located south and east of Walerga Road, collectively, the "project", Estia Dry Creek and Placer Creek Residential. This Phase 1 project consists of 220 residential units on 19.9 acres. Construction will include streets, storm drainage improvements, underground utilities, garages, a fitness clubhouse, and pool. The site is currently unimproved agricultural land. It is bounded on the north by Baseline Road and bounded on the south by Estia Dry Creek Phase 2. The proposed underground storm drain system connects to the Baseline Road backbone storm drain system. A portion of Phase 1 is proposed to drain south through Phase 2 to the Walerga tributary.

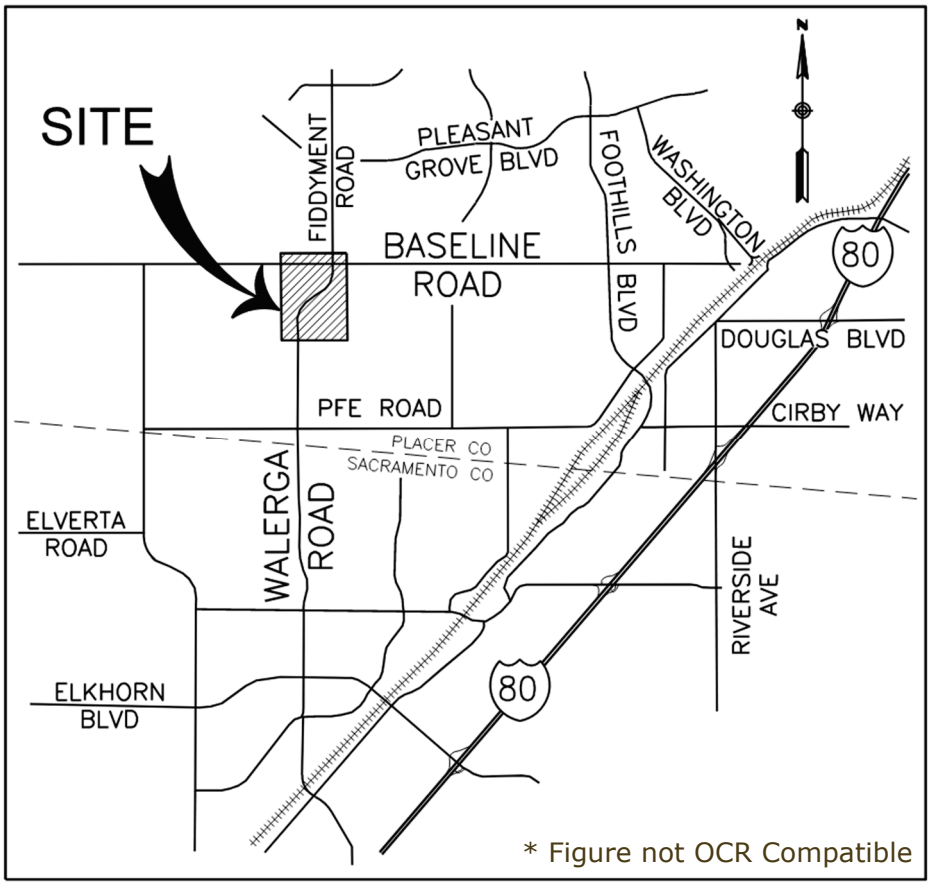


Figure 1: Project Vicinity Map

* Figure not OCR Compatible

Scope of the Report

This report provides analysis and documents for the existing pre-developed watershed characteristics and determines the required drainage facilities that are necessary for development of the project. The report will confirm that the post-development changes will be consistent with what is shown on the Drainage Maps.

Pursuant to Reference 2, this is a regulated project with more than one acre of new impervious area proposed and is within the Phase II MS4 Permit Area.

FEMA Information

The Federal Emergency Management Agency's (FEMA) Flood Insurance Study (FIS) Flood Insurance Rate Map (FIRM) contains the project area is Preliminary FIRM Panel ID# 06061C1026J, effective April 12, 2024.

The Dry Creek Walerga Road Tributary is classified as Zone AE which means base flood elevations have been determined and analyzed with a Flood Insurance Study that generated the floodplain limits and a floodway has been established. The limits of the detailed study terminate east of Crowder Lane with Zone A floodplain, which means base flood elevations have not been determined.

ULOP Applicability

The following table shows that this project does not meet the Urban Level of Flood Protection (ULOP) as determined by Placer County to construct improvements within a ULOP boundary. These criteria, enacted by State Senate Bill 5 (SB 5) in 2007, were developed to assist counties and cities within the Sacramento-San Joaquin Valley in making findings related to ULOP before approving land use decisions.

ULOP APPLICABILITY

Refer to the Tentative Map for limits of ULOP floodplain with greater than 3' flooding depth

Finding of Fact / ULOP Criteria	Yes/No	Remark
The project is located within the Sacramento Valley	Yes	Dry Creek is tributary to the Sacramento River
The project is located within an urban area as defined by Code of Federal Regulations Title 44, Section 59.1.	Yes	
A portion of the project is located within a flood hazard zone that is mapped as either a special hazard area or an area of moderate hazard on FEMA FIRM Panels.	Yes	Zone AE Floodplain
The project is located within a watershed that is more than 10 square miles in size.	No	Dry Creek Walerga Road Tributary Watershed area is approximately 1.3 square miles per FEMA FIS report
The project is located within an area with a potential flood depth above 3.0 feet during a 200-year event, from sources of flooding other than localized conditions.	No	Project is located along Dry Creek Walerga Road Tributary
Is any disturbance or development proposed within the ULOP 200-year boundary?	No	Dry Creek ULOP is downstream at the confluence

Future, Fully-Developed, Unmitigated Floodplain

The limits of the future, fully-developed, unmitigated 100-year floodplain are calculated and depicted on the Drainage Maps. The project does not propose residential lots in the future, fully-developed, unmitigated 100-year floodplain.

EXISTING CONDITIONS

Ground slopes range significantly across the project area. The Phase 1 area ground and a portion of the Phase 2 area ground slopes north toward Baseline Road and a portion of the Phase 2 area ground slopes downhill towards Walerga Tributary and Dry Creek. Existing ground cover is primarily grassland with rolling terrain. The USDA Soil Conservation Service classifies most of the soils within the project as Pleistocene alluvial deposits. The site soil is classified as hydrologic group D. ENGEO prepared a geotechnical study dated December 26, 2023 for the Estia Dry Creek project entitled "Estia at Dry Creek - Geotechnical Exploration". This report identifies the near surface soils generally as deeply weathered gravel, sand, and silt, which is consistent with the USDA data.

The Walerga Tributary is classified as Zone AE floodplain, which means base flood elevations have been determined and analyzed with a Flood Insurance Study that generated the floodplain limits and a floodway has been established. The river hydraulics and cross section profiles for the tributary are derived from the GeoHECRAS software provided by CivilGeo.



Figure 2: Pre-Development Land Photo, Baseline Rd, Looking South



Figure 3: Pre-Development Land Photo, Walerga Rd, Looking Southeast

DESIGN CRITERIA

The design criteria listed below are also found in the West Placer Stormwater Quality Design Manual and Placer County Flood Control and Water Conservation District Stormwater Management Manual (SWMM).

- **The streets remain passable during the 10- and 100-Year storm events and the finished floor elevations are 1', or greater, from the 100-year water surface elevations.**

* Figures not OCR Compatible

- **Inlet and Outlet pipes are to have matching Crown Elevations.**
- **The underground storm drain pipes do not flow full during the 10-Year storm.**
- **For Hydraulic Calculations, Pipes are sized as if all flow is captured at each inlet.**
- **Storm Drain pipes are designed to flow under gravity flow for up to the 10-year storm and allowed to flow surcharged, pressure flow for flows larger than the 10 year-storm.**
- **Culverts 30" in diameter and less are designed for 50% blockage at the inlet for the 10-year design storm. However, where there is a grated inlet with 8" maximum size opening, the inlet is designed for 50% blockage, but the culvert connected to such an inlet may be sized without blockage (figuring that large objects cannot get through the inlet openings to block the culvert).**
- **Gutters and inlets serving small drainage areas are sized according to Placer County drainage formulas as follows:**

$$\text{Sheet flow: } t_r = \frac{.355(nL)^{.6}}{S^{.3}}$$

$$\text{Channel flow: } t_r = \frac{.00735Ln^{.75}(1+z)^{.25}}{S^{.375}(A_c z)^{.25}}$$

$$\text{Peak Discharge: } Q = qA - A_p F_i$$

HYDROLOGY & HYDRAULICS

MacKay & Somps analyzed a portion of the existing shed to the Curry Creek watershed from this property in their drainage studies for The Storm Drainage Evaluation for Baseline Road – Segment 1, Upland Drive, Segment 5, and San Fernando Drive Improvement Plans Technical Memorandum dated September 19, 2023 and the Storm Drainage Evaluation for Baseline Road - Segment 3 & Portion of Segment 2 Improvement Plans Technical Memorandum, revision dated February 20, 2025 (for the C13X shed). The studies assumed a pre-development contributing area of 23.9 acres (i.e., Shed UP15X and C13X) draining to Baseline Rd within the Curry Creek Watershed. The Estia Dry Creek Pre-Development Shed Map (Drainage Map #1) assumes 35.6 acres (sheds 1-4) pre-development contributing area to Baseline Rd. within the Curry Creek Watershed, which is 11.7 acres greater than the contributing drainage area of 23.9 acres calculated by MacKay & Somps. In our professional opinion, any minor shed shift from Curry Creek to Dry Creek has no impact on Dry Creek and any downstream properties. This is supported by the HEC-RAS analysis presented in the preliminary drainage reports for Phases 3 & 4.

Maintaining the existing shed boundary on this project is not possible with any standard subdivision design. That is readily apparent from the pre-development shed boundaries in comparison to the site plan. The shape of the existing shed to Curry Creek is not conducive to any standard development for residential or commercial use if the shed boundary is strictly held and applied to development. The cross canal lawsuit determination created the City of Roseville's retention program in 1990 to mitigate volumetric impacts from Roseville to areas within Sutter County, which can experience flooding. The Curry Creek shed/Sutter County downstream is particularly sensitive to flood issues, while Dry Creek is not. Curry Creek is an intermittent watershed with unpredictable flows that is part of the Pleasant Grove Creek

watershed. Dry Creek is a major regional watershed where detention is discouraged because of the large flood wave.

Other project grading and layout configurations were considered to more closely maintain the existing watershed boundaries and capacities but were determined to be impractical. The project is required to sewer south as that is where the existing Placer County sewer facilities are located. Draining the existing shed to the north would raise some areas of the site by as much as 10-feet. This would require a significant import of material, approximately 240,000 cubic yards. Transporting such large import quantities could have significant air quality impacts. This would also result in steep road grades and potential noncompliance with ADA regulations.

Another option evaluated was a permanent storm drain pump facility. This pump facility would pump drainage from the existing shed boundary north toward the Baseline Rd storm drain system. Long-term maintenance requirements and electricity demands are higher with this type of system. Performance and reliability of these types of facilities over time can also be problematic, requiring special equipment and ongoing maintenance to function properly. Placer County Land Development Manual Section 5-11(J) states “The use of drainage pumps shall be avoided if at all possible, and is allowed only with approval of the Engineer.” The Placer County Flood Control and Water Conservation District Stormwater Management Manual (SWMM) also states in section VI-4 Drainage Systems, “Underground drainage systems shall be designed for ease of maintenance and repair.”

Please see Exhibits H, I and J for additional information on the shed shift and other design options considered.

In addition to the approximately 11.7 acres of shed shift to Dry Creek due to the difference in shed area assumptions with the MacKay and Somps Reports, the above design constraints result in an additional shed shift of approximately 14 acres. Therefore, the total shed shift from Curry Creek to Dry Creek is approximately 25.7 acres (11.7 acres + 14 acres) toward Walerga Tributary (Dry Creek), with 10.0 acres of Phase 1 continuing to drain to Curry Creek at the Sierra Vista master planned location in Baseline Rd previously described.

The County requires "compelling justification" to allow a shed shift, with supporting documentation and confirmation that the project does not negatively affect upstream or downstream drainage facilities. This project has coordinated with the County and Flood Control District for approval of this unique exception to SWMM policies (Section II(C)(3); Section IV(B)(3); Section VI(B)(1)(a)).

The project will discharge most of the stormwater runoff into Dry Creek Walerga Road Tributary. The watershed to Dry Creek is approximately 1.3 square miles. The peak flows for the various storm events were modeled in HEC-HMS (Version 4.9). The routing method used is Muskingum Method. The volumetric and discharge relationships were generated through existing surface information and HEC-RAS modeling to determine the necessary rating curve used in the Modified Puls method. The channel is approximated as a trapezoidal channel with a Muskingum Coefficient (X) between 0.10 and 0.20. The rainfall values were taken from Table 5-A-1 in the Stormwater Management Manual for the various storm events. The HEC-HMS model uses the Kinematic Wave transform method and initial/constant loss in determining flows. This method relates the shape of the channel, boundary roughness, and slope of the channel or overland flow surface. Though it simplifies the complex nature of drainage systems, the Kinematic Wave transform method provides a reasonably accurate approximation of flows.

The design flows for the 10-, 50, and 100-year storm events (10, 2 and 1 percent recurrence interval storms) for Dry Creek and the Antelope North Road Tributary were provided by FEMA and were

unchanged. There was no 500-year storm flow (0.2 percent chance of occurrence storm) provided for the tributary. Hydraulic models for the existing, revised, and unmitigated scenarios for the Dry Creek Walerga Road Tributary were generated from FEMA FIS data. The Existing model reflects the current physical improvements and latest topography in the area. The HEC-RAS models were generated with the design flows produced by the HEC-HMS model and provide the basis for comparing existing conditions BFEs to revised BFEs to analyze the impacts of the proposed project both upstream and downstream. The models were created using GeoHECRAS software using steady, uniform flow under Subcritical conditions. Refer to Tables 4-6 of the Phase 3 & 4 drainage reports for HEC-RAS modeling inputs and results.

DETENTION & RETENTION

The final predevelopment checklist identified the need for volumetric retention to mitigate impacts from the 8-day, 100-year storm event based on the potential downstream impacts on the Curry Creek Cross Canal watershed. Placer County is currently evaluating options for regional retention facilities; however, no County retention fee program has been established at this time. The project will need to demonstrate participation in a future Board-approved County retention program, if such program is established, or provide onsite retention facilities in accordance with County standards. Onsite underground retention is provided. Refer to Exhibit G for locations identified for potential retention facilities. The estimated retention required is 69,220 cubic feet. The Exhibit G alternative provides roughly 100,800 cubic feet of possible retention with room onsite for more. The final retention volumes will be provided and analyzed with the improvement plans for each phase.

Though drainage detention is not required or recommended for Dry Creek and its tributaries, hydromodification is still required under the MS4 rules, even though the distinction between detention and hydromodification is not made clear. If detention is required, despite the potential negative consequences of overlapping the flood wave and causing higher overall peak flows in Dry Creek, peak flows would be detained and approximately 2.9 ac-ft would be provided in Phase 1 either underground, in Phase 1 Basin B, or some combination thereof. 3.9 ac-ft would need to be provided in an above ground basin in Phase 2 and an additional 0.6 ac-ft can be provided in Phase 2 Basin C. This additional storage could provide for additional attenuation and reduce downstream peak flows, if needed.

WATER QUALITY

To evaluate storm water quality and best management policies (BMP) within the project limits, the West Placer Storm Water Quality Design Manual was referenced and used as a guideline for BMP locations. Drainage Management Areas (DMA) are delineated with infiltration basins shown in Drainage Map #5. The primary purpose of the infiltration basins is to retain minor storm events and capture any pollutants that would otherwise enter Dry Creek and Curry Creek. The infiltration basins are primarily for minor storm events but not intended to reduce the peak flows during extreme storm events. The BMPs shall be maintained in accordance with the project O&M Plan.

Phase 1 is divided into two DMAs, DMA A and DMA B. DMA A is the portion of the project which will discharge into infiltration Basin A at Discharge Point A on Drainage Map #2. From Basin A, treated runoff enters the storm drain system in Baseline Rd. analyzed with the Estia Dry Creek Backbone Infrastructure Preliminary Drainage Report. That storm drain system connects to the 42-inch elliptical pipe in Baseline Rd. constructed with the Baseline Marketplace improvement plans (CWJ#191108, EN22-1061). DMA B, which covers the remainder of the project, constructs the storm drain system which collects runoff and flows toward infiltration Basin B before outfalling to the storm drain system in Phase 2A Park 1.

The composite runoff coefficient (Rc) is determined using State Water Control Board Runoff Coefficient Fact Sheet 5.1.3. The fact sheet provides tables of various coefficients depending on land use. The land use within the Phase 1 project is Multi-Family. The Coefficient of 0.55 was used because it is the more conservative value for Water Quality calculations.

REFERENCES

Ref. 1: NPDES CA S000002, SWRCB Water Quality Order No. 2009-0009 DWQ, as amended by 2010-2014-DWQ and 2012-006-DWQ, Construction General Permit (permit to be obtained for the Project).

Ref. 2: NPDES General Permit No. CA S000004, SWRCB Water Quality Order No. 2013-00001 DWQ, WDRs for MS4s

Ref. 3: Placer County Storm Water Management Plan 2004, or latest update

Ref. 4: Placer County Storm Water Management Manual and Land Development Manual

Ref. 5: CASQA Stormwater BMP Handbook New Development and Redevelopment, Table 2.2 and Section 5.

Ref. 6: USDA, Soil Conservation Service, web soil survey website.

Ref. 7: ENVIROSTOR website: envirostor.dtsc.ca.gov/

Ref. 8: Hydraflow Express program for gutter and inlet sizing

Ref. 9: Storm Drainage Evaluation for Baseline Road – Segment 1, Upland Drive, Segment 5, & San Fernando Drive Improvement Plans, MacKay & Somps, October 2022

Ref. 10: Storm Drainage Evaluation for Baseline Road – Segment 3 & Portion of Segment 2 Improvement Plans, MacKay & Somps, February 2025

EXHIBIT A

FIRM Panel



* Figure not OCR Compatible

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available effective flood hazard information for your community, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Mapping and Insurance eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be downloaded from the website. Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be acquired directly from the Flood Map Service Center at the website listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). The basemap shown is the USGS National Map: Orthoimagery. Last refreshed October, 2020.

Note: Some Special Flood Hazard Areas with elevations may not appear with elevation labels if the Base Flood Elevation or Cross-section line which communicates the elevation for the location appears on the adjacent panel. Please see the Panel Locator Diagram on this map panel to determine the adjacent panel and find the elevation feature there, or alternatively use the Flood Insurance Study report for detailed elevations by flood source.

SCALE

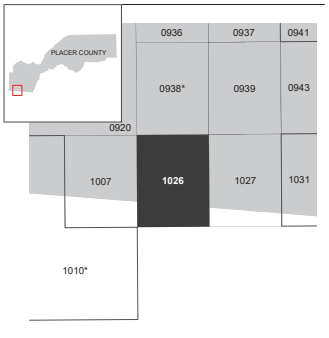
1 inch = 500 feet 1:6,000

0 250 500 1,000 1,500 2,000 feet

0 50 100 200 300 400 meters

Map Projection:
NAD 1983 StatePlane California II FIPS 0402 Feet
Vertical Datum: NAVD88

PANEL LOCATOR



*PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

PLACER COUNTY CALIFORNIA AND INCORPORATED AREAS

FEMA

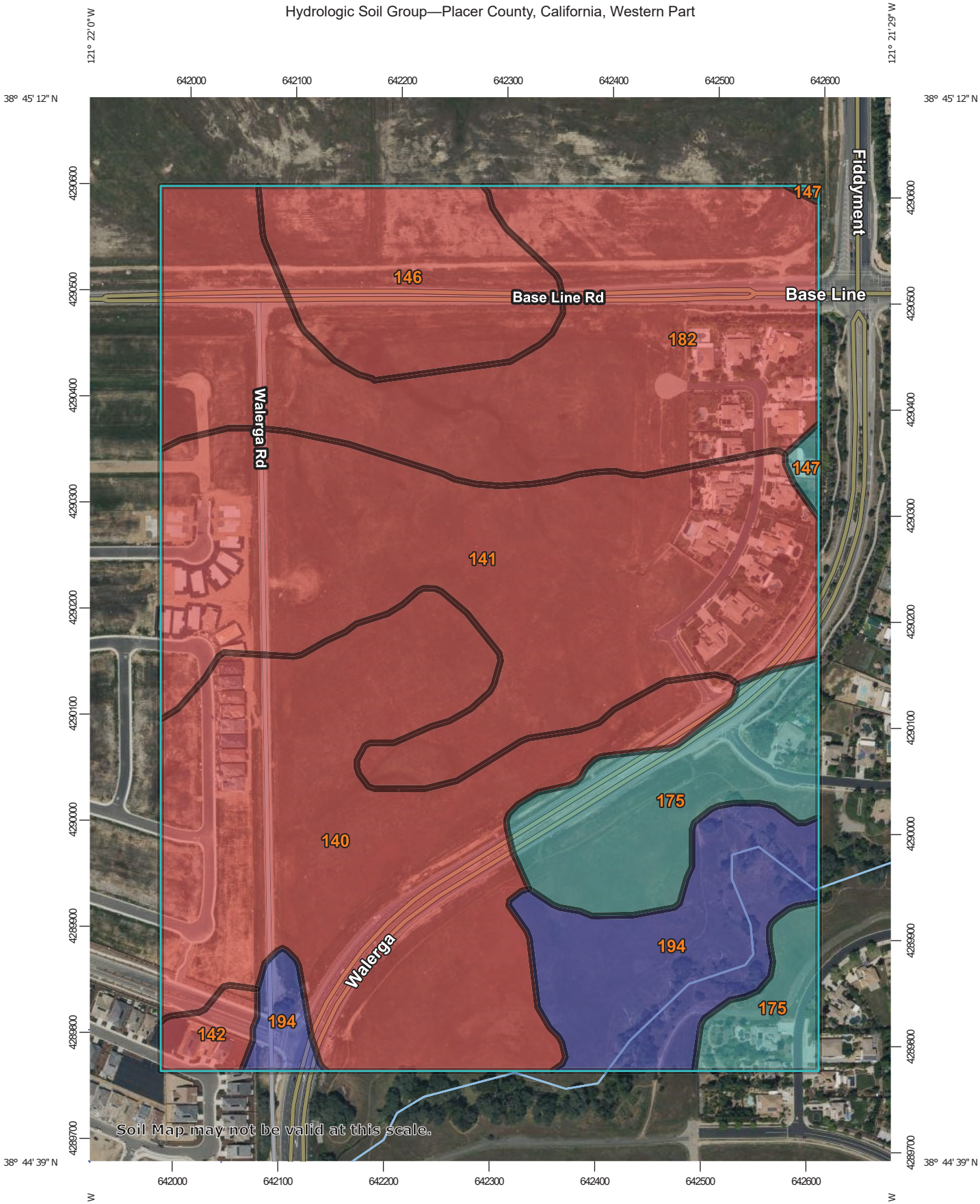
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
PLACER COUNTY UNINCORPORATED AREAS	060239	1026	J

MAP NUMBER
06061C1026J
EFFECTIVE DATE
Prelim Issue Date: 04/12/2024

EXHIBIT B

Web Soil Survey Map



Map Scale: 1:4,890 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

* Figure not OCR Compatible

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Placer County, California, Western Part
Survey Area Data: Version 15, Aug 31, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 23, 2022—Apr 24, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
140	Cometa sandy loam, 1 to 5 percent slopes	D	32.3	25.0%
141	Cometa-Fiddyment complex, 1 to 5 percent slopes	D	32.1	24.9%
142	Cometa-Ramona sandy loams, 1 to 5 percent slopes	D	1.4	1.1%
146	Fiddyment loam, 1 to 8 percent slopes	D	10.1	7.8%
147	Fiddyment-Kaseberg loams, 2 to 9 percent slopes	C	0.5	0.4%
175	Ramona sandy loam, 2 to 9 percent slopes	C	11.8	9.2%
182	San Joaquin-Cometa sandy loams, 1 to 5 percent slopes	D	29.5	22.9%
194	Xerofluvents, frequently flooded	B	11.4	8.8%
Totals for Area of Interest			**128.9**	**100.0%**

EXHIBIT C

Drainage Peak Flow Calculations

Table 1

Estia Dry Creek Pre-Development Peak Flow Worksheet

Watershed Data							Time of Concentration											Peak Flow			
Refer to drainage map and soil type							Overland Flow				Channel Flow							Fig 5-3A,C P.C. SWMM			
BASIN	DISCHARGE LOCATION	Elev.	Total Area (ac.)	Perv. Area	Soil Type	F_i	Length ft.	Slope ft/ft	N	t_r min.	Area (ac.)	Length ft.	Slope ft/ft	n	Z	t_r min.	Total Time (min.)	q_{10}	q_{100}	Q_{10} cfs	Q_{100} cfs
TO POINT A																					
3	PT. A	100	5.24	5.24	D	0.12	172	0.0038	0.4	23.92	5.24	1067	0.010	0.035	10	4.29	28.21	0.890	1.600	4.03	7.75
4		100	10.96	10.96	D	0.12	294	0.011	0.4	23.99	10.96	940	0.007	0.035	10	3.56	27.55	0.917	1.655	8.72	16.80
2		100	11.13	11.13	D	0.12	329	0.0047	0.4	33.12	11.13	1236	0.007	0.035	10	4.61	37.74	0.643	1.190	5.80	11.89
1		100	8.26	8.26	D	0.12	325	0.0162	0.4	22.69	8.26	1160	0.006	0.035	10	5.04	27.72	0.910	1.639	6.51	12.53
1>4		100	35.59	35.59	D	0.12											37.74	0.643	1.190	**18.54**	**38.03**
TO POINT B																					
5	PT. B	100	4.94	4.94	D	0.12	240	0.02	0.4	17.75	4.94	642	0.014	0.035	10	2.29	20.04	1.210	2.240	5.38	10.46
7		100	5.44	5.44	D	0.12	197	0.0308	0.4	13.85	5.44	446	0.017	0.035	10	1.43	15.28	1.680	3.048	8.48	15.92
6		100	5.37	5.37	D	0.12	248	0.0223	0.4	17.52	5.37	737	0.020	0.035	10	2.24	19.77	1.240	2.292	6.00	11.65
W1		100	4.52	1.13	D	0.12	100	0.0223	0.4	10.16	4.52	400	0.020	0.035	10	1.27	11.43	1.983	3.590	8.83	16.09
5>7		100	20.27	16.88	D	0.12											20.04	1.210	2.240	**22.47**	**43.35**
TO POINT C																					
8	PT. C	100	1.86	1.86	D	0.12	100	0.0051	0.4	15.82	1.86	642	0.014	0.035	10	2.92	18.74	1.330	2.446	2.25	4.32
9		100	11.09	11.09	D	0.12	197	0.0308	0.4	13.85	11.09	446	0.017	0.035	10	1.20	15.05	1.700	3.083	17.50	32.84
10		100	8.93	8.93	D	0.12	248	0.0223	0.4	17.52	8.93	737	0.020	0.035	10	1.98	19.50	1.270	2.343	10.25	19.84
11		100	3.80	3.80	D	0.12	215	0.0051	0.4	25.04	3.80	642	0.014	0.035	10	2.44	27.48	0.921	1.663	3.04	5.86
12		100	9.79	9.79	D	0.12	197	0.0308	0.4	13.85	9.79	446	0.017	0.035	10	1.23	15.09	1.700	3.083	15.45	28.99
13		100	4.52	4.52	D	0.12	248	0.0223	0.4	17.52	4.52	737	0.020	0.035	10	2.34	19.87	1.230	2.274	5.01	9.73
14		100	9.71	9.71	D	0.12	225	0.0051	0.4	25.73	9.71	642	0.014	0.035	10	1.93	27.67	0.914	1.647	7.69	14.81
8>14		100	49.70	49.70	D	0.12											27.67	0.914	1.647	**39.35**	**75.81**

Table 2

Estia Dry Creek Post-Development Peak Flow Worksheet

Watershed Data								Time of Concentration											Peak Flow			
Refer to drainage map and soil type								Overland Flow				Channel Flow							Fig 5-3A,C P.C. SWMM			
SHED	DRAINAGE INLET	Elev.	Total Area (ac.)	Perv. Area	Soil Type	Infiltration Rate (in/hr)	F_i [1]	Length ft.	Slope ft/ft	N [5]	t_r [2] min.	Area (ac.)	Length ft.	Slope ft/ft	n	Z	t_r [3] min.	Total Time (min.)	q_{10}	q_{100}	Q_{10} [4] cfs	Q_{100} [4] cfs
TO PHASE 1 DISCHARGE																						
23	DI-14	100	0.57	0.29	D	0.12	0.21	142	0.01	0.4	15.00	0.57	155	0.0040	0.015	50	1.19	16.19	1.590	2.894	0.85	1.59
																	DI-14 TOTAL FLOW				**0.85**	**1.59**
22	DI-12	100	0.53	0.27	D	0.12	0.21	134	0.01	0.4	15.00	0.53	144	0.0050	0.015	50	1.03	16.03	1.600	2.911	0.79	1.49
																	DI-12 TOTAL FLOW				**0.79**	**1.49**
20	DI-13	100	0.48	0.24	D	0.12	0.21	149	0.01	0.4	15.00	3.20	75	0.0040	0.015	50	0.37	15.37	1.670	3.031	0.75	1.40
21		100	0.57	0.29	D	0.12	0.21	147	0.01	0.4	15.00	0.57	56	0.0040	0.015	50	0.43	15.43	1.660	3.014	0.89	1.66
20>23								DI-14 PIPE FLOW				0.57	166	0.0030	0.015	2	0.67	16.86				
								DI-12 PIPE FLOW				0.53	39	0.0030	0.015	2	0.16	16.19				
		100	2.15	1.08	D	0.12	0.21											15.37	1.670	3.031	3.37	6.29
																	DI-13 TOTAL FLOW				**3.37**	**6.29**
18	DI-11	100	0.45	0.23	D	0.12	0.21	119	0.01	0.4	14.35	0.45	159	0.0040	0.015	50	1.29	15.64	1.640	2.980	0.69	1.29
19		100	0.60	0.30	D	0.12	0.21	226	0.01	0.4	15.00	0.60	80	0.0040	0.015	50	0.60	15.60	1.640	2.980	0.92	1.73
18>23								DI-13 PIPE FLOW				2.15	151	0.0030	0.015	2	0.43	15.81				
		100	3.20	1.60	D	0.12	0.21											15.81	1.620	2.945	4.85	9.09
																	DI-11 TOTAL FLOW				**4.85**	**9.09**
16	DI-10	100	0.67	0.34	D	0.12	0.21	132	0.01	0.4	15.00	0.67	201	0.0040	0.015	50	1.48	16.48	1.560	2.842	0.98	1.83
17		100	0.88	0.44	D	0.12	0.21	252	0.01	0.4	15.00	0.88	119	0.0040	0.015	50	0.82	15.82	1.620	2.945	1.33	2.50
14>19								DI-11 PIPE FLOW				3.20	186	0.0030	0.015	2	0.49	16.29				
		100	4.75	2.38	D	0.12	0.21											16.48	1.560	2.842	6.91	13.00
																	DI-10 TOTAL FLOW				**6.91**	**13.00**

[1] SWMM Equation 5-5, Infiltration Factor

[2] SWMM Equation 5-3, Overland Flow Response Time

[3] SWMM Equation 5-4, Collector Flow Response Time

[4] SWMM Equation 5-6, Adjustment for Infiltration Peak Flow

[5] SWMM Table 5-5, Roughness Parameters for Overland Flow

Table 2 (CONT.)

Watershed Data								Time of Concentration											Peak Flow			
Refer to drainage map and soil type								Overland Flow				Channel Flow							Fig 5-3A,C P.C. SWMM			
SHED	DRAINAGE INLET	Elev.	Total Area (ac.)	Perv. Area	Soil Type	Infiltration Rate (in/hr)	F_I [1]	Length ft.	Slope ft/ft	N [5]	t_r [2] min.	Area (ac.)	Length ft.	Slope ft/ft	n	Z	t_r [3] min.	Total Time (min.)	q_{10}	q_{100}	Q_{10} [4] cfs	Q_{100} [4] cfs
TO PHASE 1 DISCHARGE																						
14	DI-9	100	0.67	0.34	D	0.12	0.21	202	0.01	0.4	15.00	0.67	137	0.0147	0.015	50	0.62	15.62	1.640	2.980	1.03	1.93
15		100	0.88	0.44	D	0.12	0.21	269	0.01	0.4	15.00	0.88	110	0.0147	0.015	50	0.46	15.46	1.660	3.014	1.37	2.56
14>15								DI-10 PIPE FLOW				4.75	189	0.0030	0.015	2	0.45	16.92				
		100	6.30	3.15	D	0.12	0.21											16.92	1.510	2.756	8.86	16.70
																	DI-9 TOTAL FLOW				**8.86**	**16.70**
31	DI-15	100	0.67	0.20	D	0.12	0.21	167	0.01	0.4	15.00	0.67	181	0.0040	0.015	50	1.33	16.33	1.570	2.859	1.01	1.87
32		100	0.92	0.28	D	0.12	0.21	194	0.01	0.4	15.00	0.92	182	0.0040	0.015	50	1.23	16.23	1.580	2.876	1.40	2.59
								SDMH-2 PIPE FLOW				6.30	247	0.0030	0.015	2	0.55	17.47				
31>32		100	7.89	3.63	D	0.12	0.21											17.47	1.460	2.670	10.76	20.31
																	DI-15 TOTAL FLOW				**10.76**	**20.31**
33	DI-16	100	0.52	0.16	D	0.12	0.21	160	0.01	0.4	15.00	0.52	125	0.0140	0.015	50	0.61	15.61	1.640	2.980	0.82	1.52
34		100	0.52	0.16	D	0.12	0.21	134	0.01	0.4	15.00	0.52	145	0.0140	0.015	50	0.71	15.71	1.630	2.962	0.82	1.51
31>34								DI-15 PIPE FLOW				7.89	33	0.0030	0.015	2	0.07	17.54				
		100	8.93	3.94	D	0.12	0.21											17.54	1.450	2.653	12.13	22.87
																	DI-16 TOTAL FLOW				**12.13**	**22.87**
35	DI-17 (PHASE 1 DISCHARGE)	100	0.53	0.16	D	0.12	0.21	151	0.01	0.4	15.00	0.53	102	0.0040	0.015	50	0.79	15.79	1.630	2.962	0.83	1.54
36		100	0.53	0.16	D	0.12	0.21	117	0.01	0.4	14.20	0.53	101	0.0040	0.015	50	0.79	14.99	1.710	3.100	0.87	1.61
31>36								DI-16 PIPE FLOW				8.93	125	0.0030	0.015	2	0.25	17.79				
		100	9.99	4.26	D	0.12	0.21											17.79	1.430	2.618	13.40	25.27
																	DI-17 (PHASE 1 DISCHARGE) TOTAL FLOW				**13.40**	**25.27**
TO POINT A																						
1	DI-1	100	0.30	0.15	D	0.12	0.21	138	0.01	0.4	15.00	0.30	108	0.0040	0.015	50	0.97	15.97	1.610	2.928	0.45	0.85
2		100	0.50	0.25	D	0.12	0.21	157	0.01	0.4	15.00	0.50	101	0.0040	0.015	50	0.80	15.80	1.630	2.962	0.76	1.43
1>2		100	0.80	0.40	D	0.12	0.21											15.97	1.610	2.928	1.20	2.26
																	DI-1 TOTAL FLOW				**1.20**	**2.26**

[1] SWMM Equation 5-5, Infiltration Factor
[2] SWMM Equation 5-3, Overland Flow Response Time
[3] SWMM Equation 5-4, Collector Flow Response Time
[4] SWMM Equation 5-6, Adjustment for Infiltration Peak Flow
[5] SWMM Table 5-5, Roughness Parameters for Overland Flow

Table 2 (CONT.)

Watershed Data								Time of Concentration											Peak Flow			
Refer to drainage map and soil type								Overland Flow				Channel Flow							Fig 5-3A,C P.C. SWMM			
SHED	DRAINAGE INLET	Elev.	Total Area (ac.)	Perv. Area	Soil Type	Infiltration Rate (in/hr)	F_I [1]	Length ft.	Slope ft/ft	N [5]	t_r [2] min.	Area (ac.)	Length ft.	Slope ft/ft	n	Z	t_r [3] min.	Total Time (min.)	q_{10}	q_{100}	Q_{10} [4] cfs	Q_{100} [4] cfs
TO POINT A																						
5	DI-3	100	0.73	0.37	D	0.12	0.21	145	0.01	0.4	15.00	0.73	175	0.0043	0.015	50	1.22	16.22	1.580	2.876	1.08	2.02
6		100	0.64	0.32	D	0.12	0.21	99	0.01	0.4	12.85	0.64	97	0.0043	0.015	50	0.70	13.55	1.819	3.296	1.10	2.04
3		100	0.52	0.26	D	0.12	0.21	176	0.01	0.4	15.00	0.52	103	0.0140	0.015	50	0.50	15.50	1.650	2.997	0.80	1.50
4		100	0.49	0.25	D	0.12	0.21	133	0.01	0.4	15.00	0.49	145	0.0140	0.015	50	0.72	15.72	1.630	2.962	0.75	1.40
1>6								DI-1 PIPE FLOW				0.80	150	0.0049	0.015	2	0.46	16.43				
		100	3.18	1.59	D	0.12	0.21											16.43	1.560	2.842	4.63	8.71
																	DI-3 TOTAL FLOW				**4.63**	**8.71**
7	DI-4	100	0.52	0.26	D	0.12	0.21	127	0.01	0.4	14.92	0.52	132	0.0040	0.015	50	1.03	15.95	1.610	2.928	0.78	1.47
8		100	0.37	0.19	D	0.12	0.21	121	0.01	0.4	14.49	0.37	103	0.0040	0.015	50	0.88	15.37	1.670	3.031	0.58	1.08
9		100	0.52	0.26	D	0.12	0.21	117	0.01	0.4	14.20	0.52	41	0.0040	0.015	50	0.32	14.52	1.741	3.156	0.85	1.59
7>9								DI-3 PIPE FLOW				3.18	50	0.0030	0.015	2	0.13	16.56				
		100	4.59	2.30	D	0.12	0.21											16.56	1.550	2.825	6.64	12.49
																	DI-4 TOTAL FLOW				**6.64**	**12.49**
24+26	DI-7	100	0.60	0.30	D	0.12	0.21	138	0.01	0.4	15.00	0.60	143	0.0050	0.015	50	0.99	15.99	1.610	2.928	0.90	1.69
25+27		100	0.99	0.50	D	0.12	0.21	187	0.01	0.4	15.00	0.99	191	0.0050	0.015	50	1.17	16.17	1.590	2.894	1.47	2.76
24>27		100	1.59	0.80	D	0.12	0.21											16.17	1.590	2.894	2.36	4.43
																	DI-7 TOTAL FLOW				**2.36**	**4.43**
28	DI-8	100	0.40	0.20	D	0.12	0.21	118	0.01	0.4	14.26	0.40	171	0.0050	0.015	50	1.31	15.57	1.650	2.997	0.62	1.16
29		100	0.68	0.34	D	0.12	0.21	133	0.01	0.4	15.00	0.68	160	0.0060	0.015	50	1.00	16.00	1.600	2.911	1.02	1.91
30		100	0.47	0.24	D	0.12	0.21	138	0.01	0.4	15.00	0.47	76	0.0040	0.015	50	0.61	15.61	1.640	2.980	0.72	1.35
24>30								DI-7 PIPE FLOW				1.59	170	0.0050	0.015	2	0.44	16.61				
		100	3.14	1.57	D	0.12	0.21											16.61	1.540	2.808	4.51	8.49
																	DI-8 TOTAL FLOW				**4.51**	**8.49**
10	DI-5	100	0.60	0.30	D	0.12	0.21	118	0.01	0.4	14.25	0.60	153	0.0050	0.015	50	1.06	15.31	1.670	3.031	0.94	1.76
11		100	0.15	0.08	D	0.12	0.21	10	0.01	0.4	3.25	0.15	29	0.0050	0.015	50	0.29	3.53	2.520	5.020	0.36	0.74
12		100	0.86	0.43	D	0.12	0.21	132	0.01	0.4	15.00	0.86	179	0.0050	0.015	50	1.14	16.14	1.590	2.894	1.28	2.40
13		100	0.58	0.29	D	0.12	0.21	232	0.01	0.4	21.42	0.58	67	0.0050	0.015	50	0.47	21.89	1.140	2.100	0.60	1.16
10>30								DI-8 PIPE FLOW				3.14	171	0.0020	0.015	2	0.52	17.13				
		100	5.33	2.67	D	0.12	0.21											17.13	1.490	2.722	7.39	13.95
																	TOTAL FLOW				**7.39**	**13.95**
1>6	**DI-6 (PT. A)**	100	9.92	4.96	D	0.12	0.21	DI-5 PIPE FLOW				5.33	157	0.0015	0.015	2	0.47	17.03				
								DI-4 PIPE FLOW				4.59	150	0.0049	0.015	2	0.30	17.43	1.460	2.670	13.45	25.45
																	DI-6 (PT. A) TOTAL FLOW				**13.45**	**25.45**

[1] SWMM Equation 5-5, Infiltration Factor
[2] SWMM Equation 5-3, Overland Flow Response Time
[3] SWMM Equation 5-4, Collector Flow Response Time
[4] SWMM Equation 5-6, Adjustment for Infiltration Peak Flow
[5] SWMM Table 5-5, Roughness Parameters for Overland Flow

Table 3

Bypass Flow Table

GUTTER AND BYPASS FLOW DATA																		
				GUTTER FLOW										ON GRADE INLETS				
SHEDS	GUTTER	TO DRAINAGE INLET	INLET CONDITION	GUTTER SLOPE ft/ft	Q_{10} cfs	ADD Q_{10} UPSTREAM BYPASS cfs	Q_{10} TOTAL cfs	Q_{100} cfs	ADD Q_{100} UPSTREAM BYPASS cfs	Q_{100} TOTAL cfs	Q_{10} GUTTER SPREAD ft	Q_{100} GUTTER SPREAD ft	Q_{100} GUTTER DEPTH ft	Q_{10} INLET CAP cfs	Q_{10} BYPASS cfs	Q_{100} INLET CAP cfs	Q_{100} BYPASS cfs	BYPASS TARGET
(MAP 2)											(REF 10)							
VALLEY GUTTER																		
1	g1	DI-1	GRADE	0.0040	0.45	0.00	0.45	0.85	0.00	0.85	8.20	9.40	0.11	0.23	0.22	0.37	0.48	DI-3
2	g2	DI-1	GRADE	0.0040	0.76	0.00	0.76	1.43	0.00	1.43	9.00	10.60	0.14	0.34	0.42	0.55	0.88	#REF!
7	g7	DI-4	SAG	0.0040	0.78	0.49	1.27	1.47	1.06	2.53	11.98	16.12	0.28	OK	-	OK	-	-
8	g8	DI-4	SAG	0.0040	0.58	0.38	0.96	1.08	0.85	1.94	12.45	17.07	0.30	OK	-	OK	-	-
9	g9	DI-4	SAG	0.0040	0.85	0.00	0.85	1.59	0.00	1.59	9.31	11.54	0.16	OK	-	OK	-	-
5	g5	DI-3	GRADE	0.0043	1.08	0.00	1.08	2.02	0.00	2.02	11.00	13.40	0.21	0.59	0.49	0.96	1.06	DI-4
6	g6	DI-3	GRADE	0.0043	1.10	0.00	1.10	2.04	0.00	2.04	11.80	14.60	0.24	0.72	0.38	1.19	0.85	DI-4
23	g20	DI-14	GRADE	0.0040	0.85	0.00	0.85	1.59	0.00	1.59	9.40	11.00	0.15	0.37	0.48	0.59	1.00	DI-8
22	g22	DI-12	SAG	0.0050	0.79	0.00	0.79	1.49	0.00	1.49	9.10	11.27	0.16	OK	-	OK	-	-
20	g20	DI-13	SAG	0.0040	0.75	0.76	1.51	1.40	1.64	3.04	11.32	15.08	0.25	OK	-	OK	-	-
21	g21	DI-13	SAG	0.0040	0.89	1.18	2.06	1.66	2.35	4.01	12.78	17.11	0.30	OK	-	OK	-	-
18	g18	DI-11	GRADE	0.0040	0.69	0.56	1.25	1.29	1.17	2.47	10.20	12.60	0.19	0.49	0.76	0.83	1.64	DI-13
19	g19	DI-11	GRADE	0.0040	0.92	0.91	1.84	1.73	1.67	3.39	11.40	13.80	0.22	0.66	1.18	1.04	2.35	DI-13
16	g16	DI-10	GRADE	0.0040	0.98	0.00	0.98	1.83	0.00	1.83	9.80	11.40	0.16	0.42	0.56	0.66	1.17	DI-11
17	g17	DI-10	GRADE	0.0040	1.33	0.00	1.33	2.50	0.00	2.50	9.80	12.60	0.19	0.42	0.91	0.83	1.67	DI-11
14	g14	DI-9	GRADE	0.0147	1.03	0.00	1.03	1.93	0.00	1.93	8.60	9.80	0.12	0.39	0.64	0.63	1.30	DI-15
15	g15	DI-9	GRADE	0.0147	1.37	0.00	1.37	2.56	0.00	2.56	10.60	12.60	0.19	0.53	0.84	0.84	1.72	DI-15
31	g31	DI-15	GRADE	0.0040	1.01	0.64	1.65	1.87	1.30	3.17	11.00	13.40	0.21	0.61	1.04	0.98	2.19	DI-16
32	g32	DI-15	GRADE	0.0040	1.40	0.84	2.24	2.59	1.72	4.31	12.20	14.60	0.24	0.77	1.47	1.22	3.09	DI-17
33	g33	DI-16	SAG	0.0140	0.82	0.00	0.82	1.52	0.00	1.52	9.21	11.35	0.16	OK	-	OK	-	-
34	g34	DI-16	SAG	0.0140	0.82	1.47	2.28	1.51	3.09	4.60	13.32	18.29	0.33	OK	-	OK	-	-
35	g35	DI-17	SAG	0.0040	0.83	0.00	0.83	1.54	0.00	1.54	9.21	11.35	0.16	OK	-	OK	-	-
36	g36	DI-17	SAG	0.0040	0.87	1.47	2.34	1.61	3.09	4.70	13.47	18.48	0.34	OK	-	OK	-	-
REF 1:		Hydraflow Express program																
NOTES:		1. Design flow floods up to the but not including travel lanes - on site streets																
		2. Design Capacity is based on Reference 4, Table 6-1 "Allowable Street Encroachments" & LDM Section 5-13																
		3. Gutter spread is measured from face of curb.																

Table 3

Bypass Flow Table

GUTTER AND BYPASS FLOW DATA																			
				GUTTER FLOW										ON GRADE INLETS					
SHEDS	GUTTER	TO DRAINAGE INLET	INLET CONDITION	GUTTER SLOPE ft/ft	Q_{10} cfs	ADD Q_{10} UPSTREAM BYPASS cfs	Q_{10} TOTAL cfs	Q_{100} cfs	ADD Q_{100} UPSTREAM BYPASS cfs	Q_{100} TOTAL cfs	Q_{10} GUTTER SPREAD ft	Q_{100} GUTTER SPREAD ft	Q_{100} GUTTER DEPTH ft	Q_{10} INLET CAP cfs	Q_{10} BYPASS cfs	Q_{100} INLET CAP cfs	Q_{100} BYPASS cfs	BYPASS TARGET
(MAP 2)											(REF 10)							
VALLEY GUTTER																		
24+26	g24	DI-7	GRADE	0.0050	0.90	0.00	0.90	1.69	0.00	1.69	9.40	11.00	0.15	0.36	0.54	0.61	1.08	DI-8
25+27	g25	DI-7	GRADE	0.0050	1.47	0.00	1.47	2.76	0.00	2.76	10.60	12.60	0.19	0.55	0.92	0.88	1.88	DI-8
28	g28	DI-8	GRADE	0.0050	0.62	0.00	0.62	1.16	0.00	1.16	8.60	9.80	0.12	0.29	0.33	0.46	0.70	DI-8
29	g29	DI-8	GRADE	0.0060	1.02	0.00	1.02	1.91	0.00	1.91	9.40	11.40	0.16	0.41	0.61	0.67	1.24	DI-5
30	g30	DI-8	GRADE	0.0040	0.72	0.48	1.20	1.35	1.00	2.35	9.80	11.80	0.17	0.46	0.74	0.77	1.58	DI-5
10	g12.1	DI-5	SAG	0.0050	0.94	0.00	0.94	1.76	0.00	1.76	9.61	12.00	0.18	OK	-	OK	-	-
11	g13.1	DI-5	SAG	0.0050	0.36	0.00	0.36	0.74	0.00	0.74	7.43	8.93	0.10	OK	-	OK	-	-
12	g12	DI-5	SAG	0.0050	1.28	0.00	1.28	2.40	0.00	2.40	10.66	13.61	0.21	OK	-	OK	-	-
13	g13	DI-5	SAG	0.0050	0.60	0.00	0.60	1.16	0.00	1.16	8.42	10.30	0.13	OK	-	OK	-	-
REF 1:		Hydraflow Express program																
NOTES:		1. Design flow floods up to the but not including travel lanes - on site streets																
		2. Design Capacity is based on Reference 4, Table 6-1 "Allowable Street Encroachments" & LDM Section 5-13																
		3. Gutter spread is measured from face of curb.																

Table 4

Pre-Development to Post-Development Comparison

PRE-DEVELOPMENT					POST-DEVELOPMENT					Comments:
Discharge Location	**Sheds**	**Area - ac.**	**Q10**	**Q100**	**Discharge Location**	**Sheds**	**Area - ac.**	**Q10**	**Q100**	
POINT A	1>4	35.6	18.5	38.0	POINT A	12>13, 24>30	9.9	13.4	25.5	Runoff towards infiltration basin and existing storm drain per Segment 1, Upland Drive
PT. A PRE TOTAL		**35.6**	**18.5**	**38.0**	**PT. A POST TOTAL**		**9.9[1]**	**13.4**	**25.5**	Discharge towards existing storm drain at Baseline; Curry Creek
POINT B	5>7	20.3	22.5	43.3	PHASE 1 DISCHARGE	1>11, 14>23, 31>32	10.0	13.4	25.3	Infiltration Basin B at Phase 1; Runoff towards Point B
					PHASE 2 DISCHARGE	33>63	28.6	36.3	68.4	Phase 2 Runoff
					BACKBONE TO POINT B	105>120	7.3	7.8	15.1	Walerga Runoff
PT. B PRE TOTAL		**20.3**	**22.5**	**43.3**	**PT. B POST TOTAL**		**45.9[1]**	**57.5**	**108.7**	Overall runoff from Phases 1, 2, and Backbone (Walerga)
POINT C	8>14	49.7	39.3	75.8	TO PHASE 3 DISCHARGE 1	PH3-OS1, 64>67	5.4	4.1	7.8	Infiltration Basin D at Phase 3
					TO PHASE 3 DISCHARGE 2	PH3-OS2, 68>81	15.0	13.1	25.5	Infiltration Basin E at Phase 3
					TO PHASE 4 DISCHARGE 1	OS3, 82>88	7.3	5.8	11.0	Infiltration Basin F at Phase 4
					TO PHASE 4 DISCHARGE 2	OS2, 89>96	22.2	22.9	45.1	Infiltration Basin G at Phase 4
PT. C PRE TOTAL		**49.7**	**39.3**	**75.8**	**PT. C POST TOTAL**		**49.8**	**45.9**	**89.4**	Overall runoff from Phases 3 and 4
PT. D PRE TOTAL		**70.0**	**61.8**	**119.2**	**PT. D POST TOTAL**		**95.7**	**103.4**	**198.2**	Point D = Point B + Point C; At Walerga Tributary
PRE OVERALL TOTAL		**105.6**	**80.4**	**157.2**	**POST OVERALL TOTAL**		**105.6**	**116.8**	**223.6**	Total Overal Project

[1]25.7 acres are proposed to be shifted from the Curry Creek watershed to the Dry Creek watershed from Point A to Point B. The associated 100-year flows from this shed shift are 25.3 cfs from Phase 1 and 39.2 cfs from Phase 2. The associated 10-year flows from this shed shift are 13.4 cfs from Phase 1 and 17.3 cfs from Phase 2.

Table 5

8-day, 100-year Retention Volume Calculations														
Existing Conditions														
Lot	**Land Use**	**Area (ac) [1]**	**Type D Area (ac) [1]**	**I_a (inch) [3]**	**S (inch) [4]**	**Roseville Impervious Area (%)**	**King Impervious Area (%)**	**CN[7]**	**P (inch) [5]**	**Q (inch) [2]**	**Type D Volume (ac-ft)**	**Roseville Type D Retention (ac-ft)[8]**	**Roseville Impact Rate, Type D (ac-ft/ac)[7]**	**King Type D Retention (ac-ft)**
Estia	**VACANT**	9.90	9.90	0.3	1.5	0%	0%	87	10.75	9.14	7.5	-	0.171	-
Total											**7.5**	-	-	-
Proposed Conditions														
Lot	**Land Use**	**Area (ac) [1]**	**Type D Area (ac) [1]**	**I_a (inch) [3]**	**S (inch) [4]**	**Roseville Impervious Area (%)**	**King Impervious Area (%)**	**CN [6]**	**P (inch) [5]**	**Q (inch) [2]**	**Type D Volume (ac-ft)**	**Roseville Type D Retention (ac-ft)[8]**	**Roseville Impact Rate, Type D (ac-ft/ac)[7]**	**King Type D Retention (ac-ft)**
Estia	**HDR**	9.90	9.90	0.1	0.4	50%	75%	96	10.75	10.27	8.5	1.7	0.171	0.9
Total											**8.5**	1.7	-	**0.9**

Notes

(1) Area is based on the difference between Pre-Development and Post-Development from the Pre-Development to Post-Development Table, Curry Creek watershed

(2) Equation 2-1, SCS Curve Number Method, TR-55

(3) Equation 2-2, SCS Curve Number Method, TR-55

(4) Equation 2-4, SCS Curve Number Method, TR-55

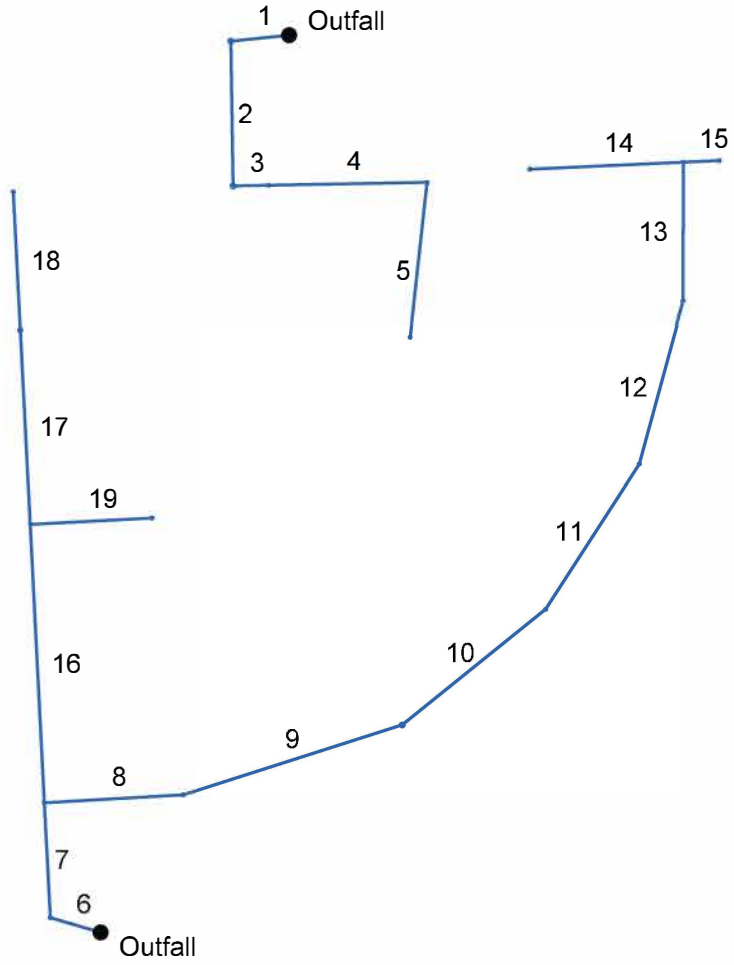
(5) Rainfall depth assumed to be 10.75-inches during the 100-year, 8-day design storm at elevation of 200-feet

(6) Assume pervious Type D Curve Number as 89 for urban landscaping

EXHIBIT D

Hydraulic Data and Profiles – 10-Year and 100-Year

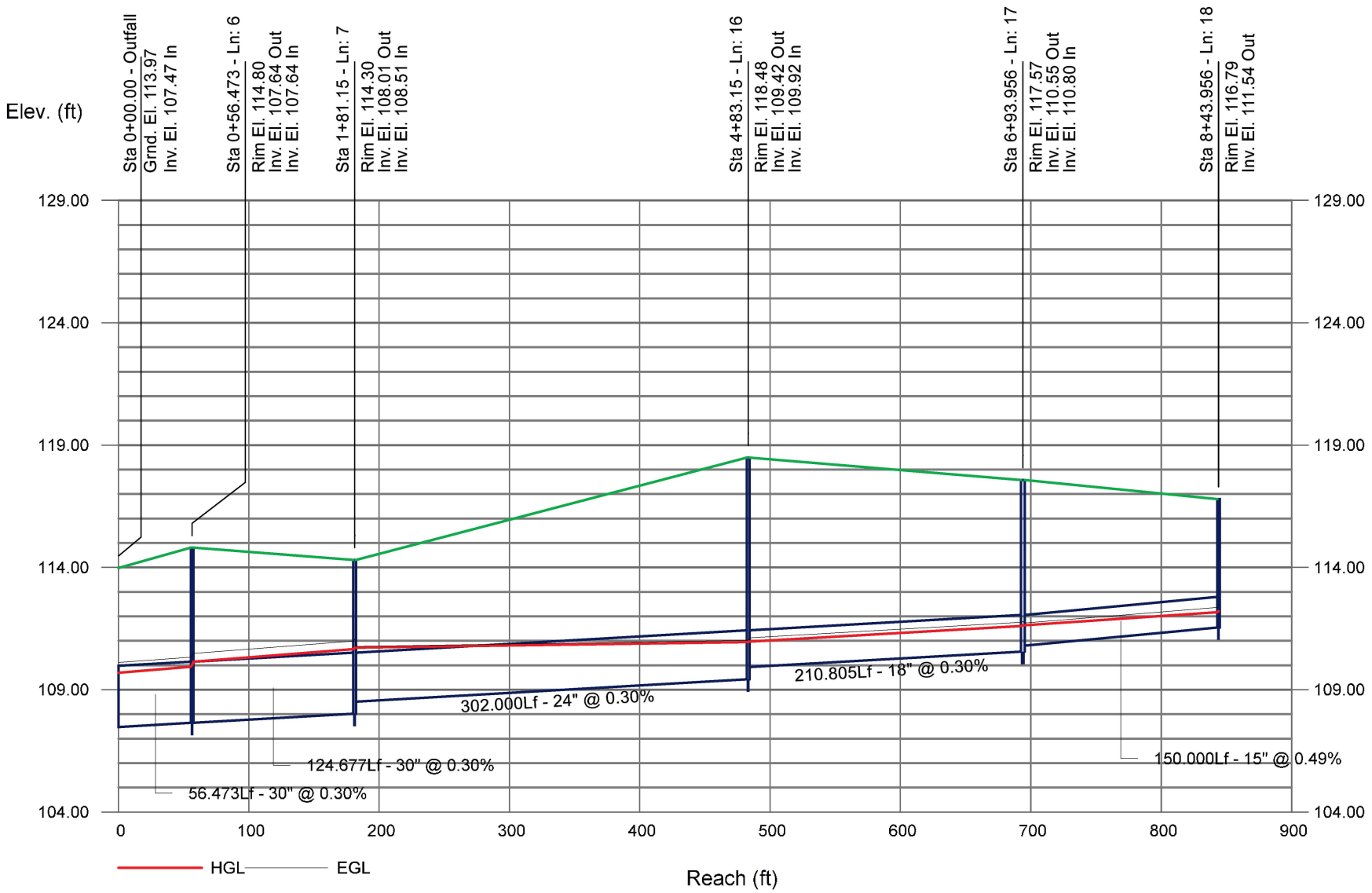
Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Phase 1 10-Year.stm	* Figure not OCR Compatible	Number of lines: 19	Date: 11/25/2025

Storm Sewer Profile

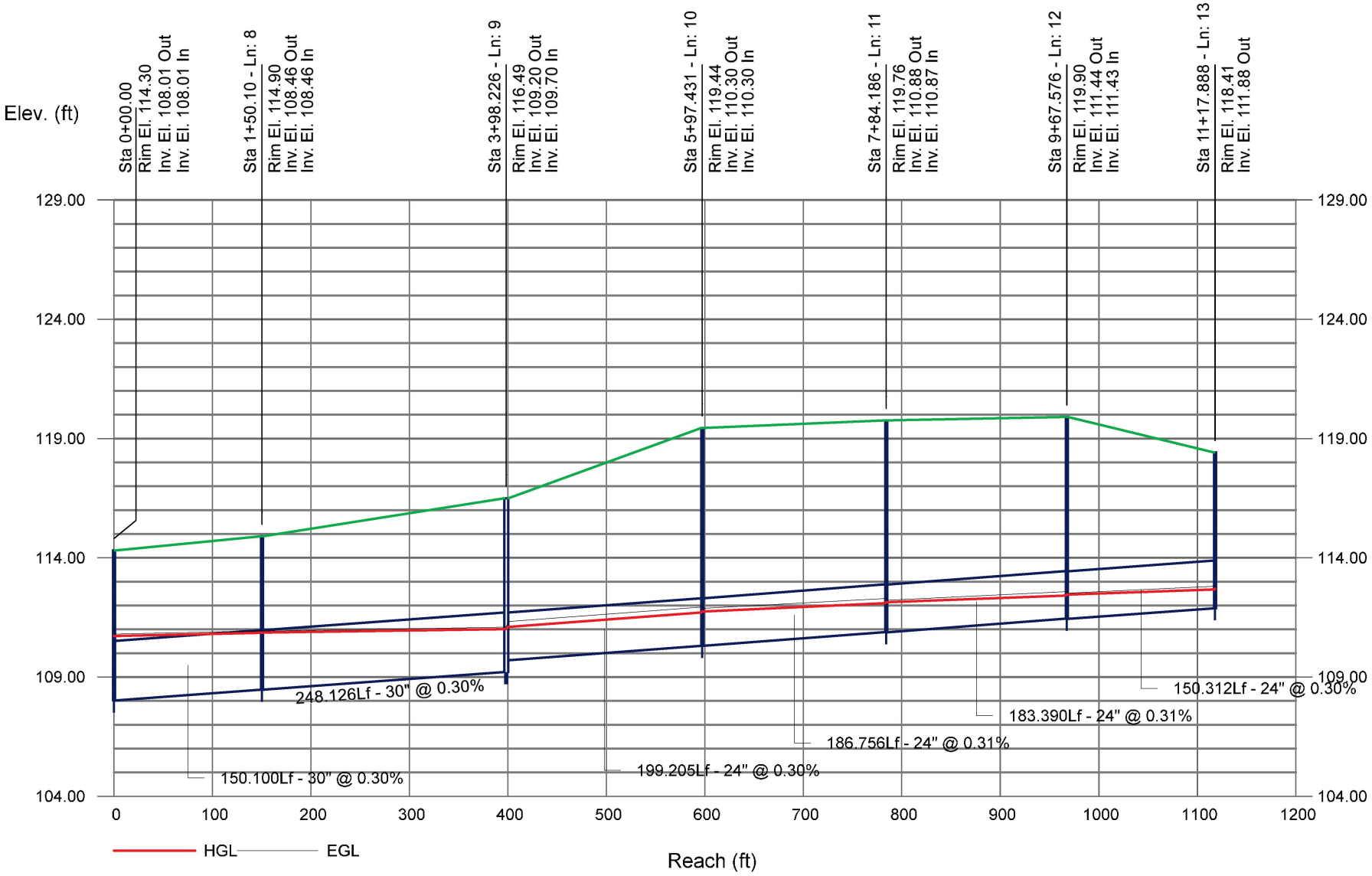
Proj. file: Phase 1 10-Year.stm



* Figure not OCR Compatible

Storm Sewer Profile

Proj. file: Phase 1 10-Year.stm



* Figure not OCR Compatible

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	P-16	7.56	24	Cir	63.397	112.00	112.10	0.152	113.07	113.42	0.04	113.46	End	Manhole
2	P-15	7.56	24	Cir	156.600	112.10	112.33	0.147	113.75	113.98	0.02	114.00	1	Manhole
3	P-14	4.77	18	Cir	38.445	112.83	112.91	0.208	114.33	114.41	0.02	114.43	2	Manhole
4	P-13	3.87	18	Cir	171.271	112.91	113.25	0.199	114.43	114.73	0.02	114.74	3	Manhole
5	P-12	2.39	15	Cir	168.919	113.50	114.35	0.503	114.74	115.12	0.03	115.15	4	Manhole
6	P-20	23.82	30	Cir	56.473	107.47	107.64	0.301	109.69	109.93	0.08	110.01	End	Manhole
7	P-19	22.75	30	Cir	124.677	107.64	108.01	0.297	110.14*	110.65*	0.07	110.72	6	Manhole
8	P-18	10.92	30	Cir	150.100	108.01	108.46	0.300	110.72	110.85	0.02	110.86	7	Manhole
9	P-7.1	8.98	30	Cir	248.126	108.46	109.20	0.298	110.86	111.00	0.02	111.02	8	Manhole
10	P-7	8.98	24	Cir	199.205	109.70	110.30	0.301	111.10	111.70	0.05	111.74	9	Manhole
11	P-5	7.01	24	Cir	186.756	110.30	110.88	0.311	111.74	112.09	0.04	112.13	10	Manhole
12	P-6	4.88	24	Cir	183.390	110.87	111.44	0.311	112.13	112.42	0.03	112.45	11	Manhole
13	P-8	3.36	24	Cir	150.312	111.43	111.88	0.299	112.45	112.67	0.03	112.70	12	Manhole
14	P-10	0.88	18	Cir	166.271	112.38	112.88	0.301	112.81	113.30	0.01	113.32	13	Manhole
15	P-9	0.80	18	Cir	38.729	112.38	112.50	0.310	112.78	112.90	0.01	112.92	13	Manhole
16	P-4	5.40	24	Cir	302.000	108.51	109.42	0.301	110.72	110.94	0.01	110.95	7	Manhole
17	P-2	4.13	18	Cir	210.805	109.92	110.55	0.299	110.96	111.59	0.03	111.62	16	Manhole
18	P-3	2.15	15	Cir	150.000	110.80	111.54	0.493	111.62	112.16	0.04	112.20	17	Manhole
19	P-1	1.22	15	Cir	131.901	110.17	110.70	0.402	110.95	111.21	0.02	111.23	16	Manhole

Project File: Phase 1 10-Year.stm | Number of lines: 19 | Run Date: 11/25/2025

NOTES: Known Qs only ; *Surcharged (HGL above crown).

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	63.397	1.00	5.00	0.40	0.40	2.00	10.0	14.1	0.0	7.56	7.65	3.92	24	0.15	112.00	112.10	113.07	113.42	114.30	114.81	P-16
2	1	156.600	1.00	4.00	0.40	0.40	1.60	10.0	13.0	0.0	7.56	7.51	2.73	24	0.15	112.10	112.33	113.75	113.98	114.81	233.53	P-15
3	2	38.445	1.00	3.00	0.40	0.40	1.20	10.0	12.7	0.0	4.77	4.15	2.70	18	0.21	112.83	112.91	114.33	114.41	233.53	232.16	P-14
4	3	171.271	1.00	2.00	0.40	0.40	0.80	10.0	11.4	0.0	3.87	4.05	2.19	18	0.20	112.91	113.25	114.43	114.73	232.16	231.26	P-13
5	4	168.919	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	2.39	3.97	2.48	15	0.50	113.50	114.35	114.74	115.12	231.26	235.80	P-12
6	End	56.473	1.00	14.00	0.40	0.40	5.60	10.0	26.3	0.0	23.82	19.50	5.11	30	0.30	107.47	107.64	109.69	109.93	0.00	114.80	P-20
7	6	124.677	1.00	13.00	0.40	0.40	5.20	10.0	25.8	0.0	22.75	19.36	4.64	30	0.30	107.64	108.01	110.14	110.65	114.80	114.30	P-19
8	7	150.100	1.00	8.00	0.40	0.40	3.20	10.0	24.7	0.0	10.92	19.46	2.24	30	0.30	108.01	108.46	110.72	110.85	114.30	114.90	P-18
9	8	248.126	1.00	7.00	0.40	0.40	2.80	10.0	22.4	0.0	8.98	19.41	2.11	30	0.30	108.46	109.20	110.86	111.00	114.90	116.49	P-7.1
10	9	199.205	1.00	6.00	0.40	0.40	2.40	10.0	21.3	0.0	8.98	10.76	3.83	24	0.30	109.70	110.30	111.10	111.70	116.49	119.44	P-7
11	10	186.756	1.00	5.00	0.40	0.40	2.00	10.0	19.9	0.0	7.01	10.92	3.20	24	0.31	110.30	110.88	111.74	112.09	119.44	119.76	P-5
12	11	183.390	1.00	4.00	0.40	0.40	1.60	10.0	17.9	0.0	4.88	10.93	2.77	24	0.31	110.87	111.44	112.13	112.42	119.76	119.90	P-6
13	12	150.312	1.00	3.00	0.40	0.40	1.20	10.0	15.6	0.0	3.36	10.73	2.51	24	0.30	111.43	111.88	112.45	112.67	119.90	118.41	P-8
14	13	166.271	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	0.88	4.99	2.13	18	0.30	112.38	112.88	112.81	113.30	118.41	117.74	P-10
15	13	38.729	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	0.80	5.07	2.09	18	0.31	112.38	112.50	112.78	112.90	118.41	118.61	P-9
16	7	302.000	1.00	4.00	0.40	0.40	1.60	10.0	12.9	0.0	5.40	10.76	1.91	24	0.30	108.51	109.42	110.72	110.94	114.30	118.48	P-4
17	16	210.805	1.00	2.00	0.40	0.40	0.80	10.0	11.4	0.0	4.13	4.98	3.15	18	0.30	109.92	110.55	110.96	111.59	118.48	117.57	P-2
18	17	150.000	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	2.15	3.93	3.01	15	0.49	110.80	111.54	111.62	112.16	117.57	116.79	P-3
19	16	131.901	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.22	3.55	2.05	15	0.40	110.17	110.70	110.95	111.21	118.48	119.01	P-1

Project File: Phase 1 10-Year.stm | Number of lines: 19 | Run Date: 11/25/2025

NOTES:Known Qs only ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
(1)	(in) (2)	(cfs) (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(ft) (12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(K) (23)	(ft) (24)
1	24	7.56	112.00	113.07	1.07	1.71	4.42	0.30	113.37	0.475	63.397	112.10	113.42	1.33	2.21	3.42	0.18	113.60	0.246	0.360	0.228	0.20	0.04
2	24	7.56	112.10	113.75	1.65*	2.77	2.73	0.12	113.87	0.147	156.600	112.33	113.98	1.65	2.77	2.73	0.12	114.10	0.147	0.147	0.230	0.20	0.02
3	18	4.77	112.83	114.33	1.50*	1.77	2.70	0.11	114.44	0.275	38.445	112.91	114.41	1.50	1.77	2.70	0.11	114.52	0.271	0.273	0.105	0.20	0.02
4	18	3.87	112.91	114.43	1.50	1.77	2.19	0.07	114.51	0.181	171.271	113.25	114.73	1.48	1.76	2.20	0.08	114.80	0.164	0.172	0.295	0.20	0.02
5	15	2.39	113.50	114.74	1.24	1.23	1.95	0.06	114.80	0.171	168.919	114.35	115.12	0.77	0.79	3.01	0.14	115.26	0.373	0.272	0.459	0.20	0.03
6	30	23.82	107.47	109.69	2.22	4.61	5.17	0.42	110.11	0.400	56.473	107.64	109.93	2.29	4.71	5.05	0.40	110.33	0.391	0.395	0.223	0.20	0.08
7	30	22.75	107.64	110.14	2.50*	4.91	4.64	0.33	110.47	0.410	124.677	108.01	110.65	2.50	4.91	4.63	0.33	110.99	0.410	0.410	0.511	0.20	0.07
8	30	10.92	108.01	110.72	2.50	4.91	2.23	0.08	110.79	0.094	150.100	108.46	110.85	2.39	4.83	2.26	0.08	110.93	0.082	0.088	0.132	0.20	0.02
9	30	8.98	108.46	110.86	2.40	4.85	1.85	0.05	110.92	0.056	248.126	109.20	111.00	1.80	3.79	2.37	0.09	111.09	0.085	0.070	0.174	0.20	0.02
10	24	8.98	109.70	111.10	1.40*	2.34	3.83	0.23	111.33	0.301	199.205	110.30	111.70	1.40	2.34	3.83	0.23	111.93	0.301	0.301	0.600	0.20	0.05
11	24	7.01	110.30	111.74	1.44	2.43	2.89	0.13	111.87	0.169	186.756	110.88	112.09	1.21	1.99	3.52	0.19	112.28	0.275	0.222	0.414	0.20	0.04
12	24	4.88	110.87	112.13	1.26	2.09	2.34	0.09	112.22	0.118	183.390	111.44	112.42	0.98	1.52	3.21	0.16	112.58	0.270	0.194	0.356	0.20	0.03
13	24	3.36	111.43	112.45	1.02	1.61	2.09	0.07	112.52	0.111	150.312	111.88	112.67	0.79	1.15	2.92	0.13	112.80	0.272	0.192	0.288	0.20	0.03
14	18	0.88	112.38	112.81	0.43*	0.41	2.13	0.07	112.88	0.300	166.271	112.88	113.30	0.42	0.41	2.14	0.07	113.38	0.306	0.303	0.504	0.20	0.01
15	18	0.80	112.38	112.78	0.40*	0.38	2.09	0.07	112.85	0.310	38.729	112.50	112.90	0.40	0.38	2.09	0.07	112.97	0.309	0.309	0.120	0.20	0.01
16	24	5.40	108.51	110.72	2.00	3.14	1.72	0.05	110.76	0.076	302.000	109.42	110.94	1.52	2.56	2.11	0.07	111.01	0.088	0.082	0.248	0.20	0.01
17	18	4.13	109.92	110.96	1.04*	1.31	3.15	0.15	111.12	0.299	210.805	110.55	111.59	1.04	1.31	3.15	0.15	111.75	0.299	0.299	0.630	0.20	0.03
18	15	2.15	110.80	111.62	0.82	0.86	2.50	0.10	111.72	0.248	150.000	111.54	112.16	0.62	0.61	3.53	0.19	112.36	0.600	0.424	0.636	0.20	0.04
19	15	1.22	110.17	110.95	0.78	0.81	1.50	0.04	110.99	0.092	131.901	110.70	111.21	0.51	0.47	2.61	0.11	111.31	0.395	0.243	0.321	0.20	0.02

Project File: Phase 1 10-Year.stm | Number of lines: 19 | Run Date: 11/25/2025

Notes: * Normal depth assumed ; c = cir e = ellip b = box

Hydraflow HGL Computation Procedure

General Procedure:

Hydraflow computes the HGL using the Bernoulli energy equation. Manning's equation is used to determine energy losses due to pipe friction. In a standard step, iterative procedure, Hydraflow assumes upstream HGLs until the energy equation balances. If the energy equation cannot balance, supercritical flow exists and critical depth is temporarily assumed at the upstream end. A supercritical flow Profile is then computed using the same procedure in a downstream direction using momentum principles.

Col. 1 The line number being computed. Calculations begin at Line 1 and proceed upstream.

Col. 2 The line size. In the case of non-circular pipes, the line rise is printed above the span.

Col. 3 Total flow rate in the line.

Col. 4 The elevation of the downstream invert.

Col. 5 Elevation of the hydraulic grade line at the downstream end. This is computed as the upstream HGL + Minor loss of this line's downstream line.

Col. 6 The downstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 7 Cross-sectional area of the flow at the downstream end.

Col. 8 The velocity of the flow at the downstream end, (Col. 3 / Col. 7).

Col. 9 Velocity head (Velocity squared / 2g).

Col. 10 The elevation of the energy grade line at the downstream end, HGL + Velocity head, (Col. 5 + Col. 9).

Col. 11 The friction slope at the downstream end (the S or Slope term in Manning's equation).

Col. 12 The line length.

Col. 13 The elevation of the upstream invert.

Col. 14 Elevation of the hydraulic grade line at the upstream end.

Col. 15 The upstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 16 Cross-sectional area of the flow at the upstream end.

Col. 17 The velocity of the flow at the upstream end, (Col. 3 / Col. 16).

Col. 18 Velocity head (Velocity squared / 2g).

Col. 19 The elevation of the energy grade line at the upstream end, HGL + Velocity head, (Col. 14 + Col. 18) .

Col. 20 The friction slope at the upstream end (the S or Slope term in Manning's equation).

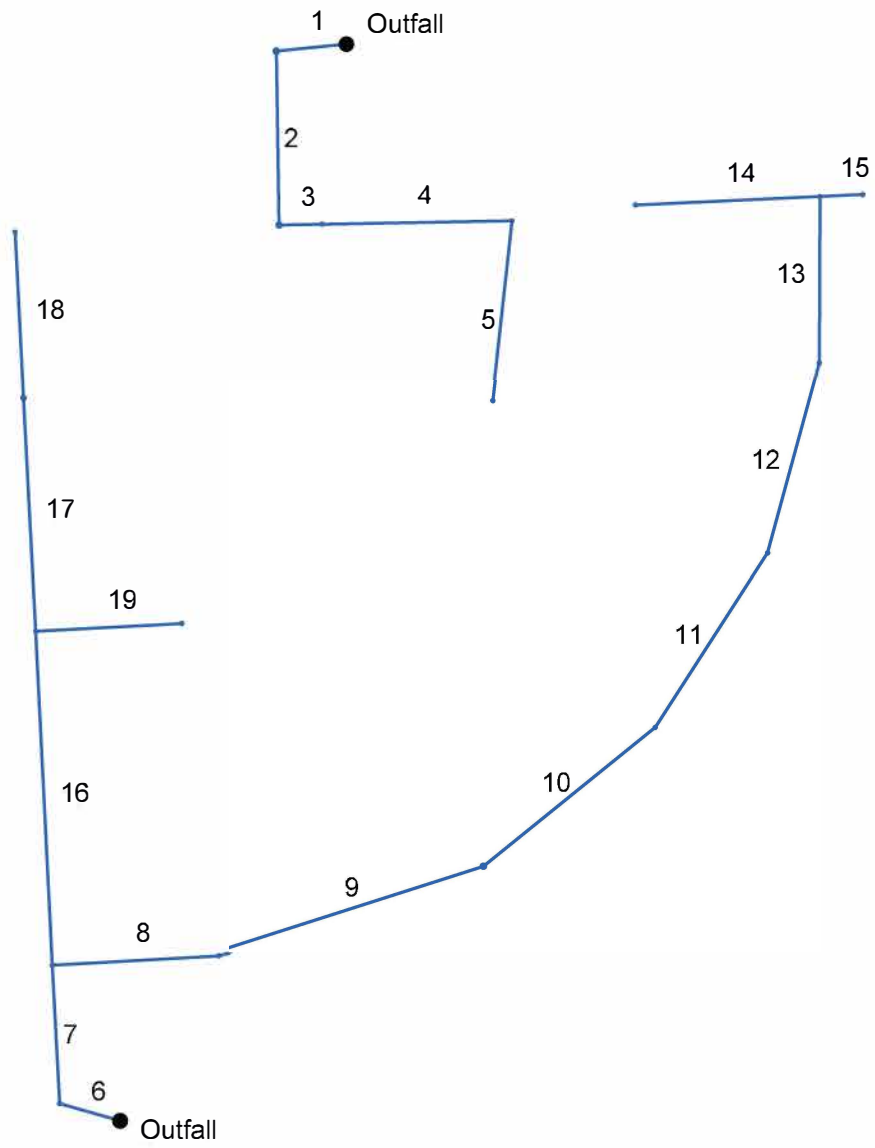
Col. 21 The average of the downstream and upstream friction slopes.

Col. 22 Energy loss. Average Sf/100 x Line Length (Col. 21/100 x Col. 12). Equals (EGL upstream - EGL downstream) +/- tolerance.

Col. 23 The junction loss coefficient (K).

Col. 24 Minor loss. (Col. 23 x Col. 18). Is added to upstream HGL and used as the starting HGL for the next upstream line(s).

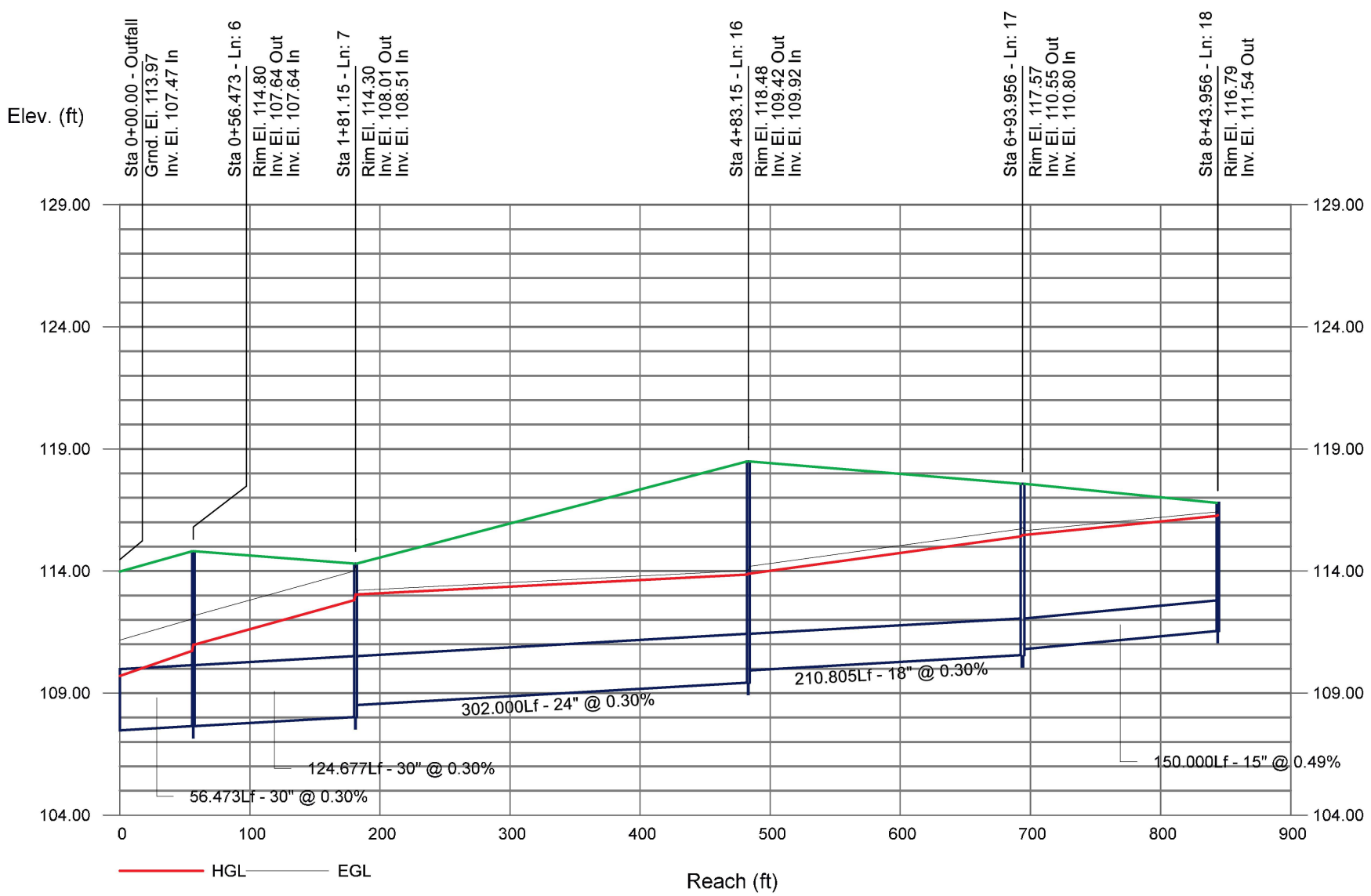
Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Phase 1 100-Year.stm	* Figure not OCR Compatible	Number of lines: 19	Date: 11/25/2025

Storm Sewer Profile

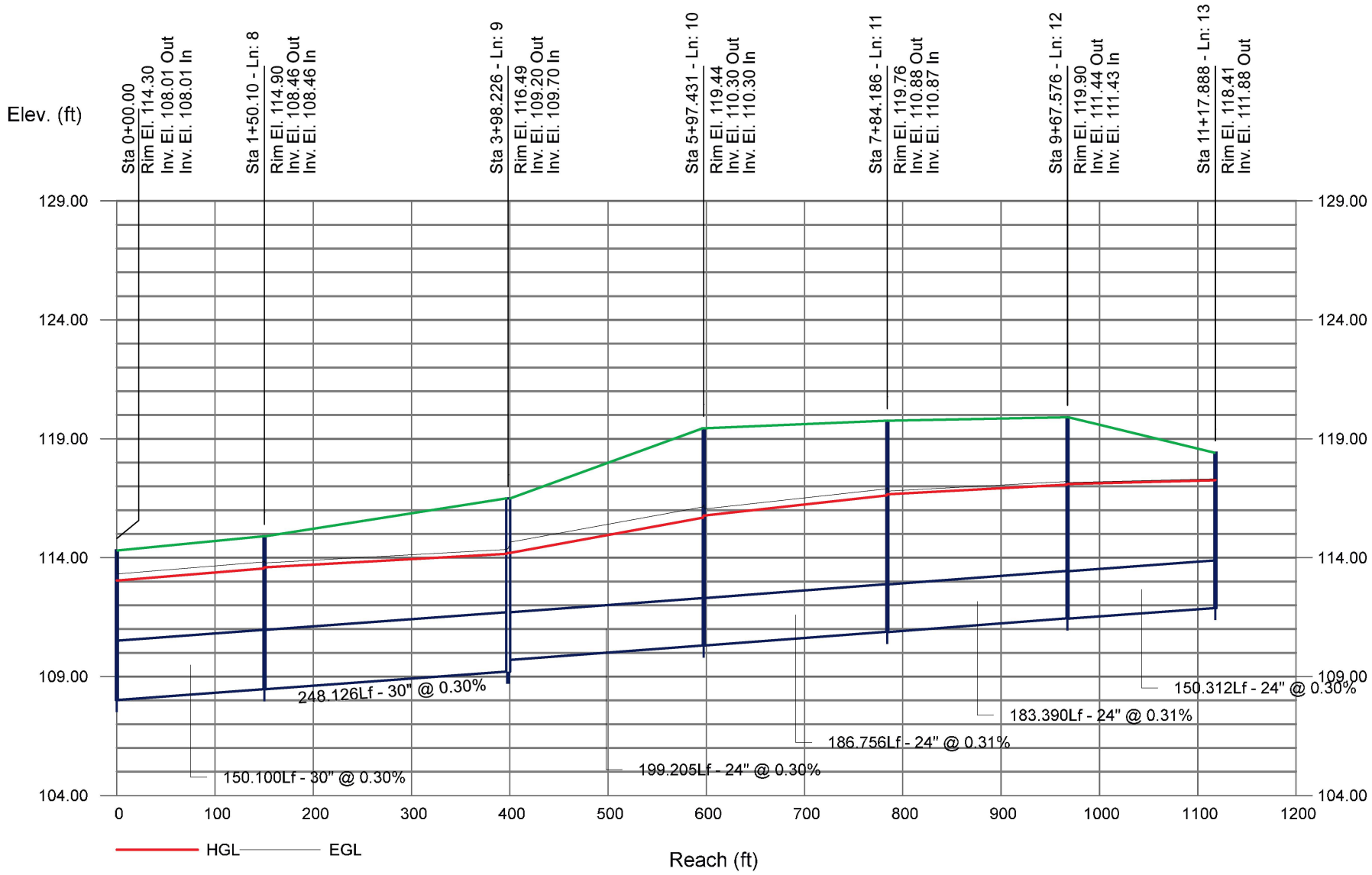
Proj. file: Phase 1 100-Year.stm



* Figure not OCR Compatible

Storm Sewer Profile

Proj. file: Phase 1 100-Year.stm



* Figure not OCR Compatible

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	P-16	9.01	24	Cir	63.397	112.00	112.10	0.152	113.07	113.60	0.04	113.64	End	Manhole
2	P-15	9.01	24	Cir	156.600	112.10	112.33	0.147	114.10*	114.43*	0.03	114.46	1	Manhole
3	P-14	9.01	18	Cir	38.445	112.83	112.91	0.208	114.46*	114.83*	0.08	114.91	2	Manhole
4	P-13	7.28	18	Cir	171.271	112.91	113.25	0.199	114.91*	116.01*	0.05	116.06	3	Manhole
5	P-12	4.49	15	Cir	168.919	113.50	114.35	0.503	116.06*	117.15*	0.04	117.19	4	Manhole
6	P-20	44.97	30	Cir	56.473	107.47	107.64	0.301	109.69*	110.72*	0.26	110.98	End	Manhole
7	P-19	42.92	30	Cir	124.677	107.64	108.01	0.297	110.98*	112.80*	0.24	113.04	6	Manhole
8	P-18	20.58	30	Cir	150.100	108.01	108.46	0.300	113.04*	113.54*	0.05	113.60	7	Manhole
9	P-7.1	16.92	30	Cir	248.126	108.46	109.20	0.298	113.60*	114.16*	0.04	114.20	8	Manhole
10	P-7	16.92	24	Cir	199.205	109.70	110.30	0.301	114.20*	115.68*	0.09	115.77	9	Manhole
11	P-5	13.17	24	Cir	186.756	110.30	110.88	0.311	115.77*	116.61*	0.05	116.67	10	Manhole
12	P-6	9.15	24	Cir	183.390	110.87	111.44	0.311	116.67*	117.07*	0.03	117.09	11	Manhole
13	P-8	6.30	24	Cir	150.312	111.43	111.88	0.299	117.09*	117.25*	0.01	117.26	12	Manhole
14	P-10	1.65	18	Cir	166.271	112.38	112.88	0.301	117.26*	117.32*	0.00	117.32	13	Manhole
15	P-9	1.51	18	Cir	38.729	112.38	112.50	0.310	117.26*	117.27*	0.00	117.28	13	Manhole
16	P-4	10.18	24	Cir	302.000	108.51	109.42	0.301	113.04*	113.85*	0.03	113.89	7	Manhole
17	P-2	7.75	18	Cir	210.805	109.92	110.55	0.299	113.89*	115.41*	0.06	115.47	16	Manhole
18	P-3	4.03	15	Cir	150.000	110.80	111.54	0.493	115.47*	116.25*	0.03	116.29	17	Manhole
19	P-1	2.29	15	Cir	131.901	110.17	110.70	0.402	113.89*	114.11*	0.01	114.12	16	Manhole

Project File: Phase 1 100-Year.stm | Number of lines: 19 | Run Date: 11/25/2025

NOTES: Known Qs only ; *Surcharged (HGL above crown).

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	63.397	1.00	5.00	0.40	0.40	2.00	10.0	12.5	0.0	9.01	7.65	4.41	24	0.15	112.00	112.10	113.07	113.60	114.30	114.81	P-16
2	1	156.600	1.00	4.00	0.40	0.40	1.60	10.0	11.6	0.0	9.01	7.51	2.87	24	0.15	112.10	112.33	114.10	114.43	114.81	233.53	P-15
3	2	38.445	1.00	3.00	0.40	0.40	1.20	10.0	11.5	0.0	9.01	4.15	5.10	18	0.21	112.83	112.91	114.46	114.83	233.53	232.16	P-14
4	3	171.271	1.00	2.00	0.40	0.40	0.80	10.0	10.8	0.0	7.28	4.05	4.12	18	0.20	112.91	113.25	114.91	116.01	232.16	231.26	P-13
5	4	168.919	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	4.49	3.97	3.66	15	0.50	113.50	114.35	116.06	117.15	231.26	235.80	P-12
6	End	56.473	1.00	14.00	0.40	0.40	5.60	10.0	18.7	0.0	44.97	19.50	9.45	30	0.30	107.47	107.64	109.69	110.72	0.00	114.80	P-20
7	6	124.677	1.00	13.00	0.40	0.40	5.20	10.0	18.4	0.0	42.92	19.36	8.74	30	0.30	107.64	108.01	110.98	112.80	114.80	114.30	P-19
8	7	150.100	1.00	8.00	0.40	0.40	3.20	10.0	17.8	0.0	20.58	19.46	4.19	30	0.30	108.01	108.46	113.04	113.54	114.30	114.90	P-18
9	8	248.126	1.00	7.00	0.40	0.40	2.80	10.0	16.6	0.0	16.92	19.41	3.45	30	0.30	108.46	109.20	113.60	114.16	114.90	116.49	P-7.1
10	9	199.205	1.00	6.00	0.40	0.40	2.40	10.0	16.0	0.0	16.92	10.76	5.39	24	0.30	109.70	110.30	114.20	115.68	116.49	119.44	P-7
11	10	186.756	1.00	5.00	0.40	0.40	2.00	10.0	15.3	0.0	13.17	10.92	4.19	24	0.31	110.30	110.88	115.77	116.61	119.44	119.76	P-5
12	11	183.390	1.00	4.00	0.40	0.40	1.60	10.0	14.2	0.0	9.15	10.93	2.91	24	0.31	110.87	111.44	116.67	117.07	119.76	119.90	P-6
13	12	150.312	1.00	3.00	0.40	0.40	1.20	10.0	13.0	0.0	6.30	10.73	2.01	24	0.30	111.43	111.88	117.09	117.25	119.90	118.41	P-8
14	13	166.271	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.65	4.99	0.93	18	0.30	112.38	112.88	117.26	117.32	118.41	117.74	P-10
15	13	38.729	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.51	5.07	0.85	18	0.31	112.38	112.50	117.26	117.27	118.41	118.61	P-9
16	7	302.000	1.00	4.00	0.40	0.40	1.60	10.0	11.6	0.0	10.18	10.76	3.24	24	0.30	108.51	109.42	113.04	113.85	114.30	118.48	P-4
17	16	210.805	1.00	2.00	0.40	0.40	0.80	10.0	10.8	0.0	7.75	4.98	4.39	18	0.30	109.92	110.55	113.89	115.41	118.48	117.57	P-2
18	17	150.000	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	4.03	3.93	3.28	15	0.49	110.80	111.54	115.47	116.25	117.57	116.79	P-3
19	16	131.901	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	2.29	3.55	1.87	15	0.40	110.17	110.70	113.89	114.11	118.48	119.01	P-1

Project File: Phase 1 100-Year.stm | Number of lines: 19 | Run Date: 11/25/2025

NOTES:Known Qs only ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
(1)	(in) (2)	(cfs) (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(ft) (12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(K) (23)	(ft) (24)
1	24	9.01	112.00	113.07	1.07	1.71	5.26	0.43	113.50	0.673	63.397	112.10	113.60	1.50	2.53	3.56	0.20	113.80	0.253	0.463	0.294	0.20	0.04
2	24	9.01	112.10	114.10	2.00*	3.14	2.87	0.13	114.23	0.211	156.600	112.33	114.43	2.00	3.14	2.87	0.13	114.56	0.211	0.211	0.331	0.20	0.03
3	18	9.01	112.83	114.46	1.50	1.77	5.10	0.40	114.86	0.981	38.445	112.91	114.83	1.50	1.77	5.10	0.40	115.24	0.980	0.980	0.377	0.20	0.08
4	18	7.28	112.91	114.91	1.50	1.77	4.12	0.26	115.18	0.640	171.271	113.25	116.01	1.50	1.77	4.12	0.26	116.27	0.640	0.640	1.096	0.20	0.05
5	15	4.49	113.50	116.06	1.25	1.23	3.66	0.21	116.27	0.644	168.919	114.35	117.15	1.25	1.23	3.66	0.21	117.36	0.644	0.644	1.088	0.20	0.04
6	30	44.97	107.47	109.69	2.22*	4.61	9.75	1.48	111.17	1.424	56.473	107.64	110.72	2.50	4.91	9.16	1.30	112.03	1.601	1.512	0.854	0.20	0.26
7	30	42.92	107.64	110.98	2.50	4.91	8.75	1.19	112.17	1.459	124.677	108.01	112.80	2.50	4.91	8.74	1.19	113.99	1.458	1.458	1.818	0.20	0.24
8	30	20.58	108.01	113.04	2.50	4.91	4.19	0.27	113.31	0.335	150.100	108.46	113.54	2.50	4.91	4.19	0.27	113.81	0.335	0.335	0.503	0.20	0.05
9	30	16.92	108.46	113.60	2.50	4.91	3.45	0.18	113.78	0.227	248.126	109.20	114.16	2.50	4.91	3.45	0.18	114.34	0.227	0.227	0.562	0.20	0.04
10	24	16.92	109.70	114.20	2.00	3.14	5.39	0.45	114.65	0.745	199.205	110.30	115.68	2.00	3.14	5.39	0.45	116.13	0.745	0.745	1.485	0.20	0.09
11	24	13.17	110.30	115.77	2.00	3.14	4.19	0.27	116.04	0.452	186.756	110.88	116.61	2.00	3.14	4.19	0.27	116.89	0.451	0.452	0.843	0.20	0.05
12	24	9.15	110.87	116.67	2.00	3.14	2.91	0.13	116.80	0.218	183.390	111.44	117.07	2.00	3.14	2.91	0.13	117.20	0.218	0.218	0.400	0.20	0.03
13	24	6.30	111.43	117.09	2.00	3.14	2.01	0.06	117.16	0.103	150.312	111.88	117.25	2.00	3.14	2.01	0.06	117.31	0.103	0.103	0.155	0.20	0.01
14	18	1.65	112.38	117.26	1.50	1.77	0.93	0.01	117.28	0.033	166.271	112.88	117.32	1.50	1.77	0.93	0.01	117.33	0.033	0.033	0.055	0.20	0.00
15	18	1.51	112.38	117.26	1.50	1.77	0.85	0.01	117.27	0.028	38.729	112.50	117.27	1.50	1.77	0.85	0.01	117.28	0.028	0.028	0.011	0.20	0.00
16	24	10.18	108.51	113.04	2.00	3.14	3.24	0.16	113.20	0.270	302.000	109.42	113.85	2.00	3.14	3.24	0.16	114.02	0.270	0.270	0.815	0.20	0.03
17	18	7.75	109.92	113.89	1.50	1.77	4.39	0.30	114.18	0.725	210.805	110.55	115.41	1.50	1.77	4.39	0.30	115.71	0.725	0.725	1.529	0.20	0.06
18	15	4.03	110.80	115.47	1.25	1.23	3.28	0.17	115.64	0.519	150.000	111.54	116.25	1.25	1.23	3.28	0.17	116.42	0.519	0.519	0.778	0.20	0.03
19	15	2.29	110.17	113.89	1.25	1.23	1.87	0.05	113.94	0.168	131.901	110.70	114.11	1.25	1.23	1.87	0.05	114.16	0.167	0.167	0.221	0.20	0.01

Project File: Phase 1 100-Year.stm | Number of lines: 19 | Run Date: 11/25/2025

Notes: * Normal depth assumed ; c = cir e = ellip b = box

Hydraflow HGL Computation Procedure

General Procedure:

Hydraflow computes the HGL using the Bernoulli energy equation. Manning's equation is used to determine energy losses due to pipe friction. In a standard step, iterative procedure, Hydraflow assumes upstream HGLs until the energy equation balances. If the energy equation cannot balance, supercritical flow exists and critical depth is temporarily assumed at the upstream end. A supercritical flow Profile is then computed using the same procedure in a downstream direction using momentum principles.

Col. 1 The line number being computed. Calculations begin at Line 1 and proceed upstream.

Col. 2 The line size. In the case of non-circular pipes, the line rise is printed above the span.

Col. 3 Total flow rate in the line.

Col. 4 The elevation of the downstream invert.

Col. 5 Elevation of the hydraulic grade line at the downstream end. This is computed as the upstream HGL + Minor loss of this line's downstream line.

Col. 6 The downstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 7 Cross-sectional area of the flow at the downstream end.

Col. 8 The velocity of the flow at the downstream end, (Col. 3 / Col. 7).

Col. 9 Velocity head (Velocity squared / 2g).

Col. 10 The elevation of the energy grade line at the downstream end, HGL + Velocity head, (Col. 5 + Col. 9).

Col. 11 The friction slope at the downstream end (the S or Slope term in Manning's equation).

Col. 12 The line length.

Col. 13 The elevation of the upstream invert.

Col. 14 Elevation of the hydraulic grade line at the upstream end.

Col. 15 The upstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 16 Cross-sectional area of the flow at the upstream end.

Col. 17 The velocity of the flow at the upstream end, (Col. 3 / Col. 16).

Col. 18 Velocity head (Velocity squared / 2g).

Col. 19 The elevation of the energy grade line at the upstream end, HGL + Velocity head, (Col. 14 + Col. 18) .

Col. 20 The friction slope at the upstream end (the S or Slope term in Manning's equation).

Col. 21 The average of the downstream and upstream friction slopes.

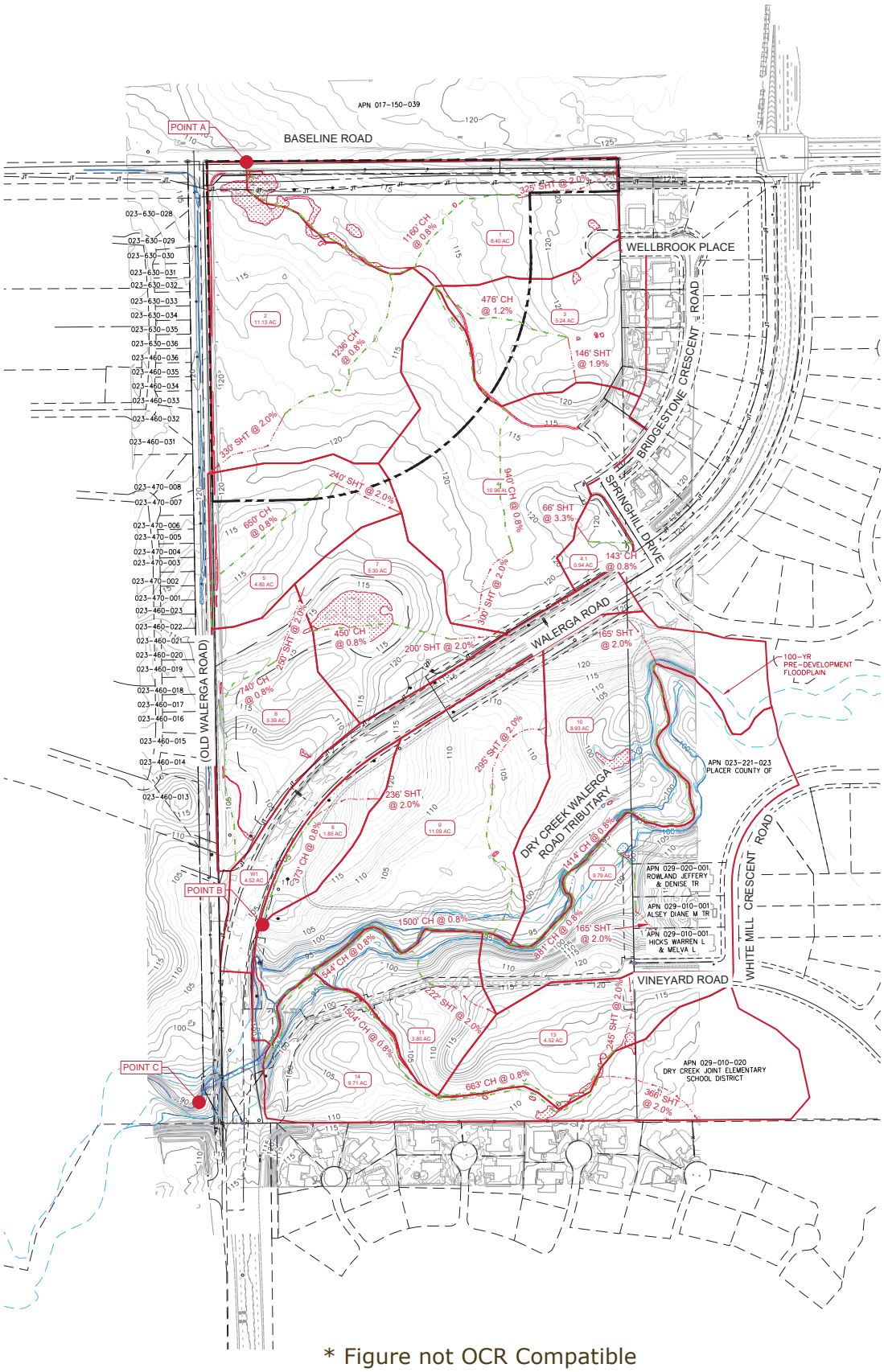
Col. 22 Energy loss. Average Sf/100 x Line Length (Col. 21/100 x Col. 12). Equals (EGL upstream - EGL downstream) +/- tolerance.

Col. 23 The junction loss coefficient (K).

Col. 24 Minor loss. (Col. 23 x Col. 18). Is added to upstream HGL and used as the starting HGL for the next upstream line(s).

EXHIBIT E

Drainage Maps



* Figure not OCR Compatible

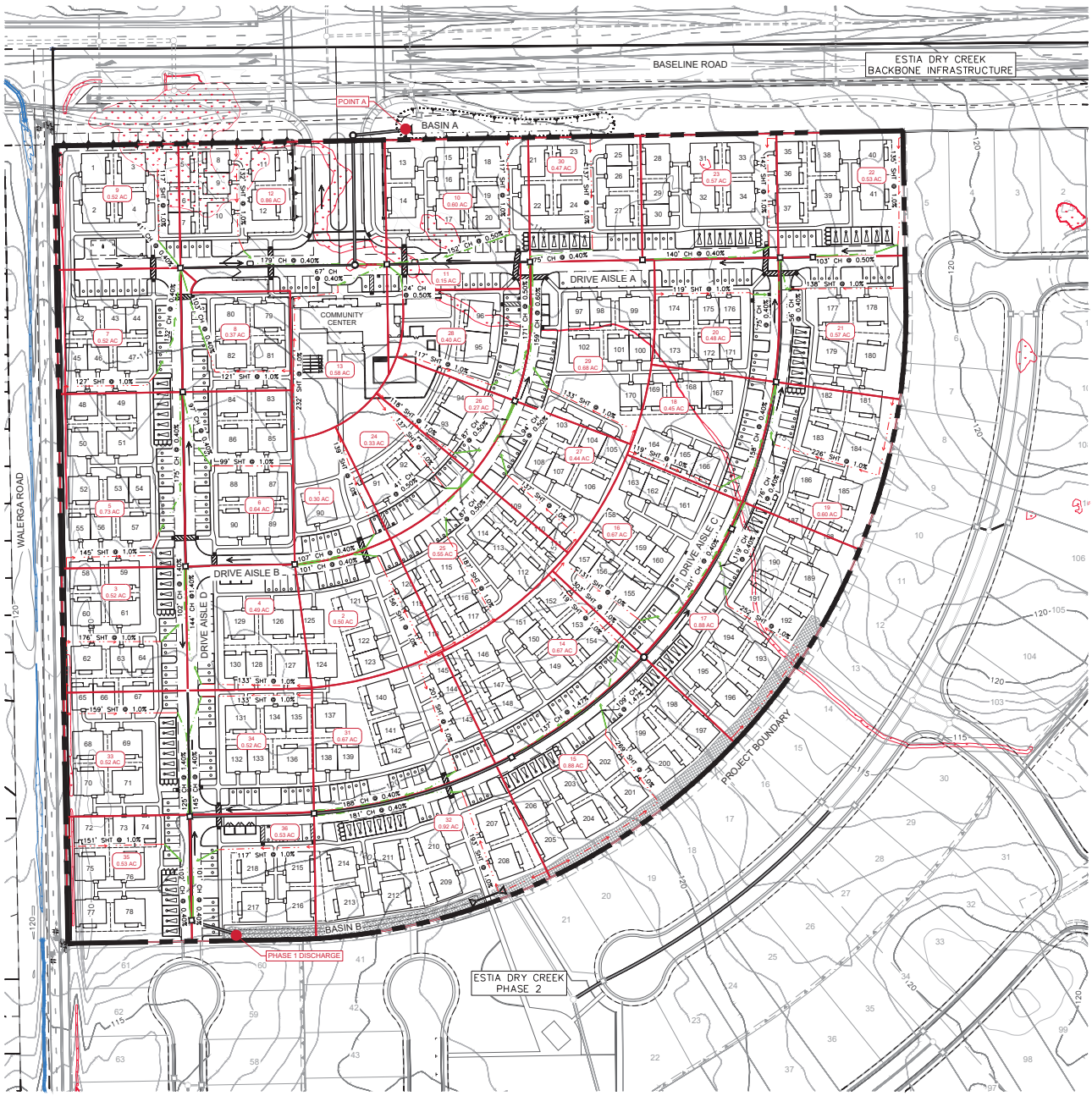
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E: info@King-Engineering-Inc.com

ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

DRAINAGE MAP #1 - PRE-DEVELOPMENT SHED MAP - OVERALL

PLACER COUNTY, CALIFORNIA

JUNE 2026



* Figure not OCR Compatible

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ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

DRAINAGE MAP #2 - POST-DEVELOPMENT SHED MAP - PHASE 1

PLACER COUNTY, CALIFORNIA

JUNE 2026

INDEX OF GUTTER FLOWS				
Gutter No.	Q10 (cfs)	Gutter Slope	Target Inlet No.	Target Inlet Condition
VALLEY GUTTER				
g1	0.45	0.004	DI-1	GRADE
g2	0.76	0.004	DI-1	GRADE
g7	1.27	0.004	DI-4	SAG
g8	0.96	0.004	DI-4	SAG
g9	0.85	0.004	DI-4	SAG
g5	1.08	0.004	DI-3	GRADE
g6	1.10	0.004	DI-3	GRADE
g20	0.85	0.004	DI-14	GRADE
g22	0.79	0.005	DI-12	SAG
g20	1.51	0.004	DI-13	SAG
g21	2.06	0.004	DI-13	SAG
g35	0.83	0.004	DI-17	SAG
g36	2.34	0.004	DI-17	SAG
g24	0.90	0.005	DI-7	GRADE
g25	1.47	0.005	DI-7	GRADE
g28	0.62	0.005	DI-8	GRADE
g29	1.02	0.006	DI-8	GRADE
g30	1.20	0.004	DI-8	GRADE
g12.1	0.94	0.005	DI-5	SAG
g13.1	0.36	0.005	DI-5	SAG
g12	1.28	0.005	DI-5	SAG
g13	0.60	0.005	DI-5	SAG

INDEX OF PIPES				
TO PHASE 1 DISCHARGE				
Pipe ID	Pipe Size (in)	Slope (%)	Q10 (cfs)	Q100 (cfs)
P-1	15	0.40%	1.20	2.26
P-3	15	0.49%	6.64	12.49
P-2	15	0.30%	4.63	8.71
P-10	15	0.30%	0.85	1.59
P-9	15	0.30%	0.79	1.49
P-8	15	0.30%	3.37	6.29
P-6	18	0.30%	4.85	9.09
P-5	18	0.30%	6.91	13.00
P-7	18	0.30%	8.86	16.70
P-7.1	24	0.30%	8.86	16.70
P-18	24	0.30%	10.76	20.31
P-19	24	0.30%	12.13	22.87
P-20	30	0.30%	13.40	25.27
TO POINT A				
P-12	15	0.50%	2.36	4.43
P-13	18	0.20%	4.51	8.49
P-15	24	0.15%	7.39	13.95
P-16	24	0.15%	7.39	13.95

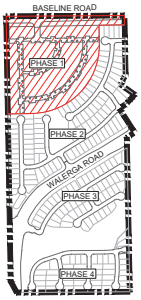
60 30 0 60

SCALE: 1" = 60'

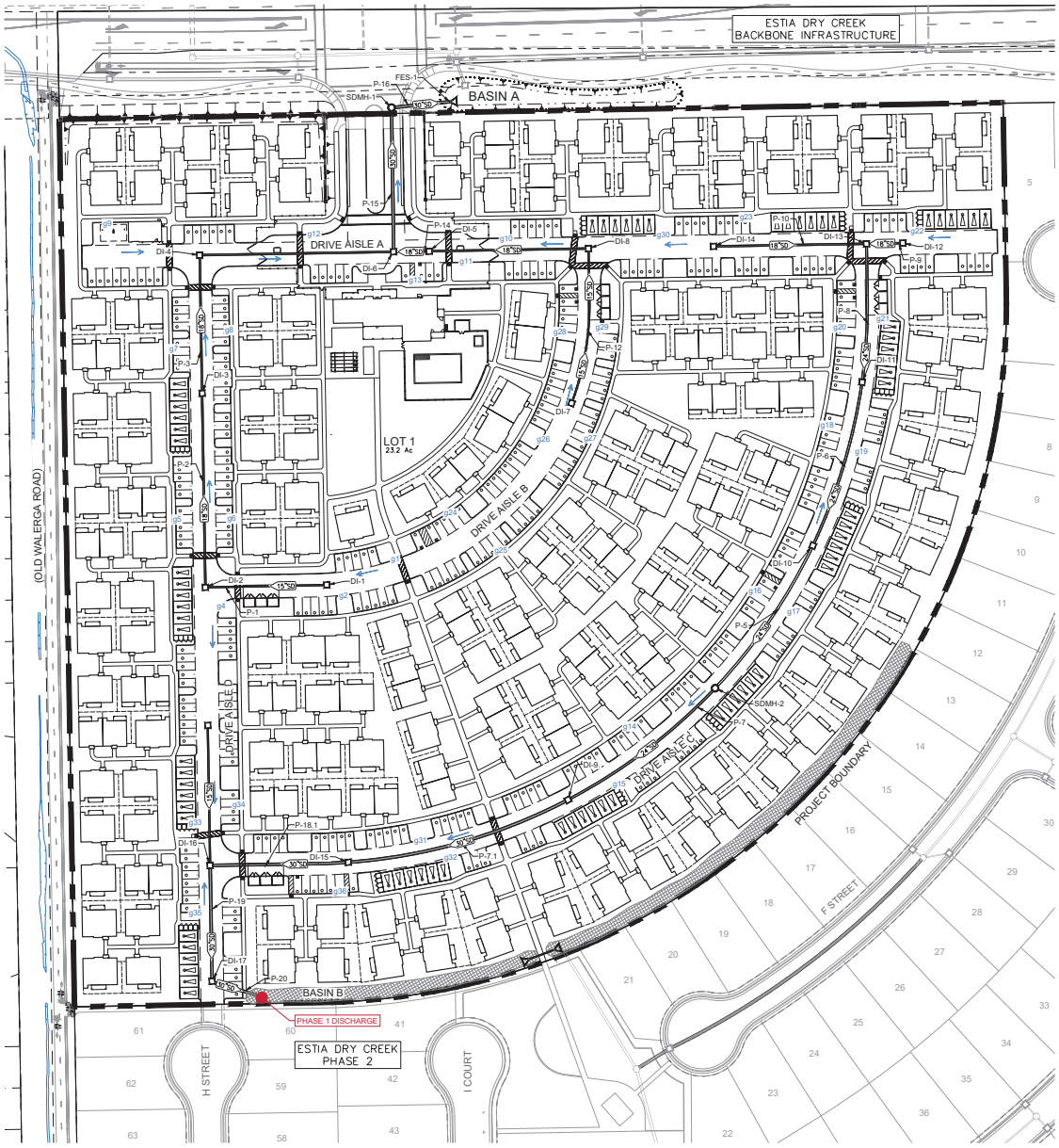
ESTIA DRY CREEK - PHASE 1		
FLOW SUMMARY		
ULT DEVELOPMENT		
DRAINAGE INLET, MH OR LID	Q10 cfs	Q100 cfs
TO PHASE 1 DISCHARGE		
DI-1	1.20	2.26
DI-4	6.64	12.49
DI-3	4.63	8.71
DI-14	0.85	1.59
DI-12	0.79	1.49
DI-13	3.37	6.29
DI-11	4.85	9.09
DI-10	6.91	13.00
DI-9	8.86	16.70
DI-15	10.76	20.31
DI-16	12.13	22.87
DI-17	13.40	25.27
TO POINT A		
DI-7	2.36	4.43
DI-8	4.51	8.49
DI-5	7.39	13.95

LEGEND

- WETLANDS (TRIBUTARY)
- WETLANDS (AVOIDED)
- PT # DISCHARGE POINT
- STORM DRAIN: FLARED END SECTION, MANHOLE, DRAIN INLET
- PROPOSED
- EXISTING
- FUTURE
- PROJECT BOUNDARY LINE
- FLOW DIRECTION



KEY MAP
NO SCALE



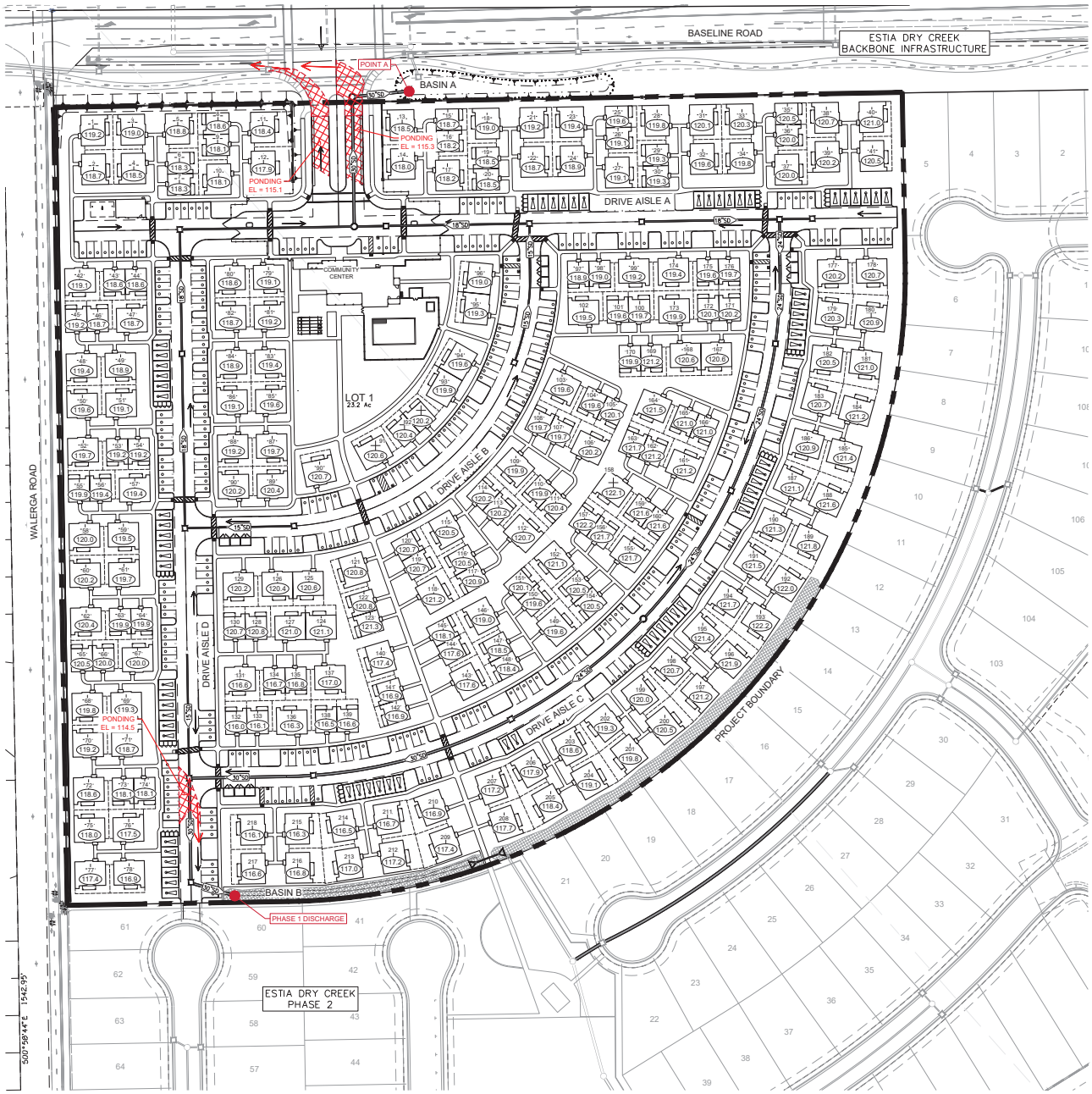
* Figure not OCR Compatible

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ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

DRAINAGE MAP #3 - PROJECT INDEX - PHASE 1

PLACER COUNTY, CALIFORNIA
JUNE 2026



* Figure not OCR Compatible

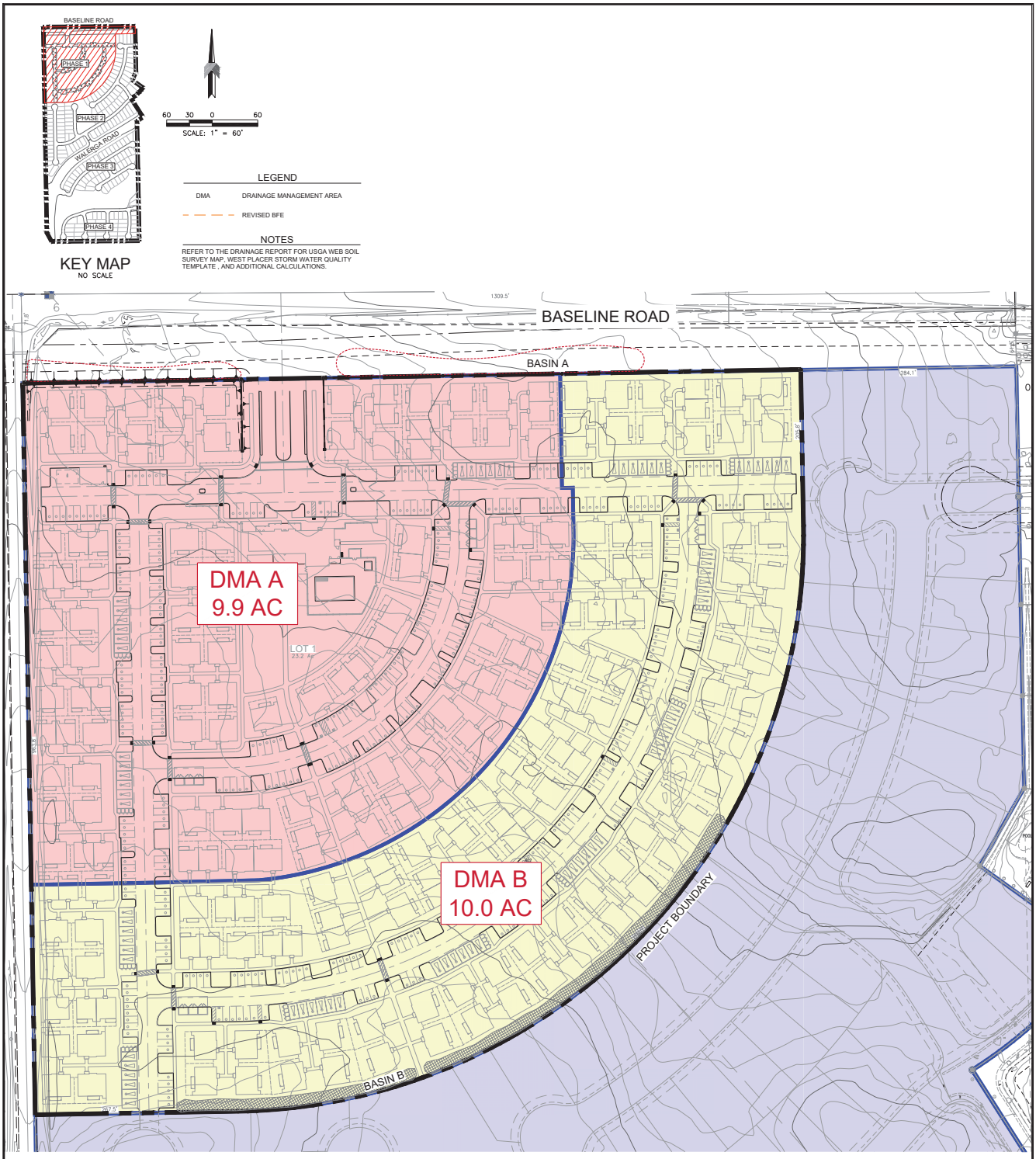
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ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

DRAINAGE MAP #4 - BLOCKED INLET SCENARIO - PHASE 1

PLACER COUNTY, CALIFORNIA

JUNE 2026



* Figure not OCR Compatible

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ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

DRAINAGE MAP #5 - SITE ASSESSMENT AND DRAINAGE MANAGEMENT AREA MAP - PHASE 1

PLACER COUNTY, CALIFORNIA

JUNE 2026

EXHIBIT F

Post-Construction Storm Water Quality Plan Workbook

Post-Construction
Storm Water Quality Plan
West Placer County

For:

ESTIA DRY CREEK
within MS4 in Placer County, CA

Prepared for:

CHRIS DICKINSON
LAND DEVELOPMENT AND ACQUISITIONS PROJECT MANAGER
HOMES BY TOWNE
11060 WHITE ROCK ROAD, SUITE 150
RANCHO CORDOVA, CA 95670
(916) 782-2424

Prepared by:

King Engineering, Inc.
200 Auburn Folsom Road
Auburn, CA 95603
(530) 272-8328

Preparation Date:_____03/04/2026_____

Placer County Approval Date:_____

Revision Date December 11 2024

Section 1 General Project Information

The undersigned owner of the subject property, is responsible for the implementation of the provisions of this Storm Water Quality Plan (SWQP), including ongoing operations and maintenance (O&M), consistent with the requirements of the West Placer Storm Water Quality Design Manual and the State of California Phase II Small MS4 General Permit (Order No: 2013-0001-DWQ). If the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement the SWQP.

For all Regulated Projects (As identified in Form 1-2 below), the undersigned owner hereby grants access to all representatives of the Jurisdictional Agency for the sole purpose of performing O&M inspections of the installed treatment system(s) and hydromodification control(s) if any.

A copy of the final signed and fully approved SWQP shall be available on the subject site for the duration of construction and then stored with the project approval documentation and improvement plans in perpetuity.

Form 1-1 Project Identification and Owner's Certification

Project Site Address:	BASELINE ROAD	
Owner Name:	CHRIS DICKINSON	
Title	LAND DEVELOPMENT AND ACQUISITIONS PROJECT MANAGER	
Company	HOMES BY TOWNE	
Address	11060 WHITE ROCK ROAD, SUITE 150	
City, State, Zip Code	RANCHO CORDOVA, CA 95670	
Email	cdickinson@hbtsac.com	
Telephone #	(916) 782-2424	
Signature	Date	
Engineer:*	Curtis King	PE Stamp* (Required for all Regulated Projects)
Title	Principal Engineer	
Company	King Engineering, Inc.	
Address	200 Auburn Folsom Road	
City, State, Zip Code	Auburn, CA 95603	
Email	Curtis.King@King-Engineering-Inc.com	
Telephone #	(530) 272-8328	
Signature		
Brief Description of Project: (Attach additional sheets as necessary)	Phases 1-4 and Backbone Roads	

* Not required for Small Projects as determined in Form 1-2 below. Project owners are responsible for ensuring that all storm water facilities are designed by an appropriately licensed and qualified professional.

Form 1-2 Project Category	
Development Category (Select all that apply)	
[1]**Small Project** – All projects, except LUPs, that create and/or replace between 2,500-5,000 ft^2 of impervious surface or detached single family homes that create and/or replace 2,500 ft^2 or more of impervious surface and are not part of a larger plan of development.	
[2]Enter total new and/or replaced impervious surface (ft^2)	
[3]**Regulated Project** – All projects that create and/or replace 5,000 ft^2 or more of impervious surface.	
[4]**Regulated Redevelopment Project** with equal to, or greater than 50 percent increase in impervious area	
[5]**Regulated Redevelopment Project** with less than 50 percent increase in impervious area	
[6]Enter total pre-project impervious surface (ft^2)	
[7]Enter total new and/or replaced impervious surface (ft^2)	
[8]**Regulated Road or linear underground/overhead project (LUP)** creating 5,000 ft^2 or more of newly constructed contiguous impervious surface.	
[9]Enter total new and/or replaced impervious surface (ft^2)	
[10]**Regulated Hydromodification Management Project** – Regulated projects that create and/or replace 1 acre or more of impervious surface. A project that does not increase impervious surface area over the pre-project condition is not a hydromodification management project.	YES
[11]Enter total new and/or replaced impervious surface (ft^2)	2255580.36

Section 3 Regulated Projects

Section 3 forms are to be completed for all Regulated Projects.

Form 3-1 Site Location and Hydrologic Features

Site coordinates: *Take GPS measurement at approximate center of site*	[1] Latitude	[2] Longitude	[3] Elevation (ft. above sea level)	[4] 85th Percentile, 24 Hour Design Storm Depth (in):
	38.75051	-121.36295	110	0.9

[5] Receiving waters *Name of stream, lake or other downstream waterbody to which the site runoff eventually drains*	Dry Creek and Curry Creek
[6] 303(d) listed pollutants of concern *Refer to State Water Resources Control Board website* www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/#impaired	
[7] Is Project going to be phased? *If yes, ensure that the SWQP evaluates each phase with distinct DMAs, requiring LID BMPs to address runoff at time of completion.*	Yes

[8] *Use this form to show a conceptual schematic depicting DMAs and conveyance features connecting DMAs to the site outlet(s). An example is provided below that can be modified for the proposed project or a drawing clearly showing DMAs and flow routing may be attached.*

Example only
Modify for project specific SWQP
Use separate sheet if necessary

Please Refer to Site Assessment and Drainage Management Area Drainage Map

Form 3-2 Site Assessment and Layout Documentation

	Has this Item been considered in the Site Layout and depicted in the Site Plan?	
	Yes	**Not Applicable (Include brief explanation)**
Define the development envelope and protected areas, identifying areas that are most suitable for development and areas to be landscaped, or left undisturbed, and used for infiltration.	X	Reference Site Plan for infiltration basins and landscaped spaces to provide
Concentrate development on portions of the site with less permeable soils and preserve areas that can promote infiltration.		N/A
Limit overall impervious coverage of the site with paving and roofs.		N/A
Set back development from creeks, wetlands, and riparian habitats.	X	Reference Site Plan for setbacks and protected regions
To the extent practicable, avoid development and LID siting within floodplains.	X	Reference Site Plan for infiltration basins and landscaped spaces to provide
Preserve significant trees.	X	Reference Site Plan for protected trees
Conform site layout along natural landforms.	X	Site layout conforms to existing tributary flow paths and flood limits
Avoid excessive grading and disturbance of vegetation and soils.		N/A
Replicate the site's natural drainage patterns.	X	Site layout conforms to existing tributary flow paths and flood limits
Detain and retain runoff throughout the site.	X	Infiltration basins are incorporated to capture runoff throughout the site

Attach a Site Plan that incorporates the applicable considerations above. Ensure that the following items are included in the Site Plan:

Site Boundary
Soil types and areal extents, test pit and infiltration test locations
Topographic data with 1 ft. contours
Existing natural hydrologic features (depressions, watercourses, wetlands, riparian corridors)
Floodplain boundaries
Environmentally sensitive areas and areas to be preserved
Proposed locations and footprints of improvements creating new, or replaced, impervious surfaces
Potential pollutant sources and locations
Entire site divided into separate DMAs with unique identifiers
Existing and proposed site drainage network with flow directions and site run-on and discharge locations
Proposed design features and surface treatments used to minimize imperviousness and reduce runoff
Proposed locations and footprints of treatment and hydromodification management facilities
Design features for managing authorized non-stormwater discharges
Areas of soil and/or groundwater contamination
Existing utilities and easements
Maintenance areas

Form 3-3 Source Control Measures			
Potential Pollutant Generating Activity or Source	Check One		Describe the source control measures to be implemented for each potential pollutant generating activity or source present on the project as listed in Appendix C and in the CASQA Fact Sheets. Include any special features, materials, or methods of construction that will be used.
	Present	Not Applicable	
Accidental spills or leaks	☑	☐	measures per SC-11 fact sheet
Interior floor drains	☐	☑	
Parking/storage areas and maintenance	☐	☑	measure per SC-21, SC-22, SC-32 and SC-43 fact sheets
Indoor and structural pest control	☑	☐	measures done mainly by licensed pest control companies per SC-34, SC-61, SC-60 fact sheets
Pools, spas, ponds, decorative fountains, and other water features	☐	☑	measures per SC-72 fact sheet
Landscape/outdoor pesticide use	☑	☐	measures per SC-41, SC-60, SC-73 and SC-75 fact sheets
Restaurants, grocery stores, and other food service operations	☐	☑	
Refuse areas	☑	☐	homewoners to take measures per SC-34, SC-60
Industrial Processes	☐	☑	
Outdoor storage of equipment or materials	☐	☑	measures per SC-32, SC-41, SC-43 fact sheets
Vehicle and equipment cleaning	☑	☐	measures per SC-21 fact sheet
Vehicle and equipment repair and maintenance	☑	☐	measures per SC-22, SC-32 fact sheets
Fuel dispensing areas	☐	☑	
Loading docks	☐	☑	
Fire sprinkler test water	☐	☑	
Drain or wash water from boiler drain lines, condensate drain lines, rooftop equipment, drainage sumps, and other sources	☐	☑	
Unauthorized non-storm water discharges	☑	☐	measures per SC-10 fact sheet
Building and grounds maintenance	☑	☐	measures per SC-4, SC-43 fact sheets

The source control measures identified in this table shall be designed consistent with recommendations from the CASQA Stormwater BMP Handbook for New Development and Redevelopment[1], or from another equivalent manual.

[1] California Stormwater BMP Handbook New Development and Redevelopment. California Stormwater Quality Association (CASQA). January 2003.

Form 3-4 Runoff Reduction Calculator for Site Design Measures on Regulated Projects

[1]DMA ID No.			1		2		3		4	
Site Design Measure	**Runoff Reduction Parameters**			**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**
[2] Adjacent/On-Site Stream Setbacks and Buffers	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[3] Soil Quality Improvement and Maintenance	A_{pond} (ft^2)	*ponding area*		0		0		0		0
	D_{pond} (ft)	*ponding depth*								
	A_{sa} (ft^2)	*soil amendment area*								
	D_{sa} (ft)	*depth of amended soil*								
	n	*porosity of amended soil*								
[4] Tree Planting and Preservation	n_e	*number of new evergreen trees*	26	966	24	874	51	1817	0	0
	n_d	*number of new deciduous trees*	79		71		145		0	
	A_{tc} (ft^2)	*canopy area of existing trees to remain on the property*	0		0		0		0	
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[5] Rooftop and Impervious Area Disconnection	A_{imp} (ft^2)	*impervious drainage area*	125475	8470	113525	7663	92400	6237	0	0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[6] Porous Pavement	A_{res} (ft^2)	*area of gravel storage layer*		0		0		0		0
	D_{res} (ft)	*depth of gravel storage layer*								
	n_{agg}	*porosity of aggregate*								
	C	*efficiency factor*								
[7] Vegetated Swales	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[8] Rain Barrels and Cisterns	N	*number of rain barrels and/or cisterns*		0		0		0		0
	V_a (ft^3)	*volume of each rain barrel and/or cistern*								
[9] Do all Site Design Measures meet the design requirements outlined in the Fact Sheets?					**Yes**		**No**			
[10] Total Volume Reduction (ft^3)			**9435**		**8537**		**8054**		**0**	
[11] Effective Treated Impervious Area (ft^2)			**139781**		**126469**		**119323**		**0**	

Form 3-4 Runoff Reduction Calculator for Site Design Measures on Regulated Projects

DMA ID No.	5		6		7		8		9		10		11		12	
Runoff Reduction Parameters		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**
impervious drainage area		0		0		0		0		0		0		0		0
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
ponding area		0		0		0		0		0		0		0		0
ponding depth																
soil amendment area																
depth of amended soil																
porosity of amended soil																
number of new evergreen trees	5	177	9	324	5	177	7	258		0		0		0		0
number of new deciduous trees	14		26		14		21									
canopy area of existing trees to remain on the property	0		0		0		0									
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
impervious drainage area	11400	770	20400	1377	11400	770	16800	1134		0		0		0		0
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
area of gravel storage layer		0		0		0		0		0		0		0		0
depth of gravel storage layer																
porosity of aggregate																
efficiency factor																
impervious drainage area		0		0		0		0		0		0		0		0
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
number of rain barrels and/or cisterns		0		0		0		0		0		0		0		0
volume of each rain barrel and/or cistern																
Total Volume Reduction	**946**		**1701**		**946**		**1392**		**0**		**0**		**0**		**0**	
Effective Treated Impervious Area	**14016**		**25196**		**14016**		**20615**		**0**		**0**		**0**		**0**	

Form 3-5 Computation of Water Quality Design Criteria for Stormwater Treatment and Baseline Hydromodification Measures

DMA ID No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
[1]Total impervious area requiring treatment	261360	261360	1027580.4		117089	239057	152155	196978														
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	121579	134891	908257	0	103073	213861	138139	176363	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)	174240	174240	440391.6		50181	97095	65209	84419														
[4] Composite DMA Runoff Coefficient (C_w) *Enter area weighted composite runoff coefficient representing entire DMA*	0.55	0.55	0.56		0.55	0.55	0.55	0.55														
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	8813	9210	40909	0	4566	9264	6058	7769	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.753	0.787	3.496	0.000	0.390	0.792	0.518	0.664	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[4] Runoff coefficient values for various materials are as follows: roofs 0.95, asphalt/concrete pavement 0.90, gravel pavement 0.80, managed turf 0.25, disturbed soil 0.25.

[5, 6] Values will equal zero if all impervious area has been treated by Site Design Measures.

DMA ID No.	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
[1]Total impervious area requiring treatment																						
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)																						
[4] Composite DMA Runoff Coefficient (Rc) *Enter area weighted composite runoff coefficient representing entire DMA*																						
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[4] Runoff coefficient values are as follows: roofs 0.95, asphalt/concrete pavement 0.90, gravel pavement 0.80, turf 0.25, disturbed soil 0.25.

[5, 6] Values will equal zero if all impervious area has been treated by Site Design Measures.

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**1/A**	**1/B**	**3/C**	
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	8813	9210	40909	
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5	5	
[4]BMP Surface Area (ft^2) *Top of BMP*	3223	7200	9805	
[5]Infiltration rate of underlying soils (in/hr)	0.12	0.12	0.12	
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	0.50	0.50	0.50	
[7]Ponding Depth (ft) *d_{BMP} = Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.5	0.5	0.5	-
[8]Infiltrating surface area, *SA_{BMP}* (ft^2) *Bottom of BMP*	3223	7200	9805	
[9]Planting media depth, *d_{media}* (ft)	1.5	1.5	1.5	
[10]Planting media porosity	0.55	0.55	0.55	
[11]Gravel depth, *d_{media}* (ft) *Only included in certain BMP types*	4.0	1.0	7.5	
[12]Gravel porosity	0.40	0.40	0.40	
[13]Retention Volume (ft^3) *$V_{retention}$ = Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	9,411.2	12,384.0	42,358.1	-
[14]Untreated Volume (ft^3) *$V_{untreated}$ = Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15] Treated Flow Rate (ft^3/s) *$Q_{treated}$ = 1/43,200*(Item 3 * Item 4)*	0.3730	0.8333	1.1349	0.0000
[16]Total Treated Flow Rate for Project (ft^3/s) *Q_{total} = Sum of Item 15 for all DMAs*	4.3276			
[17]Is WQV for each DMA treated on-site? *Check Yes if Item 14 equals 0 for all DMAs*	**Yes**	**X**	**No**	

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**4/D**	**5/E**	**6/F**	**7/G**
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	4566	9264	6058	7769
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5	5	5
[4]BMP Surface Area (ft^2) *Top of BMP*	2390	5721	5047	4005
[5]Infiltration rate of underlying soils (in/hr)	0.12	0.12	0.12	0.12
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	0.50	0.50	0.50	0.50
[7]Ponding Depth (ft) d_{BMP} *= Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.5	0.5	0.5	0.5
[8]Infiltrating surface area, SA_{BMP} (ft^2) *Bottom of BMP*	2390	5721	5047	4005
[9]Planting media depth, d_{media} (ft)	1.5	1.5	1.5	1.5
[10]Planting media porosity	0.55	0.55	0.55	0.55
[11]Gravel depth, d_{media} (ft) *Only included in certain BMP types*	2.0	1.0	1.0	2.0
[12]Gravel porosity	0.40	0.40	0.40	0.40
[13]Retention Volume (ft^3) $V_{retention}$ *= Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	5,067.2	9,839.7	8,681.0	8,490.0
[14]Untreated Volume (ft^3) $V_{untreated}$ *= Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15] Treated Flow Rate (ft^3/s) $Q_{treated}$ *= 1/43,200*(Item 3 * Item 4)*	0.2766	0.6621	0.5842	0.4635

Section 4
Regulated Hydromodification Management Projects

Form 4-1 Peak Runoff Response Time

(Complete Section 4 forms for Regulated Hydromodification Projects only)

Determine total runoff response time for pre- and post-construction conditions at each project outlet.

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	1	**2**	**3**	**4**	**1**	**2**	**3**	**4**
[1]Length of longest overland flow path *Not to exceed 100 ft*	100	100	100	100	100	100	100	100
[2]Slope of overland flow path (ft/ft)	0.0200	0.0200	0.0200	0.0200	0.0100	0.0100	0.0100	0.0100
[3]Manning's roughness coefficient for overland flow surface *See Table 5-5 of the Placer County SWMM*	0.0350	0.0350	0.0350	0.0350	0.0200	0.0200	0.0200	0.0200
[4]Overland flow response time (min) (0.355*(Item 1*Item 3)$^{0.6}$)/(Item 2$^{0.3}$)	2.43	2.43	2.43	2.43	2.14	2.14	2.14	2.14
[5]Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	D	D	D	D	D	D	D
[6]Current Land Cover Type(s) *Select from categories shown in Table 5-3 of the SWMM*	OS	OS	OS	OS	RES	RES	RES	RES
[7]Pervious Area Condition: *Based on the extent of vegetated cover Good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating*	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
[8]Infiltration Rate (in/hr) *Refer to Table 5-3 of the SWMM using Items 3, 4, and 5 above or obtain site specific field measurements (See Section 3.1.1)*	0.09	0.09	0.09	0.09	0.12	0.12	0.12	0.12
[9]Length of collector flow (ft)	600	600	1,500	100	400	100	500	600
[10]Cross-sectional area of collector flow facility (ft^2)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
[11]Wetted perimeter of collector flow facility (ft)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
[12]Manning's roughness of collector flow facility	0.060	0.060	0.060	0.060	0.015	0.015	0.015	0.015
[13]Slope of collector flow facility (ft/ft)	0.0250	0.0250	0.0250	0.0250	0.0050	0.0050	0.0050	0.0050
[14]Channel flow velocity (ft/sec) *V = (1.49 / Item 12) * (Item 10/Item 11) ^0.67 * (Item 13) ^0.5*	3.00	3.00	3.00	3.00	5.36	5.36	5.36	5.36
[15]Collector flow facility response time (min) *T_c = Item 9 /(Item 14 * 60)*	3.34	3.34	8.34	0.56	1.24	0.31	1.55	1.87
[16]Total runoff response time or T_t (min) *T_t = Item 4 + Item 15*	5.77	5.77	10.78	2.99	3.39	2.45	3.70	4.01

Section 4
Regulated Hydromodification Management Projects

Form 4-1 Peak Runoff Response Time

Determine total runoff response time for pre- and post-construction conditions at each project outlet.

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	5	6	7	8	5	6	7	8
[1]Length of longest overland flow path *Not to exceed 100 ft*	100	100	100		100	100	100	
[2]Slope of overland flow path (ft/ft)	0.0200	0.0200	0.0200		0.0100	0.0100	0.0100	
[3]Manning's roughness coefficient for overland flow surface *See Table 5-5 of the Placer County SWMM*	0.0350	0.0350	0.0350		0.0200	0.0200	0.0200	
[4]Overland flow response time (min) (0.336*(Item 1*Item 3)$^{0.6}$)/(Item 2$^{0.3}$)	2.43	2.43	2.43	0.00	2.14	2.14	2.14	0.00
[5]Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	D	D		D	D	D	
[6]Current Land Cover Type(s) *Select from categories shown in Table 5-3 of the SWMM*	OS	OS	OS		RES	RES	RES	
[7]Pervious Area Condition: *Based on the extent of vegetated cover Good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating*	GOOD	GOOD	GOOD		GOOD	GOOD	GOOD	
[8]Infiltration Rate (in/hr) *Refer to Table 5-3 of the SWMM using Items 3, 4, and 5 above or obtain site specific field measurements (See Section 3.1.1)*	0.09	0.09	0.09		0.12	0.12	0.12	
[9]Length of collector flow (ft)	1,000	500	490		1,000	1,000	1,000	
[10]Cross-sectional area of collector flow facility (ft^2)	2.00	2.00	2.00		2.00	2.00	2.00	
[11]Wetted perimeter of collector flow facility (ft)	3.00	3.00	3.00		3.00	3.00	3.00	
[12]Manning's roughness of collector flow facility	0.060	0.060	0.060		0.015	0.015	0.015	
[13]Slope of collector flow facility (ft/ft)	0.0250	0.0250	0.0250		0.0050	0.0050	0.0050	
[14]Channel flow velocity (ft/sec) *V = (1.49 / Item 12) * (Item 10/Item 11) ^0.67 * (Item 13) ^0.5*	3.00	3.00	3.00	0.00	5.36	5.36	5.36	0.00
[15]Collector flow facility response time (min) T_c *= Item 9 /(Item 14 * 60)*	5.56	2.78	2.73	0.00	3.11	3.11	3.11	0.00
[16]Total runoff response time or T_t (min) T_t *= Item 4 + Item 15*	8.00	5.22	5.16	0.00	5.25	5.25	5.25	0.00

Form 4-2 Hydromodification Target for Peak Runoff								
Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	1	2	3	4	1	2	3	4
[1] Drainage Area (ft^2) *Sum of all outlet level DMAs should equal total project area.*	435,600	435,600	1,467,972	167,270	435,600	435,600	1,467,972	167,270
[2] Impervious Area (ft^2) *Sum of all outlet level DMAs should equal total project impervious area.*	0	0	0	0	261,360	261,360	1,027,580	117,089
[3] Rainfall depth for 2yr storm with duration equal to response time (in) *See Placer County SWMM Table 5-A-1 for elevation of site and duration equal to response time*	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
[4] Unit peak runoff (cfs/acre) *q = 60/Form 4-1 Item 16 * Item 3*	2.39	2.39	1.28	4.61	4.08	5.63	3.73	3.44
[5] Infiltration factor (cfs/acre) *F_i = Form 4-1 Item 8 * (1 + 1 /(1.3 + 0.0005 * Form 3-1 Item 3))*	0.16	0.16	0.16	0.16	0.21	0.21	0.21	0.21
[6] Peak runoff from DMAs (cfs) *Q_p = Item 1 * Item 4 – Item 5 * (Item 1 - Item 2)*	22.53	22.53	38.20	17.26	40.26	55.88	124.72	13.09
[7] Total Pre-Project Peak Runof (ft^3/s) *Q_{total} = Sum of Item 6 for all Pre-construction DMAs*	141.67							
[8] Is the total post-project peak runoff equal to or less than the total pre-project peak runoff? *Yes, if Item 7 is greater than or equal to the sum of the Total Treated Flow Rates from Form 3-6 Item 16 and 3-7 Item 14.*	**YES**							

Form 4-2 Hydromodification Target for Peak Runoff								
Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	5	6	7	8	5	6	7	8
[1] Drainage Area (ft^2) *Sum of all outlet level DMAs should equal total project area.*	336,153	217,364	281,398		336,153	217,364	281,398	
[2] Impervious Area (ft^2) *Sum of all outlet level DMAs should equal total project impervious area.*	0	0	0		239,057	152,155	196,978	
[3] Rainfall depth for 2yr storm with duration equal to response time (in) *See Placer County SWMM Table 5-A-1 for elevation of site and duration equal to response time*	0.23	0.23	0.23		0.23	0.23	0.23	
[4] Unit peak runoff (cfs/acre) *q = 60/Form 4-1 Item 16 * Item 3*	1.73	2.65	2.67	-	2.63	2.63	2.63	-
[5] Infiltration factor (cfs/acre) *F_i = Form 4-1 Item 8 * (1 + 1 /(1.3 + 0.0005 * Form 3-1 Item 3))*	0.16	0.16	0.16	-	0.21	0.21	0.21	-
[6] Peak runoff from DMAs (cfs) *Q_p = Item 1 * Item 4 – Item 5 * (Item 1 - Item 2)*	12.21	12.53	16.40	-	19.98	12.91	16.71	-

Form 4-3 Detention Volumes for Hydromodification Management

	Post-construction DMAs to Project Outlet			
	1	**2**	**3**	**4**
[1] Land cover and hydrologic condition *See NRCD TR-55 Manual Table 2-2 for types*	RES	RES	RES	RES
[2] Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	D	D	D
[3] Drainage Area (A) (ft^2)	435,600	435,600	1,467,972	167,270
[4] Curve Number (CN) *Use Items 1 and 2 to select curve number from NRCS TR-55 Manual Table 2-2*	92	92	92	92
[5] Post-development soil storage capacity, S (in): *S = (1000 / Item 4) – 10*	0.9	0.9	0.9	0.9
[6] Precipitation for 2-yr, 24-hr storm (in) *See Placer County SWMM Table 5-A-1 for elevation of site and 24-hr duration depths*	1.90	1.90	1.90	1.90
[7] Post-developed runoff volume for 2-yr – 24-hour storm, V_{runoff} (ft^3): *V_{runoff} = Item 3 * (1 / 12) * [(Item 6 – 0.2 * Item 5)^2 / (Item 6 + 0.8 * Item 5)]*	41,666	41,666	140,416	16,000
[8] Attenuation Factor, $q_{out/in}$ (ratio of target outflow rate to peak inflow rate): *$q_{out/in}$ = Form 4-2 Item 6 Pre-Construction / Form 4-2 Item 6 Post-Construction*	0.56	0.40	0.31	1.32
[9] Equalization Factor, Vs/Vr (ratio of storage capacity to runoff volume) *Vs/Vr obtained using Item 8 and nomograph in Figure 6-1 of NRCS TR-55 Manual for Rainfall Type IA*	0.14	0.14	0.14	0.14
[10] Runoff detention capacity to achieve hydromodification management criteria (ft^3) *$D_{hydromod}$ = Item 7 * Item 9*	5833	5833	19658	2240
[11] Site Design Measure (SDM) Volume (ft^3): *Sum of Item 10 in Form 3-4 for all SDMs in this DMA.*				
[12] Bioretention Volume (ft3): *Sum of Item 13 in Form 3-6 for all bioretention measures in this DMA.*	9411	12384	42358	5067
[13] Flow-Through Detention Volume (ft3): *Sum of Item 10 in Form 3-7 for all flow-through facilities in this DMA.*				
[14] Supplemental Detention Volume (ft^3)[a]:				
[15] Combined Detention Volume in this DMA (ft^3): *Sum of Items 11 through 14*	9,411	12,384	42,358	5,067
[16] Is detention capacity to achieve hydromodification management criteria achieved at all project outlets? *Yes, if Item 10 is less than or equal to Item 15 for each DMA. If not provide additional storage capacity with appropriate flow controls at the discharge.*	**Yes**	**X**	**No**	

Form 4-3 Detention Volumes for Hydromodification Management

	Post-construction DMAs to Project Outlet			
	5	**6**	**7**	**8**
[1] Land cover and hydrologic condition *See NRCD TR-55 Manual Table 2-2 for types*	RES	RES	RES	
[2] Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	D	D	-
[3] Drainage Area (A) (ft^2)	336,153	217,364	281,398	-
[4] Curve Number (CN) *Use Items 1 and 2 to select curve number from NRCS TR-55 Manual Table 2-2*	92	92	92	
[5] Post-development soil storage capacity, S (in): *S = (1000 / Item 4) – 10*	0.9	0.9	0.9	#DIV/0!
[6] Precipitation for 2-yr, 24-hr storm (in) *See Placer County SWMM Table 5-A-1 for elevation of site and 24-hr duration depths*	1.90	1.90	1.90	
[7] Post-developed runoff volume for 2-yr – 24-hour storm, V_{runoff} (ft^3): *V_{runoff} = Item 3 * (1 / 12) * [(Item 6 – 0.2 * Item 5)^2 / (Item 6 + 0.8 * Item 5)]*	32,154	20,792	26,916	#DIV/0!
[8] Attenuation Factor, $q_{out/in}$ (ratio of target outflow rate to peak inflow rate): *$q_{out/in}$ = Form 4-2 Item 6 Pre-Construction / Form 4-2 Item 6 Post-Construction*	0.61	0.97	0.98	#DIV/0!
[9] Equalization Factor, Vs/Vr (ratio of storage capacity to runoff volume) *Vs/Vr obtained using Item 8 and nomograph in Figure 6-1 of NRCS TR-55 Manual for Rainfall Type IA*	0.14	0.14	0.14	
[10] Runoff detention capacity to achieve hydromodification management criteria (ft^3) *$D_{hydromod}$ = Item 7 * Item 9*	4502	2911	3768	#DIV/0!
[11] Site Design Measure (SDM) Volume (ft^3): *Sum of Item 10 in Form 3-4 for all SDMs in this DMA.*				
[12] Bioretention Volume (ft3): *Sum of Item 12 in Form 3-8 for all bioretention measures in this DMA.*	9840	8681	8490	
[13] Flow-Through Detention Volume (ft3): *Sum of Item 10 in Form 3-7 for all flow-through facilities in this DMA.*				
[14] Supplemental Detention Volume (ft^3):				
[15] Combined Detention Volume in this DMA (ft^3): *Sum of Items 11 through 14*	9,840	8,681	8,490	-

Form 4-4 Trash Controls

Type of Trash Control Measure Implemented	Check One		Describe relevant information about each trash control measure. Include number present, size of drainage area to each measure, any special features, materials, or methods of construction that will be used.
	Present	Not Applicable	
Full Capture System	☐	☑	
Multi-Benefit Trash Treatment System: Bioretention	☑	☐	
Multi-Benefit Trash Treatment System: Capture and Use Systems	☐	☑	
Multi-Benefit Trash Treatment System: Detention Basin	☐	☑	
Multi-Benefit Trash Treatment System: Infiltration Trench or Basin	☐	☑	
Multi-Benefit Trash Treatment System: Media Filter	☐	☑	

Form 5-1 BMP Inspection and Maintenance		
BMP	**Inspection Point and Frequency**	**Maintenance Activity Required**
Infiltration Basins	Inlet/Outlet	Repair Erosion
	Entire Basin	Remove Debris and Trash as needed
	Overflow structure	Remove debris to unclog

Form 6-1 Post-Construction Stormwater BMPs

Following is a summary of all BMPs included in the Project design. This checklist must be included on the cover sheet of the Improvement Plans for all Regulated Projects.

BMP		Plan Sheet Number(s)
Structural Source Controls (list BMPs)		
Site Design Measures	Stream Setbacks and Buffers	
	Soil Quality Improvement and Maintenance	
	Tree Planting and Preservation	
	Rooftop and Impervious Area Disconnection	
	Porous Pavement	
	Vegetated Swales	
	Rain Barrels and Cisterns	
Stormwater Treatment and Baseline Hydromodification Measures	Bioretention with Infiltration	
	Flow-Through Planters, Tree Box Filters and Media Filters	
Hydromodification Management Measures	Supplemental Detention	
Trash Control Measures	Full Capture System	
	Multi-Benefit Treatment System: Bioretention	
	Multi-Benefit Treatment System: Capture and Use Systems	
	Multi-Benefit Treatment System: Detention Basin	
	Multi-Benefit Treatment System: Infiltration Trench or Basin	
	Multi-Benefit Treatment System: Media Filter	

EXHIBIT G

Retention Exhibit

KING ENGINEERING
200 Auburn Folsom Road, Ste. 201
Auburn, California 95603
T: (530) 574-6530
E: info@king-engineering-inc.com

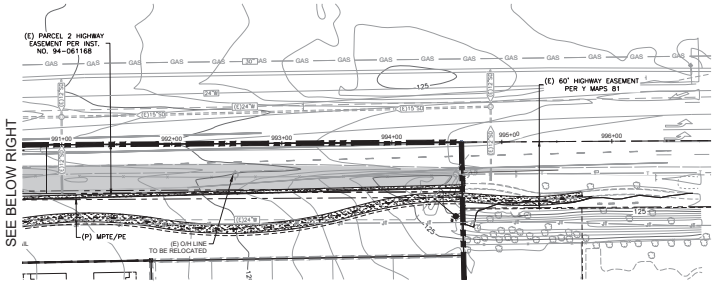
PRELIMINARY GRADING, DRAINAGE AND UTILITY PLAN - PHASE 1

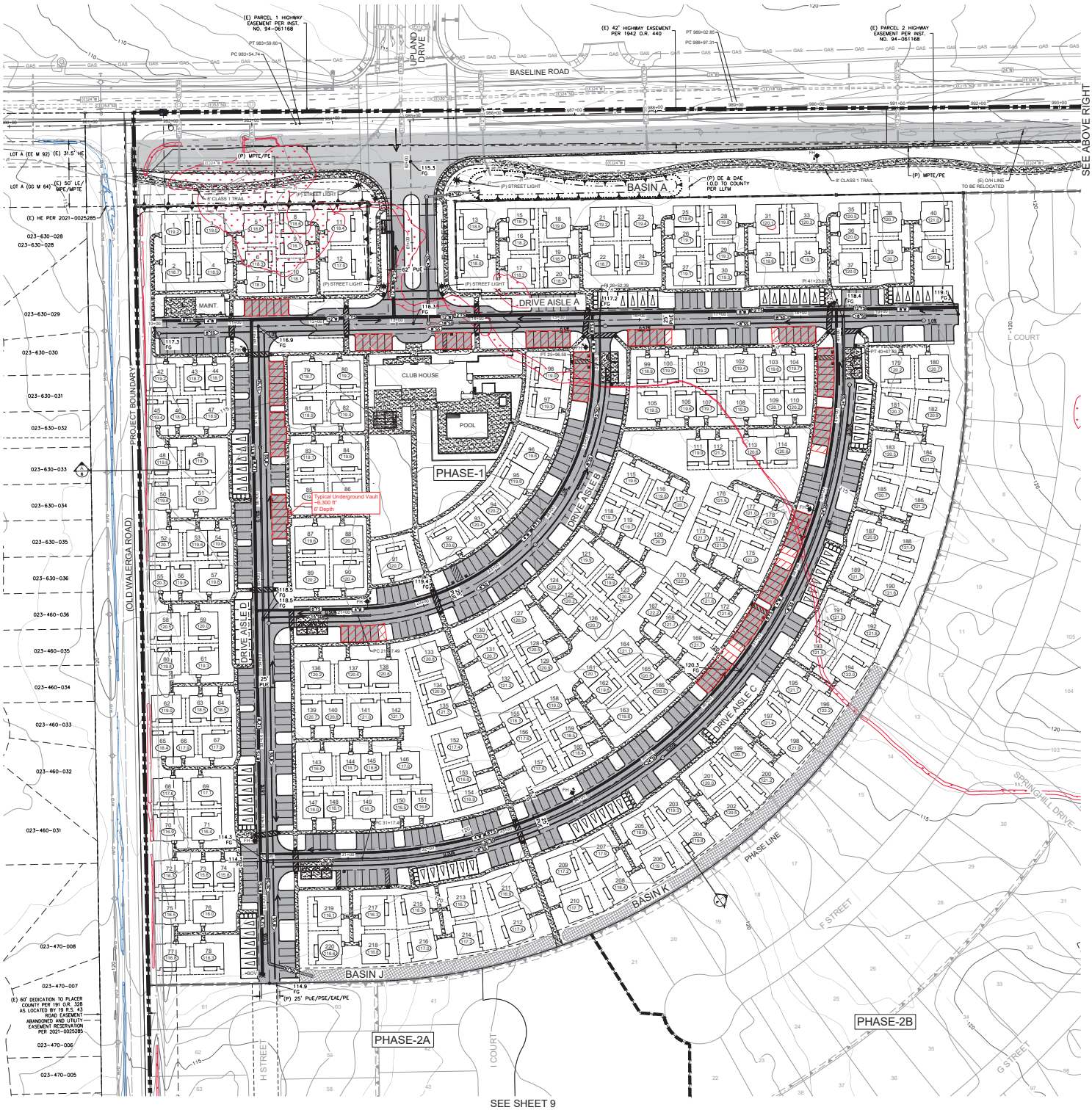
ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

PLACER COUNTY STATE OF CALIFORNIA PLN24-00144
NOVEMBER 2025

SCALE: 1" = 40'

* Figure not OCR Compatible





SEE SHEET 9

EXHIBIT H

Storm Drain Alternative Routing Exhibit

KING ENGINEERING

PRELIMINARY GRADING, DRAINAGE AND UTILITY PLAN - PHASE 2A & 2B

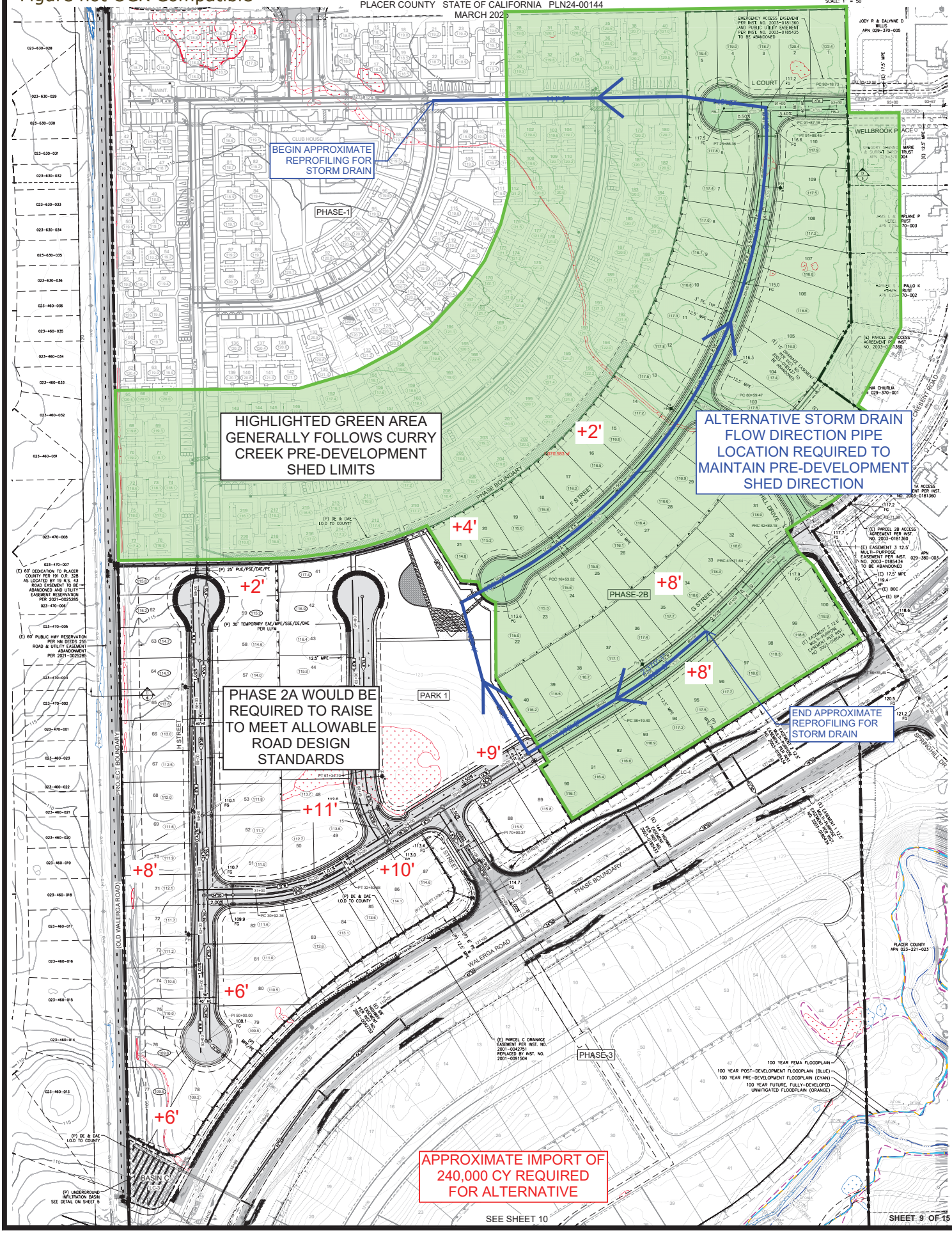
ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

* Figure not OCR Compatible

PLACER COUNTY STATE OF CALIFORNIA PLN24-00144

MARCH 2025

SCALE: 1" = 50'



SEE SHEET 10

EXHIBIT I

Storm Drain Pump Alternative

* Figure not OCR Compatible

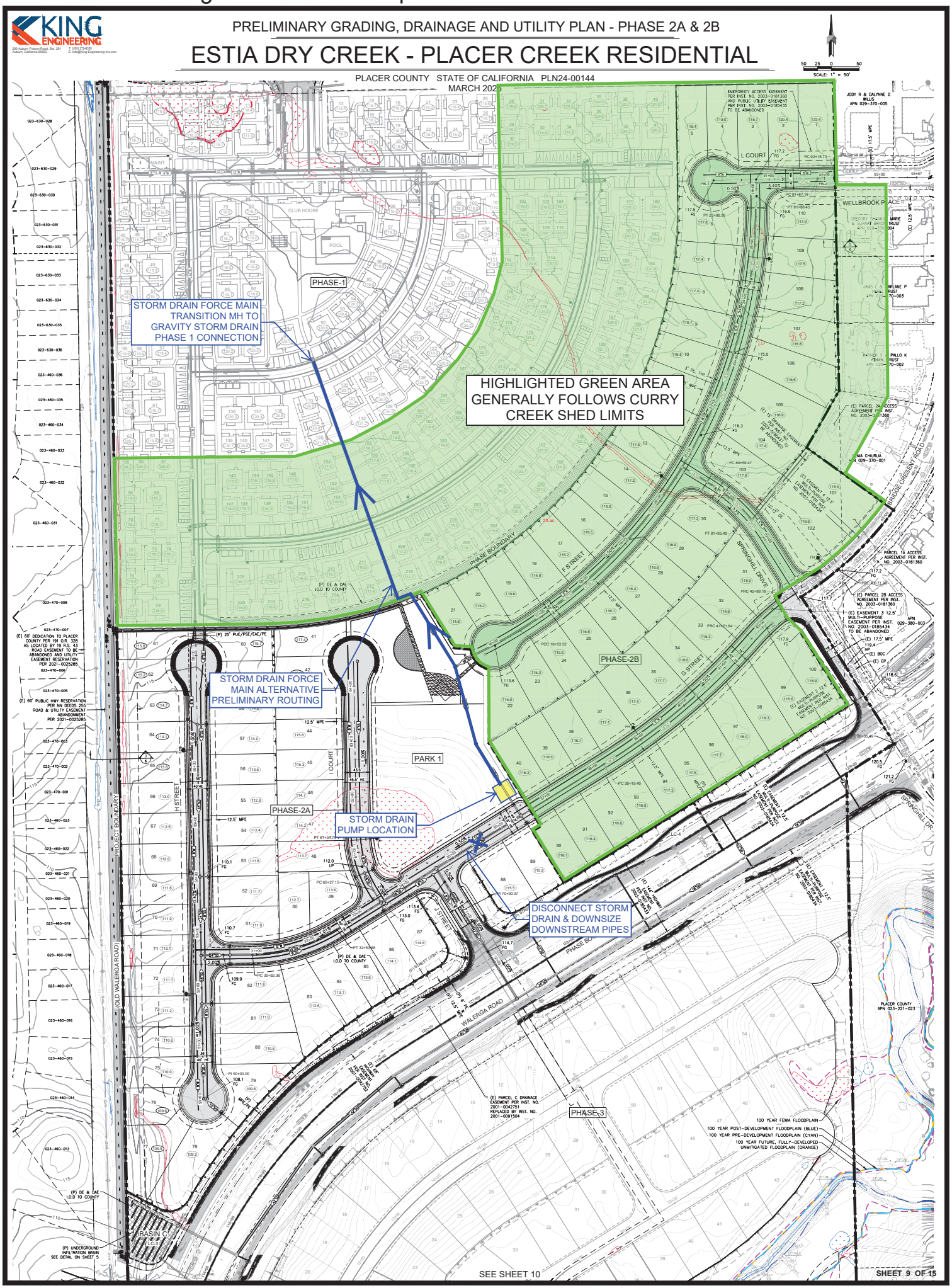


EXHIBIT J

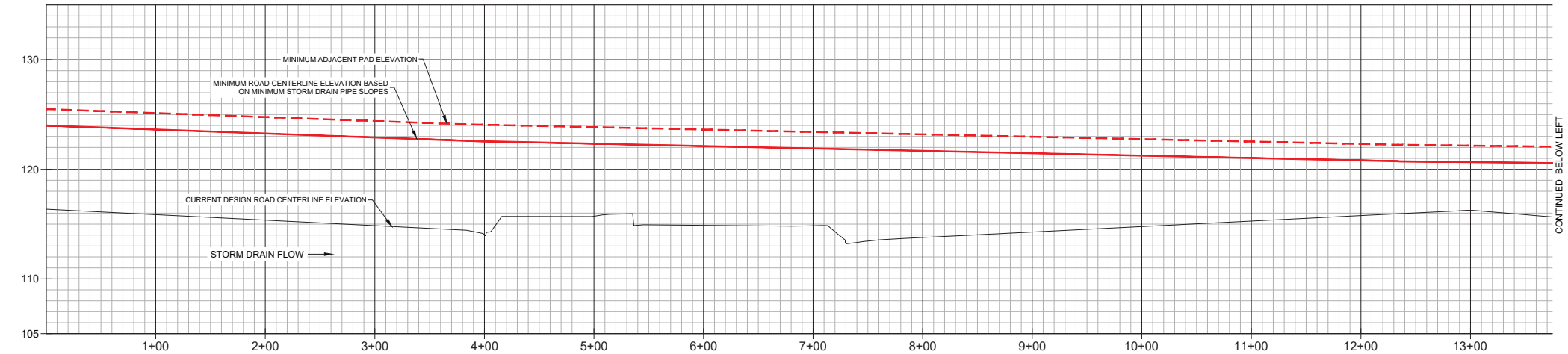
Storm Drain Alternative Profile

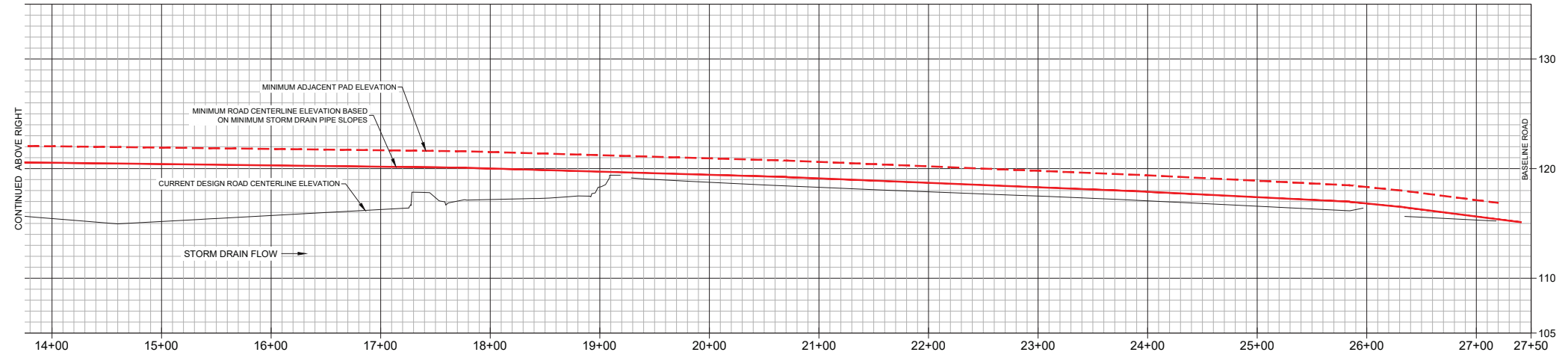
ESTIA DRY CREEK

PHASE 1 & 2 - STORM DRAIN EXHIBIT

PLACER COUNTY, CALIFORNIA

APRIL 2026





PROFILE

SCALE: 1" = 40' HORIZONTAL
1" = 4' VERTICAL

KING ENGINEERING
200 Auburn Folsom Road, Ste. 201
Auburn, California 95603
T: (530) 272-8328
E: Info@King-Engineering-Inc.com

*Figure not OCR compatible

ESTIA DRY CREEK – PHASE 2
PRELIMINARY DRAINAGE REPORT

PLN24-00144

JUNE 2026

Prepared For
HOMES BY TOWNE



KING ENGINEERING
200 Auburn Folsom Road, Ste. 201
Auburn, California 95603

TABLE OF CONTENTS

Contents	Page
Introduction	1
Project Description	1
Scope of the Report	1
FEMA Information	2
ULOP Applicability	2
Existing Conditions	2
Design Criteria	3
Hydrology & Hydraulics	4
Detention	6
Water Quality	6
References	7
Exhibit A: FEMA FIRM Panel	
Exhibit B: Web Soil Survey Soil Map	
Exhibit C: Drainage Peak Flow Calculations	
Table 1 – Estia Dry Creek Pre-Development Peak Flow Worksheet	
Table 2 – Estia Dry Creek Post-Development Peak Flow Worksheet	
Table 3 – Bypass Flow Table	
Table 4 – Pre-Development to Post-Development Comparison	
Exhibit D: Hydraulic Data and Profiles – 10-Year and 100-Year	
Exhibit E: Drainage Maps	
Drainage Map #1 – Pre-Development Overall Shed Map	
Drainage Map #2 – Post-Development Shed Map	
Drainage Map #3 – Project Index	
Drainage Map #4 – Blocked Inlet Scenario	
Drainage Map #5 – Site Assessment and Drainage Management Area Map	
Exhibit F: Post-Construction Storm Water Quality Plan Workbook	
Exhibit G: Storm Drain Alternative Routing	
Exhibit H: Storm Drain Pump Alternative	
Exhibit I: Storm Drain Alternative Profile	

INTRODUCTION

Project Description

The proposed "Estia Dry Creek & Placer Creek Residential" (Project) includes a total of approximately 88 acres, comprised of a 52.3-acre parcel (Assessor's Parcel No. 023-221-046) located on the north side of Walerga Road and a 35.3 -acre parcel (APN 023-221-061) located south and east of Walerga Road, collectively, the "project", Estia Dry Creek and Placer Creek Residential. This Phase 2 project consists of 110 residential units on 26.5 acres. Construction will include streets, storm drainage improvements, and underground utilities. The site is currently unimproved agricultural land. It is bounded on the north by Estia Dry Creek Phase 1 and bounded on the south by Walerga Road. The proposed underground storm drain system outfalls to Walerga Tributary south of Walerga Road.

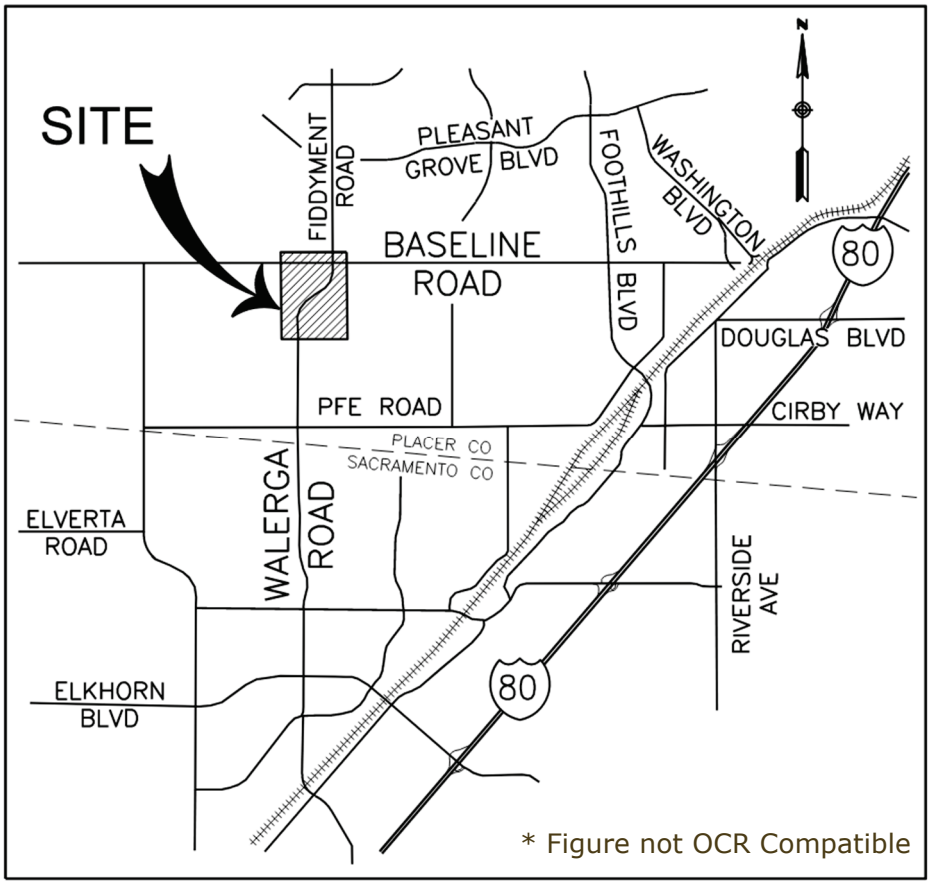


Figure 1: Project Vicinity Map

Scope of the Report

This report provides analysis and documents for the existing pre-developed watershed characteristics and determines the required drainage facilities that are necessary for development of the project. The report will confirm that the post-development changes will be consistent with what is shown on the Drainage Maps.

Pursuant to Reference 2, this is a regulated project with more than one acre of new impervious area proposed and is within the Phase II MS4 Permit Area.

FEMA Information

The Federal Emergency Management Agency's (FEMA) Flood Insurance Study (FIS) Flood Insurance Rate Map (FIRM) contains the project area is Preliminary FIRM Panel ID# 06061C1026J, effective April 12, 2024.

The Dry Creek Walerga Road Tributary is classified as Zone AE which means base flood elevations have been determined and analyzed with a Flood Insurance Study that generated the floodplain limits and a floodway has been established. The limits of the detailed study terminate east of Crowder Lane with Zone A floodplain, which means base flood elevations have not been determined.

ULOP Applicability

The following table shows that this project does not meet the Urban Level of Flood Protection (ULOP) as determined by Placer County to construct improvements within a ULOP boundary. These criteria, enacted by State Senate Bill 5 (SB 5) in 2007, were developed to assist counties and cities within the Sacramento-San Joaquin Valley in making findings related to ULOP before approving land use decisions.

ULOP APPLICABILITY

Refer to the Tentative Map for limits of ULOP floodplain with greater than 3' flooding depth

Finding of Fact / ULOP Criteria	Yes/No	Remark
The project is located within the Sacramento Valley	Yes	Dry Creek is tributary to the Sacramento River
The project is located within an urban area as defined by Code of Federal Regulations Title 44, Section 59.1.	Yes	
A portion of the project is located within a flood hazard zone that is mapped as either a special hazard area or an area of moderate hazard on FEMA FIRM Panels.	Yes	Zone AE Floodplain
The project is located within a watershed that is more than 10 square miles in size.	No	Dry Creek Walerga Road Tributary Watershed area is approximately 1.3 square miles per FEMA FIS report
The project is located within an area with a potential flood depth above 3.0 feet during a 200-year event, from sources of flooding other than localized conditions.	No	Project is located along Dry Creek Walerga Road Tributary
Is any disturbance or development proposed within the ULOP 200-year boundary?	No	Dry Creek ULOP is downstream at the confluence

Future, Fully-Developed, Unmitigated Floodplain

The limits of the future, fully-developed, unmitigated 100-year floodplain are calculated and depicted on the Drainage Maps. The project does not propose residential lots in the future, fully-developed, unmitigated 100-year floodplain.

EXISTING CONDITIONS

Ground slopes range significantly across the project area. The Phase 1 area ground and a portion of the Phase 2 area ground slopes north toward Baseline Road and a portion of the Phase 2 area ground slopes downhill towards Walerga Tributary and Dry Creek. Existing ground cover is primarily grassland with

rolling terrain. The USDA Soil Conservation Service classifies most of the soils within the project as Pleistocene alluvial deposits. The site soil is classified as hydrologic group D. ENGEO prepared a geotechnical study dated December 26, 2023 for the Estia Dry Creek project entitled "Estia at Dry Creek - Geotechnical Exploration". This report identifies the near surface soils generally as deeply weathered gravel, sand, and silt, which is consistent with the USDA data.

The Walerga Tributary is classified as Zone AE floodplain, which means base flood elevations have been determined and analyzed with a Flood Insurance Study that generated the floodplain limits and a floodway has been established. The river hydraulics and cross section profiles for the tributary are derived from the GeoHECRAS software provided by CivilGeo.



Figure 2: Pre-Development Land Photo, Baseline Rd, Looking South

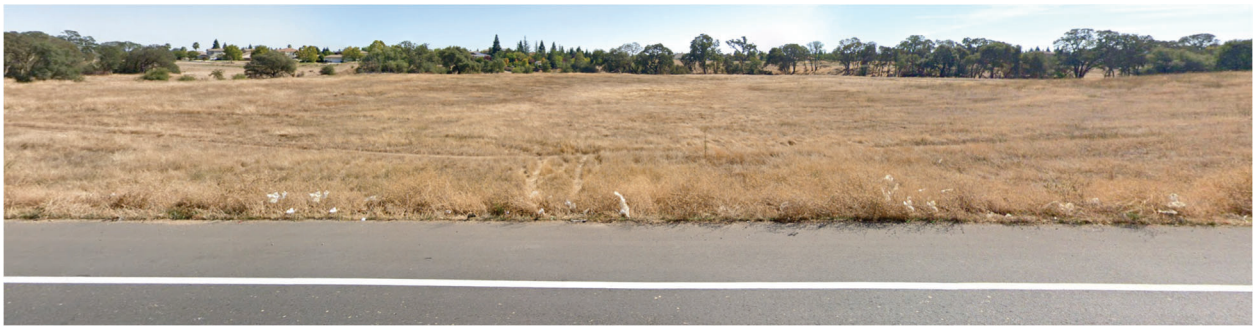


Figure 3: Pre-Development Land Photo, Walerga Rd, Looking Southeast

DESIGN CRITERIA

The design criteria listed below is also found in the West Placer Stormwater Quality Design Manual and Placer County Flood Control and Water Conservation District Stormwater Management Manual (SWMM).

- **The streets remain passable during the 10- and 100-Year storm events and the finished floor elevations are 1', or greater, from the 100-year water surface elevations.**
- **Inlet and Outlet pipes are to have matching Crown Elevations.**
- **The underground storm drain pipes do not flow full during the 10-Year storm.**

*Figures not OCR compatible

- **For Hydraulic Calculations, Pipes are sized as if all flow is captured at each inlet.**

- **Storm Drain pipes are designed to flow under gravity flow for up to the 10-year storm and allowed to flow surcharged, pressure flow for flows larger than the 10 year-storm.**

- **Culverts 30" in diameter and less are designed for 50% blockage at the inlet for the 10-year design storm. However, where there is a grated inlet with 8" maximum size opening, the inlet is designed for 50% blockage, but the culvert connected to such an inlet may be sized without blockage (figuring that large objects cannot get through the inlet openings to block the culvert).**

- **Gutters and inlets serving small drainage areas are sized according to Placer County drainage formulas as follows:**

$$\text{Sheet flow: } t_r = \frac{.355(nL)^{.6}}{S^{.3}}$$

$$\text{Channel flow: } t_r = \frac{.00735Ln^{.75}(1+z)^{.25}}{S^{.375}(A_c z)^{.25}}$$

$$\text{Peak Discharge: } Q = qA - A_p F_i$$

HYDROLOGY & HYDRAULICS

MacKay & Somps analyzed a portion of the existing shed to the Curry Creek watershed from this property in their drainage studies for The Storm Drainage Evaluation for Baseline Road – Segment 1, Upland Drive, Segment 5, and San Fernando Drive Improvement Plans Technical Memorandum dated September 19, 2023 and the Storm Drainage Evaluation for Baseline Road - Segment 3 & Portion of Segment 2 Improvement Plans Technical Memorandum, revision dated February 20, 2025 (for the C13X shed). The studies assumed a pre-development contributing area of 23.9 acres (i.e., Shed UP15X and C13X) draining to Baseline Rd within the Curry Creek Watershed. The Estia Dry Creek Pre-Development Shed Map (Drainage Map #1) assumes 35.6 acres (sheds 1-4) pre-development contributing area to Baseline Rd. within the Curry Creek Watershed, which is 11.7 acres greater than the contributing drainage area of 23.9 acres calculated by MacKay & Somps. In our professional opinion, any minor shed shift from Curry Creek to Dry Creek has no impact on Dry Creek and any downstream properties. This is supported by the HEC-RAS analysis presented in the preliminary drainage reports for Phases 3 & 4.

Maintaining the existing shed boundary on this project is not possible with any standard subdivision design. That is readily apparent from the pre-development shed boundaries in comparison to the site plan. The shape of the existing shed to Curry Creek is not conducive to any standard development for residential or commercial use if the shed boundary is strictly held and applied to development. The cross canal lawsuit determination created the City of Roseville's retention program in 1990 to mitigate volumetric impacts from Roseville to areas within Sutter County, which can experience flooding. The Curry Creek shed/Sutter County downstream is particularly sensitive to flood issues, while Dry Creek is not. Curry Creek is an intermittent watershed with unpredictable flows that is part of the Pleasant Grove Creek watershed. Dry Creek is a major regional watershed where detention is discouraged because of the large flood wave.

Other project grading and layout configurations were considered to more closely maintain the existing watershed boundaries and capacities but were determined to be impractical. The project is required to sewer south as that is where the existing Placer County sewer facilities are located. Draining the existing shed to the north would raise some areas of the site by as much as 10-feet. This would require a significant import of material, approximately 240,000 cubic yards. Transporting such large import quantities could

have significant air quality impacts. This would also result in steep road grades and potential noncompliance with ADA regulations.

Another option evaluated was a permanent storm drain pump facility. This pump facility would pump drainage from the existing shed boundary north toward the Baseline Rd storm drain system. Long-term maintenance requirements and electricity demands are higher with this type of system. Performance and reliability of these types of facilities over time can also be problematic, requiring special equipment and ongoing maintenance to function properly. Placer County Land Development Manual Section 5-11(J) states “The use of drainage pumps shall be avoided if at all possible, and is allowed only with approval of the Engineer.” The Placer County Flood Control and Water Conservation District Stormwater Management Manual (SWMM) also states in section VI-4 Drainage Systems, “Underground drainage systems shall be designed for ease of maintenance and repair.”

Please see Exhibits G, H and I for additional information on the shed shift and other design options considered.

In addition to the approximately 11.7 acres of shed shift to Dry Creek due to the difference in shed area assumptions with the MacKay and Somps Reports, the above design constraints result in an additional shed shift of approximately 14 acres. Therefore, the total shed shift from Curry Creek to Dry Creek is approximately 25.7 acres (11.7 acres + 14 acres) toward Walerga Tributary (Dry Creek), with 10.0 acres of Phase 1 continuing to drain to Curry Creek at the Sierra Vista master planned location in Baseline Rd previously described.

The County requires "compelling justification" to allow a shed shift, with supporting documentation and confirmation that the project does not negatively affect upstream or downstream drainage facilities. This project has coordinated with the County and Flood Control District for approval of this unique exception to SWMM policies (Section II(C)(3); Section IV(B)(3); Section VI(B)(1)(a)).

The project will discharge most of the stormwater runoff into Dry Creek Walerga Road Tributary. The watershed to Dry Creek is approximately 1.3 square miles. The peak flows for the various storm events were modeled in HEC-HMS (Version 4.9). The routing method used is Muskingum Method. The volumetric and discharge relationships were generated through existing surface information and HEC-RAS modeling to determine the necessary rating curve used in the Modified Puls method. The channel is approximated as a trapezoidal channel with a Muskingum Coefficient (X) between 0.10 and 0.20. The rainfall values were taken from Table 5-A-1 in the Stormwater Management Manual for the various storm events. The HEC-HMS model uses the Kinematic Wave transform method and initial/constant loss in determining flows. This method relates the shape of the channel, boundary roughness, and slope of the channel or overland flow surface. Though it simplifies the complex nature of drainage systems, the Kinematic Wave transform method provides a reasonably accurate approximation of flows.

The design flows for the 10-, 50, and 100-year storm events (10, 2 and 1 percent recurrence interval storms) for Dry Creek and the Antelope North Road Tributary were provided by FEMA and were unchanged. There was no 500-year storm flow (0.2 percent chance of occurrence storm) provided for the tributary. Hydraulic models for the existing, revised, and unmitigated scenarios for the Dry Creek Walerga Road Tributary were generated from FEMA FIS data. The Existing model reflects the current physical improvements and latest topography in the area. The HEC-RAS models were generated with the design flows produced by the HEC-HMS model and provide the basis for comparing existing conditions BFEs to revised BFEs to analyze the impacts of the proposed project both upstream and downstream. The models were created using GeoHECRAS software using steady, uniform flow under Subcritical conditions. Refer to Tables 4-6 of the Phase 3 & 4 drainage reports for HEC-RAS modeling inputs and results.

The total flows to Point B, as shown on Table 4, are Q10=57.5 cfs and Q100=108.7. This includes the shed shifted area from Phase 1, Phases 2A and 2B, as well as runoff from the backbone improvements. The infrastructure necessary for these flows is constructed with the Backbone improvements. Additionally, after treating these flows, Basin C is designed to outfall toward the existing 48-inch pipe system in Walerga Rd. The 48-inch outfall into the tributary will need to be extended outside of the roadway improvements constructed with the Backbone project. For simplicity and organization of information, this location is referred to as Point B, as it is the outfall of all flows from Phase 1 toward Dry Creek, Phases 2A and 2B, as well as Walerga Rd, after being treated at Basin C. Hydraulics demonstrating the adequacy of this system are presented in the Preliminary Backbone Drainage Report.

DETENTION & RETENTION

Though drainage detention is not required or recommended for Dry Creek and its tributaries, hydromodification is still required under the MS4 rules, even though the distinction between detention and hydromodification is not made clear. In the post-development condition, this phase discharges to Dry Creek; therefore, detention and retention are not required. Retention is only required for projects draining to the Curry Creek watershed.

WATER QUALITY

To evaluate storm water quality and best management policies (BMP) within the project limits, the West Placer Storm Water Quality Design Manual was referenced and used as a guideline for BMP locations. Drainage Management Areas (DMA) are delineated with infiltration basins shown in Drainage Map #5. The primary purpose of the infiltration basins is to retain minor storm events and capture any pollutants that would otherwise enter Dry Creek. The infiltration basins are primarily for minor storm events and are not intended to reduce the peak flows during extreme storm events. The BMPs shall be maintained in accordance with the project O&M Plan.

Treated Phase 1 flows at Basin B, which is located at the southern edge of the Phase 1 boundary, are collected via the project storm drain system at Park 1 in Phase 2A. The system collects flows from Phase 2B to the east and Phase 2A and directs them toward the Walerga Rd storm drain system analyzed in the Estia Dry Creek – Backbone Infrastructure Preliminary Drainage Report. Phase 2A constructs Basin C at the southwest corner of the project, which treats Phase 2A, Phase 2B, and the Backbone Infrastructure flows prior to outfalling into the Dry Creek Walerga Rd Tributary. Basin C is an underground infiltration basin. Additional flows from Walerga Rd will be directed toward underground infiltration Basin C.

The composite runoff coefficient (Rc) is determined using State Water Control Board Runoff Coefficient Fact Sheet 5.1.3. The fact sheet provides tables of various coefficients depending on land use. The land use within the Phase 2 project is medium density residential. An example calculation provided in Appendix A determined that the backbone portions do not accurately depict what is listed in the Fact Sheet. The Coefficient of 0.55 was used because it is the more conservative value for Water Quality calculations.

REFERENCES

Ref. 1: NPDES CA S000002, SWRCB Water Quality Order No. 2009-0009 DWQ, as amended by 2010-2014-DWQ and 2012-006-DWQ, Construction General Permit (permit to be obtained for the Project).

Ref. 2: NPDES General Permit No. CA S000004, SWRCB Water Quality Order No. 2013-00001 DWQ, WDRs for MS4s

Ref. 3: Placer County Storm Water Management Plan 2004, or latest update

Ref. 4: Placer County Storm Water Management Manual and Land Development Manual

Ref. 5: CASQA Stormwater BMP Handbook New Development and Redevelopment, Table 2.2 and Section 5.

Ref. 6: USDA, Soil Conservation Service, web soil survey website.

Ref. 7: ENVIROSTOR website: envirostor.dtsc.ca.gov/

Ref. 8: Hydraflow Express program for gutter and inlet sizing

Ref. 9: Update to the Dry Creek Watershed Flood Control Plan, Placer County Flood Control and Water Conservation District, November 2011

Ref. 10: Storm Drainage Evaluation for Baseline Road – Segment 1, Upland Drive, Segment 5, & San Fernando Drive Improvement Plans, MacKay & Somps, October 2022

Ref. 11: Storm Drainage Evaluation for Baseline Road – Segment 3 & Portion of Segment 2 Improvement Plans, MacKay & Somps, February 2025

EXHIBIT A

FEMA FIRM Panel



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 — Cross Sections with 1% Annual Chance
- 17.5 — Water Surface Elevation
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 — Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available effective flood hazard information for your community, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Mapping and Insurance eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be downloaded from the website. Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be acquired directly from the Flood Map Service Center at the website listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). The basemap shown is the USGS National Map: Orthoimagery. Last refreshed October, 2020.

Note: Some Special Flood Hazard Areas with elevations may not appear with elevation labels if the Base Flood Elevation or Cross-section line which communicates the elevation for the location appears on the adjacent panel. Please see the Panel Locator Diagram on this map panel to determine the adjacent panel and find the elevation feature there, or alternatively use the Flood Insurance Study report for detailed elevations by flood source.

SCALE

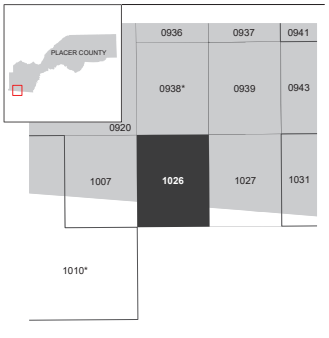
1 inch = 500 feet 1:6,000

0 250 500 1,000 1,500 2,000 feet

0 50 100 200 300 400 meters

Map Projection:
NAD 1983 StatePlane California II FIPS 0402 Feet
Vertical Datum: NAVD88

PANEL LOCATOR



*PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

PLACER COUNTY CALIFORNIA AND INCORPORATED AREAS

FEMA

Panel Contains:

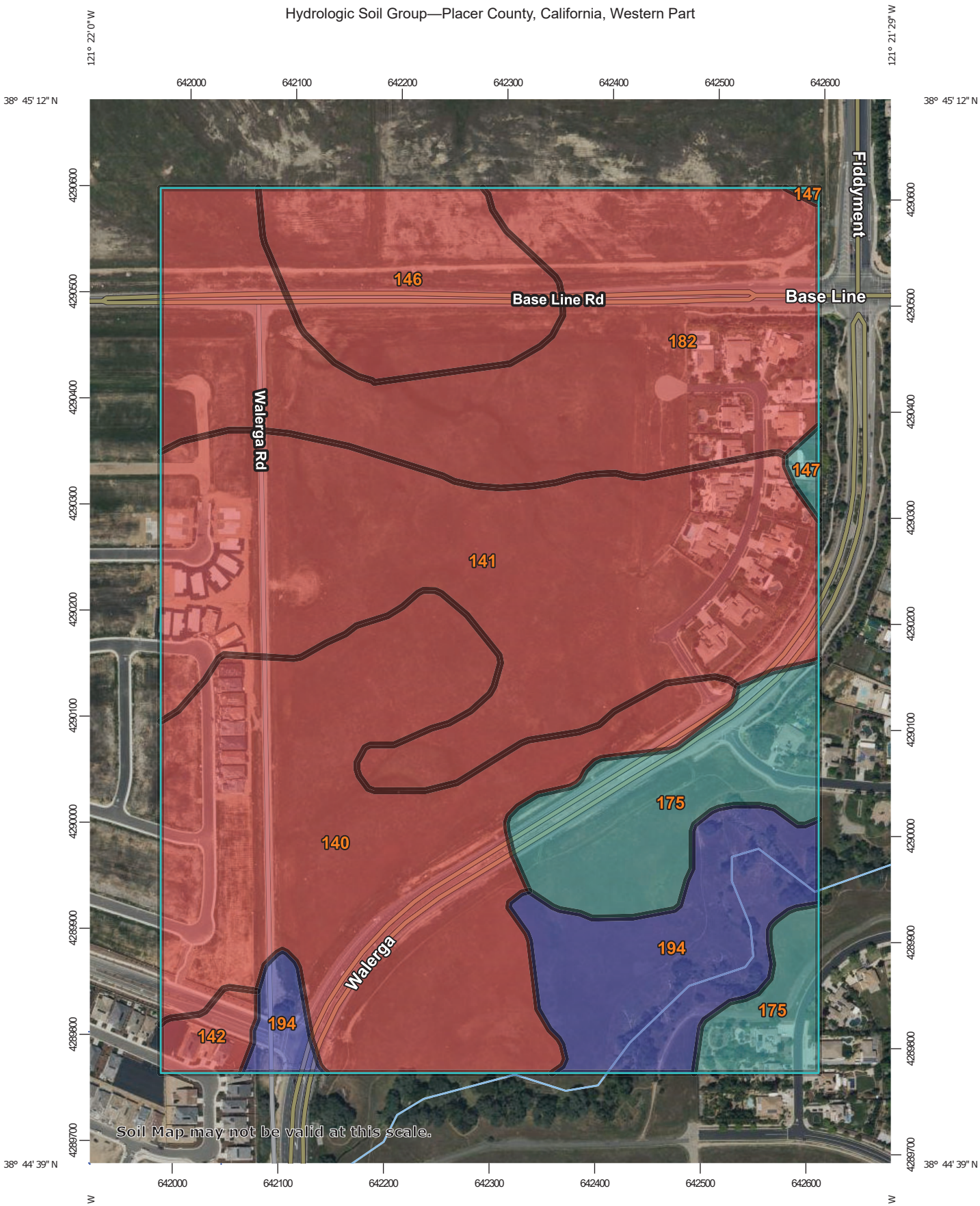
COMMUNITY	NUMBER	PANEL	SUFFIX
PLACER COUNTY UNINCORPORATED AREAS	060239	1026	J

MAP NUMBER
06061C1026J
EFFECTIVE DATE
Prelim Issue Date: 04/12/2024

*Figure not OCR compatible

EXHIBIT B

Web Soil Survey Soil Map



Map Scale: 1:4,890 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

* Figure not OCR Compatible

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Placer County, California, Western Part
Survey Area Data: Version 15, Aug 31, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 23, 2022—Apr 24, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
140	Cometa sandy loam, 1 to 5 percent slopes	D	32.3	25.0%
141	Cometa-Fiddyment complex, 1 to 5 percent slopes	D	32.1	24.9%
142	Cometa-Ramona sandy loams, 1 to 5 percent slopes	D	1.4	1.1%
146	Fiddyment loam, 1 to 8 percent slopes	D	10.1	7.8%
147	Fiddyment-Kaseberg loams, 2 to 9 percent slopes	C	0.5	0.4%
175	Ramona sandy loam, 2 to 9 percent slopes	C	11.8	9.2%
182	San Joaquin-Cometa sandy loams, 1 to 5 percent slopes	D	29.5	22.9%
194	Xerofluvents, frequently flooded	B	11.4	8.8%
Totals for Area of Interest			**128.9**	**100.0%**

EXHIBIT C

Drainage Peak Flow Calculations

Table 1

Estia Dry Creek Pre-Development Peak Flow

Watershed Data							Time of Concentration											Peak Flow			
Refer to drainage map and soil type							Overland Flow				Channel Flow							Fig 5-3A,C P.C. SWMM			
BASIN	DISCHARGE LOCATION	Elev.	Total Area (ac.)	Perv. Area	Soil Type	F_i	Length ft.	Slope ft/ft	N	t_r min.	Area (ac.)	Length ft.	Slope ft/ft	n	Z	t_r min.	Total Time (min.)	q_{10}	q_{100}	Q_{10} cfs	Q_{100} cfs
TO POINT A																					
3	PT. A	100	5.24	5.24	D	0.12	172	0.0038	0.4	23.92	5.24	1067	0.010	0.035	10	4.29	28.21	0.890	1.600	4.03	7.75
4		100	10.96	10.96	D	0.12	294	0.011	0.4	23.99	10.96	940	0.007	0.035	10	3.56	27.55	0.917	1.655	8.72	16.80
2		100	11.13	11.13	D	0.12	329	0.0047	0.4	33.12	11.13	1236	0.007	0.035	10	4.61	37.74	0.643	1.190	5.80	11.89
1		100	8.26	8.26	D	0.12	325	0.0162	0.4	22.69	8.26	1160	0.006	0.035	10	5.04	27.72	0.910	1.639	6.51	12.53
1>4		100	35.59	35.59	D	0.12											37.74	0.643	1.190	**18.54**	**38.03**
TO POINT B																					
5	PT. B	100	4.94	4.94	D	0.12	240	0.02	0.4	17.75	4.94	642	0.014	0.035	10	2.29	20.04	1.210	2.240	5.38	10.46
7		100	5.44	5.44	D	0.12	197	0.0308	0.4	13.85	5.44	446	0.017	0.035	10	1.43	15.28	1.680	3.048	8.48	15.92
6		100	5.37	5.37	D	0.12	248	0.0223	0.4	17.52	5.37	737	0.020	0.035	10	2.24	19.77	1.240	2.292	6.00	11.65
W1		100	4.52	1.13	D	0.12	100	0.0223	0.4	10.16	4.52	400	0.020	0.035	10	1.27	11.43	1.983	3.590	8.83	16.09
5>7		100	20.27	16.88	D	0.12											20.04	1.210	2.240	**22.47**	**43.35**
TO POINT C																					
8	PT. C	100	1.86	1.86	D	0.12	100	0.0051	0.4	15.82	1.86	642	0.014	0.035	10	2.92	18.74	1.330	2.446	2.25	4.32
9		100	11.09	11.09	D	0.12	197	0.0308	0.4	13.85	11.09	446	0.017	0.035	10	1.20	15.05	1.700	3.083	17.50	32.84
10		100	8.93	8.93	D	0.12	248	0.0223	0.4	17.52	8.93	737	0.020	0.035	10	1.98	19.50	1.270	2.343	10.25	19.84
11		100	3.80	3.80	D	0.12	215	0.0051	0.4	25.04	3.80	642	0.014	0.035	10	2.44	27.48	0.921	1.663	3.04	5.86
12		100	9.79	9.79	D	0.12	197	0.0308	0.4	13.85	9.79	446	0.017	0.035	10	1.23	15.09	1.700	3.083	15.45	28.99
13		100	4.52	4.52	D	0.12	248	0.0223	0.4	17.52	4.52	737	0.020	0.035	10	2.34	19.87	1.230	2.274	5.01	9.73
14		100	9.71	9.71	D	0.12	225	0.0051	0.4	25.73	9.71	642	0.014	0.035	10	1.93	27.67	0.914	1.647	7.69	14.81
8>14		100	49.70	49.70	D	0.12											27.67	0.914	1.647	**39.35**	**75.81**

Table 2

Estia Dry Creek Post-Development Peak Flow

Watershed Data								Time of Concentration											Peak Flow			
Refer to drainage map and soil type								Overland Flow				Channel Flow							Fig 5-3A,C P.C. SWMM			
SHED	DRAINAGE INLET	Elev.	Total Area (ac.)	Perv. Area	Soil Type	Infiltration Rate (in/hr)	F_i [1]	Length ft.	Slope ft/ft	N [5]	t_r [2] min.	Area (ac.)	Length ft.	Slope ft/ft	n	Z	t_r [3] min.	Total Time (min.)	q_{10}	q_{100}	Q_{10} [4] cfs	Q_{100} [4] cfs
TO PHASE 2 DISCHARGE																						
33	DI-1	100	0.90	0.27	D	0.12	0.21	144	0.01	0.4	15.00	0.90	144	0.0050	0.015	20	0.72	15.72	1.630	2.962	1.41	2.61
																	DI-1 TOTAL FLOW				**1.41**	**2.61**
34	DI-2	100	0.89	0.27	D	0.12	0.21	155	0.01	0.4	15.00	0.89	184	0.0340	0.015	20	0.45	15.45	1.660	3.014	1.42	2.63
																	DI-2 TOTAL FLOW				**1.42**	**2.63**
33>34	SDMH-1	100	1.79	0.54	D	0.12	0.21								**SDMH-1 TOTAL FLOW**			15.72	1.630	2.962	**2.81**	**5.19**
35	DI-3	100	0.62	0.19	D	0.12	0.21	125	0.01	0.4	14.77	0.62	188	0.0054	0.015	20	1.00	15.77	1.630	2.962	0.97	1.80
37		100	0.59	0.18	D	0.12	0.21	127	0.01	0.4	14.92	0.59	187	0.0083	0.015	20	0.86	15.78	1.630	2.962	0.92	1.71
																	DI-3 TOTAL FLOW				**1.90**	**3.51**
36	DI-4	100	0.79	0.24	D	0.12	0.21	128	0.01	0.4	15.00	0.79	201	0.0054	0.015	20	1.00	16.00	1.600	2.911	1.21	2.25
38		100	0.66	0.20	D	0.12	0.21	172	0.01	0.4	15.00	0.66	78	0.0083	0.015	20	0.35	15.35	1.670	3.031	1.06	1.96
																	DI-4 TOTAL FLOW				**2.28**	**4.21**
33>38	SDMH-2	100	4.45	1.34	D	0.12	0.21	SDMH-1 PIPE FLOW				1.79	266	0.0040	0.015	2	0.72	16.44				
															SDMH-2 TOTAL FLOW			16.44	1.560	2.842	**6.66**	**12.37**
39	DI-5	100	0.55	0.17	D	0.12	0.21	82	0.01	0.4	11.44	0.55	190	0.0053	0.015	20	1.05	12.48	1.905	3.450	1.01	1.86
																	DI-5 TOTAL FLOW				**1.01**	**1.86**
OS1	DI-6.1	100	1.08	0.54	D	0.12	0.21	130	0.01	0.4	15.00	1.08	385	0.0050	0.015	20	1.84	16.84	1.520	2.773	1.53	2.88
																	DI-6.1 TOTAL FLOW				**1.53**	**2.88**
40	DI-6	100	1.22	0.85	D	0.12	0.21	164	0.01	0.4	15.00	1.22	302	0.0053	0.015	20	1.37	16.37	1.570	2.859	1.74	3.31
																	DI-6 TOTAL FLOW				**1.74**	**3.31**
39>40, OS1	SDMH-4	100	2.85	1.56	D	0.12	0.21											16.84				
															SDMH-4 TOTAL FLOW			16.84	1.520	2.773	**4.01**	**7.58**
33>40, OS1	SDMH-5	100	7.30	2.89	D	0.12	0.21	SDMH-2 PIPE FLOW				4.45	225	0.0040	0.015	2	0.49	16.93				
								SDMH-4 PIPE FLOW				2.85	53	0.0051	0.015	2	0.12	16.95				
															SDMH-5 TOTAL FLOW			16.93	1.510	2.756	**10.42**	**19.51**

[1] SWMM Equation 5-5, Infiltration Factor

[2] SWMM Equation 5-3, Overland Flow Response Time

[3] SWMM Equation 5-4, Collector Flow Response Time

[4] SWMM Equation 5-6, Adjustment for Infiltration Peak Flow

[5] SWMM Table 5-5, Roughness Parameters for Overland Flow

Table 2 (CONT.)

Estia Dry Creek Post-Development Peak Flow

Watershed Data								Time of Concentration											Peak Flow			
Refer to drainage map and soil type								Overland Flow				Channel Flow							Fig 5-3A,C P.C. SWMM			
SHED	DRAINAGE INLET	Elev.	Total Area (ac.)	Perv. Area	Soil Type	Infiltration Rate (in/hr)	F_i [1]	Length ft.	Slope ft/ft	N [5]	t_r [2] min.	Area (ac.)	Length ft.	Slope ft/ft	n	Z	t_r [3] min.	Total Time (min.)	q_{10}	q_{100}	Q_{10} [4] cfs	Q_{100} [4] cfs
TO PHASE 2 DISCHARGE																						
41	DI-7	100	0.59	0.18	D	0.12	0.21	127	0.01	0.4	14.92	0.59	188	0.0050	0.015	20	1.04	15.96	1.610	2.928	0.91	1.69
																	DI-7 TOTAL FLOW				**0.91**	**1.69**
42	DI-8	100	0.25	0.08	D	0.12	0.21	125	0.01	0.4	14.77	0.25	51	0.0050	0.015	20	0.35	15.11	1.690	3.066	0.41	0.75
																	DI-8 TOTAL FLOW				**0.41**	**0.75**
33>42, OS1	SDMH-3	100	8.14	3.15	D	0.12	0.21	SDMH-5 PIPE FLOW				2.85	165	0.0040	0.015	2	0.40	16.84				
																	SDMH-3 TOTAL FLOW	16.84	1.520	2.773	**11.72**	**21.92**
43	DI-9	100	1.14	0.34	D	0.12	0.21	125	0.01	0.4	14.77	1.14	355	0.0050	0.015	20	1.67	16.44	1.560	2.842	1.71	3.17
44		100	1.37	0.41	D	0.12	0.21	125	0.01	0.4	14.77	1.37	392	0.0050	0.015	20	1.76	16.53	1.550	2.825	2.04	3.78
33>44, OS1		100	10.65	3.90	D	0.12	0.21	SDMH-3 PIPE FLOW				8.14	347	0.0040	0.015	2	0.65	17.49				
																		17.49	1.460	2.670	14.73	27.62
																	DI-9 TOTAL FLOW				**14.73**	**27.62**
PARK	PARK	100	2.06	0.62	D	0.12	0.21	100	0.01	0.4	12.93	2.06	100	0.0050	0.015	20	0.41	13.33	1.835	3.324	3.65	6.72
																	PARK TOTAL FLOW				**3.65**	**6.72**
33>44, PARK, OS1	SDMH-15.1	100	22.70	8.77	D	0.12	0.21	DI-9 PIPE FLOW				10.65	161	0.0050	0.015	2	0.26	17.74				
								PHASE 1 PIPE FLOW				9.99	100	0.0030	0.015	2	0.20	17.98				
																	SDMH-15.1 TOTAL FLOW	17.98	1.410	2.584	**30.18**	**56.83**
45	DI-10	100	0.54	0.16	D	0.12	0.21	116	0.01	0.4	14.13	0.54	122	0.0100	0.015	20	0.53	14.66	1.733	3.142	0.90	1.66
																	DI-10 TOTAL FLOW				**0.90**	**1.66**
46	DI-11	100	0.57	0.17	D	0.12	0.21	116	0.01	0.4	14.14	0.57	131	0.0100	0.015	20	0.57	14.70	1.726	3.128	0.95	1.75
																	DI-11 TOTAL FLOW				**0.95**	**1.75**
45>46	SDMH-7	100	1.11	0.33	D	0.12	0.21											14.70				
																	SDMH-7 TOTAL FLOW	14.70	1.726	3.128	**1.85**	**3.40**
47	DI-12	100	0.90	0.27	D	0.12	0.21	125	0.01	0.4	14.77	0.90	272	0.0100	0.015	20	1.05	15.81	1.620	2.945	1.40	2.59
49		100	0.55	0.17	D	0.12	0.21	127	0.01	0.4	14.92	0.55	166	0.0042	0.015	20	1.00	15.92	1.610	2.928	0.85	1.58
																	DI-12 TOTAL FLOW				**2.25**	**4.17**
48	DI-13	100	0.90	0.27	D	0.12	0.21	125	0.01	0.4	14.77	0.90	272	0.0100	0.015	20	1.05	15.81	1.620	2.945	1.40	2.59
50		100	0.42	0.13	D	0.12	0.21	127	0.01	0.4	14.93	0.42	92	0.0042	0.015	20	0.59	15.52	1.650	2.997	0.67	1.23
																	DI-13 TOTAL FLOW				**2.07**	**3.83**
45>50	SDMH-2.6	100	3.88	1.16	D	0.12	0.21	SDMH-7 PIPE FLOW				1.11	275	0.0050	0.015	2	0.77	15.48				
																	SDMH-2.6 TOTAL FLOW	15.92	1.610	2.928	**6.00**	**11.12**

[1] SWMM Equation 5-5, Infiltration Factor
[2] SWMM Equation 5-3, Overland Flow Response Time
[3] SWMM Equation 5-4, Collector Flow Response Time
[4] SWMM Equation 5-6, Adjustment for Infiltration Peak Flow
[5] SWMM Table 5-5, Roughness Parameters for Overland Flow

Table 2 (CONT.)

Estia Dry Creek Post-Development Peak Flow

Watershed Data								Time of Concentration											Peak Flow			
Refer to drainage map and soil type								Overland Flow				Channel Flow							Fig 5-3A,C P.C. SWMM			
SHED	DRAINAGE INLET	Elev.	Total Area (ac.)	Perv. Area	Soil Type	Infiltration Rate (in/hr)	F_i [1]	Length ft.	Slope ft/ft	N [5]	t_r [2] min.	Area (ac.)	Length ft.	Slope ft/ft	n	Z	t_r [3] min.	Total Time (min.)	q_{10}	q_{100}	Q_{10} [4] cfs	Q_{100} [4] cfs
TO PHASE 2 DISCHARGE																						
51	DI-14	100	1.12	0.34	D	0.12	0.21	125	0.01	0.4	14.74	1.12	206	0.0100	0.015	20	0.75	15.49	1.660	3.014	1.79	3.31
52		100	0.69	0.21	D	0.12	0.21	124	0.01	0.4	14.69	0.69	190	0.0100	0.015	20	0.78	15.47	1.660	3.014	1.10	2.04
																	DI-14 TOTAL FLOW				**2.89**	**5.34**
51>52	SDMH-2.7	100	1.81	0.54	D	0.12	0.21											15.49				
																	SDMH-2.7 TOTAL FLOW	15.49	1.660	3.014	**2.89**	**5.34**
53	DI-15	100	0.35	0.11	D	0.12	0.21	127	0.01	0.4	14.92	0.35	104	0.0042	0.015	20	0.70	15.62	1.640	2.980	0.55	1.02
																	DI-15 TOTAL FLOW				**0.55**	**1.02**
54	DI-16	100	0.23	0.07	D	0.12	0.21	135	0.01	0.4	15.00	0.23	35	0.0042	0.015	20	0.26	15.26	1.680	3.048	0.37	0.69
																	DI-16 TOTAL FLOW				**0.37**	**0.69**
51>54	SDMH-2.8	100	2.39	0.72	D	0.12	0.21	SDMH-2.7 PIPE FLOW				1.81	172	0.0050	0.015	2	0.43	15.69				
																	SDMH-2.8 TOTAL FLOW	15.69	1.640	2.980	**3.77**	**6.97**
45>54	SDMH-2.9	100	6.27	1.88	D	0.12	0.21	SDMH-2.6 PIPE FLOW				3.88	142	0.0205	0.015	2	0.17	16.09				
								SDMH-2.8 PIPE FLOW				2.39	87	0.0050	0.015	2	0.20	15.89				
																	SDMH-2.9 TOTAL FLOW	16.09	1.600	2.911	**9.64**	**17.86**
55	DI-17	100	0.49	0.15	D	0.12	0.21	125	0.01	0.4	14.75	0.49	149	0.0101	0.015	20	0.67	15.42	1.660	3.014	0.78	1.45
																	DI-17 TOTAL FLOW				**0.78**	**1.45**
56	DI-18	100	0.92	0.28	D	0.12	0.21	135	0.01	0.4	15.00	0.92	198	0.0101	0.015	20	0.76	15.76	1.630	2.962	1.44	2.67
																	DI-18 TOTAL FLOW				**1.44**	**2.67**
45>56	SDMH-2.14	100	7.68	2.30	D	0.12	0.21	SDMH-2.9 PIPE FLOW				6.27	52	0.0050	0.015	2	0.09	16.19				
																	SDMH-2.14 TOTAL FLOW	16.19	1.590	2.894	**11.73**	**21.74**
57	DI-20	100	1.47	0.44	D	0.12	0.21	118	0.01	0.4	14.29	1.47	412	0.0100	0.015	20	1.40	15.69	1.640	2.980	2.32	4.29
																	DI-20 TOTAL FLOW				**2.32**	**4.29**
58+64	DI-21	100	0.54	0.16	D	0.12	0.21	8	0.02	0.11	1.06	0.54	437	0.0100	0.015	20	1.91	2.98	2.520	5.020	1.33	2.68
																	DI-21 TOTAL FLOW				**1.33**	**2.68**
57>58	SDMH-2.11	100	2.01	0.60	D	0.12	0.21											15.69				
																	SDMH-2.11 TOTAL FLOW	15.69	1.640	2.980	**3.17**	**5.86**

[1] SWMM Equation 5-5, Infiltration Factor
[2] SWMM Equation 5-3, Overland Flow Response Time
[3] SWMM Equation 5-4, Collector Flow Response Time
[4] SWMM Equation 5-6, Adjustment for Infiltration Peak Flow
[5] SWMM Table 5-5, Roughness Parameters for Overland Flow

Table 2 (CONT.)

Estia Dry Creek Post-Development Peak Flow

Watershed Data								Time of Concentration											Peak Flow			
Refer to drainage map and soil type								Overland Flow				Channel Flow							Fig 5-3A,C P.C. SWMM			
SHED	DRAINAGE INLET	Elev.	Total Area (ac.)	Perv. Area	Soil Type	Infiltration Rate (in/hr)	F_i [1]	Length ft.	Slope ft/ft	N [5]	t_r [2] min.	Area (ac.)	Length ft.	Slope ft/ft	n	Z	t_r [3] min.	Total Time (min.)	q_{10}	q_{100}	Q_{10} [4] cfs	Q_{100} [4] cfs
TO PHASE 2 DISCHARGE																						
59	DI-19	100	1.02	0.31	D	0.12	0.21	127	0.01	0.4	14.92	1.02	281	0.0050	0.015	20	1.36	16.28	1.580	2.876	1.55	2.87
																	DI-19 TOTAL FLOW				**1.55**	**2.87**
45>59	SDMH-2.10	100	10.71	3.21	D	0.12	0.21	SDMH-2.14 PIPE FLOW				2.01	40	0.0035	0.015	2	0.11	16.30				
								SDMH-2.11 PIPE FLOW				1.02	34	0.0040	0.015	2	0.11	15.80				
																	SDMH-2.10 TOTAL FLOW	16.30	1.580	2.876	**16.25**	**30.14**
60	DI-22	100	0.61	0.18	D	0.12	0.21	128	0.01	0.4	14.98	0.61	170	0.0050	0.015	20	0.93	15.92	1.610	2.928	0.94	1.75
																	DI-22 TOTAL FLOW				**0.94**	**1.75**
61	DI-23	100	1.10	0.33	D	0.12	0.21	191	0.01	0.4	15.00	1.10	179	0.0050	0.015	20	0.85	15.85	1.620	2.945	1.71	3.17
																	DI-23 TOTAL FLOW				**1.71**	**3.17**
60>61	SDMH-14	100	1.71	0.51	D	0.12	0.21										**SDMH-14 TOTAL FLOW**	15.92	1.610	2.928	**2.65**	**4.90**
62	DI-25	100	1.15	0.35	D	0.12	0.21	126	0.01	0.4	14.85	1.15	356	0.0050	0.015	20	1.67	16.52	1.550	2.825	1.71	3.18
								SDMH-15.1 PIPE FLOW				22.70	129	0.0050	0.015	2	0.17	18.16				
		100	23.85	9.12	D	0.12	0.21											18.16	1.390	2.550	31.25	58.91
																	DI-25 TOTAL FLOW				**31.25**	**58.91**
63	DI-24	100	1.30	0.39	D	0.12	0.21	137	0.01	0.4	15.00	1.30	339	0.0050	0.015	20	1.54	16.54	1.550	2.825	1.93	3.59
																	DI-24 TOTAL FLOW				**1.93**	**3.59**
33>34, PARK, 60>63, OS1	SDMH-15	100	26.86	10.02	D	0.12	0.21	SDMH-14 PIPE FLOW				1.71	384	0.0150	0.015	2	0.64	16.56				
																	SDMH-15 TOTAL FLOW	18.16	1.390	2.550	**35.24**	**66.39**
33>63, PARK	SDMH-16	100	37.57	13.24	D	0.12	0.21	SDMH-2.10 PIPE FLOW				10.71	117	0.0050	0.015	2	0.19	16.49				
								SDMH-15 PIPE FLOW				26.86	180	0.0140	0.015	2	0.16	18.31				
																	SDMH-16 TOTAL FLOW	18.31	1.370	2.515	**48.71**	**91.74**
33>63, PARK, OS1	**PHASE 2**	100	37.57	13.24	D	0.12	0.21	SDMH-16 PIPE FLOW				37.57	277	0.0012	0.015	2	0.55	18.86				
																	PHASE 2 TOTAL FLOW	18.86	1.320	2.429	**46.83**	**88.51**

[1] SWMM Equation 5-5, Infiltration Factor

[2] SWMM Equation 5-3, Overland Flow Response Time

[3] SWMM Equation 5-4, Collector Flow Response Time

[4] SWMM Equation 5-6, Adjustment for Infiltration Peak Flow

[5] SWMM Table 5-5, Roughness Parameters for Overland Flow

Table 3

Bypass Flow Table

GUTTER AND BYPASS FLOW DATA																			
				GUTTER FLOW											ON GRADE INLETS				
SHEDS	GUTTER	TO DRAINAGE INLET	INLET CONDITION	GUTTER SLOPE ft/ft	Q_{10} cfs	ADD Q_{10} UPSTREAM BYPASS cfs	Q_{10} TOTAL cfs	Q_{100} cfs	ADD Q_{100} UPSTREAM BYPASS cfs	Q_{100} TOTAL cfs	Q_{10} GUTTER CAP cfs	Q_{10} GUTTER SPREAD ft	Q_{100} GUTTER SPREAD ft	Q_{100} GUTTER DEPTH ft	Q_{10} INLET CAP cfs	Q_{10} BYPASS cfs	Q_{100} INLET CAP cfs	Q_{100} BYPASS cfs	BYPASS TARGET
(MAP 2)											(REF 10)								
PHASE 2 DISCHARGE - TYPE 1A CURB AND GUTTER																			
33	g33	DI-1	ON GRADE	0.0050	1.41	0.00	1.41	2.61	0.00	2.61	2.00	6.01	8.92	0.38	1.19	0.22	1.93	0.68	DI-3
34	g34	DI-2	ON GRADE	0.0340	1.42	0.00	1.42	2.63	0.00	2.63	1.36	2.56	3.98	0.28	1.36	0.06	2.28	0.35	DI-4
35	g35	DI-3	SAG	0.0054	0.97	0.22	1.19	1.80	0.68	2.48	-	2.72	6.44	0.33	OK	-	OK	-	-
37	g37	DI-3	SAG	0.0083	0.92	0.22	1.15	1.71	0.68	2.39	-	2.68	6.14	0.32	OK	-	OK	-	-
36	g36	DI-4	SAG	0.0054	1.21	0.06	1.28	2.25	0.35	2.60	-	2.80	6.82	0.33	OK	-	OK	-	-
38	g38	DI-4	SAG	0.0083	1.06	0.32	1.38	1.96	1.01	2.97	-	2.89	7.97	0.36	OK	-	OK	-	-
39	g39	DI-5	ON GRADE	0.0053	1.01	0.00	1.01	1.86	0.00	1.86	2.00	3.84	6.96	0.34	0.91	0.10	1.50	0.36	DI-8
40	g40	DI-6	ON GRADE	0.0053	1.74	0.00	1.74	3.31	0.00	3.31	2.00	6.61	10.09	0.40	1.42	0.32	2.30	1.01	DI-4
41	g41	DI-7	ON GRADE	0.0050	0.91	0.00	0.91	1.69	0.00	1.69	2.00	3.46	6.61	0.33	0.83	0.08	1.38	0.31	DI-9
42	g42	DI-8	ON GRADE	0.0050	0.41	0.10	0.51	0.75	0.36	1.11	2.00	2.50	4.46	0.29	0.5	0.01	0.96	0.15	DI-9
43	g43	DI-9	SAG	0.0050	1.71	0.08	1.79	3.17	0.31	3.48	-	4.08	9.48	0.39	OK	-	OK	-	-
44	g44	DI-9	SAG	0.0050	2.04	0.01	2.05	3.78	0.15	3.94	-	5.00	10.79	0.41	OK	-	OK	-	-
45	g45	DI-10	ON GRADE	0.0100	0.90	0.00	0.90	1.66	0.00	1.66	2.80	2.72	4.74	0.29	0.85	0.05	1.43	0.23	DI-12
46	g46	DI-11	ON GRADE	0.0100	0.95	0.00	0.95	1.75	0.00	1.75	2.80	2.77	5.01	0.30	0.89	0.06	1.49	0.26	DI-13
47	g47	DI-12	SAG	0.0100	1.40	0.05	1.45	2.59	0.23	2.83	-	2.96	7.54	0.35	OK	-	OK	-	-
49	g49	DI-12	SAG	0.0042	0.85	0.23	1.08	1.58	0.00	1.58	-	2.61	3.31	0.26	OK	-	OK	-	-
48	g48	DI-13	SAG	0.0100	1.40	0.06	1.46	2.59	0.26	2.85	-	2.97	7.60	0.35	OK	-	OK	-	-
50	g50	DI-13	SAG	0.0042	0.67	0.26	0.92	1.23	0.00	1.23	-	2.45	2.75	0.24	OK	-	OK	-	-
51	g51	DI-14	SAG	0.0100	1.79	0.02	1.81	3.31	0.11	3.42	-	4.16	9.31	0.38	OK	-	OK	-	-
52	g52	DI-14	SAG	0.0100	1.10	0.00	1.10	2.04	0.04	2.07	-	2.68	6.14	0.32	OK	-	OK	-	-
53	g53	DI-15	ON GRADE	0.0042	0.55	0.00	0.55	1.02	0.00	1.02	2.00	2.66	4.47	0.29	0.53	0.02	0.91	0.11	DI-14
54	g54	DI-16	ON GRADE	0.0042	0.37	0.00	0.37	0.69	0.00	0.69	2.00	2.29	2.90	2.99	0.37	0.00	0.65	0.04	DI-14
55	g55	DI-17	SAG	0.0101	0.78	0.00	0.78	1.45	0.00	1.45	-	2.29	2.96	0.25	OK	-	OK	-	-
56	g56	DI-18	SAG	0.0101	1.44	0.46	1.90	2.67	1.71	4.37	-	4.48	11.96	0.44	OK	-	OK	-	-
57	g57	DI-20	SAG	0.0100	2.32	0.00	2.32	4.29	0.00	4.29	-	5.91	11.74	0.43	OK	-	OK	-	-
58+64	g58	DI-21	SAG	0.0100	1.33	0.34	1.67	2.68	1.11	3.79	-	3.65	10.37	0.41	OK	-	OK	-	-
59	g59	DI-19	ON GRADE	0.0050	1.55	0.54	2.09	2.87	1.76	4.63	2.00	7.72	12.26	0.44	1.63	0.46	2.92	1.71	DI-18
60	g60	DI-22	ON GRADE	0.0050	0.94	0.00	0.94	1.75	0.00	1.75	2.00	3.62	6.79	0.33	0.85	0.09	1.42	0.33	DI-25
61	g61	DI-23	ON GRADE	0.0050	1.71	0.00	1.71	3.17	0.00	3.17	2.00	6.67	10.01	0.40	1.4	0.31	2.23	0.94	DI-24
62	g52	DI-25	ON GRADE	0.0050	1.71	0.09	1.80	3.18	0.33	3.50	2.00	6.94	10.58	0.41	1.46	0.34	2.39	1.11	DI-21
63	g63	DI-24	ON GRADE	0.0050	1.93	0.34	2.28	3.59	1.11	4.71	2.00	8.19	12.37	0.45	1.74	0.54	2.95	1.76	DI-19
REF 1:		Hydraflow Express program																	
NOTES:		1. Design flow floods up to the but not including travel lanes - on site streets																	
		2. Design Capacity is based on Reference 4, Table 6-1 "Allowable Street Encroachments" & LDM Section 5-13																	
		3. Gutter spread is measured from face of curb.																	

Table 4

Pre-Development to Post-Development Comparison

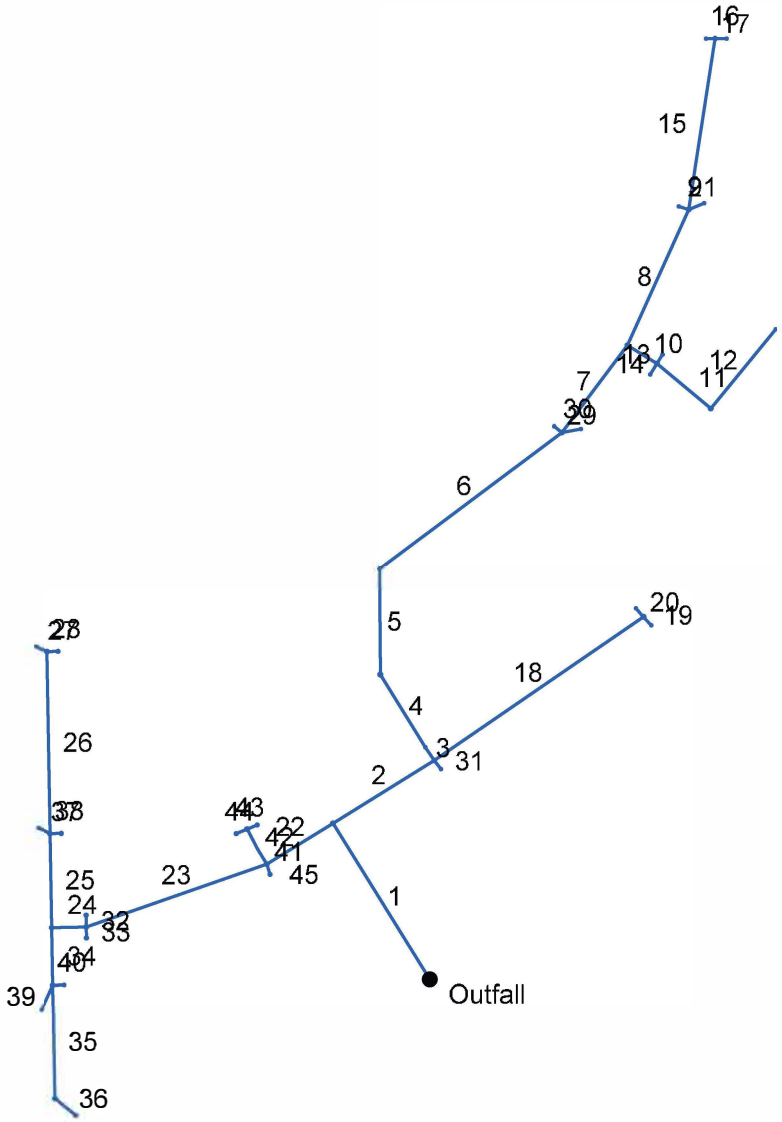
PRE-DEVELOPMENT					POST-DEVELOPMENT					Comments:
Discharge Location	**Sheds**	**Area - ac.**	**Q10**	**Q100**	**Discharge Location**	**Sheds**	**Area - ac.**	**Q10**	**Q100**	
POINT A	1>4	35.6	18.5	38.0	POINT A	12>13, 24>30	9.9	13.4	25.5	Runoff towards infiltration basin and existing storm drain per Segment 1, Upland Drive
PT. A PRE TOTAL		**35.6**	**18.5**	**38.0**	**PT. A POST TOTAL**		**9.9[1]**	**13.4**	**25.5**	Discharge towards existing storm drain at Baseline; Curry Creek
POINT B	5>7	20.3	22.5	43.3	PHASE 1 DISCHARGE	1>11, 14>23, 31>32	10.0	13.4	25.3	Infiltration Basin B at Phase 1; Runoff towards Point B
					PHASE 2 DISCHARGE	33>63	28.6	36.3	68.4	Phase 2 Runoff
					BACKBONE TO POINT B	105>120	7.3	7.8	15.1	Walerga Runoff
PT. B PRE TOTAL		**20.3**	**22.5**	**43.3**	**PT. B POST TOTAL**		**45.9[1]**	**57.5**	**108.7**	Overall runoff from Phases 1, 2, and Backbone (Walerga)
POINT C	8>14	49.7	39.3	75.8	TO PHASE 3 DISCHARGE 1	PH3-OS1, 64>67	5.4	4.1	7.8	Infiltration Basin D at Phase 3
					TO PHASE 3 DISCHARGE 2	PH3-OS2, 68>81	15.0	13.1	25.5	Infiltration Basin E at Phase 3
					TO PHASE 4 DISCHARGE 1	OS3, 82>88	7.3	5.8	11.0	Infiltration Basin F at Phase 4
					TO PHASE 4 DISCHARGE 2	OS2, 89>96	22.2	22.9	45.1	Infiltration Basin G at Phase 4
PT. C PRE TOTAL		**49.7**	**39.3**	**75.8**	**PT. C POST TOTAL**		**49.8**	**45.9**	**89.4**	Overall runoff from Phases 3 and 4
PT. D PRE TOTAL		**70.0**	**61.8**	**119.2**	**PT. D POST TOTAL**		**95.7**	**103.4**	**198.2**	Point D = Point B + Point C; At Walerga Tributary
PRE OVERALL TOTAL		**105.6**	**80.4**	**157.2**	**POST OVERALL TOTAL**		**105.6**	**116.8**	**223.6**	Total Overal Project

[1]25.7 acres are proposed to be shifted from the Curry Creek watershed to the Dry Creek watershed from Point A to Point B. The associated 100-year flows from this shed shift are 25.3 cfs from Phase 1 and 39.2 cfs from Phase 2. The associated 10-year flows from this shed shift are 13.4 cfs from Phase 1 and 17.3 cfs from Phase 2.

EXHIBIT D

Hydraulic Data and Profiles – 10-Year and 100-Year

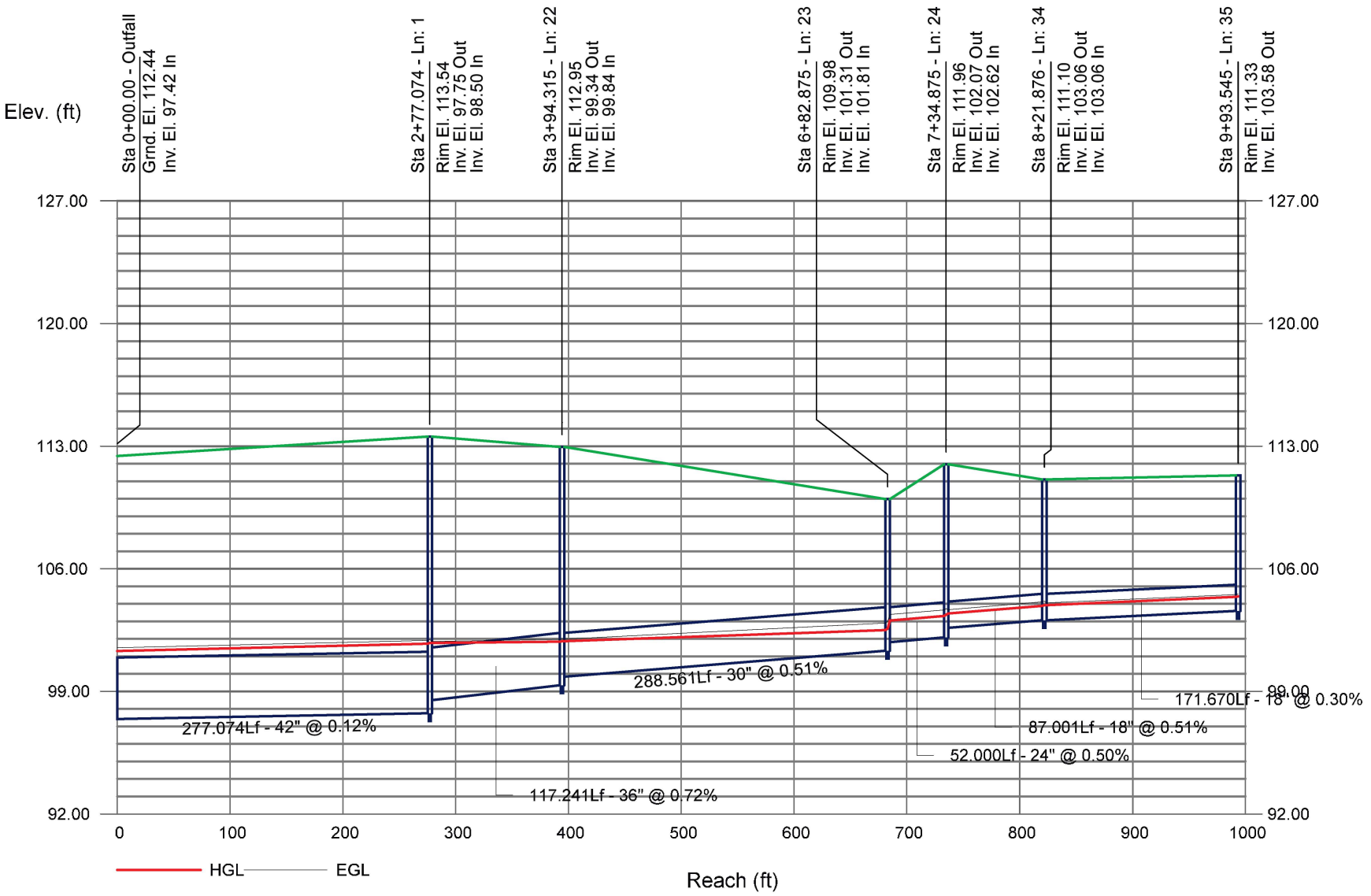
Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Phase 2 10-Year_update.stm	* Figure not OCR Compatible	Number of lines: 45	Date: 5/6/2026

Storm Sewer Profile

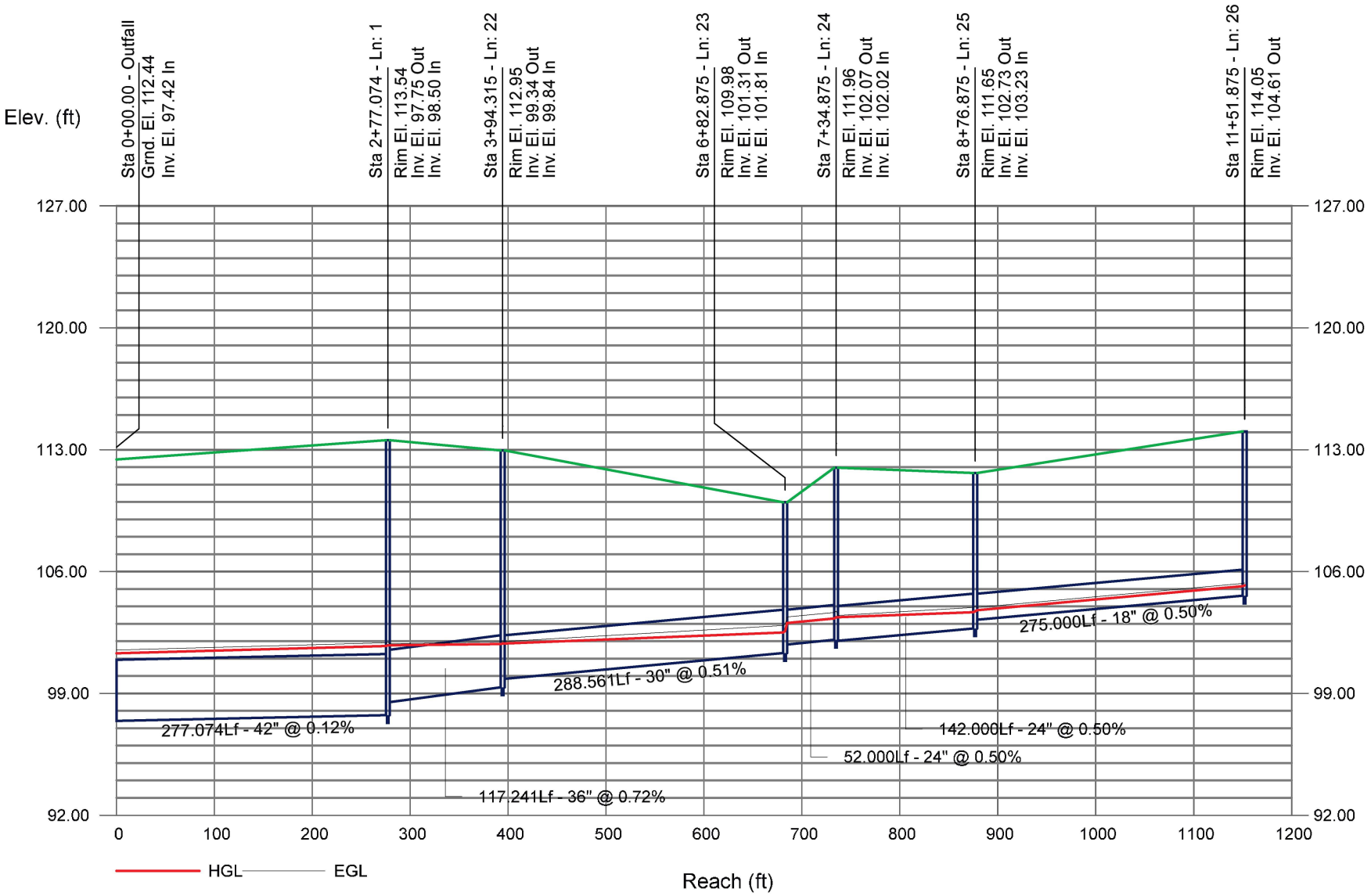
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* Figure not OCR Compatible

Storm Sewer Profile

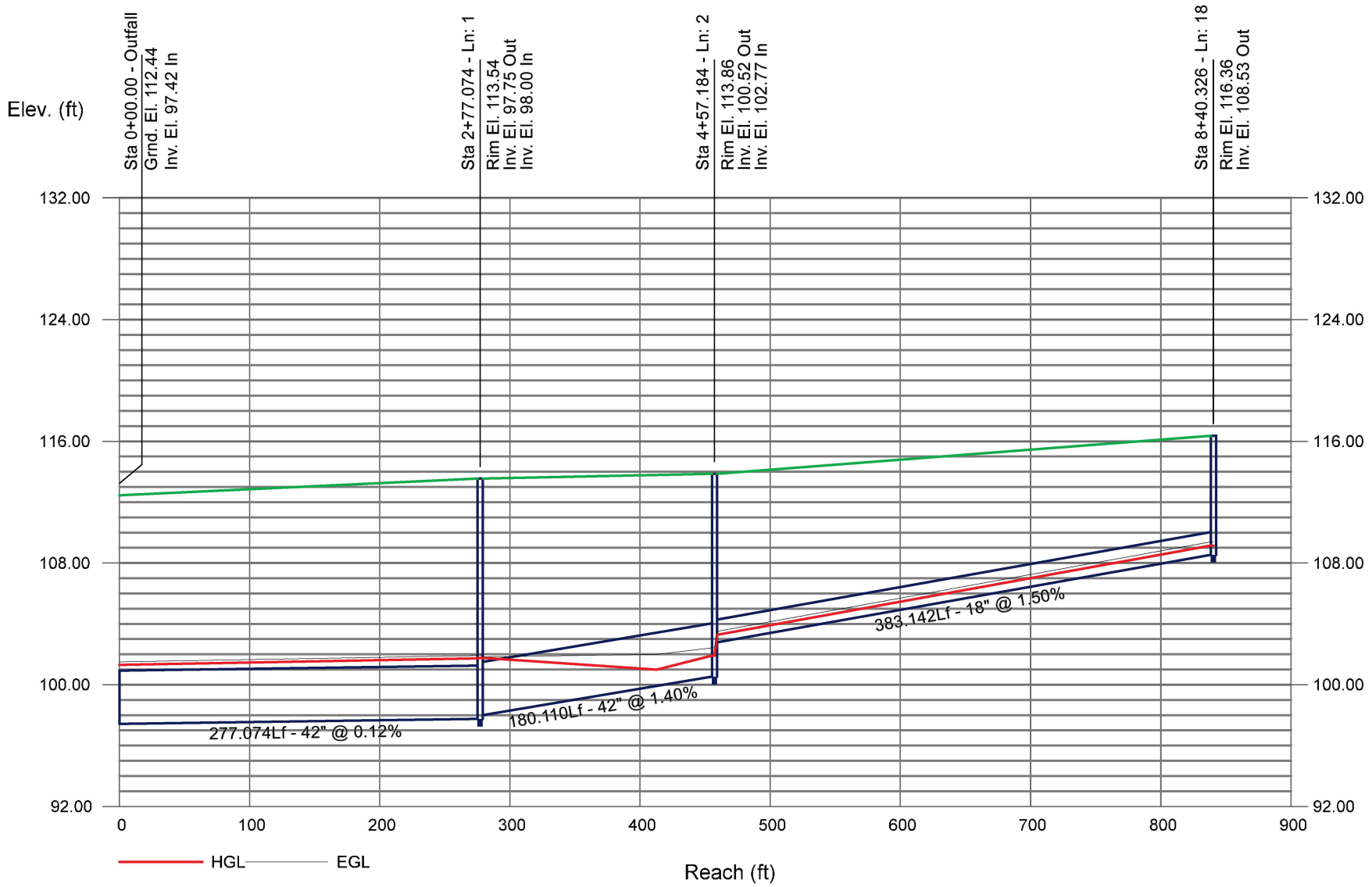
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* Figure not OCR Compatible

Storm Sewer Profile

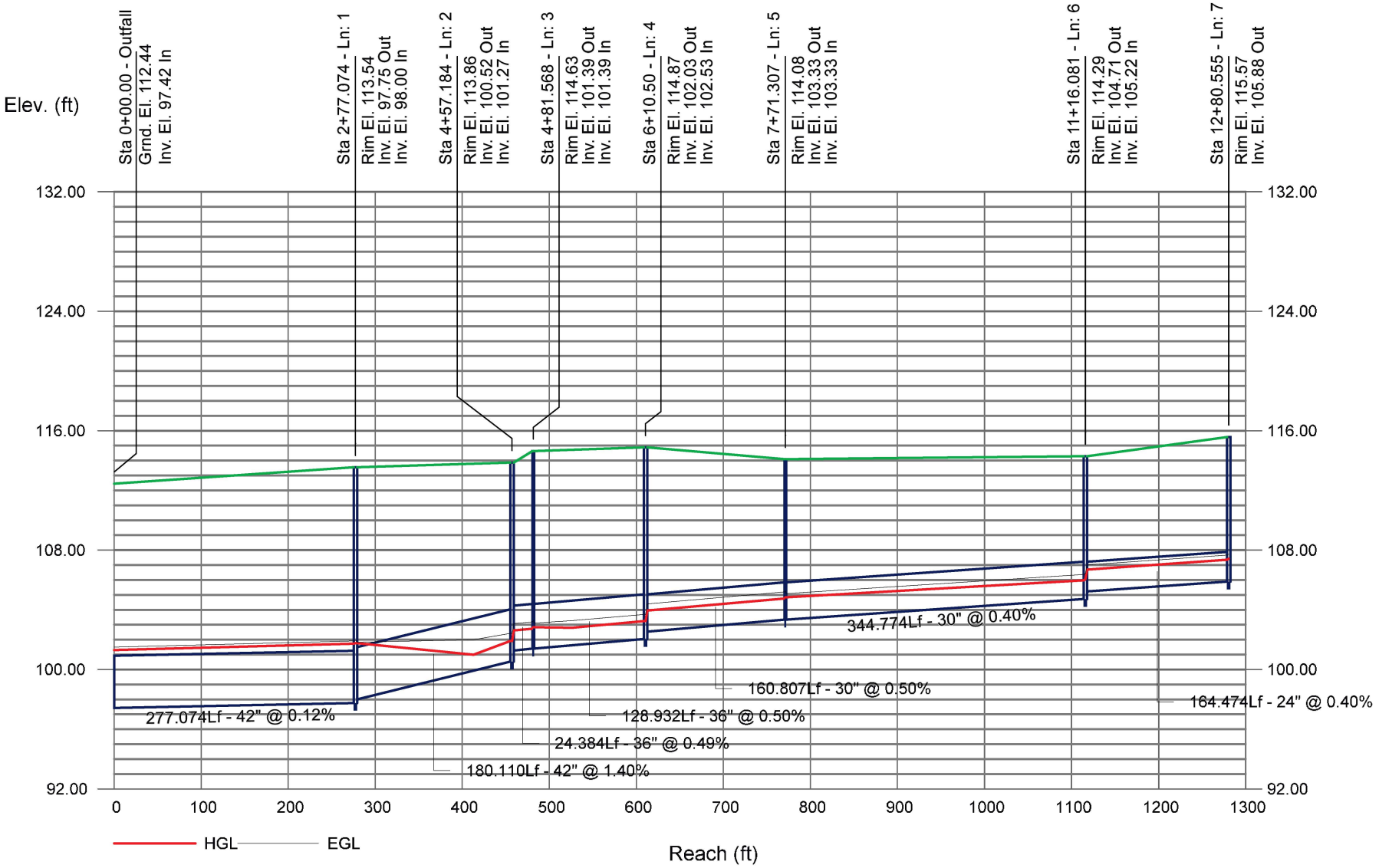
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* Figure not OCR Compatible

Storm Sewer Profile

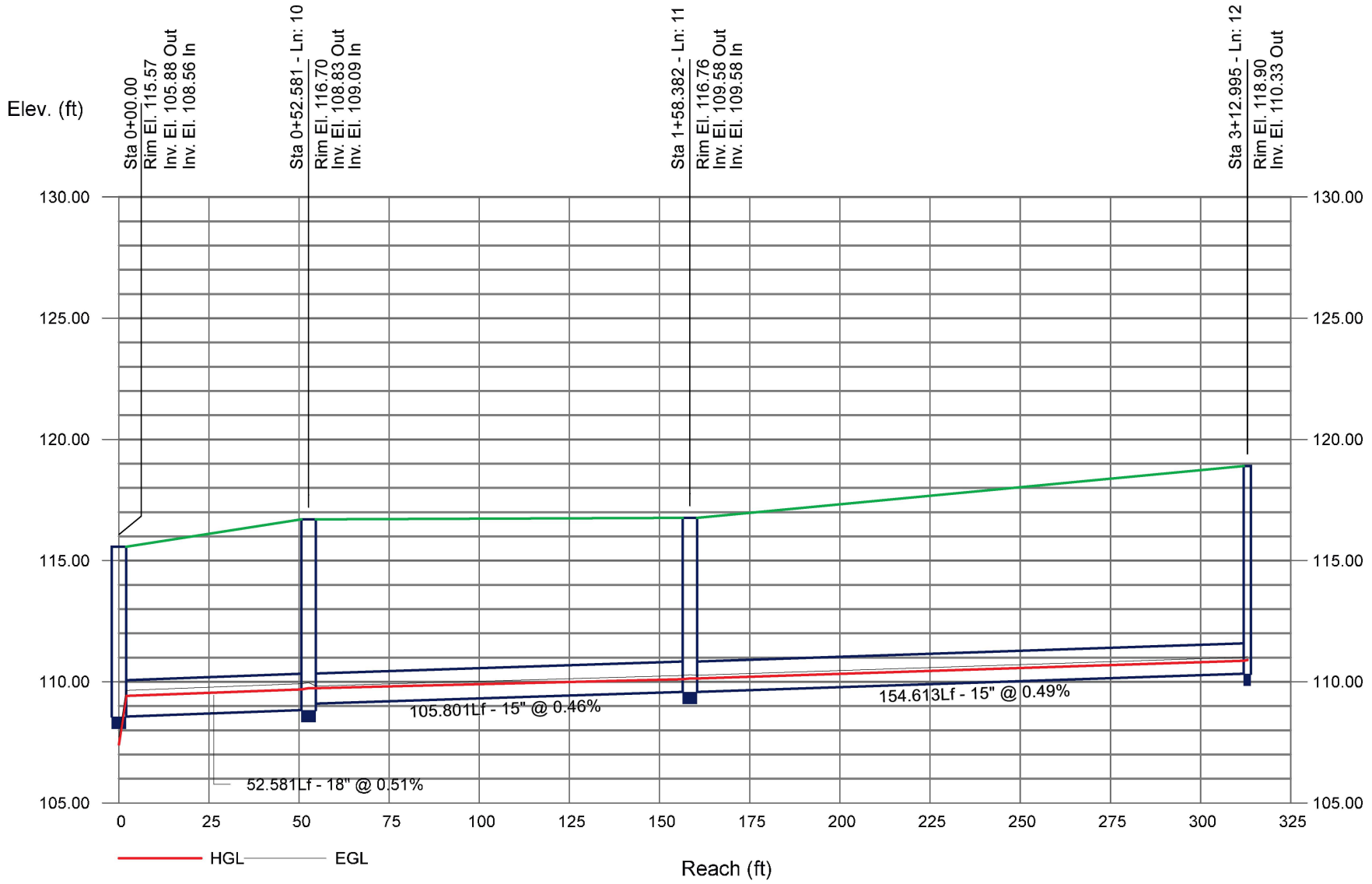
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* Figure not OCR Compatible

Storm Sewer Profile

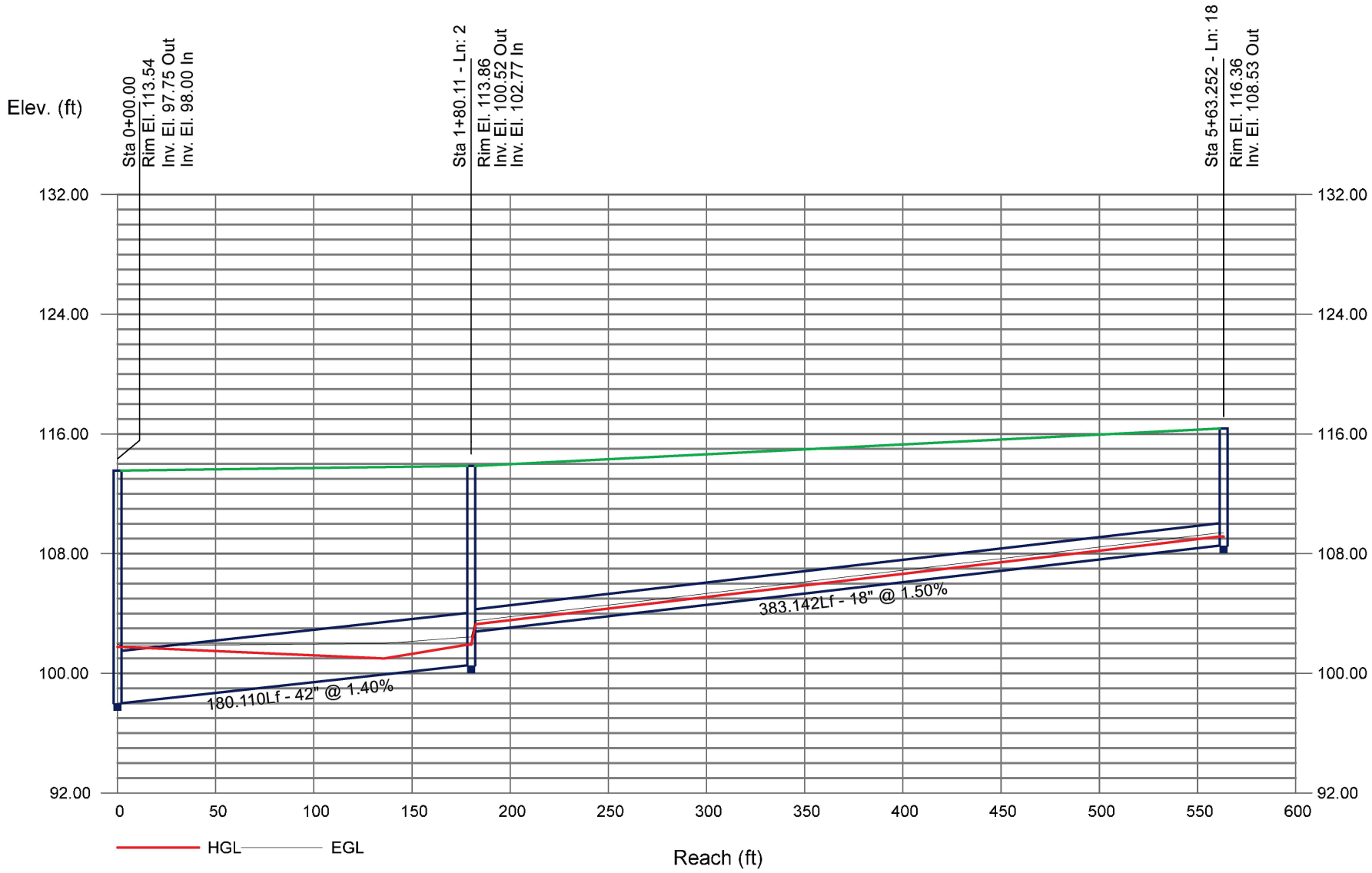
Proj. file: Phase 2 10-Year_update.stm



* Figure not OCR Compatible

Storm Sewer Profile

Proj. file: Phase 2 10-Year_update.stm



* Figure not OCR Compatible

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	P-44	46.61	42	Cir	277.074	97.42	97.75	0.119	101.30*	102.09*	0.07	102.17	End	Manhole
2	P-43	31.60	42	Cir	180.110	98.00	100.52	1.399	102.17	102.27	n/a	102.40 j	1	Manhole
3	P-41	27.61	36	Cir	24.384	101.27	101.39	0.492	103.09	103.21	0.12	103.32	2	Manhole
4	P-17	26.54	36	Cir	128.932	101.39	102.03	0.496	103.32	103.77	0.12	103.89	3	Manhole
5	P-16	14.75	36	Cir	160.807	102.03	102.83	0.497	103.89	104.11	0.08	104.19	4	Manhole
6	P-15	11.73	36	Cir	344.774	102.83	104.21	0.400	104.19	105.30	0.08	105.38	5	Manhole
7	P-12	10.43	24	Cir	164.474	105.22	105.88	0.401	106.62	107.28	0.06	107.35	6	Manhole
8	P-6	6.67	24	Cir	225.008	105.88	106.78	0.400	107.35	107.82	0.05	107.87	7	Manhole
9	P-5	2.28	12	Cir	25.237	110.78	111.28	1.981	111.29	111.93	0.06	111.93	8	Manhole
10	P-11	4.01	18	Cir	52.581	108.56	108.83	0.514	109.41	109.68	0.05	109.73	7	Manhole
11	P-8.1	1.53	15	Cir	105.801	109.09	109.58	0.463	109.73	110.11	0.03	110.14	10	Manhole
12	P-7	1.53	15	Cir	154.613	109.58	110.33	0.485	110.14	110.87	0.03	110.89	11	Manhole
13	P-9	1.74	12	Cir	15.500	109.33	109.62	1.871	109.78	110.18	n/a	110.18	10	Manhole
14	P-10	1.01	12	Cir	19.500	109.33	109.74	2.103	109.73	110.16	0.03	110.16	10	Manhole
15	P-3	2.80	18	Cir	261.002	107.28	108.35	0.410	108.01	109.08	0.03	109.12	8	Manhole
16	P-1	1.41	12	Cir	13.500	108.85	109.12	2.000	109.24	109.62	0.04	109.62	15	Manhole
17	P-2	1.42	12	Cir	17.500	108.85	109.20	2.000	109.24	109.70	n/a	109.70	15	Manhole
18	P-40	2.64	18	Cir	383.142	102.77	108.53	1.503	103.27	109.15	n/a	109.15	2	Manhole
19	P-39	1.71	12	Cir	17.505	108.34	108.71	2.114	109.15	109.27	n/a	109.27 j	18	Manhole
20	P-38	0.94	12	Cir	17.500	108.34	108.59	1.429	109.15	109.00	n/a	109.00	18	Manhole
21	P-4	1.90	12	Cir	15.500	107.78	108.09	2.000	108.24	108.68	0.05	108.68	8	Manhole
22	P-37	17.80	42	Cir	117.241	98.00	98.84	0.716	102.17	102.21	0.01	102.22	1	Manhole
23	P-32	11.73	30	Cir	288.561	99.84	101.31	0.509	102.22	102.65	0.06	102.71	22	Manhole
24	P-29	9.64	24	Cir	52.000	101.81	102.07	0.500	103.04	103.30	0.07	103.37	23	Manhole

Project File: Phase 2 10-Year_update.stm | Number of lines: 45 | Run Date: 5/6/2026

NOTES: Known Qs only ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
25	P-23	6.01	24	Cir	142.000	102.02	102.73	0.500	103.37	103.66	0.06	103.71	24	Manhole
26	P-20	1.85	18	Cir	275.000	103.23	104.61	0.502	103.78	105.16	0.03	105.19	25	Manhole
27	P-18	0.90	15	Cir	18.762	107.18	107.50	1.706	107.48	107.87	0.03	107.87	26	Manhole
28	P-19	0.95	15	Cir	16.583	107.18	107.55	2.231	107.46	107.93	n/a	107.93	26	Manhole
29	P-13	0.91	12	Cir	14.601	106.22	106.51	1.986	106.53	106.91	n/a	106.91	6	Manhole
30	P-14	0.41	12	Cir	28.816	106.22	106.79	1.978	106.43	107.05	0.02	107.05	6	Manhole
31	P-42	1.93	12	Cir	16.601	103.27	103.61	2.048	103.73	104.20	0.05	104.20	2	Manhole
32	P-30	0.78	12	Cir	17.891	102.81	103.17	2.012	103.10	103.54	0.03	103.54	23	Manhole
33	P-31	1.44	12	Cir	16.578	102.81	103.15	2.051	103.20	103.66	0.04	103.66	23	Manhole
34	P-28	3.76	18	Cir	87.001	102.62	103.06	0.506	103.44	103.88	0.05	103.92	24	Manhole
35	P-25	2.89	18	Cir	171.670	103.06	103.58	0.303	103.92	104.39	0.03	104.42	34	Manhole
36	P-24	2.89	15	Cir	40.500	102.48	103.34	2.123	104.42	104.51	0.02	104.53	35	Manhole
37	P-21	2.25	12	Cir	19.679	102.53	102.92	1.982	103.71	103.79	0.03	103.82	25	Manhole
38	P-22	2.07	15	Cir	16.583	102.28	102.61	1.990	103.71	103.73	0.01	103.74	25	Manhole
39	P-26	0.55	12	Cir	40.930	102.26	103.05	1.930	103.92	103.94	0.00	103.94	34	Manhole
40	P-27	0.37	12	Cir	17.500	102.26	102.67	2.343	103.92*	103.93*	0.00	103.93	34	Manhole
41	P-35.1	3.17	18	Cir	27.153	100.84	100.95	0.405	102.22	102.24	0.01	102.26	22	Manhole
42	P-35	3.17	18	Cir	33.697	100.84	100.97	0.386	102.26	102.29	0.01	102.30	41	Manhole
43	P-34	1.33	15	Cir	16.346	101.22	101.55	2.019	102.30	102.01	n/a	102.01	42	Manhole
44	P-33	2.32	15	Cir	18.000	101.22	101.67	2.500	102.30	102.28	n/a	102.28 j	42	Manhole
45	P-36	1.55	15	Cir	16.030	101.09	101.41	1.996	102.22	101.90	n/a	101.90	22	Manhole

Project File: Phase 2 10-Year_update.stm | Number of lines: 45 | Run Date: 5/6/2026

NOTES: Known Qs only ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Inlet Time Tabulation

Line No.	Line ID	Tc Method	Sheet Flow					Shallow Concentrated Flow					Channel Flow							Total Travel Time (min)
			n-Value	flow Length (ft)	2-yr 24h P (in)	Land Slope (%)	Travel Time (min)	flow Length (ft)	Water Slope (%)	Surf Descr	Ave Vel (ft/s)	Travel Time (min)	X-sec Area (sqft)	Wetted Perim (ft)	Chan Slope (%)	n-Value	Vel	flow Length (ft)	Travel Time (min)	
1	P-44	User																		10.00
2	P-43	User																		10.00
3	P-41	User																		10.00
4	P-17	User																		10.00
5	P-16	User																		10.00
6	P-15	User																		10.00
7	P-12	User																		10.00
8	P-6	User																		10.00
9	P-5	User																		10.00
10	P-11	User																		10.00
11	P-8.1	User																		10.00
12	P-7	User																		10.00
13	P-9	User																		10.00
14	P-10	User																		10.00
15	P-3	User																		10.00
16	P-1	User																		10.00
17	P-2	User																		10.00
18	P-40	User																		10.00
19	P-39	User																		10.00
20	P-38	User																		10.00
21	P-4	User																		10.00
22	P-37	User																		10.00
23	P-32	User																		10.00
24	P-29	User																		10.00

Project File: Phase 2 10-Year_update.stm | Min. Tc used for intensity calculations = 5 min | Number of lines: 45 | Date: 5/6/2026

Storm Sewer Inlet Time Tabulation

Line No.	Line ID	Tc Method	Sheet Flow					Shallow Concentrated Flow					Channel Flow							Total Travel Time (min)
			n-Value	flow Length (ft)	2-yr 24h P (in)	Land Slope (%)	Travel Time (min)	flow Length (ft)	Water Slope (%)	Surf Descr	Ave Vel (ft/s)	Travel Time (min)	X-sec Area (sqft)	Wetted Perim (ft)	Chan Slope (%)	n-Value	Vel	flow Length (ft)	Travel Time (min)	
25	P-23	User																		10.00
26	P-20	User																		10.00
27	P-18	User																		10.00
28	P-19	User																		10.00
29	P-13	User																		10.00
30	P-14	User																		10.00
31	P-42	User																		10.00
32	P-30	User																		10.00
33	P-31	User																		10.00
34	P-28	User																		10.00
35	P-25	User																		10.00
36	P-24	User																		10.00
37	P-21	User																		10.00
38	P-22	User																		10.00
39	P-26	User																		10.00
40	P-27	User																		10.00
41	P-35.1	User																		10.00
42	P-35	User																		10.00
43	P-34	User																		10.00
44	P-33	User																		10.00
45	P-36	User																		10.00

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
(1)	(in) (2)	(cfs) (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(ft) (12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(K) (23)	(ft) (24)
1	42	46.61	97.42	101.30	3.50	9.62	4.85	0.37	101.67	0.286	277.074	97.75	102.09	3.50	9.62	4.84	0.36	102.46	0.286	0.286	0.792	0.20	0.07
2	42	31.60	98.00	102.17	3.50	4.77	3.29	0.17	102.33	0.131	180.110	100.52	102.27 j	1.75**	4.80	6.59	0.67	102.94	0.530	0.330	0.595	0.20	0.13
3	36	27.61	101.27	103.09	1.82*	4.48	6.17	0.59	103.68	0.492	24.384	101.39	103.21	1.82	4.47	6.17	0.59	103.80	0.492	0.492	0.120	0.20	0.12
4	36	26.54	101.39	103.32	1.93	4.82	5.51	0.47	103.80	0.377	128.932	102.03	103.77	1.74	4.24	6.26	0.61	104.38	0.522	0.449	0.579	0.20	0.12
5	36	14.75	102.03	103.89	1.86	4.60	3.21	0.16	104.05	0.131	160.807	102.83	104.11	1.28	2.88	5.12	0.41	104.52	0.451	0.291	0.468	0.20	0.08
6	36	11.73	102.83	104.19	1.36	2.31	3.75	0.22	104.41	0.229	344.774	104.21	105.30	1.09**	2.33	5.04	0.39	105.70	0.512	0.371	1.279	0.20	0.08
7	24	10.43	105.22	106.62	1.40*	2.36	4.43	0.30	106.93	0.401	164.474	105.88	107.28	1.40	2.36	4.43	0.30	107.59	0.401	0.401	0.659	0.20	0.06
8	24	6.67	105.88	107.35	1.47	2.47	2.70	0.11	107.46	0.147	225.008	106.78	107.82	1.04	1.66	4.02	0.25	108.08	0.400	0.274	0.616	0.20	0.05
9	12	2.28	110.78	111.29	0.51*	0.41	5.60	0.28	111.58	0.000	25.237	111.28	111.93	0.65**	0.54	4.25	0.28	112.21	0.000	0.000	n/a	0.20	0.06
10	18	4.01	108.56	109.41	0.85*	1.03	3.88	0.23	109.64	0.513	52.581	108.83	109.68	0.85	1.04	3.87	0.23	109.91	0.511	0.512	0.269	0.20	0.05
11	15	1.53	109.09	109.73	0.64	0.63	2.43	0.09	109.82	0.278	105.801	109.58	110.11	0.53	0.49	3.12	0.15	110.26	0.546	0.412	0.436	0.20	0.03
12	15	1.53	109.58	110.14	0.56	0.53	2.90	0.13	110.27	0.447	154.613	110.33	110.87	0.54	0.50	3.05	0.14	111.01	0.513	0.480	0.742	0.20	0.03
13	12	1.74	109.33	109.78	0.45*	0.34	5.11	0.23	110.01	0.000	15.500	109.62	110.18	0.56**	0.45	3.84	0.23	110.41	0.000	0.000	n/a	0.20	n/a
14	12	1.01	109.33	109.73	0.40	0.29	3.46	0.16	109.89	0.000	19.500	109.74	110.16	0.42**	0.31	3.21	0.16	110.32	0.000	0.000	n/a	0.20	0.03
15	18	2.80	107.28	108.01	0.73*	0.86	3.26	0.17	108.18	0.410	261.002	108.35	109.08	0.73	0.86	3.27	0.17	109.25	0.412	0.411	1.072	0.20	0.03
16	12	1.41	108.85	109.24	0.39*	0.28	4.96	0.20	109.44	0.000	13.500	109.12	109.62	0.50**	0.39	3.57	0.20	109.82	0.000	0.000	n/a	0.20	0.04
17	12	1.42	108.85	109.24	0.39*	0.29	4.97	0.20	109.44	0.000	17.500	109.20	109.70	0.50**	0.40	3.58	0.20	109.90	0.000	0.000	n/a	0.20	n/a
18	18	2.64	102.77	103.27	0.50*	0.51	5.16	0.23	103.50	0.000	383.142	108.53	109.15	0.62**	0.68	3.87	0.23	109.38	0.000	0.000	n/a	0.20	n/a
19	12	1.71	108.34	109.15	0.81	0.45	2.52	0.23	109.37	0.000	17.505	108.71	109.27 j	0.56**	0.45	3.82	0.23	109.49	0.000	0.000	n/a	0.20	0.05
20	12	0.94	108.34	109.15	0.81	0.30	1.39	0.15	109.30	0.000	17.500	108.59	109.00	0.41**	0.30	3.14	0.15	109.15	0.000	0.000	n/a	0.20	n/a
21	12	1.90	107.78	108.24	0.46*	0.35	5.36	0.24	108.49	0.000	15.500	108.09	108.68	0.59**	0.48	3.97	0.24	108.92	0.000	0.000	n/a	0.20	0.05

Project File: Phase 2 10-Year_update.stm | Number of lines: 45 | Run Date: 5/6/2026

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
(1)	(in) (2)	(cfs) (3)	(ft) (4)	(ft) (5)	(ft) (6)	(sqft) (7)	(ft/s) (8)	(ft) (9)	(ft) (10)	(%) (11)	(ft) (12)	(ft) (13)	(ft) (14)	(ft) (15)	(sqft) (16)	(ft/s) (17)	(ft) (18)	(ft) (19)	(%) (20)	(%) (21)	(ft) (22)	(K) (23)	(ft) (24)
22	42	17.80	98.00	102.17	3.50	9.62	1.85	0.05	102.22	0.042	117.241	98.84	102.21	3.37	9.51	1.87	0.05	102.26	0.036	0.039	0.046	0.20	0.01
23	30	11.73	99.84	102.22	2.38	4.82	2.43	0.09	102.31	0.094	288.561	101.31	102.65	1.34	2.68	4.38	0.30	102.95	0.345	0.220	0.634	0.20	0.06
24	24	9.64	101.81	103.04	1.23*	2.02	4.77	0.35	103.39	0.499	52.000	102.07	103.30	1.23	2.02	4.77	0.35	103.65	0.501	0.500	0.260	0.20	0.07
25	24	6.01	102.02	103.37	1.35	2.25	2.67	0.11	103.48	0.148	142.000	102.73	103.66	0.93	1.42	4.23	0.28	103.93	0.491	0.320	0.454	0.20	0.06
26	18	1.85	103.23	103.78	0.55*	0.59	3.15	0.15	103.93	0.502	275.000	104.61	105.16	0.55	0.59	3.14	0.15	105.31	0.498	0.500	1.375	0.20	0.03
27	15	0.90	107.18	107.48	0.30*	0.22	4.04	0.13	107.61	0.000	18.762	107.50	107.87	0.37**	0.31	2.94	0.13	108.01	0.000	0.000	n/a	0.20	0.03
28	15	0.95	107.18	107.46	0.28*	0.21	4.52	0.14	107.60	0.000	16.583	107.55	107.93	0.38**	0.32	2.99	0.14	108.07	0.000	0.000	n/a	0.20	n/a
29	12	0.91	106.22	106.53	0.31*	0.21	4.37	0.15	106.68	0.000	14.601	106.51	106.91	0.40**	0.29	3.11	0.15	107.06	0.000	0.000	n/a	0.20	n/a
30	12	0.41	106.22	106.43	0.21*	0.12	3.47	0.09	106.52	0.000	28.816	106.79	107.05	0.26**	0.17	2.47	0.09	107.15	0.000	0.000	n/a	0.20	0.02
31	12	1.93	103.27	103.73	0.46*	0.36	5.43	0.25	103.98	0.000	16.601	103.61	104.20	0.59**	0.48	3.99	0.25	104.45	0.000	0.000	n/a	0.20	0.05
32	12	0.78	102.81	103.10	0.29*	0.19	4.21	0.14	103.23	0.000	17.891	103.17	103.54	0.37**	0.26	2.97	0.14	103.68	0.000	0.000	n/a	0.20	0.03
33	12	1.44	102.81	103.20	0.39*	0.29	5.03	0.20	103.40	0.000	16.578	103.15	103.66	0.51**	0.40	3.60	0.20	103.86	0.000	0.000	n/a	0.20	0.04
34	18	3.76	102.62	103.44	0.82*	0.99	3.80	0.22	103.67	0.506	87.001	103.06	103.88	0.82	0.99	3.81	0.23	104.10	0.509	0.508	0.442	0.20	0.05
35	18	2.89	103.06	103.92	0.86	1.05	2.74	0.12	104.04	0.253	171.670	103.58	104.39	0.81	0.97	2.97	0.14	104.53	0.312	0.283	0.486	0.20	0.03
36	15	2.89	102.48	104.42	1.25	1.23	2.36	0.09	104.50	0.267	40.500	103.34	104.51	1.17	1.20	2.42	0.09	104.60	0.230	0.249	0.101	0.20	0.02
37	12	2.25	102.53	103.71	1.00	0.79	2.87	0.13	103.84	0.532	19.679	102.92	103.79	0.87	0.72	3.10	0.15	103.94	0.485	0.508	0.100	0.20	0.03
38	15	2.07	102.28	103.71	1.25	1.23	1.69	0.04	103.76	0.137	16.583	102.61	103.73	1.12	1.16	1.79	0.05	103.78	0.121	0.129	0.021	0.20	0.01
39	12	0.55	102.26	103.92	1.00	0.79	0.70	0.01	103.93	0.032	40.930	103.05	103.94	0.89	0.74	0.75	0.01	103.94	0.028	0.030	0.012	0.20	0.00
40	12	0.37	102.26	103.92	1.00	0.79	0.47	0.00	103.93	0.014	17.500	102.67	103.93	1.00	0.79	0.47	0.00	103.93	0.014	0.014	0.003	0.20	0.00
41	18	3.17	100.84	102.22	1.38	1.70	1.86	0.05	102.27	0.105	27.153	100.95	102.24	1.29	1.62	1.95	0.06	102.30	0.112	0.109	0.029	0.20	0.01
42	18	3.17	100.84	102.26	1.42	1.73	1.83	0.05	102.31	0.105	33.697	100.97	102.29	1.32	1.64	1.93	0.06	102.35	0.109	0.107	0.036	0.20	0.01

Project File: Phase 2 10-Year_update.stm | Number of lines: 45 | Run Date: 5/6/2026

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
(1)	(in) (2)	(cfs) (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(ft) (12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(K) (23)	(ft) (24)
43	15	1.33	101.22	102.30	1.08	0.40	1.18	0.17	102.47	0.000	16.346	101.55	102.01	0.46**	0.40	3.29	0.17	102.17	0.000	0.000	n/a	0.20	n/a
44	15	2.32	101.22	102.30	1.08	0.59	2.06	0.24	102.54	0.000	18.000	101.67	102.28 j	0.61**	0.59	3.91	0.24	102.52	0.000	0.000	n/a	0.20	n/a
45	15	1.55	101.09	102.22	1.13	0.45	1.33	0.18	102.41	0.000	16.030	101.41	101.90	0.49**	0.45	3.45	0.18	102.09	0.000	0.000	n/a	0.20	n/a

Project File: Phase 2 10-Year_update.stm | Number of lines: 45 | Run Date: 5/6/2026

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraflow HGL Computation Procedure

General Procedure:

Hydraflow computes the HGL using the Bernoulli energy equation. Manning's equation is used to determine energy losses due to pipe friction. In a standard step, iterative procedure, Hydraflow assumes upstream HGLs until the energy equation balances. If the energy equation cannot balance, supercritical flow exists and critical depth is temporarily assumed at the upstream end. A supercritical flow Profile is then computed using the same procedure in a downstream direction using momentum principles.

Col. 1 The line number being computed. Calculations begin at Line 1 and proceed upstream.

Col. 2 The line size. In the case of non-circular pipes, the line rise is printed above the span.

Col. 3 Total flow rate in the line.

Col. 4 The elevation of the downstream invert.

Col. 5 Elevation of the hydraulic grade line at the downstream end. This is computed as the upstream HGL + Minor loss of this line's downstream line.

Col. 6 The downstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 7 Cross-sectional area of the flow at the downstream end.

Col. 8 The velocity of the flow at the downstream end, (Col. 3 / Col. 7).

Col. 9 Velocity head (Velocity squared / 2g).

Col. 10 The elevation of the energy grade line at the downstream end, HGL + Velocity head, (Col. 5 + Col. 9).

Col. 11 The friction slope at the downstream end (the S or Slope term in Manning's equation).

Col. 12 The line length.

Col. 13 The elevation of the upstream invert.

Col. 14 Elevation of the hydraulic grade line at the upstream end.

Col. 15 The upstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 16 Cross-sectional area of the flow at the upstream end.

Col. 17 The velocity of the flow at the upstream end, (Col. 3 / Col. 16).

Col. 18 Velocity head (Velocity squared / 2g).

Col. 19 The elevation of the energy grade line at the upstream end, HGL + Velocity head, (Col. 14 + Col. 18) .

Col. 20 The friction slope at the upstream end (the S or Slope term in Manning's equation).

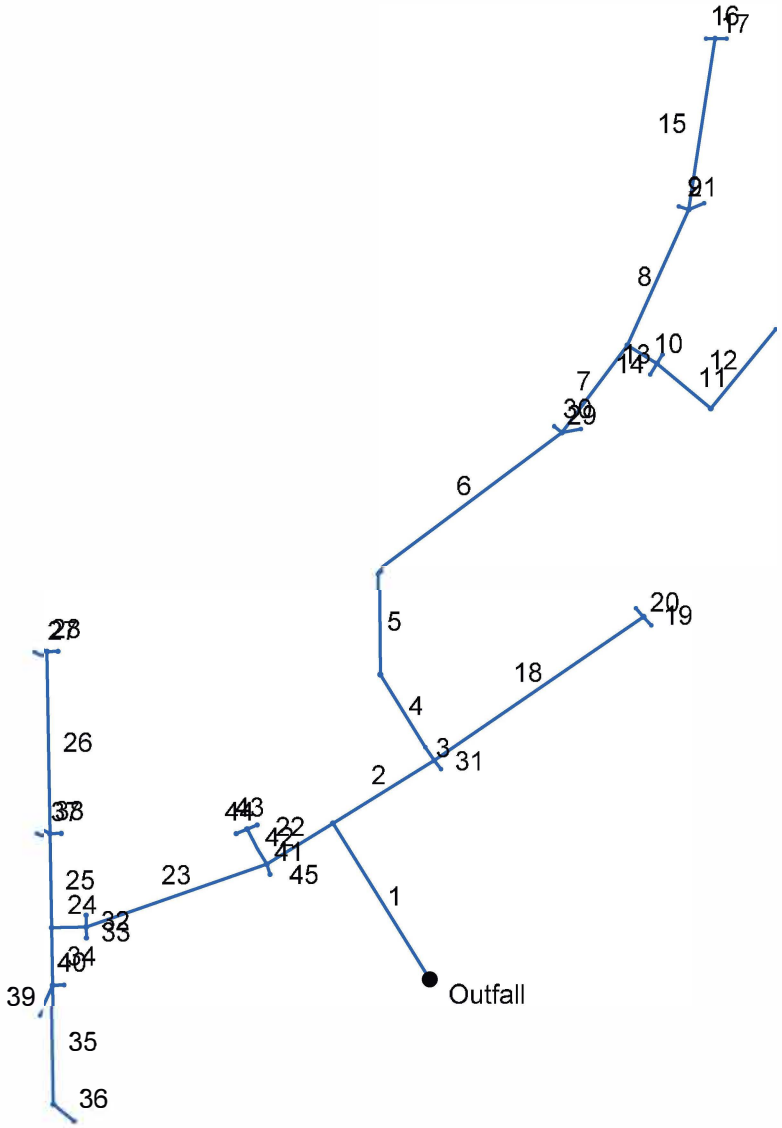
Col. 21 The average of the downstream and upstream friction slopes.

Col. 22 Energy loss. Average Sf/100 x Line Length (Col. 21/100 x Col. 12). Equals (EGL upstream - EGL downstream) +/- tolerance.

Col. 23 The junction loss coefficient (K).

Col. 24 Minor loss. (Col. 23 x Col. 18). Is added to upstream HGL and used as the starting HGL for the next upstream line(s).

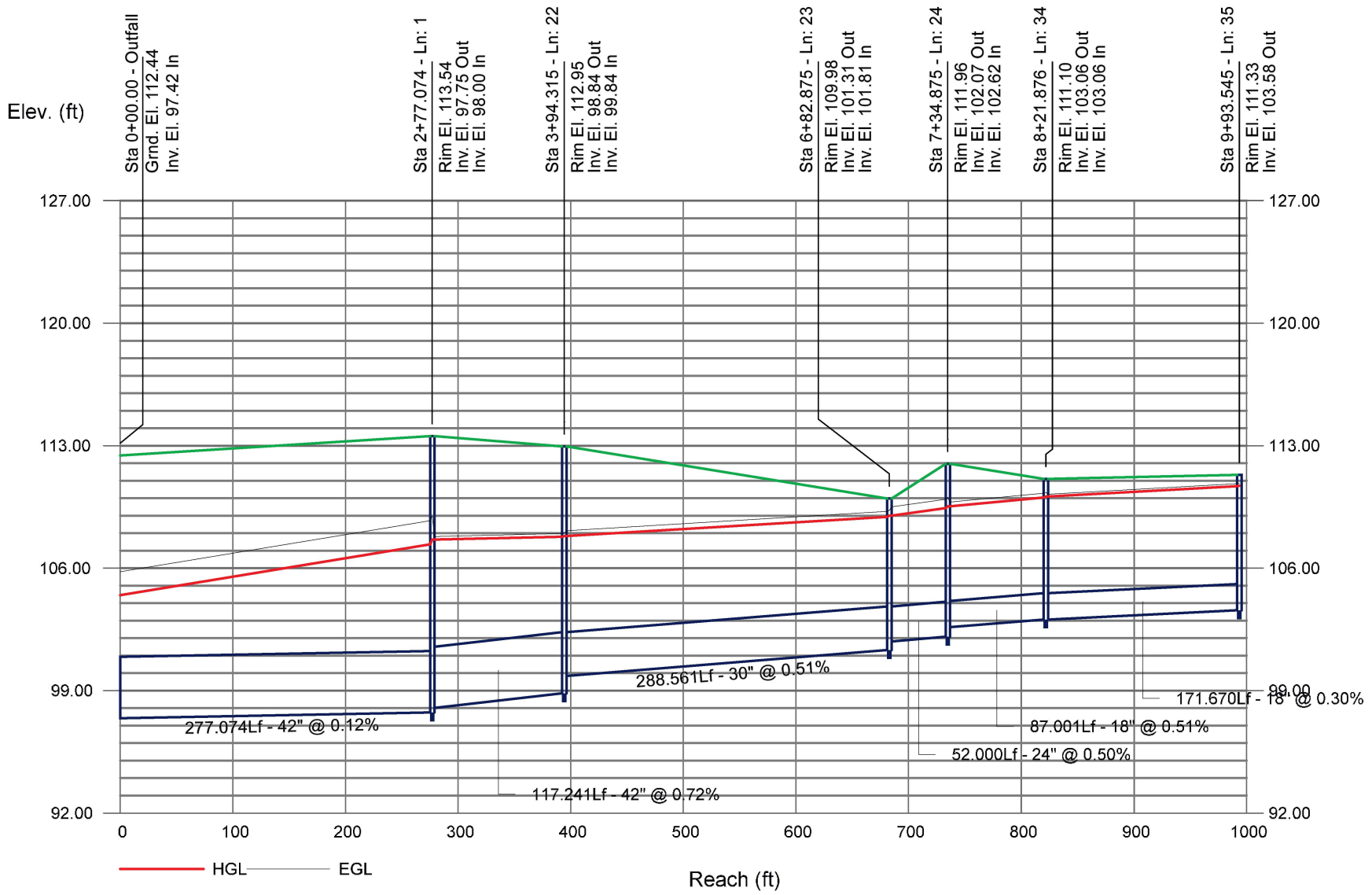
Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Phase 2 100-Year_update.stm	* Figure not OCR Compatible	Number of lines: 45	Date: 5/6/2026

Storm Sewer Profile

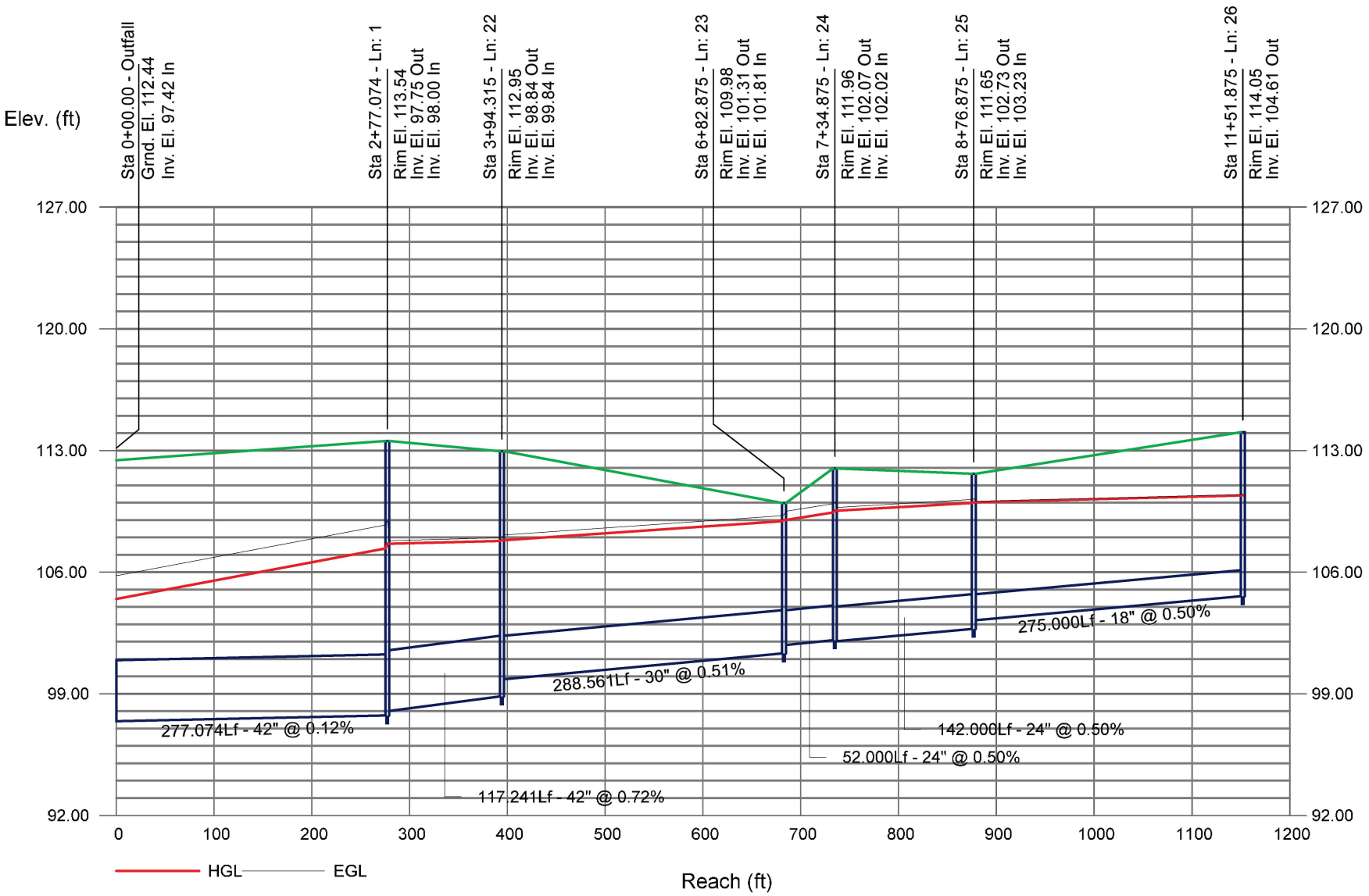
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* Figure not OCR Compatible

Storm Sewer Profile

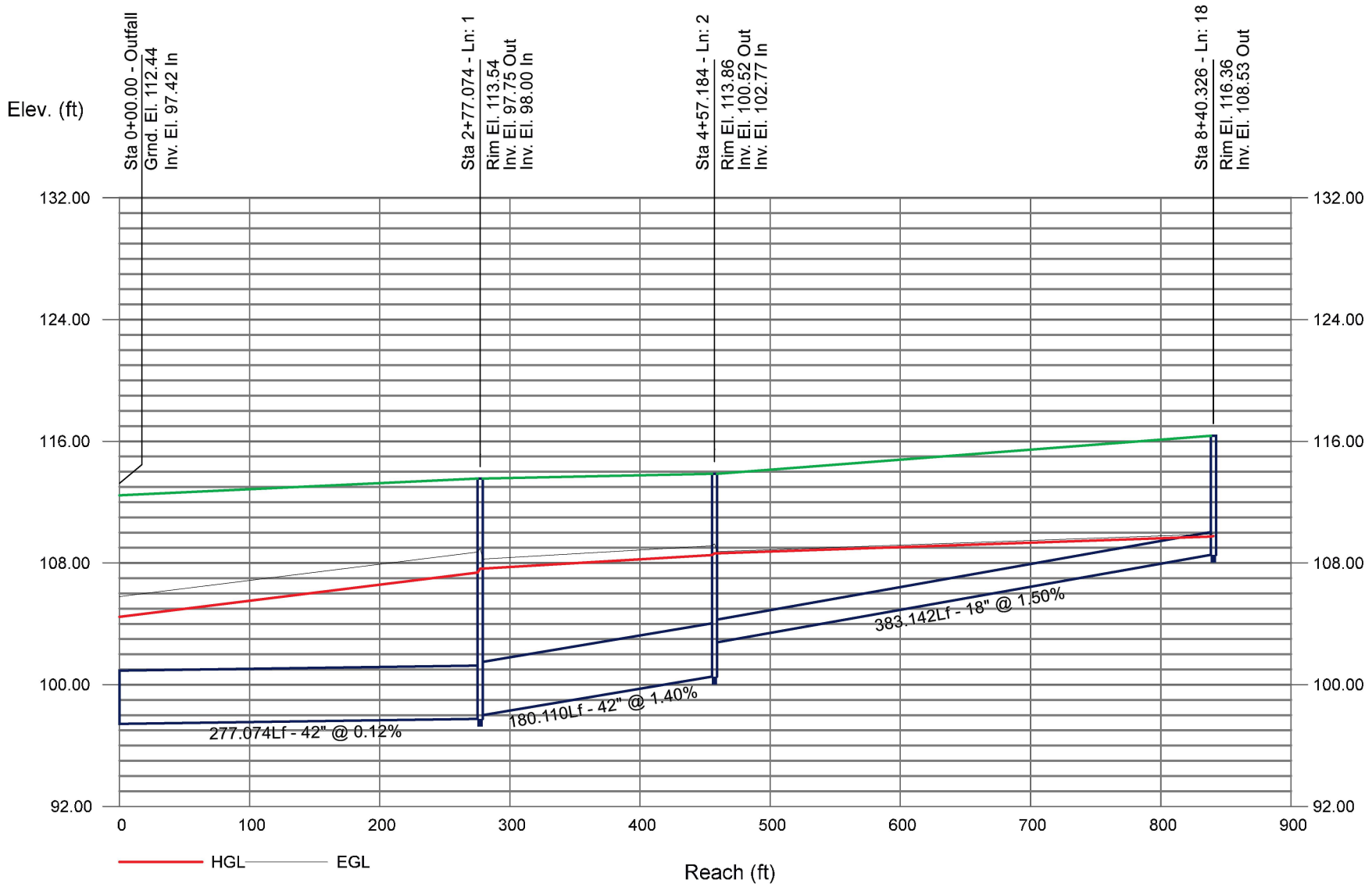
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* Figure not OCR Compatible

Storm Sewer Profile

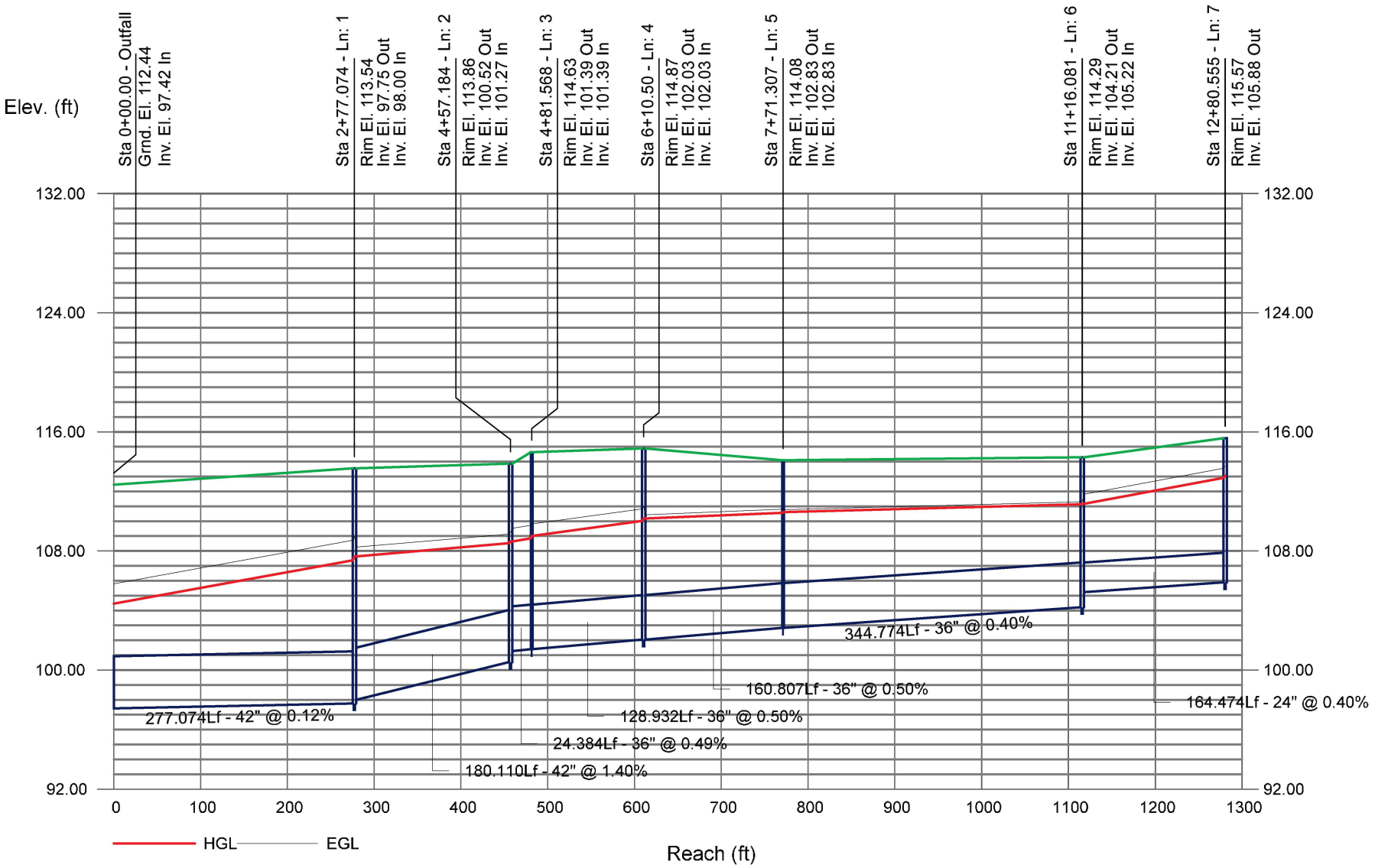
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Storm Sewer Profile

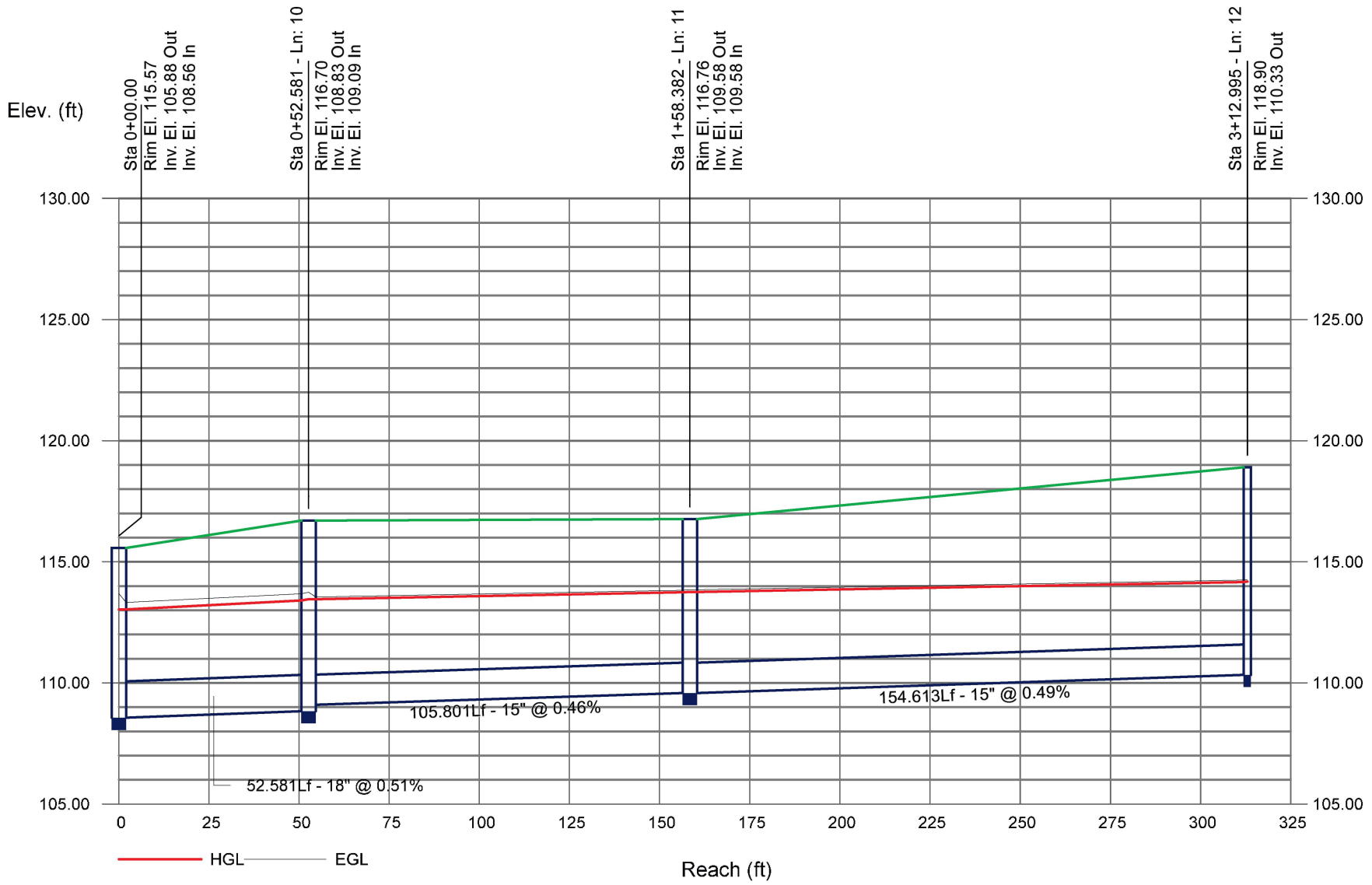
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* Figure not OCR Compatible

Storm Sewer Profile

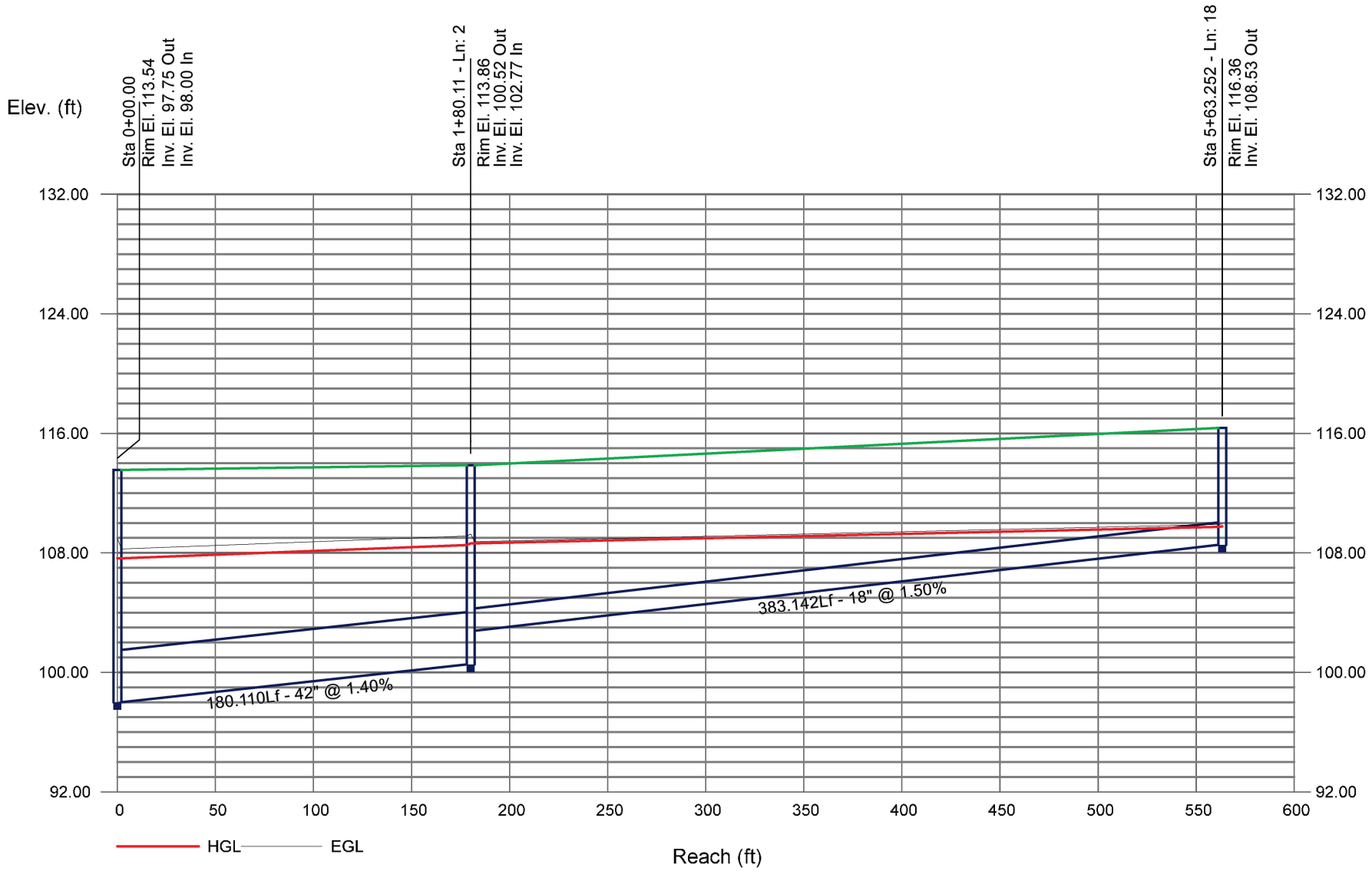
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* Figure not OCR Compatible

Storm Sewer Profile

Proj. file: Phase 2 100-Year_update.stm



* Figure not OCR Compatible

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	P-44	89.38	42	Cir	277.074	97.42	97.75	0.119	104.45*	107.36*	0.27	107.63	End	Manhole
2	P-43	60.81	42	Cir	180.110	98.00	100.52	1.399	107.63*	108.51*	0.12	108.63	1	Manhole
3	P-41	53.22	36	Cir	24.384	101.27	101.39	0.492	108.63*	108.84*	0.18	109.02	2	Manhole
4	P-17	50.76	36	Cir	128.932	101.39	102.03	0.496	109.02*	110.01*	0.16	110.17	3	Manhole
5	P-16	28.27	36	Cir	160.807	102.03	102.83	0.497	110.17*	110.56*	0.05	110.60	4	Manhole
6	P-15	22.57	36	Cir	344.774	102.83	104.21	0.400	110.60*	111.13*	0.03	111.16	5	Manhole
7	P-12	20.17	24	Cir	164.474	105.22	105.88	0.401	111.16*	112.90*	0.13	113.03	6	Manhole
8	P-6	13.03	24	Cir	225.008	105.88	106.78	0.400	113.03*	114.03*	0.05	114.08	7	Manhole
9	P-5	4.21	15	Cir	25.237	110.53	111.03	1.981	114.08*	114.22*	0.04	114.26	8	Manhole
10	P-11	7.57	18	Cir	52.581	108.56	108.83	0.514	113.03*	113.40*	0.06	113.45	7	Manhole
11	P-8.1	2.88	15	Cir	105.801	109.09	109.58	0.463	113.45*	113.73*	0.02	113.75	10	Manhole
12	P-7	2.88	15	Cir	154.613	109.58	110.33	0.485	113.75*	114.16*	0.02	114.18	11	Manhole
13	P-9	3.31	12	Cir	15.500	109.33	109.62	1.871	113.45*	113.63*	0.06	113.69	10	Manhole
14	P-10	1.86	12	Cir	19.500	109.33	109.74	2.103	113.45*	113.52*	0.02	113.54	10	Manhole
15	P-3	5.19	18	Cir	261.002	107.28	108.35	0.410	114.08*	114.93*	0.03	114.96	8	Manhole
16	P-1	2.61	12	Cir	13.500	108.85	109.12	2.000	114.96*	115.05*	0.03	115.09	15	Manhole
17	P-2	2.63	12	Cir	17.500	108.85	109.20	2.000	114.96*	115.08*	0.03	115.12	15	Manhole
18	P-40	4.90	18	Cir	383.142	102.77	108.53	1.503	108.63	109.73	0.03	109.76	2	Manhole
19	P-39	3.17	12	Cir	17.505	108.34	108.71	2.114	109.76*	109.95*	0.05	110.00	18	Manhole
20	P-38	1.75	12	Cir	17.500	108.34	108.59	1.429	109.76*	109.82*	0.02	109.83	18	Manhole
21	P-4	4.17	15	Cir	15.500	107.53	107.84	2.000	114.08*	114.17*	0.04	114.20	8	Manhole
22	P-37	32.39	42	Cir	117.241	98.00	98.84	0.716	107.63*	107.79*	0.04	107.83	1	Manhole
23	P-32	21.95	30	Cir	288.561	99.84	101.31	0.509	107.83*	108.93*	0.06	108.99	22	Manhole
24	P-29	17.86	24	Cir	52.000	101.81	102.07	0.500	108.99*	109.42*	0.10	109.52	23	Manhole

Project File: Phase 2 100-Year_update.stm | Number of lines: 45 | Run Date: 5/6/2026

NOTES: Known Qs only ; *Surcharged (HGL above crown).

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
25	P-23	11.12	24	Cir	142.000	102.02	102.73	0.500	109.52*	109.98*	0.04	110.02	24	Manhole
26	P-20	3.40	18	Cir	275.000	103.23	104.61	0.502	110.02*	110.40*	0.01	110.42	25	Manhole
27	P-18	1.66	15	Cir	18.762	107.18	107.50	1.706	110.42*	110.43*	0.01	110.44	26	Manhole
28	P-19	1.75	15	Cir	16.583	107.18	107.55	2.231	110.42*	110.43*	0.01	110.44	26	Manhole
29	P-13	1.69	15	Cir	14.601	105.97	106.26	1.986	111.16*	111.18*	0.01	111.18	6	Manhole
30	P-14	0.75	12	Cir	28.816	106.22	106.79	1.978	111.16*	111.18*	0.00	111.18	6	Manhole
31	P-42	3.59	12	Cir	16.601	103.27	103.61	2.048	108.63*	108.86*	0.06	108.92	2	Manhole
32	P-30	1.45	12	Cir	17.891	102.81	103.17	2.012	108.99*	109.03*	0.01	109.04	23	Manhole
33	P-31	2.87	12	Cir	16.578	102.81	103.15	2.051	108.99*	109.13*	0.04	109.18	23	Manhole
34	P-28	6.97	18	Cir	87.001	102.62	103.06	0.506	109.52*	110.03*	0.05	110.08	24	Manhole
35	P-25	5.34	18	Cir	171.670	103.06	103.58	0.303	110.08*	110.67*	0.03	110.70	34	Manhole
36	P-24	5.34	15	Cir	40.500	102.48	103.34	2.123	110.70*	111.07*	0.06	111.13	35	Manhole
37	P-21	4.17	12	Cir	19.679	102.53	102.92	1.982	110.02*	110.38*	0.09	110.47	25	Manhole
38	P-22	3.83	15	Cir	16.583	102.28	102.61	1.990	110.02*	110.10*	0.03	110.13	25	Manhole
39	P-26	1.02	12	Cir	40.930	102.26	103.05	1.930	110.08*	110.13*	0.01	110.13	34	Manhole
40	P-27	0.69	12	Cir	17.500	102.26	102.67	2.343	110.08*	110.09*	0.00	110.09	34	Manhole
41	P-35.1	5.20	18	Cir	27.153	100.84	100.95	0.400	107.83*	107.92*	0.03	107.94	22	Manhole
42	P-35	5.20	18	Cir	33.697	100.84	100.97	0.386	107.94*	108.05*	0.03	108.08	41	Manhole
43	P-34	1.54	15	Cir	16.346	101.22	101.55	2.019	108.08*	108.09*	0.00	108.10	42	Manhole
44	P-33	4.29	15	Cir	18.000	101.22	101.67	2.500	108.08*	108.19*	0.04	108.22	42	Manhole
45	P-36	2.87	15	Cir	16.030	101.09	101.41	1.996	107.83*	107.87*	0.02	107.89	22	Manhole

Project File: Phase 2 100-Year_update.stm | Number of lines: 45 | Run Date: 5/6/2026

NOTES: Known Qs only ; *Surcharged (HGL above crown).

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	277.074	1.00	45.00	0.40	0.40	18.00	10.0	16.2	0.0	89.38	30.09	9.29	42	0.12	97.42	97.75	104.45	107.36	112.44	113.54	P-44
2	1	180.110	1.00	23.00	0.40	0.40	9.20	10.0	15.7	0.0	60.81	103.1	6.32	42	1.40	98.00	100.52	107.63	108.51	113.54	113.86	P-43
3	2	24.384	1.00	18.00	0.40	0.40	7.20	10.0	15.7	0.0	53.22	40.55	7.53	36	0.49	101.27	101.39	108.63	108.84	113.86	114.63	P-41
4	3	128.932	1.00	17.00	0.40	0.40	6.80	10.0	15.4	0.0	50.76	40.72	7.18	36	0.50	101.39	102.03	109.02	110.01	114.63	114.87	P-17
5	4	160.807	1.00	16.00	0.40	0.40	6.40	10.0	14.7	0.0	28.27	40.77	4.00	36	0.50	102.03	102.83	110.17	110.56	114.87	114.08	P-16
6	5	344.774	1.00	15.00	0.40	0.40	6.00	10.0	12.9	0.0	22.57	36.57	3.19	36	0.40	102.83	104.21	110.60	111.13	114.08	114.29	P-15
7	6	164.474	1.00	12.00	0.40	0.40	4.80	10.0	12.5	0.0	20.17	12.42	6.42	24	0.40	105.22	105.88	111.16	112.90	114.29	115.57	P-12
8	7	225.008	1.00	6.00	0.40	0.40	2.40	10.0	11.6	0.0	13.03	12.40	4.15	24	0.40	105.88	106.78	113.03	114.03	115.57	118.68	P-6
9	8	25.237	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	4.21	7.88	3.43	15	1.98	110.53	111.03	114.08	114.22	118.68	114.74	P-5
10	7	52.581	1.00	5.00	0.40	0.40	2.00	10.0	11.8	0.0	7.57	6.52	4.28	18	0.51	108.56	108.83	113.03	113.40	115.57	116.70	P-11
11	10	105.801	1.00	2.00	0.40	0.40	0.80	10.0	11.1	0.0	2.88	3.81	2.35	15	0.46	109.09	109.58	113.45	113.73	116.70	116.76	P-8.1
12	11	154.613	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	2.88	3.90	2.35	15	0.49	109.58	110.33	113.75	114.16	116.76	118.90	P-7
13	10	15.500	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	3.31	4.22	4.21	12	1.87	109.33	109.62	113.45	113.63	116.70	115.87	P-9
14	10	19.500	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.86	4.48	2.37	12	2.10	109.33	109.74	113.45	113.52	116.70	115.87	P-10
15	8	261.002	1.00	3.00	0.40	0.40	1.20	10.0	10.1	0.0	5.19	5.83	2.94	18	0.41	107.28	108.35	114.08	114.93	118.68	120.12	P-3
16	15	13.500	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	2.61	4.36	3.32	12	2.00	108.85	109.12	114.96	115.05	120.12	116.10	P-1
17	15	17.500	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	2.63	4.36	3.35	12	2.00	108.85	109.20	114.96	115.08	120.12	116.10	P-2
18	2	383.142	1.00	3.00	0.40	0.40	1.20	10.0	10.1	0.0	4.90	11.16	3.01	18	1.50	102.77	108.53	108.63	109.73	113.86	116.36	P-40
19	18	17.505	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	3.17	4.49	4.04	12	2.11	108.34	108.71	109.76	109.95	116.36	116.00	P-39
20	18	17.500	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.75	3.69	2.23	12	1.43	108.34	108.59	109.76	109.82	116.36	115.98	P-38
21	8	15.500	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	4.17	7.91	3.40	15	2.00	107.53	107.84	114.08	114.17	118.68	114.62	P-4
22	1	117.241	1.00	21.00	0.40	0.40	8.40	10.0	14.5	0.0	32.39	73.80	3.37	42	0.72	98.00	98.84	107.63	107.79	113.54	112.95	P-37

Project File: Phase 2 100-Year_update.stm | Number of lines: 45 | Run Date: 5/6/2026

NOTES:Known Qs only ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
23	22	288.561	1.00	15.00	0.40	0.40	6.00	10.0	13.4	0.0	21.95	25.37	4.47	30	0.51	99.84	101.31	107.83	108.93	112.95	109.98	P-32
24	23	52.000	1.00	12.00	0.40	0.40	4.80	10.0	13.3	0.0	17.86	13.86	5.69	24	0.50	101.81	102.07	108.99	109.42	109.98	111.96	P-29
25	24	142.000	1.00	6.00	0.40	0.40	2.40	10.0	12.6	0.0	11.12	13.86	3.54	24	0.50	102.02	102.73	109.52	109.98	111.96	111.65	P-23
26	25	275.000	1.00	3.00	0.40	0.40	1.20	10.0	10.2	0.0	3.40	6.45	1.92	18	0.50	103.23	104.61	110.02	110.40	111.65	114.05	P-20
27	26	18.762	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.66	7.31	1.35	15	1.71	107.18	107.50	110.42	110.43	114.05	114.67	P-18
28	26	16.583	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.75	8.36	1.43	15	2.23	107.18	107.55	110.42	110.43	114.05	114.03	P-19
29	6	14.601	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.69	7.89	1.38	15	1.99	105.97	106.26	111.16	111.18	114.29	114.72	P-13
30	6	28.816	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	0.75	4.34	0.96	12	1.98	106.22	106.79	111.16	111.18	114.29	114.88	P-14
31	2	16.601	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	3.59	4.42	4.57	12	2.05	103.27	103.61	108.63	108.86	113.86	114.01	P-42
32	23	17.891	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.45	4.38	1.85	12	2.01	102.81	103.17	108.99	109.03	109.98	109.53	P-30
33	23	16.578	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	2.87	4.42	3.65	12	2.05	102.81	103.15	108.99	109.13	109.98	109.53	P-31
34	24	87.001	1.00	5.00	0.40	0.40	2.00	10.0	11.1	0.0	6.97	6.47	3.94	18	0.51	102.62	103.06	109.52	110.03	111.96	111.10	P-28
35	34	171.670	1.00	2.00	0.40	0.40	0.80	10.0	10.2	0.0	5.34	5.01	3.02	18	0.30	103.06	103.58	110.08	110.67	111.10	111.33	P-25
36	35	40.500	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	5.34	8.16	4.35	15	2.12	102.48	103.34	110.70	111.07	111.33	109.37	P-24
37	25	19.679	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	4.17	4.34	5.31	12	1.98	102.53	102.92	110.02	110.38	111.65	112.45	P-21
38	25	16.583	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	3.83	7.89	3.12	15	1.99	102.28	102.61	110.02	110.10	111.65	111.67	P-22
39	34	40.930	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.02	4.29	1.30	12	1.93	102.26	103.05	110.08	110.13	111.10	111.15	P-26
40	34	17.500	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	0.69	4.72	0.88	12	2.34	102.26	102.67	110.08	110.09	111.10	111.05	P-27
41	22	27.153	1.00	4.00	0.40	0.40	1.60	10.0	10.4	0.0	5.20	5.76	2.94	18	0.40	100.84	100.95	107.83	107.92	112.95	102.68	P-35.1
42	41	33.697	1.00	3.00	0.40	0.40	1.20	10.0	10.2	0.0	5.20	5.65	2.94	18	0.39	100.84	100.97	107.94	108.05	102.68	112.05	P-35
43	42	16.346	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.54	7.95	1.26	15	2.02	101.22	101.55	108.08	108.09	112.05	111.62	P-34
44	42	18.000	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	4.29	8.85	3.50	15	2.50	101.22	101.67	108.08	108.19	112.05	111.85	P-33

Project File: Phase 2 100-Year_update.stm | Number of lines: 45 | Run Date: 5/6/2026

NOTES:Known Qs only ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
45	22	16.030	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	2.87	7.91	2.34	15	2.00	101.09	101.41	107.83	107.87	112.95	112.56	P-36

Project File: Phase 2 100-Year_update.stm

Number of lines: 45

Run Date: 5/6/2026

NOTES:Known Qs only ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
(1)	(in) (2)	(cfs) (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(ft) (12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(K) (23)	(ft) (24)
1	42	89.38	97.42	104.45	3.50	9.62	9.29	1.34	105.79	1.051	277.074	97.75	107.36	3.50	9.62	9.29	1.34	108.70	1.051	1.051	2.912	0.20	0.27
2	42	60.81	98.00	107.63	3.50	9.62	6.32	0.62	108.25	0.487	180.110	100.52	108.51	3.50	9.62	6.32	0.62	109.13	0.486	0.487	0.876	0.20	0.12
3	36	53.22	101.27	108.63	3.00	7.07	7.53	0.88	109.51	0.848	24.384	101.39	108.84	3.00	7.07	7.53	0.88	109.72	0.848	0.848	0.207	0.20	0.18
4	36	50.76	101.39	109.02	3.00	7.07	7.18	0.80	109.82	0.772	128.932	102.03	110.01	3.00	7.07	7.18	0.80	110.81	0.771	0.771	0.995	0.20	0.16
5	36	28.27	102.03	110.17	3.00	7.07	4.00	0.25	110.42	0.239	160.807	102.83	110.56	3.00	7.07	4.00	0.25	110.80	0.239	0.239	0.385	0.20	0.05
6	36	22.57	102.83	110.60	3.00	7.07	3.19	0.16	110.76	0.153	344.774	104.21	111.13	3.00	7.07	3.19	0.16	111.29	0.152	0.153	0.526	0.20	0.03
7	24	20.17	105.22	111.16	2.00	3.14	6.42	0.64	111.80	1.059	164.474	105.88	112.90	2.00	3.14	6.42	0.64	113.55	1.059	1.059	1.742	0.20	0.13
8	24	13.03	105.88	113.03	2.00	3.14	4.15	0.27	113.30	0.442	225.008	106.78	114.03	2.00	3.14	4.15	0.27	114.29	0.442	0.442	0.994	0.20	0.05
9	15	4.21	110.53	114.08	1.25	1.23	3.43	0.18	114.26	0.566	25.237	111.03	114.22	1.25	1.23	3.43	0.18	114.41	0.566	0.566	0.143	0.20	0.04
10	18	7.57	108.56	113.03	1.50	1.77	4.28	0.29	113.32	0.692	52.581	108.83	113.40	1.50	1.77	4.28	0.29	113.68	0.692	0.692	0.364	0.20	0.06
11	15	2.88	109.09	113.45	1.25	1.23	2.35	0.09	113.54	0.265	105.801	109.58	113.73	1.25	1.23	2.35	0.09	113.82	0.265	0.265	0.280	0.20	0.02
12	15	2.88	109.58	113.75	1.25	1.23	2.35	0.09	113.84	0.265	154.613	110.33	114.16	1.25	1.23	2.35	0.09	114.25	0.265	0.265	0.410	0.20	0.02
13	12	3.31	109.33	113.45	1.00	0.79	4.22	0.28	113.73	1.151	15.500	109.62	113.63	1.00	0.79	4.21	0.28	113.91	1.150	1.150	0.178	0.20	0.06
14	12	1.86	109.33	113.45	1.00	0.79	2.37	0.09	113.54	0.363	19.500	109.74	113.52	1.00	0.79	2.37	0.09	113.61	0.363	0.363	0.071	0.20	0.02
15	18	5.19	107.28	114.08	1.50	1.77	2.94	0.13	114.21	0.325	261.002	108.35	114.93	1.50	1.77	2.94	0.13	115.06	0.325	0.325	0.849	0.20	0.03
16	12	2.61	108.85	114.96	1.00	0.79	3.32	0.17	115.13	0.715	13.500	109.12	115.05	1.00	0.79	3.32	0.17	115.22	0.715	0.715	0.097	0.20	0.03
17	12	2.63	108.85	114.96	1.00	0.79	3.35	0.17	115.13	0.726	17.500	109.20	115.08	1.00	0.79	3.35	0.17	115.26	0.726	0.726	0.127	0.20	0.03
18	18	4.90	102.77	108.63	1.50	1.77	2.77	0.12	108.75	0.290	383.142	108.53	109.73	1.20	1.51	3.24	0.16	109.89	0.305	0.297	1.139	0.20	0.03
19	12	3.17	108.34	109.76	1.00	0.79	4.04	0.25	110.01	1.055	17.505	108.71	109.95	1.00	0.79	4.04	0.25	110.20	1.055	1.055	0.185	0.20	0.05
20	12	1.75	108.34	109.76	1.00	0.79	2.23	0.08	109.84	0.322	17.500	108.59	109.82	1.00	0.79	2.23	0.08	109.89	0.322	0.322	0.056	0.20	0.02
21	15	4.17	107.53	114.08	1.25	1.23	3.40	0.18	114.26	0.555	15.500	107.84	114.17	1.25	1.23	3.40	0.18	114.35	0.555	0.555	0.086	0.20	0.04

Project File: Phase 2 100-Year_update.stm | Number of lines: 45 | Run Date: 5/6/2026

; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
(1)	(in) (2)	(cfs) (3)	(ft) (4)	(ft) (5)	(ft) (6)	(sqft) (7)	(ft/s) (8)	(ft) (9)	(ft) (10)	(%) (11)	(ft) (12)	(ft) (13)	(ft) (14)	(ft) (15)	(sqft) (16)	(ft/s) (17)	(ft) (18)	(ft) (19)	(%) (20)	(%) (21)	(ft) (22)	(K) (23)	(ft) (24)
22	42	32.39	98.00	107.63	3.50	9.62	3.37	0.18	107.81	0.138	117.241	98.84	107.79	3.50	9.62	3.37	0.18	107.97	0.138	0.138	0.162	0.20	0.04
23	30	21.95	99.84	107.83	2.50	4.91	4.47	0.31	108.14	0.382	288.561	101.31	108.93	2.50	4.91	4.47	0.31	109.24	0.381	0.381	1.101	0.20	0.06
24	24	17.86	101.81	108.99	2.00	3.14	5.69	0.50	109.49	0.831	52.000	102.07	109.42	2.00	3.14	5.69	0.50	109.93	0.830	0.830	0.432	0.20	0.10
25	24	11.12	102.02	109.52	2.00	3.14	3.54	0.19	109.72	0.322	142.000	102.73	109.98	2.00	3.14	3.54	0.19	110.18	0.322	0.322	0.457	0.20	0.04
26	18	3.40	103.23	110.02	1.50	1.77	1.92	0.06	110.08	0.140	275.000	104.61	110.40	1.50	1.77	1.92	0.06	110.46	0.140	0.140	0.384	0.20	0.01
27	15	1.66	107.18	110.42	1.25	1.23	1.35	0.03	110.44	0.088	18.762	107.50	110.43	1.25	1.23	1.35	0.03	110.46	0.088	0.088	0.017	0.20	0.01
28	15	1.75	107.18	110.42	1.25	1.23	1.43	0.03	110.45	0.098	16.583	107.55	110.43	1.25	1.23	1.43	0.03	110.46	0.098	0.098	0.016	0.20	0.01
29	15	1.69	105.97	111.16	1.25	1.23	1.38	0.03	111.19	0.091	14.601	106.26	111.18	1.25	1.23	1.38	0.03	111.21	0.091	0.091	0.013	0.20	0.01
30	12	0.75	106.22	111.16	1.00	0.79	0.96	0.01	111.18	0.059	28.816	106.79	111.18	1.00	0.79	0.95	0.01	111.19	0.059	0.059	0.017	0.20	0.00
31	12	3.59	103.27	108.63	1.00	0.79	4.57	0.32	108.96	1.354	16.601	103.61	108.86	1.00	0.79	4.57	0.32	109.18	1.353	1.353	0.225	0.20	0.06
32	12	1.45	102.81	108.99	1.00	0.79	1.85	0.05	109.04	0.221	17.891	103.17	109.03	1.00	0.79	1.85	0.05	109.08	0.221	0.221	0.039	0.20	0.01
33	12	2.87	102.81	108.99	1.00	0.79	3.65	0.21	109.20	0.865	16.578	103.15	109.13	1.00	0.79	3.65	0.21	109.34	0.865	0.865	0.143	0.20	0.04
34	18	6.97	102.62	109.52	1.50	1.77	3.94	0.24	109.77	0.587	87.001	103.06	110.03	1.50	1.77	3.94	0.24	110.28	0.587	0.587	0.510	0.20	0.05
35	18	5.34	103.06	110.08	1.50	1.77	3.02	0.14	110.22	0.344	171.670	103.58	110.67	1.50	1.77	3.02	0.14	110.82	0.344	0.344	0.591	0.20	0.03
36	15	5.34	102.48	110.70	1.25	1.23	4.35	0.29	111.00	0.911	40.500	103.34	111.07	1.25	1.23	4.35	0.29	111.37	0.910	0.911	0.369	0.20	0.06
37	12	4.17	102.53	110.02	1.00	0.79	5.31	0.44	110.46	1.826	19.679	102.92	110.38	1.00	0.79	5.31	0.44	110.82	1.826	1.826	0.359	0.20	0.09
38	15	3.83	102.28	110.02	1.25	1.23	3.12	0.15	110.17	0.469	16.583	102.61	110.10	1.25	1.23	3.12	0.15	110.25	0.468	0.468	0.078	0.20	0.03
39	12	1.02	102.26	110.08	1.00	0.79	1.30	0.03	110.11	0.109	40.930	103.05	110.13	1.00	0.79	1.30	0.03	110.15	0.109	0.109	0.045	0.20	0.01
40	12	0.69	102.26	110.08	1.00	0.79	0.88	0.01	110.09	0.050	17.500	102.67	110.09	1.00	0.79	0.88	0.01	110.10	0.050	0.050	0.009	0.20	0.00
41	18	5.20	100.84	107.83	1.50	1.77	2.94	0.13	107.96	0.327	27.153	100.95	107.92	1.50	1.77	2.94	0.13	108.05	0.326	0.327	0.089	0.20	0.03
42	18	5.20	100.84	107.94	1.50	1.77	2.94	0.13	108.08	0.327	33.697	100.97	108.05	1.50	1.77	2.94	0.13	108.19	0.326	0.327	0.110	0.20	0.03

Project File: Phase 2 100-Year_update.stm | Number of lines: 45 | Run Date: 5/6/2026

; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
(1)	(in) (2)	(cfs) (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(ft) (12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(K) (23)	(ft) (24)
43	15	1.54	101.22	108.08	1.25	1.23	1.26	0.02	108.11	0.076	16.346	101.55	108.09	1.25	1.23	1.25	0.02	108.12	0.076	0.076	0.012	0.20	0.00
44	15	4.29	101.22	108.08	1.25	1.23	3.50	0.19	108.27	0.588	18.000	101.67	108.19	1.25	1.23	3.50	0.19	108.38	0.588	0.588	0.106	0.20	0.04
45	15	2.87	101.09	107.83	1.25	1.23	2.34	0.09	107.91	0.263	16.030	101.41	107.87	1.25	1.23	2.34	0.09	107.96	0.263	0.263	0.042	0.20	0.02

Project File: Phase 2 100-Year_update.stm | Number of lines: 45 | Run Date: 5/6/2026

; c = cir e = ellip b = box

Hydraflow HGL Computation Procedure

General Procedure:

Hydraflow computes the HGL using the Bernoulli energy equation. Manning's equation is used to determine energy losses due to pipe friction. In a standard step, iterative procedure, Hydraflow assumes upstream HGLs until the energy equation balances. If the energy equation cannot balance, supercritical flow exists and critical depth is temporarily assumed at the upstream end. A supercritical flow Profile is then computed using the same procedure in a downstream direction using momentum principles.

Col. 1 The line number being computed. Calculations begin at Line 1 and proceed upstream.

Col. 2 The line size. In the case of non-circular pipes, the line rise is printed above the span.

Col. 3 Total flow rate in the line.

Col. 4 The elevation of the downstream invert.

Col. 5 Elevation of the hydraulic grade line at the downstream end. This is computed as the upstream HGL + Minor loss of this line's downstream line.

Col. 6 The downstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 7 Cross-sectional area of the flow at the downstream end.

Col. 8 The velocity of the flow at the downstream end, (Col. 3 / Col. 7).

Col. 9 Velocity head (Velocity squared / 2g).

Col. 10 The elevation of the energy grade line at the downstream end, HGL + Velocity head, (Col. 5 + Col. 9).

Col. 11 The friction slope at the downstream end (the S or Slope term in Manning's equation).

Col. 12 The line length.

Col. 13 The elevation of the upstream invert.

Col. 14 Elevation of the hydraulic grade line at the upstream end.

Col. 15 The upstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 16 Cross-sectional area of the flow at the upstream end.

Col. 17 The velocity of the flow at the upstream end, (Col. 3 / Col. 16).

Col. 18 Velocity head (Velocity squared / 2g).

Col. 19 The elevation of the energy grade line at the upstream end, HGL + Velocity head, (Col. 14 + Col. 18) .

Col. 20 The friction slope at the upstream end (the S or Slope term in Manning's equation).

Col. 21 The average of the downstream and upstream friction slopes.

Col. 22 Energy loss. Average Sf/100 x Line Length (Col. 21/100 x Col. 12). Equals (EGL upstream - EGL downstream) +/- tolerance.

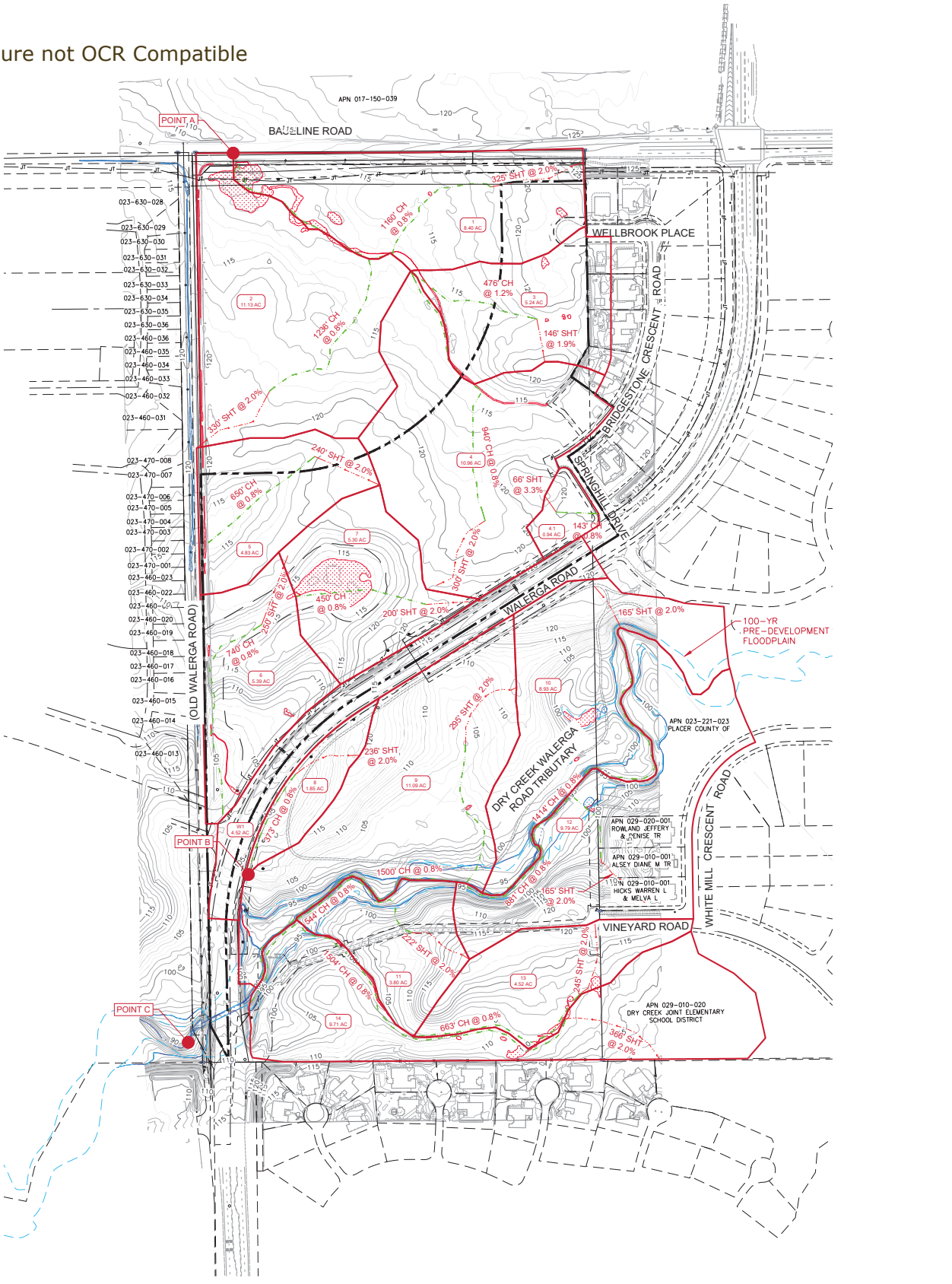
Col. 23 The junction loss coefficient (K).

Col. 24 Minor loss. (Col. 23 x Col. 18). Is added to upstream HGL and used as the starting HGL for the next upstream line(s).

EXHIBIT E

Drainage Maps

* Figure not OCR Compatible



ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

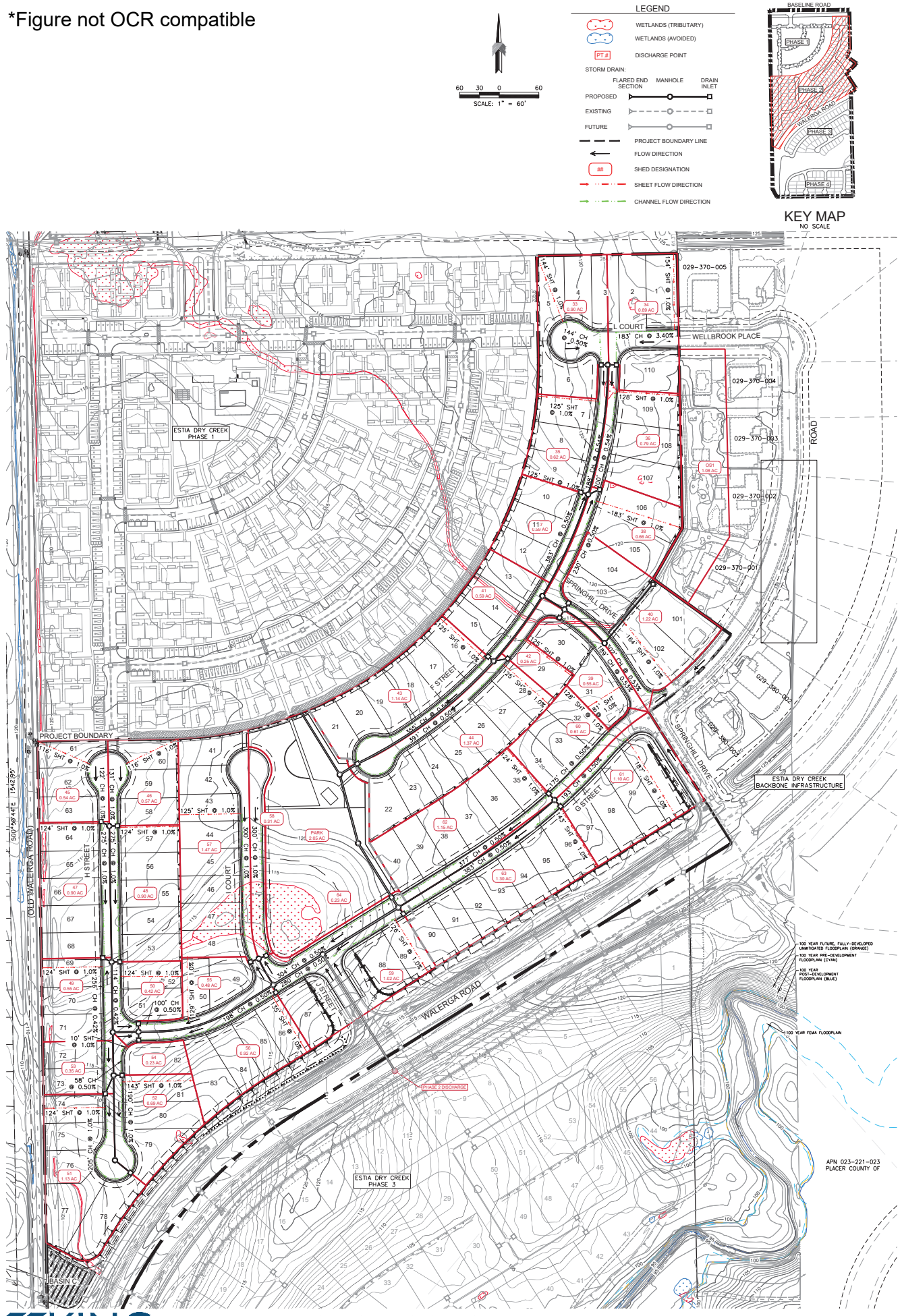
DRAINAGE MAP #1 - PRE-DEVELOPMENT SHED MAP - PHASE 2

PLACER COUNTY, CALIFORNIA

JUNE 2026

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*Figure not OCR compatible



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ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

DRAINAGE MAP #2 - POST-DEVELOPMENT SHED MAP - PHASE 2

PLACER COUNTY, CALIFORNIA

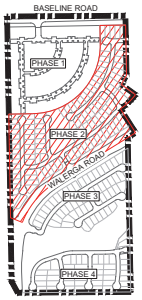
JUNE 2026

ESTIA DRY CREEK - PHASE 2		
FLOW SUMMARY		
ULT DEVELOPMENT		
DRAINAGE INLET, MH OR LID	Q10 cfs	Q100 cfs
TO PHASE 2 DISCHARGE		
DI-1	1.41	2.61
DI-2	1.42	2.63
SDMH-1	2.81	5.19
DI-3	1.90	3.51
DI-4	2.28	4.21
SDMH-2	6.66	12.37
DI-5	1.01	1.86
DI-6.1	1.53	2.88
DI-6	1.74	3.31
SDMH-4	4.01	7.58
SDMH-5	10.42	19.51
DI-7	0.91	1.69
DI-8	0.41	0.75
SDMH-3	11.72	21.92
DI-9	14.73	27.62
PARK	3.65	6.72
SDMH-15.1	30.18	56.83
DI-10	0.90	1.66
DI-11	0.95	1.75
SDMH-7	1.85	3.40
DI-12	2.25	4.17
DI-13	2.07	3.83
SDMH-2.6	6.00	11.12
DI-14	2.89	5.34
SDMH-2.7	2.89	5.34
DI-15	0.55	1.02
DI-16	0.37	0.69
SDMH-2.8	3.77	6.97
SDMH-2.9	9.64	17.86
DI-17	0.78	1.45
DI-18	1.44	2.67
SDMH-2.14	11.73	21.74
DI-20	2.32	4.29
DI-21	1.33	2.68
SDMH-2.11	3.17	5.86
DI-19	1.55	2.87
SDMH-2.10	16.25	30.14
DI-22	0.94	1.75
DI-23	1.71	3.17
SDMH-14	2.65	4.90
DI-25	31.25	58.91
DI-24	1.93	3.59
SDMH-15	35.24	66.39
SDMH-16	48.71	91.74
PHASE 2	46.83	88.51

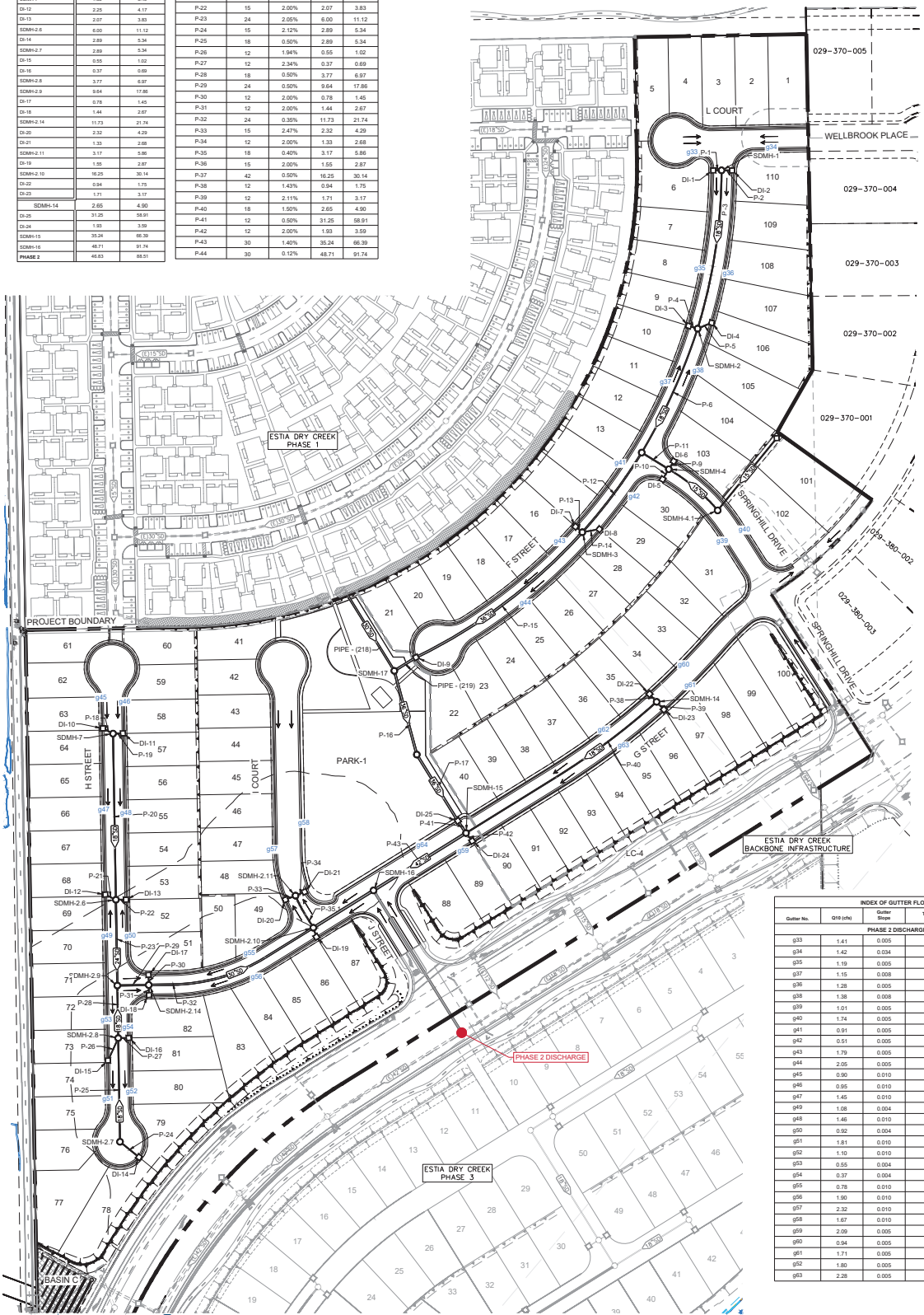
INDEX OF PIPES				
TO PHASE 2 DISCHARGE				
Pipe ID	Pipe Size (in)	Slope (%)	Q10 (cfs)	Q100 (cfs)
P-1	12	2.00%	1.41	2.61
P-2	12	2.00%	1.42	2.63
P-3	18	0.40%	2.81	5.19
P-4	12	2.00%	1.90	3.51
P-5	12	2.00%	2.28	4.21
P-6	18	0.40%	6.66	12.37
P-10	12	2.10%	1.01	1.86
P-7	15	0.49%	1.53	2.88
P-8	15	0.41%	1.53	2.88
P-9	12	1.87%	1.74	3.31
P-11	18	0.51%	4.01	7.58
P-12	24	0.40%	10.42	19.51
P-13	12	2.00%	0.91	1.69
P-14	12	2.00%	0.41	0.75
P-15	36	0.40%	11.72	21.92
P-16	36	0.50%	14.73	27.62
P-17	24	0.50%	30.18	56.83
P-18	15	1.73%	0.90	1.66
P-19	15	2.25%	0.95	1.75
P-20	18	0.50%	1.85	3.40
P-21	12	2.00%	2.25	4.17
P-22	15	2.00%	2.07	3.83
P-23	24	2.05%	6.00	11.12
P-24	15	2.12%	2.89	5.34
P-25	18	0.50%	2.89	5.34
P-26	12	1.94%	0.55	1.02
P-27	12	2.34%	0.37	0.69
P-28	18	0.50%	3.77	6.97
P-29	24	0.50%	9.64	17.86
P-30	12	2.00%	0.78	1.45
P-31	12	2.00%	1.44	2.67
P-32	24	0.35%	11.73	21.74
P-33	15	2.47%	2.32	4.29
P-34	12	2.00%	1.33	2.68
P-35	18	0.40%	3.17	5.86
P-36	15	2.00%	1.55	2.87
P-37	42	0.50%	16.25	30.14
P-38	12	1.43%	0.94	1.75
P-39	12	2.11%	1.71	3.17
P-40	18	1.50%	2.65	4.90
P-41	12	0.50%	31.25	58.91
P-42	12	2.00%	1.93	3.59
P-43	30	1.40%	35.24	66.39
P-44	30	0.12%	48.71	91.74

80 40 0 80
SCALE: 1" = 80'

LEGEND
- WETLANDS (TRIBUTARY)
- WETLANDS (AVOIDED)
- PT.# DISCHARGE POINT
- STORM DRAIN: FLARED END SECTION, MANHOLE, DRAIN INLET
- PROPOSED
- EXISTING
- FUTURE
- PROJECT BOUNDARY LINE
- FLOW DIRECTION



KEY MAP
NO SCALE

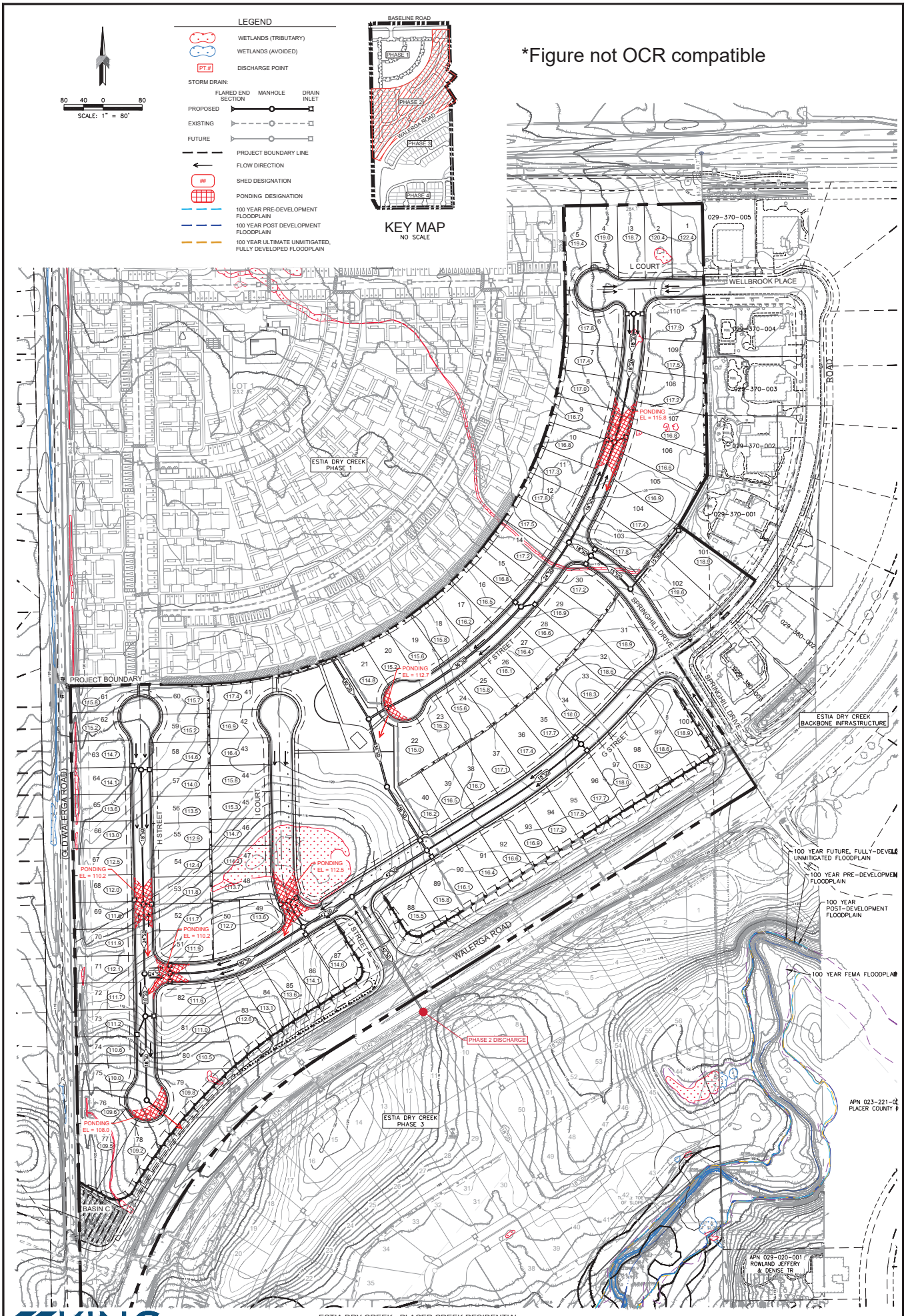


INDEX OF GUTTER FLOWS				
Gutter No.	Q10 (cfs)	Gutter Slope	Target Inlet No.	Target Inlet Condition
PHASE 2 DISCHARGE				
g33	1.41	0.005	DI-1	ON GRADE
g34	1.42	0.034	DI-2	ON GRADE
g35	1.19	0.005	DI-3	SAG
g37	1.15	0.008	DI-3	SAG
g36	1.28	0.005	DI-4	SAG
g38	1.38	0.008	DI-4	SAG
g39	1.01	0.005	DI-5	ON GRADE
g40	1.74	0.005	DI-6	ON GRADE
g41	0.91	0.005	DI-7	ON GRADE
g42	0.51	0.005	DI-8	ON GRADE
g43	1.79	0.005	DI-9	SAG
g44	2.05	0.005	DI-9	SAG
g45	0.90	0.010	DI-10	ON GRADE
g46	0.95	0.010	DI-11	ON GRADE
g47	1.45	0.010	DI-12	SAG
g49	1.08	0.004	DI-12	SAG
g48	1.46	0.010	DI-13	SAG
g50	0.92	0.004	DI-13	SAG
g51	1.81	0.010	DI-14	SAG
g52	1.10	0.010	DI-14	SAG
g53	0.55	0.004	DI-15	ON GRADE
g54	0.37	0.004	DI-16	ON GRADE
g55	0.78	0.010	DI-17	SAG
g56	1.90	0.010	DI-18	SAG
g57	2.32	0.010	DI-20	SAG
g58	1.67	0.010	DI-21	SAG
g59	2.09	0.005	DI-19	ON GRADE
g60	0.94	0.005	DI-22	ON GRADE
g61	1.71	0.005	DI-23	ON GRADE
g62	1.80	0.005	DI-25	ON GRADE
g63	2.28	0.005	DI-24	ON GRADE

KING ENGINEERING
200 Auburn Folsom Road, Ste. 201
Auburn, California 95603
Telephone: (530) 272-8328
Email: King-Engineering-Inc.com

ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL
DRAINAGE MAP #3 - PROJECT INDEX - PHASE 2
PLACER COUNTY, CALIFORNIA
JUNE 2026

*Figure not OCR compatible



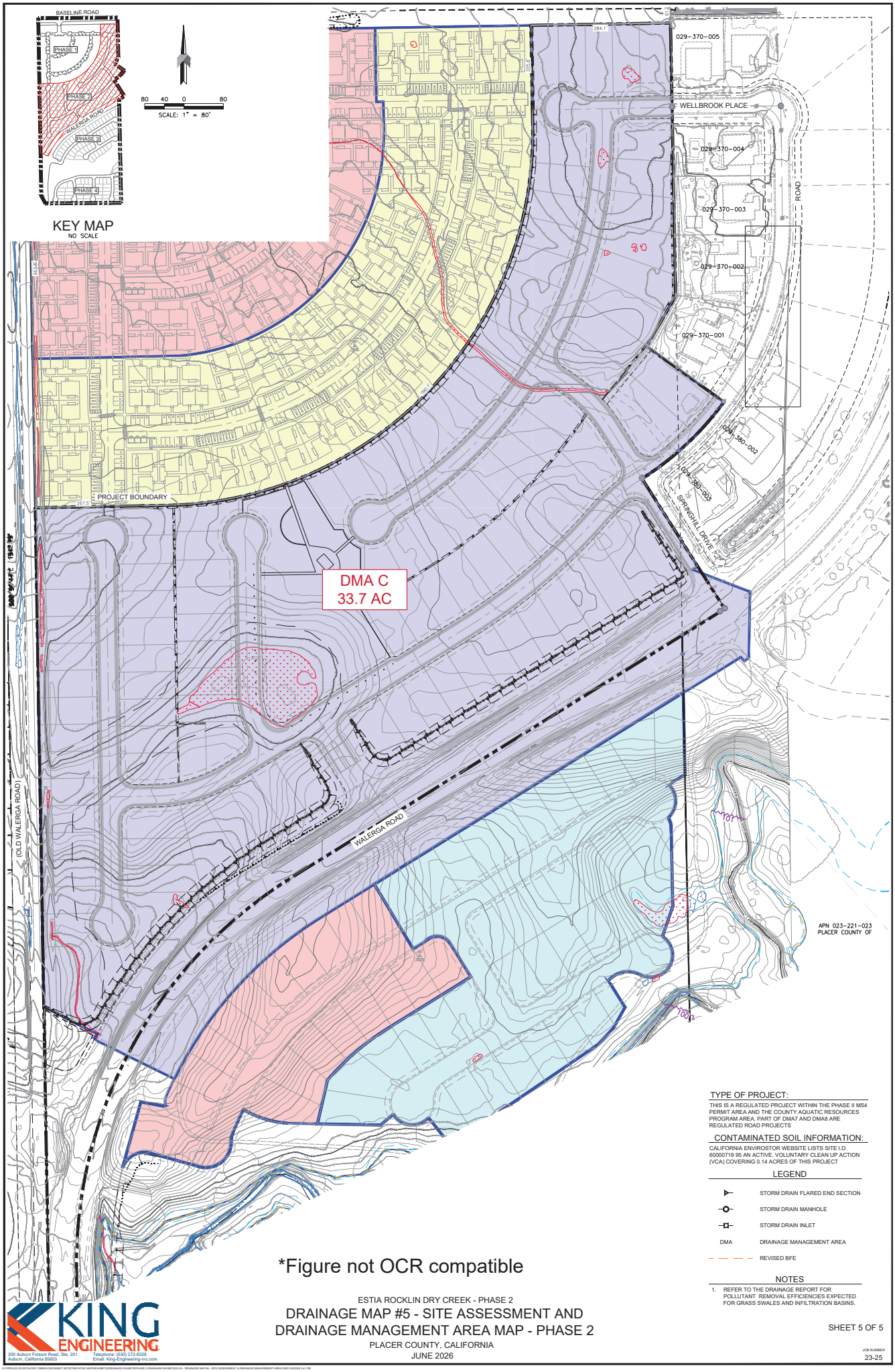
KING ENGINEERING
200 Auburn Folsom Road, Ste. 201
Auburn, California 95603
Telephone: (530) 272-8328
Email: King-Engineering-Inc.com

ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

DRAINAGE MAP #4 - BLOCKED INLET SCENARIO - PHASE 2

PLACER COUNTY, CALIFORNIA

JUNE 2026



TYPE OF PROJECT:

THIS IS A REGULATED PROJECT WITHIN THE PHASE II MS4 PERMIT AREA AND THE COUNTY AQUATIC RESOURCES PROGRAM AREA. PART OF DMA7 AND DMA8 ARE REGULATED ROAD PROJECTS

CONTAMINATED SOIL INFORMATION:

CALIFORNIA ENVIROSTOR WEBSITE LISTS SITE I.D. 60000719 95 AN ACTIVE, VOLUNTARY CLEAN UP ACTION (VCA) COVERING 0.14 ACRES OF THIS PROJECT

LEGEND

- STORM DRAIN FLARED END SECTION
- STORM DRAIN MANHOLE
- STORM DRAIN INLET
- DMA — DRAINAGE MANAGEMENT AREA
- REVISED BFE

NOTES

1. REFER TO THE DRAINAGE REPORT FOR POLLUTANT REMOVAL EFFICIENCIES EXPECTED FOR GRASS SWALES AND INFILTRATION BASINS.

*Figure not OCR compatible

ESTIA ROCKLIN DRY CREEK - PHASE 2

DRAINAGE MAP #5 - SITE ASSESSMENT AND DRAINAGE MANAGEMENT AREA MAP - PHASE 2

PLACER COUNTY, CALIFORNIA

JUNE 2026

KING ENGINEERING
200 Auburn Folsom Road, Ste. 201
Auburn, California 95603
Telephone: (530) 272-8328
Email: King-Engineering-Inc.com

JOB NUMBER
23-25

EXHIBIT F

Post-Construction Storm Water Quality Plan Workbook

Post-Construction
Storm Water Quality Plan
West Placer County

For:

ESTIA DRY CREEK
within MS4 in Placer County, CA

Prepared for:

CHRIS DICKINSON
LAND DEVELOPMENT AND ACQUISITIONS PROJECT MANAGER
HOMES BY TOWNE
11060 WHITE ROCK ROAD, SUITE 150
RANCHO CORDOVA, CA 95670
(916) 782-2424

Prepared by:

King Engineering, Inc.
200 Auburn Folsom Road
Auburn, CA 95603
(530) 272-8328

Preparation Date:_____03/04/2026_____

Placer County Approval Date:_____

Revision Date December 11 2024

Section 1 General Project Information

The undersigned owner of the subject property, is responsible for the implementation of the provisions of this Storm Water Quality Plan (SWQP), including ongoing operations and maintenance (O&M), consistent with the requirements of the West Placer Storm Water Quality Design Manual and the State of California Phase II Small MS4 General Permit (Order No: 2013-0001-DWQ). If the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement the SWQP.

For all Regulated Projects (As identified in Form 1-2 below), the undersigned owner hereby grants access to all representatives of the Jurisdictional Agency for the sole purpose of performing O&M inspections of the installed treatment system(s) and hydromodification control(s) if any.

A copy of the final signed and fully approved SWQP shall be available on the subject site for the duration of construction and then stored with the project approval documentation and improvement plans in perpetuity.

Form 1-1 Project Identification and Owner's Certification

Project Site Address:	BASELINE ROAD	
Owner Name:	CHRIS DICKINSON	
Title	LAND DEVELOPMENT AND ACQUISITIONS PROJECT MANAGER	
Company	HOMES BY TOWNE	
Address	11060 WHITE ROCK ROAD, SUITE 150	
City, State, Zip Code	RANCHO CORDOVA, CA 95670	
Email	cdickinson@hbtsac.com	
Telephone #	(916) 782-2424	
Signature	Date	
Engineer:*	Curtis King	PE Stamp* (Required for all Regulated Projects)
Title	Principal Engineer	
Company	King Engineering, Inc.	
Address	200 Auburn Folsom Road	
City, State, Zip Code	Auburn, CA 95603	
Email	Curtis.King@King-Engineering-Inc.com	
Telephone #	(530) 272-8328	
Signature		
Brief Description of Project: (Attach additional sheets as necessary)	Phases 1-4 and Backbone Roads	

* Not required for Small Projects as determined in Form 1-2 below. Project owners are responsible for ensuring that all storm water facilities are designed by an appropriately licensed and qualified professional.

Form 1-2 Project Category	
Development Category (Select all that apply)	
[1]**Small Project** – All projects, except LUPs, that create and/or replace between 2,500-5,000 ft^2 of impervious surface or detached single family homes that create and/or replace 2,500 ft^2 or more of impervious surface and are not part of a larger plan of development.	
[2]Enter total new and/or replaced impervious surface (ft^2)	
[3]**Regulated Project** – All projects that create and/or replace 5,000 ft^2 or more of impervious surface.	
[4]**Regulated Redevelopment Project** with equal to, or greater than 50 percent increase in impervious area	
[5]**Regulated Redevelopment Project** with less than 50 percent increase in impervious area	
[6]Enter total pre-project impervious surface (ft^2)	
[7]Enter total new and/or replaced impervious surface (ft^2)	
[8]**Regulated Road or linear underground/overhead project (LUP)** creating 5,000 ft^2 or more of newly constructed contiguous impervious surface.	
[9]Enter total new and/or replaced impervious surface (ft^2)	
[10]**Regulated Hydromodification Management Project** – Regulated projects that create and/or replace 1 acre or more of impervious surface. A project that does not increase impervious surface area over the pre-project condition is not a hydromodification management project.	YES
[11]Enter total new and/or replaced impervious surface (ft^2)	2255580.36

Section 3 Regulated Projects

Section 3 forms are to be completed for all Regulated Projects.

Form 3-1 Site Location and Hydrologic Features

Site coordinates: *Take GPS measurement at approximate center of site*	[1] Latitude	[2] Longitude	[3] Elevation (ft. above sea level)	[4] 85th Percentile, 24 Hour Design Storm Depth (in):
	38.75051	-121.36295	110	0.9

[5] Receiving waters *Name of stream, lake or other downstream waterbody to which the site runoff eventually drains*	Dry Creek and Curry Creek
[6] 303(d) listed pollutants of concern *Refer to State Water Resources Control Board website* www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/#impaired	
[7] Is Project going to be phased? *If yes, ensure that the SWQP evaluates each phase with distinct DMAs, requiring LID BMPs to address runoff at time of completion.*	Yes

[8] *Use this form to show a conceptual schematic depicting DMAs and conveyance features connecting DMAs to the site outlet(s). An example is provided below that can be modified for the proposed project or a drawing clearly showing DMAs and flow routing may be attached.*

Example only
Modify for project specific SWQP
Use separate sheet if necessary

Please Refer to Site Assessment and Drainage Management Area Drainage Map

Form 3-2 Site Assessment and Layout Documentation

	Has this Item been considered in the Site Layout and depicted in the Site Plan?	
	Yes	**Not Applicable (Include brief explanation)**
Define the development envelope and protected areas, identifying areas that are most suitable for development and areas to be landscaped, or left undisturbed, and used for infiltration.	X	Reference Site Plan for infiltration basins and landscaped spaces to provide
Concentrate development on portions of the site with less permeable soils and preserve areas that can promote infiltration.		N/A
Limit overall impervious coverage of the site with paving and roofs.		N/A
Set back development from creeks, wetlands, and riparian habitats.	X	Reference Site Plan for setbacks and protected regions
To the extent practicable, avoid development and LID siting within floodplains.	X	Reference Site Plan for infiltration basins and landscaped spaces to provide
Preserve significant trees.	X	Reference Site Plan for protected trees
Conform site layout along natural landforms.	X	Site layout conforms to existing tributary flow paths and flood limits
Avoid excessive grading and disturbance of vegetation and soils.		N/A
Replicate the site's natural drainage patterns.	X	Site layout conforms to existing tributary flow paths and flood limits
Detain and retain runoff throughout the site.	X	Infiltration basins are incorporated to capture runoff throughout the site

Attach a Site Plan that incorporates the applicable considerations above. Ensure that the following items are included in the Site Plan:

Site Boundary
Soil types and areal extents, test pit and infiltration test locations
Topographic data with 1 ft. contours
Existing natural hydrologic features (depressions, watercourses, wetlands, riparian corridors)
Floodplain boundaries
Environmentally sensitive areas and areas to be preserved
Proposed locations and footprints of improvements creating new, or replaced, impervious surfaces
Potential pollutant sources and locations
Entire site divided into separate DMAs with unique identifiers
Existing and proposed site drainage network with flow directions and site run-on and discharge locations
Proposed design features and surface treatments used to minimize imperviousness and reduce runoff
Proposed locations and footprints of treatment and hydromodification management facilities
Design features for managing authorized non-stormwater discharges
Areas of soil and/or groundwater contamination
Existing utilities and easements
Maintenance areas

Form 3-3 Source Control Measures			
Potential Pollutant Generating Activity or Source	Check One		Describe the source control measures to be implemented for each potential pollutant generating activity or source present on the project as listed in Appendix C and in the CASQA Fact Sheets. Include any special features, materials, or methods of construction that will be used.
	Present	Not Applicable	
Accidental spills or leaks	☑	☐	measures per SC-11 fact sheet
Interior floor drains	☐	☑	
Parking/storage areas and maintenance	☐	☑	measure per SC-21, SC-22, SC-32 and SC-43 fact sheets
Indoor and structural pest control	☑	☐	measures done mainly by licensed pest control companies per SC-34, SC-61, SC-60 fact sheets
Pools, spas, ponds, decorative fountains, and other water features	☐	☑	measures per SC-72 fact sheet
Landscape/outdoor pesticide use	☑	☐	measures per SC-41, SC-60, SC-73 and SC-75 fact sheets
Restaurants, grocery stores, and other food service operations	☐	☑	
Refuse areas	☑	☐	homewoners to take measures per SC-34, SC-60
Industrial Processes	☐	☑	
Outdoor storage of equipment or materials	☐	☑	measures per SC-32, SC-41, SC-43 fact sheets
Vehicle and equipment cleaning	☑	☐	measures per SC-21 fact sheet
Vehicle and equipment repair and maintenance	☑	☐	measures per SC-22, SC-32 fact sheets
Fuel dispensing areas	☐	☑	
Loading docks	☐	☑	
Fire sprinkler test water	☐	☑	
Drain or wash water from boiler drain lines, condensate drain lines, rooftop equipment, drainage sumps, and other sources	☐	☑	
Unauthorized non-storm water discharges	☑	☐	measures per SC-10 fact sheet
Building and grounds maintenance	☑	☐	measures per SC-4, SC-43 fact sheets

The source control measures identified in this table shall be designed consistent with recommendations from the CASQA Stormwater BMP Handbook for New Development and Redevelopment[1], or from another equivalent manual.

[1] California Stormwater BMP Handbook New Development and Redevelopment. California Stormwater Quality Association (CASQA). January 2003.

Form 3-4 Runoff Reduction Calculator for Site Design Measures on Regulated Projects

[1]DMA ID No.			1		2		3		4	
Site Design Measure	**Runoff Reduction Parameters**			**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**
[2] Adjacent/On-Site Stream Setbacks and Buffers	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[3] Soil Quality Improvement and Maintenance	A_{pond} (ft^2)	*ponding area*		0		0		0		0
	D_{pond} (ft)	*ponding depth*								
	A_{sa} (ft^2)	*soil amendment area*								
	D_{sa} (ft)	*depth of amended soil*								
	n	*porosity of amended soil*								
[4] Tree Planting and Preservation	n_e	*number of new evergreen trees*	26	966	24	874	51	1817	0	0
	n_d	*number of new deciduous trees*	79		71		145		0	
	A_{tc} (ft^2)	*canopy area of existing trees to remain on the property*	0		0		0		0	
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[5] Rooftop and Impervious Area Disconnection	A_{imp} (ft^2)	*impervious drainage area*	125475	8470	113525	7663	92400	6237	0	0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[6] Porous Pavement	A_{res} (ft^2)	*area of gravel storage layer*		0		0		0		0
	D_{res} (ft)	*depth of gravel storage layer*								
	n_{agg}	*porosity of aggregate*								
	C	*efficiency factor*								
[7] Vegetated Swales	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[8] Rain Barrels and Cisterns	N	*number of rain barrels and/or cisterns*		0		0		0		0
	V_a (ft^3)	*volume of each rain barrel and/or cistern*								
[9] Do all Site Design Measures meet the design requirements outlined in the Fact Sheets?					**Yes**		**No**			
[10] Total Volume Reduction (ft^3)			**9435**		**8537**		**8054**		**0**	
[11] Effective Treated Impervious Area (ft^2)			**139781**		**126469**		**119323**		**0**	

Form 3-4 Runoff Reduction Calculator for Site Design Measures on Regulated Projects

DMA ID No.	5		6		7		8		9		10		11		12	
Runoff Reduction Parameters		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**
impervious drainage area		0		0		0		0		0		0		0		0
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
ponding area		0		0		0		0		0		0		0		0
ponding depth																
soil amendment area																
depth of amended soil																
porosity of amended soil																
number of new evergreen trees	5	177	9	324	5	177	7	258		0		0		0		0
number of new deciduous trees	14		26		14		21									
canopy area of existing trees to remain on the property	0		0		0		0									
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
impervious drainage area	11400	770	20400	1377	11400	770	16800	1134		0		0		0		0
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
area of gravel storage layer		0		0		0		0		0		0		0		0
depth of gravel storage layer																
porosity of aggregate																
efficiency factor																
impervious drainage area		0		0		0		0		0		0		0		0
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
number of rain barrels and/or cisterns		0		0		0		0		0		0		0		0
volume of each rain barrel and/or cistern																
Total Volume Reduction	**946**		**1701**		**946**		**1392**		**0**		**0**		**0**		**0**	
Effective Treated Impervious Area	**14016**		**25196**		**14016**		**20615**		**0**		**0**		**0**		**0**	

Form 3-5 Computation of Water Quality Design Criteria for Stormwater Treatment and Baseline Hydromodification Measures

DMA ID No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
[1]Total impervious area requiring treatment	261360	261360	1027580.4		117089	239057	152155	196978														
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	121579	134891	908257	0	103073	213861	138139	176363	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)	174240	174240	440391.6		50181	97095	65209	84419														
[4] Composite DMA Runoff Coefficient (C_w) *Enter area weighted composite runoff coefficient representing entire DMA*	0.55	0.55	0.56		0.55	0.55	0.55	0.55														
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	8813	9210	40909	0	4566	9264	6058	7769	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.753	0.787	3.496	0.000	0.390	0.792	0.518	0.664	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[4] Runoff coefficient values for various materials are as follows: roofs 0.95, asphalt/concrete pavement 0.90, gravel pavement 0.80, managed turf 0.25, disturbed soil 0.25.

[5, 6] Values will equal zero if all impervious area has been treated by Site Design Measures.

DMA ID No.	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
[1]Total impervious area requiring treatment																						
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)																						
[4] Composite DMA Runoff Coefficient (Rc) *Enter area weighted composite runoff coefficient representing entire DMA*																						
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[4] Runoff coefficient values are as follows: roofs 0.95, asphalt/concrete pavement 0.90, gravel pavement 0.80, turf 0.25, disturbed soil 0.25.

[5, 6] Values will equal zero if all impervious area has been treated by Site Design Measures.

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**1/A**	**1/B**	**3/C**	
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	8813	9210	40909	
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5	5	
[4]BMP Surface Area (ft^2) *Top of BMP*	3223	7200	9805	
[5]Infiltration rate of underlying soils (in/hr)	0.12	0.12	0.12	
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	0.50	0.50	0.50	
[7]Ponding Depth (ft) *d_{BMP} = Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.5	0.5	0.5	-
[8]Infiltrating surface area, *SA_{BMP}* (ft^2) *Bottom of BMP*	3223	7200	9805	
[9]Planting media depth, *d_{media}* (ft)	1.5	1.5	1.5	
[10]Planting media porosity	0.55	0.55	0.55	
[11]Gravel depth, *d_{media}* (ft) *Only included in certain BMP types*	4.0	1.0	7.5	
[12]Gravel porosity	0.40	0.40	0.40	
[13]Retention Volume (ft^3) *$V_{retention}$ = Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	9,411.2	12,384.0	42,358.1	-
[14]Untreated Volume (ft^3) *$V_{untreated}$ = Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15] Treated Flow Rate (ft^3/s) *$Q_{treated}$ = 1/43,200*(Item 3 * Item 4)*	0.3730	0.8333	1.1349	0.0000
[16]Total Treated Flow Rate for Project (ft^3/s) *Q_{total} = Sum of Item 15 for all DMAs*	4.3276			
[17]Is WQV for each DMA treated on-site? *Check Yes if Item 14 equals 0 for all DMAs*	**Yes**	**X**	**No**	

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**4/D**	**5/E**	**6/F**	**7/G**
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	4566	9264	6058	7769
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5	5	5
[4]BMP Surface Area (ft^2) *Top of BMP*	2390	5721	5047	4005
[5]Infiltration rate of underlying soils (in/hr)	0.12	0.12	0.12	0.12
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	0.50	0.50	0.50	0.50
[7]Ponding Depth (ft) d_{BMP} *= Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.5	0.5	0.5	0.5
[8]Infiltrating surface area, SA_{BMP} (ft^2) *Bottom of BMP*	2390	5721	5047	4005
[9]Planting media depth, d_{media} (ft)	1.5	1.5	1.5	1.5
[10]Planting media porosity	0.55	0.55	0.55	0.55
[11]Gravel depth, d_{media} (ft) *Only included in certain BMP types*	2.0	1.0	1.0	2.0
[12]Gravel porosity	0.40	0.40	0.40	0.40
[13]Retention Volume (ft^3) $V_{retention}$ *= Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	5,067.2	9,839.7	8,681.0	8,490.0
[14]Untreated Volume (ft^3) $V_{untreated}$ *= Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15] Treated Flow Rate (ft^3/s) $Q_{treated}$ *= 1/43,200*(Item 3 * Item 4)*	0.2766	0.6621	0.5842	0.4635

Section 4
Regulated Hydromodification Management Projects

Form 4-1 Peak Runoff Response Time

(Complete Section 4 forms for Regulated Hydromodification Projects only)

Determine total runoff response time for pre- and post-construction conditions at each project outlet.

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	1	**2**	**3**	**4**	**1**	**2**	**3**	**4**
[1]Length of longest overland flow path *Not to exceed 100 ft*	100	100	100	100	100	100	100	100
[2]Slope of overland flow path (ft/ft)	0.0200	0.0200	0.0200	0.0200	0.0100	0.0100	0.0100	0.0100
[3]Manning's roughness coefficient for overland flow surface *See Table 5-5 of the Placer County SWMM*	0.0350	0.0350	0.0350	0.0350	0.0200	0.0200	0.0200	0.0200
[4]Overland flow response time (min) (0.355*(Item 1*Item 3)$^{0.6}$)/(Item 2$^{0.3}$)	2.43	2.43	2.43	2.43	2.14	2.14	2.14	2.14
[5]Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	D	D	D	D	D	D	D
[6]Current Land Cover Type(s) *Select from categories shown in Table 5-3 of the SWMM*	OS	OS	OS	OS	RES	RES	RES	RES
[7]Pervious Area Condition: *Based on the extent of vegetated cover Good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating*	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
[8]Infiltration Rate (in/hr) *Refer to Table 5-3 of the SWMM using Items 3, 4, and 5 above or obtain site specific field measurements (See Section 3.1.1)*	0.09	0.09	0.09	0.09	0.12	0.12	0.12	0.12
[9]Length of collector flow (ft)	600	600	1,500	100	400	100	500	600
[10]Cross-sectional area of collector flow facility (ft^2)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
[11]Wetted perimeter of collector flow facility (ft)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
[12]Manning's roughness of collector flow facility	0.060	0.060	0.060	0.060	0.015	0.015	0.015	0.015
[13]Slope of collector flow facility (ft/ft)	0.0250	0.0250	0.0250	0.0250	0.0050	0.0050	0.0050	0.0050
[14]Channel flow velocity (ft/sec) *V = (1.49 / Item 12) * (Item 10/Item 11) ^0.67 * (Item 13) ^0.5*	3.00	3.00	3.00	3.00	5.36	5.36	5.36	5.36
[15]Collector flow facility response time (min) *T_c = Item 9 /(Item 14 * 60)*	3.34	3.34	8.34	0.56	1.24	0.31	1.55	1.87
[16]Total runoff response time or T_t (min) *T_t = Item 4 + Item 15*	5.77	5.77	10.78	2.99	3.39	2.45	3.70	4.01

Section 4
Regulated Hydromodification Management Projects

Form 4-1 Peak Runoff Response Time

Determine total runoff response time for pre- and post-construction conditions at each project outlet.

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	5	**6**	**7**	**8**	**5**	**6**	**7**	**8**
[1]Length of longest overland flow path *Not to exceed 100 ft*	100	100	100		100	100	100	
[2]Slope of overland flow path (ft/ft)	0.0200	0.0200	0.0200		0.0100	0.0100	0.0100	
[3]Manning's roughness coefficient for overland flow surface *See Table 5-5 of the Placer County SWMM*	0.0350	0.0350	0.0350		0.0200	0.0200	0.0200	
[4]Overland flow response time (min) (0.336*(Item 1*Item 3)$^{0.6}$)/(Item 2$^{0.3}$)	2.43	2.43	2.43	0.00	2.14	2.14	2.14	0.00
[5]Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	D	D		D	D	D	
[6]Current Land Cover Type(s) *Select from categories shown in Table 5-3 of the SWMM*	OS	OS	OS		RES	RES	RES	
[7]Pervious Area Condition: *Based on the extent of vegetated cover Good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating*	GOOD	GOOD	GOOD		GOOD	GOOD	GOOD	
[8]Infiltration Rate (in/hr) *Refer to Table 5-3 of the SWMM using Items 3, 4, and 5 above or obtain site specific field measurements (See Section 3.1.1)*	0.09	0.09	0.09		0.12	0.12	0.12	
[9]Length of collector flow (ft)	1,000	500	490		1,000	1,000	1,000	
[10]Cross-sectional area of collector flow facility (ft^2)	2.00	2.00	2.00		2.00	2.00	2.00	
[11]Wetted perimeter of collector flow facility (ft)	3.00	3.00	3.00		3.00	3.00	3.00	
[12]Manning's roughness of collector flow facility	0.060	0.060	0.060		0.015	0.015	0.015	
[13]Slope of collector flow facility (ft/ft)	0.0250	0.0250	0.0250		0.0050	0.0050	0.0050	
[14]Channel flow velocity (ft/sec) *V = (1.49 / Item 12) * (Item 10/Item 11)^0.67 * (Item 13)^0.5*	3.00	3.00	3.00	0.00	5.36	5.36	5.36	0.00
[15]Collector flow facility response time (min) T_c *= Item 9 /(Item 14 * 60)*	5.56	2.78	2.73	0.00	3.11	3.11	3.11	0.00
[16]Total runoff response time or T_t (min) T_t *= Item 4 + Item 15*	8.00	5.22	5.16	0.00	5.25	5.25	5.25	0.00

Form 4-2 Hydromodification Target for Peak Runoff								
Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	1	2	3	4	1	2	3	4
[1] Drainage Area (ft^2) *Sum of all outlet level DMAs should equal total project area.*	435,600	435,600	1,467,972	167,270	435,600	435,600	1,467,972	167,270
[2] Impervious Area (ft^2) *Sum of all outlet level DMAs should equal total project impervious area.*	0	0	0	0	261,360	261,360	1,027,580	117,089
[3] Rainfall depth for 2yr storm with duration equal to response time (in) *See Placer County SWMM Table 5-A-1 for elevation of site and duration equal to response time*	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
[4] Unit peak runoff (cfs/acre) *q = 60/Form 4-1 Item 16 * Item 3*	2.39	2.39	1.28	4.61	4.08	5.63	3.73	3.44
[5] Infiltration factor (cfs/acre) *F_i = Form 4-1 Item 8 * (1 + 1 /(1.3 + 0.0005 * Form 3-1 Item 3))*	0.16	0.16	0.16	0.16	0.21	0.21	0.21	0.21
[6] Peak runoff from DMAs (cfs) *Q_p = Item 1 * Item 4 – Item 5 * (Item 1 - Item 2)*	22.53	22.53	38.20	17.26	40.26	55.88	124.72	13.09
[7] Total Pre-Project Peak Runof (ft^3/s) *Q_{total} = Sum of Item 6 for all Pre-construction DMAs*	141.67							
[8] Is the total post-project peak runoff equal to or less than the total pre-project peak runoff? *Yes, if Item 7 is greater than or equal to the sum of the Total Treated Flow Rates from Form 3-6 Item 16 and 3-7 Item 14.*	**YES**							

Form 4-2 Hydromodification Target for Peak Runoff								
Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	5	6	7	8	5	6	7	8
[1] Drainage Area (ft^2) *Sum of all outlet level DMAs should equal total project area.*	336,153	217,364	281,398		336,153	217,364	281,398	
[2] Impervious Area (ft^2) *Sum of all outlet level DMAs should equal total project impervious area.*	0	0	0		239,057	152,155	196,978	
[3] Rainfall depth for 2yr storm with duration equal to response time (in) *See Placer County SWMM Table 5-A-1 for elevation of site and duration equal to response time*	0.23	0.23	0.23		0.23	0.23	0.23	
[4] Unit peak runoff (cfs/acre) *q = 60/Form 4-1 Item 16 * Item 3*	1.73	2.65	2.67	-	2.63	2.63	2.63	-
[5] Infiltration factor (cfs/acre) *F_i = Form 4-1 Item 8 * (1 + 1 /(1.3 + 0.0005 * Form 3-1 Item 3))*	0.16	0.16	0.16	-	0.21	0.21	0.21	-
[6] Peak runoff from DMAs (cfs) *Q_p = Item 1 * Item 4 – Item 5 * (Item 1 - Item 2)*	12.21	12.53	16.40	-	19.98	12.91	16.71	-

Form 4-3 Detention Volumes for Hydromodification Management

	Post-construction DMAs to Project Outlet			
	1	**2**	**3**	**4**
[1] Land cover and hydrologic condition *See NRCD TR-55 Manual Table 2-2 for types*	RES	RES	RES	RES
[2] Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	D	D	D
[3] Drainage Area (A) (ft^2)	435,600	435,600	1,467,972	167,270
[4] Curve Number (CN) *Use Items 1 and 2 to select curve number from NRCS TR-55 Manual Table 2-2*	92	92	92	92
[5] Post-development soil storage capacity, S (in): *S = (1000 / Item 4) – 10*	0.9	0.9	0.9	0.9
[6] Precipitation for 2-yr, 24-hr storm (in) *See Placer County SWMM Table 5-A-1 for elevation of site and 24-hr duration depths*	1.90	1.90	1.90	1.90
[7] Post-developed runoff volume for 2-yr – 24-hour storm, V_{runoff} (ft^3): *V_{runoff} = Item 3 * (1 / 12) * [(Item 6 – 0.2 * Item 5)^2 / (Item 6 + 0.8 * Item 5)]*	41,666	41,666	140,416	16,000
[8] Attenuation Factor, $q_{out/in}$ (ratio of target outflow rate to peak inflow rate): *$q_{out/in}$ = Form 4-2 Item 6 Pre-Construction / Form 4-2 Item 6 Post-Construction*	0.56	0.40	0.31	1.32
[9] Equalization Factor, Vs/Vr (ratio of storage capacity to runoff volume) *Vs/Vr obtained using Item 8 and nomograph in Figure 6-1 of NRCS TR-55 Manual for Rainfall Type IA*	0.14	0.14	0.14	0.14
[10] Runoff detention capacity to achieve hydromodification management criteria (ft^3) *$D_{hydromod}$ = Item 7 * Item 9*	5833	5833	19658	2240
[11] Site Design Measure (SDM) Volume (ft^3): *Sum of Item 10 in Form 3-4 for all SDMs in this DMA.*				
[12] Bioretention Volume (ft3): *Sum of Item 13 in Form 3-6 for all bioretention measures in this DMA.*	9411	12384	42358	5067
[13] Flow-Through Detention Volume (ft3): *Sum of Item 10 in Form 3-7 for all flow-through facilities in this DMA.*				
[14] Supplemental Detention Volume (ft^3)[a]:				
[15] Combined Detention Volume in this DMA (ft^3): *Sum of Items 11 through 14*	9,411	12,384	42,358	5,067
[16] Is detention capacity to achieve hydromodification management criteria achieved at all project outlets? *Yes, if Item 10 is less than or equal to Item 15 for each DMA. If not provide additional storage capacity with appropriate flow controls at the discharge.*	**Yes**	**X**	**No**	

Form 4-3 Detention Volumes for Hydromodification Management

	Post-construction DMAs to Project Outlet			
	5	**6**	**7**	**8**
[1] Land cover and hydrologic condition *See NRCD TR-55 Manual Table 2-2 for types*	RES	RES	RES	
[2] Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	D	D	-
[3] Drainage Area (A) (ft^2)	336,153	217,364	281,398	-
[4] Curve Number (CN) *Use Items 1 and 2 to select curve number from NRCS TR-55 Manual Table 2-2*	92	92	92	
[5] Post-development soil storage capacity, S (in): *S = (1000 / Item 4) – 10*	0.9	0.9	0.9	#DIV/0!
[6] Precipitation for 2-yr, 24-hr storm (in) *See Placer County SWMM Table 5-A-1 for elevation of site and 24-hr duration depths*	1.90	1.90	1.90	
[7] Post-developed runoff volume for 2-yr – 24-hour storm, V_{runoff} (ft^3): *V_{runoff} = Item 3 * (1 / 12) * [(Item 6 – 0.2 * Item 5)^2 / (Item 6 + 0.8 * Item 5)]*	32,154	20,792	26,916	#DIV/0!
[8] Attenuation Factor, $q_{out/in}$ (ratio of target outflow rate to peak inflow rate): *$q_{out/in}$ = Form 4-2 Item 6 Pre-Construction / Form 4-2 Item 6 Post-Construction*	0.61	0.97	0.98	#DIV/0!
[9] Equalization Factor, Vs/Vr (ratio of storage capacity to runoff volume) *Vs/Vr obtained using Item 8 and nomograph in Figure 6-1 of NRCS TR-55 Manual for Rainfall Type IA*	0.14	0.14	0.14	
[10] Runoff detention capacity to achieve hydromodification management criteria (ft^3) *$D_{hydromod}$ = Item 7 * Item 9*	4502	2911	3768	#DIV/0!
[11] Site Design Measure (SDM) Volume (ft^3): *Sum of Item 10 in Form 3-4 for all SDMs in this DMA.*				
[12] Bioretention Volume (ft3): *Sum of Item 12 in Form 3-8 for all bioretention measures in this DMA.*	9840	8681	8490	
[13] Flow-Through Detention Volume (ft3): *Sum of Item 10 in Form 3-7 for all flow-through facilities in this DMA.*				
[14] Supplemental Detention Volume (ft^3):				
[15] Combined Detention Volume in this DMA (ft^3): *Sum of Items 11 through 14*	9,840	8,681	8,490	-

Form 4-4 Trash Controls

Type of Trash Control Measure Implemented	Check One		Describe relevant information about each trash control measure. Include number present, size of drainage area to each measure, any special features, materials, or methods of construction that will be used.
	Present	Not Applicable	
Full Capture System	☐	☑	
Multi-Benefit Trash Treatment System: Bioretention	☑	☐	
Multi-Benefit Trash Treatment System: Capture and Use Systems	☐	☑	
Multi-Benefit Trash Treatment System: Detention Basin	☐	☑	
Multi-Benefit Trash Treatment System: Infiltration Trench or Basin	☐	☑	
Multi-Benefit Trash Treatment System: Media Filter	☐	☑	

Form 5-1 BMP Inspection and Maintenance		
BMP	**Inspection Point and Frequency**	**Maintenance Activity Required**
Infiltration Basins	Inlet/Outlet	Repair Erosion
	Entire Basin	Remove Debris and Trash as needed
	Overflow structure	Remove debris to unclog

Form 6-1 Post-Construction Stormwater BMPs

Following is a summary of all BMPs included in the Project design. This checklist must be included on the cover sheet of the Improvement Plans for all Regulated Projects.

BMP		Plan Sheet Number(s)
Structural Source Controls (list BMPs)		
Site Design Measures	Stream Setbacks and Buffers	
	Soil Quality Improvement and Maintenance	
	Tree Planting and Preservation	
	Rooftop and Impervious Area Disconnection	
	Porous Pavement	
	Vegetated Swales	
	Rain Barrels and Cisterns	
Stormwater Treatment and Baseline Hydromodification Measures	Bioretention with Infiltration	
	Flow-Through Planters, Tree Box Filters and Media Filters	
Hydromodification Management Measures	Supplemental Detention	
Trash Control Measures	Full Capture System	
	Multi-Benefit Treatment System: Bioretention	
	Multi-Benefit Treatment System: Capture and Use Systems	
	Multi-Benefit Treatment System: Detention Basin	
	Multi-Benefit Treatment System: Infiltration Trench or Basin	
	Multi-Benefit Treatment System: Media Filter	

EXHIBIT G

Storm Drain Alternative Routing Exhibit

*Figure not OCR compatible

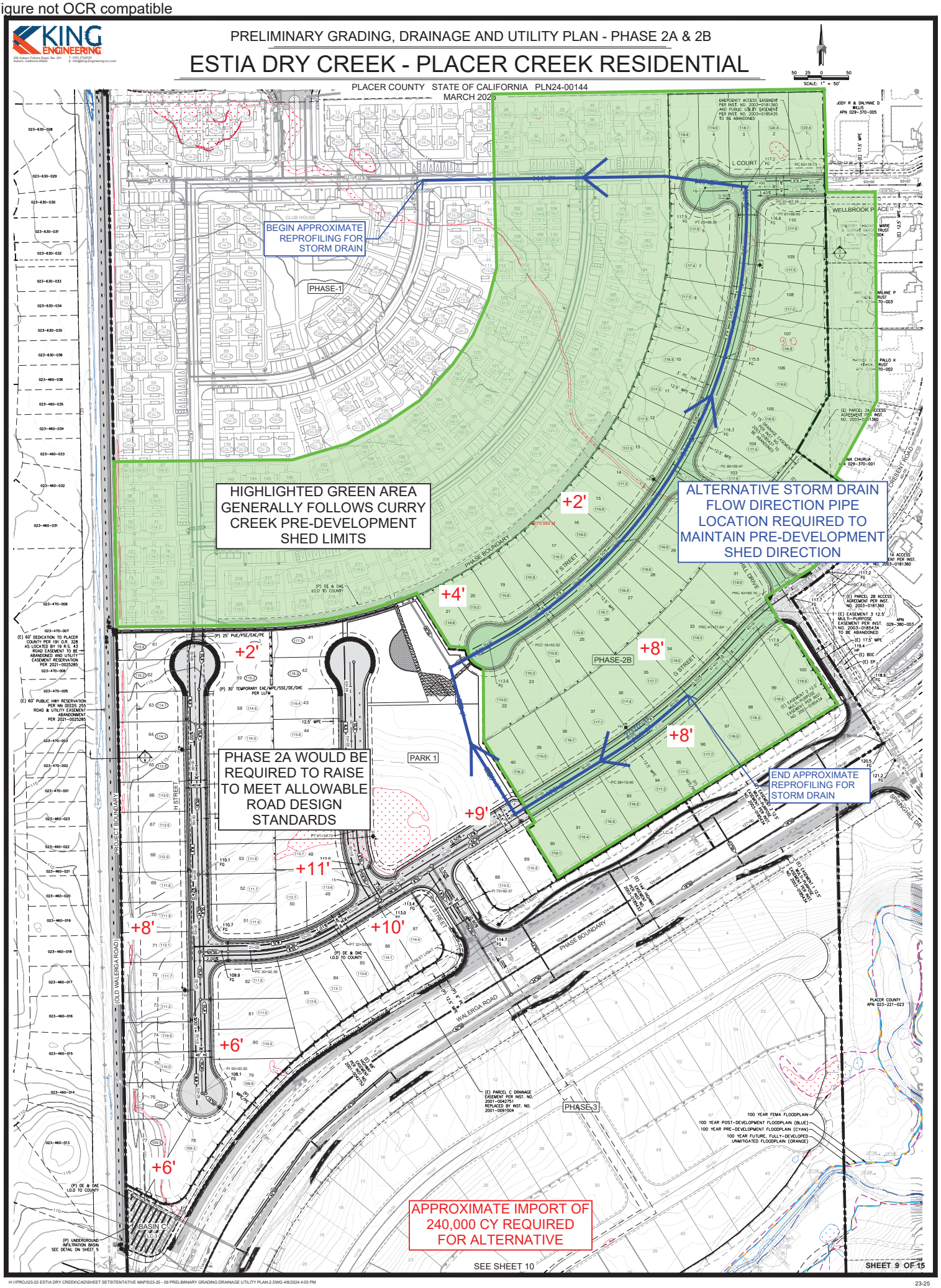


EXHIBIT H

Storm Drain Pump Alternative

*Figure not OCR compatible

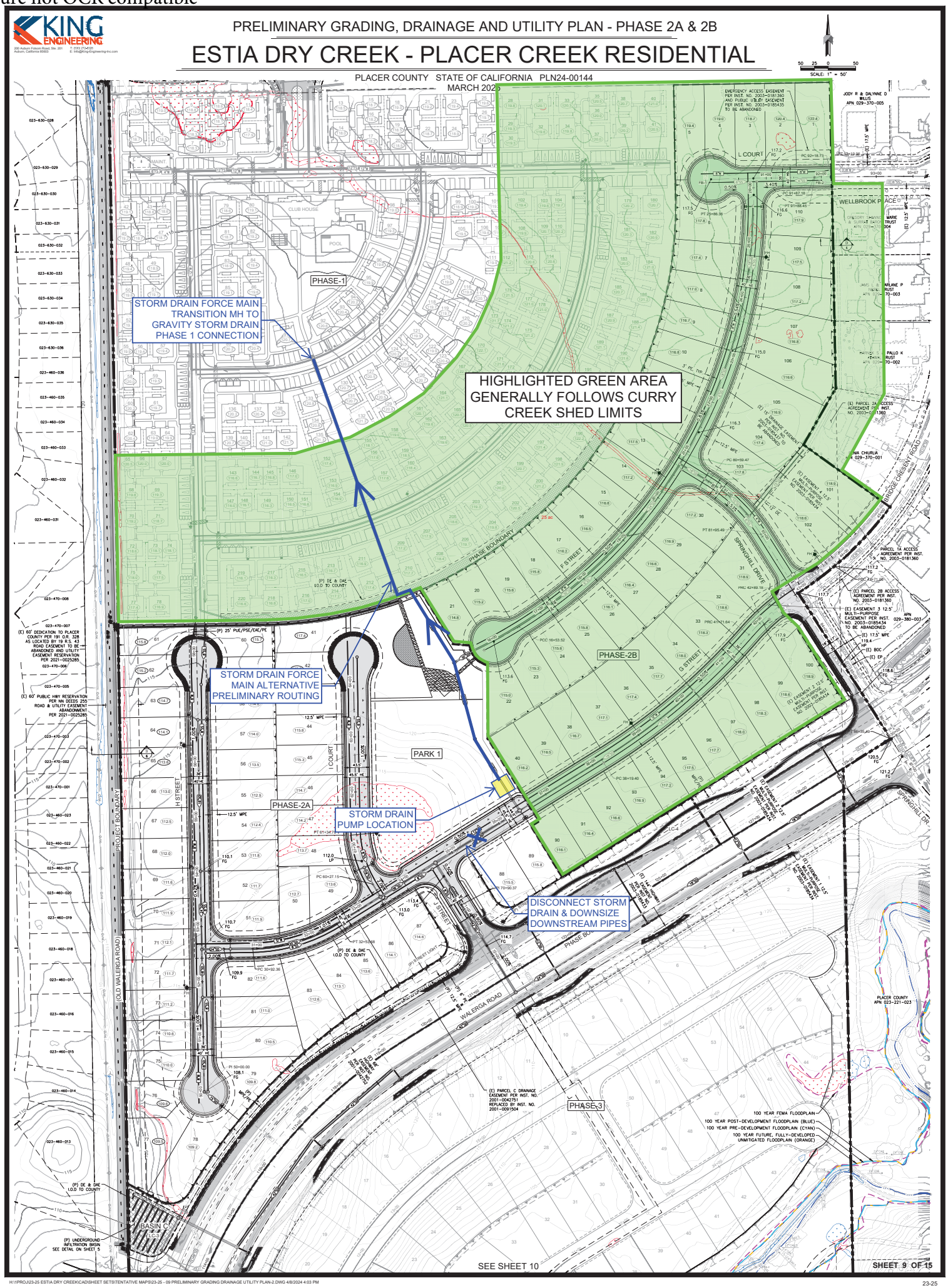


EXHIBIT I

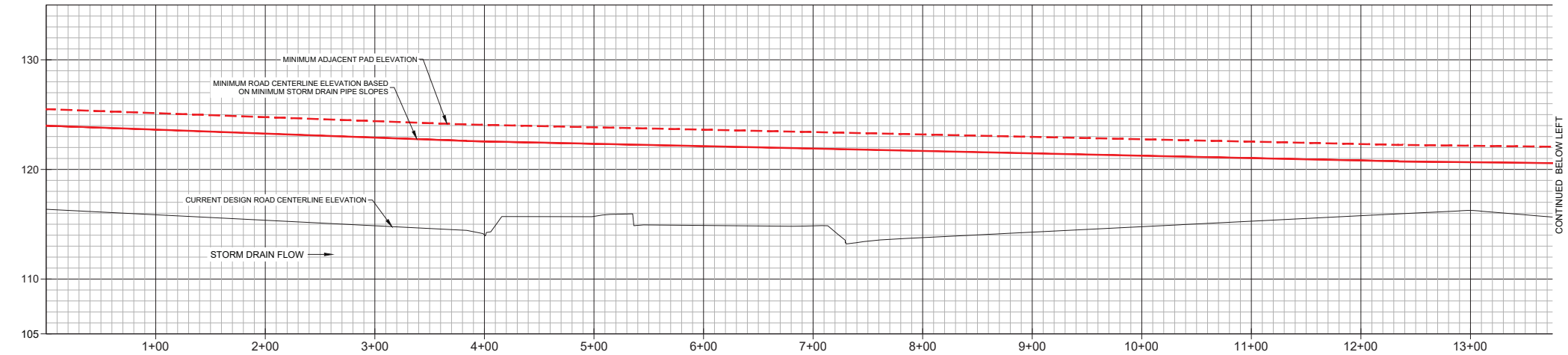
Storm Drain Alternative Profile

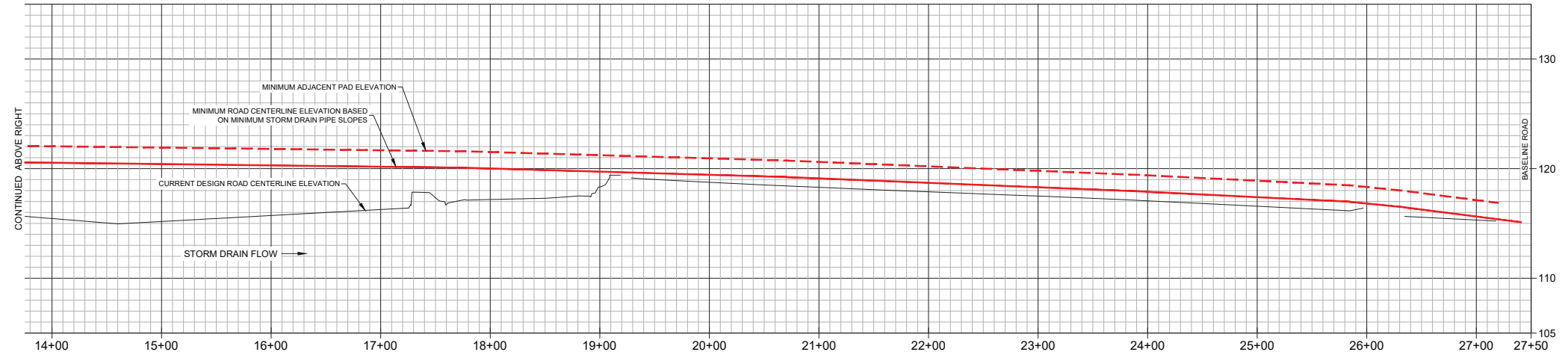
ESTIA DRY CREEK

PHASE 1 & 2 - STORM DRAIN EXHIBIT

PLACER COUNTY, CALIFORNIA

APRIL 2026





PROFILE

SCALE: 1" = 40' HORIZONTAL
1" = 4' VERTICAL

KING ENGINEERING
200 Auburn Folsom Road, Ste. 201
Auburn, California 95603
T: (530) 272-8328
E: Info@King-Engineering-Inc.com

* Figure not OCR Compatible

H:\1PROJ\23-25 ESTIA DRY CREEK\CAD\SHEET SETS\TENTATIVE MAPS\EXHIBITS\23-25 - DRAINAGE FOR PH2 GOING NORTH - PROFILE.DWG 4/6/2026 6:26 PM

ESTIA DRY CREEK – PHASE 3
PRELIMINARY DRAINAGE REPORT

PLN24-00144

JUNE 2026

Prepared For
HOMES BY TOWNE



KING ENGINEERING
200 Auburn Folsom Road, Ste. 201
Auburn, California 95603

TABLE OF CONTENTS

Contents	Page
Introduction	1
Project Description	1
Scope of the Report	1
FEMA Information	2
Existing Conditions	2
Design Criteria	3
Hydrology & Hydraulics for Phases 3 & 4	3
Detention	5
Water Quality	5
References	6
Exhibit A: FEMA FIRM Panel	
Exhibit B: Web Soil Survey Soil Map	
Exhibit C: Drainage Peak Flow Calculations	
Table 1 –Estia Dry Creek Pre-Development Peak Flow Worksheet	
Table 2 – Estia Dry Creek Post-Development Peak Flow Worksheet	
Table 3 – Bypass Flow Table	
Table 4 – HEC-RAS Summary	
Table 5 – HEC-RAS Results	
Table 6 – HEC-HMS Results	
Table 7 – Pre-Development to Post-Development Comparison	
Exhibit D: Hydraulic Data and Profiles – 10-Year and 100-Year	
Exhibit E: Drainage Maps	
Drainage Map #1 – Pre-Development Overall Shed Map	
Drainage Map #2 – Post-Development Shed Map	
Drainage Map #3 – Project Index	
Drainage Map #4 – Block Inlet Scenario	
Drainage Map #5 – Site Assessment and Drainage Management Area Map	
Exhibit F: Post-Construction Storm Water Quality Plan Workbook	
Exhibit G: HEC-RAS Exhibit	
Exhibit H: HEC-HMS Existing and Proposed Shed Map Exhibits	

INTRODUCTION

Project Description

The proposed "Estia Dry Creek & Placer Creek Residential" (Project) includes a total of approximately 88 acres, comprised of a 52.3-acre parcel (Assessor's Parcel No. 023-221-046) located on the north side of Walerga Road and a 35.3 -acre parcel (APN 023-221-061) located south and east of Walerga Road, collectively, the "project", Estia Dry Creek and Placer Creek Residential. This Phase 3 project consists of 56 residential units on 21.3 acres. Construction will include streets, storm drainage improvements, and underground utilities. The site is currently unimproved agricultural land. It is bounded on the north by Walerga Road and bounded on the south by Dry Creek Walerga Rd Tributary. The proposed underground storm drain system outfalls to water quality basins before ultimately draining to the Dry Creek Walerga Road Tributary.

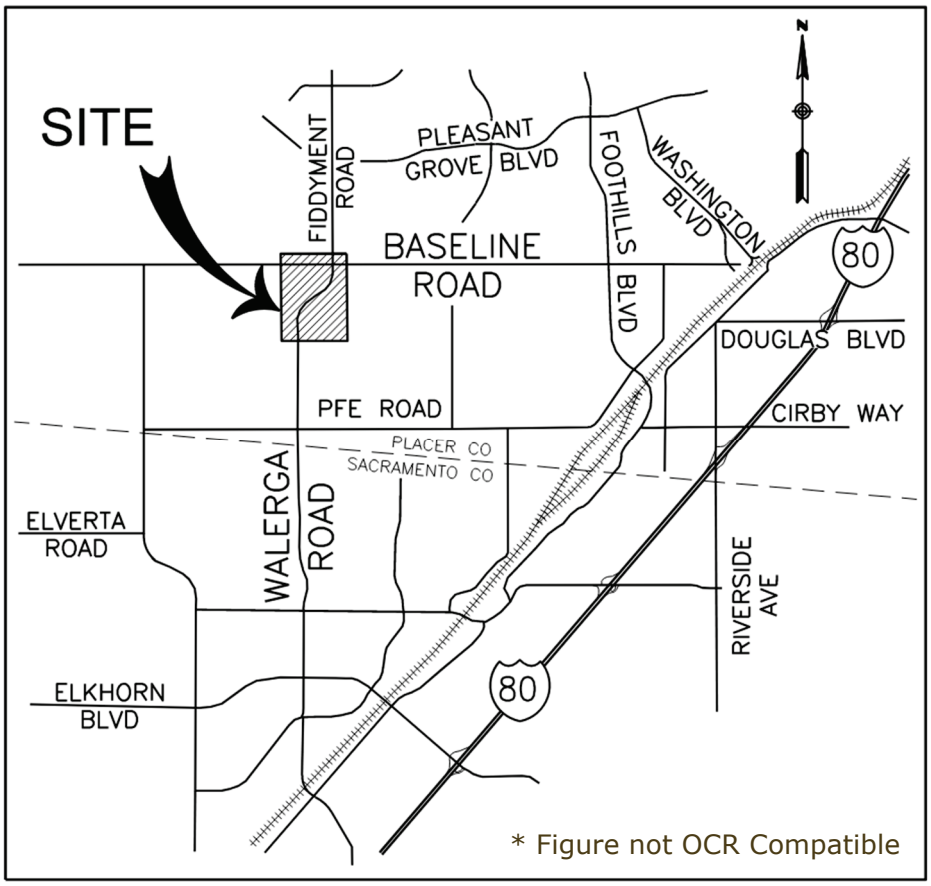


Figure 1: Project Vicinity Map

Scope of the Report

This report provides analysis and documents for the existing pre-developed watershed characteristics and determines the required drainage facilities that are necessary for development of the project. The report will confirm that the post-development changes will be consistent with what is shown on the Drainage Maps.

Pursuant to Reference 2, this is a regulated project with more than one acre of new impervious area proposed and is within the Phase II MS4 Permit Area.

FEMA Information

The Federal Emergency Management Agency's (FEMA) Flood Insurance Study (FIS) Flood Insurance Rate Map (FIRM) contains the project area is Preliminary FIRM Panel ID# 06061C1026J, effective April 12, 2024. Based off the panel, portions of the existing 100-year floodplain are impacted by the proposed development. Excavation is proposed along the tributary to construct water quality infiltration basins. A pedestrian bridge is proposed over the tributary, connecting trails between Phases 3 and 4. This bridge is proposed to be placed on existing grade with minimal grading activities to support placement. Minor storm events will pass under the bridge, while the 100-year storm is intended to inundate and pass over it. For the current Preliminary FIRM Panel, please see Exhibit A.

The Dry Creek Walerga Road Tributary is classified as Zone AE which means base flood elevations have been determined and analyzed with a Flood Insurance Study that generated the floodplain limits and a floodway has been established. The limits of the detailed study terminate east of Crowder Lane with Zone A floodplain, which means base flood elevations have not been determined.

ULOP Applicability

The following table shows that this project does not meet the Urban Level of Flood Protection (ULOP) as determined by Placer County to construct improvements within a ULOP boundary. These criteria, enacted by State Senate Bill 5 (SB 5) in 2007, were developed to assist counties and cities within the Sacramento-San Joaquin Valley in making findings related to ULOP before approving land use decisions.

ULOP APPLICABILITY

Refer to the Tentative Map for limits of ULOP floodplain with greater than 3' flooding depth

Finding of Fact / ULOP Criteria	Yes/No	Remark
The project is located within the Sacramento Valley	Yes	Dry Creek is tributary to the Sacramento River
The project is located within an urban area as defined by Code of Federal Regulations Title 44, Section 59.1.	Yes	
A portion of the project is located within a flood hazard zone that is mapped as either a special hazard area or an area of moderate hazard on FEMA FIRM Panels.	Yes	Zone AE Floodplain
The project is located within a watershed that is more than 10 square miles in size.	No	Dry Creek Walerga Road Tributary Watershed area is approximately 1.3 square miles per FEMA FIS report
The project is located within an area with a potential flood depth above 3.0 feet during a 200-year event, from sources of flooding other than localized conditions.	No	Project is located along Dry Creek Walerga Road Tributary
Is any disturbance or development proposed within the ULOP 200-year boundary?	No	Dry Creek ULOP is downstream at the confluence

Future, Fully-Developed, Unmitigated Floodplain

The limits of the future, fully-developed, unmitigated 100-year floodplain are calculated and depicted on the Drainage Maps. The project does not propose residential lots in the future, fully-developed, unmitigated 100-year floodplain.

EXISTING CONDITIONS

Ground slopes range significantly across the project area. The Phase 3 ground slopes downhill to the South towards Dry Creek Walerga Road Tributary. Existing ground cover is primarily grassland with rolling terrain. The USDA Soil Conservation Service classifies most of the soils within the project as Pleistocene alluvial deposits. The site soil is classified as hydrologic group D. ENGEO prepared a geotechnical study dated December 26, 2023 for the Estia Dry Creek project entitled "Estia at Dry Creek - Geotechnical Exploration". This report identifies the near surface soils generally as deeply weathered gravel, sand, and silt, which is consistent with the USDA data.

The Walerga Tributary is classified as Zone AE floodplain, which means base flood elevations have been determined and analyzed with a Flood Insurance Study that generated the floodplain limits and a floodway has been established. The river hydraulics and cross section profiles for the tributary are derived from the GeoHECRAS software provided by CivilGeo.



Figure 2: Pre-Development Land Photo, Baseline Rd, Looking South



Figure 3: Pre-Development Land Photo, Walerga Rd, Looking Southeast

DESIGN CRITERIA

*Figures not OCR compatible

The design criteria listed below are also found in the West Placer Stormwater Quality Design Manual and Placer County Flood Control and Water Conservation District Stormwater Management Manual (SWMM).

- **The streets remain passable during the 10- and 100-Year storm events and the finished floor elevations are 1', or greater, from the 100-year water surface elevations.**
- **Inlet and Outlet pipes are to have matching Crown Elevations.**
- **The underground storm drain pipes do not flow full during the 10-Year storm.**
- **For Hydraulic Calculations, Pipes are sized as if all flow is captured at each inlet.**
- **Storm Drain pipes are designed to flow under gravity flow for up to the 10-year storm and allowed to flow surcharged, pressure flow for flows larger than the 10 year-storm.**
- **Culverts 30" in diameter and less are designed for 50% blockage at the inlet for the 10-year design storm. However, where there is a grated inlet with 8" maximum size opening, the inlet is designed for 50% blockage, but the culvert connected to such an inlet may be sized without blockage (figuring that large objects cannot get through the inlet openings to block the culvert).**
- **The future, fully developed unmitigated 100-Year floodplain limits for Dry Creek Walerga Road Tributary have been added to the maps using FIS flow data.**
- **Gutters and inlets serving small drainage areas are sized according to Placer County drainage formulas as follows:**

$$\text{Sheet flow: } t_r = \frac{.355(nL)^{.6}}{S^{.3}}$$

$$\text{Channel flow: } t_r = \frac{.00735Ln^{.75}(1+z)^{.25}}{S^{.375}(A_c z)^{.25}}$$

$$\text{Peak Discharge: } Q = qA - A_p F_i$$

HYDROLOGY & HYDRAULICS

The project will discharge stormwater runoff into Dry Creek Walerga Road Tributary. The watershed to Dry Creek is approximately 1.3 square miles. The peak flows for the various storm events were modeled in HEC-HMS (Version 4.9). The routing method used is Muskingum Method. The volumetric and discharge relationships were generated through existing surface information and HEC-RAS modeling to determine the necessary rating curve used in the Modified Puls method. The channel is approximated as a trapezoidal channel with a Muskingum Coefficient (X) between 0.10 and 0.20. The rainfall values were taken from Table 5-A-1 in the Stormwater Management Manual for the various storm events. The HEC-HMS model uses the Kinematic Wave transform method and initial/constant loss. This method relates the shape of the channel, boundary roughness, and slope of the channel or overland flow surface. Though it simplifies the complex nature of drainage systems, the Kinematic Wave transform method provides a reasonably accurate approximation of flows.

The design flows for the 10-, 50-and 100-year storm events (10, 2 and 1 percent chance of occurrence storms) for Dry Creek and the Antelope North Road Tributary were provided by FEMA and were unchanged. There was no 500-year storm flow (0.2 percent chance of occurrence storm) provided for the tributary. Hydraulic models for the existing, revised, and unmitigated scenarios for the Dry Creek Walerga Road Tributary were generated from FEMA FIS data. The Existing model reflects the current physical improvements and latest topography in the area. The HEC-RAS models were generated with the design flows produced by the HEC-HMS model and provide the basis for comparing existing conditions BFEs to revised BFEs to analyze the impacts of the proposed project both upstream and downstream. The models were created using Geo HEC-RAS software using steady, uniform flow under Subcritical conditions. Refer to Tables 4-6 for HEC-RAS modeling inputs and results.

DETENTION

Though drainage detention is not required or recommended for Dry Creek and its tributaries, hydromodification is still required under the MS4 rules, even though the distinction between detention and hydromodification is not made clear.

The peak flood wave in the Dry Creek Walerga Road Tributary occurs at approximately 13 hours into 100-year, 24-hour storm, well ahead of the Dry Creek regional flood wave at approximately 17 hours (Dry Creek Watershed Plan, Placer County). This means that downstream properties will see no impact to the base flood elevation from this project. The shed shift from Curry Creek to Dry Creek of approximately 25.7 acres toward Walerga Tributary (Dry Creek) was accounted for in the HEC-HMS modeling, which determined the timing of this peak flood wave.

WATER QUALITY

To evaluate storm water quality and best management policies (BMP) within the project limits, the West Placer Storm Water Quality Design Manual was referenced and used as a guideline for BMP locations. Drainage Management Areas (DMA) are delineated with infiltration basins shown in Drainage Map #5. The primary purpose of the infiltration basins is to retain minor storm events and capture any pollutants that would otherwise enter Dry Creek. The infiltration basins are primarily for minor storm events but not intended to reduce the peak flows during extreme storm events.

Phase 3 is divided into two DMAs, DMA D and DMA E. DMA D is the portion of the project which will discharge into infiltration Basin D at Phase 3 Discharge Point 1 on Drainage Map #2. From Basin D, treated runoff enters the Dry Creek Walerga Road Tributary. DMA E is the portion of the project which will discharge into infiltration Basin E at Phase 3 Discharge Point 2 on Drainage Map #2. From Basin E, treated runoff enters the Dry Creek Walerga Road Tributary. The peak flows from these DMAs can be found in Tables 2 and 7. The combined runoff of Phases 3 and 4 is described as Point C in Table 7 and shown on Drainage Map #2.

The composite runoff coefficient (Rc) is determined using State Water Control Board Runoff Coefficient Fact Sheet 5.1.3. The fact sheet provides tables of various coefficients depending on land use. The land use within the Phase 3 project is medium density residential. The Coefficient of 0.55 was used because it is the more conservative value for Water Quality calculations.

REFERENCES

Ref. 1: NPDES CA S000002, SWRCB Water Quality Order No. 2009-0009 DWQ, as amended by 2010-2014-DWQ and 2012-006-DWQ, Construction General Permit (permit to be obtained for the Project).

Ref. 2: NPDES General Permit No. CA S000004, SWRCB Water Quality Order No. 2013-00001 DWQ, WDRs for MS4s

Ref. 3: Placer County Storm Water Management Plan 2004, or latest update

Ref. 4: Placer County Storm Water Management Manual and Land Development Manual

Ref. 5: CASQA Stormwater BMP Handbook New Development and Redevelopment, Table 2.2 and Section 5.

Ref. 6: USDA, Soil Conservation Service, web soil survey website.

Ref. 7: ENVIROSTOR website: envirostor.dtsc.ca.gov/

Ref. 8: Hydraflow Express program for gutter and inlet sizing

Ref. 9: Update to the Dry Creek Watershed Flood Control Plan, Placer County Flood Control and Water Conservation District, November 2011

EXHIBIT A

FEMA FIRM Panel



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 — Cross Sections with 1% Annual Chance
- 17.5 — Water Surface Elevation
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 — Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available effective flood hazard information for your community, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Mapping and Insurance eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be downloaded from the website. Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be acquired directly from the Flood Map Service Center at the website listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). The basemap shown is the USGS National Map: Orthoimagery. Last refreshed October, 2020.

Note: Some Special Flood Hazard Areas with elevations may not appear with elevation labels if the Base Flood Elevation or Cross-section line which communicates the elevation for the location appears on the adjacent panel. Please see the Panel Locator Diagram on this map panel to determine the adjacent panel and find the elevation feature there, or alternatively use the Flood Insurance Study report for detailed elevations by flood source.

SCALE

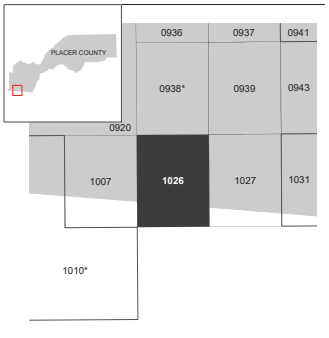
1 inch = 500 feet 1:6,000

0 250 500 1,000 1,500 2,000 feet

0 50 100 200 300 400 meters

Map Projection:
NAD 1983 StatePlane California II FIPS 0402 Feet
Vertical Datum: NAVD88

PANEL LOCATOR



*PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

PLACER COUNTY CALIFORNIA AND INCORPORATED AREAS

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
PLACER COUNTY UNINCORPORATED AREAS	060239	1026	J

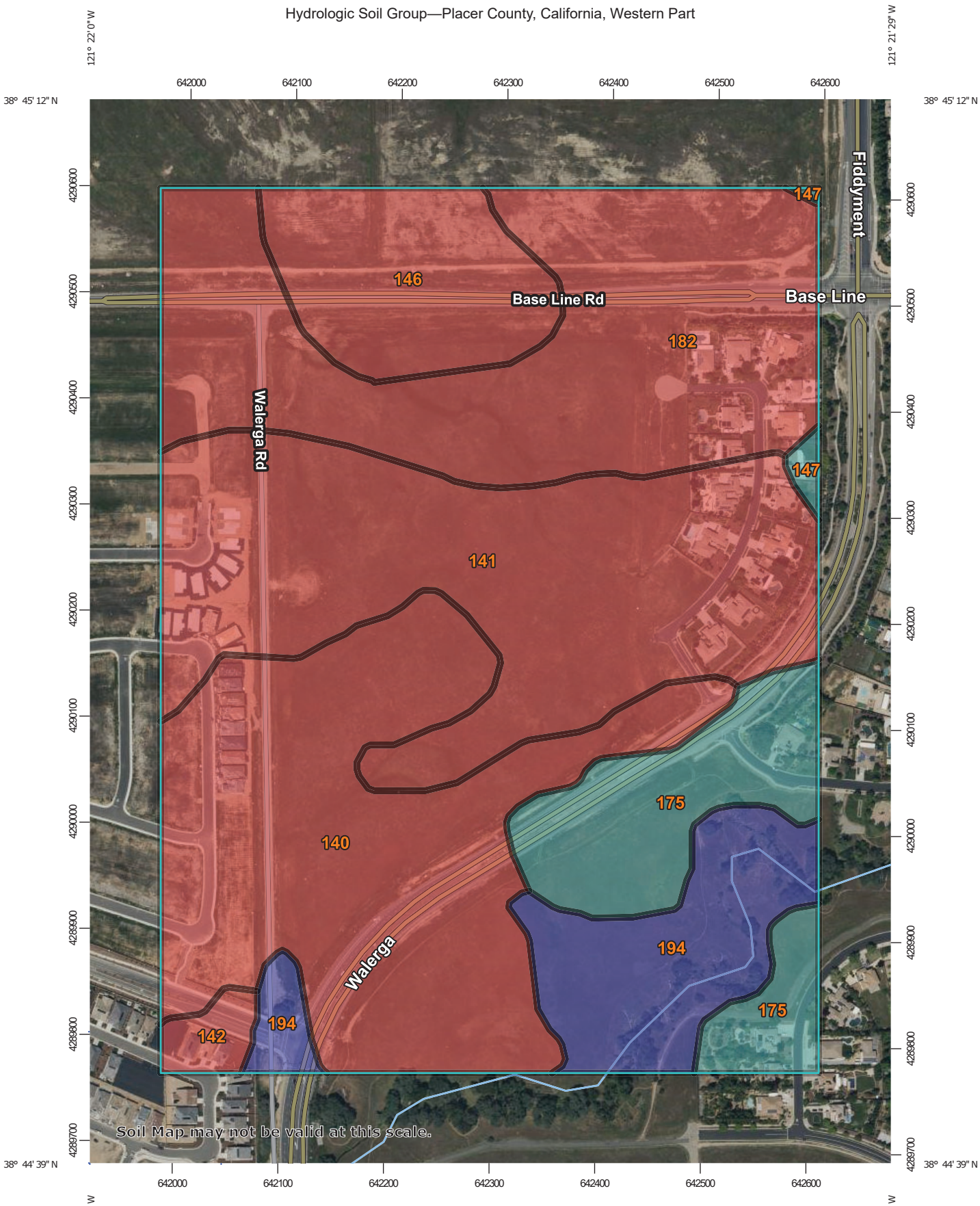
MAP NUMBER
06061C1026J
EFFECTIVE DATE
Prelim Issue Date: 04/12/2024

*Figure not OCR compatible

EXHIBIT B

Web Soil Survey Soil Map

Hydrologic Soil Group—Placer County, California, Western Part



Map Scale: 1:4,890 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

* Figure not OCR Compatible

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Placer County, California, Western Part
Survey Area Data: Version 15, Aug 31, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 23, 2022—Apr 24, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
140	Cometa sandy loam, 1 to 5 percent slopes	D	32.3	25.0%
141	Cometa-Fiddyment complex, 1 to 5 percent slopes	D	32.1	24.9%
142	Cometa-Ramona sandy loams, 1 to 5 percent slopes	D	1.4	1.1%
146	Fiddyment loam, 1 to 8 percent slopes	D	10.1	7.8%
147	Fiddyment-Kaseberg loams, 2 to 9 percent slopes	C	0.5	0.4%
175	Ramona sandy loam, 2 to 9 percent slopes	C	11.8	9.2%
182	San Joaquin-Cometa sandy loams, 1 to 5 percent slopes	D	29.5	22.9%
194	Xerofluvents, frequently flooded	B	11.4	8.8%
Totals for Area of Interest			**128.9**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

EXHIBIT C

Drainage Peak Flow Calculations

Table 1

Estia Dry Creek Pre-Development Peak Flow

Watershed Data							Time of Concentration											Peak Flow			
Refer to drainage map and soil type							Overland Flow				Channel Flow							Fig 5-3A,C P.C. SWMM			
BASIN	DISCHARGE LOCATION	Elev.	Total Area (ac.)	Perv. Area	Soil Type	F_i	Length ft.	Slope ft/ft	N	t_r min.	Area (ac.)	Length ft.	Slope ft/ft	n	Z	t_r min.	Total Time (min.)	q_{10}	q_{100}	Q_{10} cfs	Q_{100} cfs
TO POINT A																					
3	PT. A	100	5.24	5.24	D	0.12	172	0.0038	0.4	23.92	5.24	1067	0.010	0.035	10	4.29	28.21	0.890	1.600	4.03	7.75
4		100	10.96	10.96	D	0.12	294	0.011	0.4	23.99	10.96	940	0.007	0.035	10	3.56	27.55	0.917	1.655	8.72	16.80
2		100	11.13	11.13	D	0.12	329	0.0047	0.4	33.12	11.13	1236	0.007	0.035	10	4.61	37.74	0.643	1.190	5.80	11.89
1		100	8.26	8.26	D	0.12	325	0.0162	0.4	22.69	8.26	1160	0.006	0.035	10	5.04	27.72	0.910	1.639	6.51	12.53
1>4		100	35.59	35.59	D	0.12											37.74	0.643	1.190	**18.54**	**38.03**
TO POINT B																					
5	PT. B	100	4.94	4.94	D	0.12	240	0.02	0.4	17.75	4.94	642	0.014	0.035	10	2.29	20.04	1.210	2.240	5.38	10.46
7		100	5.44	5.44	D	0.12	197	0.0308	0.4	13.85	5.44	446	0.017	0.035	10	1.43	15.28	1.680	3.048	8.48	15.92
6		100	5.37	5.37	D	0.12	248	0.0223	0.4	17.52	5.37	737	0.020	0.035	10	2.24	19.77	1.240	2.292	6.00	11.65
W1		100	4.52	1.13	D	0.12	100	0.0223	0.4	10.16	4.52	400	0.020	0.035	10	1.27	11.43	1.983	3.590	8.83	16.09
5>7		100	20.27	16.88	D	0.12											20.04	1.210	2.240	**22.47**	**43.35**
TO POINT C																					
8	PT. C	100	1.86	1.86	D	0.12	100	0.0051	0.4	15.82	1.86	642	0.014	0.035	10	2.92	18.74	1.330	2.446	2.25	4.32
9		100	11.09	11.09	D	0.12	197	0.0308	0.4	13.85	11.09	446	0.017	0.035	10	1.20	15.05	1.700	3.083	17.50	32.84
10		100	8.93	8.93	D	0.12	248	0.0223	0.4	17.52	8.93	737	0.020	0.035	10	1.98	19.50	1.270	2.343	10.25	19.84
11		100	3.80	3.80	D	0.12	215	0.0051	0.4	25.04	3.80	642	0.014	0.035	10	2.44	27.48	0.921	1.663	3.04	5.86
12		100	9.79	9.79	D	0.12	197	0.0308	0.4	13.85	9.79	446	0.017	0.035	10	1.23	15.09	1.700	3.083	15.45	28.99
13		100	4.52	4.52	D	0.12	248	0.0223	0.4	17.52	4.52	737	0.020	0.035	10	2.34	19.87	1.230	2.274	5.01	9.73
14		100	9.71	9.71	D	0.12	225	0.0051	0.4	25.73	9.71	642	0.014	0.035	10	1.93	27.67	0.914	1.647	7.69	14.81
8>14		100	49.70	49.70	D	0.12											27.67	0.914	1.647	**39.35**	**75.81**

Table 2

Estia Dry Creek Post-Development Peak Flow

Watershed Data								Time of Concentration											Peak Flow			
Refer to drainage map and soil type								Overland Flow				Channel Flow							Fig 5-3A,C P.C. SWMM			
SHED	DRAINAGE INLET	Elev.	Total Area (ac.)	Perv. Area	Soil Type	Infiltration Rate (in/hr)	F_i [1]	Length ft.	Slope ft/ft	N [5]	t_r [2] min.	Area (ac.)	Length ft.	Slope ft/ft	n	Z	t_r [3] min.	Total Time (min.)	q_{10}	q_{100}	Q_{10} [4] cfs	Q_{100} [4] cfs
TO PHASE 3 DISCHARGE 1																						
64	DI-1	100	1.10	0.33	D	0.12	0.21	116	0.01	0.4	14.14	1.10	336	0.0050	0.015	20	1.60	15.73	1.630	2.962	1.72	3.19
																	DI-1 TOTAL FLOW				**1.72**	**3.19**
65	DI-2	100	0.95	0.29	D	0.12	0.21	116	0.01	0.4	14.11	0.95	335	0.0050	0.015	20	1.65	15.76	1.630	2.962	1.49	2.75
																	DI-2 TOTAL FLOW				**1.49**	**2.75**
1>2	SDMH-1	100	2.05	0.62	D	0.12	0.21										**SDMH-1 TOTAL FLOW**	15.76	1.630	2.962	**3.21**	**5.94**
66+67	DI-3	100	1.62	0.49	D	0.12	0.21	118	0.01	0.4	14.25	1.62	262	0.0050	0.015	20	1.13	15.39	1.670	3.031	2.60	4.81
																	DI-3 TOTAL FLOW				**2.60**	**4.81**
PH3-OS1	EXIST	100	1.68	1.68	D	0.12	0.21	225	0.005	0.4	25.89	1.68	414	0.0017	0.015	20	2.65	28.54	0.878	1.577	1.12	2.30
																	EXIST TOTAL FLOW				**1.12**	**2.30**
64>67	**PT. D**	100	5.35	2.78	D	0.12	0.21	SDMH-2 PIPE FLOW				5.35	50	0.0045	0.015	20	0.17	28.70	0.871	1.561	4.08	7.77
																	PT. D TOTAL FLOW				**4.08**	**7.77**

[1] SWMM Equation 5-5, Infiltration Factor

[2] SWMM Equation 5-3, Overland Flow Response Time

[3] SWMM Equation 5-4, Collector Flow Response Time

[4] SWMM Equation 5-6, Adjustment for Infiltration Peak Flow

[5] SWMM Table 5-5, Roughness Parameters for Overland Flow

Table 2 (CONT.)

Estia Dry Creek Post-Development Peak Flow

Watershed Data								Time of Concentration											Peak Flow			
Refer to drainage map and soil type								Overland Flow				Channel Flow							Fig 5-3A,C P.C. SWMM			
SHED	DRAINAGE INLET	Elev.	Total Area (ac.)	Perv. Area	Soil Type	Infiltration Rate (in/hr)	F_i[1]	Length ft.	Slope ft/ft	N[5]	t_r[2] min.	Area (ac.)	Length ft.	Slope ft/ft	n	Z	t_r[3] min.	Total Time (min.)	q_{10}	q_{100}	Q_{10}[4] cfs	Q_{100}[4] cfs
TO PHASE 3 DISCHARGE 2																						
68	DI-4	100	0.88	0.26	D	0.12	0.21	189	0.01	0.4	15.00	0.88	158	0.0050	0.015	20	0.79	15.79	1.630	2.962	1.38	2.55
																		DI-4 TOTAL FLOW			**1.38**	**2.55**
69	DI-5	100	0.53	0.37	D	0.12	0.21	136	0.01	0.4	15.00	0.53	268	0.0050	0.015	20	1.53	16.53	1.550	2.825	0.74	1.42
																		DI-5 TOTAL FLOW			**0.74**	**1.42**
68>69	SDMH-3	100	1.41	0.64	D	0.12	0.21										**SDMH-3 TOTAL FLOW**	16.53	1.550	2.825	**2.05**	**3.85**
70	DI-6	100	0.91	0.27	D	0.12	0.21	116	0.01	0.4	14.12	0.91	294	0.0050	0.015	20	1.46	15.58	1.650	2.997	1.44	2.67
72		100	0.42	0.13	D	0.12	0.21	116	0.01	0.4	14.14	0.42	134	0.0100	0.015	20	0.62	14.76	1.726	3.128	0.70	1.29
																		DI-6 TOTAL FLOW			**2.14**	**3.96**
71	DI-7	100	0.89	0.27	D	0.12	0.21	116	0.01	0.4	14.16	0.89	264	0.0050	0.015	20	1.32	15.48	1.660	3.014	1.42	2.63
																		DI-7 TOTAL FLOW			**1.42**	**2.63**
68>72	SDMH-4	100	3.63	1.30	D	0.12	0.21	SDMH-3 PIPE FLOW				1.41	277	0.0050	0.015	2	0.73	17.26				
																		SDMH-4 TOTAL FLOW	17.26	1.480	2.704	**5.10**	**9.55**
74	DI-9	100	0.13	0.04	D	0.12	0.21	7	0.02	0.11	0.98	0.13	186	0.0100	0.015	20	1.16	2.14	2.520	5.020	0.32	0.64
75		100	0.39	0.12	D	0.12	0.21	115	0.01	0.4	14.04	0.39	143	0.0065	0.015	20	0.79	14.83	1.718	3.114	0.65	1.19
																		DI-9 TOTAL FLOW			**0.96**	**1.83**
73	DI-8	100	0.32	0.10	D	0.12	0.21	116	0.01	0.4	14.11	0.32	251	0.0100	0.015	20	1.25	15.36	1.670	3.031	0.51	0.95
																		DI-8 TOTAL FLOW			**0.51**	**0.95**
68>75	SDMH-6	100	4.47	1.55	D	0.12	0.21	SDMH-5 PIPE FLOW				3.63	214	0.0100	0.015	2	0.35	17.61				
																		SDMH-6 TOTAL FLOW	17.61	1.440	2.636	**6.11**	**11.46**
76	DI-10	100	0.85	0.26	D	0.12	0.21	148	0.01	0.4	15.00	0.85	192	0.0065	0.015	20	0.88	15.88	1.620	2.945	1.32	2.45
																		DI-10 TOTAL FLOW			**1.32**	**2.45**
77	DI-11	100	0.45	0.14	D	0.12	0.21	91	0.01	0.4	12.22	0.45	58	0.0065	0.015	20	0.31	12.54	1.897	3.436	0.83	1.52
																		DI-11 TOTAL FLOW			**0.83**	**1.52**
76>77	SDMH-7	100	1.30	0.39	D	0.12	0.21										**SDMH-7 TOTAL FLOW**	15.88	1.620	2.945	**2.02**	**3.75**
68>77	SDMH-8	100	5.77	1.94	D	0.12	0.21	SDMH-6 PIPE FLOW				4.47	50	0.0098	0.015	2	0.08	17.68				
								SDMH-7 PIPE FLOW				1.30	145	0.0050	0.015	2	0.39	16.27				
																		SDMH-8 TOTAL FLOW	17.68	1.440	2.636	**7.90**	**14.80**
78	DI-12	100	0.45	0.14	D	0.12	0.21	115	0.01	0.4	14.06	0.45	106	0.0065	0.015	20	0.57	14.63	1.733	3.142	0.75	1.39
																		DI-12 TOTAL FLOW			**0.75**	**1.39**
79	DI-13	100	0.77	0.23	D	0.12	0.21	111	0.01	0.4	13.79	0.77	258	0.0065	0.015	20	1.21	15.00	1.710	3.100	1.27	2.34
																		DI-13 TOTAL FLOW			**1.27**	**2.34**
68>79	SDMH-6	100	6.99	2.31	D	0.12	0.21	SDMH-8 PIPE FLOW				5.77	164	0.0050	0.015	2	0.31	17.99				
																		SDMH-6 TOTAL FLOW	17.99	1.410	2.584	**9.37**	**17.58**
80	DI-15	100	0.78	0.23	D	0.12	0.21	113	0.01	0.4	13.93	0.78	148	0.0065	0.015	20	0.69	14.62	1.733	3.142	1.30	2.40
81		100	0.51	0.15	D	0.12	0.21	144	0.01	0.4	15.00	0.51	148	0.0065	0.015	20	0.77	15.77	1.630	2.962	0.80	1.48
																		DI-15 TOTAL FLOW			**1.30**	**2.40**
PH3-OS2	EXIST	100	6.72	6.72	D	0.12	0.21	248	0.010	0.4	22.64	6.72	1183	0.0200	0.015	20	2.12	24.76	1.027	1.873	5.50	11.19
																		EXIST TOTAL FLOW			**5.50**	**11.19**
68>81	**PT. E**	100	15.00	9.42	D	0.12	0.21	DI-15 PIPE FLOW				0.77	143	0.0050	0.015	2	0.44	25.20	1.007	1.834	13.14	25.55
																		PT. E TOTAL FLOW			**13.14**	**25.55**

[1] SWMM Equation 5-5, Infiltration Factor
[2] SWMM Equation 5-3, Overland Flow Response Time
[3] SWMM Equation 5-4, Collector Flow Response Time
[4] SWMM Equation 5-6, Adjustment for Infiltration Peak Flow
[5] SWMM Table 5-5, Roughness Parameters for Overland Flow

Table 3

Bypass Flow Table

GUTTER AND BYPASS FLOW DATA																			
				GUTTER FLOW											ON GRADE INLETS				
SHEDS	GUTTER	TO DRAINAGE INLET	INLET CONDITION	GUTTER SLOPE ft/ft	Q_{10} cfs	ADD Q_{10} UPSTREAM BYPASS cfs	Q_{10} TOTAL cfs	Q_{100} cfs	ADD Q_{100} UPSTREAM BYPASS cfs	Q_{100} TOTAL cfs	Q_{10} GUTTER CAP cfs	Q_{10} GUTTER SPREAD ft	Q_{100} GUTTER SPREAD ft	Q_{100} GUTTER DEPTH ft	Q_{10} INLET CAP cfs	Q_{10} BYPASS cfs	Q_{100} INLET CAP cfs	Q_{100} BYPASS cfs	BYPASS TARGET
(MAP 2)											(REF 10)								
PHASE 3 DISCHARGE 1 - TYPE 1 CURB AND GUTTER																			
64	g64	DI-2	ON GRADE	0.0050	1.72	0.00	1.72	3.19	0.00	3.19	2.00	6.79	10.12	0.40	1.42	0.30	2.26	0.93	DI-3
65	g65	DI-1	ON GRADE	0.0050	1.49	0.00	1.49	2.75	0.00	2.75	2.00	5.99	9.25	0.38	1.26	0.23	2.02	0.73	DI-3
66+67	g67	DI-3	SAG	0.0050	2.60	0.53	3.14	4.81	1.66	6.47	-	6.76	14.72	0.49	OK	-	OK	-	-
PHASE 3 DISCHARGE 2 - TYPE 1A CURB AND GUTTER																			
68	g68	DI-4	ON GRADE	0.0050	1.38	0.00	1.38	2.55	0.00	2.55	2.00	5.53	8.78	0.37	1.17	0.21	1.89	0.66	DI-6
69	g69	DI-5	ON GRADE	0.0050	0.74	0.00	0.74	1.42	0.00	1.42	2.00	2.96	6.03	0.32	0.74	0.00	1.27	0.15	DI-7
70	g70	DI-6	SAG	0.0050	1.44	0.21	1.65	2.67	0.66	3.33	-	3.61	9.11	0.38	OK	-	OK	-	-
72	g72	DI-6	SAG	0.0100	0.70	0.00	0.70	1.29	0.00	1.29	-	2.20	2.81	0.24	OK	-	OK	-	-
71	g71	DI-7	SAG	0.0050	1.42	0.00	1.43	2.63	0.15	2.78	-	3.01	7.76	0.35	OK	-	OK	-	-
74	g74	DI-9	SAG	0.0100	0.32	0.00	0.32	0.64	0.00	0.64	-	1.43	2.13	0.18	OK	-	OK	-	-
75	g75	DI-9	SAG	0.0065	0.65	0.18	0.83	1.19	0.60	1.79	-	2.36	4.12	0.28	OK	-	OK	-	-
73	g73	DI-8	SAG	0.0100	0.51	0.00	0.51	0.95	0.00	0.95	-	1.96	2.49	0.21	OK	-	OK	-	-
76	g76	DI-10	ON GRADE	0.0065	1.32	0.00	1.32	2.45	0.00	2.45	2.00	5.38	8.60	0.37	1.14	0.18	1.85	0.60	DI-9
77	g77	DI-11	ON GRADE	0.0065	0.83	0.00	0.83	1.52	0.00	1.52	2.00	3.18	6.76	0.33	0.79	0.04	1.42	0.10	DI-13
78	g78	DI-12	ON GRADE	0.0065	0.75	0.00	0.75	1.39	0.00	1.39	2.00	2.94	6.25	0.32	0.75	0.00	1.38	0.01	DI-15
79	g79	DI-13	ON GRADE	0.0065	1.27	0.04	1.30	2.34	0.10	2.44	2.00	3.44	6.95	0.34	1.15	0.15	1.99	0.45	DI-15
80	g80	DI-15	SAG	0.0065	1.30	0.00	1.31	2.40	0.01	2.41	-	4.01	9.77	0.39	OK	-	OK	-	-
81	g81	DI-15	SAG	0.0065	0.80	0.15	0.95	1.48	0.45	1.93	-	2.43	4.79	0.29	OK	-	OK	-	-
REF 1:		Hydraflow Express program																	
NOTES:		1. Design flow floods up to the but not including travel lanes - on site streets																	
		2. Design Capacity is based on Reference 4, Table 6-1 "Allowable Street Encroachments" & LDM Section 5-13																	
		3. Gutter spread is measured from face of curb.																	

Table 4

HEC-RAS Summary

HEC-RAS Existing Steady Flow Summary				
River	**Reach**	**Steady Flow Input (10-YR, cfs)**	**Steady Flow Input (100-YR, cfs)**	**Hydrologic Element in HEC-HMS**
Walerga Tributary	Walerga Tributary	216.6	408.6	DCW-Discharge
HEC-RAS Proposed Steady Flow Summary				
River	**Reach**	**Steady Flow Input (10-YR, cfs)**	**Steady Flow Input (100-YR, cfs)**	**Hydrologic Element in HEC-HMS**
Walerga Tributary	Walerga Tributary	217.2	424.7	DCW-Discharge
HEC-RAS Unmitigated Steady Flow Summary				
River	**Reach**	**Steady Flow Input (10-YR, cfs)**	**Steady Flow Input (100-YR, cfs)**	**Hydrologic Element in HEC-HMS**
Walerga Tributary	Walerga Tributary	216.3	426.1	DCW-Discharge

Table 5

HEC-RAS Results

River Station	100-Year Existing W.S. Elev (ft)	100-Year Proposed W.S. Elev (ft)	100-Year Unmitigated W.S. Elev (ft)
Estia Dry Creek - Walerga Road Tributary - Offsite			
6640	100.51	100.56	100.57
6545	100.54	100.6	100.62
6400	100.23	100.29	100.31
6276	100.04	100.09	100.1
6275	100.05	100.08	100.09
6201	99.93	99.98	99.99
6200	99.73	99.78	99.8
6100	99.5	99.55	99.57
6000	99.46	99.51	99.53
5922.73	99.21	99.26	99.27
5900	99.03	99.08	99.09
5825	98.84	98.89	98.9
3851	95.02	94.96	95.02
3850	95.02	95.02	95.02
3769.99	95.01	95.01	95.01
3710	95	95	95
River Station	**100-Year Existing W.S. Elev (ft)**	**100-Year Proposed W.S. Elev (ft)**	**100-Year Unmitigated W.S. Elev (ft)**
Estia Dry Creek - Walerga Road Tributary - Onsite			
5700	98.43	98.48	98.5
5600	98.18	98.23	98.24
5500	97.54	97.61	97.63
5400	97.17	97.21	97.23
5300	97	97.05	97.07
5200	96.88	96.93	96.95
5100	96.57	96.61	96.63
5062.01	96.43	96.47	96.49
5000	96.2	96.22	96.25
4900	96.11	96.13	96.15
4846	96	96.01	96.04
4835	95.97	95.98	96.01
4831.21	PED. BRIDGE	PED. BRIDGE	PED. BRIDGE
4825	95.94	95.95	95.98
4800	95.93	95.94	95.96
4700	95.82	95.81	95.84
4600	95.64	95.61	95.64
4500	95.5	95.46	95.49
4400	95.51	95.47	95.51
4350	95.48	95.44	95.47
4300	95.47	95.42	95.46
4250	95.47	95.42	95.45
4101	95.43	95.38	95.42
4100	95.36	95.1	95.33
3975.67	CULVERT	CULVERT	CULVERT

Table 6

HEC-HMS Results

HEC-HMS Model Results 100-Year - Existing			
Basin	Area (mi^2)	Discharge (cfs)	Volume (ac-ft)
1	0.1362	168.09	18
2	0.0904	64.61	11.8
3	0.1538	93.09	16.6
4	0.0707	42.06	7.1
5	0.1988	136.33	35
6	0.3962	240.16	42.8
DCW-R1	1.0461	408.59	131.4
DCW-R2	0.8195	395.64	101.6
DCW-R3	0.3962	252.9	42.9
DCW-Discharge	1.0461	408.59	131.4

HEC-HMS Model Detention Results 100-Year - Proposed			
Basin	Area (mi^2)	Discharge (cfs)	Volume (ac-ft)
1A	0.057	86.84	10.2
1B	0.0217	34.16	3.6
1C	0.0061	7.87	1.1
1D	0.0119	14.51	2.1
1E	0.0087	15.17	1.1
1F	0.0078	10.19	1.4
1G	0.0101	12.75	1.8
2	0.1491	150.25	19.6
3	0.1538	93.09	16.6
4	0.0707	42.06	7.1
5	0.1988	190.59	35.2
6	0.3962	240.16	42.8
DCW-R1	1.0919	424.68	142.7
DCW-R2	0.8195	368.86	101.9
DCW-R3	0.3962	252.9	42.9
DCW-Discharge	1.0919	424.68	142.7

Table 6 (Cont.)

HEC-HMS Results

HEC-HMS Model Detention Results 100-Year - Unmitigated			
Basin	**Area (mi^2)**	**Discharge (cfs)**	**Volume (ac-ft)**
1A	0.057	86.84	10.2
1B	0.0217	34.52	4.1
1C	0.0091	11.78	1.6
1D	0.0119	14.51	2.1
1E	0.0087	15.17	1.1
1F	0.0078	10.19	1.4
1G	0.0101	12.75	1.8
2	0.1491	145.7	16.3
3	0.1538	93.09	16.6
4	0.0707	42.06	7.1
5	0.1988	190.59	35.2
6	0.3962	240.16	42.8
DCW-R1	1.0949	423.97	140.5
DCW-R2	0.8195	368.86	101.9
DCW-R3	0.3962	252.9	42.9
DCW-Discharge	1.0949	423.97	140.5

Table 7

Pre-Development to Post-Development Comparison

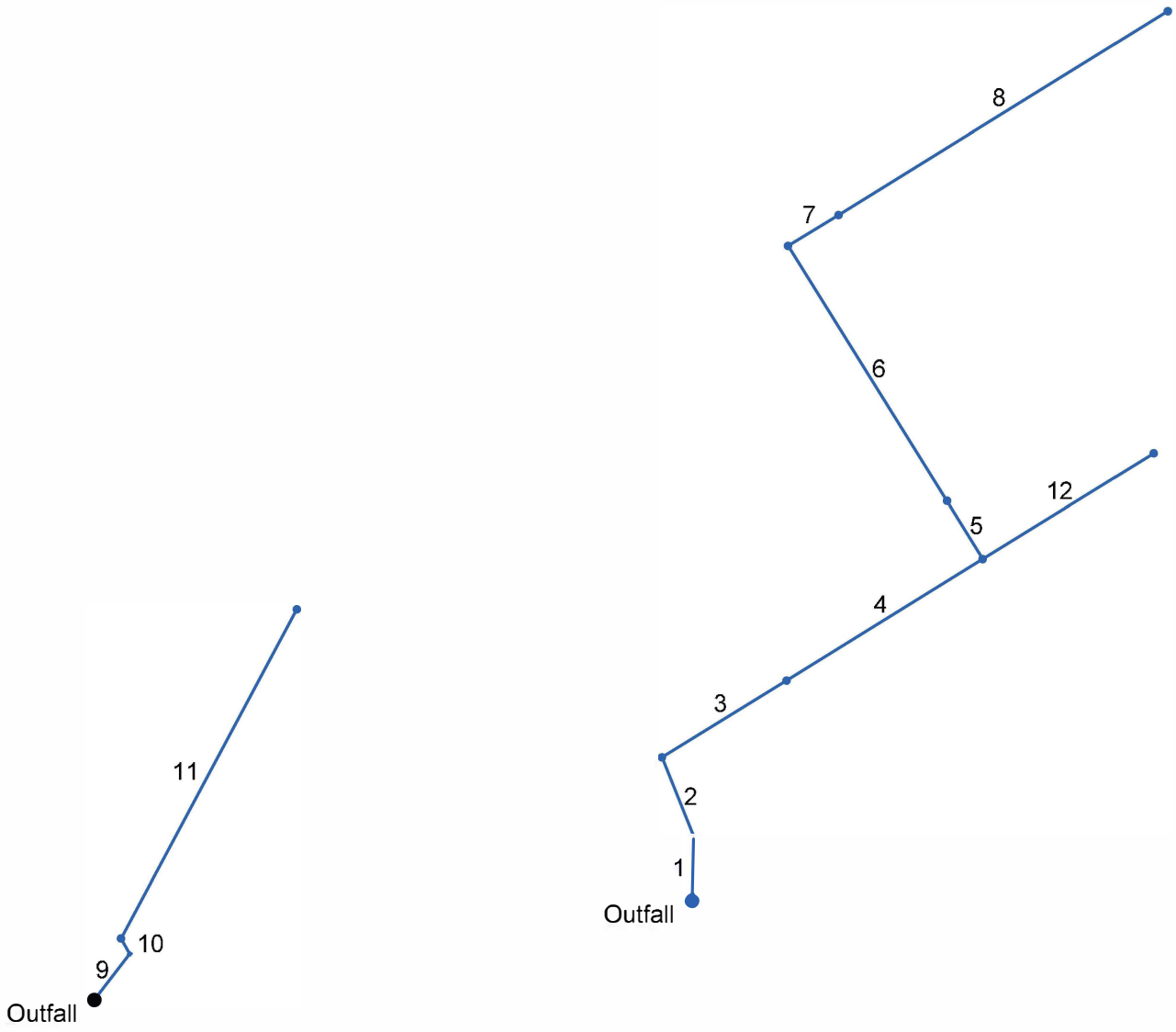
PRE-DEVELOPMENT					POST-DEVELOPMENT					Comments:
Discharge Location	Sheds	Area - ac.	Q10	Q100	Discharge Location	Sheds	Area - ac.	Q10	Q100	
POINT A	1>4	35.6	18.5	38.0	POINT A	12>13, 24>30	9.9	13.4	25.5	Runoff towards infiltration basin and existing storm drain per Segment 1, Upland Drive
PT. A PRE TOTAL		**35.6**	**18.5**	**38.0**	**PT. A POST TOTAL**		**9.9[1]**	**13.4**	**25.5**	Discharge towards existing storm drain at Baseline; Curry Creek
POINT B	5>7	20.3	22.5	43.3	PHASE 1 DISCHARGE	1>11, 14>23, 31>32	10.0	13.4	25.3	Infiltration Basin B at Phase 1; Runoff towards Point B
					PHASE 2 DISCHARGE	33>63	28.6	36.3	68.4	Phase 2 Runoff
					BACKBONE TO POINT B	105>120	7.3	7.8	15.1	Walerga Runoff
PT. B PRE TOTAL		**20.3**	**22.5**	**43.3**	**PT. B POST TOTAL**		**45.9[1]**	**57.5**	**108.7**	Overall runoff from Phases 1, 2, and Backbone (Walerga)
POINT C	8>14	49.7	39.3	75.8	TO PHASE 3 DISCHARGE 1	PH3-OS1, 64>67	5.4	4.1	7.8	Infiltration Basin D at Phase 3
					TO PHASE 3 DISCHARGE 2	PH3-OS2, 68>81	15.0	13.1	25.5	Infiltration Basin E at Phase 3
					TO PHASE 4 DISCHARGE 1	OS3, 82>88	7.3	5.8	11.0	Infiltration Basin F at Phase 4
					TO PHASE 4 DISCHARGE 2	OS2, 89>96	22.2	22.9	45.1	Infiltration Basin G at Phase 4
PT. C PRE TOTAL		**49.7**	**39.3**	**75.8**	**PT. C POST TOTAL**		**49.8**	**45.9**	**89.4**	Overall runoff from Phases 3 and 4
PT. D PRE TOTAL		**70.0**	**61.8**	**119.2**	**PT. D POST TOTAL**		**95.7**	**103.4**	**198.2**	Point D = Point B + Point C; At Walerga Tributary
PRE OVERALL TOTAL		**105.6**	**80.4**	**157.2**	**POST OVERALL TOTAL**		**105.6**	**116.8**	**223.6**	Total Overal Project

[1]25.7 acres are proposed to be shifted from the Curry Creek watershed to the Dry Creek watershed from Point A to Point B. The associated 100-year flows from this shed shift are 25.3 cfs from Phase 1 and 39.2 cfs from Phase 2. The associated 10-year flows from this shed shift are 13.4 cfs from Phase 1 and 17.3 cfs from Phase 2.

EXHIBIT D

Hydraulic Data and Profiles – 10-Year and 100-Year

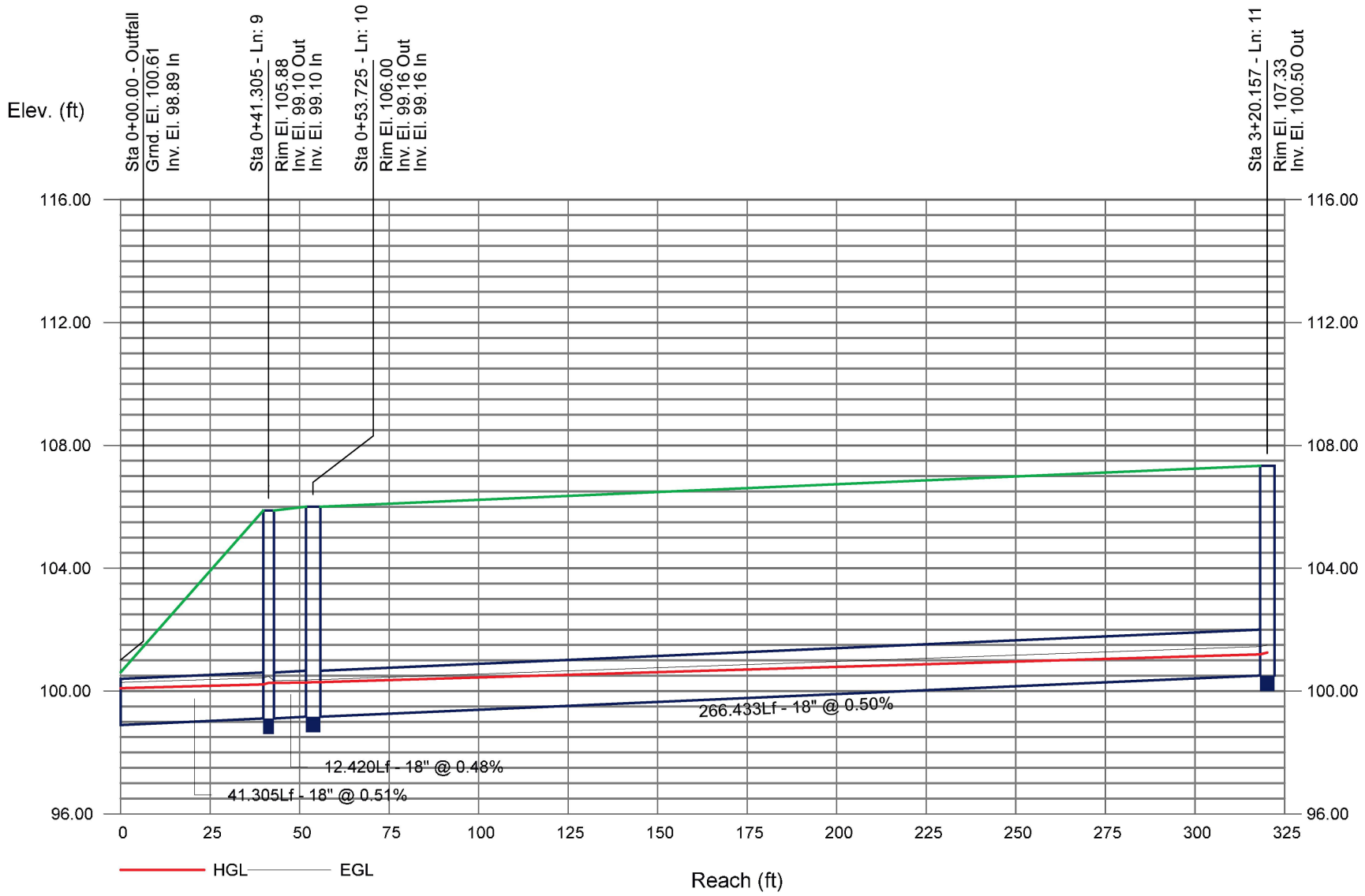
Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Phase 3 10-Year.stm	* Figure not OCR Compatible	Number of lines: 12	Date: 8/13/2025

Storm Sewer Profile

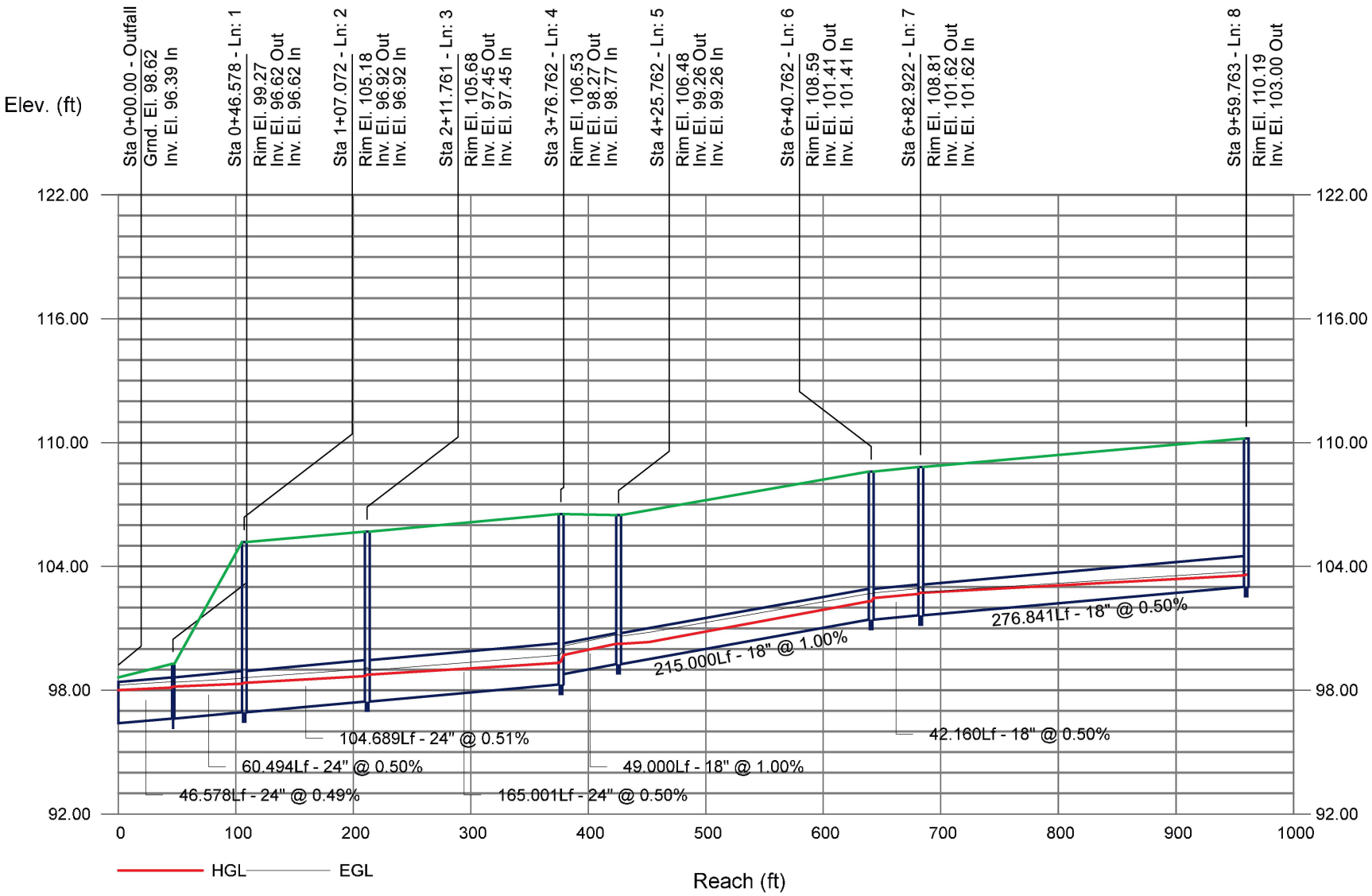
Proj. file: Phase 3 10-Year.stm



* Figure not OCR Compatible

Storm Sewer Profile

Proj. file: Phase 3 10-Year.stm



* Figure not OCR Compatible

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	P-24	10.75	24	Cir	46.578	96.39	96.62	0.494	98.00	98.12	0.06	98.18	End	Manhole
2	P-23	9.54	24	Cir	60.494	96.62	96.92	0.496	98.18	98.30	0.05	98.36	1	Manhole
3	P-22	9.54	24	Cir	104.689	96.92	97.45	0.506	98.36	98.68	0.07	98.75	2	Manhole
4	P-19	8.10	24	Cir	165.001	97.45	98.27	0.497	98.75	99.32	0.07	99.40	3	Manhole
5	P-15	6.42	18	Cir	49.000	98.77	99.26	1.000	99.70	100.24	n/a	100.24	4	Manhole
6	P-12	5.35	18	Cir	215.000	99.26	101.41	1.000	100.24	102.30	n/a	102.30 j	5	Manhole
7	P-11	5.35	18	Cir	42.160	101.41	101.62	0.498	102.46	102.66	0.05	102.72	6	Manhole
8	P-8	2.15	18	Cir	276.841	101.62	103.00	0.498	102.72	103.56	0.04	103.60	7	Manhole
9	P-5	5.23	18	Cir	41.305	98.89	99.10	0.508	100.09	100.22	0.04	100.26	End	Manhole
10	P-4	3.23	18	Cir	12.420	99.10	99.16	0.483	100.26	100.27	0.02	100.29	9	Manhole
11	P-3	3.23	18	Cir	266.433	99.16	100.50	0.503	100.29	101.20	0.05	101.25	10	Manhole
12	P-18	1.88	18	Cir	143.602	98.77	99.49	0.501	99.40	100.01	0.04	100.05	4	Manhole

Project File: Phase 3 10-Year.stm | Number of lines: 12 | Run Date: 8/13/2025

NOTES: Known Qs only ; j - Line contains hyd. jump.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	46.578	1.00	9.00	0.40	0.40	3.60	10.0	17.4	0.0	10.75	13.77	4.11	24	0.49	96.39	96.62	98.00	98.12	98.62	99.27	P-24
2	1	60.494	1.00	8.00	0.40	0.40	3.20	10.0	17.1	0.0	9.54	13.80	3.88	24	0.50	96.62	96.92	98.18	98.30	99.27	105.18	P-23
3	2	104.689	1.00	7.00	0.40	0.40	2.80	10.0	16.5	0.0	9.54	13.95	4.34	24	0.51	96.92	97.45	98.36	98.68	105.18	105.68	P-22
4	3	165.001	1.00	6.00	0.40	0.40	2.40	10.0	15.4	0.0	8.10	13.82	4.30	24	0.50	97.45	98.27	98.75	99.32	105.68	106.53	P-19
5	4	49.000	1.00	4.00	0.40	0.40	1.60	10.0	15.2	0.0	6.42	9.10	5.42	18	1.00	98.77	99.26	99.70	100.24	106.53	106.48	P-15
6	5	215.000	1.00	3.00	0.40	0.40	1.20	10.0	14.0	0.0	5.35	9.10	4.64	18	1.00	99.26	101.41	100.24	102.30	106.48	108.59	P-12
7	6	42.160	1.00	2.00	0.40	0.40	0.80	10.0	13.8	0.0	5.35	6.42	4.07	18	0.50	101.41	101.62	102.46	102.66	108.59	108.81	P-11
8	7	276.841	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	2.15	6.43	2.58	18	0.50	101.62	103.00	102.72	103.56	108.81	110.19	P-8
9	End	41.305	1.00	3.00	0.40	0.40	1.20	10.0	12.5	0.0	5.23	6.49	3.58	18	0.51	98.89	99.10	100.09	100.22	100.61	105.88	P-5
10	9	12.420	1.00	2.00	0.40	0.40	0.80	10.0	12.4	0.0	3.23	6.33	2.25	18	0.48	99.10	99.16	100.26	100.27	105.88	106.00	P-4
11	10	266.433	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	3.23	6.45	3.15	18	0.50	99.16	100.50	100.29	101.20	106.00	107.33	P-3
12	4	143.602	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.88	6.44	3.08	18	0.50	98.77	99.49	99.40	100.01	106.53	107.21	P-18

Project File: Phase 3 10-Year.stm | Number of lines: 12 | Run Date: 8/13/2025

NOTES:Known Qs only ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
(1)	(in) (2)	(cfs) (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(ft) (12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(K) (23)	(ft) (24)
1	24	10.75	96.39	98.00	1.61	2.71	3.97	0.24	98.24	0.311	46.578	96.62	98.12	1.50	2.53	4.25	0.28	98.40	0.361	0.336	0.156	0.20	0.06
2	24	9.54	96.62	98.18	1.56	2.63	3.63	0.21	98.38	0.262	60.494	96.92	98.30	1.38	2.32	4.12	0.26	98.57	0.349	0.305	0.185	0.20	0.05
3	24	9.54	96.92	98.36	1.44	2.41	3.95	0.24	98.60	0.317	104.689	97.45	98.68	1.23	2.02	4.72	0.35	99.02	0.491	0.404	0.423	0.20	0.07
4	24	8.10	97.45	98.75	1.30	2.15	3.76	0.22	98.97	0.301	165.001	98.27	99.32	1.05	1.68	4.83	0.36	99.69	0.575	0.438	0.723	0.20	0.07
5	18	6.42	98.77	99.70	0.93*	1.15	5.58	0.43	100.13	0.000	49.000	99.26	100.24	0.98**	1.22	5.26	0.43	100.67	0.000	0.000	n/a	0.20	n/a
6	18	5.35	99.26	100.24	0.98	1.09	4.38	0.37	100.61	0.000	215.000	101.41	102.30 j	0.89**	1.09	4.90	0.37	102.67	0.000	0.000	n/a	0.20	0.07
7	18	5.35	101.41	102.46	1.05*	1.32	4.07	0.26	102.71	0.498	42.160	101.62	102.66	1.04	1.31	4.07	0.26	102.92	0.500	0.499	0.210	0.20	0.05
8	18	2.15	101.62	102.72	1.10	0.59	1.55	0.04	102.75	0.071	276.841	103.00	103.56	0.56**	0.60	3.60	0.20	103.76	0.647	0.359	0.994	0.20	0.04
9	18	5.23	98.89	100.09	1.20	1.52	3.45	0.19	100.28	0.346	41.305	99.10	100.22	1.12	1.41	3.71	0.21	100.43	0.405	0.375	0.155	0.20	0.04
10	18	3.23	99.10	100.26	1.16	1.46	2.21	0.08	100.33	0.142	12.420	99.16	100.27	1.11	1.40	2.30	0.08	100.35	0.156	0.149	0.019	0.20	0.02
11	18	3.23	99.16	100.29	1.13	1.42	2.27	0.08	100.37	0.151	266.433	100.50	101.20	0.70	0.80	4.03	0.25	101.45	0.655	0.403	1.073	0.20	0.05
12	18	1.88	98.77	99.40	0.63	0.54	2.70	0.11	99.51	0.323	143.602	99.49	100.01	0.52**	0.54	3.46	0.19	100.20	0.642	0.483	0.693	0.20	0.04

Project File: Phase 3 10-Year.stm | Number of lines: 12 | Run Date: 8/13/2025

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraflow HGL Computation Procedure

General Procedure:

Hydraflow computes the HGL using the Bernoulli energy equation. Manning's equation is used to determine energy losses due to pipe friction. In a standard step, iterative procedure, Hydraflow assumes upstream HGLs until the energy equation balances. If the energy equation cannot balance, supercritical flow exists and critical depth is temporarily assumed at the upstream end. A supercritical flow Profile is then computed using the same procedure in a downstream direction using momentum principles.

Col. 1 The line number being computed. Calculations begin at Line 1 and proceed upstream.

Col. 2 The line size. In the case of non-circular pipes, the line rise is printed above the span.

Col. 3 Total flow rate in the line.

Col. 4 The elevation of the downstream invert.

Col. 5 Elevation of the hydraulic grade line at the downstream end. This is computed as the upstream HGL + Minor loss of this line's downstream line.

Col. 6 The downstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 7 Cross-sectional area of the flow at the downstream end.

Col. 8 The velocity of the flow at the downstream end, (Col. 3 / Col. 7).

Col. 9 Velocity head (Velocity squared / 2g).

Col. 10 The elevation of the energy grade line at the downstream end, HGL + Velocity head, (Col. 5 + Col. 9).

Col. 11 The friction slope at the downstream end (the S or Slope term in Manning's equation).

Col. 12 The line length.

Col. 13 The elevation of the upstream invert.

Col. 14 Elevation of the hydraulic grade line at the upstream end.

Col. 15 The upstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 16 Cross-sectional area of the flow at the upstream end.

Col. 17 The velocity of the flow at the upstream end, (Col. 3 / Col. 16).

Col. 18 Velocity head (Velocity squared / 2g).

Col. 19 The elevation of the energy grade line at the upstream end, HGL + Velocity head, (Col. 14 + Col. 18) .

Col. 20 The friction slope at the upstream end (the S or Slope term in Manning's equation).

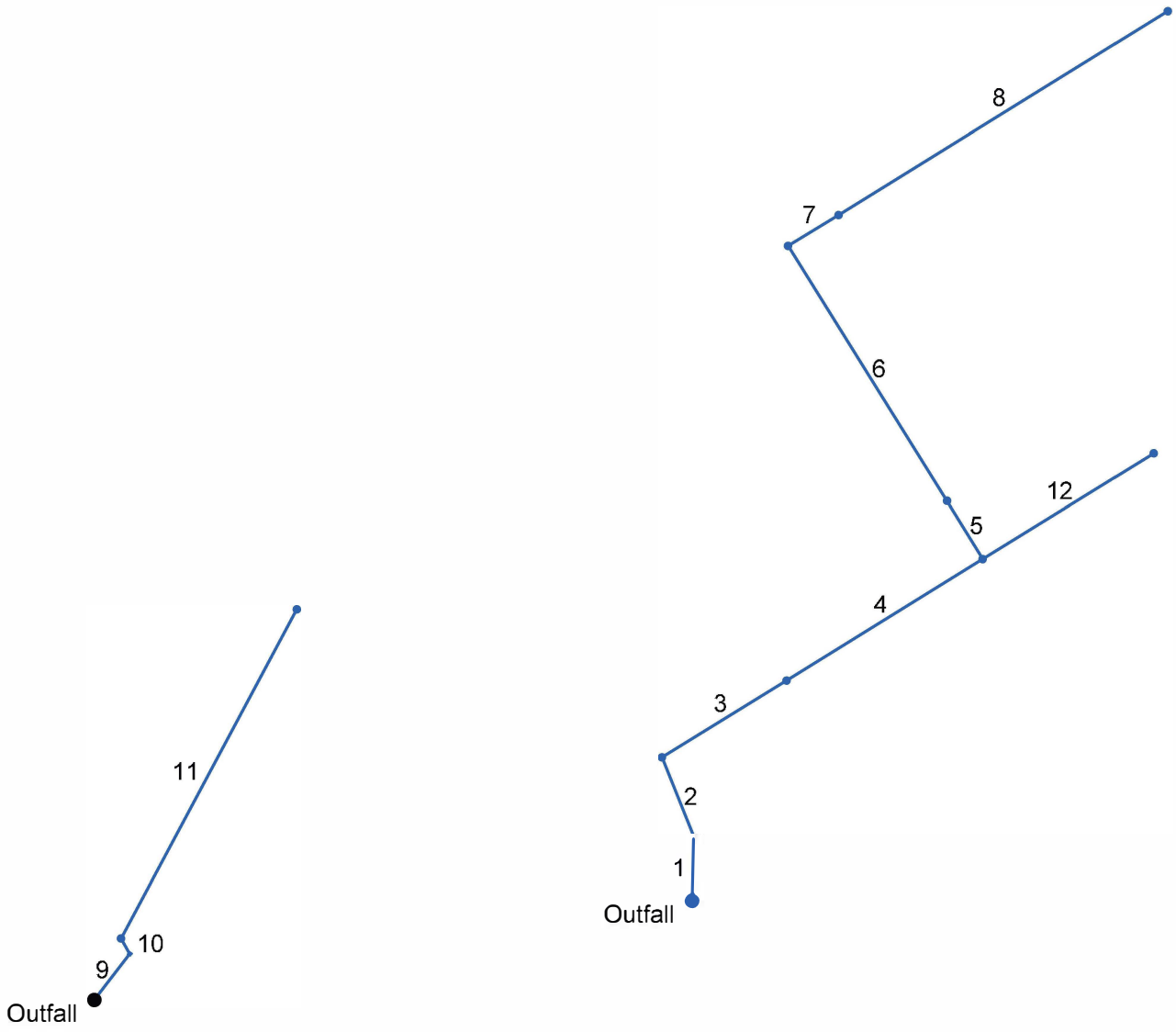
Col. 21 The average of the downstream and upstream friction slopes.

Col. 22 Energy loss. Average Sf/100 x Line Length (Col. 21/100 x Col. 12). Equals (EGL upstream - EGL downstream) +/- tolerance.

Col. 23 The junction loss coefficient (K).

Col. 24 Minor loss. (Col. 23 x Col. 18). Is added to upstream HGL and used as the starting HGL for the next upstream line(s).

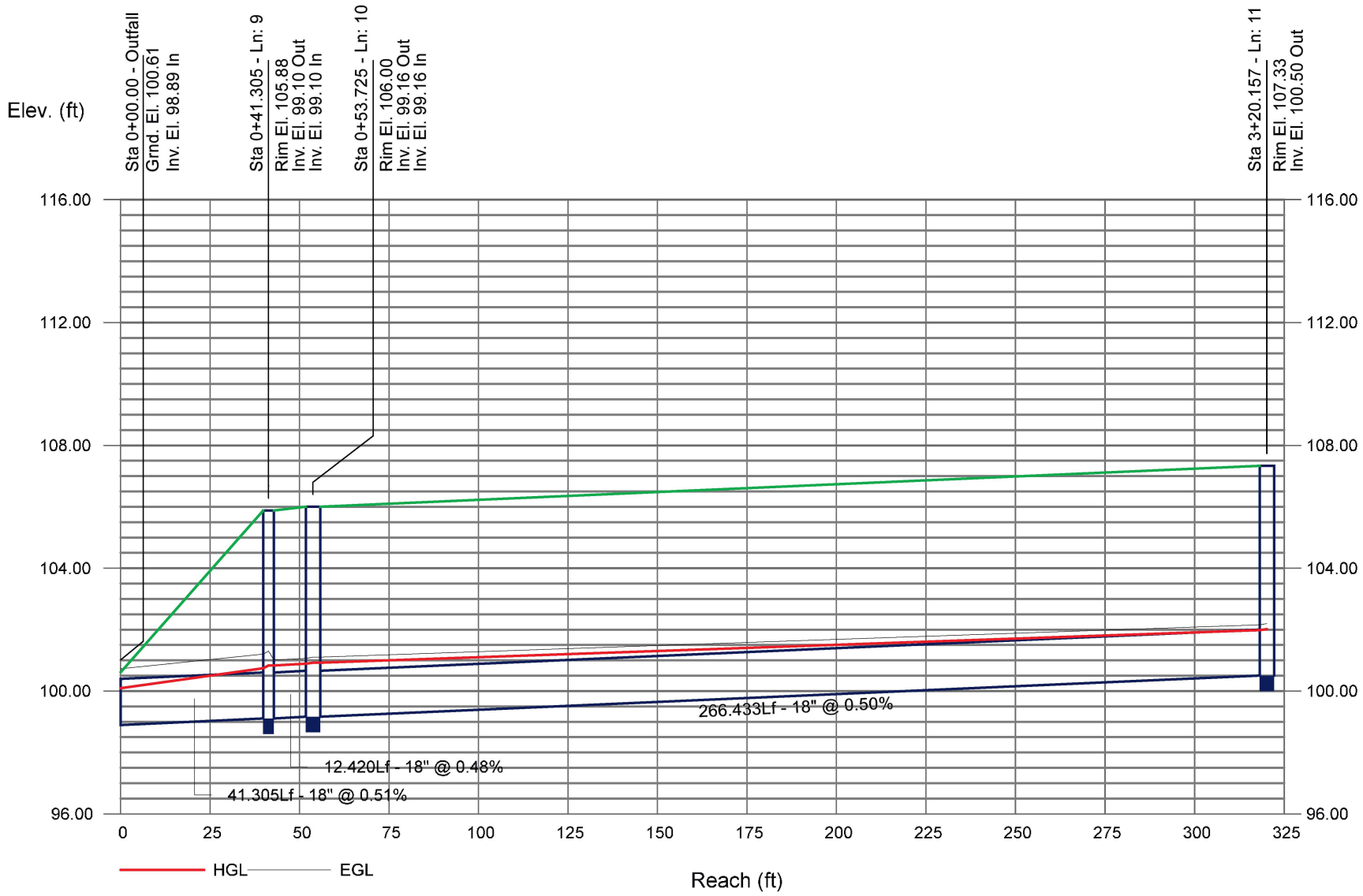
Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Phase 3 100-Year.stm	* Figure not OCR Compatible	Number of lines: 12	Date: 8/13/2025

Storm Sewer Profile

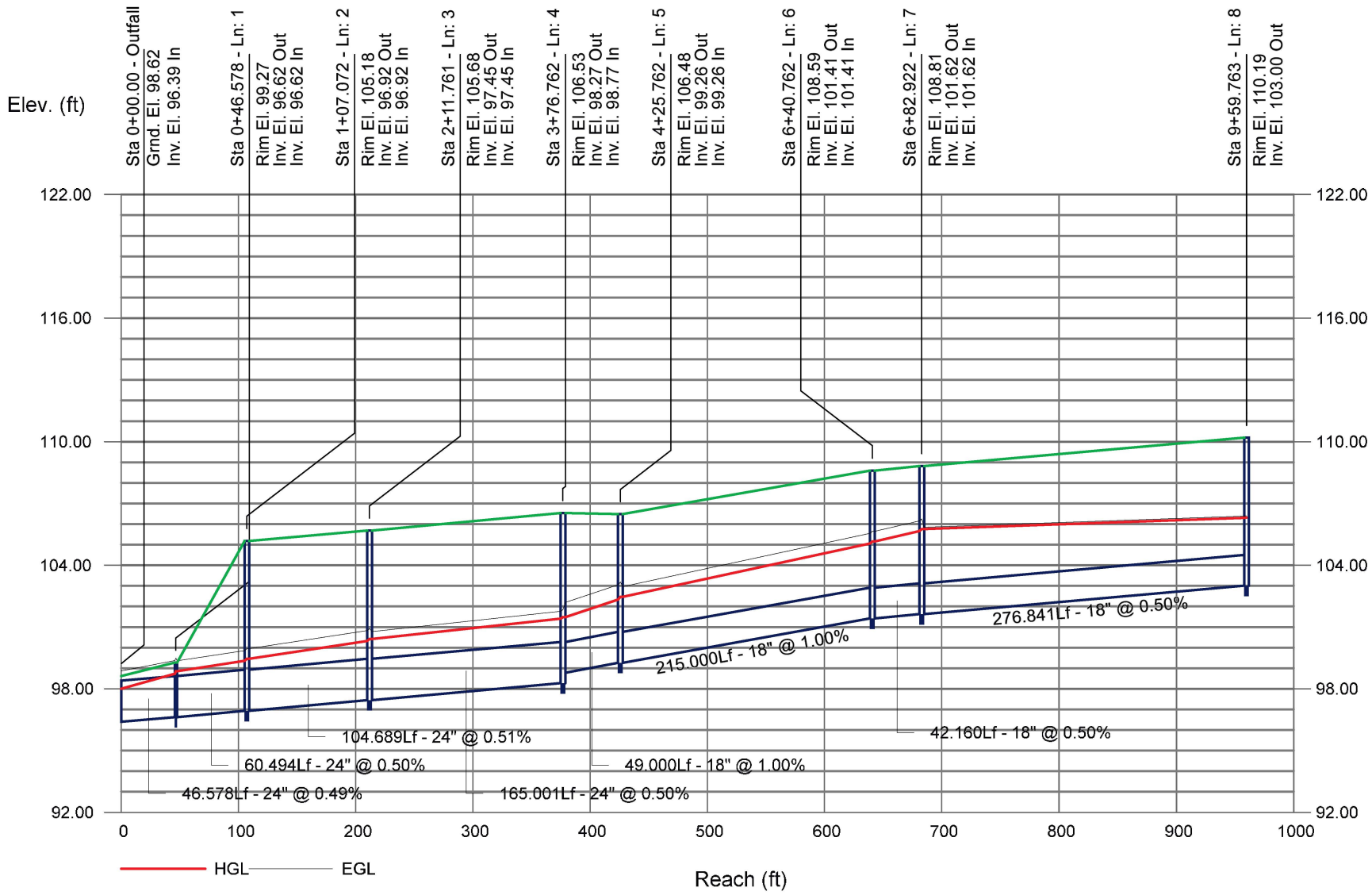
Proj. file: Phase 3 100-Year.stm



* Figure not OCR Compatible

Storm Sewer Profile

Proj. file: Phase 3 100-Year.stm



* Figure not OCR Compatible

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	P-24	20.16	24	Cir	46.578	96.39	96.62	0.494	98.00*	98.72*	0.13	98.85	End	Manhole
2	P-23	17.83	24	Cir	60.494	96.62	96.92	0.496	98.85*	99.35*	0.10	99.45	1	Manhole
3	P-22	17.83	24	Cir	104.689	96.92	97.45	0.506	99.45*	100.32*	0.10	100.42	2	Manhole
4	P-19	15.12	24	Cir	165.001	97.45	98.27	0.497	100.42*	101.40*	0.07	101.47	3	Manhole
5	P-15	11.99	18	Cir	49.000	98.77	99.26	1.000	101.47*	102.32*	0.14	102.46	4	Manhole
6	P-12	9.98	18	Cir	215.000	99.26	101.41	1.000	102.46*	105.05*	0.10	105.15	5	Manhole
7	P-11	9.98	18	Cir	42.160	101.41	101.62	0.498	105.15*	105.66*	0.10	105.76	6	Manhole
8	P-8	4.02	18	Cir	276.841	101.62	103.00	0.498	105.76*	106.30*	0.02	106.31	7	Manhole
9	P-5	9.68	18	Cir	41.305	98.89	99.10	0.508	100.09*	100.74*	0.09	100.83	End	Manhole
10	P-4	5.98	18	Cir	12.420	99.10	99.16	0.483	100.83*	100.88*	0.04	100.92	9	Manhole
11	P-3	5.98	18	Cir	266.433	99.16	100.50	0.503	100.92	101.98	0.04	102.01	10	Manhole
12	P-18	3.48	18	Cir	143.602	98.77	99.49	0.501	101.47*	101.68*	0.01	101.69	4	Manhole

Project File: Phase 3 100-Year.stm | Number of lines: 12 | Run Date: 8/13/2025

NOTES: Known Qs only ; *Surcharged (HGL above crown).

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	46.578	1.00	9.00	0.40	0.40	3.60	10.0	14.0	0.0	20.16	13.77	6.93	24	0.49	96.39	96.62	98.00	98.72	98.62	99.27	P-24
2	1	60.494	1.00	8.00	0.40	0.40	3.20	10.0	13.8	0.0	17.83	13.80	5.68	24	0.50	96.62	96.92	98.85	99.35	99.27	105.18	P-23
3	2	104.689	1.00	7.00	0.40	0.40	2.80	10.0	13.5	0.0	17.83	13.95	5.68	24	0.51	96.92	97.45	99.45	100.32	105.18	105.68	P-22
4	3	165.001	1.00	6.00	0.40	0.40	2.40	10.0	12.9	0.0	15.12	13.82	4.81	24	0.50	97.45	98.27	100.42	101.40	105.68	106.53	P-19
5	4	49.000	1.00	4.00	0.40	0.40	1.60	10.0	12.8	0.0	11.99	9.10	6.79	18	1.00	98.77	99.26	101.47	102.32	106.53	106.48	P-15
6	5	215.000	1.00	3.00	0.40	0.40	1.20	10.0	12.2	0.0	9.98	9.10	5.65	18	1.00	99.26	101.41	102.46	105.05	106.48	108.59	P-12
7	6	42.160	1.00	2.00	0.40	0.40	0.80	10.0	12.0	0.0	9.98	6.42	5.65	18	0.50	101.41	101.62	105.15	105.66	108.59	108.81	P-11
8	7	276.841	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	4.02	6.43	2.28	18	0.50	101.62	103.00	105.76	106.30	108.81	110.19	P-8
9	End	41.305	1.00	3.00	0.40	0.40	1.20	10.0	11.4	0.0	9.68	6.49	5.93	18	0.51	98.89	99.10	100.09	100.74	100.61	105.88	P-5
10	9	12.420	1.00	2.00	0.40	0.40	0.80	10.0	11.3	0.0	5.98	6.33	3.38	18	0.48	99.10	99.16	100.83	100.88	105.88	106.00	P-4
11	10	266.433	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	5.98	6.45	3.39	18	0.50	99.16	100.50	100.92	101.98	106.00	107.33	P-3
12	4	143.602	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	3.48	6.44	1.97	18	0.50	98.77	99.49	101.47	101.68	106.53	107.21	P-18

Project File: Phase 3 100-Year.stm | Number of lines: 12 | Run Date: 8/13/2025

NOTES:Known Qs only ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
(1)	(in) (2)	(cfs) (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(ft) (12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(K) (23)	(ft) (24)
1	24	20.16	96.39	98.00	1.61	2.71	7.44	0.86	98.86	1.093	46.578	96.62	98.72	2.00	3.14	6.42	0.64	99.36	1.058	1.075	0.501	0.20	0.13
2	24	17.83	96.62	98.85	2.00	3.14	5.68	0.50	99.35	0.828	60.494	96.92	99.35	2.00	3.14	5.68	0.50	99.85	0.827	0.828	0.501	0.20	0.10
3	24	17.83	96.92	99.45	2.00	3.14	5.68	0.50	99.95	0.828	104.689	97.45	100.32	2.00	3.14	5.68	0.50	100.82	0.827	0.828	0.866	0.20	0.10
4	24	15.12	97.45	100.42	2.00	3.14	4.81	0.36	100.78	0.595	165.001	98.27	101.40	2.00	3.14	4.81	0.36	101.76	0.595	0.595	0.982	0.20	0.07
5	18	11.99	98.77	101.47	1.50	1.77	6.79	0.72	102.19	1.736	49.000	99.26	102.32	1.50	1.77	6.78	0.72	103.04	1.736	1.736	0.851	0.20	0.14
6	18	9.98	99.26	102.46	1.50	1.77	5.65	0.50	102.96	1.203	215.000	101.41	105.05	1.50	1.77	5.65	0.50	105.55	1.203	1.203	2.586	0.20	0.10
7	18	9.98	101.41	105.15	1.50	1.77	5.65	0.50	105.65	1.203	42.160	101.62	105.66	1.50	1.77	5.65	0.50	106.15	1.203	1.203	0.507	0.20	0.10
8	18	4.02	101.62	105.76	1.50	1.77	2.28	0.08	105.84	0.195	276.841	103.00	106.30	1.50	1.77	2.27	0.08	106.38	0.195	0.195	0.540	0.20	0.02
9	18	9.68	98.89	100.09	1.20*	1.52	6.39	0.63	100.72	1.184	41.305	99.10	100.74	1.50	1.77	5.48	0.47	101.20	1.131	1.158	0.478	0.20	0.09
10	18	5.98	99.10	100.83	1.50	1.77	3.38	0.18	101.01	0.432	12.420	99.16	100.88	1.50	1.77	3.38	0.18	101.06	0.432	0.432	0.054	0.20	0.04
11	18	5.98	99.16	100.92	1.50	1.77	3.38	0.18	101.10	0.432	266.433	100.50	101.98	1.48	1.76	3.40	0.18	102.16	0.391	0.411	1.096	0.20	0.04
12	18	3.48	98.77	101.47	1.50	1.77	1.97	0.06	101.53	0.146	143.602	99.49	101.68	1.50	1.77	1.97	0.06	101.74	0.146	0.146	0.210	0.20	0.01

Project File: Phase 3 100-Year.stm | Number of lines: 12 | Run Date: 8/13/2025

Notes: * Normal depth assumed ; c = cir e = ellip b = box

Hydraflow HGL Computation Procedure

General Procedure:

Hydraflow computes the HGL using the Bernoulli energy equation. Manning's equation is used to determine energy losses due to pipe friction. In a standard step, iterative procedure, Hydraflow assumes upstream HGLs until the energy equation balances. If the energy equation cannot balance, supercritical flow exists and critical depth is temporarily assumed at the upstream end. A supercritical flow Profile is then computed using the same procedure in a downstream direction using momentum principles.

Col. 1 The line number being computed. Calculations begin at Line 1 and proceed upstream.

Col. 2 The line size. In the case of non-circular pipes, the line rise is printed above the span.

Col. 3 Total flow rate in the line.

Col. 4 The elevation of the downstream invert.

Col. 5 Elevation of the hydraulic grade line at the downstream end. This is computed as the upstream HGL + Minor loss of this line's downstream line.

Col. 6 The downstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 7 Cross-sectional area of the flow at the downstream end.

Col. 8 The velocity of the flow at the downstream end, (Col. 3 / Col. 7).

Col. 9 Velocity head (Velocity squared / 2g).

Col. 10 The elevation of the energy grade line at the downstream end, HGL + Velocity head, (Col. 5 + Col. 9).

Col. 11 The friction slope at the downstream end (the S or Slope term in Manning's equation).

Col. 12 The line length.

Col. 13 The elevation of the upstream invert.

Col. 14 Elevation of the hydraulic grade line at the upstream end.

Col. 15 The upstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 16 Cross-sectional area of the flow at the upstream end.

Col. 17 The velocity of the flow at the upstream end, (Col. 3 / Col. 16).

Col. 18 Velocity head (Velocity squared / 2g).

Col. 19 The elevation of the energy grade line at the upstream end, HGL + Velocity head, (Col. 14 + Col. 18) .

Col. 20 The friction slope at the upstream end (the S or Slope term in Manning's equation).

Col. 21 The average of the downstream and upstream friction slopes.

Col. 22 Energy loss. Average Sf/100 x Line Length (Col. 21/100 x Col. 12). Equals (EGL upstream - EGL downstream) +/- tolerance.

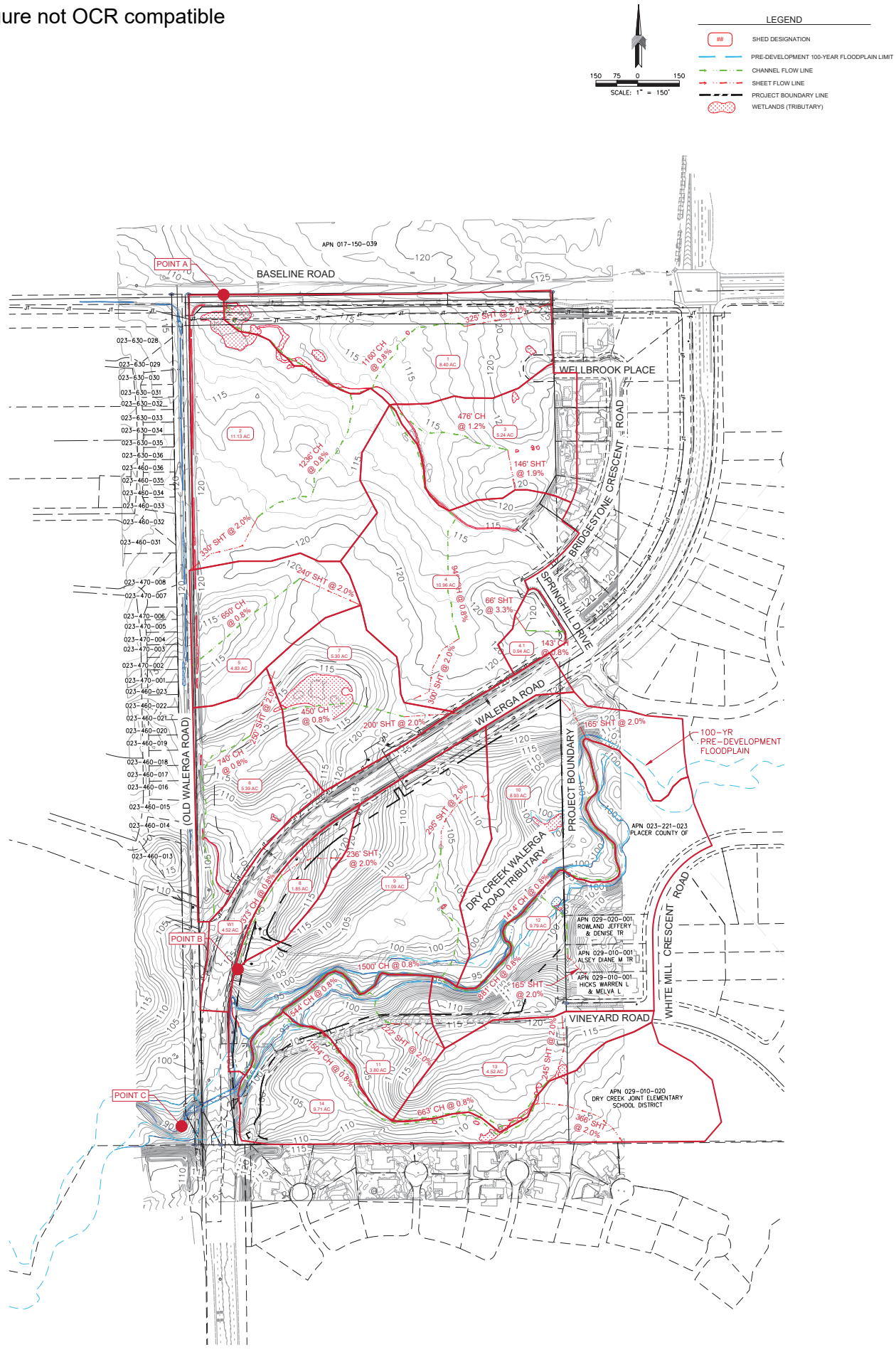
Col. 23 The junction loss coefficient (K).

Col. 24 Minor loss. (Col. 23 x Col. 18). Is added to upstream HGL and used as the starting HGL for the next upstream line(s).

EXHIBIT E

Drainage Maps

*Figure not OCR compatible



ESTIS DRY CREEK - PLACER CREEK RESIDENTIAL

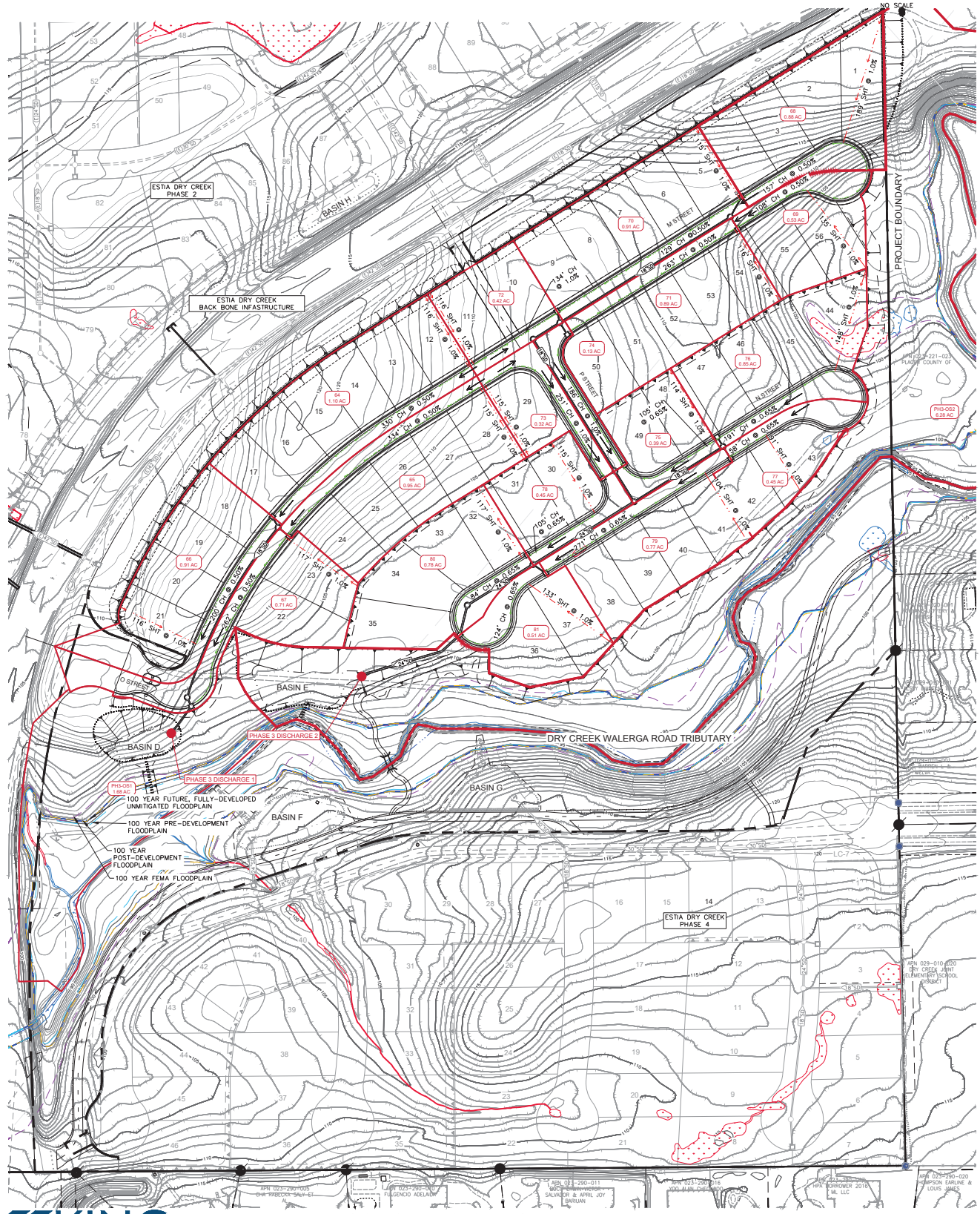
DRAINAGE MAP #1 - PRE-DEVELOPMENT SHED MAP - OVERALL

PLACER COUNTY, CALIFORNIA

JUNE 2026

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*Figure not OCR compatible



KING ENGINEERING
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Telephone: (530) 272-8328
Email: King-Engineering-Inc.com

ESTIS DRY CREEK - PLACER CREEK RESIDENTIAL

DRAINAGE MAP #2 - POST-DEVELOPMENT SHED MAP - PHASE 3

PLACER COUNTY, CALIFORNIA

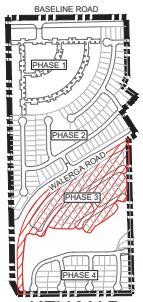
JUNE 2026

ESTIA DRY CREEK - PHASE 3		
FLOW SUMMARY		
ULT DEVELOPMENT		
DRAINAGE INLET, MH OR LID	Q10 cfs	Q100 cfs
TO PHASE 3 DISCHARGE 1		
DI-1	1.72	3.19
DI-2	1.49	2.75
SDMH-1	3.21	5.94
DI-3	2.03	3.75
PT. D	5.24	9.68
TO PHASE 3 DISCHARGE 2		
DI-4	1.38	2.55
DI-5	0.74	1.42
SDMH-3	2.05	3.85
DI-6	2.14	3.96
DI-7	1.42	2.63
SDMH-4	5.10	9.55
DI-9	0.96	1.83
DI-8	0.51	0.95
SDMH-5	6.11	11.46
DI-10	1.32	2.45
DI-11	0.83	1.52
SDMH-7	2.02	3.75
SDMH-8	7.90	14.80
DI-12	0.75	1.39
DI-13	1.27	2.34
SDMH-6	9.37	17.58
DI-15	1.30	2.40
PT. E	10.70	20.12

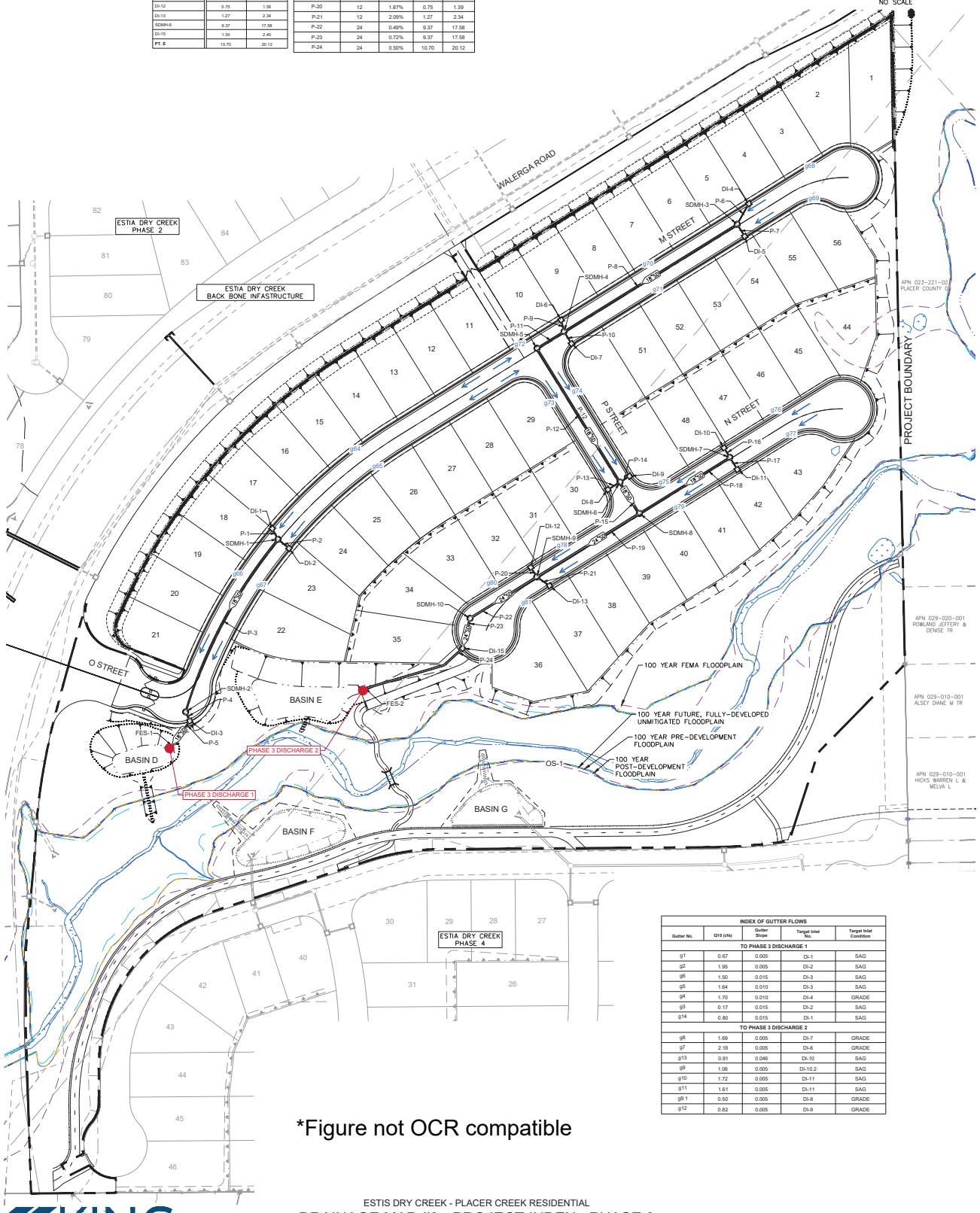
INDEX OF PIPES				
TO PHASE 3 DISCHARGE 1				
Pipe ID	Pipe Size (in)	Slope (%)	Q10 (cfs)	Q100 (cfs)
P-1	15	2.00%	1.72	3.19
P-2	15	2.00%	1.49	2.75
P-3	18	0.50%	3.21	5.94
P-4	18	0.45%	3.21	5.94
P-5	18	0.50%	5.24	9.68
TO PHASE 3 DISCHARGE 2				
P-6	12	1.85%	1.38	2.55
P-7	12	1.90%	0.74	1.42
P-8	18	0.50%	2.05	3.85
P-9	12	2.00%	2.14	3.96
P-10	12	2.00%	1.42	2.63
P-11	18	0.49%	5.10	9.55
P-12	18	1.00%	5.10	9.55
P-13	12	2.00%	0.96	1.83
P-14	12	2.00%	0.51	0.95
P-15	18	0.98%	6.11	11.46
P-16	12	1.86%	1.32	2.45
P-17	12	1.88%	0.83	1.52
P-18	18	0.50%	2.02	3.75
P-19	24	0.50%	7.90	14.80
P-20	12	1.87%	0.75	1.39
P-21	12	2.09%	1.27	2.34
P-22	24	0.49%	9.37	17.58
P-23	24	0.72%	9.37	17.58
P-24	24	0.50%	10.70	20.12

60 30 0 60
SCALE: 1" = 60'

LEGEND
- WETLANDS (TRIBUTARY)
- WETLANDS (AVOIDED)
- PT.# DISCHARGE POINT
- STORM DRAIN: FLARED END SECTION, MANHOLE, DRAIN INLET
- PROPOSED
- EXISTING
- FUTURE
- PROJECT BOUNDARY LINE
- FLOW DIRECTION



KEY MAP
NO SCALE



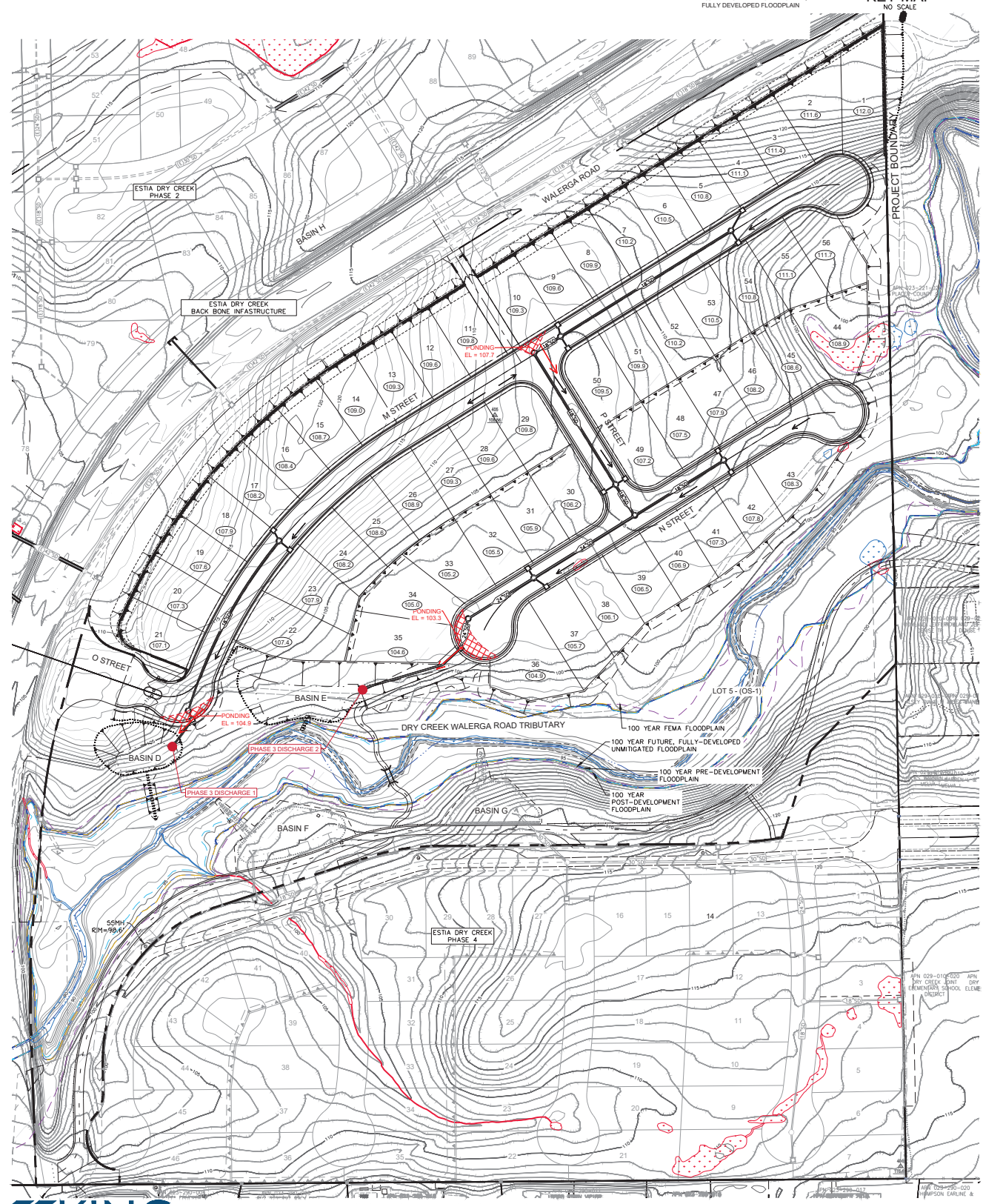
INDEX OF GUTTER FLOWS				
Gutter No.	Q10 (cfs)	Gutter Slope	Target Inlet No.	Target Inlet Condition
TO PHASE 3 DISCHARGE 1				
g1	0.67	0.005	DI-1	SAG
g2	1.95	0.005	DI-2	SAG
g6	1.50	0.015	DI-3	SAG
g5	1.64	0.010	DI-3	SAG
g4	1.70	0.010	DI-4	GRADE
g3	0.17	0.015	DI-2	SAG
g14	0.80	0.015	DI-1	SAG
TO PHASE 3 DISCHARGE 2				
g8	1.69	0.005	DI-7	GRADE
g7	2.18	0.005	DI-6	GRADE
g13	0.91	0.046	DI-10	SAG
g9	1.06	0.005	DI-10.2	SAG
g10	1.72	0.005	DI-11	SAG
g11	1.61	0.005	DI-11	SAG
g9.1	0.50	0.005	DI-8	GRADE
g12	0.82	0.005	DI-9	GRADE

*Figure not OCR compatible

KING ENGINEERING
200 Auburn Folsom Road, Ste. 201
Auburn, California 95603
Telephone: (530) 272-8328
Email: King-Engineering-Inc.com

ESTIS DRY CREEK - PLACER CREEK RESIDENTIAL
DRAINAGE MAP #3 - PROJECT INDEX - PHASE 3
PLACER COUNTY, CALIFORNIA
JUNE 2026

*Figure not OCR compatible



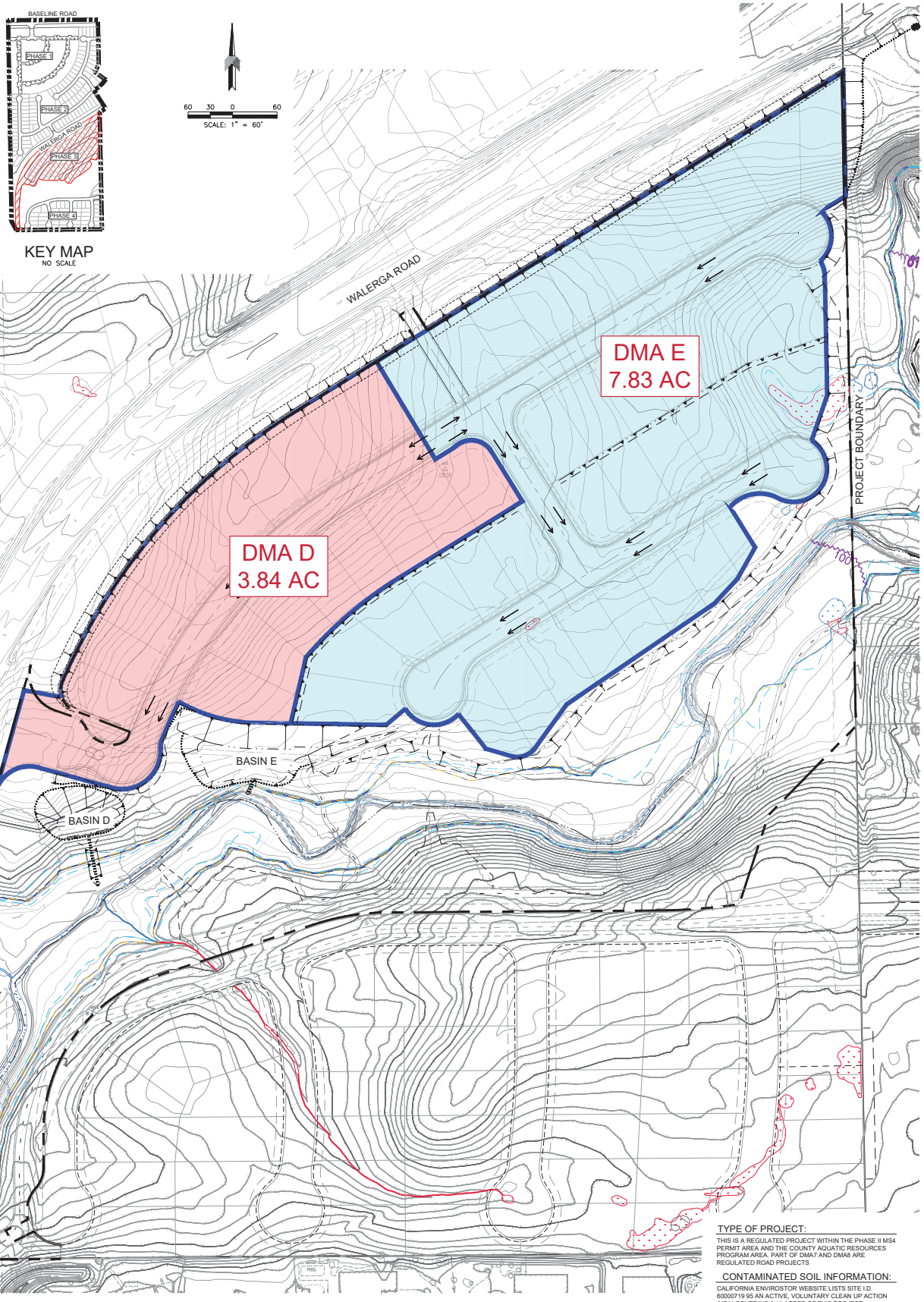
ESTIS DRY CREEK - PLACER CREEK RESIDENTIAL

DRAINAGE MAP #4 - BLOCKED INLET SCENARIO - PHASE 3

PLACER COUNTY, CALIFORNIA

JUNE 2026

KING ENGINEERING
200 Auburn Folsom Road, Ste. 201
Auburn, California 95603
Telephone: (530) 272-8328
Email: King-Engineering-Inc.com



TYPE OF PROJECT:

THIS IS A REGULATED PROJECT WITHIN THE PHASE II MS4 PERMIT AREA AND THE COUNTY AQUATIC RESOURCES PROGRAM AREA. PART OF DMA7 AND DMA8 ARE REGULATED ROAD PROJECTS

CONTAMINATED SOIL INFORMATION:

CALIFORNIA ENVIROSTOR WEBSITE LISTS SITE I.D. 60000719 95 AN ACTIVE, VOLUNTARY CLEAN UP ACTION (VCA) COVERING 0.14 ACRES OF THIS PROJECT

LEGEND

- STORM DRAIN FLARED END SECTION
- STORM DRAIN MANHOLE
- STORM DRAIN INLET
- DMA — DRAINAGE MANAGEMENT AREA
- REVISED BFE

NOTES

1. REFER TO THE DRAINAGE REPORT FOR POLLUTANT REMOVAL EFFICIENCIES EXPECTED FOR GRASS SWALES AND INFILTRATION BASINS.

*Figure not OCR compatible

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Auburn, California 95603
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ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

DRAINAGE MAP #5 - SITE ASSESSMENT AND DRAINAGE MANAGEMENT AREA MAP - PHASE 3

PLACER COUNTY, CALIFORNIA

JUNE 2026

SHEET 5 OF 5

JOB NUMBER 23-25

EXHIBIT F

Post-Construction Storm Water Quality Plan Workbook

Post-Construction
Storm Water Quality Plan
West Placer County

For:

ESTIA DRY CREEK
within MS4 in Placer County, CA

Prepared for:

CHRIS DICKINSON
LAND DEVELOPMENT AND ACQUISITIONS PROJECT MANAGER
HOMES BY TOWNE
11060 WHITE ROCK ROAD, SUITE 150
RANCHO CORDOVA, CA 95670
(916) 782-2424

Prepared by:

King Engineering, Inc.
200 Auburn Folsom Road
Auburn, CA 95603
(530) 272-8328

Preparation Date:_____05/05/2026_____

Placer County Approval Date:_____

Revision Date December 11 2024

Section 1 General Project Information

The undersigned owner of the subject property, is responsible for the implementation of the provisions of this Storm Water Quality Plan (SWQP), including ongoing operations and maintenance (O&M), consistent with the requirements of the West Placer Storm Water Quality Design Manual and the State of California Phase II Small MS4 General Permit (Order No: 2013-0001-DWQ). If the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement the SWQP.

For all Regulated Projects (As identified in Form 1-2 below), the undersigned owner hereby grants access to all representatives of the Jurisdictional Agency for the sole purpose of performing O&M inspections of the installed treatment system(s) and hydromodification control(s) if any.

A copy of the final signed and fully approved SWQP shall be available on the subject site for the duration of construction and then stored with the project approval documentation and improvement plans in perpetuity.

Form 1-1 Project Identification and Owner's Certification

Project Site Address:	BASELINE ROAD	
Owner Name:	CHRIS DICKINSON	
Title	LAND DEVELOPMENT AND ACQUISITIONS PROJECT MANAGER	
Company	HOMES BY TOWNE	
Address	11060 WHITE ROCK ROAD, SUITE 150	
City, State, Zip Code	RANCHO CORDOVA, CA 95670	
Email	cdickinson@hbtsac.com	
Telephone #	(916) 782-2424	
Signature	Date	
Engineer:*	Curtis King	PE Stamp* (Required for all Regulated Projects)
Title	Principal Engineer	
Company	King Engineering, Inc.	
Address	200 Auburn Folsom Road	
City, State, Zip Code	Auburn, CA 95603	
Email	Curtis.King@King-Engineering-Inc.com	
Telephone #	(530) 272-8328	
Signature		
Brief Description of Project: (Attach additional sheets as necessary)	Phases 1-4 and Backbone Roads	

* Not required for Small Projects as determined in Form 1-2 below. Project owners are responsible for ensuring that all storm water facilities are designed by an appropriately licensed and qualified professional.

Form 1-2 Project Category	
Development Category (Select all that apply)	
[1]**Small Project** – All projects, except LUPs, that create and/or replace between 2,500-5,000 ft^2 of impervious surface or detached single family homes that create and/or replace 2,500 ft^2 or more of impervious surface and are not part of a larger plan of development.	
[2]Enter total new and/or replaced impervious surface (ft^2)	
[3]**Regulated Project** – All projects that create and/or replace 5,000 ft^2 or more of impervious surface.	
[4]**Regulated Redevelopment Project** with equal to, or greater than 50 percent increase in impervious area	
[5]**Regulated Redevelopment Project** with less than 50 percent increase in impervious area	
[6]Enter total pre-project impervious surface (ft^2)	
[7]Enter total new and/or replaced impervious surface (ft^2)	
[8]**Regulated Road or linear underground/overhead project (LUP)** creating 5,000 ft^2 or more of newly constructed contiguous impervious surface.	
[9]Enter total new and/or replaced impervious surface (ft^2)	
[10]**Regulated Hydromodification Management Project** – Regulated projects that create and/or replace 1 acre or more of impervious surface. A project that does not increase impervious surface area over the pre-project condition is not a hydromodification management project.	YES
[11]Enter total new and/or replaced impervious surface (ft^2)	2255580.36

Section 3 Regulated Projects

Section 3 forms are to be completed for all Regulated Projects.

Form 3-1 Site Location and Hydrologic Features

Site coordinates: *Take GPS measurement at approximate center of site*	[1] Latitude	[2] Longitude	[3] Elevation (ft. above sea level)	[4] 85th Percentile, 24 Hour Design Storm Depth (in):
	38.75051	-121.36295	110	0.9

[5] Receiving waters *Name of stream, lake or other downstream waterbody to which the site runoff eventually drains*	Dry Creek and Curry Creek
[6] 303(d) listed pollutants of concern *Refer to State Water Resources Control Board website* www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/#impaired	
[7] Is Project going to be phased? *If yes, ensure that the SWQP evaluates each phase with distinct DMAs, requiring LID BMPs to address runoff at time of completion.*	Yes

[8] *Use this form to show a conceptual schematic depicting DMAs and conveyance features connecting DMAs to the site outlet(s). An example is provided below that can be modified for the proposed project or a drawing clearly showing DMAs and flow routing may be attached.*

Example only
Modify for project specific SWQP
Use separate sheet if necessary

Please Refer to Site Assessment and Drainage Management Area Drainage Map

Form 3-2 Site Assessment and Layout Documentation

	Has this Item been considered in the Site Layout and depicted in the Site Plan?	
	Yes	**Not Applicable (Include brief explanation)**
Define the development envelope and protected areas, identifying areas that are most suitable for development and areas to be landscaped, or left undisturbed, and used for infiltration.	X	Reference Site Plan for infiltration basins and landscaped spaces to provide
Concentrate development on portions of the site with less permeable soils and preserve areas that can promote infiltration.		N/A
Limit overall impervious coverage of the site with paving and roofs.		N/A
Set back development from creeks, wetlands, and riparian habitats.	X	Reference Site Plan for setbacks and protected regions
To the extent practicable, avoid development and LID siting within floodplains.	X	Reference Site Plan for infiltration basins and landscaped spaces to provide
Preserve significant trees.	X	Reference Site Plan for protected trees
Conform site layout along natural landforms.	X	Site layout conforms to existing tributary flow paths and flood limits
Avoid excessive grading and disturbance of vegetation and soils.		N/A
Replicate the site's natural drainage patterns.	X	Site layout conforms to existing tributary flow paths and flood limits
Detain and retain runoff throughout the site.	X	Infiltration basins are incorporated to capture runoff throughout the site

Attach a Site Plan that incorporates the applicable considerations above. Ensure that the following items are included in the Site Plan:

Site Boundary
Soil types and areal extents, test pit and infiltration test locations
Topographic data with 1 ft. contours
Existing natural hydrologic features (depressions, watercourses, wetlands, riparian corridors)
Floodplain boundaries
Environmentally sensitive areas and areas to be preserved
Proposed locations and footprints of improvements creating new, or replaced, impervious surfaces
Potential pollutant sources and locations
Entire site divided into separate DMAs with unique identifiers
Existing and proposed site drainage network with flow directions and site run-on and discharge locations
Proposed design features and surface treatments used to minimize imperviousness and reduce runoff
Proposed locations and footprints of treatment and hydromodification management facilities
Design features for managing authorized non-stormwater discharges
Areas of soil and/or groundwater contamination
Existing utilities and easements
Maintenance areas

Form 3-3 Source Control Measures			
Potential Pollutant Generating Activity or Source	Check One		Describe the source control measures to be implemented for each potential pollutant generating activity or source present on the project as listed in Appendix C and in the CASQA Fact Sheets. Include any special features, materials, or methods of construction that will be used.
	Present	Not Applicable	
Accidental spills or leaks	☑	☐	measures per SC-11 fact sheet
Interior floor drains	☐	☑	
Parking/storage areas and maintenance	☐	☑	measure per SC-21, SC-22, SC-32 and SC-43 fact sheets
Indoor and structural pest control	☑	☐	measures done mainly by licensed pest control companies per SC-34, SC-61, SC-60 fact sheets
Pools, spas, ponds, decorative fountains, and other water features	☐	☑	measures per SC-72 fact sheet
Landscape/outdoor pesticide use	☑	☐	measures per SC-41, SC-60, SC-73 and SC-75 fact sheets
Restaurants, grocery stores, and other food service operations	☐	☑	
Refuse areas	☑	☐	homewoners to take measures per SC-34, SC-60
Industrial Processes	☐	☑	
Outdoor storage of equipment or materials	☐	☑	measures per SC-32, SC-41, SC-43 fact sheets
Vehicle and equipment cleaning	☑	☐	measures per SC-21 fact sheet
Vehicle and equipment repair and maintenance	☑	☐	measures per SC-22, SC-32 fact sheets
Fuel dispensing areas	☐	☑	
Loading docks	☐	☑	
Fire sprinkler test water	☐	☑	
Drain or wash water from boiler drain lines, condensate drain lines, rooftop equipment, drainage sumps, and other sources	☐	☑	
Unauthorized non-storm water discharges	☑	☐	measures per SC-10 fact sheet
Building and grounds maintenance	☑	☐	measures per SC-4, SC-43 fact sheets

The source control measures identified in this table shall be designed consistent with recommendations from the CASQA Stormwater BMP Handbook for New Development and Redevelopment[1], or from another equivalent manual.

[1] California Stormwater BMP Handbook New Development and Redevelopment. California Stormwater Quality Association (CASQA). January 2003.

Form 3-4 Runoff Reduction Calculator for Site Design Measures on Regulated Projects

[1]DMA ID No.			1		2		3		4	
Site Design Measure	**Runoff Reduction Parameters**			**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**
[2] Adjacent/On-Site Stream Setbacks and Buffers	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[3] Soil Quality Improvement and Maintenance	A_{pond} (ft^2)	*ponding area*		0		0		0		0
	D_{pond} (ft)	*ponding depth*								
	A_{sa} (ft^2)	*soil amendment area*								
	D_{sa} (ft)	*depth of amended soil*								
	n	*porosity of amended soil*								
[4] Tree Planting and Preservation	n_e	*number of new evergreen trees*	26	966	24	874	51	1817	0	0
	n_d	*number of new deciduous trees*	79		71		145		0	
	A_{tc} (ft^2)	*canopy area of existing trees to remain on the property*	0		0		0		0	
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[5] Rooftop and Impervious Area Disconnection	A_{imp} (ft^2)	*impervious drainage area*	125475	8470	113525	7663	92400	6237	0	0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[6] Porous Pavement	A_{res} (ft^2)	*area of gravel storage layer*		0		0		0		0
	D_{res} (ft)	*depth of gravel storage layer*								
	n_{agg}	*porosity of aggregate*								
	C	*efficiency factor*								
[7] Vegetated Swales	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[8] Rain Barrels and Cisterns	N	*number of rain barrels and/or cisterns*		0		0		0		0
	V_a (ft^3)	*volume of each rain barrel and/or cistern*								
[9] Do all Site Design Measures meet the design requirements outlined in the Fact Sheets?					**Yes**		**No**			
[10] Total Volume Reduction (ft^3)			**9435**		**8537**		**8054**		**0**	
[11] Effective Treated Impervious Area (ft^2)			**139781**		**126469**		**119323**		**0**	

Form 3-4 Runoff Reduction Calculator for Site Design Measures on Regulated Projects

DMA ID No.	5		6		7		8		9		10		11		12	
Runoff Reduction Parameters		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**
impervious drainage area		0		0		0		0		0		0		0		0
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
ponding area		0		0		0		0		0		0		0		0
ponding depth																
soil amendment area																
depth of amended soil																
porosity of amended soil																
number of new evergreen trees	5	177	9	324	5	177	7	258		0		0		0		0
number of new deciduous trees	14		26		14		21									
canopy area of existing trees to remain on the property	0		0		0		0									
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
impervious drainage area	11400	770	20400	1377	11400	770	16800	1134		0		0		0		0
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
area of gravel storage layer		0		0		0		0		0		0		0		0
depth of gravel storage layer																
porosity of aggregate																
efficiency factor																
impervious drainage area		0		0		0		0		0		0		0		0
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
number of rain barrels and/or cisterns		0		0		0		0		0		0		0		0
volume of each rain barrel and/or cistern																
Total Volume Reduction	**946**		**1701**		**946**		**1392**		**0**		**0**		**0**		**0**	
Effective Treated Impervious Area	**14016**		**25196**		**14016**		**20615**		**0**		**0**		**0**		**0**	

Form 3-5 Computation of Water Quality Design Criteria for Stormwater Treatment and Baseline Hydromodification Measures

DMA ID No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
[1]Total impervious area requiring treatment	261360	261360	1027580.4		117089	239057	152155	196978														
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	121579	134891	908257	0	103073	213861	138139	176363	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)	174240	174240	440391.6		50181	97095	65209	84419														
[4] Composite DMA Runoff Coefficient (C_w) *Enter area weighted composite runoff coefficient representing entire DMA*	0.55	0.55	0.56		0.55	0.55	0.55	0.55														
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	8813	9210	40909	0	4566	9264	6058	7769	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.753	0.787	3.496	0.000	0.390	0.792	0.518	0.664	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[4] Runoff coefficient values for various materials are as follows: roofs 0.95, asphalt/concrete pavement 0.90, gravel pavement 0.80, managed turf 0.25, disturbed soil 0.25.

[5, 6] Values will equal zero if all impervious area has been treated by Site Design Measures.

DMA ID No.	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
[1]Total impervious area requiring treatment																						
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)																						
[4] Composite DMA Runoff Coefficient (Rc) *Enter area weighted composite runoff coefficient representing entire DMA*																						
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[4] Runoff coefficient values are as follows: roofs 0.95, asphalt/concrete pavement 0.90, gravel pavement 0.80, turf 0.25, disturbed soil 0.25.

[5, 6] Values will equal zero if all impervious area has been treated by Site Design Measures.

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**1/A**	**1/B**	**3/C**	
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	8813	9210	40909	
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5	5	
[4]BMP Surface Area (ft^2) *Top of BMP*	3223	7200	9805	
[5]Infiltration rate of underlying soils (in/hr)	0.12	0.12	0.12	
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	0.50	0.50	0.50	
[7]Ponding Depth (ft) *d_{BMP} = Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.5	0.5	0.5	-
[8]Infiltrating surface area, *SA_{BMP}* (ft^2) *Bottom of BMP*	3223	7200	9805	
[9]Planting media depth, *d_{media}* (ft)	1.5	1.5	1.5	
[10]Planting media porosity	0.55	0.55	0.55	
[11]Gravel depth, *d_{media}* (ft) *Only included in certain BMP types*	4.0	1.0	7.5	
[12]Gravel porosity	0.40	0.40	0.40	
[13]Retention Volume (ft^3) *$V_{retention}$ = Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	9,411.2	12,384.0	42,358.1	-
[14]Untreated Volume (ft^3) *$V_{untreated}$ = Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15] Treated Flow Rate (ft^3/s) *$Q_{treated}$ = 1/43,200*(Item 3 * Item 4)*	0.3730	0.8333	1.1349	0.0000
[16]Total Treated Flow Rate for Project (ft^3/s) *Q_{total} = Sum of Item 15 for all DMAs*	4.3276			
[17]Is WQV for each DMA treated on-site? *Check Yes if Item 14 equals 0 for all DMAs*	**Yes**	**X**	**No**	

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**4/D**	**5/E**	**6/F**	**7/G**
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	4566	9264	6058	7769
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5	5	5
[4]BMP Surface Area (ft^2) *Top of BMP*	2390	5721	5047	4005
[5]Infiltration rate of underlying soils (in/hr)	0.12	0.12	0.12	0.12
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	0.50	0.50	0.50	0.50
[7]Ponding Depth (ft) d_{BMP} *= Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.5	0.5	0.5	0.5
[8]Infiltrating surface area, SA_{BMP} (ft^2) *Bottom of BMP*	2390	5721	5047	4005
[9]Planting media depth, d_{media} (ft)	1.5	1.5	1.5	1.5
[10]Planting media porosity	0.55	0.55	0.55	0.55
[11]Gravel depth, d_{media} (ft) *Only included in certain BMP types*	2.0	1.0	1.0	2.0
[12]Gravel porosity	0.40	0.40	0.40	0.40
[13]Retention Volume (ft^3) $V_{retention}$ *= Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	5,067.2	9,839.7	8,681.0	8,490.0
[14]Untreated Volume (ft^3) $V_{untreated}$ *= Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15] Treated Flow Rate (ft^3/s) $Q_{treated}$ *= 1/43,200*(Item 3 * Item 4)*	0.2766	0.6621	0.5842	0.4635

Section 4
Regulated Hydromodification Management Projects

Form 4-1 Peak Runoff Response Time

(Complete Section 4 forms for Regulated Hydromodification Projects only)

Determine total runoff response time for pre- and post-construction conditions at each project outlet.

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	1	**2**	**3**	**4**	**1**	**2**	**3**	**4**
[1]Length of longest overland flow path *Not to exceed 100 ft*	100	100	100	100	100	100	100	100
[2]Slope of overland flow path (ft/ft)	0.0200	0.0200	0.0200	0.0200	0.0100	0.0100	0.0100	0.0100
[3]Manning's roughness coefficient for overland flow surface *See Table 5-5 of the Placer County SWMM*	0.0350	0.0350	0.0350	0.0350	0.0200	0.0200	0.0200	0.0200
[4]Overland flow response time (min) (0.355*(Item 1*Item 3)$^{0.6}$)/(Item 2$^{0.3}$)	2.43	2.43	2.43	2.43	2.14	2.14	2.14	2.14
[5]Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	D	D	D	D	D	D	D
[6]Current Land Cover Type(s) *Select from categories shown in Table 5-3 of the SWMM*	OS	OS	OS	OS	RES	RES	RES	RES
[7]Pervious Area Condition: *Based on the extent of vegetated cover Good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating*	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
[8]Infiltration Rate (in/hr) *Refer to Table 5-3 of the SWMM using Items 3, 4, and 5 above or obtain site specific field measurements (See Section 3.1.1)*	0.09	0.09	0.09	0.09	0.12	0.12	0.12	0.12
[9]Length of collector flow (ft)	600	600	1,500	100	400	100	500	600
[10]Cross-sectional area of collector flow facility (ft^2)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
[11]Wetted perimeter of collector flow facility (ft)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
[12]Manning's roughness of collector flow facility	0.060	0.060	0.060	0.060	0.015	0.015	0.015	0.015
[13]Slope of collector flow facility (ft/ft)	0.0250	0.0250	0.0250	0.0250	0.0050	0.0050	0.0050	0.0050
[14]Channel flow velocity (ft/sec) *V = (1.49 / Item 12) * (Item 10/Item 11) ^0.67 * (Item 13) ^0.5*	3.00	3.00	3.00	3.00	5.36	5.36	5.36	5.36
[15]Collector flow facility response time (min) *T_c = Item 9 /(Item 14 * 60)*	3.34	3.34	8.34	0.56	1.24	0.31	1.55	1.87
[16]Total runoff response time or T_t (min) *T_t = Item 4 + Item 15*	5.77	5.77	10.78	2.99	3.39	2.45	3.70	4.01

Section 4
Regulated Hydromodification Management Projects

Form 4-1 Peak Runoff Response Time

Determine total runoff response time for pre- and post-construction conditions at each project outlet.

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	5	**6**	**7**	**8**	**5**	**6**	**7**	**8**
[1]Length of longest overland flow path *Not to exceed 100 ft*	100	100	100		100	100	100	
[2]Slope of overland flow path (ft/ft)	0.0200	0.0200	0.0200		0.0100	0.0100	0.0100	
[3]Manning's roughness coefficient for overland flow surface *See Table 5-5 of the Placer County SWMM*	0.0350	0.0350	0.0350		0.0200	0.0200	0.0200	
[4]Overland flow response time (min) (0.336*(Item 1*Item 3)$^{0.6}$)/(Item 2$^{0.3}$)	2.43	2.43	2.43	0.00	2.14	2.14	2.14	0.00
[5]Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	D	D		D	D	D	
[6]Current Land Cover Type(s) *Select from categories shown in Table 5-3 of the SWMM*	OS	OS	OS		RES	RES	RES	
[7]Pervious Area Condition: *Based on the extent of vegetated cover Good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating*	GOOD	GOOD	GOOD		GOOD	GOOD	GOOD	
[8]Infiltration Rate (in/hr) *Refer to Table 5-3 of the SWMM using Items 3, 4, and 5 above or obtain site specific field measurements (See Section 3.1.1)*	0.09	0.09	0.09		0.12	0.12	0.12	
[9]Length of collector flow (ft)	1,000	500	490		1,000	1,000	1,000	
[10]Cross-sectional area of collector flow facility (ft^2)	2.00	2.00	2.00		2.00	2.00	2.00	
[11]Wetted perimeter of collector flow facility (ft)	3.00	3.00	3.00		3.00	3.00	3.00	
[12]Manning's roughness of collector flow facility	0.060	0.060	0.060		0.015	0.015	0.015	
[13]Slope of collector flow facility (ft/ft)	0.0250	0.0250	0.0250		0.0050	0.0050	0.0050	
[14]Channel flow velocity (ft/sec) *V = (1.49 / Item 12) * (Item 10/Item 11)^0.67 * (Item 13)^0.5*	3.00	3.00	3.00	0.00	5.36	5.36	5.36	0.00
[15]Collector flow facility response time (min) T_c *= Item 9 /(Item 14 * 60)*	5.56	2.78	2.73	0.00	3.11	3.11	3.11	0.00
[16]Total runoff response time or T_t (min) T_t *= Item 4 + Item 15*	8.00	5.22	5.16	0.00	5.25	5.25	5.25	0.00

Form 4-2 Hydromodification Target for Peak Runoff								
Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	1	2	3	4	1	2	3	4
[1] Drainage Area (ft^2) *Sum of all outlet level DMAs should equal total project area.*	435,600	435,600	1,467,972	167,270	435,600	435,600	1,467,972	167,270
[2] Impervious Area (ft^2) *Sum of all outlet level DMAs should equal total project impervious area.*	0	0	0	0	261,360	261,360	1,027,580	117,089
[3] Rainfall depth for 2yr storm with duration equal to response time (in) *See Placer County SWMM Table 5-A-1 for elevation of site and duration equal to response time*	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
[4] Unit peak runoff (cfs/acre) *q = 60/Form 4-1 Item 16 * Item 3*	2.39	2.39	1.28	4.61	4.08	5.63	3.73	3.44
[5] Infiltration factor (cfs/acre) *F_i = Form 4-1 Item 8 * (1 + 1 /(1.3 + 0.0005 * Form 3-1 Item 3))*	0.16	0.16	0.16	0.16	0.21	0.21	0.21	0.21
[6] Peak runoff from DMAs (cfs) *Q_p = Item 1 * Item 4 – Item 5 * (Item 1 - Item 2)*	22.53	22.53	38.20	17.26	40.26	55.88	124.72	13.09
[7] Total Pre-Project Peak Runof (ft^3/s) *Q_{total} = Sum of Item 6 for all Pre-construction DMAs*	141.67							
[8] Is the total post-project peak runoff equal to or less than the total pre-project peak runoff? *Yes, if Item 7 is greater than or equal to the sum of the Total Treated Flow Rates from Form 3-6 Item 16 and 3-7 Item 14.*	**YES**							

Form 4-2 Hydromodification Target for Peak Runoff								
Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	5	6	7	8	5	6	7	8
[1] Drainage Area (ft^2) *Sum of all outlet level DMAs should equal total project area.*	336,153	217,364	281,398		336,153	217,364	281,398	
[2] Impervious Area (ft^2) *Sum of all outlet level DMAs should equal total project impervious area.*	0	0	0		239,057	152,155	196,978	
[3] Rainfall depth for 2yr storm with duration equal to response time (in) *See Placer County SWMM Table 5-A-1 for elevation of site and duration equal to response time*	0.23	0.23	0.23		0.23	0.23	0.23	
[4] Unit peak runoff (cfs/acre) *q = 60/Form 4-1 Item 16 * Item 3*	1.73	2.65	2.67	-	2.63	2.63	2.63	-
[5] Infiltration factor (cfs/acre) *F_i = Form 4-1 Item 8 * (1 + 1 /(1.3 + 0.0005 * Form 3-1 Item 3))*	0.16	0.16	0.16	-	0.21	0.21	0.21	-
[6] Peak runoff from DMAs (cfs) *Q_p = Item 1 * Item 4 – Item 5 * (Item 1 - Item 2)*	12.21	12.53	16.40	-	19.98	12.91	16.71	-

Form 4-3 Detention Volumes for Hydromodification Management

	Post-construction DMAs to Project Outlet			
	1	**2**	**3**	**4**
[1] Land cover and hydrologic condition *See NRCD TR-55 Manual Table 2-2 for types*	RES	RES	RES	RES
[2] Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	D	D	D
[3] Drainage Area (A) (ft^2)	435,600	435,600	1,467,972	167,270
[4] Curve Number (CN) *Use Items 1 and 2 to select curve number from NRCS TR-55 Manual Table 2-2*	92	92	92	92
[5] Post-development soil storage capacity, S (in): *S = (1000 / Item 4) – 10*	0.9	0.9	0.9	0.9
[6] Precipitation for 2-yr, 24-hr storm (in) *See Placer County SWMM Table 5-A-1 for elevation of site and 24-hr duration depths*	1.90	1.90	1.90	1.90
[7] Post-developed runoff volume for 2-yr – 24-hour storm, V_{runoff} (ft^3): *V_{runoff} = Item 3 * (1 / 12) * [(Item 6 – 0.2 * Item 5)^2 / (Item 6 + 0.8 * Item 5)]*	41,666	41,666	140,416	16,000
[8] Attenuation Factor, $q_{out/in}$ (ratio of target outflow rate to peak inflow rate): *$q_{out/in}$ = Form 4-2 Item 6 Pre-Construction / Form 4-2 Item 6 Post-Construction*	0.56	0.40	0.31	1.32
[9] Equalization Factor, Vs/Vr (ratio of storage capacity to runoff volume) *Vs/Vr obtained using Item 8 and nomograph in Figure 6-1 of NRCS TR-55 Manual for Rainfall Type IA*	0.14	0.14	0.14	0.14
[10] Runoff detention capacity to achieve hydromodification management criteria (ft^3) *$D_{hydromod}$ = Item 7 * Item 9*	5833	5833	19658	2240
[11] Site Design Measure (SDM) Volume (ft^3): *Sum of Item 10 in Form 3-4 for all SDMs in this DMA.*				
[12] Bioretention Volume (ft3): *Sum of Item 13 in Form 3-6 for all bioretention measures in this DMA.*	9411	12384	42358	5067
[13] Flow-Through Detention Volume (ft3): *Sum of Item 10 in Form 3-7 for all flow-through facilities in this DMA.*				
[14] Supplemental Detention Volume (ft^3)[a]:				
[15] Combined Detention Volume in this DMA (ft^3): *Sum of Items 11 through 14*	9,411	12,384	42,358	5,067
[16] Is detention capacity to achieve hydromodification management criteria achieved at all project outlets? *Yes, if Item 10 is less than or equal to Item 15 for each DMA. If not provide additional storage capacity with appropriate flow controls at the discharge.*	**Yes**	**X**	**No**	

Form 4-3 Detention Volumes for Hydromodification Management

	Post-construction DMAs to Project Outlet			
	5	**6**	**7**	**8**
[1] Land cover and hydrologic condition *See NRCD TR-55 Manual Table 2-2 for types*	RES	RES	RES	
[2] Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	D	D	-
[3] Drainage Area (A) (ft^2)	336,153	217,364	281,398	-
[4] Curve Number (CN) *Use Items 1 and 2 to select curve number from NRCS TR-55 Manual Table 2-2*	92	92	92	
[5] Post-development soil storage capacity, S (in): *S = (1000 / Item 4) – 10*	0.9	0.9	0.9	#DIV/0!
[6] Precipitation for 2-yr, 24-hr storm (in) *See Placer County SWMM Table 5-A-1 for elevation of site and 24-hr duration depths*	1.90	1.90	1.90	
[7] Post-developed runoff volume for 2-yr – 24-hour storm, V_{runoff} (ft^3): *V_{runoff} = Item 3 * (1 / 12) * [(Item 6 – 0.2 * Item 5)^2 / (Item 6 + 0.8 * Item 5)]*	32,154	20,792	26,916	#DIV/0!
[8] Attenuation Factor, $q_{out/in}$ (ratio of target outflow rate to peak inflow rate): *$q_{out/in}$ = Form 4-2 Item 6 Pre-Construction / Form 4-2 Item 6 Post-Construction*	0.61	0.97	0.98	#DIV/0!
[9] Equalization Factor, Vs/Vr (ratio of storage capacity to runoff volume) *Vs/Vr obtained using Item 8 and nomograph in Figure 6-1 of NRCS TR-55 Manual for Rainfall Type IA*	0.14	0.14	0.14	
[10] Runoff detention capacity to achieve hydromodification management criteria (ft^3) *$D_{hydromod}$ = Item 7 * Item 9*	4502	2911	3768	#DIV/0!
[11] Site Design Measure (SDM) Volume (ft^3): *Sum of Item 10 in Form 3-4 for all SDMs in this DMA.*				
[12] Bioretention Volume (ft3): *Sum of Item 12 in Form 3-8 for all bioretention measures in this DMA.*	9840	8681	8490	
[13] Flow-Through Detention Volume (ft3): *Sum of Item 10 in Form 3-7 for all flow-through facilities in this DMA.*				
[14] Supplemental Detention Volume (ft^3):				
[15] Combined Detention Volume in this DMA (ft^3): *Sum of Items 11 through 14*	9,840	8,681	8,490	-

Form 4-4 Trash Controls

Type of Trash Control Measure Implemented	Check One		Describe relevant information about each trash control measure. Include number present, size of drainage area to each measure, any special features, materials, or methods of construction that will be used.
	Present	Not Applicable	
Full Capture System	☐	☑	
Multi-Benefit Trash Treatment System: Bioretention	☑	☐	
Multi-Benefit Trash Treatment System: Capture and Use Systems	☐	☑	
Multi-Benefit Trash Treatment System: Detention Basin	☐	☑	
Multi-Benefit Trash Treatment System: Infiltration Trench or Basin	☐	☑	
Multi-Benefit Trash Treatment System: Media Filter	☐	☑	

Form 5-1 BMP Inspection and Maintenance		
BMP	**Inspection Point and Frequency**	**Maintenance Activity Required**
Infiltration Basins	Inlet/Outlet	Repair Erosion
	Entire Basin	Remove Debris and Trash as needed
	Overflow structure	Remove debris to unclog

Form 6-1 Post-Construction Stormwater BMPs

Following is a summary of all BMPs included in the Project design. This checklist must be included on the cover sheet of the Improvement Plans for all Regulated Projects.

BMP		Plan Sheet Number(s)
Structural Source Controls (list BMPs)		
Site Design Measures	Stream Setbacks and Buffers	
	Soil Quality Improvement and Maintenance	
	Tree Planting and Preservation	
	Rooftop and Impervious Area Disconnection	
	Porous Pavement	
	Vegetated Swales	
	Rain Barrels and Cisterns	
Stormwater Treatment and Baseline Hydromodification Measures	Bioretention with Infiltration	
	Flow-Through Planters, Tree Box Filters and Media Filters	
Hydromodification Management Measures	Supplemental Detention	
Trash Control Measures	Full Capture System	
	Multi-Benefit Treatment System: Bioretention	
	Multi-Benefit Treatment System: Capture and Use Systems	
	Multi-Benefit Treatment System: Detention Basin	
	Multi-Benefit Treatment System: Infiltration Trench or Basin	
	Multi-Benefit Treatment System: Media Filter	

EXHIBIT G

HEC-RAS Exhibit

ESTIA DRY CREEK - PHASE 1

POST-DEVELOPED FLOODPLAIN MAP (MITIGATED AND UNMITIGATED)

PLACER COUNTY, CALIFORNIA

MAY 2026

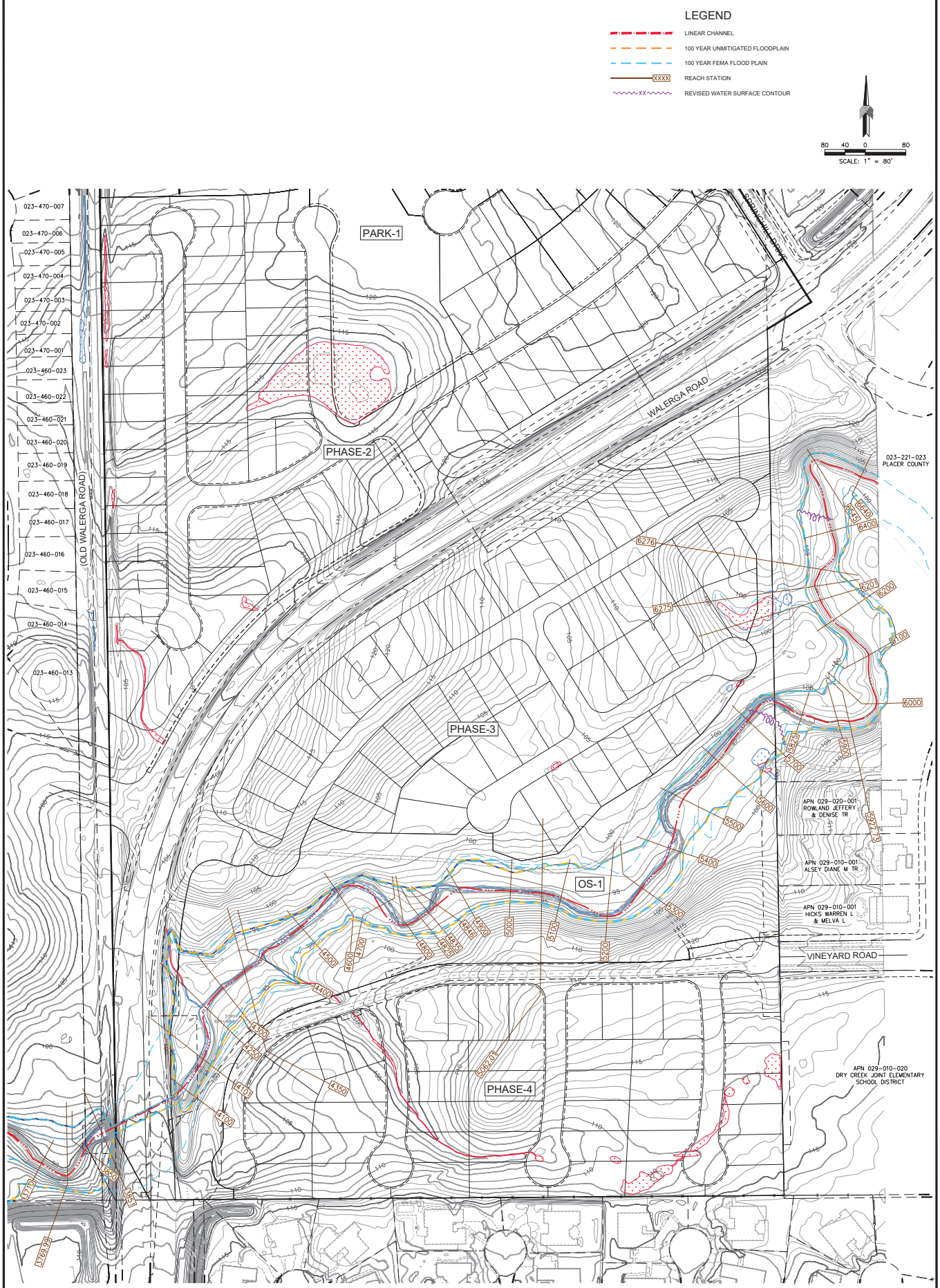
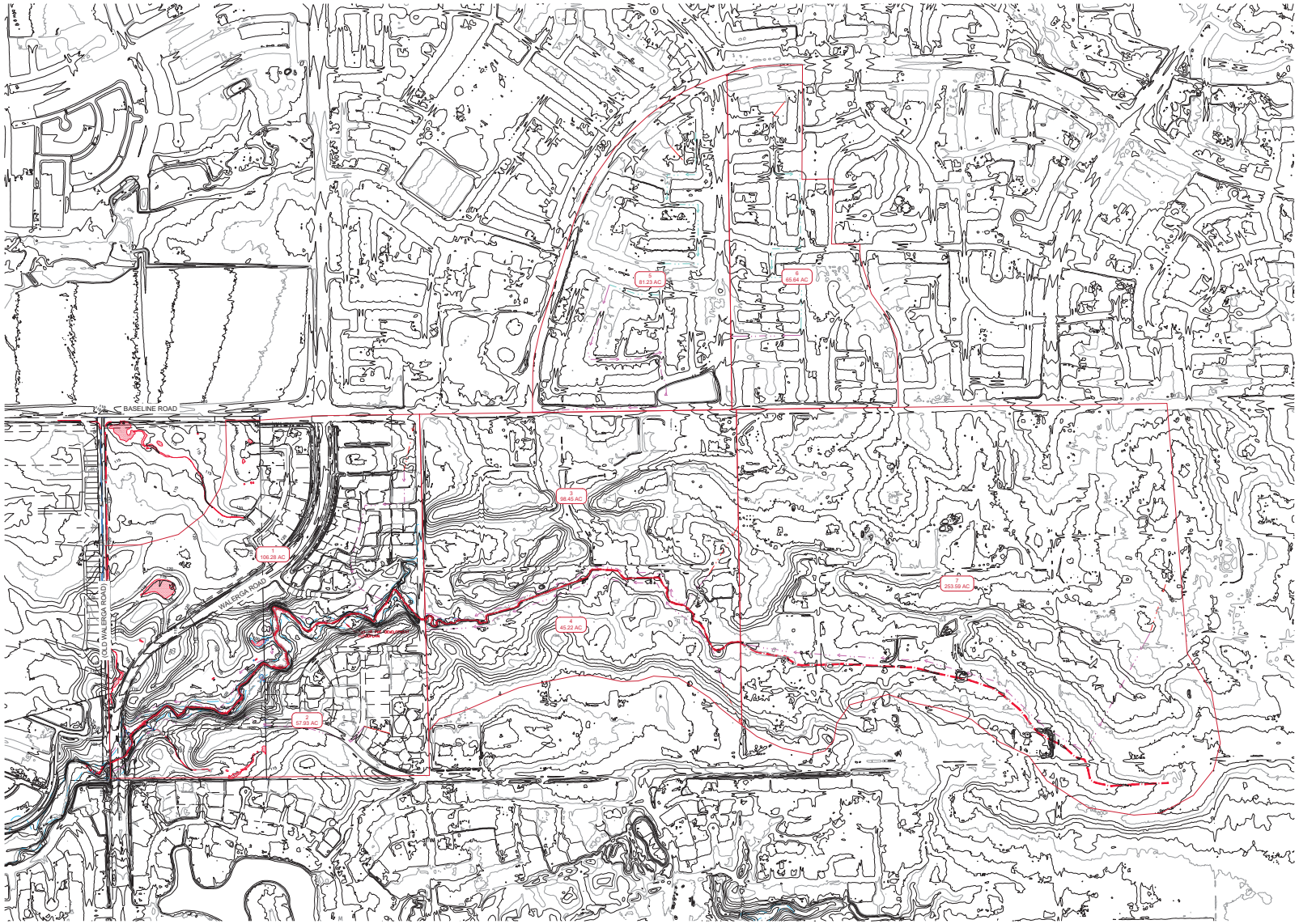


*Figure not OCR compatible

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EXHIBIT H

HEC-HMS Existing and Proposed Shed Map Exhibits



LEGEND

- ## — SHED DESIGNATION
- PRE-DEVELOPMENT 100-YEAR FLOODPLAIN LIMIT
- WETLANDS (TRIBUTARY)
- WETLANDS (AVOIDED)
- PROPOSED 100-YEAR FLOODPLAIN LIMIT
- ULTIMATE UNMITIGATED 100 YEAR FLOODPLAIN LIMIT
- PLACER RANCH SPECIFIC PLAN BOUNDARY
- LINEAR CHANNEL
- EXISTING PROPERTY LINE
- EXISTING LARGE LOT PROPERTY LINE
- XX — WATER SURFACE CONTOUR
- XXXX — REACH CROSS SECTION

NOTES

1. FLOW TRAVEL PATHS NOT SHOWN WILL BE INCLUDED ON THE FINAL REPORT MAPS.

400 200 0 400

SCALE: 1" = 400'

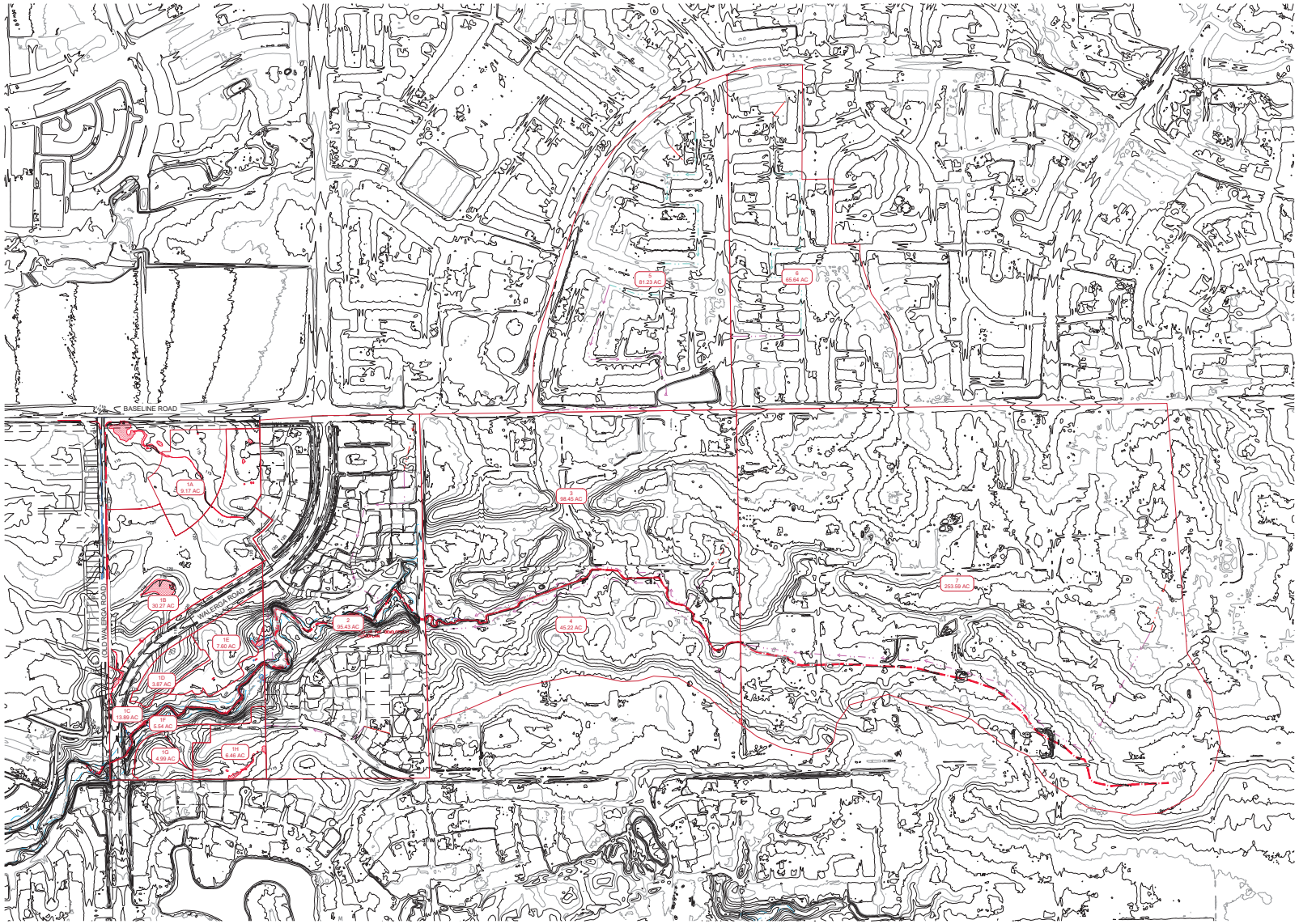
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*Figure not OCR compatible

ESTIA DRY CREEK

EXISTING HEC-HMS SHED MAP

PLACER COUNTY, CALIFORNIA
AUGUST 2025



LEGEND

- ## — SHED DESIGNATION
- PRE-DEVELOPMENT 100-YEAR FLOODPLAIN LIMIT
- WETLANDS (TRIBUTARY)
- WETLANDS (AVOIDED)
- PROPOSED 100-YEAR FLOODPLAIN LIMIT
- ULTIMATE UNMITIGATED 100 YEAR FLOODPLAIN LIMIT
- PLACER RANCH SPECIFIC PLAN BOUNDARY
- LINEAR CHANNEL
- EXISTING PROPERTY LINE
- EXISTING LARGE LOT PROPERTY LINE
- XX — WATER SURFACE CONTOUR
- XXXX — REACH CROSS SECTION

NOTES

1. FLOW TRAVEL PATHS NOT SHOWN WILL BE INCLUDED ON THE FINAL REPORT MAPS.

400 200 0 400

SCALE: 1" = 400'

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*Figure not OCR compatible

ESTIA DRY CREEK

PROPOSED HEC-HMS SHED MAP

PLACER COUNTY, CALIFORNIA
AUGUST 2025

ESTIA DRY CREEK – PHASE 4
PRELIMINARY DRAINAGE REPORT

PLN24-00144

JUNE 2026

Prepared For
HOMES BY TOWNE



KING ENGINEERING
200 Auburn Folsom Road, Ste. 201
Auburn, California 95603

TABLE OF CONTENTS

Contents Page

Introduction 1

Project Description 1

Scope of the Report 1

FEMA Information 2

Existing Conditions 2

Design Criteria 3

Hydrology & Hydraulics for Phases 3 & 4 3

Detention 5

Water Quality 5

References 6

Exhibit A: FEMA FIRM Panel

Exhibit B: Web Soil Survey Soil Map

Exhibit C: Drainage Peak Flow Calculations

Table 1 – Estia Dry Creek Pre-Development Peak Flow Worksheet

Table 2 – Estia Dry Creek Post-Development Peak Flow Worksheet

Table 3 – Bypass Flow Table

Table 4 – HEC-RAS Summary

Table 5 – HEC-RAS Results

Table 6 – HEC-HMS Results

Table 7 – Pre-Development to Post-Development Comparison

Exhibit D: Hydraulic Data and Profiles – 10-Year and 100-Year

Exhibit E: Drainage Maps

Drainage Map #1 – Pre-Development Overall Shed Map

Drainage Map #2 – Post-Development Shed Map

Drainage Map #3 – Project Index

Drainage Map #4 – Blocked Inlet Scenario

Drainage Map #5 – Site Assessment and Drainage Management Area Map

Appendix F: Post-Construction Storm Water Quality Plan Workbook

Appendix G: HEC-RAS Exhibit

Appendix H: HEC-HMS Existing and Proposed Shed Map Exhibits

INTRODUCTION

Project Description

The proposed "Estia Dry Creek & Placer Creek Residential" (Project) includes a total of approximately 88 acres, comprised of a 52.3-acre parcel (Assessor's Parcel No. 023-221-046) located on the north side of Walerga Road and a 35.3-acre parcel (APN 023-221-061) located south and east of Walerga Road, collectively, the "project", Estia Dry Creek and Placer Creek Residential. This Phase 4 project consists of 46 residential units on 11.5 acres. Construction will include streets, storm drainage improvements, and underground utilities. The site is currently unimproved agricultural land. It is bounded on the north by Dry Creek Walerga Road Tributary and bounded on the south by Morgan Creek Village P. The proposed underground storm drain system outfalls to water quality basins before ultimately draining to the Dry Creek Walerga Road Tributary.

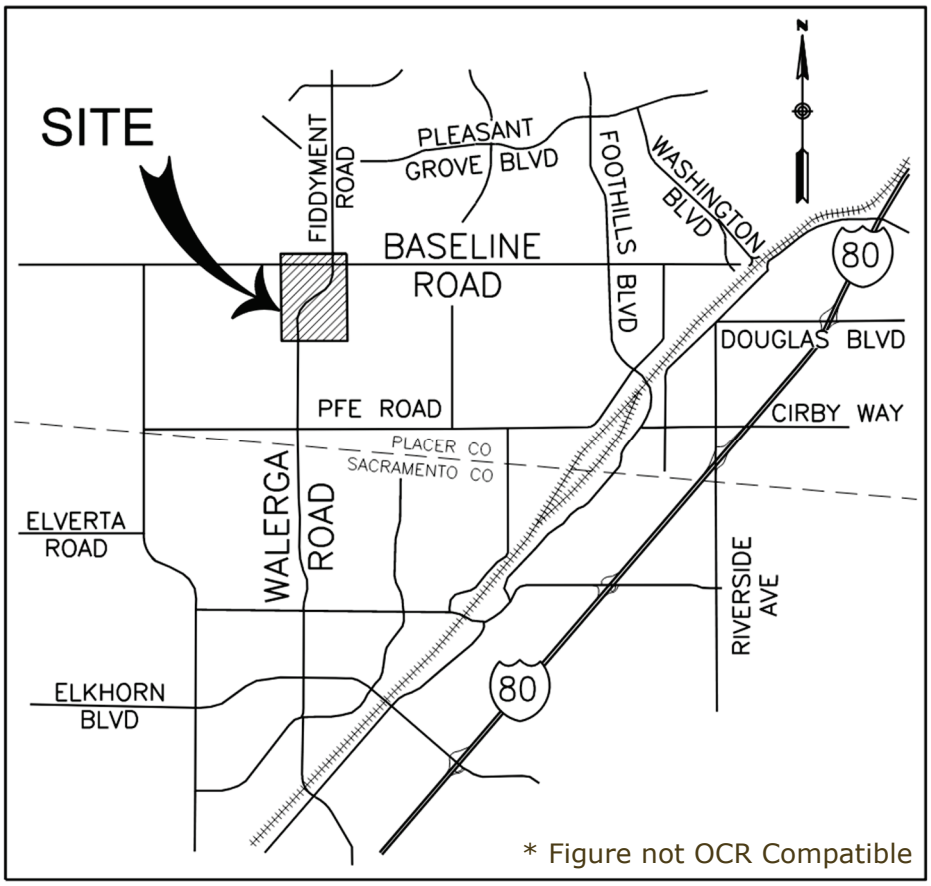


Figure 1: Project Vicinity Map

Scope of the Report

This report provides analysis and documents for the existing pre-developed watershed characteristics and determines the required drainage facilities that are necessary for development of the project. The report will confirm that the post-development changes will be consistent with what is shown on the Drainage Maps.

Pursuant to Reference 2, this is a regulated project with more than one acre of new impervious area proposed and is within the Phase II MS4 Permit Area.

FEMA Information

The Federal Emergency Management Agency's (FEMA) Flood Insurance Study (FIS) Flood Insurance Rate Map (FIRM) contains the project area is Preliminary FIRM Panel ID# 06061C1026J, effective April 12, 2024. Based off the panel, portions of the existing 100-year floodplain are impacted by the proposed development. Excavation is proposed along the tributary to construct water quality infiltration basins. For the current Preliminary FIRM Panel, please see Exhibit A. A pedestrian bridge is proposed over the tributary, connecting trails between Phases 3 and 4. This bridge is proposed to be placed on existing grade with minimal grading activities to support placement. Minor storm events will pass under the bridge, while the 100-year storm is intended to inundate and pass over it. For the current Preliminary FIRM Panel, please see Exhibit A.

The Dry Creek Walerga Road Tributary is classified as Zone AE which means base flood elevations have been determined and analyzed with a Flood Insurance Study that generated the floodplain limits and a floodway has been established. The limits of the detailed study terminate east of Crowder Lane with Zone A floodplain, which means base flood elevations have not been determined.

ULOP Applicability

The following table shows that this project does not meet the Urban Level of Flood Protection (ULOP) as determined by Placer County to construct improvements within a ULOP boundary. These criteria, enacted by State Senate Bill 5 (SB 5) in 2007, were developed to assist counties and cities within the Sacramento-San Joaquin Valley in making findings related to ULOP before approving land use decisions.

ULOP APPLICABILITY

Refer to the Tentative Map for limits of ULOP floodplain with greater than 3' flooding depth

Finding of Fact / ULOP Criteria	Yes/No	Remark
The project is located within the Sacramento Valley	Yes	Dry Creek is tributary to the Sacramento River
The project is located within an urban area as defined by Code of Federal Regulations Title 44, Section 59.1.	Yes	
A portion of the project is located within a flood hazard zone that is mapped as either a special hazard area or an area of moderate hazard on FEMA FIRM Panels.	Yes	Zone AE Floodplain
The project is located within a watershed that is more than 10 square miles in size.	No	Dry Creek Walerga Road Tributary Watershed area is approximately 1.3 square miles per FEMA FIS report
The project is located within an area with a potential flood depth above 3.0 feet during a 200-year event, from sources of flooding other than localized conditions.	No	Project is located along Dry Creek Walerga Road Tributary
Is any disturbance or development proposed within the ULOP 200-year boundary?	No	Dry Creek ULOP is downstream at the confluence

Future, Fully-Developed, Unmitigated Floodplain

The limits of the future, fully-developed, unmitigated 100-year floodplain are calculated and depicted on the Drainage Maps. The project does not propose residential lots in the future, fully-developed, unmitigated 100-year floodplain.

EXISTING CONDITIONS

Ground slopes range significantly across the project area. The Phase 4 ground slopes downhill to the North towards Dry Creek Walerga Road Tributary. Existing ground cover is primarily grassland with rolling terrain. The USDA Soil Conservation Service classifies most of the soils within the project as Pleistocene alluvial deposits. The site soil is classified as hydrologic group D. ENGEO prepared a geotechnical study dated December 26, 2023 for the Estia Dry Creek project entitled "Estia at Dry Creek - Geotechnical Exploration". This report identifies the near surface soils generally as deeply weathered gravel, sand, and silt, which is consistent with the USDA data.

The Walerga Tributary is classified as Zone AE floodplain, which means base flood elevations have been determined and analyzed with a Flood Insurance Study that generated the floodplain limits and a floodway has been established. The river hydraulics and cross section profiles for the tributary are derived from the GeoHECRAS software provided by CivilGeo.



Figure 2: Pre-Development Land Photo, Baseline Rd, Looking South



Figure 3: Pre-Development Land Photo, Walerga Rd, Looking Southeast

DESIGN CRITERIA

*Figures not OCR compatible

The design criteria listed below are also found in the West Placer Stormwater Quality Design Manual and Placer County Flood Control and Water Conservation District Stormwater Management Manual (SWMM).

- **The streets remain passable during the 10- and 100-Year storm events and the finished floor elevations are 1', or greater, from the 100-year water surface elevations.**
- **Inlet and Outlet pipes are to have matching Crown Elevations.**
- **The underground storm drain pipes do not flow full during the 10-Year storm.**
- **For Hydraulic Calculations, Pipes are sized as if all flow is captured at each inlet.**
- **Storm Drain pipes are designed to flow under gravity flow for up to the 10-year storm and allowed to flow surcharged, pressure flow for flows larger than the 10 year-storm.**
- **Culverts 30" in diameter and less are designed for 50% blockage at the inlet for the 10-year design storm. However, where there is a grated inlet with 8" maximum size opening, the inlet is designed for 50% blockage, but the culvert connected to such an inlet may be sized without blockage (figuring that large objects cannot get through the inlet openings to block the culvert).**
- **Gutters and inlets serving small drainage areas are sized according to Placer County drainage formulas as follows:**

$$\text{Sheet flow: } t_r = \frac{.355(nL)^{.6}}{S^{.3}}$$

$$\text{Channel flow: } t_r = \frac{.00735Ln^{.75}(1+z)^{.25}}{S^{.375}(A_c z)^{.25}}$$

$$\text{Peak Discharge: } Q = qA - A_p F_i$$

HYDROLOGY & HYDRAULICS FOR PHASES 3 & 4

The project will discharge stormwater runoff into Dry Creek Walerga Road Tributary. The watershed to Dry Creek is approximately 1.3 square miles. The peak flows for the various storm events were modeled in HEC-HMS (Version 4.9). The routing method used is Muskingum Method. The volumetric and discharge relationships were generated through existing surface information and HEC-RAS modeling to determine the necessary rating curve used in the Modified Puls method. The channel is approximated as a trapezoidal channel with a Muskingum Coefficient (X) between 0.10 and 0.20. The rainfall values were taken from Table 5-A-1 in the Stormwater Management Manual for the various storm events. The HEC-HMS model uses the Kinematic Wave transform method and initial/constant loss in determining flows. This method relates the shape of the channel, boundary roughness, and slope of the channel or overland flow surface. Though it simplifies the complex nature of drainage systems, the Kinematic Wave transform method provides a reasonably accurate approximation of flows.

The design flows for the 10-, 50-and 100-year storm events (10, 2 and 1 percent chance of occurrence storms) for Dry Creek and the Antelope North Road Tributary were provided by FEMA and were unchanged. There was no 500-year storm flow (0.2 percent chance of occurrence storm) provided for the tributary. Hydraulic models for the existing, revised, and unmitigated scenarios for the Dry Creek Walerga

Road Tributary were generated from FEMA FIS data. The Existing model reflects the current physical improvements and latest topography in the area. The HEC-RAS models were generated with the design flows produced by the HEC-HMS model and provide the basis for comparing existing conditions BFEs to revised BFEs to analyze the impacts of the proposed project both upstream and downstream. The models were created using Geo HEC-RAS software using steady, uniform flow under Subcritical conditions. Refer to Tables 4-6 for HEC-RAS modeling inputs and results.

DETENTION

Though drainage detention is not required or recommended for Dry Creek and its tributaries, hydromodification is still required under the MS4 rules, even though the distinction between detention and hydromodification is not made clear.

The peak flood wave in the Dry Creek Walerga Road Tributary occurs at approximately 13 hours into 100-year, 24-hour storm, well ahead of the Dry Creek regional flood wave at approximately 17 hours (Dry Creek Watershed Plan, Placer County). This means that downstream properties will see no impact to the base flood elevation from this project. The shed shift from Curry Creek to Dry Creek of approximately 25.7 acres toward Walerga Tributary (Dry Creek) was accounted for in the HEC-HMS modeling, which determined the timing of this peak flood wave.

WATER QUALITY

To evaluate storm water quality and best management policies (BMP) within the project limits, the West Placer Storm Water Quality Design Manual was referenced and used as a guideline for BMP locations. Drainage Management Areas (DMA) are delineated with infiltration basins shown in Drainage Map #5. The primary purpose of the infiltration basins is to retain minor storm events and capture any pollutants that would otherwise enter Dry Creek. The infiltration basins are primarily for minor storm events but not intended to reduce the peak flows during extreme storm events.

Phase 4 is divided into two DMAs, DMA F and DMA G. DMA F is the portion of the project which will discharge into infiltration Basin F at Phase 4 Discharge Point 1 on Drainage Map #2. From Basin F, treated runoff enters the Dry Creek Walerga Road Tributary. DMA G is the portion of the project which will discharge runoff into infiltration Basin G at Phase 4 Discharge Point 2 on Drainage Map #2. From Basin G, treated runoff enters the Dry Creek Walerga Road Tributary. The peak flows from these DMAs can be found in Tables 2 and 7. The combined runoff of Phases 3 and 4 is described as Point C in Table 7 and shown on Drainage Map #2.

The composite runoff coefficient (Rc) is determined using State Water Control Board Runoff Coefficient Fact Sheet 5.1.3. The fact sheet provides tables of various coefficients depending on land use. The land use within the Phase 3 project is medium density residential. The Coefficient of 0.55 was used because it is the more conservative value for Water Quality calculations.

REFERENCES

Ref. 1: NPDES CA S000002, SWRCB Water Quality Order No. 2009-0009 DWQ, as amended by 2010-2014-DWQ and 2012-006-DWQ, Construction General Permit (permit to be obtained for the Project).

Ref. 2: NPDES General Permit No. CA S000004, SWRCB Water Quality Order No. 2013-00001 DWQ, WDRs for MS4s

Ref. 3: Placer County Storm Water Management Plan 2004, or latest update

Ref. 4: Placer County Storm Water Management Manual and Land Development Manual

Ref. 5: CASQA Stormwater BMP Handbook New Development and Redevelopment, Table 2.2 and Section 5.

Ref. 6: USDA, Soil Conservation Service, web soil survey website.

Ref. 7: ENVIROSTOR website: envirostor.dtsc.ca.gov/

Ref. 8: Hydraflow Express program for gutter and inlet sizing

Ref. 9: Update to the Dry Creek Watershed Flood Control Plan, Placer County Flood Control and Water Conservation District, November 2011

EXHIBIT A

FEMA FIRM Panel



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 — Cross Sections with 1% Annual Chance
- 17.5 — Water Surface Elevation
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 — Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available effective flood hazard information for your community, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Mapping and Insurance eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be downloaded from the website. Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be acquired directly from the Flood Map Service Center at the website listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). The basemap shown is the USGS National Map: Orthoimagery. Last refreshed October, 2020.

Note: Some Special Flood Hazard Areas with elevations may not appear with elevation labels if the Base Flood Elevation or Cross-section line which communicates the elevation for the location appears on the adjacent panel. Please see the Panel Locator Diagram on this map panel to determine the adjacent panel and find the elevation feature there, or alternatively use the Flood Insurance Study report for detailed elevations by flood source.

SCALE

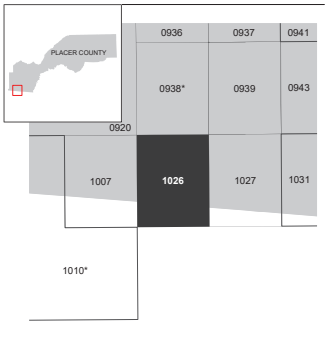
1 inch = 500 feet 1:6,000

0 250 500 1,000 1,500 2,000 feet

0 50 100 200 300 400 meters

Map Projection:
NAD 1983 StatePlane California II FIPS 0402 Feet
Vertical Datum: NAVD88

PANEL LOCATOR



*PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

PLACER COUNTY CALIFORNIA AND INCORPORATED AREAS

FEMA

Panel Contains:

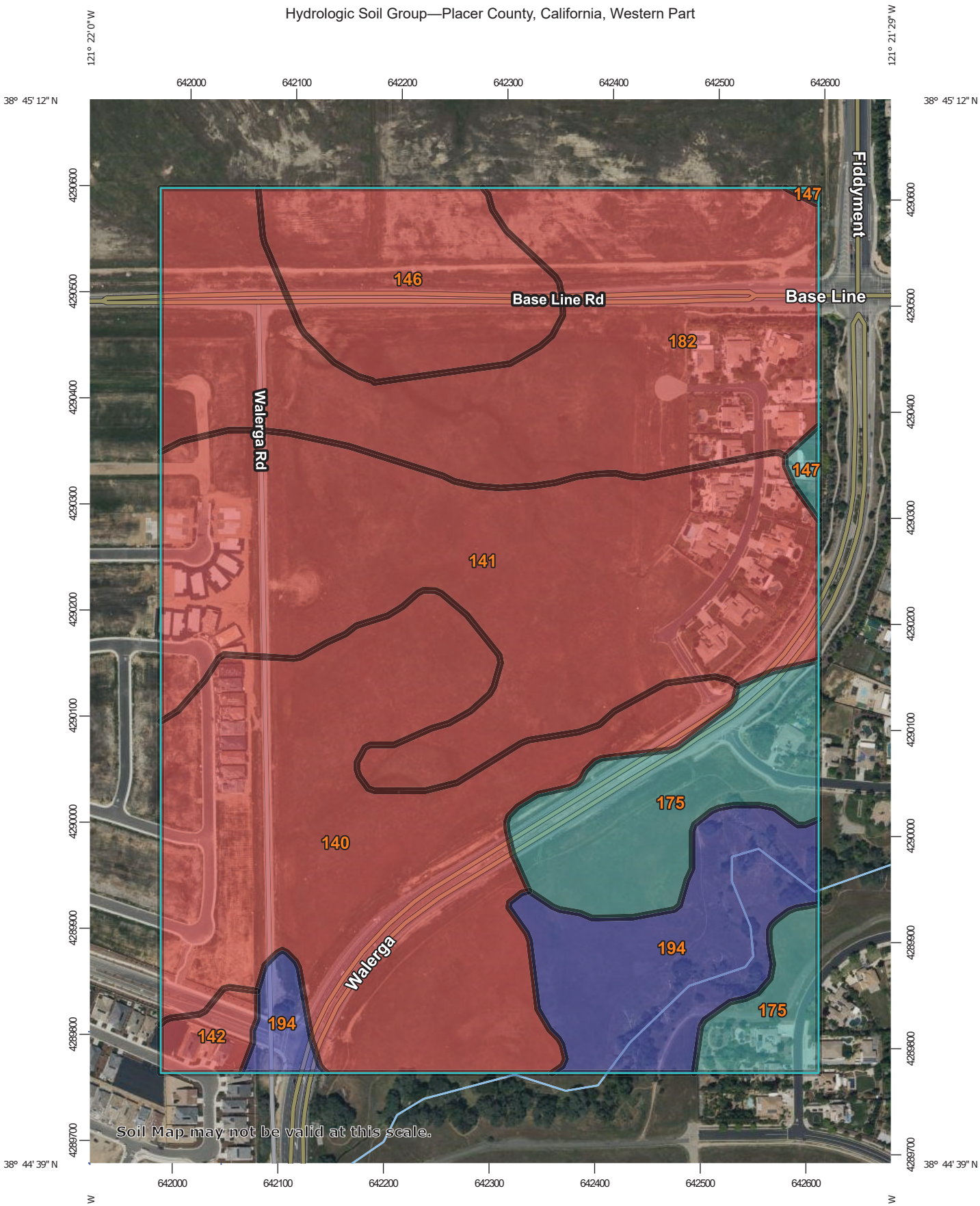
COMMUNITY	NUMBER	PANEL	SUFFIX
PLACER COUNTY UNINCORPORATED AREAS	060239	1026	J

MAP NUMBER
06061C1026J
EFFECTIVE DATE
Prelim Issue Date: 04/12/2024

*Figure not OCR compatible

EXHIBIT B

Web Soil Survey Soil Map



Map Scale: 1:4,890 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

* Figure not OCR Compatible

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Placer County, California, Western Part
Survey Area Data: Version 15, Aug 31, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 23, 2022—Apr 24, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
140	Cometa sandy loam, 1 to 5 percent slopes	D	32.3	25.0%
141	Cometa-Fiddyment complex, 1 to 5 percent slopes	D	32.1	24.9%
142	Cometa-Ramona sandy loams, 1 to 5 percent slopes	D	1.4	1.1%
146	Fiddyment loam, 1 to 8 percent slopes	D	10.1	7.8%
147	Fiddyment-Kaseberg loams, 2 to 9 percent slopes	C	0.5	0.4%
175	Ramona sandy loam, 2 to 9 percent slopes	C	11.8	9.2%
182	San Joaquin-Cometa sandy loams, 1 to 5 percent slopes	D	29.5	22.9%
194	Xerofluvents, frequently flooded	B	11.4	8.8%
Totals for Area of Interest			**128.9**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

EXHIBIT C

Drainage Peak Flow Calculations

Table 1

Estia Dry Creek Pre-Development Peak Flow

Watershed Data							Time of Concentration											Peak Flow			
Refer to drainage map and soil type							Overland Flow				Channel Flow							Fig 5-3A,C P.C. SWMM			
BASIN	DISCHARGE LOCATION	Elev.	Total Area (ac.)	Perv. Area	Soil Type	F_i	Length ft.	Slope ft/ft	N	t_r min.	Area (ac.)	Length ft.	Slope ft/ft	n	Z	t_r min.	Total Time (min.)	q_{10}	q_{100}	Q_{10} cfs	Q_{100} cfs
TO POINT A																					
3	PT. A	100	5.24	5.24	D	0.12	172	0.0038	0.4	23.92	5.24	1067	0.010	0.035	10	4.29	28.21	0.890	1.600	4.03	7.75
4		100	10.96	10.96	D	0.12	294	0.011	0.4	23.99	10.96	940	0.007	0.035	10	3.56	27.55	0.917	1.655	8.72	16.80
2		100	11.13	11.13	D	0.12	329	0.0047	0.4	33.12	11.13	1236	0.007	0.035	10	4.61	37.74	0.643	1.190	5.80	11.89
1		100	8.26	8.26	D	0.12	325	0.0162	0.4	22.69	8.26	1160	0.006	0.035	10	5.04	27.72	0.910	1.639	6.51	12.53
1>4		100	35.59	35.59	D	0.12											37.74	0.643	1.190	**18.54**	**38.03**
TO POINT B																					
5	PT. B	100	4.94	4.94	D	0.12	240	0.02	0.4	17.75	4.94	642	0.014	0.035	10	2.29	20.04	1.210	2.240	5.38	10.46
7		100	5.44	5.44	D	0.12	197	0.0308	0.4	13.85	5.44	446	0.017	0.035	10	1.43	15.28	1.680	3.048	8.48	15.92
6		100	5.37	5.37	D	0.12	248	0.0223	0.4	17.52	5.37	737	0.020	0.035	10	2.24	19.77	1.240	2.292	6.00	11.65
W1		100	4.52	1.13	D	0.12	100	0.0223	0.4	10.16	4.52	400	0.020	0.035	10	1.27	11.43	1.983	3.590	8.83	16.09
5>7		100	20.27	16.88	D	0.12											20.04	1.210	2.240	**22.47**	**43.35**
TO POINT C																					
8	PT. C	100	1.86	1.86	D	0.12	100	0.0051	0.4	15.82	1.86	642	0.014	0.035	10	2.92	18.74	1.330	2.446	2.25	4.32
9		100	11.09	11.09	D	0.12	197	0.0308	0.4	13.85	11.09	446	0.017	0.035	10	1.20	15.05	1.700	3.083	17.50	32.84
10		100	8.93	8.93	D	0.12	248	0.0223	0.4	17.52	8.93	737	0.020	0.035	10	1.98	19.50	1.270	2.343	10.25	19.84
11		100	3.80	3.80	D	0.12	215	0.0051	0.4	25.04	3.80	642	0.014	0.035	10	2.44	27.48	0.921	1.663	3.04	5.86
12		100	9.79	9.79	D	0.12	197	0.0308	0.4	13.85	9.79	446	0.017	0.035	10	1.23	15.09	1.700	3.083	15.45	28.99
13		100	4.52	4.52	D	0.12	248	0.0223	0.4	17.52	4.52	737	0.020	0.035	10	2.34	19.87	1.230	2.274	5.01	9.73
14		100	9.71	9.71	D	0.12	225	0.0051	0.4	25.73	9.71	642	0.014	0.035	10	1.93	27.67	0.914	1.647	7.69	14.81
8>14		100	49.70	49.70	D	0.12											27.67	0.914	1.647	**39.35**	**75.81**

Table 2

Estia Dry Creek Post-Development Peak Flow

Watershed Data								Time of Concentration											Peak Flow			
Refer to drainage map and soil type								Overland Flow				Channel Flow							Fig 5-3A,C P.C. SWMM			
SHED	DRAINAGE INLET	Elev.	Total Area (ac.)	Perv. Area	Soil Type	Infiltration Rate (in/hr)	F_i [1]	Length ft.	Slope ft/ft	N [5]	t_r [2] min.	Area (ac.)	Length ft.	Slope ft/ft	n	Z	t_r [3] min.	Total Time (min.)	q_{10}	q_{100}	Q_{10} [4] cfs	Q_{100} [4] cfs
TO PHASE 4 DISCHARGE 1																						
82	DI-3	100	0.91	0.27	D	0.12	0.21	114	0.01	0.4	13.98	0.91	306	0.0150	0.015	20	1.01	14.99	1.710	3.100	1.50	2.76
83		100	1.07	0.32	D	0.12	0.21	127	0.01	0.4	14.92	1.07	314	0.0100	0.015	20	1.16	16.08	1.600	2.911	1.64	3.05
82>83																	**DI-3 TOTAL FLOW**				**3.14**	**5.81**
84	DI-4	100	1.14	0.57	D	0.12	0.21	128	0.01	0.4	14.96	1.14	314	0.0100	0.015	20	1.14	16.10	1.600	2.911	1.70	3.20
82>84								DI-3 PIPE FLOW				1.98	35	0.0200	0.015	2	0.05	16.13				
		100	3.12	1.16	D	0.12	0.21											16.13	1.590	2.894	4.72	8.78
																	DI-4 TOTAL FLOW				**4.72**	**8.78**
82>84	SDMH-2	100	3.12	1.16	D	0.12	0.21	DI-4 PIPE FLOW				3.12	60	0.0100	0.015	2	0.10	16.23				
																	SDMH-2 TOTAL FLOW	16.23	1.580	2.876	**4.69**	**8.73**
85	DI-2	100	1.34	0.40	D	0.12	0.21	128	0.01	0.4	14.96	1.34	416	0.0050	0.015	20	1.88	16.84	1.520	2.773	1.95	3.63
86		100	0.07	0.04	D	0.12	0.21	7	0.01	0.4	2.62	0.07	106	0.0150	0.015	20	0.66	3.28	2.520	5.020	0.17	0.34
																	DI-2 TOTAL FLOW				**2.12**	**3.98**
82>86	SDMH-1	100	4.53	1.60	D	0.12	0.21	SDMH-2 PIPE FLOW				3.12	84	0.0098	0.015	2	0.14	16.37				
																	SDMH-1 TOTAL FLOW	16.84	1.520	2.773	**6.55**	**12.23**
87	DI-1	100	0.32	0.10	D	0.12	0.21	28	0.01	0.4	6.02	0.32	486	0.0050	0.015	20	3.14	9.17	2.167	3.995	0.67	1.26
88		100	0.33	0.17	D	0.12	0.21	7	0.01	0.4	2.62	0.33	457	0.0150	0.015	20	1.94	4.56	2.520	5.020	0.80	1.62
								SDMH-1 PIPE FLOW				4.53	10	0.0200	0.015	2	0.01	16.85				
		100	5.18	1.86	D	0.12	0.21											16.85	1.520	2.773	7.48	13.98
																	DI-1 TOTAL FLOW				**7.48**	**13.98**
PH4-OS1	EXISTING	100	2.08	2.08	D	0.12	0.21	225	0.005	0.4	25.73	2.08	505	0.0050	0.015	20	2.04	27.78	0.910	1.639	1.46	2.98
																	EXISTING TOTAL FLOW				**1.46**	**2.98**
82>88	**PT. F**	100	7.26	3.94	D	0.12	0.21	DI-1 PIPE FLOW				7.26	59	0.0334	0.015	20	0.09	27.86	0.906	1.632	5.75	11.02
																	PT. F TOTAL FLOW				**5.75**	**11.02**

[1] SWMM Equation 5-5, Infiltration Factor

[2] SWMM Equation 5-3, Overland Flow Response Time

[3] SWMM Equation 5-4, Collector Flow Response Time

[4] SWMM Equation 5-6, Adjustment for Infiltration Peak Flow

[5] SWMM Table 5-5, Roughness Parameters for Overland Flow

Table 2 (CONT.)

Estia Dry Creek Post-Development Peak Flow

Watershed Data								Time of Concentration											Peak Flow			
Refer to drainage map and soil type								Overland Flow				Channel Flow							Fig 5-3A,C P.C. SWMM			
SHED	DRAINAGE INLET	Elev.	Total Area (ac.)	Perv. Area	Soil Type	Infiltration Rate (in/hr)	F_i [1]	Length ft.	Slope ft/ft	N [5]	t_r [2] min.	Area (ac.)	Length ft.	Slope ft/ft	n	Z	t_r [3] min.	Total Time (min.)	q_{10}	q_{100}	Q_{10} [4] cfs	Q_{100} [4] cfs
TO PHASE 4 DISCHARGE 2																						
89	DI-11	100	1.14	0.34	D	0.12	0.21	144	0.01	0.4	15.00	1.14	283	0.0050	0.015	20	1.33	16.33	1.570	2.859	1.72	3.19
90		100	1.01	0.30	D	0.12	0.21	115	0.01	0.4	14.08	1.01	280	0.0050	0.015	20	1.36	15.44	1.660	3.014	1.61	2.98
																	DI-11 TOTAL FLOW				**3.33**	**6.17**
89>90	SDMH-6	100	2.15	0.65	D	0.12	0.21											16.33				
																	SDMH-6 TOTAL FLOW		1.570	2.859	**3.24**	**6.01**
PH4-OS3	DI-12	100	6.07	3.64	D	0.12	0.21	400	0.01	0.4	10.00	6.07	505	0.0050	0.015	20	1.56	11.56	1.975	3.576	11.23	20.95
																	DI-12 TOTAL FLOW				**11.23**	**20.95**
89>90	SDMH-7	100	8.22	4.29	D	0.12	0.21	SDMH-6 PIPE FLOW				6.07	181	0.0050	0.015	2	0.33	16.66				
																	SDMH-7 TOTAL FLOW	16.66	1.540	2.808	**11.76**	**22.18**
91	DI-8	100	0.26	0.08	D	0.12	0.21	76	0.01	0.4	10.99	0.26	88	0.0050	0.015	20	0.60	11.59	1.975	3.576	0.50	0.91
																	DI-8 TOTAL FLOW				**0.50**	**0.91**
92	DI-9	100	0.50	0.15	D	0.12	0.21	120	0.01	0.4	14.43	0.50	89	0.0050	0.015	20	0.51	14.94	1.710	3.100	0.82	1.52
																	DI-9 TOTAL FLOW				**0.82**	**1.52**
89>92	SDMH-4	100	8.98	4.52	D	0.12	0.21	SDMH-7 PIPE FLOW				8.22	65	0.0045	0.015	2	0.11	16.78				
																		16.78				
																	SDMH-4 TOTAL FLOW		1.530	2.790	**12.80**	**24.11**
93	DI-10	100	0.30	0.09	D	0.12	0.21	21	0.01	0.4	5.07	0.30	250	0.0462	0.015	20	0.71	5.78	2.453	4.825	0.72	1.43
																	DI-10 TOTAL FLOW				**0.72**	**1.43**
94	DI-10.2	100	0.64	0.19	D	0.12	0.21	115	0.01	0.4	14.02	0.64	160	0.0050	0.015	20	0.87	14.89	1.718	3.114	1.06	1.95
																	DI-10.2 TOTAL FLOW				**1.06**	**1.95**
89>94	SDMH-5.1	100	9.92	4.80	D	0.12	0.21	SDMH-5 PIPE FLOW				8.98	105	0.0050	0.015	2	0.17	16.95				
																		16.95				
																	SDMH-5.1 TOTAL FLOW		1.510	2.756	**13.98**	**26.34**
95	DI-7	100	1.12	0.34	D	0.12	0.21	124	0.01	0.4	14.70	1.12	345	0.0050	0.015	20	1.63	16.33	1.570	2.859	1.69	3.13
																	DI-7 TOTAL FLOW				**1.69**	**3.13**
PH4-OS2	DI-12	100	9.65	9.65	D	0.12	0.21	197	0.01	0.4	19.42	9.65	446	0.0020	0.015	10	1.46	20.88	1.179	2.178	9.36	19.00
																	DI-12 TOTAL FLOW				**9.36**	**19.00**
96	DI-6	100	1.54	1.08	D	0.12	0.21	128	0.01	0.4	14.96	1.54	349	0.0050	0.015	20	1.52	16.48	1.560	2.842	2.18	4.15
								DI-7 PIPE FLOW				1.12	41	0.0050	0.015	2	0.12	16.44				
89>96		100	2.66	1.41	D	0.12	0.21											16.48	1.560	2.842	3.85	7.26
																	DI-6 TOTAL FLOW				**3.85**	**7.26**
	SDMH-3 (PT. G)	100	22.23	15.86	D	0.12	0.21	SDMH-5.1 PIPE FLOW				9.92	209	0.0050	0.015	2	0.34	16.82				
														SDMH-3(PT. G) TOTAL FLOW					20.88	1.179	2.178	**22.89**	**45.09**

[1] SWMM Equation 5-5, Infiltration Factor
[2] SWMM Equation 5-3, Overland Flow Response Time
[3] SWMM Equation 5-4, Collector Flow Response Time
[4] SWMM Equation 5-6, Adjustment for Infiltration Peak Flow
[5] SWMM Table 5-5, Roughness Parameters for Overland Flow

Table 3

Bypass Flow Table

GUTTER AND BYPASS FLOW DATA																			
				GUTTER FLOW											ON GRADE INLETS				
SHEDS	GUTTER	TO DRAINAGE INLET	INLET CONDITION	GUTTER SLOPE ft/ft	Q_{10} cfs	ADD Q_{10} UPSTREAM BYPASS cfs	Q_{10} TOTAL cfs	Q_{100} cfs	ADD Q_{100} UPSTREAM BYPASS cfs	Q_{100} TOTAL cfs	Q_{10} GUTTER CAP cfs	Q_{10} GUTTER SPREAD ft	Q_{100} GUTTER SPREAD ft	Q_{100} GUTTER DEPTH ft	Q_{10} INLET CAP cfs	Q_{10} BYPASS cfs	Q_{100} INLET CAP cfs	Q_{100} BYPASS cfs	BYPASS TARGET
(MAP 2)											(REF 10)								
TO PHASE 4 DISCHARGE 1 - TYPE 1A CURB AND GUTTER																			
87	g87	DI-1	SAG	0.0050	0.67	0.00	0.67	1.26	0.00	1.26	-	2.17	2.78	0.24	OK	-	OK	-	-
85	g85	DI-2	SAG	0.0050	1.95	0.25	2.21	3.63	0.85	4.48	-	5.55	12.25	0.44	OK	-	OK	-	-
82	g82	DI-3	SAG	0.0150	1.50	0.49	1.99	2.76	1.45	4.22	-	4.79	11.55	0.43	OK	-	OK	-	-
83	g83	DI-3	SAG	0.0100	1.64	0.49	2.13	3.05	1.45	4.50	-	3.83	12.30	0.38	OK	-	OK	-	-
84	g84	DI-4	GRADE	0.0100	1.70	0.00	1.70	3.20	0.00	3.20	2.80	4.86	8.15	0.36	1.45	0.25	2.35	0.85	DI-2
86	g86	DI-2	SAG	0.0150	0.17	0.25	0.42	0.34	0.85	1.19	-	0.94	2.72	0.23	OK	-	OK	-	-
88	g88	DI-1	SAG	0.0150	0.80	0.00	0.80	1.62	0.00	1.62	-	2.32	3.46	0.27	OK	-	OK	-	-
TO PHASE 4 DISCHARGE 2 - TYPE 1A CURB AND GUTTER																			
95	g95	DI-7	GRADE	0.0050	1.69	0.00	1.69	3.13	0.00	3.13	2.00	6.61	9.93	0.40	1.38	0.31	2.21	0.92	DI-10.2
96	g96	DI-6	GRADE	0.0050	2.18	0.00	2.18	4.15	0.00	4.15	2.00	7.95	11.59	0.43	1.69	0.49	2.7	1.45	DI-3
93.0	g93	DI-10	SAG	0.0462	0.72	0.00	0.72	1.43	0.00	1.43	-	2.43	3.68	0.27	OK	-	OK	-	-
9.0	g9	DI-10.2	SAG	0.0050	1.06	0.31	1.37	1.95	0.92	2.87	-	2.88	7.67	0.35	OK	-	OK	-	-
89	g89	DI-11	SAG	0.0050	1.72	0.07	1.79	3.19	0.33	3.52	-	4.08	9.60	0.39	OK	-	OK	-	-
90	g90	DI-11	SAG	0.0050	1.61	0.07	1.68	2.98	0.33	3.31	-	3.68	8.99	0.38	OK	-	OK	-	-
9.1	g91	DI-8	GRADE	0.0050	0.50	0.00	0.50	0.91	0.00	0.91	2.00	2.48	3.46	0.27	0.49	0.01	0.83	0.08	DI-11
92	g92	DI-9	GRADE	0.0050	0.82	0.00	0.82	1.52	0.00	1.52	2.00	2.99	6.07	0.32	0.76	0.06	1.27	0.25	DI-11

REF 1: Hydraflow Express program

NOTES:
1. Design flow floods up to the but not including travel lanes - on site streets
2. Design Capacity is based on Reference 4, Table 6-1 "Allowable Street Encroachments" & LDM Section 5-13
3. Gutter spread is measured from face of curb.

Table 4

HEC-RAS Summary

HEC-RAS Existing Steady Flow Summary				
River	**Reach**	**Steady Flow Input (10-YR, cfs)**	**Steady Flow Input (100-YR, cfs)**	**Hydrologic Element in HEC-HMS**
Walerga Tributary	Walerga Tributary	216.6	408.6	DCW-Discharge
HEC-RAS Proposed Steady Flow Summary				
River	**Reach**	**Steady Flow Input (10-YR, cfs)**	**Steady Flow Input (100-YR, cfs)**	**Hydrologic Element in HEC-HMS**
Walerga Tributary	Walerga Tributary	217.2	424.7	DCW-Discharge
HEC-RAS Unmitigated Steady Flow Summary				
River	**Reach**	**Steady Flow Input (10-YR, cfs)**	**Steady Flow Input (100-YR, cfs)**	**Hydrologic Element in HEC-HMS**
Walerga Tributary	Walerga Tributary	216.3	426.1	DCW-Discharge

Table 5

HEC-RAS Results

River Station	100-Year Existing W.S. Elev (ft)	100-Year Proposed W.S. Elev (ft)	100-Year Unmitigated W.S. Elev (ft)
Estia Dry Creek - Walerga Road Tributary - Offsite			
6640	100.51	100.56	100.57
6545	100.54	100.6	100.62
6400	100.23	100.29	100.31
6276	100.04	100.09	100.1
6275	100.05	100.08	100.09
6201	99.93	99.98	99.99
6200	99.73	99.78	99.8
6100	99.5	99.55	99.57
6000	99.46	99.51	99.53
5922.73	99.21	99.26	99.27
5900	99.03	99.08	99.09
5825	98.84	98.89	98.9
3851	95.02	94.96	95.02
3850	95.02	95.02	95.02
3769.99	95.01	95.01	95.01
3710	95	95	95
River Station	**100-Year Existing W.S. Elev (ft)**	**100-Year Proposed W.S. Elev (ft)**	**100-Year Unmitigated W.S. Elev (ft)**
Estia Dry Creek - Walerga Road Tributary - Onsite			
5700	98.43	98.48	98.5
5600	98.18	98.23	98.24
5500	97.54	97.61	97.63
5400	97.17	97.21	97.23
5300	97	97.05	97.07
5200	96.88	96.93	96.95
5100	96.57	96.61	96.63
5062.01	96.43	96.47	96.49
5000	96.2	96.22	96.25
4900	96.11	96.13	96.15
4846	96	96.01	96.04
4835	95.97	95.98	96.01
4831.21	PED. BRIDGE	PED. BRIDGE	PED. BRIDGE
4825	95.94	95.95	95.98
4800	95.93	95.94	95.96
4700	95.82	95.81	95.84
4600	95.64	95.61	95.64
4500	95.5	95.46	95.49
4400	95.51	95.47	95.51
4350	95.48	95.44	95.47
4300	95.47	95.42	95.46
4250	95.47	95.42	95.45
4101	95.43	95.38	95.42
4100	95.36	95.1	95.33
3975.67	CULVERT	CULVERT	CULVERT

Table 6

HEC-HMS Results

HEC-HMS Model Results 100-Year - Existing			
Basin	**Area (mi^2)**	**Discharge (cfs)**	**Volume (ac-ft)**
1	0.1362	168.09	18
2	0.0904	64.61	11.8
3	0.1538	93.09	16.6
4	0.0707	42.06	7.1
5	0.1988	136.33	35
6	0.3962	240.16	42.8
DCW-R1	1.0461	408.59	131.4
DCW-R2	0.8195	395.64	101.6
DCW-R3	0.3962	252.9	42.9
DCW-Discharge	1.0461	408.59	131.4

HEC-HMS Model Detention Results 100-Year - Proposed			
Basin	**Area (mi^2)**	**Discharge (cfs)**	**Volume (ac-ft)**
1A	0.057	86.84	10.2
1B	0.0217	34.16	3.6
1C	0.0061	7.87	1.1
1D	0.0119	14.51	2.1
1E	0.0087	15.17	1.1
1F	0.0078	10.19	1.4
1G	0.0101	12.75	1.8
2	0.1491	150.25	19.6
3	0.1538	93.09	16.6
4	0.0707	42.06	7.1
5	0.1988	190.59	35.2
6	0.3962	240.16	42.8
DCW-R1	1.0919	424.68	142.7
DCW-R2	0.8195	368.86	101.9
DCW-R3	0.3962	252.9	42.9
DCW-Discharge	1.0919	424.68	142.7

Table 6 (Cont.)

HEC-HMS Results

HEC-HMS Model Detention Results 100-Year - Unmitigated			
Basin	**Area (mi^2)**	**Discharge (cfs)**	**Volume (ac-ft)**
1A	0.057	86.84	10.2
1B	0.0217	34.52	4.1
1C	0.0091	11.78	1.6
1D	0.0119	14.51	2.1
1E	0.0087	15.17	1.1
1F	0.0078	10.19	1.4
1G	0.0101	12.75	1.8
2	0.1491	145.7	16.3
3	0.1538	93.09	16.6
4	0.0707	42.06	7.1
5	0.1988	190.59	35.2
6	0.3962	240.16	42.8
DCW-R1	1.0949	423.97	140.5
DCW-R2	0.8195	368.86	101.9
DCW-R3	0.3962	252.9	42.9
DCW-Discharge	1.0949	423.97	140.5

Table 7

Pre-Development to Post-Development Comparison

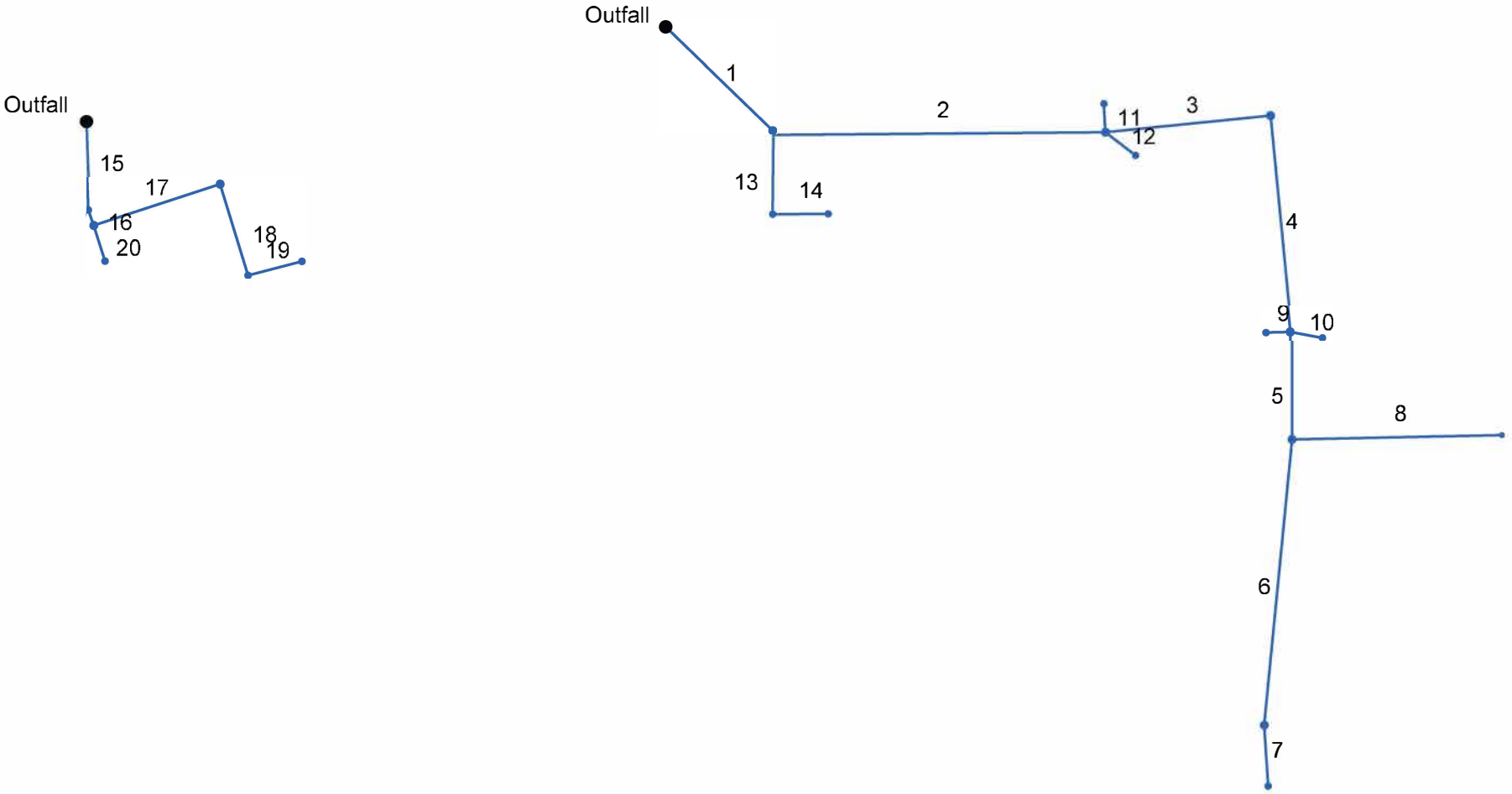
PRE-DEVELOPMENT					POST-DEVELOPMENT					Comments:
Discharge Location	Sheds	Area - ac.	Q10	Q100	Discharge Location	Sheds	Area - ac.	Q10	Q100	
POINT A	1>4	35.6	18.5	38.0	POINT A	12>13, 24>30	9.9	13.4	25.5	Runoff towards infiltration basin and existing storm drain per Segment 1, Upland Drive
PT. A PRE TOTAL		**35.6**	**18.5**	**38.0**	**PT. A POST TOTAL**		**9.9[1]**	**13.4**	**25.5**	Discharge towards existing storm drain at Baseline; Curry Creek
POINT B	5>7	20.3	22.5	43.3	PHASE 1 DISCHARGE	1>11, 14>23, 31>32	10.0	13.4	25.3	Infiltration Basin B at Phase 1; Runoff towards Point B
					PHASE 2 DISCHARGE	33>63	28.6	36.3	68.4	Phase 2 Runoff
					BACKBONE TO POINT B	105>120	7.3	7.8	15.1	Walerga Runoff
PT. B PRE TOTAL		**20.3**	**22.5**	**43.3**	**PT. B POST TOTAL**		**45.9[1]**	**57.5**	**108.7**	Overall runoff from Phases 1, 2, and Backbone (Walerga)
POINT C	8>14	49.7	39.3	75.8	TO PHASE 3 DISCHARGE 1	PH3-OS1, 64>67	5.4	4.1	7.8	Infiltration Basin D at Phase 3
					TO PHASE 3 DISCHARGE 2	PH3-OS2, 68>81	15.0	13.1	25.5	Infiltration Basin E at Phase 3
					TO PHASE 4 DISCHARGE 1	OS3, 82>88	7.3	5.8	11.0	Infiltration Basin F at Phase 4
					TO PHASE 4 DISCHARGE 2	OS2, 89>96	22.2	22.9	45.1	Infiltration Basin G at Phase 4
PT. C PRE TOTAL		**49.7**	**39.3**	**75.8**	**PT. C POST TOTAL**		**49.8**	**45.9**	**89.4**	Overall runoff from Phases 3 and 4
PT. D PRE TOTAL		**70.0**	**61.8**	**119.2**	**PT. D POST TOTAL**		**95.7**	**103.4**	**198.2**	Point D = Point B + Point C; At Walerga Tributary
PRE OVERALL TOTAL		**105.6**	**80.4**	**157.2**	**POST OVERALL TOTAL**		**105.6**	**116.8**	**223.6**	Total Overal Project

[1]25.7 acres are proposed to be shifted from the Curry Creek watershed to the Dry Creek watershed from Point A to Point B. The associated 100-year flows from this shed shift are 25.3 cfs from Phase 1 and 39.2 cfs from Phase 2. The associated 10-year flows from this shed shift are 13.4 cfs from Phase 1 and 17.3 cfs from Phase 2.

EXHIBIT D

Hydraulic Data and Profiles – 10-Year and 100-Year

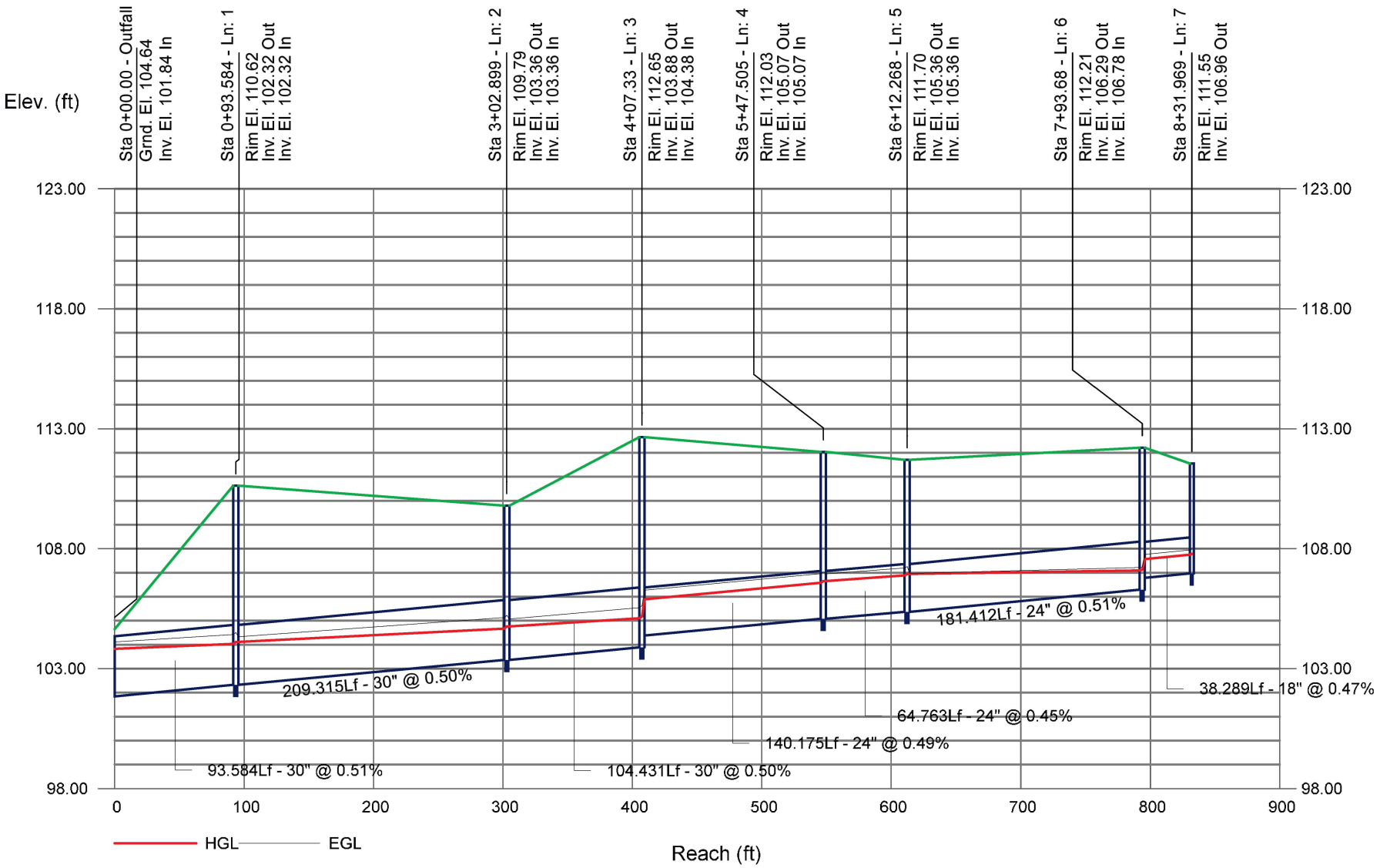
Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Phase 4 10-Year.stm	* Figure not OCR Compatible	Number of lines: 20	Date: 11/24/2025

Storm Sewer Profile

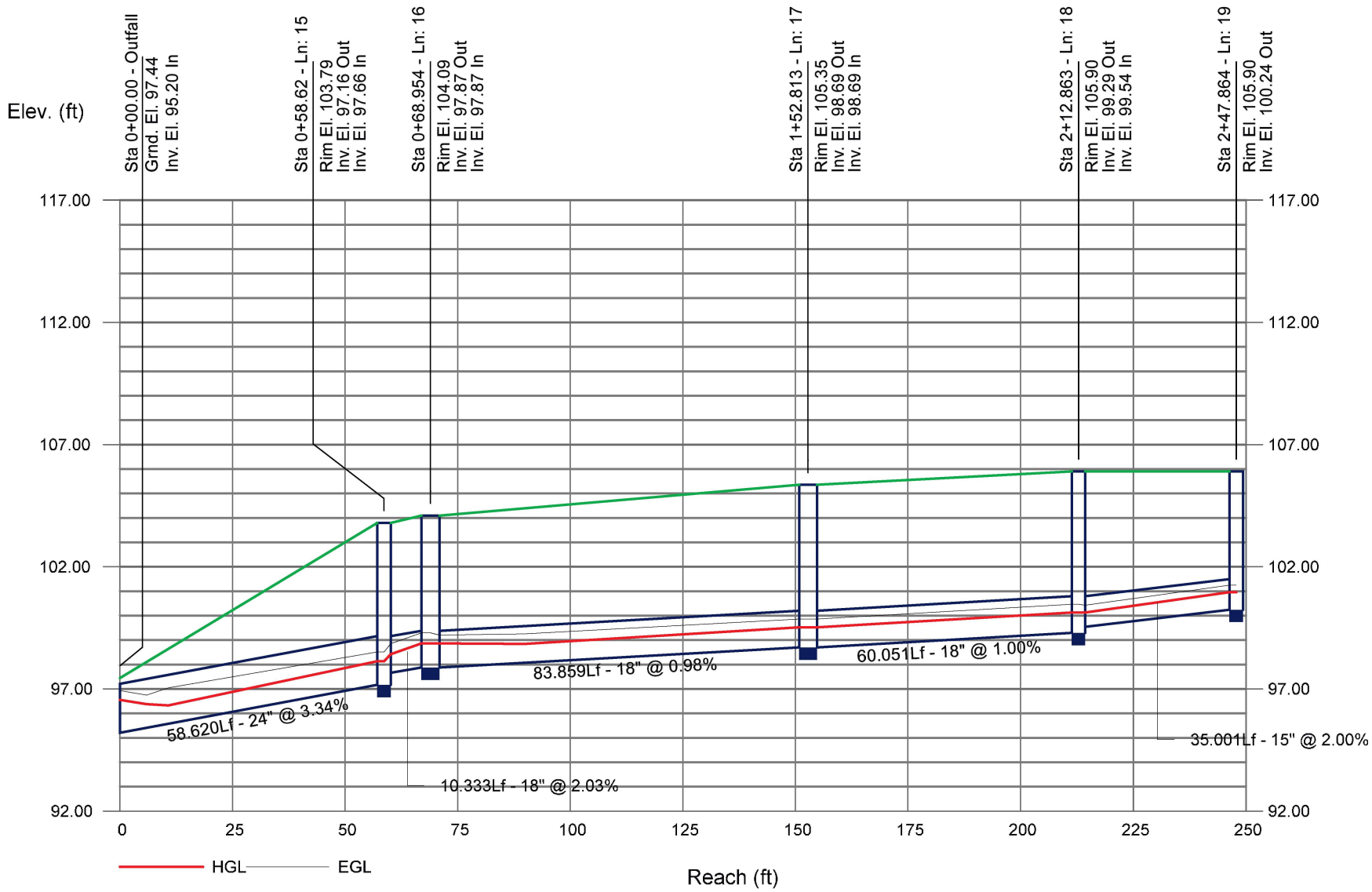
Proj. file: Phase 4 10-Year.stm



* Figure not OCR Compatible

Storm Sewer Profile

Proj. file: Phase 4 10-Year.stm



* Figure not OCR Compatible

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	P-21	17.97	30	Cir	93.584	101.84	102.32	0.513	103.82	104.03	0.08	104.10	End	Manhole
2	P-18	14.12	30	Cir	209.315	102.32	103.36	0.497	104.10	104.66	0.09	104.75	1	Manhole
3	P-15	12.56	30	Cir	104.431	103.36	103.88	0.498	104.75	105.09	0.09	105.18	2	Manhole
4	P-14	12.56	24	Cir	140.175	104.38	105.07	0.492	105.88	106.57	0.08	106.65	3	Manhole
5	P-11	11.53	24	Cir	64.763	105.07	105.36	0.448	106.65	106.88	0.06	106.94	4	Manhole
6	P-9	3.24	24	Cir	181.412	105.36	106.29	0.513	106.94	107.09	0.02	107.11	5	Manhole
7	P-8	3.33	18	Cir	38.289	106.78	106.96	0.470	107.56	107.74	0.04	107.78	6	Manhole
8	P-10	10.93	24	Cir	132.322	105.36	105.55	0.144	107.36*	107.77*	0.04	107.81	5	Manhole
9	P-12	0.50	15	Cir	15.500	105.82	106.07	1.613	106.65	106.35	n/a	106.35	4	Manhole
10	P-13	0.82	15	Cir	19.950	105.82	106.19	1.855	106.65	106.54	0.03	106.54	4	Manhole
11	P-16	0.91	15	Cir	17.999	104.61	104.95	1.889	104.90	105.32	0.03	105.32	2	Manhole
12	P-17	1.06	15	Cir	24.016	104.61	105.04	1.790	104.93	105.44	n/a	105.44	2	Manhole
13	P-20	3.86	18	Cir	50.010	103.32	103.56	0.480	104.17	104.41	0.04	104.45	1	Manhole
14	P-19	1.69	18	Cir	35.000	103.56	103.74	0.514	104.45	104.47	0.01	104.48	13	Manhole
15	P-7	7.47	24	Cir	58.620	95.20	97.16	3.344	96.55	98.13	n/a	98.13 j	End	Manhole
16	P-1	6.54	18	Cir	10.333	97.66	97.87	2.032	98.41	98.86	0.09	98.86	15	Manhole
17	P-3.1	4.68	18	Cir	83.859	97.87	98.69	0.978	98.86	99.52	n/a	99.52 j	16	Manhole
18	P-5	4.71	18	Cir	60.051	98.69	99.29	0.999	99.52	100.12	n/a	100.12	17	Manhole
19	P-4	3.14	15	Cir	35.001	99.54	100.24	2.000	100.12	100.95	0.06	100.95	18	Manhole
20	P-2	2.12	15	Cir	23.500	98.12	98.59	2.000	98.86	99.17	n/a	99.17 j	16	Manhole

Project File: Phase 4 10-Year.stm | Number of lines: 20 | Run Date: 11/24/2025

NOTES: Known Qs only ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	93.584	1.00	14.00	0.40	0.40	5.60	10.0	16.0	0.0	17.97	25.46	4.67	30	0.51	101.84	102.32	103.82	104.03	104.64	110.62	P-21
2	1	209.315	1.00	11.00	0.40	0.40	4.40	10.0	14.8	0.0	14.12	25.05	4.62	30	0.50	102.32	103.36	104.10	104.66	110.62	109.79	P-18
3	2	104.431	1.00	8.00	0.40	0.40	3.20	10.0	14.1	0.0	12.56	25.08	4.89	30	0.50	103.36	103.88	104.75	105.09	109.79	112.65	P-15
4	3	140.175	1.00	7.00	0.40	0.40	2.80	10.0	13.6	0.0	12.56	13.75	4.96	24	0.49	104.38	105.07	105.88	106.57	112.65	112.03	P-14
5	4	64.763	1.00	4.00	0.40	0.40	1.60	10.0	13.3	0.0	11.53	13.12	4.42	24	0.45	105.07	105.36	106.65	106.88	112.03	111.70	P-11
6	5	181.412	1.00	2.00	0.40	0.40	0.80	10.0	10.3	0.0	3.24	14.03	1.99	24	0.51	105.36	106.29	106.94	107.09	111.70	112.21	P-9
7	6	38.289	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	3.33	6.24	3.58	18	0.47	106.78	106.96	107.56	107.74	112.21	111.55	P-8
8	5	132.322	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	10.93	7.43	3.48	24	0.14	105.36	105.55	107.36	107.77	111.70	113.40	P-10
9	4	15.500	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	0.50	7.11	1.54	15	1.61	105.82	106.07	106.65	106.35	112.03	111.69	P-12
10	4	19.950	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	0.82	7.62	1.91	15	1.85	105.82	106.19	106.65	106.54	112.03	111.68	P-13
11	2	17.999	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	0.91	7.69	3.58	15	1.89	104.61	104.95	104.90	105.32	109.79	109.44	P-16
12	2	24.016	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.06	7.49	3.70	15	1.79	104.61	105.04	104.93	105.44	109.79	109.58	P-17
13	1	50.010	1.00	2.00	0.40	0.40	0.80	10.0	10.6	0.0	3.86	6.30	3.75	18	0.48	103.32	103.56	104.17	104.41	110.62	110.59	P-20
14	13	35.000	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.69	6.53	1.77	18	0.51	103.56	103.74	104.45	104.47	110.59	110.59	P-19
15	End	58.620	1.00	6.00	0.40	0.40	2.40	10.0	11.2	0.0	7.47	35.84	4.13	24	3.34	95.20	97.16	96.55	98.13	97.44	103.79	P-7
16	15	10.333	1.00	5.00	0.40	0.40	2.00	10.0	11.1	0.0	6.54	12.97	6.32	18	2.03	97.66	97.87	98.41	98.86	103.79	104.09	P-1
17	16	83.859	1.00	3.00	0.40	0.40	1.20	10.0	10.6	0.0	4.68	9.00	4.23	18	0.98	97.87	98.69	98.86	99.52	104.09	105.35	P-3.1
18	17	60.051	1.00	2.00	0.40	0.40	0.80	10.0	10.2	0.0	4.71	9.10	4.68	18	1.00	98.69	99.29	99.52	100.12	105.35	105.90	P-5
19	18	35.001	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	3.14	7.91	4.97	15	2.00	99.54	100.24	100.12	100.95	105.90	105.90	P-4
20	16	23.500	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	2.12	7.91	3.31	15	2.00	98.12	98.59	98.86	99.17	104.09	103.84	P-2

Project File: Phase 4 10-Year.stm | Number of lines: 20 | Run Date: 11/24/2025

NOTES:Known Qs only ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
(1)	(in) (2)	(cfs) (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(ft) (12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(K) (23)	(ft) (24)
1	30	17.97	101.84	103.82	1.98	4.17	4.31	0.29	104.11	0.273	93.584	102.32	104.03	1.71	3.57	5.04	0.39	104.42	0.390	0.332	0.310	0.20	0.08
2	30	14.12	102.32	104.10	1.78	3.75	3.77	0.22	104.33	0.214	209.315	103.36	104.66	1.30	2.58	5.47	0.46	105.13	0.551	0.383	0.801	0.20	0.09
3	30	12.56	103.36	104.75	1.39	2.81	4.46	0.31	105.06	0.348	104.431	103.88	105.09	1.21	2.36	5.31	0.44	105.53	0.552	0.450	0.470	0.20	0.09
4	24	12.56	104.38	105.88	1.50*	2.53	4.96	0.38	106.27	0.492	140.175	105.07	106.57	1.50	2.53	4.96	0.38	106.96	0.492	0.492	0.689	0.20	0.08
5	24	11.53	105.07	106.65	1.58	2.66	4.33	0.29	106.94	0.372	64.763	105.36	106.88	1.52	2.56	4.51	0.32	107.19	0.405	0.388	0.251	0.20	0.06
6	24	3.24	105.36	106.94	1.58	2.66	1.22	0.02	106.96	0.029	181.412	106.29	107.09	0.80	1.17	2.76	0.12	107.21	0.240	0.135	0.244	0.20	0.02
7	18	3.33	106.78	107.56	0.78*	0.93	3.59	0.20	107.76	0.470	38.289	106.96	107.74	0.78	0.93	3.58	0.20	107.94	0.468	0.469	0.179	0.20	0.04
8	24	10.93	105.36	107.36	2.00*	3.14	3.48	0.19	107.55	0.311	132.322	105.55	107.77	2.00	3.14	3.48	0.19	107.96	0.311	0.311	0.412	0.20	0.04
9	15	0.50	105.82	106.65	0.83	0.20	0.58	0.10	106.75	0.000	15.500	106.07	106.35	0.28**	0.20	2.50	0.10	106.44	0.000	0.000	n/a	0.20	n/a
10	15	0.82	105.82	106.65	0.83	0.29	0.95	0.13	106.78	0.000	19.950	106.19	106.54	0.35**	0.29	2.86	0.13	106.67	0.000	0.000	n/a	0.20	0.03
11	15	0.91	104.61	104.90	0.29*	0.22	4.21	0.14	105.04	0.000	17.999	104.95	105.32	0.37**	0.31	2.95	0.14	105.46	0.000	0.000	n/a	0.20	0.03
12	15	1.06	104.61	104.93	0.32*	0.25	4.31	0.15	105.08	0.000	24.016	105.04	105.44	0.40**	0.34	3.08	0.15	105.59	0.000	0.000	n/a	0.20	n/a
13	18	3.86	103.32	104.17	0.85*	1.03	3.75	0.22	104.39	0.480	50.010	103.56	104.41	0.85	1.03	3.75	0.22	104.63	0.480	0.480	0.240	0.20	0.04
14	18	1.69	103.56	104.45	0.89	1.09	1.54	0.04	104.49	0.079	35.000	103.74	104.47	0.73	0.85	1.99	0.06	104.53	0.154	0.116	0.041	0.20	0.01
15	24	7.47	95.20	96.55	1.35	1.51	3.31	0.38	96.93	0.000	58.620	97.16	98.13 j	0.97**	1.51	4.94	0.38	98.51	0.000	0.000	n/a	0.20	0.08
16	18	6.54	97.66	98.41	0.75*	0.89	7.35	0.44	98.85	0.000	10.333	97.87	98.86	0.99**	1.23	5.30	0.44	99.29	0.000	0.000	n/a	0.20	0.09
17	18	4.68	97.87	98.86	0.99	1.00	3.79	0.34	99.20	0.000	83.859	98.69	99.52 j	0.83**	1.00	4.66	0.34	99.86	0.000	0.000	n/a	0.20	n/a
18	18	4.71	98.69	99.52	0.83	1.00	4.69	0.34	99.86	0.000	60.051	99.29	100.12	0.83**	1.01	4.67	0.34	100.46	0.000	0.000	n/a	0.20	n/a
19	15	3.14	99.54	100.12	0.58	0.56	5.59	0.29	100.42	0.000	35.001	100.24	100.95	0.71**	0.72	4.34	0.29	101.25	0.000	0.000	n/a	0.20	0.06
20	15	2.12	98.12	98.86	0.74	0.56	2.81	0.22	99.08	0.000	23.500	98.59	99.17 j	0.58**	0.56	3.80	0.22	99.39	0.000	0.000	n/a	0.20	0.04

Project File: Phase 4 10-Year.stm | Number of lines: 20 | Run Date: 11/24/2025

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraflow HGL Computation Procedure

General Procedure:

Hydraflow computes the HGL using the Bernoulli energy equation. Manning's equation is used to determine energy losses due to pipe friction. In a standard step, iterative procedure, Hydraflow assumes upstream HGLs until the energy equation balances. If the energy equation cannot balance, supercritical flow exists and critical depth is temporarily assumed at the upstream end. A supercritical flow Profile is then computed using the same procedure in a downstream direction using momentum principles.

Col. 1 The line number being computed. Calculations begin at Line 1 and proceed upstream.

Col. 2 The line size. In the case of non-circular pipes, the line rise is printed above the span.

Col. 3 Total flow rate in the line.

Col. 4 The elevation of the downstream invert.

Col. 5 Elevation of the hydraulic grade line at the downstream end. This is computed as the upstream HGL + Minor loss of this line's downstream line.

Col. 6 The downstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 7 Cross-sectional area of the flow at the downstream end.

Col. 8 The velocity of the flow at the downstream end, (Col. 3 / Col. 7).

Col. 9 Velocity head (Velocity squared / 2g).

Col. 10 The elevation of the energy grade line at the downstream end, HGL + Velocity head, (Col. 5 + Col. 9).

Col. 11 The friction slope at the downstream end (the S or Slope term in Manning's equation).

Col. 12 The line length.

Col. 13 The elevation of the upstream invert.

Col. 14 Elevation of the hydraulic grade line at the upstream end.

Col. 15 The upstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 16 Cross-sectional area of the flow at the upstream end.

Col. 17 The velocity of the flow at the upstream end, (Col. 3 / Col. 16).

Col. 18 Velocity head (Velocity squared / 2g).

Col. 19 The elevation of the energy grade line at the upstream end, HGL + Velocity head, (Col. 14 + Col. 18) .

Col. 20 The friction slope at the upstream end (the S or Slope term in Manning's equation).

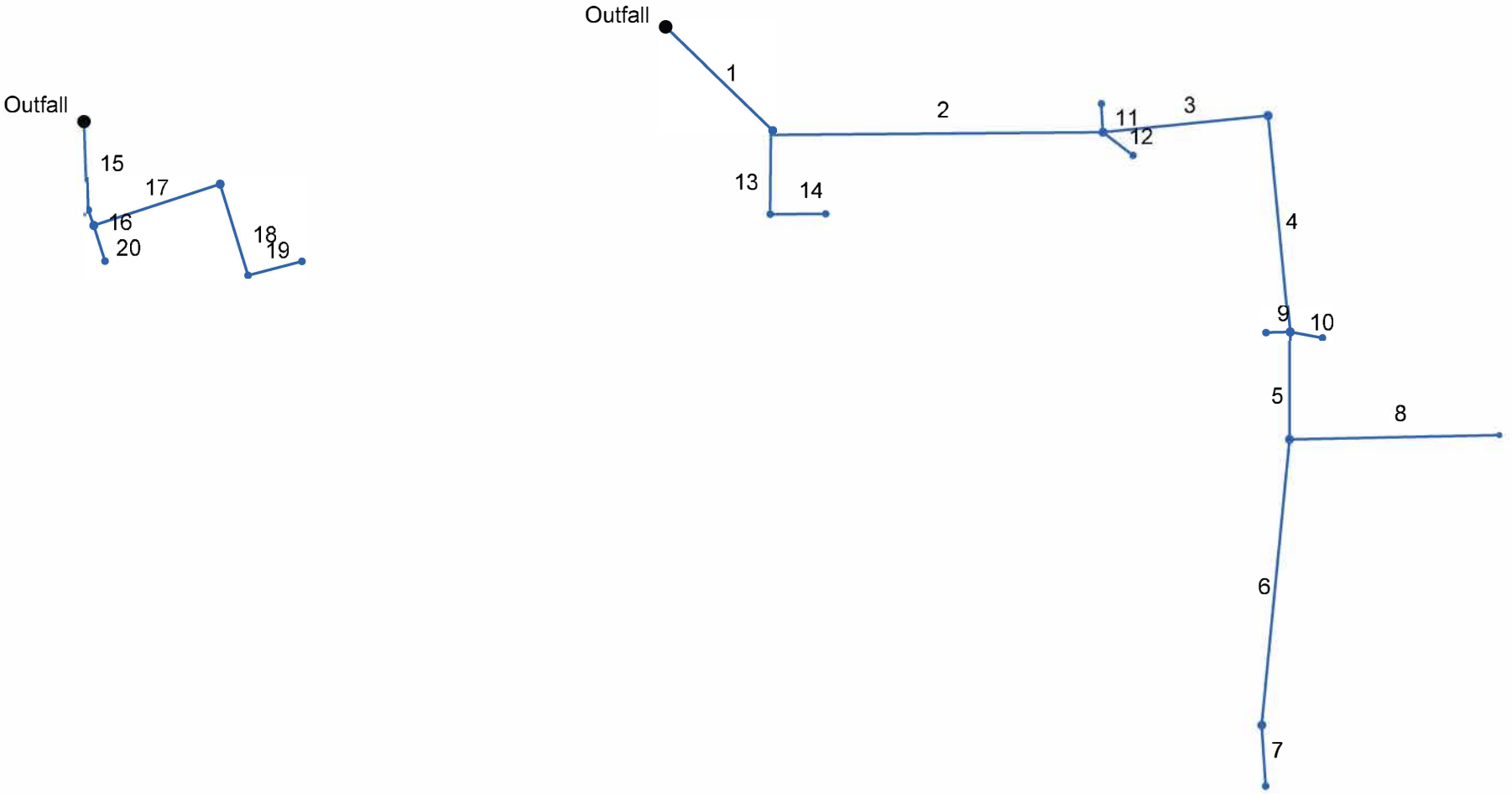
Col. 21 The average of the downstream and upstream friction slopes.

Col. 22 Energy loss. Average Sf/100 x Line Length (Col. 21/100 x Col. 12). Equals (EGL upstream - EGL downstream) +/- tolerance.

Col. 23 The junction loss coefficient (K).

Col. 24 Minor loss. (Col. 23 x Col. 18). Is added to upstream HGL and used as the starting HGL for the next upstream line(s).

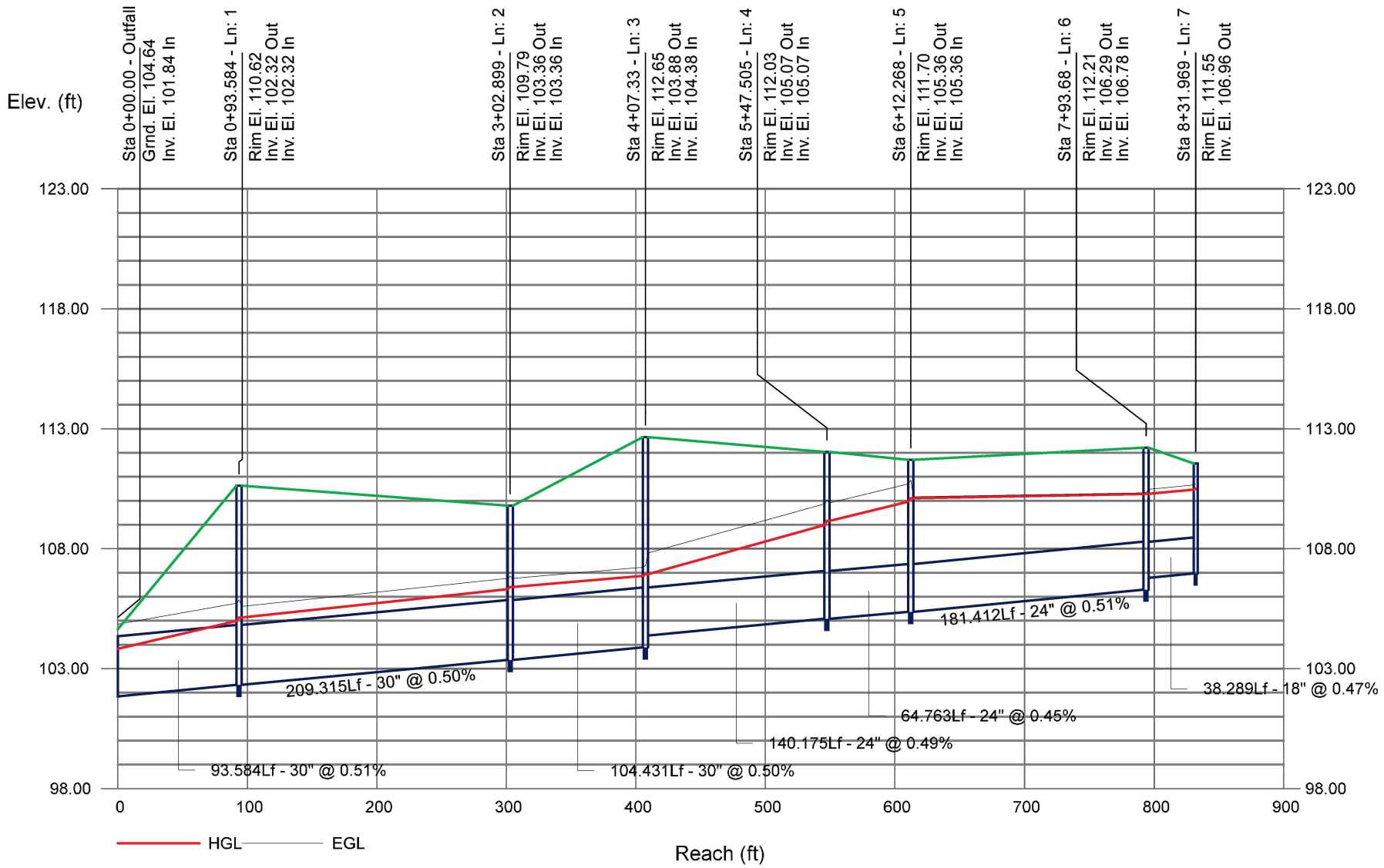
Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Phase 4 100-Year.stm	* Figure not OCR Compatible	Number of lines: 20	Date: 11/24/2025

Storm Sewer Profile

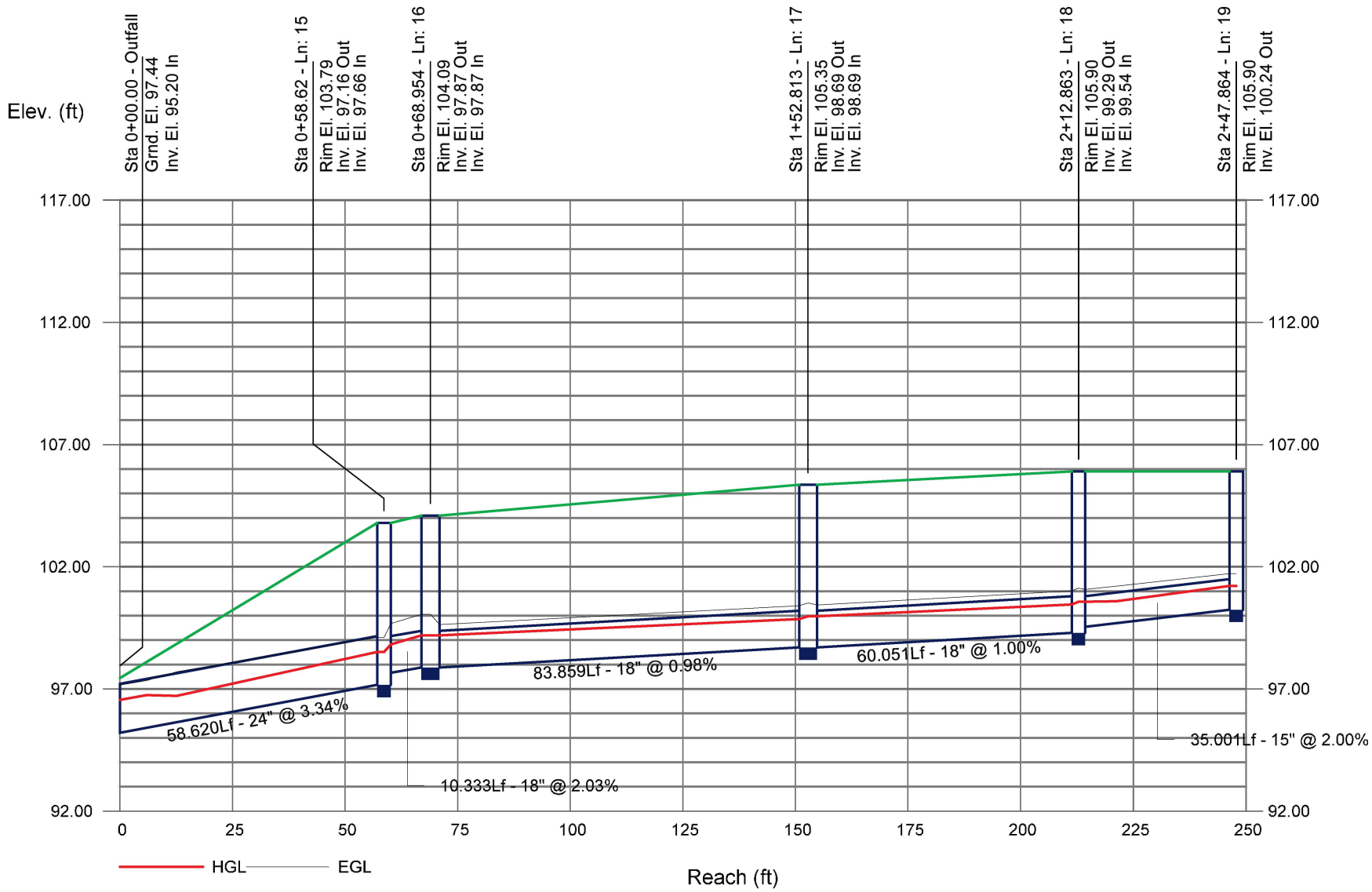
Proj. file: Phase 4 100-Year.stm



* Figure not OCR Compatible

Storm Sewer Profile

Proj. file: Phase 4 100-Year.stm



* Figure not OCR Compatible

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	P-21	33.85	30	Cir	93.584	101.84	102.32	0.513	103.82*	104.98*	0.15	105.13	End	Manhole
2	P-18	26.60	30	Cir	209.315	102.32	103.36	0.497	105.13*	106.30*	0.09	106.39	1	Manhole
3	P-15	23.68	30	Cir	104.431	103.36	103.88	0.498	106.39*	106.86*	0.07	106.93	2	Manhole
4	P-14	23.68	24	Cir	140.175	104.38	105.07	0.492	106.93*	108.98*	0.18	109.15	3	Manhole
5	P-11	21.75	24	Cir	64.763	105.07	105.36	0.448	109.15*	109.95*	0.15	110.10	4	Manhole
6	P-9	6.01	24	Cir	181.412	105.36	106.29	0.513	110.10*	110.27*	0.01	110.28	5	Manhole
7	P-8	6.17	18	Cir	38.289	106.78	106.96	0.470	110.28*	110.46*	0.04	110.50	6	Manhole
8	P-10	20.39	24	Cir	132.322	105.36	105.55	0.144	110.10*	111.53*	0.13	111.66	5	Manhole
9	P-12	0.91	15	Cir	15.500	105.82	106.07	1.613	109.15*	109.16*	0.00	109.16	4	Manhole
10	P-13	1.52	15	Cir	19.950	105.82	106.19	1.855	109.15*	109.17*	0.00	109.17	4	Manhole
11	P-16	1.68	15	Cir	17.999	104.61	104.95	1.889	106.39*	106.41*	0.01	106.42	2	Manhole
12	P-17	1.95	15	Cir	24.016	104.61	105.04	1.790	106.39*	106.42*	0.01	106.43	2	Manhole
13	P-20	7.26	18	Cir	50.010	103.32	103.56	0.480	105.13*	105.45*	0.05	105.50	1	Manhole
14	P-19	3.13	18	Cir	35.000	103.56	103.74	0.514	105.50*	105.54*	0.01	105.55	13	Manhole
15	P-7	13.98	24	Cir	58.620	95.20	97.16	3.344	96.55	98.51	n/a	98.51 j	End	Manhole
16	P-1	12.23	18	Cir	10.333	97.66	97.87	2.032	98.82	99.19	n/a	99.19	15	Manhole
17	P-3.1	8.73	18	Cir	83.859	97.87	98.69	0.978	99.19	99.86	0.11	99.97	16	Manhole
18	P-5	8.78	18	Cir	60.051	98.69	99.29	0.999	99.97	100.45	0.11	100.57	17	Manhole
19	P-4	5.81	15	Cir	35.001	99.54	100.24	2.000	100.57	101.21	n/a	101.21 j	18	Manhole
20	P-2	3.98	15	Cir	23.500	98.12	98.59	2.000	99.19	99.40	n/a	99.40 j	16	Manhole

Project File: Phase 4 100-Year.stm | Number of lines: 20 | Run Date: 11/24/2025

NOTES: Known Qs only ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	93.584	1.00	14.00	0.40	0.40	5.60	10.0	13.2	0.0	33.85	25.46	7.51	30	0.51	101.84	102.32	103.82	104.98	104.64	110.62	P-21
2	1	209.315	1.00	11.00	0.40	0.40	4.40	10.0	12.6	0.0	26.60	25.05	5.42	30	0.50	102.32	103.36	105.13	106.30	110.62	109.79	P-18
3	2	104.431	1.00	8.00	0.40	0.40	3.20	10.0	12.2	0.0	23.68	25.08	4.82	30	0.50	103.36	103.88	106.39	106.86	109.79	112.65	P-15
4	3	140.175	1.00	7.00	0.40	0.40	2.80	10.0	11.9	0.0	23.68	13.75	7.54	24	0.49	104.38	105.07	106.93	108.98	112.65	112.03	P-14
5	4	64.763	1.00	4.00	0.40	0.40	1.60	10.0	11.8	0.0	21.75	13.12	6.92	24	0.45	105.07	105.36	109.15	109.95	112.03	111.70	P-11
6	5	181.412	1.00	2.00	0.40	0.40	0.80	10.0	10.2	0.0	6.01	14.03	1.91	24	0.51	105.36	106.29	110.10	110.27	111.70	112.21	P-9
7	6	38.289	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	6.17	6.24	3.49	18	0.47	106.78	106.96	110.28	110.46	112.21	111.55	P-8
8	5	132.322	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	20.39	7.43	6.49	24	0.14	105.36	105.55	110.10	111.53	111.70	113.40	P-10
9	4	15.500	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	0.91	7.11	0.74	15	1.61	105.82	106.07	109.15	109.16	112.03	111.69	P-12
10	4	19.950	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.52	7.62	1.24	15	1.85	105.82	106.19	109.15	109.17	112.03	111.68	P-13
11	2	17.999	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.68	7.69	1.37	15	1.89	104.61	104.95	106.39	106.41	109.79	109.44	P-16
12	2	24.016	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.95	7.49	1.59	15	1.79	104.61	105.04	106.39	106.42	109.79	109.58	P-17
13	1	50.010	1.00	2.00	0.40	0.40	0.80	10.0	10.3	0.0	7.26	6.30	4.11	18	0.48	103.32	103.56	105.13	105.45	110.62	110.59	P-20
14	13	35.000	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	3.13	6.53	1.77	18	0.51	103.56	103.74	105.50	105.54	110.59	110.59	P-19
15	End	58.620	1.00	6.00	0.40	0.40	2.40	10.0	10.6	0.0	13.98	35.84	6.21	24	3.34	95.20	97.16	96.55	98.51	97.44	103.79	P-7
16	15	10.333	1.00	5.00	0.40	0.40	2.00	10.0	10.6	0.0	12.23	12.97	7.88	18	2.03	97.66	97.87	98.82	99.19	103.79	104.09	P-1
17	16	83.859	1.00	3.00	0.40	0.40	1.20	10.0	10.3	0.0	8.73	9.00	5.60	18	0.98	97.87	98.69	99.19	99.86	104.09	105.35	P-3.1
18	17	60.051	1.00	2.00	0.40	0.40	0.80	10.0	10.1	0.0	8.78	9.10	5.72	18	1.00	98.69	99.29	99.97	100.45	105.35	105.90	P-5
19	18	35.001	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	5.81	7.91	5.53	15	2.00	99.54	100.24	100.57	101.21	105.90	105.90	P-4
20	16	23.500	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	3.98	7.91	4.15	15	2.00	98.12	98.59	99.19	99.40	104.09	103.84	P-2

Project File: Phase 4 100-Year.stm | Number of lines: 20 | Run Date: 11/24/2025

NOTES:Known Qs only ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
(1)	(in) (2)	(cfs) (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(ft) (12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(K) (23)	(ft) (24)
1	30	33.85	101.84	103.82	1.98	4.17	8.12	1.02	104.84	0.968	93.584	102.32	104.98	2.50	4.91	6.90	0.74	105.72	0.907	0.938	0.878	0.20	0.15
2	30	26.60	102.32	105.13	2.50	4.91	5.42	0.46	105.59	0.560	209.315	103.36	106.30	2.50	4.91	5.42	0.46	106.76	0.560	0.560	1.173	0.20	0.09
3	30	23.68	103.36	106.39	2.50	4.91	4.82	0.36	106.76	0.444	104.431	103.88	106.86	2.50	4.91	4.82	0.36	107.22	0.444	0.444	0.464	0.20	0.07
4	24	23.68	104.38	106.93	2.00	3.14	7.54	0.88	107.81	1.460	140.175	105.07	108.98	2.00	3.14	7.54	0.88	109.86	1.459	1.460	2.046	0.20	0.18
5	24	21.75	105.07	109.15	2.00	3.14	6.92	0.75	109.90	1.232	64.763	105.36	109.95	2.00	3.14	6.92	0.75	110.70	1.231	1.231	0.798	0.20	0.15
6	24	6.01	105.36	110.10	2.00	3.14	1.91	0.06	110.16	0.094	181.412	106.29	110.27	2.00	3.14	1.91	0.06	110.33	0.094	0.094	0.171	0.20	0.01
7	18	6.17	106.78	110.28	1.50	1.77	3.49	0.19	110.47	0.460	38.289	106.96	110.46	1.50	1.77	3.49	0.19	110.65	0.460	0.460	0.176	0.20	0.04
8	24	20.39	105.36	110.10	2.00	3.14	6.49	0.66	110.76	1.082	132.322	105.55	111.53	2.00	3.14	6.49	0.65	112.19	1.082	1.082	1.432	0.20	0.13
9	15	0.91	105.82	109.15	1.25	1.23	0.74	0.01	109.16	0.026	15.500	106.07	109.16	1.25	1.23	0.74	0.01	109.17	0.026	0.026	0.004	0.20	0.00
10	15	1.52	105.82	109.15	1.25	1.23	1.24	0.02	109.18	0.074	19.950	106.19	109.17	1.25	1.23	1.24	0.02	109.19	0.074	0.074	0.015	0.20	0.00
11	15	1.68	104.61	106.39	1.25	1.23	1.37	0.03	106.42	0.090	17.999	104.95	106.41	1.25	1.23	1.37	0.03	106.44	0.090	0.090	0.016	0.20	0.01
12	15	1.95	104.61	106.39	1.25	1.23	1.59	0.04	106.43	0.121	24.016	105.04	106.42	1.25	1.23	1.59	0.04	106.46	0.121	0.121	0.029	0.20	0.01
13	18	7.26	103.32	105.13	1.50	1.77	4.11	0.26	105.39	0.637	50.010	103.56	105.45	1.50	1.77	4.11	0.26	105.71	0.636	0.636	0.318	0.20	0.05
14	18	3.13	103.56	105.50	1.50	1.77	1.77	0.05	105.55	0.118	35.000	103.74	105.54	1.50	1.77	1.77	0.05	105.59	0.118	0.118	0.041	0.20	0.01
15	24	13.98	95.20	96.55	1.35	2.25	6.20	0.60	97.15	0.000	58.620	97.16	98.51 j	1.35**	2.25	6.22	0.60	99.11	0.000	0.000	n/a	0.20	n/a
16	18	12.23	97.66	98.82	1.16*	1.47	8.35	0.85	99.67	0.000	10.333	97.87	99.19	1.32**	1.65	7.42	0.85	100.05	0.000	0.000	n/a	0.20	n/a
17	18	8.73	97.87	99.19	1.32	1.65	5.29	0.44	99.63	0.826	83.859	98.69	99.86	1.17	1.48	5.91	0.54	100.40	1.018	0.922	0.773	0.20	0.11
18	18	8.78	98.69	99.97	1.28	1.60	5.48	0.47	100.43	0.875	60.051	99.29	100.45	1.16	1.47	5.96	0.55	101.01	1.035	0.955	0.574	0.20	0.11
19	15	5.81	99.54	100.57	1.03	1.03	5.39	0.50	101.06	0.000	35.001	100.24	101.21 j	0.97**	1.03	5.66	0.50	101.71	0.000	0.000	n/a	0.20	n/a
20	15	3.98	98.12	99.19	1.07	0.84	3.55	0.35	99.54	0.000	23.500	98.59	99.40 j	0.81**	0.84	4.75	0.35	99.75	0.000	0.000	n/a	0.20	0.07

Project File: Phase 4 100-Year.stm | Number of lines: 20 | Run Date: 11/24/2025

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraflow HGL Computation Procedure

General Procedure:

Hydraflow computes the HGL using the Bernoulli energy equation. Manning's equation is used to determine energy losses due to pipe friction. In a standard step, iterative procedure, Hydraflow assumes upstream HGLs until the energy equation balances. If the energy equation cannot balance, supercritical flow exists and critical depth is temporarily assumed at the upstream end. A supercritical flow Profile is then computed using the same procedure in a downstream direction using momentum principles.

Col. 1 The line number being computed. Calculations begin at Line 1 and proceed upstream.

Col. 2 The line size. In the case of non-circular pipes, the line rise is printed above the span.

Col. 3 Total flow rate in the line.

Col. 4 The elevation of the downstream invert.

Col. 5 Elevation of the hydraulic grade line at the downstream end. This is computed as the upstream HGL + Minor loss of this line's downstream line.

Col. 6 The downstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 7 Cross-sectional area of the flow at the downstream end.

Col. 8 The velocity of the flow at the downstream end, (Col. 3 / Col. 7).

Col. 9 Velocity head (Velocity squared / 2g).

Col. 10 The elevation of the energy grade line at the downstream end, HGL + Velocity head, (Col. 5 + Col. 9).

Col. 11 The friction slope at the downstream end (the S or Slope term in Manning's equation).

Col. 12 The line length.

Col. 13 The elevation of the upstream invert.

Col. 14 Elevation of the hydraulic grade line at the upstream end.

Col. 15 The upstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 16 Cross-sectional area of the flow at the upstream end.

Col. 17 The velocity of the flow at the upstream end, (Col. 3 / Col. 16).

Col. 18 Velocity head (Velocity squared / 2g).

Col. 19 The elevation of the energy grade line at the upstream end, HGL + Velocity head, (Col. 14 + Col. 18) .

Col. 20 The friction slope at the upstream end (the S or Slope term in Manning's equation).

Col. 21 The average of the downstream and upstream friction slopes.

Col. 22 Energy loss. Average Sf/100 x Line Length (Col. 21/100 x Col. 12). Equals (EGL upstream - EGL downstream) +/- tolerance.

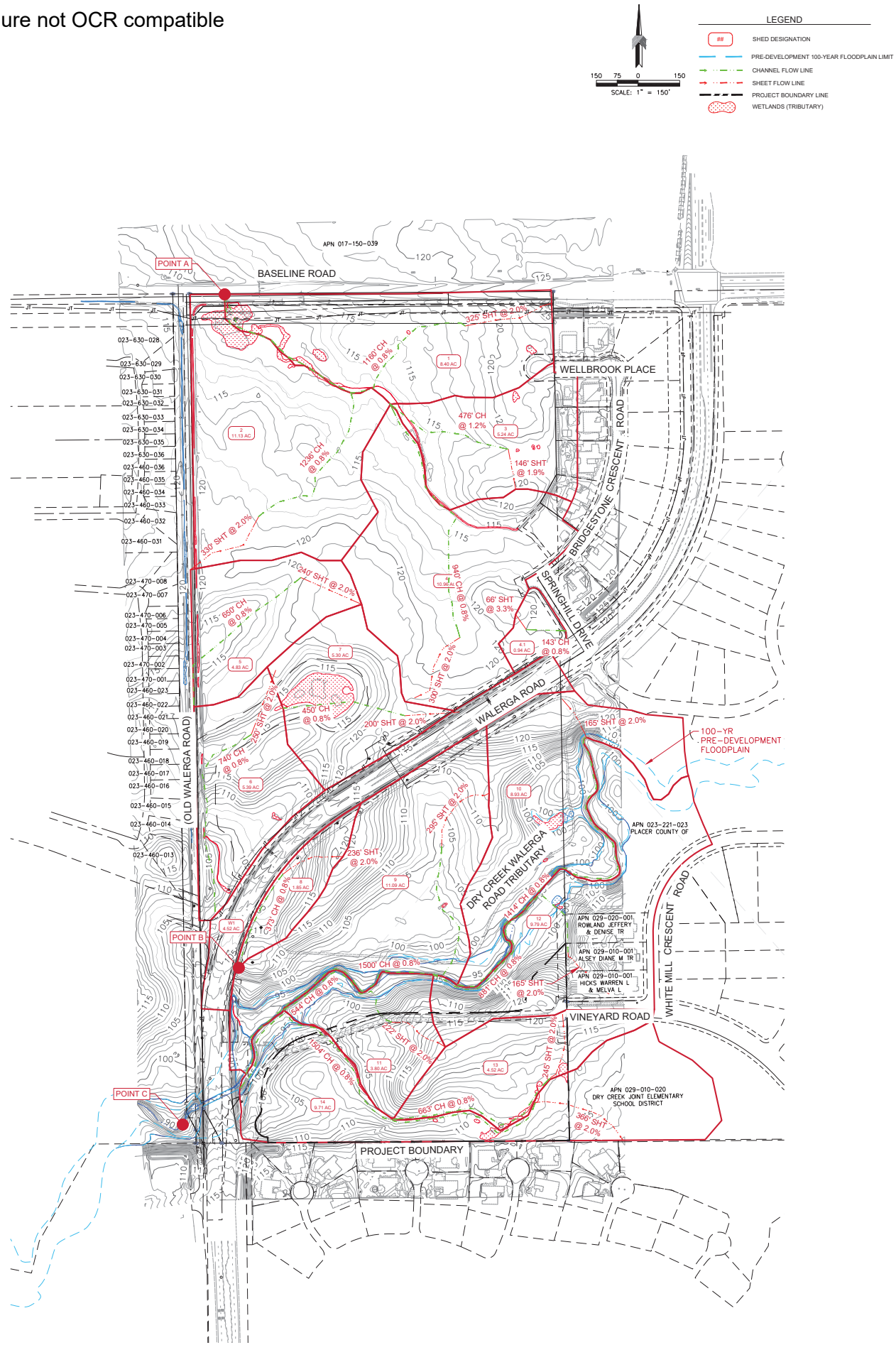
Col. 23 The junction loss coefficient (K).

Col. 24 Minor loss. (Col. 23 x Col. 18). Is added to upstream HGL and used as the starting HGL for the next upstream line(s).

EXHIBIT E

Drainage Maps

*Figure not OCR compatible



ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

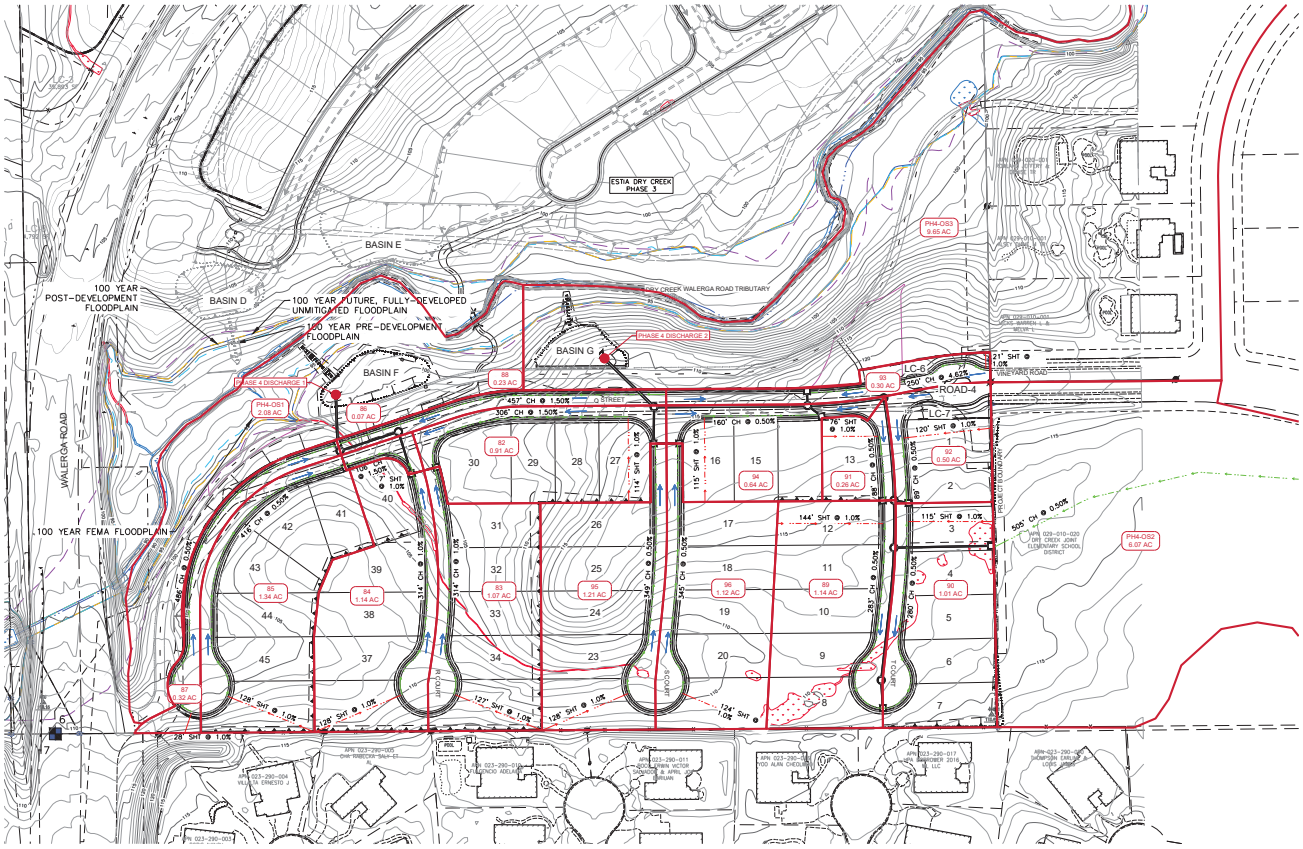
DRAINAGE MAP #1 - PRE-DEVELOPMENT SHED MAP - OVERALL

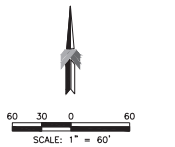
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E: info@King-Engineering-Inc.com

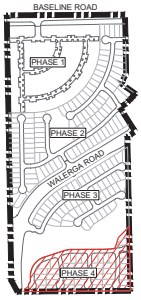
*Figure not OCR compatible





LEGEND

- WETLANDS (TRIBUTARY)
- WETLANDS (AVOIDED)
- PT.# DISCHARGE POINT
- STORM DRAIN: FLARED END SECTION, MANHOLE, DRAIN INLET
- PROPOSED
- EXISTING
- FUTURE
- PROJECT BOUNDARY LINE
- FLOW DIRECTION
- ## SHED DESIGNATION
- SHEET FLOW DIRECTION
- CHANNEL FLOW DIRECTION
- 100 YEAR PRE-DEVELOPMENT FLOODPLAIN
- 100 YEAR POST DEVELOPMENT FLOODPLAIN
- 100 YEAR ULTIMATE UNMITIGATED, FULLY DEVELOPED FLOODPLAIN



KEY MAP
NO SCALE

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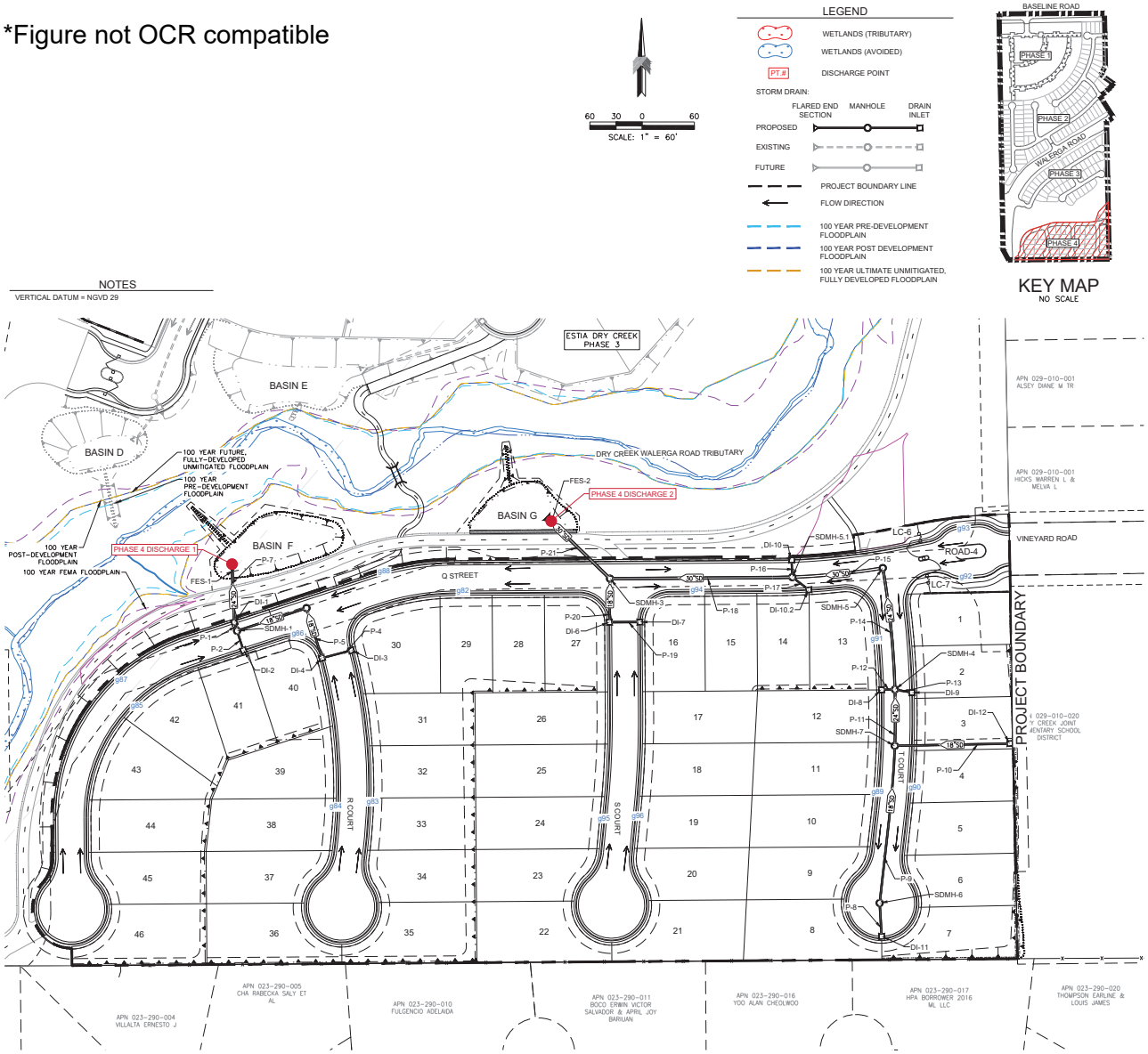
ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

DRAINAGE MAP #2 - POST-DEVELOPMENT SHED MAP - PHASE 4

PLACER COUNTY, CALIFORNIA

JUNE 2026

*Figure not OCR compatible



ESTIA DRY CREEK - PHASE 4

FLOW SUMMARY

ULT DEVELOPMENT

DRAINAGE INLET, MH OR LID	Q10 cfs	Q100 cfs
TO PHASE 4 DISCHARGE 1		
DI-3	3.14	5.81
DI-4	4.72	8.78
SDMH-2	4.69	8.73
DI-2	2.12	3.98
SDMH-1	6.55	12.23
DI-1	7.48	13.98
PT. F	7.43	13.89
TO PHASE 4 DISCHARGE 2		
DI-11	3.33	6.17
SDMH-6	3.24	6.01
DI-12	10.93	20.39
SDMH-7	11.54	21.75
DI-8	0.50	0.91
DI-9	0.82	1.52
SDMH-4	12.57	23.69
DI-10	0.72	1.43
DI-10.2	1.06	1.95
SDMH-5.1	13.76	25.92
DI-7	1.69	3.13
DI-6	3.85	7.26
SDMH-3 (PT. G)	17.60	33.17

INDEX OF PIPES

Pipe ID	Pipe Size (in)	Slope (%)	Q10 (cfs)	Q100 (cfs)
TO PHASE 4 DISCHARGE 1				
P-4	15	2.00%	3.14	5.81
P-5	18	1.00%	4.72	8.78
P-3.1	18	0.98%	4.69	8.73
P-2	15	2.00%	2.12	3.98
P-1	18	2.00%	6.55	12.23
P-7	24	3.34%	7.48	13.98
TO PHASE 4 DISCHARGE 2				
P-8	18	0.48%	3.33	6.17
P-9	18	0.50%	3.24	6.01
P-10	18	0.14%	10.93	20.39
P-11	24	0.45%	11.54	21.75
P-12	15	1.61%	0.50	0.91
P-13	15	1.90%	0.82	1.52
P-14	24	0.49%	12.57	23.69
P-15	30	0.50%	12.57	23.69
P-16	15	1.87%	0.72	1.43
P-17	15	1.77%	1.06	1.95
P-18	30	0.50%	13.76	25.92
P-19	18	0.50%	1.69	3.13
P-20	18	0.49%	3.85	7.26
P-21	30	0.50%	17.60	33.17

INDEX OF GUTTER FLOWS

Gutter No.	Q10 (cfs)	Gutter Slope	Target Inlet No.	Target Inlet Condition
TO PHASE 4 DISCHARGE 1				
g87	0.67	0.005	DI-1	SAG
g85	2.21	0.005	DI-2	SAG
g82	1.99	0.015	DI-3	SAG
g83	2.13	0.010	DI-3	SAG
g84	1.70	0.010	DI-4	GRADE
TO PHASE 4 DISCHARGE 2				
g95	1.69	0.005	DI-7	GRADE
g96	2.18	0.005	DI-6	GRADE
g93	0.72	0.046	DI-10	SAG
g9	1.37	0.005	DI-10.2	SAG
g89	1.79	0.005	DI-11	SAG
g90	1.68	0.005	DI-11	SAG
g91	0.50	0.005	DI-8	GRADE
g92	0.82	0.005	DI-9	GRADE

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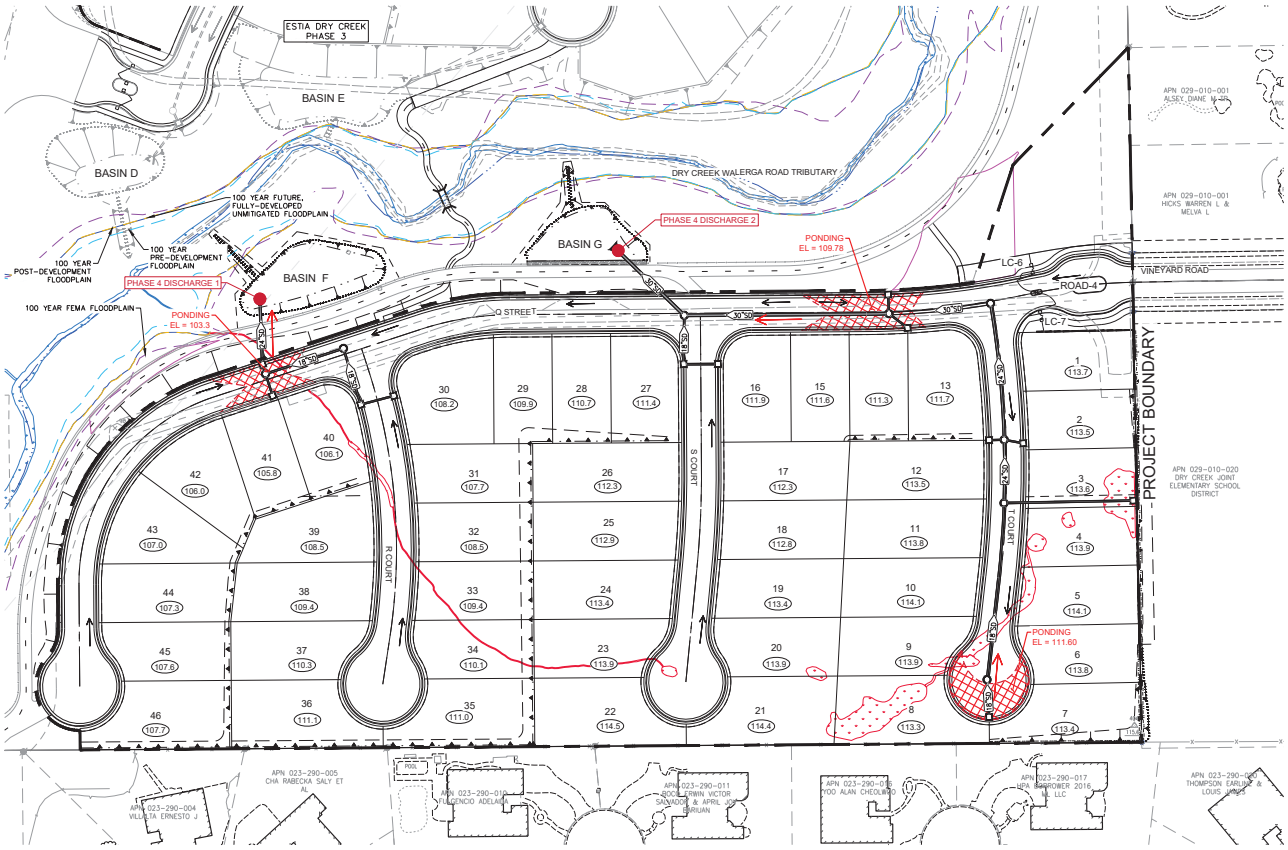
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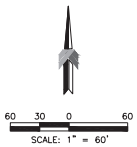
DRAINAGE MAP #3 - PROJECT INDEX - PHASE 4

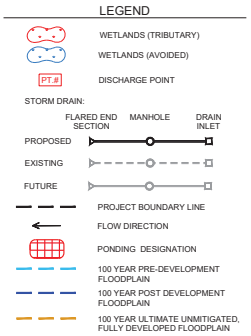
PLACER COUNTY, CALIFORNIA

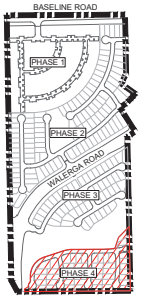
JUNE 2026

*Figure not OCR compatible









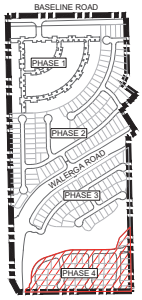
KEY MAP
NO SCALE

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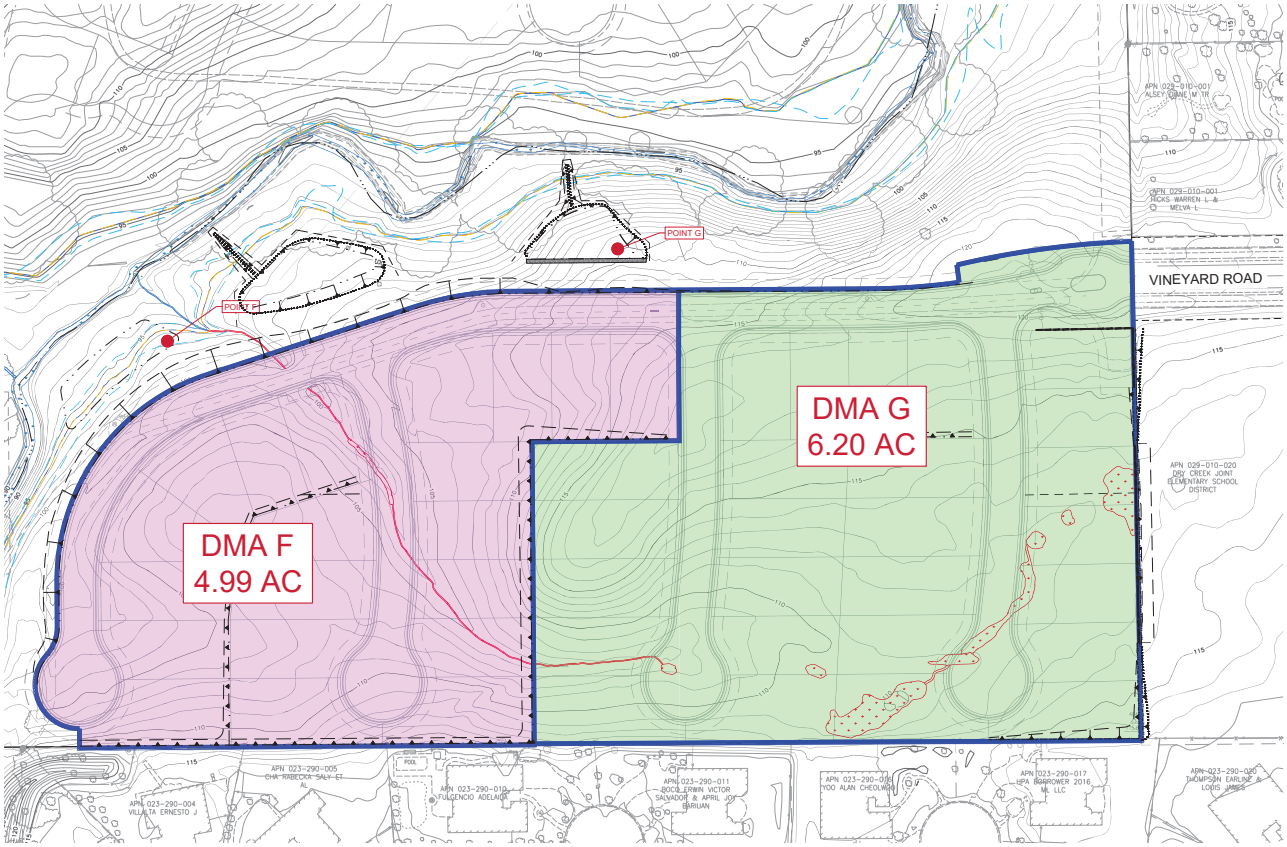
DRAINAGE MAP #4 - BLOCKED INLET SCENARIO - PHASE 4

PLACER COUNTY, CALIFORNIA
JUNE 2026



KEY MAP
NO SCALE

60 30 0 60
SCALE: 1" = 60'



TYPE OF PROJECT:

THIS IS A REGULATED PROJECT WITHIN THE PHASE II MS4 PERMIT AREA AND THE COUNTY AQUATIC RESOURCES PROGRAM AREA. PART OF DMA7 AND DMA8 ARE REGULATED ROAD PROJECTS

CONTAMINATED SOIL INFORMATION:

CALIFORNIA ENVIROSTOR WEBSITE LISTS SITE I.D. 60000719 95 AN ACTIVE, VOLUNTARY CLEAN UP ACTION (VCA) COVERING 0.14 ACRES OF THIS PROJECT

LEGEND

- STORM DRAIN FLARED END SECTION
- STORM DRAIN MANHOLE
- STORM DRAIN INLET
- DMA — DRAINAGE MANAGEMENT AREA
- REVISED BFE

NOTES

1. REFER TO THE DRAINAGE REPORT FOR POLLUTANT REMOVAL EFFICIENCIES EXPECTED FOR GRASS SWALES AND INFILTRATION BASINS.

*Figure not OCR compatible

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ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

DRAINAGE MAP #5 - SITE ASSESSMENT AND DRAINAGE MANAGEMENT AREA MAP - PHASE 4

PLACER COUNTY, CALIFORNIA

JUNE 2026

JOB NUMBER
23-25

EXHIBIT F

Post-Construction Storm Water Quality Plan Workbook

Post-Construction
Storm Water Quality Plan
West Placer County

For:

ESTIA DRY CREEK
within MS4 in Placer County, CA

Prepared for:

CHRIS DICKINSON
LAND DEVELOPMENT AND ACQUISITIONS PROJECT MANAGER
HOMES BY TOWNE
11060 WHITE ROCK ROAD, SUITE 150
RANCHO CORDOVA, CA 95670
(916) 782-2424

Prepared by:

King Engineering, Inc.
200 Auburn Folsom Road
Auburn, CA 95603
(530) 272-8328

Preparation Date:_____03/04/2026_____

Placer County Approval Date:_____

Revision Date December 11 2024

Section 1 General Project Information

The undersigned owner of the subject property, is responsible for the implementation of the provisions of this Storm Water Quality Plan (SWQP), including ongoing operations and maintenance (O&M), consistent with the requirements of the West Placer Storm Water Quality Design Manual and the State of California Phase II Small MS4 General Permit (Order No: 2013-0001-DWQ). If the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement the SWQP.

For all Regulated Projects (As identified in Form 1-2 below), the undersigned owner hereby grants access to all representatives of the Jurisdictional Agency for the sole purpose of performing O&M inspections of the installed treatment system(s) and hydromodification control(s) if any.

A copy of the final signed and fully approved SWQP shall be available on the subject site for the duration of construction and then stored with the project approval documentation and improvement plans in perpetuity.

Form 1-1 Project Identification and Owner's Certification

Project Site Address:	BASELINE ROAD		
Owner Name:	CHRIS DICKINSON		
Title	LAND DEVELOPMENT AND ACQUISITIONS PROJECT MANAGER		
Company	HOMES BY TOWNE		
Address	11060 WHITE ROCK ROAD, SUITE 150		
City, State, Zip Code	RANCHO CORDOVA, CA 95670		
Email	cdickinson@hbtsac.com		
Telephone #	(916) 782-2424		
Signature		Date	
Engineer:*	Curtis King		PE Stamp* (Required for all Regulated Projects)
Title	Principal Engineer		
Company	King Engineering, Inc.		
Address	200 Auburn Folsom Road		
City, State, Zip Code	Auburn, CA 95603		
Email	Curtis.King@King-Engineering-Inc.com		
Telephone #	(530) 272-8328		
Signature			
Brief Description of Project: (Attach additional sheets as necessary)	Phases 1-4 and Backbone Roads		

* Not required for Small Projects as determined in Form 1-2 below. Project owners are responsible for ensuring that all storm water facilities are designed by an appropriately licensed and qualified professional.

Form 1-2 Project Category	
Development Category (Select all that apply)	
[1]**Small Project** – All projects, except LUPs, that create and/or replace between 2,500-5,000 ft^2 of impervious surface or detached single family homes that create and/or replace 2,500 ft^2 or more of impervious surface and are not part of a larger plan of development.	
[2]Enter total new and/or replaced impervious surface (ft^2)	
[3]**Regulated Project** – All projects that create and/or replace 5,000 ft^2 or more of impervious surface.	
[4]**Regulated Redevelopment Project** with equal to, or greater than 50 percent increase in impervious area	
[5]**Regulated Redevelopment Project** with less than 50 percent increase in impervious area	
[6]Enter total pre-project impervious surface (ft^2)	
[7]Enter total new and/or replaced impervious surface (ft^2)	
[8]**Regulated Road or linear underground/overhead project (LUP)** creating 5,000 ft^2 or more of newly constructed contiguous impervious surface.	
[9]Enter total new and/or replaced impervious surface (ft^2)	
[10]**Regulated Hydromodification Management Project** – Regulated projects that create and/or replace 1 acre or more of impervious surface. A project that does not increase impervious surface area over the pre-project condition is not a hydromodification management project.	YES
[11]Enter total new and/or replaced impervious surface (ft^2)	2247652.44

Section 3 Regulated Projects

Section 3 forms are to be completed for all Regulated Projects.

Form 3-1 Site Location and Hydrologic Features

Site coordinates: *Take GPS measurement at approximate center of site*	[1] Latitude	[2] Longitude	[3] Elevation (ft. above sea level)	[4] 85th Percentile, 24 Hour Design Storm Depth (in):
	38.75051	-121.36295	110	0.9

[5] Receiving waters *Name of stream, lake or other downstream waterbody to which the site runoff eventually drains*	Dry Creek and Curry Creek
[6] 303(d) listed pollutants of concern *Refer to State Water Resources Control Board website* www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/#impaired	
[7] Is Project going to be phased? *If yes, ensure that the SWQP evaluates each phase with distinct DMAs, requiring LID BMPs to address runoff at time of completion.*	Yes

[8] *Use this form to show a conceptual schematic depicting DMAs and conveyance features connecting DMAs to the site outlet(s). An example is provided below that can be modified for the proposed project or a drawing clearly showing DMAs and flow routing may be attached.*

Example only
Modify for project specific SWQP
Use separate sheet if necessary

Please Refer to Site Assessment and Drainage Management Area Drainage Map

Form 3-2 Site Assessment and Layout Documentation

	Has this Item been considered in the Site Layout and depicted in the Site Plan?	
	Yes	**Not Applicable (Include brief explanation)**
Define the development envelope and protected areas, identifying areas that are most suitable for development and areas to be landscaped, or left undisturbed, and used for infiltration.	X	Reference Site Plan for infiltration basins and landscaped spaces to provide
Concentrate development on portions of the site with less permeable soils and preserve areas that can promote infiltration.		N/A
Limit overall impervious coverage of the site with paving and roofs.		N/A
Set back development from creeks, wetlands, and riparian habitats.	X	Reference Site Plan for setbacks and protected regions
To the extent practicable, avoid development and LID siting within floodplains.	X	Reference Site Plan for infiltration basins and landscaped spaces to provide
Preserve significant trees.	X	Reference Site Plan for protected trees
Conform site layout along natural landforms.	X	Site layout conforms to existing tributary flow paths and flood limits
Avoid excessive grading and disturbance of vegetation and soils.		N/A
Replicate the site's natural drainage patterns.	X	Site layout conforms to existing tributary flow paths and flood limits
Detain and retain runoff throughout the site.	X	Infiltration basins are incorporated to capture runoff throughout the site

Attach a Site Plan that incorporates the applicable considerations above. Ensure that the following items are included in the Site Plan:

Site Boundary
Soil types and areal extents, test pit and infiltration test locations
Topographic data with 1 ft. contours
Existing natural hydrologic features (depressions, watercourses, wetlands, riparian corridors)
Floodplain boundaries
Environmentally sensitive areas and areas to be preserved
Proposed locations and footprints of improvements creating new, or replaced, impervious surfaces
Potential pollutant sources and locations
Entire site divided into separate DMAs with unique identifiers
Existing and proposed site drainage network with flow directions and site run-on and discharge locations
Proposed design features and surface treatments used to minimize imperviousness and reduce runoff
Proposed locations and footprints of treatment and hydromodification management facilities
Design features for managing authorized non-stormwater discharges
Areas of soil and/or groundwater contamination
Existing utilities and easements
Maintenance areas

Form 3-3 Source Control Measures			
Potential Pollutant Generating Activity or Source	Check One		Describe the source control measures to be implemented for each potential pollutant generating activity or source present on the project as listed in Appendix C and in the CASQA Fact Sheets. Include any special features, materials, or methods of construction that will be used.
	Present	Not Applicable	
Accidental spills or leaks	☑	☐	measures per SC-11 fact sheet
Interior floor drains	☐	☑	
Parking/storage areas and maintenance	☐	☑	measure per SC-21, SC-22, SC-32 and SC-43 fact sheets
Indoor and structural pest control	☑	☐	measures done mainly by licensed pest control companies per SC-34, SC-61, SC-60 fact sheets
Pools, spas, ponds, decorative fountains, and other water features	☐	☑	measures per SC-72 fact sheet
Landscape/outdoor pesticide use	☑	☐	measures per SC-41, SC-60, SC-73 and SC-75 fact sheets
Restaurants, grocery stores, and other food service operations	☐	☑	
Refuse areas	☑	☐	homewoners to take measures per SC-34, SC-60
Industrial Processes	☐	☑	
Outdoor storage of equipment or materials	☐	☑	measures per SC-32, SC-41, SC-43 fact sheets
Vehicle and equipment cleaning	☑	☐	measures per SC-21 fact sheet
Vehicle and equipment repair and maintenance	☑	☐	measures per SC-22, SC-32 fact sheets
Fuel dispensing areas	☐	☑	
Loading docks	☐	☑	
Fire sprinkler test water	☐	☑	
Drain or wash water from boiler drain lines, condensate drain lines, rooftop equipment, drainage sumps, and other sources	☐	☑	
Unauthorized non-storm water discharges	☑	☐	measures per SC-10 fact sheet
Building and grounds maintenance	☑	☐	measures per SC-4, SC-43 fact sheets

The source control measures identified in this table shall be designed consistent with recommendations from the CASQA Stormwater BMP Handbook for New Development and Redevelopment[1], or from another equivalent manual.

[1] California Stormwater BMP Handbook New Development and Redevelopment. California Stormwater Quality Association (CASQA). January 2003.

Form 3-4 Runoff Reduction Calculator for Site Design Measures on Regulated Projects

[1]DMA ID No.			1		2		3		4	
Site Design Measure	**Runoff Reduction Parameters**			**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**
[2] Adjacent/On-Site Stream Setbacks and Buffers	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[3] Soil Quality Improvement and Maintenance	A_{pond} (ft^2)	*ponding area*		0		0		0		0
	D_{pond} (ft)	*ponding depth*								
	A_{sa} (ft^2)	*soil amendment area*								
	D_{sa} (ft)	*depth of amended soil*								
	n	*porosity of amended soil*								
[4] Tree Planting and Preservation	n_e	*number of new evergreen trees*	26	966	24	874	51	1817	0	0
	n_d	*number of new deciduous trees*	79		71		145		0	
	A_{tc} (ft^2)	*canopy area of existing trees to remain on the property*	0		0		0		0	
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[5] Rooftop and Impervious Area Disconnection	A_{imp} (ft^2)	*impervious drainage area*	125475	8470	113525	7663	92400	6237	0	0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[6] Porous Pavement	A_{res} (ft^2)	*area of gravel storage layer*		0		0		0		0
	D_{res} (ft)	*depth of gravel storage layer*								
	n_{agg}	*porosity of aggregate*								
	C	*efficiency factor*								
[7] Vegetated Swales	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[8] Rain Barrels and Cisterns	N	*number of rain barrels and/or cisterns*		0		0		0		0
	V_a (ft^3)	*volume of each rain barrel and/or cistern*								
[9] Do all Site Design Measures meet the design requirements outlined in the Fact Sheets?					**Yes**		**No**			
[10] Total Volume Reduction (ft^3)			**9435**		**8537**		**8054**		**0**	
[11] Effective Treated Impervious Area (ft^2)			**139781**		**126469**		**119323**		**0**	

Form 3-5 Computation of Water Quality Design Criteria for Stormwater Treatment and Baseline Hydromodification Measures

DMA ID No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
[1]Total impervious area requiring treatment	261360	261360	1027580.4		117089	239057	152155	189050														
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	121579	134891	908257	0	103073	213861	138139	168435	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)	174240	174240	440391.6		50181	97095	65209	81022														
[4] Composite DMA Runoff Coefficient (C_w) *Enter area weighted composite runoff coefficient representing entire DMA*	0.55	0.55	0.56		0.55	0.55	0.55	0.55														
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	8813	9210	40909	0	4566	9264	6058	7432	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.753	0.787	3.496	0.000	0.390	0.792	0.518	0.635	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[4] Runoff coefficient values for various materials are as follows: roofs 0.95, asphalt/concrete pavement 0.90, gravel pavement 0.80, managed turf 0.25, disturbed soil 0.25.

[5, 6] Values will equal zero if all impervious area has been treated by Site Design Measures.

DMA ID No.	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
[1]Total impervious area requiring treatment																						
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)																						
[4] Composite DMA Runoff Coefficient (Rc) *Enter area weighted composite runoff coefficient representing entire DMA*																						
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[4] Runoff coefficient values are as follows: roofs 0.95, asphalt/concrete pavement 0.90, gravel pavement 0.80, turf 0.25, disturbed soil 0.25.

[5, 6] Values will equal zero if all impervious area has been treated by Site Design Measures.

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**1/A**	**1/B**	**3/C**	
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	8813	9210	40909	
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5	5	
[4]BMP Surface Area (ft^2) *Top of BMP*	3223	7200	9805	
[5]Infiltration rate of underlying soils (in/hr)	0.12	0.12	0.12	
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	0.50	0.50	0.50	
[7]Ponding Depth (ft) *d_{BMP} = Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.5	0.5	0.5	-
[8]Infiltrating surface area, *SA_{BMP}* (ft^2) *Bottom of BMP*	3223	7200	9805	
[9]Planting media depth, *d_{media}* (ft)	1.5	1.5	1.5	
[10]Planting media porosity	0.55	0.55	0.55	
[11]Gravel depth, *d_{media}* (ft) *Only included in certain BMP types*	4.0	1.0	7.5	
[12]Gravel porosity	0.40	0.40	0.40	
[13]Retention Volume (ft^3) *$V_{retention}$ = Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	9,411.2	12,384.0	42,358.1	-
[14]Untreated Volume (ft^3) *$V_{untreated}$ = Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15] Treated Flow Rate (ft^3/s) *$Q_{treated}$ = 1/43,200*(Item 3 * Item 4)*	0.3730	0.8333	1.1349	0.0000
[16]Total Treated Flow Rate for Project (ft^3/s) *Q_{total} = Sum of Item 15 for all DMAs*	4.3276			
[17]Is WQV for each DMA treated on-site? *Check Yes if Item 14 equals 0 for all DMAs*	**Yes**	**X**	**No**	

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**4/D**	**5/E**	**6/F**	**7/G**
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	4566	9264	6058	7432
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5	5	5
[4]BMP Surface Area (ft^2) *Top of BMP*	2390	5721	5047	4005
[5]Infiltration rate of underlying soils (in/hr)	0.12	0.12	0.12	0.12
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	0.50	0.50	0.50	0.50
[7]Ponding Depth (ft) d_{BMP} *= Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.5	0.5	0.5	0.5
[8]Infiltrating surface area, SA_{BMP} (ft^2) *Bottom of BMP*	2390	5721	5047	4005
[9]Planting media depth, d_{media} (ft)	1.5	1.5	1.5	1.5
[10]Planting media porosity	0.55	0.55	0.55	0.55
[11]Gravel depth, d_{media} (ft) *Only included in certain BMP types*	2.0	1.0	1.0	2.0
[12]Gravel porosity	0.40	0.40	0.40	0.40
[13]Retention Volume (ft^3) $V_{retention}$ *= Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	5,067.2	9,839.7	8,681.0	8,490.0
[14]Untreated Volume (ft^3) $V_{untreated}$ *= Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15] Treated Flow Rate (ft^3/s) $Q_{treated}$ *= 1/43,200*(Item 3 * Item 4)*	0.2766	0.6621	0.5842	0.4635

Section 4
Regulated Hydromodification Management Projects

Form 4-1 Peak Runoff Response Time

(Complete Section 4 forms for Regulated Hydromodification Projects only)

Determine total runoff response time for pre- and post-construction conditions at each project outlet.

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	1	**2**	**3**	**4**	**1**	**2**	**3**	**4**
[1]Length of longest overland flow path *Not to exceed 100 ft*	100	100	100	100	100	100	100	100
[2]Slope of overland flow path (ft/ft)	0.0200	0.0200	0.0200	0.0200	0.0100	0.0100	0.0100	0.0100
[3]Manning's roughness coefficient for overland flow surface *See Table 5-5 of the Placer County SWMM*	0.0350	0.0350	0.0350	0.0350	0.0200	0.0200	0.0200	0.0200
[4]Overland flow response time (min) (0.355*(Item 1*Item 3)$^{0.6}$)/(Item 2$^{0.3}$)	2.43	2.43	2.43	2.43	2.14	2.14	2.14	2.14
[5]Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	D	D	D	D	D	D	D
[6]Current Land Cover Type(s) *Select from categories shown in Table 5-3 of the SWMM*	OS	OS	OS	OS	RES	RES	RES	RES
[7]Pervious Area Condition: *Based on the extent of vegetated cover Good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating*	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
[8]Infiltration Rate (in/hr) *Refer to Table 5-3 of the SWMM using Items 3, 4, and 5 above or obtain site specific field measurements (See Section 3.1.1)*	0.09	0.09	0.09	0.09	0.12	0.12	0.12	0.12
[9]Length of collector flow (ft)	600	600	1,500	100	400	100	500	600
[10]Cross-sectional area of collector flow facility (ft^2)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
[11]Wetted perimeter of collector flow facility (ft)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
[12]Manning's roughness of collector flow facility	0.060	0.060	0.060	0.060	0.015	0.015	0.015	0.015
[13]Slope of collector flow facility (ft/ft)	0.0250	0.0250	0.0250	0.0250	0.0050	0.0050	0.0050	0.0050
[14]Channel flow velocity (ft/sec) *V = (1.49 / Item 12) * (Item 10/Item 11) ^0.67 * (Item 13) ^0.5*	3.00	3.00	3.00	3.00	5.36	5.36	5.36	5.36
[15]Collector flow facility response time (min) *T_c = Item 9 /(Item 14 * 60)*	3.34	3.34	8.34	0.56	1.24	0.31	1.55	1.87
[16]Total runoff response time or T_t (min) *T_t = Item 4 + Item 15*	5.77	5.77	10.78	2.99	3.39	2.45	3.70	4.01

Section 4
Regulated Hydromodification Management Projects

Form 4-1 Peak Runoff Response Time

Determine total runoff response time for pre- and post-construction conditions at each project outlet.

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	5	**6**	**7**	**8**	**5**	**6**	**7**	**8**
[1]Length of longest overland flow path *Not to exceed 100 ft*	100	100	100		100	100	100	
[2]Slope of overland flow path (ft/ft)	0.0200	0.0200	0.0200		0.0100	0.0100	0.0100	
[3]Manning's roughness coefficient for overland flow surface *See Table 5-5 of the Placer County SWMM*	0.0350	0.0350	0.0350		0.0200	0.0200	0.0200	
[4]Overland flow response time (min) (0.336*(Item 1*Item 3)$^{0.6}$)/(Item 2$^{0.3}$)	2.43	2.43	2.43	0.00	2.14	2.14	2.14	0.00
[5]Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	D	D		D	D	D	
[6]Current Land Cover Type(s) *Select from categories shown in Table 5-3 of the SWMM*	OS	OS	OS		RES	RES	RES	
[7]Pervious Area Condition: *Based on the extent of vegetated cover Good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating*	GOOD	GOOD	GOOD		GOOD	GOOD	GOOD	
[8]Infiltration Rate (in/hr) *Refer to Table 5-3 of the SWMM using Items 3, 4, and 5 above or obtain site specific field measurements (See Section 3.1.1)*	0.09	0.09	0.09		0.12	0.12	0.12	
[9]Length of collector flow (ft)	1,000	500	490		1,000	1,000	1,000	
[10]Cross-sectional area of collector flow facility (ft^2)	2.00	2.00	2.00		2.00	2.00	2.00	
[11]Wetted perimeter of collector flow facility (ft)	3.00	3.00	3.00		3.00	3.00	3.00	
[12]Manning's roughness of collector flow facility	0.060	0.060	0.060		0.015	0.015	0.015	
[13]Slope of collector flow facility (ft/ft)	0.0250	0.0250	0.0250		0.0050	0.0050	0.0050	
[14]Channel flow velocity (ft/sec) *V = (1.49 / Item 12) * (Item 10/Item 11)^0.67 * (Item 13)^0.5*	3.00	3.00	3.00	0.00	5.36	5.36	5.36	0.00
[15]Collector flow facility response time (min) T_c *= Item 9 /(Item 14 * 60)*	5.56	2.78	2.73	0.00	3.11	3.11	3.11	0.00
[16]Total runoff response time or T_t (min) T_t *= Item 4 + Item 15*	8.00	5.22	5.16	0.00	5.25	5.25	5.25	0.00

Form 4-2 Hydromodification Target for Peak Runoff								
Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	1	2	3	4	1	2	3	4
[1] Drainage Area (ft^2) *Sum of all outlet level DMAs should equal total project area.*	435,600	435,600	1,467,972	167,270	435,600	435,600	1,467,972	167,270
[2] Impervious Area (ft^2) *Sum of all outlet level DMAs should equal total project impervious area.*	0	0	0	0	261,360	261,360	1,027,580	117,089
[3] Rainfall depth for 2yr storm with duration equal to response time (in) *See Placer County SWMM Table 5-A-1 for elevation of site and duration equal to response time*	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
[4] Unit peak runoff (cfs/acre) *q = 60/Form 4-1 Item 16 * Item 3*	2.39	2.39	1.28	4.61	4.08	5.63	3.73	3.44
[5] Infiltration factor (cfs/acre) *F_i = Form 4-1 Item 8 * (1 + 1 /(1.3 + 0.0005 * Form 3-1 Item 3))*	0.16	0.16	0.16	0.16	0.21	0.21	0.21	0.21
[6] Peak runoff from DMAs (cfs) *Q_p = Item 1 * Item 4 – Item 5 * (Item 1 - Item 2)*	22.53	22.53	38.20	17.26	40.26	55.88	124.72	13.09
[7] Total Pre-Project Peak Runof (ft^3/s) *Q_{total} = Sum of Item 6 for all Pre-construction DMAs*	141.01							
[8] Is the total post-project peak runoff equal to or less than the total pre-project peak runoff? *Yes, if Item 7 is greater than or equal to the sum of the Total Treated Flow Rates from Form 3-6 Item 16 and 3-7 Item 14.*	**YES**							

Form 4-2 Hydromodification Target for Peak Runoff								
Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	5	6	7	8	5	6	7	8
[1] Drainage Area (ft^2) *Sum of all outlet level DMAs should equal total project area.*	336,153	217,364	270,072		336,153	217,364	270,072	
[2] Impervious Area (ft^2) *Sum of all outlet level DMAs should equal total project impervious area.*	0	0	0		239,057	152,155	189,050	
[3] Rainfall depth for 2yr storm with duration equal to response time (in) *See Placer County SWMM Table 5-A-1 for elevation of site and duration equal to response time*	0.23	0.23	0.23		0.23	0.23	0.23	
[4] Unit peak runoff (cfs/acre) *q = 60/Form 4-1 Item 16 * Item 3*	1.73	2.65	2.67	-	2.63	2.63	2.63	-
[5] Infiltration factor (cfs/acre) *F_i = Form 4-1 Item 8 * (1 + 1 /(1.3 + 0.0005 * Form 3-1 Item 3))*	0.16	0.16	0.16	-	0.21	0.21	0.21	-
[6] Peak runoff from DMAs (cfs) *Q_p = Item 1 * Item 4 – Item 5 * (Item 1 - Item 2)*	12.21	12.53	15.74	-	19.98	12.91	16.04	-

Form 4-3 Detention Volumes for Hydromodification Management

	Post-construction DMAs to Project Outlet			
	1	**2**	**3**	**4**
[1] Land cover and hydrologic condition *See NRCD TR-55 Manual Table 2-2 for types*	RES	RES	RES	RES
[2] Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	D	D	D
[3] Drainage Area (A) (ft^2)	435,600	435,600	1,467,972	167,270
[4] Curve Number (CN) *Use Items 1 and 2 to select curve number from NRCS TR-55 Manual Table 2-2*	92	92	92	92
[5] Post-development soil storage capacity, S (in): *S = (1000 / Item 4) – 10*	0.9	0.9	0.9	0.9
[6] Precipitation for 2-yr, 24-hr storm (in) *See Placer County SWMM Table 5-A-1 for elevation of site and 24-hr duration depths*	1.90	1.90	1.90	1.90
[7] Post-developed runoff volume for 2-yr – 24-hour storm, V_{runoff} (ft^3): *V_{runoff} = Item 3 * (1 / 12) * [(Item 6 – 0.2 * Item 5)^2 / (Item 6 + 0.8 * Item 5)]*	41,666	41,666	140,416	16,000
[8] Attenuation Factor, $q_{out/in}$ (ratio of target outflow rate to peak inflow rate): *$q_{out/in}$ = Form 4-2 Item 6 Pre-Construction / Form 4-2 Item 6 Post-Construction*	0.56	0.40	0.31	1.32
[9] Equalization Factor, Vs/Vr (ratio of storage capacity to runoff volume) *Vs/Vr obtained using Item 8 and nomograph in Figure 6-1 of NRCS TR-55 Manual for Rainfall Type IA*	0.14	0.14	0.14	0.14
[10] Runoff detention capacity to achieve hydromodification management criteria (ft^3) *$D_{hydromod}$ = Item 7 * Item 9*	5833	5833	19658	2240
[11] Site Design Measure (SDM) Volume (ft^3): *Sum of Item 10 in Form 3-4 for all SDMs in this DMA.*				
[12] Bioretention Volume (ft3): *Sum of Item 13 in Form 3-6 for all bioretention measures in this DMA.*	9411	12384	42358	5067
[13] Flow-Through Detention Volume (ft3): *Sum of Item 10 in Form 3-7 for all flow-through facilities in this DMA.*				
[14] Supplemental Detention Volume (ft^3)[a]:				
[15] Combined Detention Volume in this DMA (ft^3): *Sum of Items 11 through 14*	9,411	12,384	42,358	5,067
[16] Is detention capacity to achieve hydromodification management criteria achieved at all project outlets? *Yes, if Item 10 is less than or equal to Item 15 for each DMA. If not provide additional storage capacity with appropriate flow controls at the discharge.*	**Yes**	**X**	**No**	

Form 4-3 Detention Volumes for Hydromodification Management

	Post-construction DMAs to Project Outlet			
	5	**6**	**7**	**8**
[1] Land cover and hydrologic condition *See NRCD TR-55 Manual Table 2-2 for types*	RES	RES	RES	
[2] Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	D	D	-
[3] Drainage Area (A) (ft^2)	336,153	217,364	270,072	-
[4] Curve Number (CN) *Use Items 1 and 2 to select curve number from NRCS TR-55 Manual Table 2-2*	92	92	92	
[5] Post-development soil storage capacity, S (in): *S = (1000 / Item 4) – 10*	0.9	0.9	0.9	#DIV/0!
[6] Precipitation for 2-yr, 24-hr storm (in) *See Placer County SWMM Table 5-A-1 for elevation of site and 24-hr duration depths*	1.90	1.90	1.90	
[7] Post-developed runoff volume for 2-yr – 24-hour storm, V_{runoff} (ft^3): *V_{runoff} = Item 3 * (1 / 12) * [(Item 6 – 0.2 * Item 5)^2 / (Item 6 + 0.8 * Item 5)]*	32,154	20,792	25,833	#DIV/0!
[8] Attenuation Factor, $q_{out/in}$ (ratio of target outflow rate to peak inflow rate): *$q_{out/in}$ = Form 4-2 Item 6 Pre-Construction / Form 4-2 Item 6 Post-Construction*	0.61	0.97	0.98	#DIV/0!
[9] Equalization Factor, Vs/Vr (ratio of storage capacity to runoff volume) *Vs/Vr obtained using Item 8 and nomograph in Figure 6-1 of NRCS TR-55 Manual for Rainfall Type IA*	0.14	0.14	0.14	
[10] Runoff detention capacity to achieve hydromodification management criteria (ft^3) *$D_{hydromod}$ = Item 7 * Item 9*	4502	2911	3617	#DIV/0!
[11] Site Design Measure (SDM) Volume (ft^3): *Sum of Item 10 in Form 3-4 for all SDMs in this DMA.*				
[12] Bioretention Volume (ft3): *Sum of Item 12 in Form 3-8 for all bioretention measures in this DMA.*	9840	8681	8490	
[13] Flow-Through Detention Volume (ft3): *Sum of Item 10 in Form 3-7 for all flow-through facilities in this DMA.*				
[14] Supplemental Detention Volume (ft^3):				
[15] Combined Detention Volume in this DMA (ft^3): *Sum of Items 11 through 14*	9,840	8,681	8,490	-

Form 4-4 Trash Controls			
Type of Trash Control Measure Implemented	Check One		Describe relevant information about each trash control measure. Include number present, size of drainage area to each measure, any special features, materials, or methods of construction that will be used.
	Present	Not Applicable	
Full Capture System	☐	☑	
Multi-Benefit Trash Treatment System: Bioretention	☑	☐	
Multi-Benefit Trash Treatment System: Capture and Use Systems	☐	☑	
Multi-Benefit Trash Treatment System: Detention Basin	☐	☑	
Multi-Benefit Trash Treatment System: Infiltration Trench or Basin	☐	☑	
Multi-Benefit Trash Treatment System: Media Filter	☐	☑	

Form 5-1 BMP Inspection and Maintenance		
BMP	**Inspection Point and Frequency**	**Maintenance Activity Required**
Infiltration Basins	Inlet/Outlet	Repair Erosion
	Entire Basin	Remove Debris and Trash as needed
	Overflow structure	Remove debris to unclog

Form 6-1 Post-Construction Stormwater BMPs

Following is a summary of all BMPs included in the Project design. This checklist must be included on the cover sheet of the Improvement Plans for all Regulated Projects.

BMP		Plan Sheet Number(s)
Structural Source Controls (list BMPs)		
Site Design Measures	Stream Setbacks and Buffers	
	Soil Quality Improvement and Maintenance	
	Tree Planting and Preservation	
	Rooftop and Impervious Area Disconnection	
	Porous Pavement	
	Vegetated Swales	
	Rain Barrels and Cisterns	
Stormwater Treatment and Baseline Hydromodification Measures	Bioretention with Infiltration	
	Flow-Through Planters, Tree Box Filters and Media Filters	
Hydromodification Management Measures	Supplemental Detention	
Trash Control Measures	Full Capture System	
	Multi-Benefit Treatment System: Bioretention	
	Multi-Benefit Treatment System: Capture and Use Systems	
	Multi-Benefit Treatment System: Detention Basin	
	Multi-Benefit Treatment System: Infiltration Trench or Basin	
	Multi-Benefit Treatment System: Media Filter	

EXHIBIT G

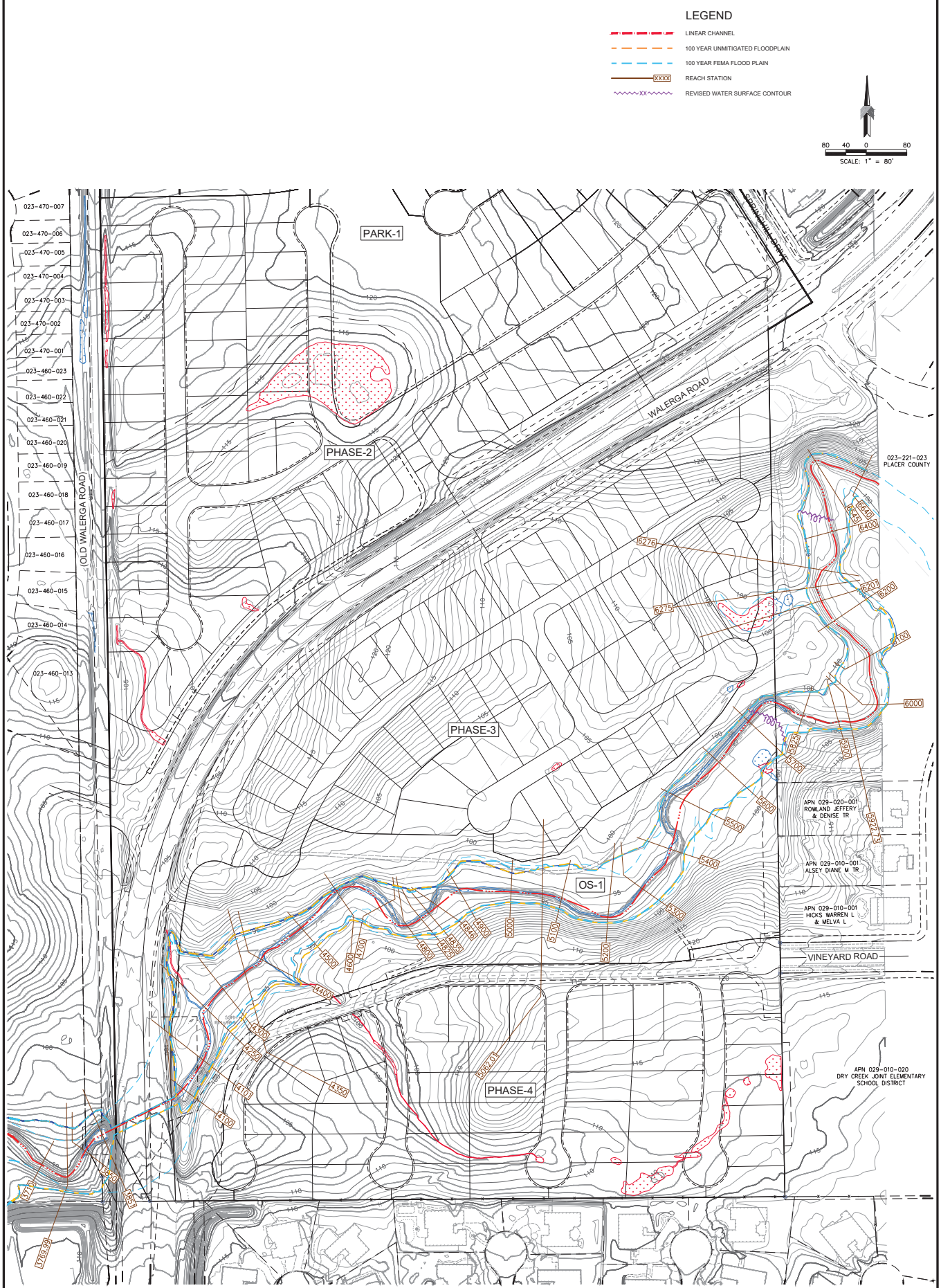
HEC-RAS Exhibit

ESTIA DRY CREEK - PHASE 1

POST-DEVELOPED FLOODPLAIN MAP (MITIGATED AND UNMITIGATED)

PLACER COUNTY, CALIFORNIA

MAY 2026



KING ENGINEERING

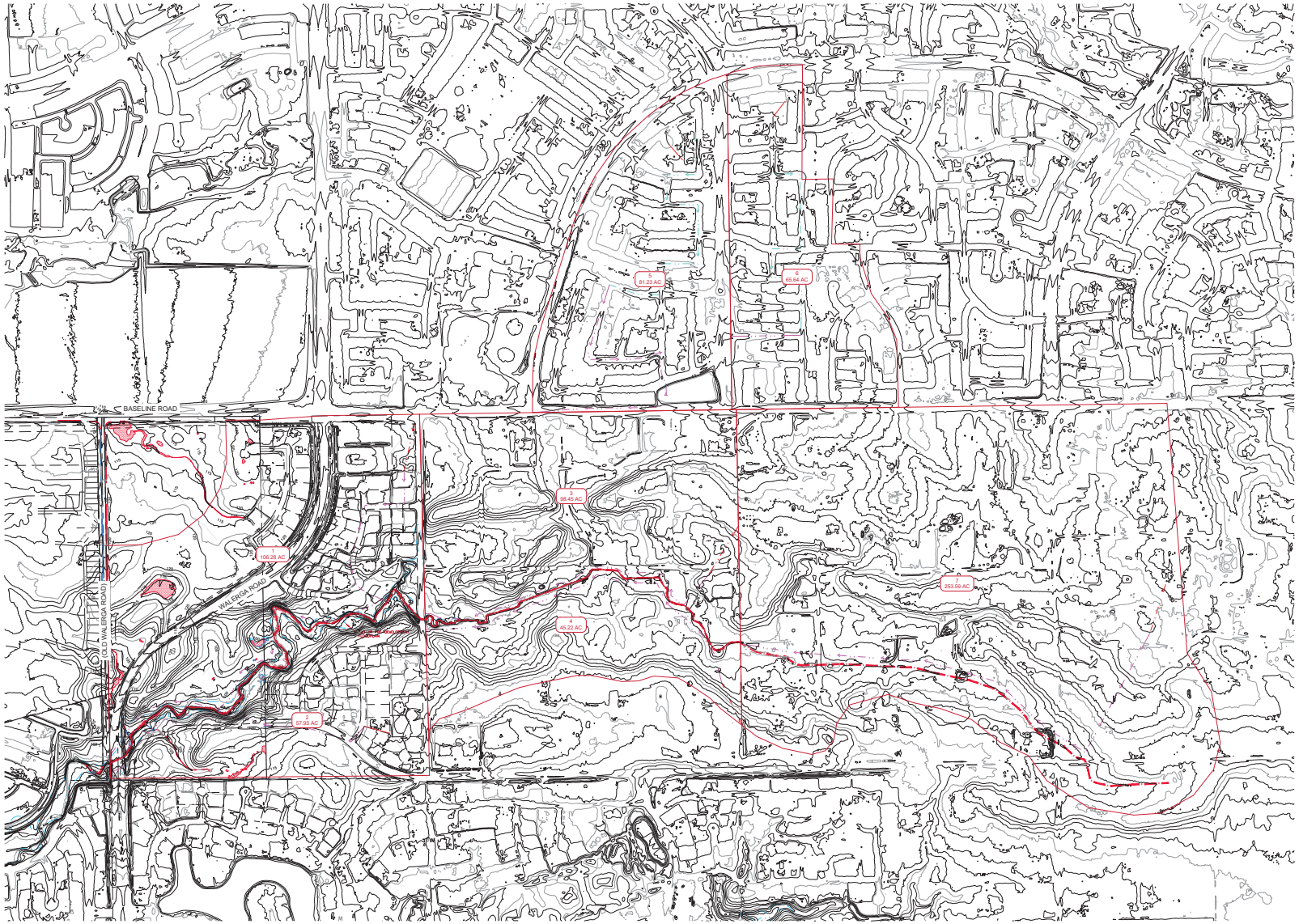
200 Auburn Folsom Road, Ste. 201
Auburn, California 95603

T: (530) 272-4328
E: info@King-Engineering-Inc.com

*Figure not OCR compatible

EXHIBIT H

HEC-HMS Existing and Proposed Shed Map Exhibits



LEGEND

- ## — SHED DESIGNATION
- PRE-DEVELOPMENT 100-YEAR FLOODPLAIN LIMIT
- WETLANDS (TRIBUTARY)
- WETLANDS (AVOIDED)
- PROPOSED 100-YEAR FLOODPLAIN LIMIT
- ULTIMATE UNMITIGATED 100 YEAR FLOODPLAIN LIMIT
- PLACER RANCH SPECIFIC PLAN BOUNDARY
- LINEAR CHANNEL
- EXISTING PROPERTY LINE
- EXISTING LARGE LOT PROPERTY LINE
- XX — WATER SURFACE CONTOUR
- XXXX — REACH CROSS SECTION

NOTES

1. FLOW TRAVEL PATHS NOT SHOWN WILL BE INCLUDED ON THE FINAL REPORT MAPS.

400 200 0 400

SCALE: 1" = 400'

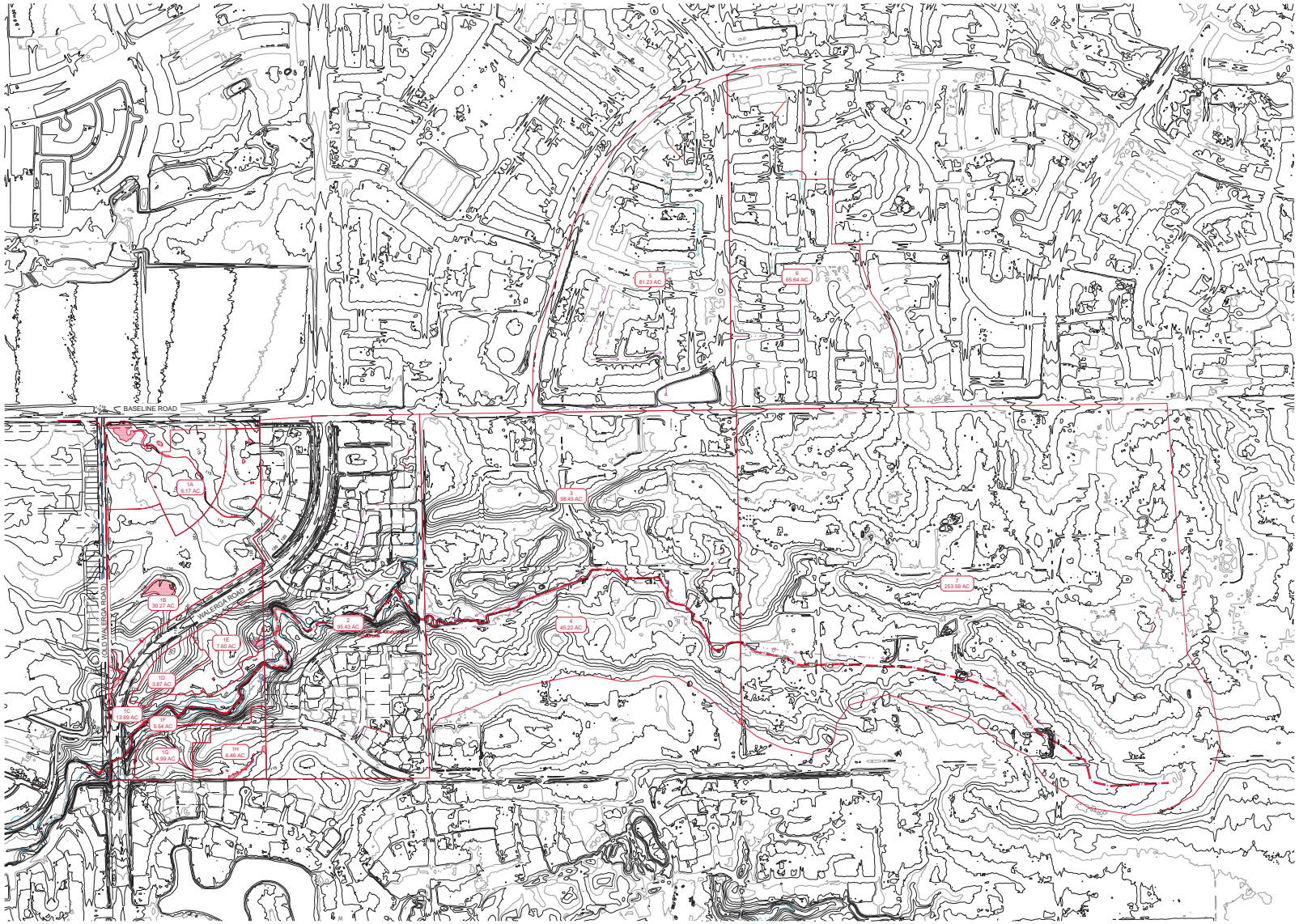
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ESTIA DRY CREEK

EXISTING HEC-HMS SHED MAP

PLACER COUNTY, CALIFORNIA
AUGUST 2025

*Figure not OCR compatible



LEGEND

- ## — SHED DESIGNATION
- PRE-DEVELOPMENT 100-YEAR FLOODPLAIN LIMIT
- WETLANDS (TRIBUTARY)
- WETLANDS (AVOIDED)
- PROPOSED 100-YEAR FLOODPLAIN LIMIT
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- XXXX — REACH CROSS SECTION

NOTES

1. FLOW TRAVEL PATHS NOT SHOWN WILL BE INCLUDED ON THE FINAL REPORT MAPS.

400 200 0 400

SCALE: 1" = 400'

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ESTIA DRY CREEK

PROPOSED HEC-HMS SHED MAP

PLACER COUNTY, CALIFORNIA
AUGUST 2025

*Figure not OCR compatible

ESTIA DRY CREEK – BACKBONE INFRASTRUCTURE PRELIMINARY DRAINAGE REPORT

JUNE 2026

PLN24-00144

Prepared For
HOMES BY TOWNE



KING ENGINEERING
200 Auburn Folsom Road, Ste. 201
Auburn, California 95603

TABLE OF CONTENTS

Contents	Page
Introduction	1
Project Description	1
Scope of the Report	1
Existing Conditions	2
Design Criteria	2
Hydrology & Hydraulics	3
Detention & Retention	4
Water Quality	5
No Rise CFD #1 Lift Station	5
References	6
Exhibit A: FEMA FIRM Panel	
Exhibit B: Web Soil Survey Map	
Exhibit C: Drainage Peak Flow Calculations	
Table 1 – Estia Dry Creek Pre-Development Peak Flow Worksheet	
Table 2 – Estia Dry Creek Post-Development Peak Flow Worksheet	
Table 3 – Bypass Flow Table	
Table 4 – HEC-RAS Summary	
Table 5 – HEC-RAS Results	
Table 6 – HEC-HMS Results	
Table 7 – Pre-Development to Post-Development Comparison	
Exhibit D: Hydraulic Data and Profiles – 10-Year and 100-Year	
Exhibit E: Drainage Maps	
Drainage Map #1 – Pre-Development Overall	
Drainage Map #2 – Post-Development Shed Map – Baseline Road	
Drainage Map #3 – Post-Development Shed Map – Walerga Road	
Drainage Map #4 – Project Index – Baseline Road	
Drainage Map #5 – Project Index – Walerga Road	
Drainage Map #6 – Block Inlet – Baseline Road	
Drainage Map #7 – Block Inlet – Walerga Road	
Drainage Map #8 – Site Assessment and Drainage Management Area Overall Map	

Drainage Map #9 – CFD1 Emergency Storage HEC-RAS No Rise Exhibit

Exhibit F: Post-Construction Storm Water Quality Plan Workbook

Exhibit G: Walerga Tributary Profile and Walerga Rd Culvert Cross Section

INTRODUCTION

Project Description

The proposed "Estia Dry Creek & Placer Creek Residential" (Project) includes a total of approximately 88 acres, comprised of a 52.3-acre parcel (Assessor's Parcel No. 023-221-046) located on the north side of Walerga Road and a 35.3 -acre parcel (APN 023-221-061) located south and east of Walerga Road, collectively, the "project", Estia Dry Creek and Placer Creek Residential. The Backbone Infrastructure project proposes improvements to Baseline Road and Walerga Road. Construction will include street widening and storm drainage improvements. The site is currently unimproved agricultural land. It is bounded on the north by Estia Dry Creek Phase 2 and bounded on the south by Estia Dry Creek Phase 3. The proposed underground storm drain system outfalls to Walerga Tributary.

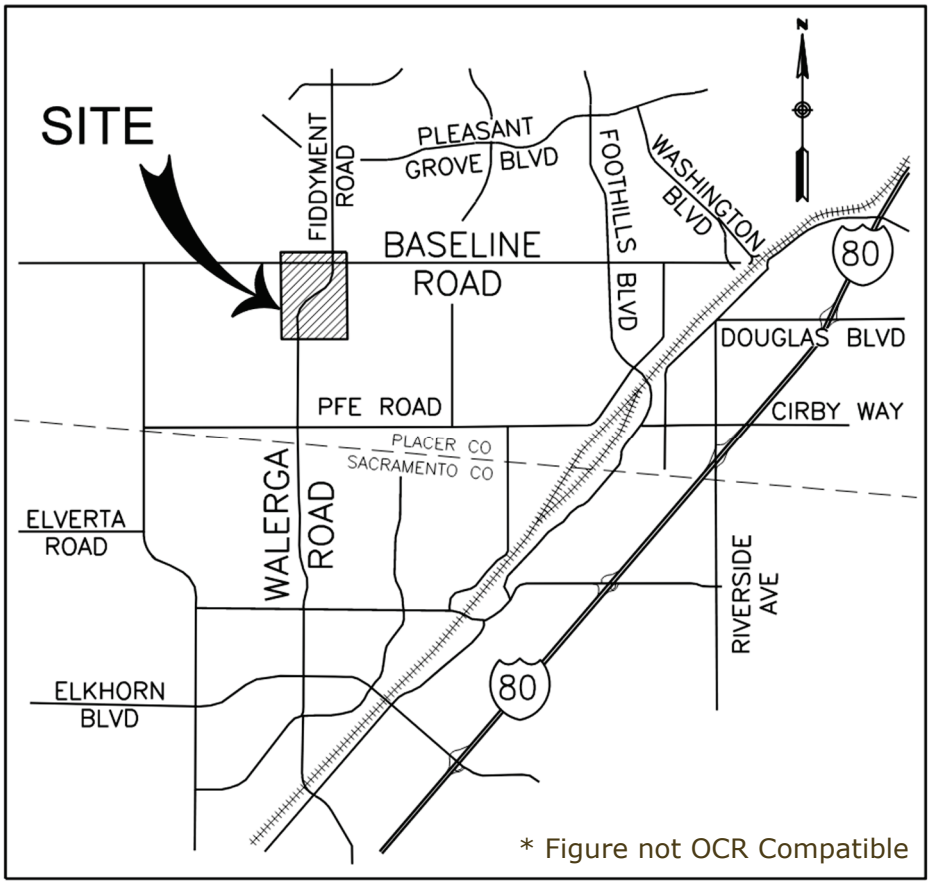


Figure 1: Project Vicinity Map

Scope of the Report

This report provides analysis and documents for the existing pre-developed watershed characteristics and determines the required drainage facilities that are necessary for development of the project. The report will confirm that the post-development changes will be consistent with what is shown on the Drainage Maps.

Pursuant to Reference 2, this is a regulated project with more than one acre of new impervious area proposed and is within the Phase II MS4 Permit Area.

EXISTING CONDITIONS

Ground slopes range significantly across the project area. The Phase 1 area ground and a portion of the Phase 2 area ground slopes north toward Baseline Road and a portion of the Phase 2 area ground slopes downhill towards Walerga Tributary and Dry Creek. Phases 3 and 4 slope to the south and north respectively towards Dry Creek Walerga Tributary. The USDA Soil Conservation Service classifies most of the soils within the project as Pleistocene alluvial deposits. The site soil is classified as hydrologic group D. ENGEO prepared a geotechnical study dated December 26, 2023 for the Estia Dry Creek project entitled "Estia at Dry Creek - Geotechnical Exploration". This report identifies the near surface soils generally as deeply weathered gravel, sand, and silt, which is consistent with the USDA data.

The Walerga Tributary is classified as Zone AE floodplain, which means base flood elevations have been determined and analyzed with a Flood Insurance Study that generated the floodplain limits and a floodway has been established. The river hydraulics and cross section profiles for the tributary are derived from the GeoHECRAS software provided by CivilGeo.



Figure 2: Pre-Development Land Photo, Baseline Rd, Looking South



Figure 3: Pre-Development Land Photo, Walerga Rd, Looking Northwest

DESIGN CRITERIA

The design criteria listed below are also found in the West Placer Stormwater Quality Design Manual and Placer County Flood and Control Water Conservation District Stormwater Management Manual (SWMM).

- **The streets remain passable during the 10- and 100-Year storm events and the finished floor elevations are 1', or greater, from the 100-year water surface elevations.**

*Figures not OCR compatible

- **Inlet and Outlet pipes are to have matching Crown Elevations.**
- **The underground storm drain pipes do not flow full during the 10-Year storm.**
- **For Hydraulic Calculations, Pipes are sized as if all flow is captured at each inlet.**
- **Storm Drain pipes are designed to flow under gravity flow for up to the 10-year storm and allowed to flow surcharged, pressure flow for flows larger than the 10 year-storm.**
- **Culverts 30" in diameter and less are designed for 50% blockage at the inlet for the 10-year design storm. However, where there is a grated inlet with 8" maximum size opening, the inlet is designed for 50% blockage, but the culvert connected to such an inlet may be sized without blockage (figuring that large objects cannot get through the inlet openings to block the culvert).**
- **Gutters and inlets serving small drainage areas are sized according to Placer County drainage formulas as follows:**

Sheet flow: $$t_r = \frac{.355(nL)^{.6}}{S^{.3}}$$

Channel flow: $$t_r = \frac{.00735\,Ln^{.75}(1+z)^{.25}}{S^{.375}(A_c z)^{.25}}$$

Peak Discharge: $$Q = qA - A_p F_i$$

HYDROLOGY & HYDRAULICS

The project will discharge most of the stormwater runoff into Dry Creek Walerga Road Tributary. The watershed to Dry Creek is approximately 1.3 square miles. The peak flows for the various storm events were modeled in HEC-HMS (Version 4.9). The routing method used is Muskingum Method. The volumetric and discharge relationships were generated through existing surface information and HEC-RAS modeling to determine the necessary rating curve used in the Modified Puls method. The channel is approximated as a trapezoidal channel with a Muskingum Coefficient (X) between 0.10 and 0.20. The rainfall values were taken from Table 5-A-1 in the Stormwater Management Manual for the various storm events. The HEC-HMS model uses the Kinematic Wave transform method and initial/constant loss in determining flows. This method relates the shape of the channel, boundary roughness, and slope of the channel or overland flow surface. Though it simplifies the complex nature of drainage systems, the Kinematic Wave transform method provides a reasonably accurate approximation of flows.

The design flows for the 10-, 50, and 100-year storm events (10, 2 and 1 percent recurrence interval storms) for Dry Creek and the Antelope North Road Tributary were provided by FEMA and were unchanged. There was no 500-year storm flow (0.2 percent chance of occurrence storm) provided for the tributary. Hydraulic models for the existing, revised, and unmitigated scenarios for the Dry Creek Walerga Road Tributary were generated from FEMA FIS data. The Existing model reflects the current physical improvements and latest topography in the area. The HEC-RAS models were generated with the design flows produced by the HEC-HMS model and provide the basis for comparing existing conditions BFEs to revised BFEs to analyze the impacts of the proposed project both upstream and downstream. The models were created using GeoHECRAS software using steady, uniform flow under Subcritical conditions. Refer to Tables 4-6 of the Phase 3 & 4 drainage reports for HEC-RAS modeling inputs and results.

The total flows to Point A from Phase 1, as shown on Table 4, are Q10=13.4 cfs and Q100=25.5 cfs. These flows are generally consistent with Table 2 flows of Q10=13.76 cfs and Q100=26.20 cfs, which differ slightly due to time of concentration. Point A is the connection to the Baseline Marketplace storm drain system. Sheds 97 and 98 in Table 2 also connect to the Baseline Marketplace system via DI-1. The remaining Baseline Rd drain inlets connect to the storm drain system in Baseline Rd constructed with the Upland Drive Segment 5 improvements, consistent with the drainage study, The Storm Drainage Evaluation for Baseline Road – Segment 1, Upland Drive, Segment 5, and San Fernando Drive Improvement Plans Technical Memorandum dated September 19, 2023 by MacKay and Somps and the Storm Drainage Evaluation for Baseline Road - Segment 3 & Portion of Segment 2 Improvement Plans Technical Memorandum, revision dated February 20, 2025 (for the C13X shed). The study assumed a pre-development contributing area of 3.9 acres (i.e., Sheds C12R, UP16R, UP17R, UP18R, and UP19R) draining to Baseline Rd within the Curry Creek Watershed. This report is generally consistent at 3.5 acres, with the difference being accounted for in the Preliminary Phase 1 Drainage Report analysis. The flows from that difference are part of the calculation for Point A.

The total flows to Point B, as shown on Table 4, are Q10=57.5 cfs and Q100=108.7 cfs. This includes the shed shifted area from Phase 1, Phases 2A and 2B, as well as runoff from the backbone improvements. The infrastructure necessary for these flows is constructed with the Backbone improvements. Additionally, after treating these flows, Basin C is designed to outfall toward the existing 48-inch pipe system in Walerga Rd. The 48-inch outfall into the tributary will need to be extended outside of the roadway improvements constructed with the Backbone project. For simplicity and organization of information, this location is referred to as Point B, as it is the outfall of all flows from Phase 1 toward Dry Creek, Phases 2A and 2B, as well as Walerga Rd, after being treated at Basin C. Hydraulics demonstrating the adequacy of this system are presented in Exhibit D Hydraulic Data and Profiles – 10-Year and 100-Year. Discharge Point B is approximately 900 linear feet downstream of Basin C. This point is used for tables and mapping because it is located at the Walerga Rd outfall to the tributary. Per Table 4, flows at Point B from Walerga Rd only are Q10=7.8 cfs and Q100=15.1cfs. Per Table 2, concentrated flows at Point B are Q10=50.61 cfs and Q100=96.68 cfs. As shown on Table 4, total combined discharge flows at Point B are Q10=57.5 cfs and Q100=108.7 cfs. The discrepancy is due to time of concentration. The total combined discharge flows are the most conservative values, which are shown this way to demonstrate the separate sources of runoff.

Refer to Exhibit G for a profile of the Walerga Rd Tributary water surface as calculated in HEC-RAS. Cross section outputs are provided for river stations 4100, 3975.67, and 3851 showing that there is adequate capacity for post-development project flows through the culvert under Walerga Rd.

DETENTION & RETENTION

The final predevelopment checklist identified the need for volumetric retention to mitigate impacts from the 8-day, 100-year storm event based on the potential downstream impacts on the Curry Creek Cross Canal watershed. Placer County is currently evaluating options for regional retention facilities; however, no County retention fee program has been established at this time. The project will need to demonstrate participation in a future Board-approved County retention program, if such program is established, or provide onsite retention facilities in accordance with County standards. Onsite underground retention is provided. Refer to Exhibit G in the Preliminary Phase 1 Drainage Report for locations identified for potential retention facilities. The estimated retention required is 69,220 cubic feet. The Exhibit G

alternative provides roughly 100,800 cubic feet of possible retention with room onsite for more. The final retention volumes will be provided and analyzed with the improvement plans for each phase.

Though drainage detention is not required or recommended for Dry Creek and its tributaries, hydromodification is still required under the MS4 rules, even though the distinction between detention and hydromodification is not made clear. If detention is required, despite the potential negative consequences of overlapping the flood wave and causing higher overall peak flows in Dry Creek, peak flows would be detained and approximately 2.9 ac-ft would be provided in Phase 1 either underground, in Phase 1 Basin B, or some combination thereof. 3.9 ac-ft would need to be provided in an above ground basin in Phase 2 and an additional 0.6 ac-ft can be provided in Phase 2 Basin C. This additional storage capacity could provide for additional attenuation and reduce downstream peak flows, if needed.

WATER QUALITY

To evaluate storm water quality and best management policies (BMP) within the project limits, the West Placer Storm Water Quality Design Manual was referenced and used as a guideline for BMP locations. Drainage Management Areas (DMA) are delineated with infiltration basins shown in Drainage Map #8. The primary purpose of the infiltration basins is to retain minor storm events and capture any pollutants that would otherwise enter Dry Creek and Curry Creek. The infiltration basins are primarily for minor storm events but not intended to reduce the peak flows during extreme storm events.

The Walerga Rd backbone storm drain system receives flows from Phases 1 & 2 and directs them to underground infiltration Basin C, which is constructed with Phase 2A. Additional runoff from Walerga Rd will be directed toward Basin C.

The composite runoff coefficient (Rc) is determined using State Water Control Board Runoff Coefficient Fact Sheet 5.1.3. The fact sheet provides tables of various coefficients depending on land use. The land use within the Phase 3 project is medium density residential. The Coefficient of 0.55 was used because it is the more conservative value for Water Quality calculations.

NO RISE CFD #1 LIFT STATION

The Estia Dry Creek project will require an emergency storage upgrade to the CFD#1 Lift Station south of Dry Creek near Walerga Road. Please refer to the Estia Dry Creek Preliminary Wastewater Report for additional information. As part of the emergency storage upgrade, additional grading is required in the floodplain as shown in the aforementioned report. This results in a need for compensatory cut in the floodplain, which is also shown in the aforementioned report. In order to demonstrate that this results in a No Rise condition at this facility, the following table has been prepared from HEC-RAS analysis.

Refer to Drainage Map #9 - CFD1 Emergency Storage HEC-RAS No Rise Exhibit for the HEC-RAS cross section locations given in Table 1 below.

Table 1 CFD #1 No Rise WSEL Summary

Walerga Tributary WSEL Summary			
Cross Section	Existing WSEL[(1)] (ft)	Revised WSEL[(1)] (ft)	Difference in Existing vs. Revised WSEL (ft)
	100-Year	100-Year	
14565 P	97.11	96.98	-0.13
13755 O	95.9	95.72	-0.18
13200	95.06	95.06	0.00
13115 N	95.04	95.04	0.00
13000	94.96	94.96	0.00
12495 M	94.44	94.44	0.00
11670	93.90	93.9	0.00
(1) Elevations are in NAVD88			

The HEC-RAS modeling to verify this condition is provided.

REFERENCES

Ref. 1: NPDES CA S000002, SWRCB Water Quality Order No. 2009-0009 DWQ, as amended by 2010-2014-DWQ and 2012-006-DWQ, Construction General Permit (permit to be obtained for the Project).

Ref. 2: NPDES General Permit No. CA S000004, SWRCB Water Quality Order No. 2013-00001 DWQ, WDRs for MS4s

Ref. 3: Placer County Storm Water Management Plan 2004, or latest update

Ref. 4: Placer County Storm Water Management Manual and Land Development Manual

Ref. 5: CASQA Stormwater BMP Handbook New Development and Redevelopment, Table 2.2 and Section 5.

Ref. 6: USDA, Soil Conservation Service, web soil survey website.

Ref. 7: ENVIROSTOR website: envirostor.dtsc.ca.gov/

Ref. 8: Hydraflow Express program for gutter and inlet sizing

Ref. 9: Storm Drainage Evaluation for Baseline Road – Segment 1, Upland Drive, Segment 5, & San Fernando Drive Improvement Plans, MacKay & Somps, October 2022

Ref. 10: Storm Drainage Evaluation for Baseline Road – Segment 3 & Portion of Segment 2 Improvement Plans, MacKay & Somps, February 2025

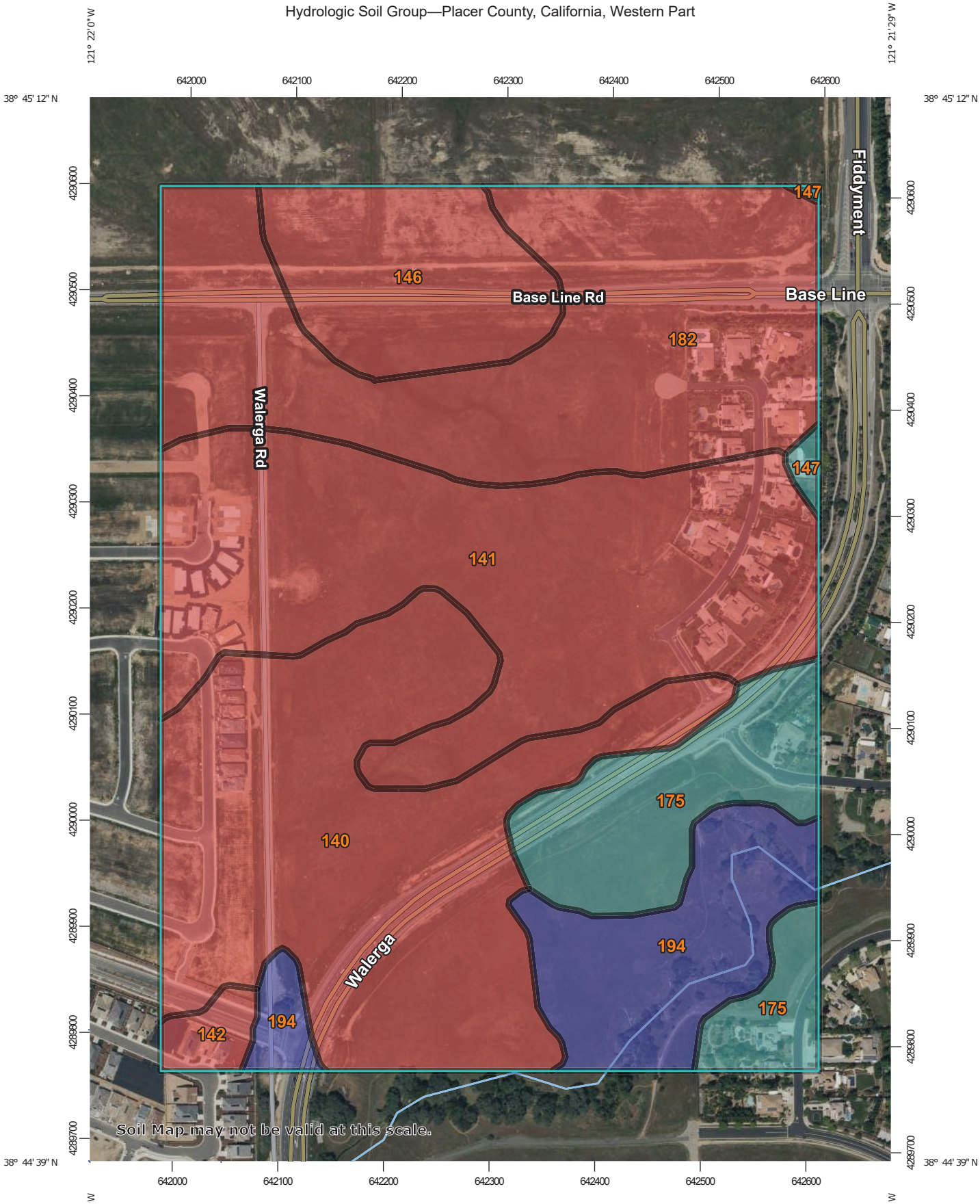
EXHIBIT A

FEMA FIRM Panel


38° 45'0.02" N, 121° 22'30.05" W
38° 45'0.02" N, 121° 20'37.55" W
38° 43'7.52" N, 121° 22'30.05" W
38° 43'7.52" N, 121° 20'37.55" W
121°22'30"W
121°20'0"W
38°45'0"N
38°43'45"N
ZONE AE
ZONE A
Dry Creek Walerga Road Tributary
Dry Creek
Dry Creek South Tributary
Placer County Unincorporated Areas 060239
LIMIT OF STUDY
WITHOUT
ELEVATION
Pleasant Valley Canal
Pleasant Valley Canal Lateral 1
Pleasant Valley Canal Lateral 2
Pleasant Valley Canal Lateral 3
Pleasant Valley Canal Lateral 4
Pleasant Valley Canal Lateral 5
Pleasant Valley Canal Lateral 6
Pleasant Valley Canal Lateral 7
Pleasant Valley Canal Lateral 8
Pleasant Valley Canal Lateral 9
Pleasant Valley Canal Lateral 10
Pleasant Valley Canal Lateral 11
Pleasant Valley Canal Lateral 12
Pleasant Valley Canal Lateral 13
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Pleasant Valley Canal Lateral 871
Pleasant Valley Canal Lateral 872
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EXHIBIT B

Web Soil Survey Soil Map



Map Scale: 1:4,890 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

* Figure not OCR Compatible

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Placer County, California, Western Part
Survey Area Data: Version 15, Aug 31, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 23, 2022—Apr 24, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
140	Cometa sandy loam, 1 to 5 percent slopes	D	32.3	25.0%
141	Cometa-Fiddyment complex, 1 to 5 percent slopes	D	32.1	24.9%
142	Cometa-Ramona sandy loams, 1 to 5 percent slopes	D	1.4	1.1%
146	Fiddyment loam, 1 to 8 percent slopes	D	10.1	7.8%
147	Fiddyment-Kaseberg loams, 2 to 9 percent slopes	C	0.5	0.4%
175	Ramona sandy loam, 2 to 9 percent slopes	C	11.8	9.2%
182	San Joaquin-Cometa sandy loams, 1 to 5 percent slopes	D	29.5	22.9%
194	Xerofluvents, frequently flooded	B	11.4	8.8%
Totals for Area of Interest			**128.9**	**100.0%**

EXHIBIT C

Drainage Peak Flow Calculations

Table 1

Estia Dry Creek Pre-Development Peak Flow

Watershed Data							Time of Concentration											Peak Flow			
Refer to drainage map and soil type							Overland Flow				Channel Flow							Fig 5-3A,C P.C. SWMM			
BASIN	DISCHARGE LOCATION	Elev.	Total Area (ac.)	Perv. Area	Soil Type	F_i	Length ft.	Slope ft/ft	N	t_r min.	Area (ac.)	Length ft.	Slope ft/ft	n	Z	t_r min.	Total Time (min.)	q_{10}	q_{100}	Q_{10} cfs	Q_{100} cfs
TO POINT A																					
3	PT. A	100	5.24	5.24	D	0.12	172	0.0038	0.4	23.92	5.24	1067	0.010	0.035	10	4.29	28.21	0.890	1.600	4.03	7.75
4		100	10.96	10.96	D	0.12	294	0.011	0.4	23.99	10.96	940	0.007	0.035	10	3.56	27.55	0.917	1.655	8.72	16.80
2		100	11.13	11.13	D	0.12	329	0.0047	0.4	33.12	11.13	1236	0.007	0.035	10	4.61	37.74	0.643	1.190	5.80	11.89
1		100	8.26	8.26	D	0.12	325	0.0162	0.4	22.69	8.26	1160	0.006	0.035	10	5.04	27.72	0.910	1.639	6.51	12.53
1>4		100	35.59	35.59	D	0.12											37.74	0.643	1.190	**18.54**	**38.03**
TO POINT B																					
5	PT. B	100	4.94	4.94	D	0.12	240	0.02	0.4	17.75	4.94	642	0.014	0.035	10	2.29	20.04	1.210	2.240	5.38	10.46
7		100	5.44	5.44	D	0.12	197	0.0308	0.4	13.85	5.44	446	0.017	0.035	10	1.43	15.28	1.680	3.048	8.48	15.92
6		100	5.37	5.37	D	0.12	248	0.0223	0.4	17.52	5.37	737	0.020	0.035	10	2.24	19.77	1.240	2.292	6.00	11.65
W1		100	4.52	1.13	D	0.12	100	0.0223	0.4	10.16	4.52	400	0.020	0.035	10	1.27	11.43	1.983	3.590	8.83	16.09
5>7		100	20.27	16.88	D	0.12											20.04	1.210	2.240	**22.47**	**43.35**
TO POINT C																					
8	PT. C	100	1.86	1.86	D	0.12	100	0.0051	0.4	15.82	1.86	642	0.014	0.035	10	2.92	18.74	1.330	2.446	2.25	4.32
9		100	11.09	11.09	D	0.12	197	0.0308	0.4	13.85	11.09	446	0.017	0.035	10	1.20	15.05	1.700	3.083	17.50	32.84
10		100	8.93	8.93	D	0.12	248	0.0223	0.4	17.52	8.93	737	0.020	0.035	10	1.98	19.50	1.270	2.343	10.25	19.84
11		100	3.80	3.80	D	0.12	215	0.0051	0.4	25.04	3.80	642	0.014	0.035	10	2.44	27.48	0.921	1.663	3.04	5.86
12		100	9.79	9.79	D	0.12	197	0.0308	0.4	13.85	9.79	446	0.017	0.035	10	1.23	15.09	1.700	3.083	15.45	28.99
13		100	4.52	4.52	D	0.12	248	0.0223	0.4	17.52	4.52	737	0.020	0.035	10	2.34	19.87	1.230	2.274	5.01	9.73
14		100	9.71	9.71	D	0.12	225	0.0051	0.4	25.73	9.71	642	0.014	0.035	10	1.93	27.67	0.914	1.647	7.69	14.81
8>14		100	49.70	49.70	D	0.12											27.67	0.914	1.647	**39.35**	**75.81**

Table 2

Estia Dry Creek Post-Development Peak Flow

Watershed Data								Time of Concentration											Peak Flow			
Refer to drainage map and soil type								Overland Flow				Channel Flow							Fig 5-3A,C P.C. SWMM			
SHED	DRAINAGE INLET	Elev.	Total Area (ac.)	Perv. Area	Soil Type	Infiltration Rate (in/hr)	F_i[1]	Length ft.	Slope ft/ft	N[5]	t_r[2] min.	Area (ac.)	Length ft.	Slope ft/ft	n	Z	t_r[3] min.	Total Time (min.)	q_{10}	q_{100}	Q_{10}[4] cfs	Q_{100}[4] cfs
BASELINE ROAD																						
97	DI-1	100	0.33	0.17	D	0.12	0.21	48	0.01	0.4	8.29	0.33	147	0.0041	0.015	20	1.01	9.30	2.150	3.946	0.68	1.27
98		100	0.49	0.25	D	0.12	0.21	39	0.01	0.4	7.38	0.49	193	0.0059	0.015	20	1.05	8.43	2.226	4.166	1.04	1.99
97>98		100	0.82	0.41	D	0.12	0.21											8.43	2.226	4.166	1.74	3.33
																	DI-1 TOTAL FLOW				**1.74**	**3.33**
102	DI-5	100	0.69	0.35	D	0.12	0.21	52	0.01	0.4	8.74	0.69	309	0.0067	0.015	20	1.48	10.22	2.077	3.758	1.36	2.52
																	DI-5 TOTAL FLOW				**1.36**	**2.52**
103	DI-6	100	0.81	0.41	D	0.12	0.21	48	0.01	0.4	8.34	0.81	359	0.0067	0.015	20	1.65	9.98	2.226	3.800	1.72	2.99
																	DI-6 TOTAL FLOW				**1.72**	**2.99**
104	DI-7	100	0.29	0.15	D	0.12	0.21	4	0.01	0.4	1.94	0.29	423	0.0067	0.015	20	2.51	4.45	2.520	5.020	0.70	1.43
																	DI-7 TOTAL FLOW				**0.70**	**1.43**
TO POINT A																						
101	DI-4	100	0.44	0.22	D	0.12	0.21	53	0.01	0.4	8.81	0.44	200	0.0067	0.015	20	1.07	9.89	2.108	3.824	0.88	1.64
								PHASE 1 PIPE FLOW				9.92	211	0.0030	0.015	2	0.42	17.84				
		100	10.36	5.18	D	0.12	0.21											17.84	1.420	2.601	13.63	25.87
																	DI-4 TOTAL FLOW				**13.63**	**25.87**
99+100	DI-2 (POINT A)	100	0.43	0.22	D	0.12	0.21	13	0.01	0.4	3.86	0.43	81	0.0067	0.015	20	0.44	4.29	2.520	5.020	1.04	2.11
								DI-4 PIPE FLOW				10.36	211	0.0030	0.015	2	0.41	18.26				
		100	10.79	5.40	D	0.12	0.21											18.26	1.380	2.532	13.76	26.20
																	DI-2 (POINT A) TOTAL FLOW				**13.76**	**26.20**

[1] SWMM Equation 5-5, Infiltration Factor

[2] SWMM Equation 5-3, Overland Flow Response Time

[3] SWMM Equation 5-4, Collector Flow Response Time

[4] SWMM Equation 5-6, Adjustment for Infiltration Peak Flow

[5] SWMM Table 5-5, Roughness Parameters for Overland Flow

Table 2

Estia Dry Creek Post-Development Peak Flow

Watershed Data								Time of Concentration											Peak Flow			
Refer to drainage map and soil type								Overland Flow				Channel Flow							Fig 5-3A,C P.C. SWMM			
SHED	DRAINAGE INLET	Elev.	Total Area (ac.)	Perv. Area	Soil Type	Infiltration Rate (in/hr)	F_i [1]	Length ft.	Slope ft/ft	N [5]	t_r [2] min.	Area (ac.)	Length ft.	Slope ft/ft	n	Z	t_r [3] min.	Total Time (min.)	q_{10}	q_{100}	Q_{10} [4] cfs	Q_{100} [4] cfs
TO POINT B																						
105	DI-8	100	0.33	0.17	D	0.12	0.21	9	0.01	0.4	3.05	0.33	117	0.0052	0.015	20	0.74	3.79	2.520	5.020	0.80	1.62
																	DI-8 TOTAL FLOW				**0.80**	**1.62**
106	DI-9	100	0.33	0.17	D	0.12	0.21	37	0.01	0.4	7.13	0.33	52	0.0052	0.015	20	0.33	7.46	2.310	4.410	0.73	1.42
																	DI-9 TOTAL FLOW				**0.73**	**1.42**
105>106	SDMH-1	100	0.66	0.33	D	0.12	0.21											7.46	2.310	4.410	1.46	2.84
																	SDMH-1 TOTAL FLOW				**1.46**	**2.84**
107	DI-10	100	0.52	0.26	D	0.12	0.21	53	0.01	0.4	8.84	0.52	216	0.0052	0.015	20	1.22	10.06	2.092	3.786	1.03	1.91
																	DI-10 TOTAL FLOW				**1.03**	**1.91**
108	DI-11	100	0.51	0.26	D	0.12	0.21	37	0.01	0.4	7.08	0.51	217	0.0052	0.015	20	1.23	8.31	2.234	4.190	1.09	2.08
																	DI-11 TOTAL FLOW				**1.09**	**2.08**
105>108	SDMH-2	100	1.69	0.85	D	0.12	0.21	SDMH-1 PIPE FLOW				0.66	221	0.0052	0.015	2	0.70	8.15				
																		10.06	2.092	3.786	3.36	6.22
																	SDMH-2 TOTAL FLOW				**3.36**	**6.22**
109	DI-10.1	100	0.51	0.26	D	0.12	0.21	51	0.01	0.4	8.63	0.51	214	0.0052	0.015	20	1.21	9.84	2.108	3.824	1.02	1.90
																	DI-10.1 TOTAL FLOW				**1.02**	**1.90**
110	DI-11.1	100	0.50	0.25	D	0.12	0.21	46	0.01	0.4	8.11	0.50	214	0.0052	0.015	20	1.22	9.33	2.150	3.946	1.02	1.92
																	DI-11.1 TOTAL FLOW				**1.02**	**1.92**
105>110	SDMH-2.1	100	2.70	1.35	D	0.12	0.21	SDMH-2 PIPE FLOW				1.69	216	0.0052	0.015	2	0.54	10.60				
																		10.60	2.045	3.702	5.24	9.71
																	SDMH-2.1 TOTAL FLOW				**5.24**	**9.71**
111	DI-12	100	0.44	0.26	D	0.12	0.21	41	0.01	0.4	7.57	0.44	185	0.0052	0.015	20	1.09	8.66	2.209	4.117	0.92	1.76
																	DI-12 TOTAL FLOW				**0.92**	**1.76**
112	DI-13	100	0.43	0.26	D	0.12	0.21	49	0.01	0.4	8.43	0.43	184	0.0052	0.015	20	1.09	9.51	2.134	3.898	0.86	1.62
																	DI-13 TOTAL FLOW				**0.86**	**1.62**
105>112	SDMH-3	100	3.57	1.87	D	0.12	0.21	SDMH-2.1 PIPE FLOW				2.70	185	0.0052	0.015	2	0.41	11.01				
																		11.01	2.014	3.646	6.80	12.63
																	SDMH-3 TOTAL FLOW				**6.80**	**12.63**
105>112, PHASE 2	SDMH-4	100	41.14	15.11	D	0.12	0.21	SDMH-3 PIPE FLOW				3.57	130	0.0042	0.015	2	0.29	11.30				
								PHASE 2 PIPE FLOW				37.57	130	0.0200	0.015	2	0.09	18.95				
																		18.95	1.320	2.429	51.15	96.79
																	SDMH-4 TOTAL FLOW				**51.15**	**96.79**

[1] SWMM Equation 5-5, Infiltration Factor

[2] SWMM Equation 5-3, Overland Flow Response Time

[3] SWMM Equation 5-4, Collector Flow Response Time

[4] SWMM Equation 5-6, Adjustment for Infiltration Peak Flow

[5] SWMM Table 5-5, Roughness Parameters for Overland Flow

Table 2

Estia Dry Creek Post-Development Peak Flow

Watershed Data								Time of Concentration											Peak Flow			
Refer to drainage map and soil type								Overland Flow				Channel Flow							Fig 5-3A,C P.C. SWMM			
SHED	DRAINAGE INLET	Elev.	Total Area (ac.)	Perv. Area	Soil Type	Infiltration Rate (in/hr)	F_i [1]	Length ft.	Slope ft/ft	N [5]	t_r [2] min.	Area (ac.)	Length ft.	Slope ft/ft	n	Z	t_r [3] min.	Total Time (min.)	q_{10}	q_{100}	Q_{10} [4] cfs	Q_{100} [4] cfs
TO POINT B																						
113	EXIST	100	0.57	0.29	D	0.12	0.21	48	0.01	0.4	8.32	0.57	195	0.0073	0.015	20	0.95	9.27	2.159	3.971	1.17	2.20
																		EXIST TOTAL FLOW			**1.17**	**2.20**
114	DI-14	100	0.83	0.42	D	0.12	0.21	49	0.01	0.4	8.43	0.83	340	0.0073	0.015	20	1.50	9.93	2.100	3.800	1.66	3.07
																		DI-14 TOTAL FLOW			**1.66**	**3.07**
105>114, PHASE 2	SDMH-5	100	42.54	15.81	D	0.12	0.21	SDMH-4 PIPE FLOW				41.14	262	0.0050	0.015	2	0.30	19.25				
																		19.25	1.290	2.378	51.58	97.85
																		SDMH-5 TOTAL FLOW			**51.58**	**97.85**
115	EXIST	100	0.32	0.16	D	0.12	0.21	53	0.01	0.4	8.83	0.32	199	0.0125	0.015	20	0.91	9.74	2.117	3.849	0.64	1.20
																		EXIST TOTAL FLOW			**0.64**	**1.20**
116	DI-15	100	0.47	0.24	D	0.12	0.21	46	0.01	0.4	8.11	0.47	187	0.0125	0.015	20	0.78	8.89	2.192	4.068	0.98	1.86
																		DI-15 TOTAL FLOW			**0.98**	**1.86**
105>116, PHASE 2	SDMH-6	100	43.33	16.20	D	0.12	0.21	SDMH-5 PIPE FLOW				42.54	193	0.0050	0.015	2	0.22	19.47				
																		19.47	1.270	2.343	51.65	98.15
																		SDMH-6 TOTAL FLOW			**51.65**	**98.15**
117	EXIST	100	0.45	0.23	D	0.12	0.21	72	0.01	0.4	10.61	0.45	249	0.0125	0.015	20	1.05	11.66	1.967	3.562	0.84	1.56
																		EXIST TOTAL FLOW			**0.84**	**1.56**
118	DI-16	100	0.57	0.29	D	0.12	0.21	48	0.01	0.4	8.32	0.57	231	0.0125	0.015	20	0.92	9.24	2.159	3.971	1.17	2.20
																		DI-16 TOTAL FLOW			**1.17**	**2.20**
105>118, PHASE 2	SDMH-7	100	44.35	16.71	D	0.12	0.21	SDMH-6 PIPE FLOW				43.33	240	0.0050	0.015	2	0.27	19.74				
																		19.74	1.240	2.292	51.51	98.15
																		SDMH-7 TOTAL FLOW			**51.51**	**98.15**
105>118, PHASE 2	SDMH-8	100	44.35	16.71	D	0.12	0.21	SDMH-7 PIPE FLOW				44.35	321	0.0050	0.015	2	0.36	20.10				
																		20.10	1.206	2.232	50.00	95.51
																		SDMH-8 TOTAL FLOW			**50.00**	**95.51**
119	DI-17	100	0.36	0.18	D	0.12	0.21	11	0.01	0.4	3.44	0.36	166	0.0125	0.015	20	0.74	4.18	2.520	5.020	0.87	1.77
																		DI-17 TOTAL FLOW			**0.87**	**1.77**
120	DI-18	100	0.19	0.10	D	0.12	0.21	11	0.01	0.4	3.44	0.19	100	0.0125	0.015	20	0.52	3.96	2.520	5.020	0.46	0.93
																		DI-18 TOTAL FLOW			**0.46**	**0.93**
105>120, PHASE 2	**TO POINT B**	100	44.90	16.99	D	0.12	0.21	SDMH-8 PIPE FLOW				44.35	50	0.0050	0.015	2	0.06	20.16				
																		20.16	1.206	2.232	50.61	96.68
																		TO POINT B TOTAL FLOW			**50.61**	**96.68**

[1] SWMM Equation 5-5, Infiltration Factor
[2] SWMM Equation 5-3, Overland Flow Response Time
[3] SWMM Equation 5-4, Collector Flow Response Time
[4] SWMM Equation 5-6, Adjustment for Infiltration Peak Flow
[5] SWMM Table 5-5, Roughness Parameters for Overland Flow

Table 3

Bypass Flow Table

GUTTER AND BYPASS FLOW DATA																			
				GUTTER FLOW											ON GRADE INLETS				
SHEDS	GUTTER	TO DRAINAGE INLET	INLET CONDITION	GUTTER SLOPE ft/ft	Q_{10} cfs	ADD Q_{10} UPSTREAM BYPASS cfs	Q_{10} TOTAL cfs	Q_{100} cfs	ADD Q_{100} UPSTREAM BYPASS cfs	Q_{100} TOTAL cfs	Q_{10} GUTTER CAP cfs	Q_{10} GUTTER SPREAD ft	Q_{100} GUTTER SPREAD ft	Q_{100} GUTTER DEPTH ft	Q_{10} INLET CAP cfs	Q_{10} BYPASS cfs	Q_{100} INLET CAP cfs	Q_{100} BYPASS cfs	BYPASS TARGET
(MAP 2)											(REF 10)								
POINT A - TYPE 1 CURB AND GUTTER																			
97	g97	DI-1	SAG	0.0041	0.68	0.00	0.68	1.27	0.00	1.27	-	2.35	3.24	0.23	OK	-	OK	-	-
98	g98	DI-1	SAG	0.0059	1.04	1.65	2.69	1.99	3.34	5.33	-	1.81	2.66	0.20	OK	-	OK	-	-
99+100	g100	DI-2	GRADE	0.0067	1.04	1.30	2.34	2.11	2.59	4.70	2.00	2.90	6.28	0.29	0.69	1.65	1.36	3.34	DI-1
101	g101	DI-4	GRADE	0.0067	0.88	1.20	2.08	1.64	2.49	4.13	2.00	3.27	7.06	0.31	0.78	1.30	1.54	2.59	DI-2
102	g102	DI-5	GRADE	0.0067	1.36	0.91	2.27	2.52	1.87	4.39	2.00	4.93	8.42	0.33	1.07	1.20	1.90	2.49	DI-4
103	g103	DI-6	GRADE	0.0067	1.72	0.27	1.99	2.99	0.67	3.66	2.00	4.97	8.00	0.33	1.08	0.91	1.79	1.87	DI-5
104	g104	DI-7	GRADE	0.0067	0.70	0.00	0.70	1.43	0.00	1.43	2.00	2.39	3.12	0.23	0.43	0.27	0.76	0.67	DI-6
POINT B - TYPE 1 CURB AND GUTTER																			
105	g105	DI-8	GRADE	0.0052	0.80	0.00	0.80	1.62	0.00	1.62	2.00	2.69	4.47	0.25	0.48	0.32	0.83	0.79	DI-10
106	g106	DI-9	GRADE	0.0052	0.73	0.00	0.73	1.42	0.00	1.42	2.00	2.69	4.47	0.25	0.48	0.25	0.83	0.59	DI-11
107	g107	DI-10	GRADE	0.0052	1.03	0.32	1.35	1.91	0.79	2.71	2.00	4.22	7.32	0.31	0.79	0.56	1.37	1.34	DI-10.1
108	g108	DI-11	GRADE	0.0052	1.09	0.25	1.33	2.08	0.59	2.67	2.00	4.13	7.20	0.31	0.78	0.55	1.35	1.32	DI-11.1
109.0	g109	DI-10.1	GRADE	0.0052	1.02	0.56	1.58	1.90	1.34	3.23	2.00	4.57	7.87	0.32	0.85	0.73	1.50	1.73	DI-12
110.0	g110	DI-11.1	GRADE	0.0052	1.02	0.55	1.58	1.92	1.32	3.25	2.00	4.42	7.76	0.32	0.82	0.76	1.47	1.78	DI-13
111	g111	DI-12	GRADE	0.0052	0.92	0.73	1.65	1.76	1.73	3.49	2.00	3.91	7.53	0.32	0.75	0.90	1.42	2.07	EXIST
112	g112	DI-13	GRADE	0.0052	0.86	0.76	1.62	1.62	1.78	3.40	2.00	3.86	7.40	0.31	0.74	0.88	1.39	2.01	DI-14
113	EXIST	EXIST	GRADE	0.0073	1.17	0.90	2.07	2.20	2.07	4.27	2.00	2.92	6.02	0.29	0.89	1.18	1.65	2.62	EXIST
114	g114	DI-14	GRADE	0.0073	1.66	0.88	2.54	3.07	2.01	5.08	2.00	4.22	7.51	0.32	1.2	1.34	2.08	3.00	DI-15
115	EXIST	EXIST	GRADE	0.0125	0.64	1.18	1.82	1.20	2.62	3.82	3.10	2.41	4.06	0.25	0.57	1.25	1.16	2.66	EXIST
116	g116	DI-15	GRADE	0.0125	0.98	1.34	2.32	1.86	3.00	4.86	3.10	2.85	6.11	0.29	0.84	1.48	1.67	3.19	DI-16
117	EXIST	EXIST	SAG	0.0125	0.84	1.25	2.09	1.56	2.66	4.22	-	2.38	3.99	0.25	OK	-	OK	-	-
118	g118	DI-16	SAG	0.0125	1.17	1.48	2.65	2.20	3.19	5.39	-	2.70	6.20	0.29	OK	-	OK	-	-
119	g119	DI-17	SAG	0.0125	0.87	0.00	0.87	1.77	0.00	1.77	-	2.19	2.80	0.21	OK	-	OK	-	-
120	g120	DI-18	SAG	0.0125	0.46	0.00	0.46	0.93	0.00	0.93	-	1.53	2.18	0.16	OK	-	OK	-	-
REF 1:		Hydraflow Express program																	
NOTES:		1. Design flow floods up to the but not including travel lanes - on site streets																	
		2. Design Capacity is based on Reference 4, Table 6-1 "Allowable Street Encroachments" & LDM Section 5-13																	
		3. Gutter spread is measured from face of curb.																	

Table 4

HEC-RAS Summary

HEC-RAS Existing Steady Flow Summary				
River	**Reach**	**Steady Flow Input (10-YR, cfs)**	**Steady Flow Input (100-YR, cfs)**	**Hydrologic Element in HEC-HMS**
Walerga Tributary	Walerga Tributary	216.6	408.6	DCW-Discharge
HEC-RAS Proposed Steady Flow Summary				
River	**Reach**	**Steady Flow Input (10-YR, cfs)**	**Steady Flow Input (100-YR, cfs)**	**Hydrologic Element in HEC-HMS**
Walerga Tributary	Walerga Tributary	217.2	424.7	DCW-Discharge
HEC-RAS Unmitigated Steady Flow Summary				
River	**Reach**	**Steady Flow Input (10-YR, cfs)**	**Steady Flow Input (100-YR, cfs)**	**Hydrologic Element in HEC-HMS**
Walerga Tributary	Walerga Tributary	216.3	426.1	DCW-Discharge

Table 5

HEC-RAS Results

River Station	100-Year Existing W.S. Elev (ft)	100-Year Proposed W.S. Elev (ft)	100-Year Unmitigated W.S. Elev (ft)
Estia Dry Creek - Walerga Road Tributary - Offsite			
6640	100.51	100.56	100.57
6545	100.54	100.6	100.62
6400	100.23	100.29	100.31
6276	100.04	100.09	100.1
6275	100.05	100.08	100.09
6201	99.93	99.98	99.99
6200	99.73	99.78	99.8
6100	99.5	99.55	99.57
6000	99.46	99.51	99.53
5922.73	99.21	99.26	99.27
5900	99.03	99.08	99.09
5825	98.84	98.89	98.9
3851	95.02	94.96	95.02
3850	95.02	95.02	95.02
3769.99	95.01	95.01	95.01
3710	95	95	95
River Station	**100-Year Existing W.S. Elev (ft)**	**100-Year Proposed W.S. Elev (ft)**	**100-Year Unmitigated W.S. Elev (ft)**
Estia Dry Creek - Walerga Road Tributary - Onsite			
5700	98.43	98.48	98.5
5600	98.18	98.23	98.24
5500	97.54	97.61	97.63
5400	97.17	97.21	97.23
5300	97	97.05	97.07
5200	96.88	96.93	96.95
5100	96.57	96.61	96.63
5062.01	96.43	96.47	96.49
5000	96.2	96.22	96.25
4900	96.11	96.13	96.15
4846	96	96.01	96.04
4835	95.97	95.98	96.01
4831.21	PED. BRIDGE	PED. BRIDGE	PED. BRIDGE
4825	95.94	95.95	95.98
4800	95.93	95.94	95.96
4700	95.82	95.81	95.84
4600	95.64	95.61	95.64
4500	95.5	95.46	95.49
4400	95.51	95.47	95.51
4350	95.48	95.44	95.47
4300	95.47	95.42	95.46
4250	95.47	95.42	95.45
4101	95.43	95.38	95.42
4100	95.36	95.1	95.33
3975.67	CULVERT	CULVERT	CULVERT

Table 6
HEC-HMS Results

HEC-HMS Model Results 100-Year - Existing			
Basin	Area (mi^2)	Discharge (cfs)	Volume (ac-ft)
1	0.1362	168.09	18
2	0.0904	64.61	11.8
3	0.1538	93.09	16.6
4	0.0707	42.06	7.1
5	0.1988	136.33	35
6	0.3962	240.16	42.8
DCW-R1	1.0461	408.59	131.4
DCW-R2	0.8195	395.64	101.6
DCW-R3	0.3962	252.9	42.9
DCW-Discharge	1.0461	408.59	131.4

HEC-HMS Model Detention Results 100-Year - Proposed			
Basin	Area (mi^2)	Discharge (cfs)	Volume (ac-ft)
1A	0.057	86.84	10.2
1B	0.0217	34.16	3.6
1C	0.0061	7.87	1.1
1D	0.0119	14.51	2.1
1E	0.0087	15.17	1.1
1F	0.0078	10.19	1.4
1G	0.0101	12.75	1.8
2	0.1491	150.25	19.6
3	0.1538	93.09	16.6
4	0.0707	42.06	7.1
5	0.1988	190.59	35.2
6	0.3962	240.16	42.8
DCW-R1	1.0919	424.68	142.7
DCW-R2	0.8195	368.86	101.9
DCW-R3	0.3962	252.9	42.9
DCW-Discharge	1.0919	424.68	142.7

Table 6 (Cont.)
HEC-HMS Results

HEC-HMS Model Detention Results 100-Year - Unmitigated			
Basin	**Area (mi^2)**	**Discharge (cfs)**	**Volume (ac-ft)**
1A	0.057	86.84	10.2
1B	0.0217	34.52	4.1
1C	0.0091	11.78	1.6
1D	0.0119	14.51	2.1
1E	0.0087	15.17	1.1
1F	0.0078	10.19	1.4
1G	0.0101	12.75	1.8
2	0.1491	145.7	16.3
3	0.1538	93.09	16.6
4	0.0707	42.06	7.1
5	0.1988	190.59	35.2
6	0.3962	240.16	42.8
DCW-R1	1.0949	423.97	140.5
DCW-R2	0.8195	368.86	101.9
DCW-R3	0.3962	252.9	42.9
DCW-Discharge	1.0949	423.97	140.5

Table 7

Pre-Development to Post-Development Comparison

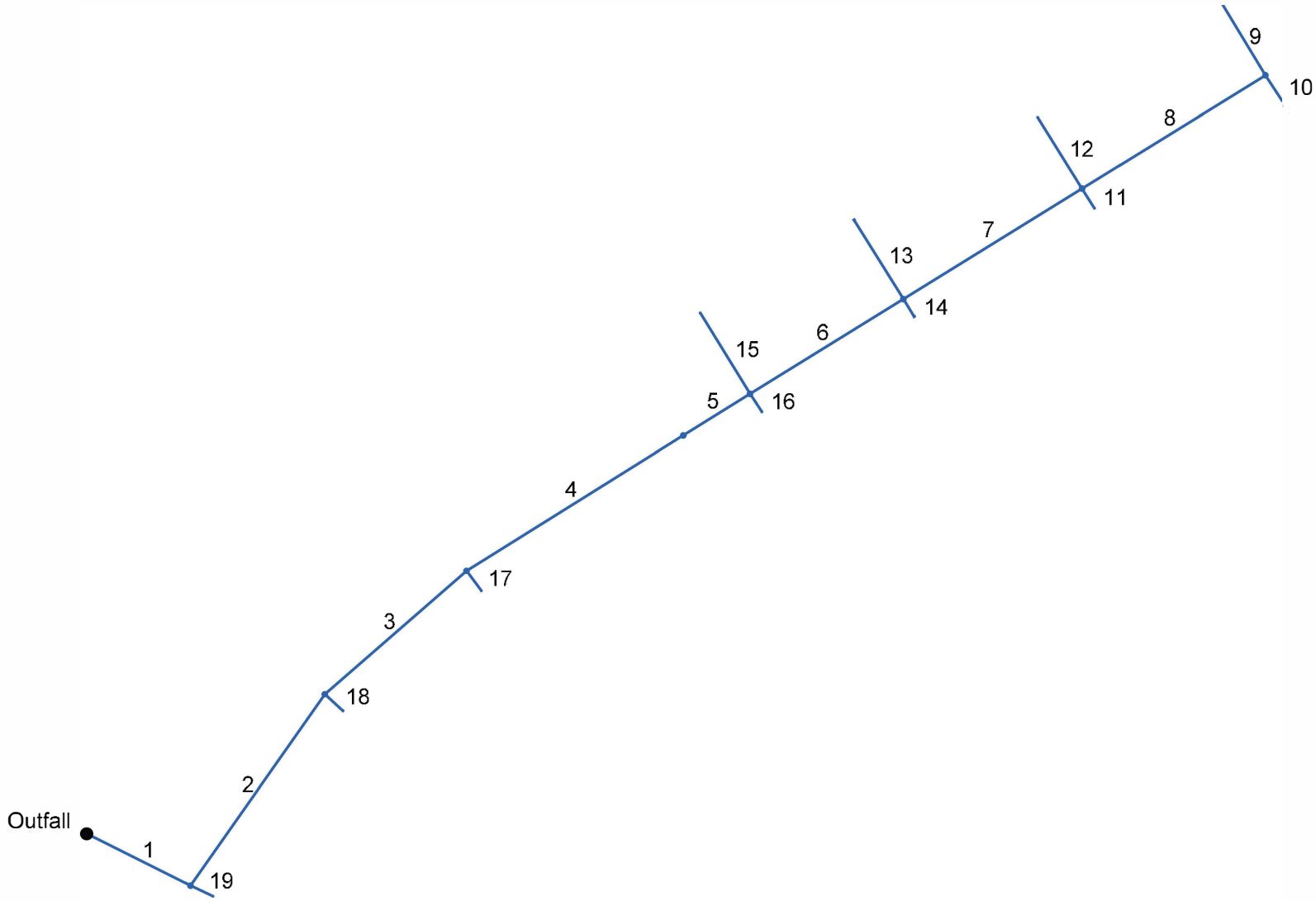
PRE-DEVELOPMENT					POST-DEVELOPMENT					Comments:
Discharge Location	**Sheds**	**Area - ac.**	**Q10**	**Q100**	**Discharge Location**	**Sheds**	**Area - ac.**	**Q10**	**Q100**	
POINT A	1>4	35.6	18.5	38.0	POINT A	12>13, 24>30	9.9	13.4	25.5	Runoff towards infiltration basin and existing storm drain per Segment 1, Upland Drive
PT. A PRE TOTAL		**35.6**	**18.5**	**38.0**	**PT. A POST TOTAL**		**9.9[1]**	**13.4**	**25.5**	Discharge towards existing storm drain at Baseline; Curry Creek
POINT B	5>7	20.3	22.5	43.3	PHASE 1 DISCHARGE	1>11, 14>23, 31>32	10.0	13.4	25.3	Infiltration Basin B at Phase 1; Runoff towards Point B
					PHASE 2 DISCHARGE	33>63	28.6	36.3	68.4	Phase 2 Runoff
					BACKBONE TO POINT B	105>120	7.3	7.8	15.1	Walerga Runoff
PT. B PRE TOTAL		**20.3**	**22.5**	**43.3**	**PT. B POST TOTAL**		**45.9[1]**	**57.5**	**108.7**	Overall runoff from Phases 1, 2, and Backbone (Walerga)
POINT C	8>14	49.7	39.3	75.8	TO PHASE 3 DISCHARGE 1	PH3-OS1, 64>67	5.4	4.1	7.8	Infiltration Basin D at Phase 3
					TO PHASE 3 DISCHARGE 2	PH3-OS2, 68>81	15.0	13.1	25.5	Infiltration Basin E at Phase 3
					TO PHASE 4 DISCHARGE 1	OS3, 82>88	7.3	5.8	11.0	Infiltration Basin F at Phase 4
					TO PHASE 4 DISCHARGE 2	OS2, 89>96	22.2	22.9	45.1	Infiltration Basin G at Phase 4
PT. C PRE TOTAL		**49.7**	**39.3**	**75.8**	**PT. C POST TOTAL**		**49.8**	**45.9**	**89.4**	Overall runoff from Phases 3 and 4
PT. D PRE TOTAL		**70.0**	**61.8**	**119.2**	**PT. D POST TOTAL**		**95.7**	**103.4**	**198.2**	Point D = Point B + Point C; At Walerga Tributary
PRE OVERALL TOTAL		**105.6**	**80.4**	**157.2**	**POST OVERALL TOTAL**		**105.6**	**116.8**	**223.6**	Total Overal Project

[1]25.7 acres are proposed to be shifted from the Curry Creek watershed to the Dry Creek watershed from Point A to Point B. The associated 100-year flows from this shed shift are 25.3 cfs from Phase 1 and 39.2 cfs from Phase 2. The associated 10-year flows from this shed shift are 13.4 cfs from Phase 1 and 17.3 cfs from Phase 2.

EXHIBIT D

Hydraulic Data and Profiles – 10-Year and 100-Year

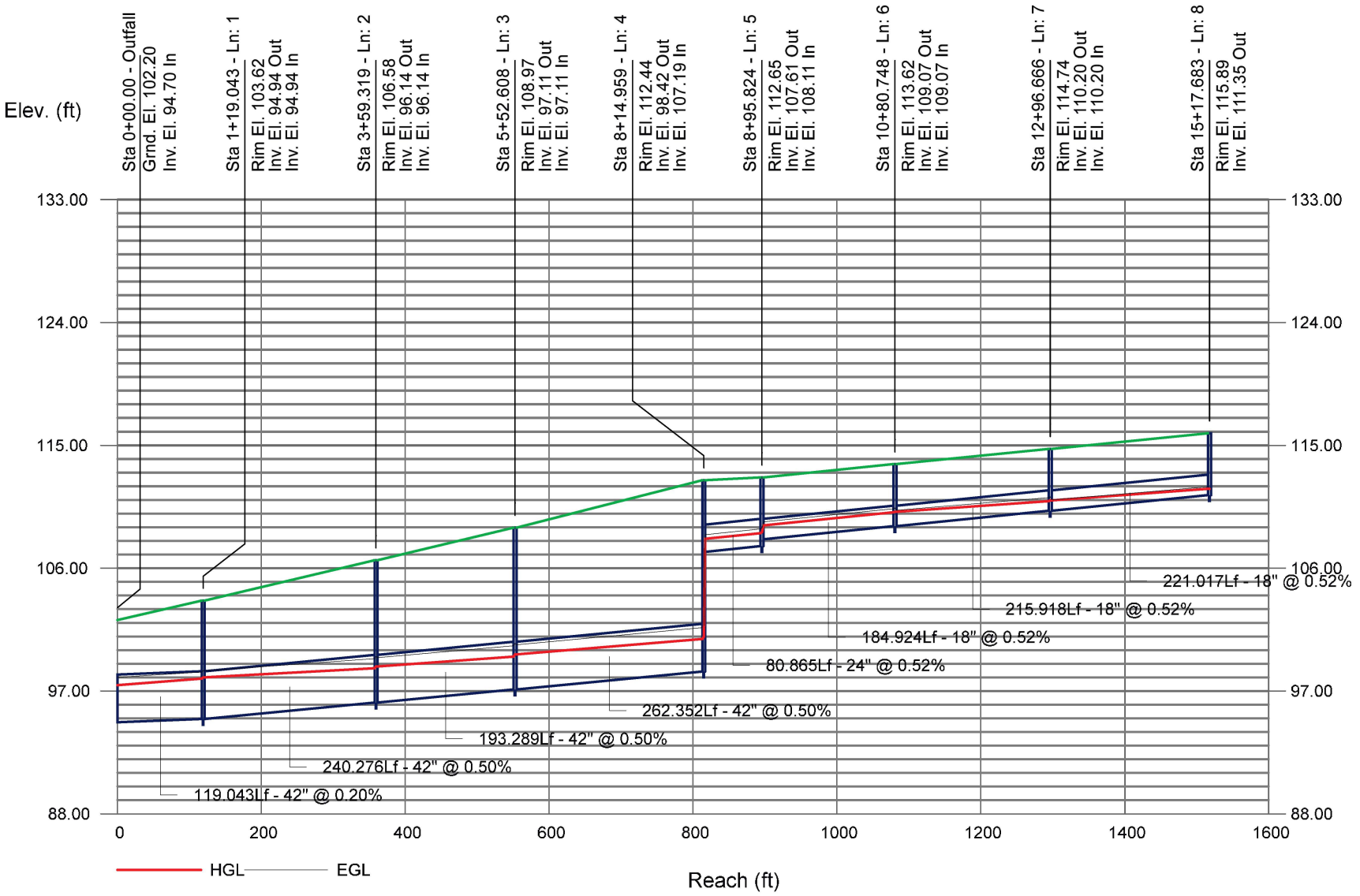
Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Backbone 10-Year.stm	* Figure not OCR Compatible	Number of lines: 19	Date: 5/5/2026

Storm Sewer Profile

Proj. file: Backbone 10-Year.stm



* Figure not OCR Compatible

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	P-23	48.93	42	Cir	119.043	94.70	94.94	0.202	97.43	97.90	0.10	97.99	End	Manhole
2	P-21	49.97	42	Cir	240.276	94.94	96.14	0.499	97.99	98.66	0.14	98.80	1	Manhole
3	P-19	50.55	42	Cir	193.289	96.14	97.11	0.502	98.80	99.51	0.16	99.67	2	Manhole
4	P-17	50.90	42	Cir	262.352	97.11	98.42	0.499	99.67	100.81	0.17	100.97	3	Manhole
5	P-16	6.55	24	Cir	80.865	107.19	107.61	0.519	108.15	108.57	0.06	108.63	4	Manhole
6	P-13.1	5.24	18	Cir	184.924	108.11	109.07	0.519	109.12	110.08	0.05	110.14	5	Manhole
7	P-13	3.36	18	Cir	215.918	109.07	110.20	0.523	110.14	110.91	0.05	110.96	6	Manhole
8	P-10	1.46	18	Cir	221.017	110.20	111.35	0.520	110.96	111.80	0.03	111.80	7	Manhole
9	P-8	0.80	12	Cir	83.802	111.85	113.52	1.993	112.14	113.89	0.03	113.89	8	Manhole
10	P-9	0.73	12	Cir	31.542	111.85	112.48	1.997	112.13	112.84	n/a	112.84	8	Manhole
11	P-12	1.09	12	Cir	23.681	110.70	111.17	1.985	111.04	111.61	n/a	111.61	7	Manhole
12	P-11	1.03	12	Cir	85.940	110.70	112.42	2.001	111.03	112.85	n/a	112.85	7	Manhole
13	P-11.1	1.02	15	Cir	95.429	109.32	111.23	2.001	110.14	111.63	n/a	111.63 j	6	Manhole
14	P-12.1	1.02	15	Cir	21.022	109.32	109.74	1.998	110.14	110.14	n/a	110.14 j	6	Manhole
15	P-14	0.92	12	Cir	97.675	108.61	110.57	2.007	108.92	110.97	n/a	110.97	5	Manhole
16	P-15	0.86	12	Cir	21.647	108.61	109.05	2.033	108.91	109.44	n/a	109.44	5	Manhole
17	P-18	1.66	12	Cir	25.156	99.61	-0.75	-398.943	100.61*	100.68*	0.01	100.70	3	Manhole
18	P-20	0.98	12	Cir	25.092	98.64	102.91	17.017	98.83	103.33	0.03	103.33	2	Manhole
19	P-22	1.17	12	Cir	25.389	97.44	99.92	9.768	97.99	100.38	n/a	100.38 j	1	Manhole

Project File: Backbone 10-Year.stm | Number of lines: 19 | Run Date: 5/5/2026

NOTES: Known Qs only ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	119.043	1.00	19.00	0.40	0.40	7.60	10.0	21.6	0.0	48.93	39.15	5.86	42	0.20	94.70	94.94	97.43	97.90	0.00	103.62	P-23
2	1	240.276	1.00	17.00	0.40	0.40	6.80	10.0	20.8	0.0	49.97	61.62	6.18	42	0.50	94.94	96.14	97.99	98.66	103.62	106.58	P-21
3	2	193.289	1.00	15.00	0.40	0.40	6.00	10.0	20.2	0.0	50.55	61.77	6.81	42	0.50	96.14	97.11	98.80	99.51	106.58	108.97	P-19
4	3	262.352	1.00	13.00	0.40	0.40	5.20	10.0	19.4	0.0	50.90	61.61	7.01	42	0.50	97.11	98.42	99.67	100.81	108.97	112.44	P-17
5	4	80.865	1.00	12.00	0.40	0.40	4.80	10.0	18.8	0.0	6.55	14.13	4.41	24	0.52	107.19	107.61	108.15	108.57	112.44	112.65	P-16
6	5	184.924	1.00	9.00	0.40	0.40	3.60	10.0	17.7	0.0	5.24	6.56	4.12	18	0.52	108.11	109.07	109.12	110.08	112.65	113.62	P-13.1
7	6	215.918	1.00	6.00	0.40	0.40	2.40	10.0	15.8	0.0	3.36	6.58	3.31	18	0.52	109.07	110.20	110.14	110.91	113.62	114.74	P-13
8	7	221.017	1.00	3.00	0.40	0.40	1.20	10.0	11.4	0.0	1.46	6.56	2.44	18	0.52	110.20	111.35	110.96	111.80	114.74	115.89	P-10
9	8	83.802	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	0.80	4.36	3.61	12	1.99	111.85	113.52	112.14	113.89	115.89	116.36	P-8
10	8	31.542	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	0.73	4.36	3.51	12	2.00	111.85	112.48	112.13	112.84	115.89	115.31	P-9
11	7	23.681	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.09	4.35	3.94	12	1.98	110.70	111.17	111.04	111.61	114.74	114.00	P-12
12	7	85.940	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.03	4.37	3.89	12	2.00	110.70	112.42	111.03	112.85	114.74	115.25	P-11
13	6	95.429	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.02	7.92	2.12	15	2.00	109.32	111.23	110.14	111.63	113.62	113.09	P-11.1
14	6	21.022	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.02	7.91	2.12	15	2.00	109.32	109.74	110.14	110.14	113.62	111.60	P-12.1
15	5	97.675	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	0.92	4.37	3.76	12	2.01	108.61	110.57	108.92	110.97	112.65	113.40	P-14
16	5	21.647	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	0.86	4.40	3.70	12	2.03	108.61	109.05	108.91	109.44	112.65	111.88	P-15
17	3	25.156	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.66	0.00	2.11	12	-398.94	99.61	-0.75	100.61	100.68	108.97	2.08	P-18
18	2	25.092	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	0.98	12.73	6.38	12	17.02	98.64	102.91	98.83	103.33	106.58	105.75	P-20
19	1	25.389	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.17	9.65	2.99	12	9.77	97.44	99.92	97.99	100.38	103.62	102.75	P-22

Project File: Backbone 10-Year.stm

Number of lines: 19

Run Date: 5/5/2026

NOTES:Known Qs only ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
(1)	(in) (2)	(cfs) (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(ft) (12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(K) (23)	(ft) (24)
1	42	48.93	94.70	97.43	2.73	8.05	6.08	0.57	98.00	0.347	119.043	94.94	97.90	2.96	8.67	5.64	0.50	98.39	0.299	0.323	0.385	0.20	0.10
2	42	49.97	94.94	97.99	3.05	8.91	5.61	0.49	98.48	0.298	240.276	96.14	98.66	2.52	7.41	6.74	0.71	99.37	0.437	0.368	0.883	0.20	0.14
3	42	50.55	96.14	98.80	2.66	7.84	6.45	0.65	99.45	0.392	193.289	97.11	99.51	2.40	7.04	7.18	0.80	100.31	0.505	0.449	0.867	0.20	0.16
4	42	50.90	97.11	99.67	2.56	7.55	6.74	0.71	100.38	0.434	262.352	98.42	100.81	2.39	6.99	7.29	0.83	101.63	0.522	0.478	1.254	0.20	0.17
5	24	6.55	107.19	108.15	0.96*	1.49	4.41	0.30	108.45	0.519	80.865	107.61	108.57	0.96	1.48	4.42	0.30	108.87	0.522	0.520	0.421	0.20	0.06
6	18	5.24	108.11	109.12	1.01*	1.27	4.12	0.26	109.39	0.519	184.924	109.07	110.08	1.01	1.27	4.12	0.26	110.35	0.519	0.519	0.959	0.20	0.05
7	18	3.36	109.07	110.14	1.07	0.81	2.50	0.10	110.23	0.186	215.918	110.20	110.91	0.71**	0.82	4.11	0.26	111.17	0.673	0.430	0.928	0.20	0.05
8	18	1.46	110.20	110.96	0.76	0.45	1.63	0.04	111.00	0.099	221.017	111.35	111.80	0.45**	0.45	3.25	0.16	111.97	0.655	0.377	n/a	0.20	0.03
9	12	0.80	111.85	112.14	0.29*	0.19	4.23	0.14	112.28	0.000	83.802	113.52	113.89	0.37**	0.27	2.99	0.14	114.03	0.000	0.000	n/a	0.20	0.03
10	12	0.73	111.85	112.13	0.28*	0.18	4.12	0.13	112.26	0.000	31.542	112.48	112.84	0.36**	0.25	2.91	0.13	112.97	0.000	0.000	n/a	0.20	n/a
11	12	1.09	110.70	111.04	0.34*	0.24	4.60	0.17	111.21	0.000	23.681	111.17	111.61	0.44**	0.33	3.28	0.17	111.78	0.000	0.000	n/a	0.20	n/a
12	12	1.03	110.70	111.03	0.33*	0.23	4.54	0.16	111.19	0.000	85.940	112.42	112.85	0.43**	0.32	3.23	0.16	113.01	0.000	0.000	n/a	0.20	n/a
13	15	1.02	109.32	110.14	0.82	0.33	1.20	0.14	110.28	0.000	95.429	111.23	111.63 j	0.40**	0.33	3.05	0.14	111.77	0.000	0.000	n/a	0.20	n/a
14	15	1.02	109.32	110.14	0.82	0.33	1.20	0.14	110.28	0.000	21.022	109.74	110.14 j	0.40**	0.33	3.05	0.14	110.28	0.000	0.000	n/a	0.20	n/a
15	12	0.92	108.61	108.92	0.31*	0.21	4.40	0.15	109.07	0.000	97.675	110.57	110.97	0.40**	0.30	3.12	0.15	111.12	0.000	0.000	n/a	0.20	n/a
16	12	0.86	108.61	108.91	0.30*	0.20	4.34	0.14	109.05	0.000	21.647	109.05	109.44	0.39**	0.28	3.05	0.14	109.58	0.000	0.000	n/a	0.20	n/a
17	12	1.66	99.61	100.61	1.00*	0.79	2.11	0.07	100.68	0.289	25.156	-0.75	100.68	1.00	0.79	2.11	0.07	100.75	0.289	0.289	0.073	0.20	0.01
18	12	0.98	98.64	98.83	0.19*	0.10	9.59	0.16	98.98	0.000	25.092	102.91	103.33	0.42**	0.31	3.18	0.16	103.48	0.000	0.000	n/a	0.20	0.03
19	12	1.17	97.44	97.99	0.55	0.35	2.61	0.18	98.17	0.000	25.389	99.92	100.38 j	0.46**	0.35	3.36	0.18	100.55	0.000	0.000	n/a	0.20	0.04

Project File: Backbone 10-Year.stm | Number of lines: 19 | Run Date: 5/5/2026

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraflow HGL Computation Procedure

General Procedure:

Hydraflow computes the HGL using the Bernoulli energy equation. Manning's equation is used to determine energy losses due to pipe friction. In a standard step, iterative procedure, Hydraflow assumes upstream HGLs until the energy equation balances. If the energy equation cannot balance, supercritical flow exists and critical depth is temporarily assumed at the upstream end. A supercritical flow Profile is then computed using the same procedure in a downstream direction using momentum principles.

Col. 1 The line number being computed. Calculations begin at Line 1 and proceed upstream.

Col. 2 The line size. In the case of non-circular pipes, the line rise is printed above the span.

Col. 3 Total flow rate in the line.

Col. 4 The elevation of the downstream invert.

Col. 5 Elevation of the hydraulic grade line at the downstream end. This is computed as the upstream HGL + Minor loss of this line's downstream line.

Col. 6 The downstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 7 Cross-sectional area of the flow at the downstream end.

Col. 8 The velocity of the flow at the downstream end, (Col. 3 / Col. 7).

Col. 9 Velocity head (Velocity squared / 2g).

Col. 10 The elevation of the energy grade line at the downstream end, HGL + Velocity head, (Col. 5 + Col. 9).

Col. 11 The friction slope at the downstream end (the S or Slope term in Manning's equation).

Col. 12 The line length.

Col. 13 The elevation of the upstream invert.

Col. 14 Elevation of the hydraulic grade line at the upstream end.

Col. 15 The upstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 16 Cross-sectional area of the flow at the upstream end.

Col. 17 The velocity of the flow at the upstream end, (Col. 3 / Col. 16).

Col. 18 Velocity head (Velocity squared / 2g).

Col. 19 The elevation of the energy grade line at the upstream end, HGL + Velocity head, (Col. 14 + Col. 18) .

Col. 20 The friction slope at the upstream end (the S or Slope term in Manning's equation).

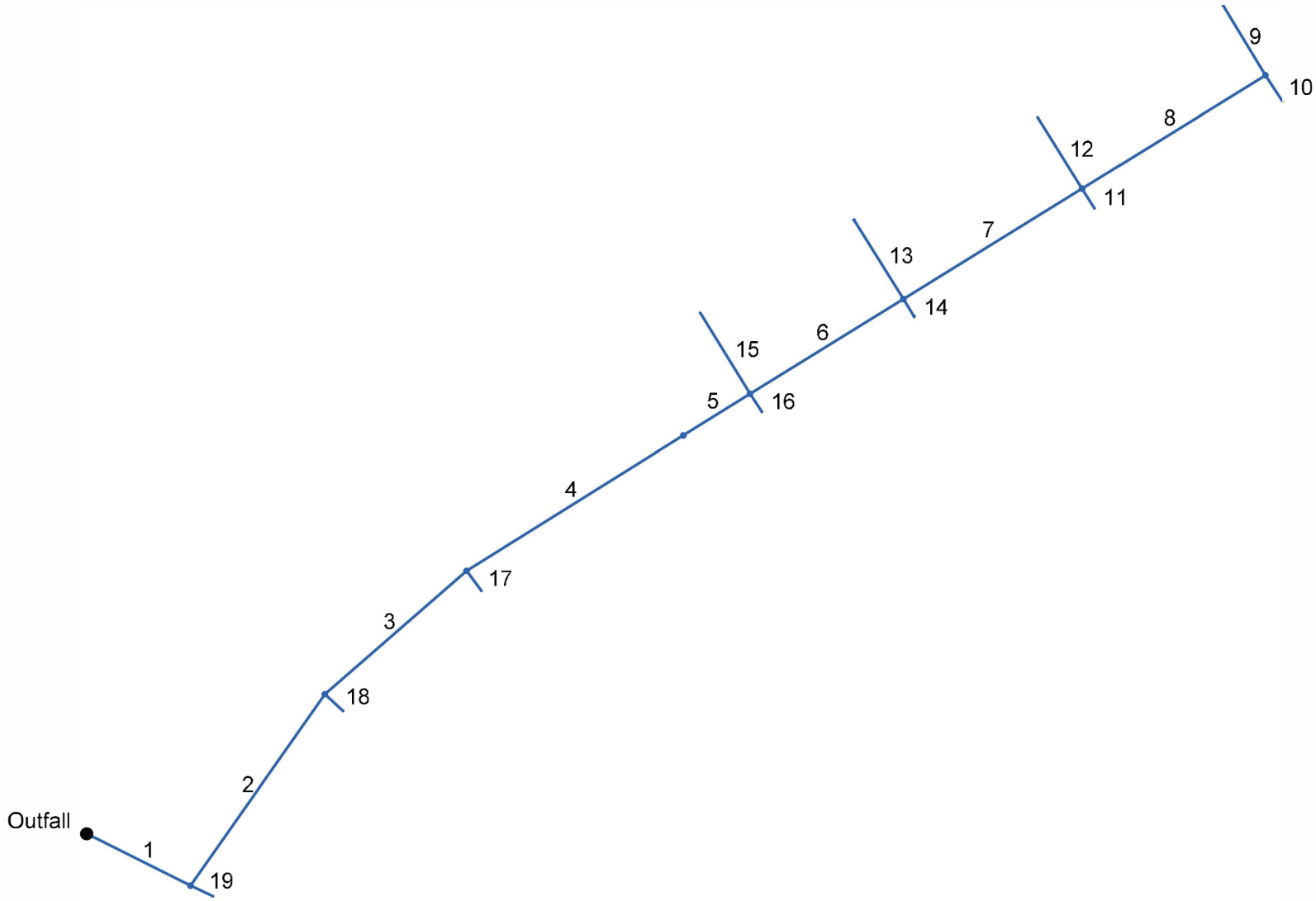
Col. 21 The average of the downstream and upstream friction slopes.

Col. 22 Energy loss. Average Sf/100 x Line Length (Col. 21/100 x Col. 12). Equals (EGL upstream - EGL downstream) +/- tolerance.

Col. 23 The junction loss coefficient (K).

Col. 24 Minor loss. (Col. 23 x Col. 18). Is added to upstream HGL and used as the starting HGL for the next upstream line(s).

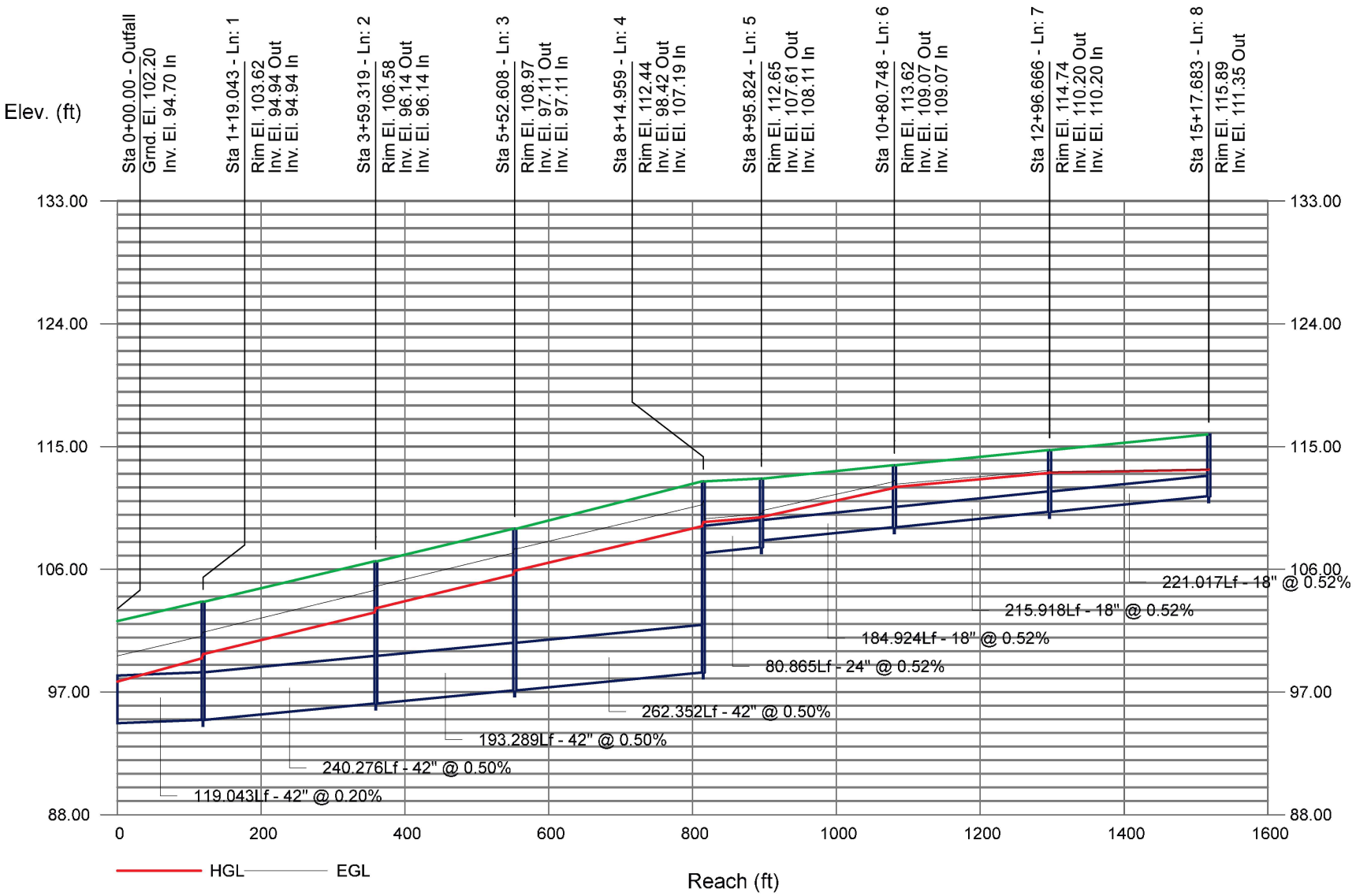
Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Backbone 100-Year.stm	* Figure not OCR Compatible	Number of lines: 19	Date: 5/5/2026

Storm Sewer Profile

Proj. file: Backbone 100-Year.stm



* Figure not OCR Compatible

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	P-23	98.12	42	Cir	119.043	94.70	94.94	0.202	97.75*	99.46*	0.32	99.79	End	Manhole
2	P-21	98.13	42	Cir	240.276	94.94	96.14	0.499	99.79*	102.83*	0.32	103.15	1	Manhole
3	P-19	97.83	42	Cir	193.289	96.14	97.11	0.502	103.15*	105.59*	0.32	105.91	2	Manhole
4	P-17	96.77	42	Cir	262.352	97.11	98.42	0.499	105.91*	109.14*	0.31	109.46	3	Manhole
5	P-16	12.61	24	Cir	80.865	107.19	107.61	0.519	109.46*	109.79*	0.05	109.84	4	Manhole
6	P-13.1	9.70	18	Cir	184.924	108.11	109.07	0.519	109.84*	111.94*	0.09	112.04	5	Manhole
7	P-13	6.21	18	Cir	215.918	109.07	110.20	0.523	112.04*	113.04*	0.04	113.08	6	Manhole
8	P-10	2.84	18	Cir	221.017	110.20	111.35	0.520	113.08*	113.30*	0.01	113.31	7	Manhole
9	P-8	1.62	12	Cir	83.802	111.85	113.52	1.993	113.31	114.06	n/a	114.06 j	8	Manhole
10	P-9	1.42	12	Cir	31.542	111.85	112.48	1.997	113.31	113.36	0.01	113.37	8	Manhole
11	P-12	2.08	12	Cir	23.681	110.70	111.17	1.985	113.08*	113.19*	0.02	113.21	7	Manhole
12	P-11	1.91	12	Cir	85.940	110.70	112.42	2.001	113.08	113.39	0.02	113.41	7	Manhole
13	P-11.1	1.90	15	Cir	95.429	109.32	111.23	2.001	112.04	112.14	0.01	112.15	6	Manhole
14	P-12.1	1.92	15	Cir	21.022	109.32	109.74	1.998	112.04*	112.06*	0.01	112.07	6	Manhole
15	P-14	1.76	12	Cir	97.675	108.61	110.57	2.007	109.84	111.13	n/a	111.13 j	5	Manhole
16	P-15	1.62	12	Cir	21.647	108.61	109.05	2.033	109.84	109.89	0.02	109.90	5	Manhole
17	P-18	3.07	12	Cir	25.156	99.61	-0.75	-398.943	105.91*	106.16*	0.05	106.21	3	Manhole
18	P-20	1.86	12	Cir	25.092	98.64	102.91	17.017	103.15	103.49	n/a	103.49	2	Manhole
19	P-22	2.20	12	Cir	25.389	97.44	99.92	9.768	99.79	100.55	n/a	100.55 j	1	Manhole

Project File: Backbone 100-Year.stm | Number of lines: 19 | Run Date: 5/5/2026

NOTES: Known Qs only ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	119.043	1.00	19.00	0.40	0.40	7.60	10.0	16.0	0.0	98.12	39.15	10.61	42	0.20	94.70	94.94	97.75	99.46	0.00	103.62	P-23
2	1	240.276	1.00	17.00	0.40	0.40	6.80	10.0	15.6	0.0	98.13	61.62	10.20	42	0.50	94.94	96.14	99.79	102.83	103.62	106.58	P-21
3	2	193.289	1.00	15.00	0.40	0.40	6.00	10.0	15.3	0.0	97.83	61.77	10.17	42	0.50	96.14	97.11	103.15	105.59	106.58	108.97	P-19
4	3	262.352	1.00	13.00	0.40	0.40	5.20	10.0	14.9	0.0	96.77	61.61	10.06	42	0.50	97.11	98.42	105.91	109.14	108.97	112.44	P-17
5	4	80.865	1.00	12.00	0.40	0.40	4.80	10.0	14.6	0.0	12.61	14.13	4.01	24	0.52	107.19	107.61	109.46	109.79	112.44	112.65	P-16
6	5	184.924	1.00	9.00	0.40	0.40	3.60	10.0	14.0	0.0	9.70	6.56	5.49	18	0.52	108.11	109.07	109.84	111.94	112.65	113.62	P-13.1
7	6	215.918	1.00	6.00	0.40	0.40	2.40	10.0	13.0	0.0	6.21	6.58	3.51	18	0.52	109.07	110.20	112.04	113.04	113.62	114.74	P-13
8	7	221.017	1.00	3.00	0.40	0.40	1.20	10.0	10.7	0.0	2.84	6.56	1.61	18	0.52	110.20	111.35	113.08	113.30	114.74	115.89	P-10
9	8	83.802	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.62	4.36	2.90	12	1.99	111.85	113.52	113.31	114.06	115.89	116.36	P-8
10	8	31.542	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.42	4.36	1.87	12	2.00	111.85	112.48	113.31	113.36	115.89	115.31	P-9
11	7	23.681	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	2.08	4.35	2.65	12	1.98	110.70	111.17	113.08	113.19	114.74	114.00	P-12
12	7	85.940	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.91	4.37	2.44	12	2.00	110.70	112.42	113.08	113.39	114.74	115.25	P-11
13	6	95.429	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.90	7.92	1.77	15	2.00	109.32	111.23	112.04	112.14	113.62	113.09	P-11.1
14	6	21.022	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.92	7.91	1.56	15	2.00	109.32	109.74	112.04	112.06	113.62	111.60	P-12.1
15	5	97.675	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.76	4.37	3.05	12	2.01	108.61	110.57	109.84	111.13	112.65	113.40	P-14
16	5	21.647	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.62	4.40	2.19	12	2.03	108.61	109.05	109.84	109.89	112.65	111.88	P-15
17	3	25.156	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	3.07	0.00	3.91	12	-398.94	99.61	-0.75	105.91	106.16	108.97	2.08	P-18
18	2	25.092	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	1.86	12.73	3.15	12	17.02	98.64	102.91	103.15	103.49	106.58	105.75	P-20
19	1	25.389	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	2.20	9.65	3.50	12	9.77	97.44	99.92	99.79	100.55	103.62	102.75	P-22

Project File: Backbone 100-Year.stm

Number of lines: 19

Run Date: 5/5/2026

NOTES:Known Qs only ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
(1)	(in) (2)	(cfs) (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(ft) (12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(K) (23)	(ft) (24)
1	42	98.12	94.70	97.75	3.05	8.90	11.03	1.89	99.64	1.153	119.043	94.94	99.46	3.50	9.62	10.20	1.62	101.08	1.266	1.210	1.440	0.20	0.32
2	42	98.13	94.94	99.79	3.50	9.62	10.20	1.62	101.40	1.267	240.276	96.14	102.83	3.50	9.62	10.20	1.62	104.45	1.267	1.267	3.044	0.20	0.32
3	42	97.83	96.14	103.15	3.50	9.62	10.17	1.61	104.76	1.259	193.289	97.11	105.59	3.50	9.62	10.17	1.61	107.20	1.259	1.259	2.434	0.20	0.32
4	42	96.77	97.11	105.91	3.50	9.62	10.06	1.57	107.48	1.232	262.352	98.42	109.14	3.50	9.62	10.06	1.57	110.72	1.232	1.232	3.232	0.20	0.31
5	24	12.61	107.19	109.46	2.00	3.14	4.01	0.25	109.71	0.414	80.865	107.61	109.79	2.00	3.14	4.01	0.25	110.04	0.414	0.414	0.335	0.20	0.05
6	18	9.70	108.11	109.84	1.50	1.77	5.49	0.47	110.31	1.136	184.924	109.07	111.94	1.50	1.77	5.49	0.47	112.41	1.136	1.136	2.101	0.20	0.09
7	18	6.21	109.07	112.04	1.50	1.77	3.51	0.19	112.23	0.466	215.918	110.20	113.04	1.50	1.77	3.51	0.19	113.24	0.466	0.466	1.006	0.20	0.04
8	18	2.84	110.20	113.08	1.50	1.77	1.61	0.04	113.12	0.097	221.017	111.35	113.30	1.50	1.77	1.61	0.04	113.34	0.097	0.097	0.215	0.20	0.01
9	12	1.62	111.85	113.31	1.00	0.43	2.06	0.07	113.37	0.276	83.802	113.52	114.06 j	0.54**	0.43	3.74	0.22	114.28	0.852	0.564	n/a	0.20	0.04
10	12	1.42	111.85	113.31	1.00	0.79	1.81	0.05	113.36	0.212	31.542	112.48	113.36	0.88	0.73	1.94	0.06	113.42	0.190	0.201	0.063	0.20	0.01
11	12	2.08	110.70	113.08	1.00	0.79	2.65	0.11	113.19	0.454	23.681	111.17	113.19	1.00	0.79	2.65	0.11	113.30	0.454	0.454	0.108	0.20	0.02
12	12	1.91	110.70	113.08	1.00	0.79	2.43	0.09	113.17	0.383	85.940	112.42	113.39	0.97	0.78	2.45	0.09	113.48	0.337	0.360	0.310	0.20	0.02
13	15	1.90	109.32	112.04	1.25	1.23	1.55	0.04	112.08	0.115	95.429	111.23	112.14	0.91	0.96	1.99	0.06	112.20	0.149	0.132	0.126	0.20	0.01
14	15	1.92	109.32	112.04	1.25	1.23	1.56	0.04	112.08	0.118	21.022	109.74	112.06	1.25	1.23	1.56	0.04	112.10	0.118	0.118	0.025	0.20	0.01
15	12	1.76	108.61	109.84	1.00	0.46	2.24	0.08	109.92	0.325	97.675	110.57	111.13 j	0.56**	0.46	3.86	0.23	111.37	0.875	0.600	n/a	0.20	0.05
16	12	1.62	108.61	109.84	1.00	0.79	2.06	0.07	109.91	0.276	21.647	109.05	109.89	0.84	0.70	2.31	0.08	109.97	0.267	0.271	0.059	0.20	0.02
17	12	3.07	99.61	105.91	1.00	0.79	3.91	0.24	106.15	0.990	25.156	-0.75	106.16	1.00	0.79	3.91	0.24	106.40	0.989	0.990	0.249	0.20	0.05
18	12	1.86	98.64	103.15	1.00	0.47	2.37	0.09	103.24	0.363	25.092	102.91	103.49	0.58**	0.47	3.93	0.24	103.73	0.891	0.627	n/a	0.20	n/a
19	12	2.20	97.44	99.79	1.00	0.52	2.80	0.12	99.91	0.508	25.389	99.92	100.55 j	0.63**	0.52	4.19	0.27	100.83	0.957	0.733	n/a	0.20	0.05

Project File: Backbone 100-Year.stm | Number of lines: 19 | Run Date: 5/5/2026

Notes: ; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraflow HGL Computation Procedure

General Procedure:

Hydraflow computes the HGL using the Bernoulli energy equation. Manning's equation is used to determine energy losses due to pipe friction. In a standard step, iterative procedure, Hydraflow assumes upstream HGLs until the energy equation balances. If the energy equation cannot balance, supercritical flow exists and critical depth is temporarily assumed at the upstream end. A supercritical flow Profile is then computed using the same procedure in a downstream direction using momentum principles.

Col. 1 The line number being computed. Calculations begin at Line 1 and proceed upstream.

Col. 2 The line size. In the case of non-circular pipes, the line rise is printed above the span.

Col. 3 Total flow rate in the line.

Col. 4 The elevation of the downstream invert.

Col. 5 Elevation of the hydraulic grade line at the downstream end. This is computed as the upstream HGL + Minor loss of this line's downstream line.

Col. 6 The downstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 7 Cross-sectional area of the flow at the downstream end.

Col. 8 The velocity of the flow at the downstream end, (Col. 3 / Col. 7).

Col. 9 Velocity head (Velocity squared / 2g).

Col. 10 The elevation of the energy grade line at the downstream end, HGL + Velocity head, (Col. 5 + Col. 9).

Col. 11 The friction slope at the downstream end (the S or Slope term in Manning's equation).

Col. 12 The line length.

Col. 13 The elevation of the upstream invert.

Col. 14 Elevation of the hydraulic grade line at the upstream end.

Col. 15 The upstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 16 Cross-sectional area of the flow at the upstream end.

Col. 17 The velocity of the flow at the upstream end, (Col. 3 / Col. 16).

Col. 18 Velocity head (Velocity squared / 2g).

Col. 19 The elevation of the energy grade line at the upstream end, HGL + Velocity head, (Col. 14 + Col. 18) .

Col. 20 The friction slope at the upstream end (the S or Slope term in Manning's equation).

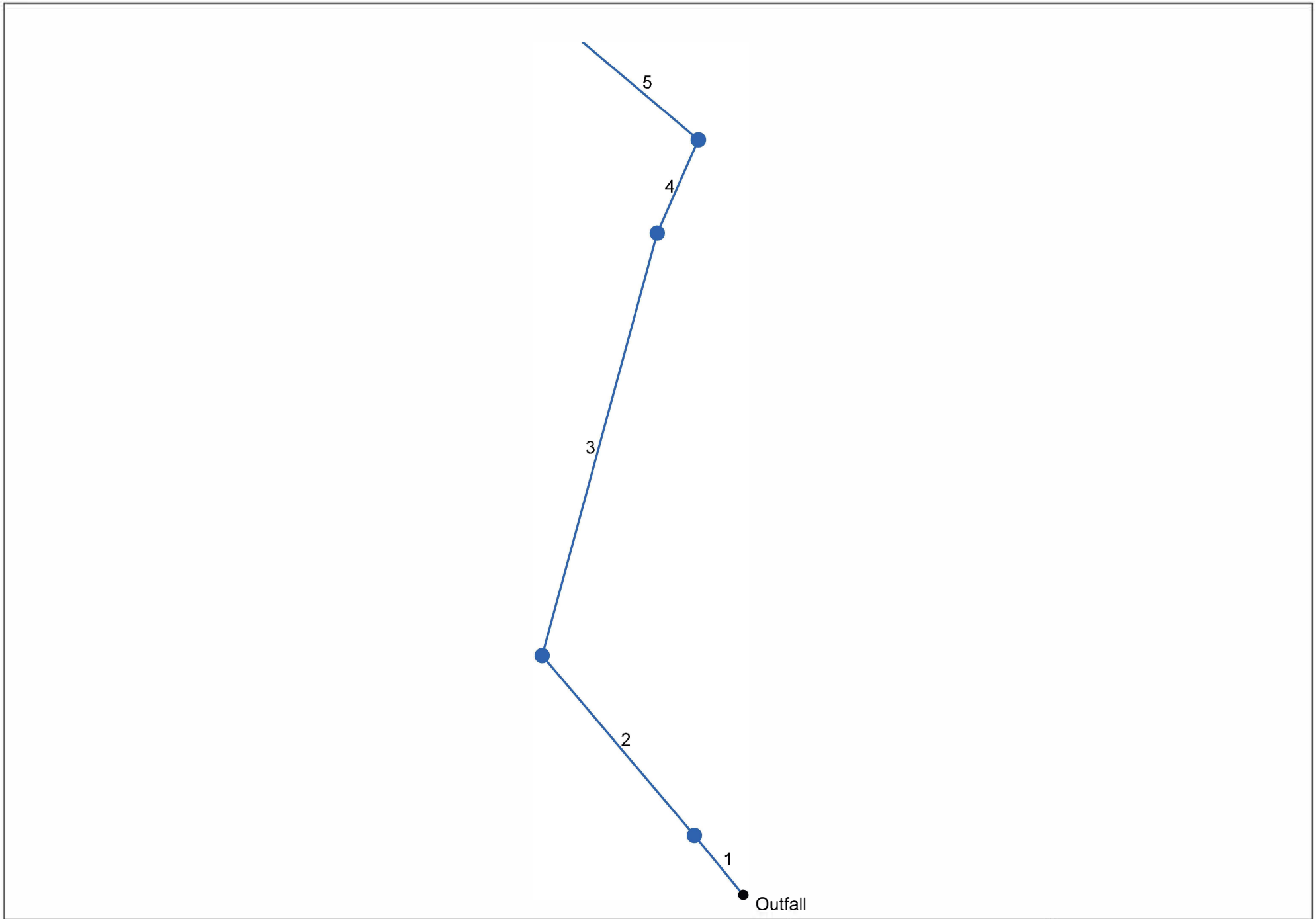
Col. 21 The average of the downstream and upstream friction slopes.

Col. 22 Energy loss. Average Sf/100 x Line Length (Col. 21/100 x Col. 12). Equals (EGL upstream - EGL downstream) +/- tolerance.

Col. 23 The junction loss coefficient (K).

Col. 24 Minor loss. (Col. 23 x Col. 18). Is added to upstream HGL and used as the starting HGL for the next upstream line(s).

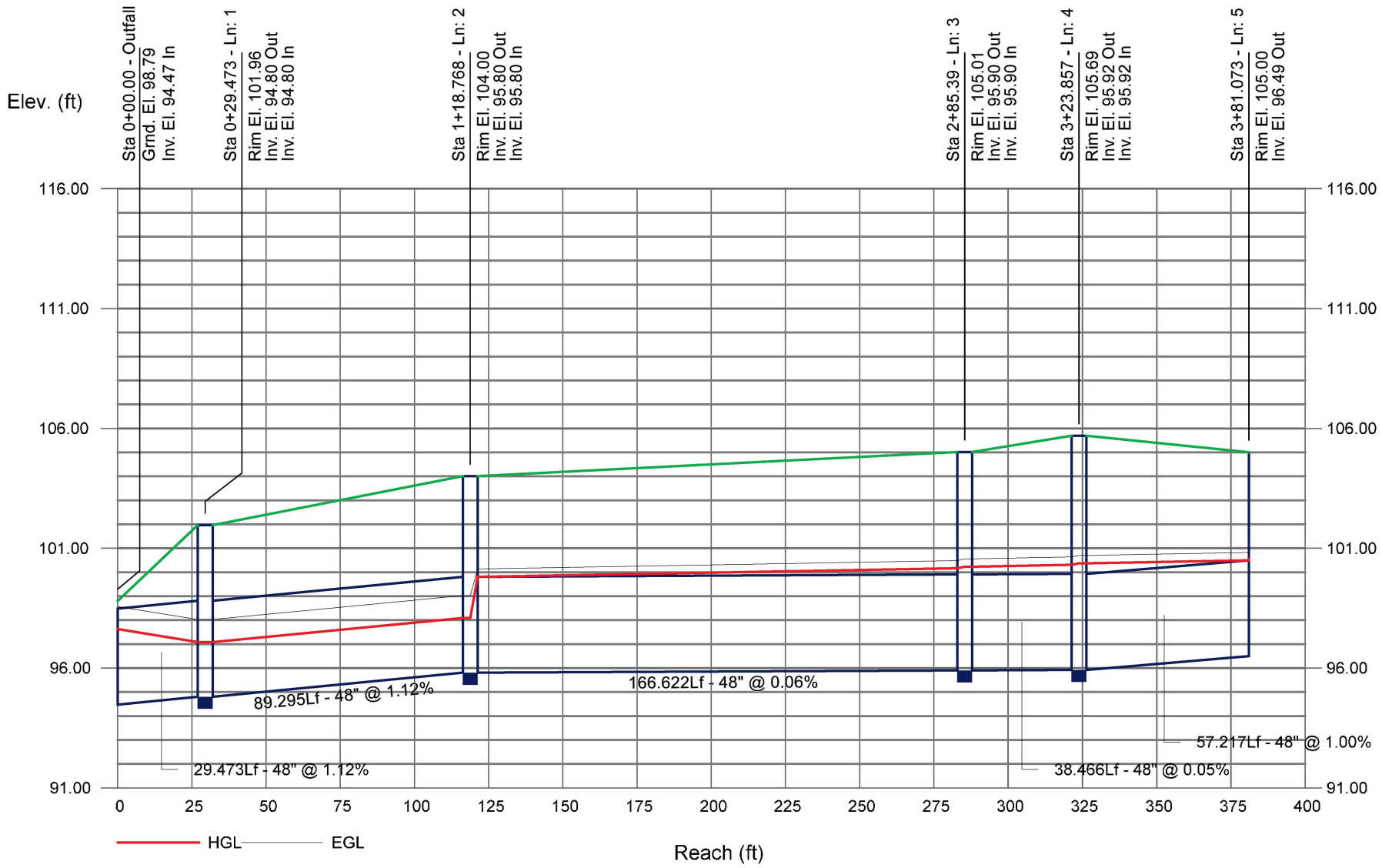
Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Walerga Ex 10-Year.stm	* Figure not OCR Compatible	Number of lines: 5	Date: 5/6/2026

Storm Sewer Profile

Proj. file: Walerga Ex 10-Year.stm



* Figure not OCR Compatible

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (42)	57.50	48	Cir	29.473	94.47	94.80	1.120	97.62	97.08	n/a	97.08	End	Manhole
2	Pipe - (41)	57.50	48	Cir	89.295	94.80	95.80	1.120	97.08	98.08	n/a	98.08	1	Manhole
3	Pipe - (40)	57.50	48	Cir	166.622	95.80	95.90	0.060	99.80*	100.16*	0.07	100.22	2	Manhole
4	Pipe - (39) (1)	57.50	48	Cir	38.466	95.90	95.92	0.052	100.22*	100.30*	0.07	100.37	3	Manhole
5	Pipe - (97)	57.50	48	Cir	57.217	95.92	96.49	0.996	100.37	100.49	0.07	100.55	4	Manhole

Project File: Walerga Ex 10-Year.stm | Number of lines: 5 | Run Date: 5/6/2026

NOTES: Known Qs only ; *Surcharged (HGL above crown).

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	29.473	1.00	5.00	0.40	0.40	2.00	10.0	11.3	0.0	57.50	131.7	6.59	48	1.12	94.47	94.80	97.62	97.08	98.79	101.96	Pipe - (42)
2	1	89.295	1.00	4.00	0.40	0.40	1.60	10.0	11.0	0.0	57.50	131.7	7.77	48	1.12	94.80	95.80	97.08	98.08	101.96	104.00	Pipe - (41)
3	2	166.622	1.00	3.00	0.40	0.40	1.20	10.0	10.3	0.0	57.50	30.50	4.58	48	0.06	95.80	95.90	99.80	100.16	104.00	105.01	Pipe - (40)
4	3	38.466	1.00	2.00	0.40	0.40	0.80	10.0	10.2	0.0	57.50	28.38	4.58	48	0.05	95.90	95.92	100.22	100.30	105.01	105.69	Pipe - (39) (1)
5	4	57.217	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	57.50	124.3	4.58	48	1.00	95.92	96.49	100.37	100.49	105.69	105.00	Pipe - (97)

Project File: Walerga Ex 10-Year.stm

Number of lines: 5

Run Date: 5/6/2026

NOTES:Known Qs only ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
(1)	(in) (2)	(cfs) (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(ft) (12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(K) (23)	(ft) (24)
1	48	57.50	94.47	97.62	3.15	7.40	5.42	0.94	98.56	0.000	29.473	94.80	97.08	2.28**	7.40	7.77	0.94	98.02	0.000	0.000	n/a	0.20	n/a
2	48	57.50	94.80	97.08	2.28*	7.40	7.77	0.94	98.02	0.000	89.295	95.80	98.08	2.28**	7.40	7.77	0.94	99.02	0.000	0.000	n/a	0.20	n/a
3	48	57.50	95.80	99.80	4.00*	12.56	4.58	0.33	100.13	0.213	166.622	95.90	100.16	4.00	12.57	4.58	0.33	100.48	0.213	0.213	0.356	0.20	0.07
4	48	57.50	95.90	100.22	4.00	12.56	4.58	0.33	100.55	0.213	38.466	95.92	100.30	4.00	12.57	4.58	0.33	100.63	0.213	0.213	0.082	0.20	0.07
5	48	57.50	95.92	100.37	4.00	12.56	4.58	0.33	100.69	0.213	57.217	96.49	100.49	4.00	12.57	4.58	0.33	100.82	0.212	0.213	0.122	0.20	0.07

Project File: Walerga Ex 10-Year.stm | Number of lines: 5 | Run Date: 5/6/2026

Notes: * Normal depth assumed; ** Critical depth. ; c = cir e = ellip b = box

Hydraflow HGL Computation Procedure

General Procedure:

Hydraflow computes the HGL using the Bernoulli energy equation. Manning's equation is used to determine energy losses due to pipe friction. In a standard step, iterative procedure, Hydraflow assumes upstream HGLs until the energy equation balances. If the energy equation cannot balance, supercritical flow exists and critical depth is temporarily assumed at the upstream end. A supercritical flow Profile is then computed using the same procedure in a downstream direction using momentum principles.

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Col. 5 Elevation of the hydraulic grade line at the downstream end. This is computed as the upstream HGL + Minor loss of this line's downstream line.

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Col. 7 Cross-sectional area of the flow at the downstream end.

Col. 8 The velocity of the flow at the downstream end, (Col. 3 / Col. 7).

Col. 9 Velocity head (Velocity squared / 2g).

Col. 10 The elevation of the energy grade line at the downstream end, HGL + Velocity head, (Col. 5 + Col. 9).

Col. 11 The friction slope at the downstream end (the S or Slope term in Manning's equation).

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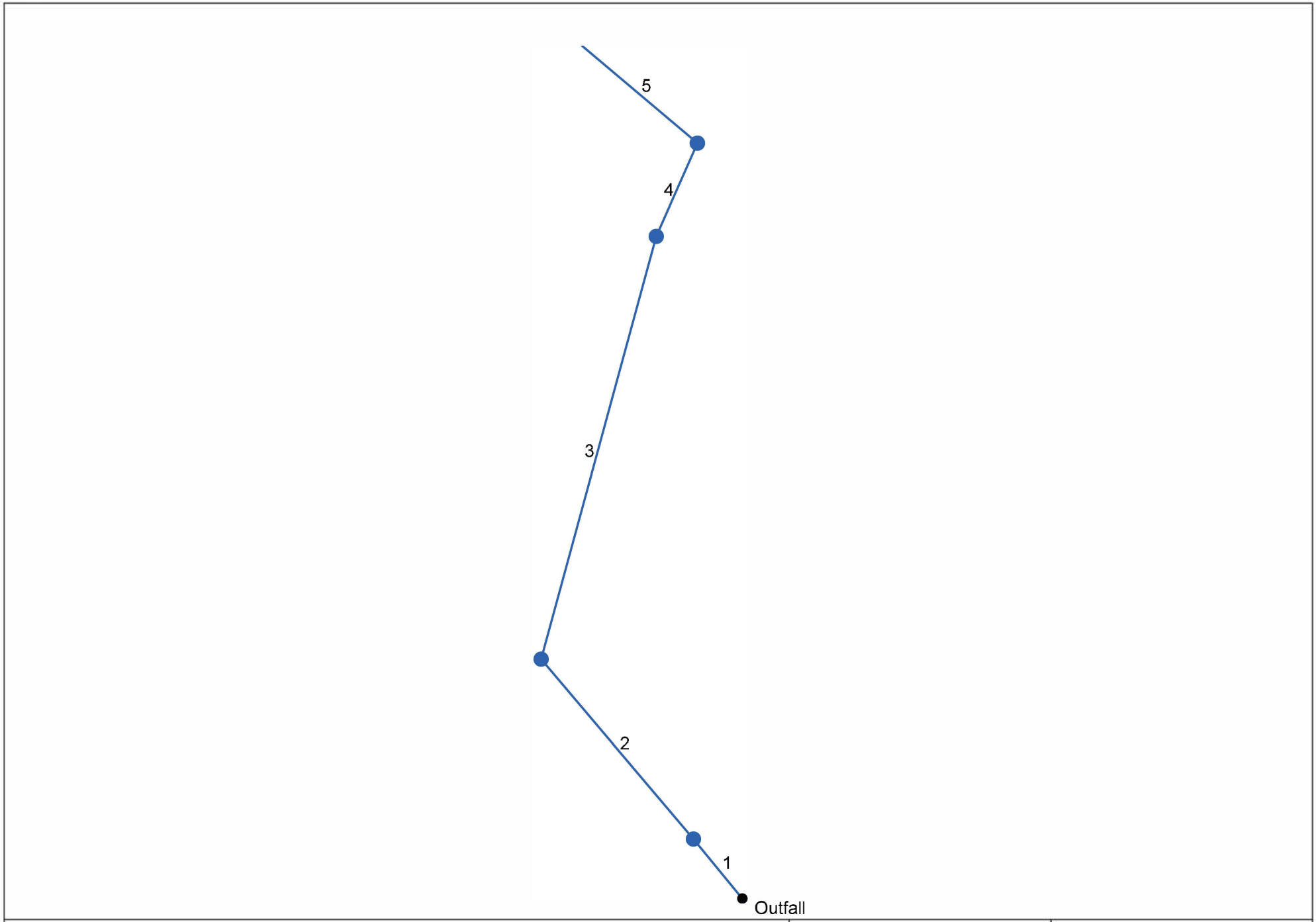
Col. 21 The average of the downstream and upstream friction slopes.

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Col. 23 The junction loss coefficient (K).

Col. 24 Minor loss. (Col. 23 x Col. 18). Is added to upstream HGL and used as the starting HGL for the next upstream line(s).

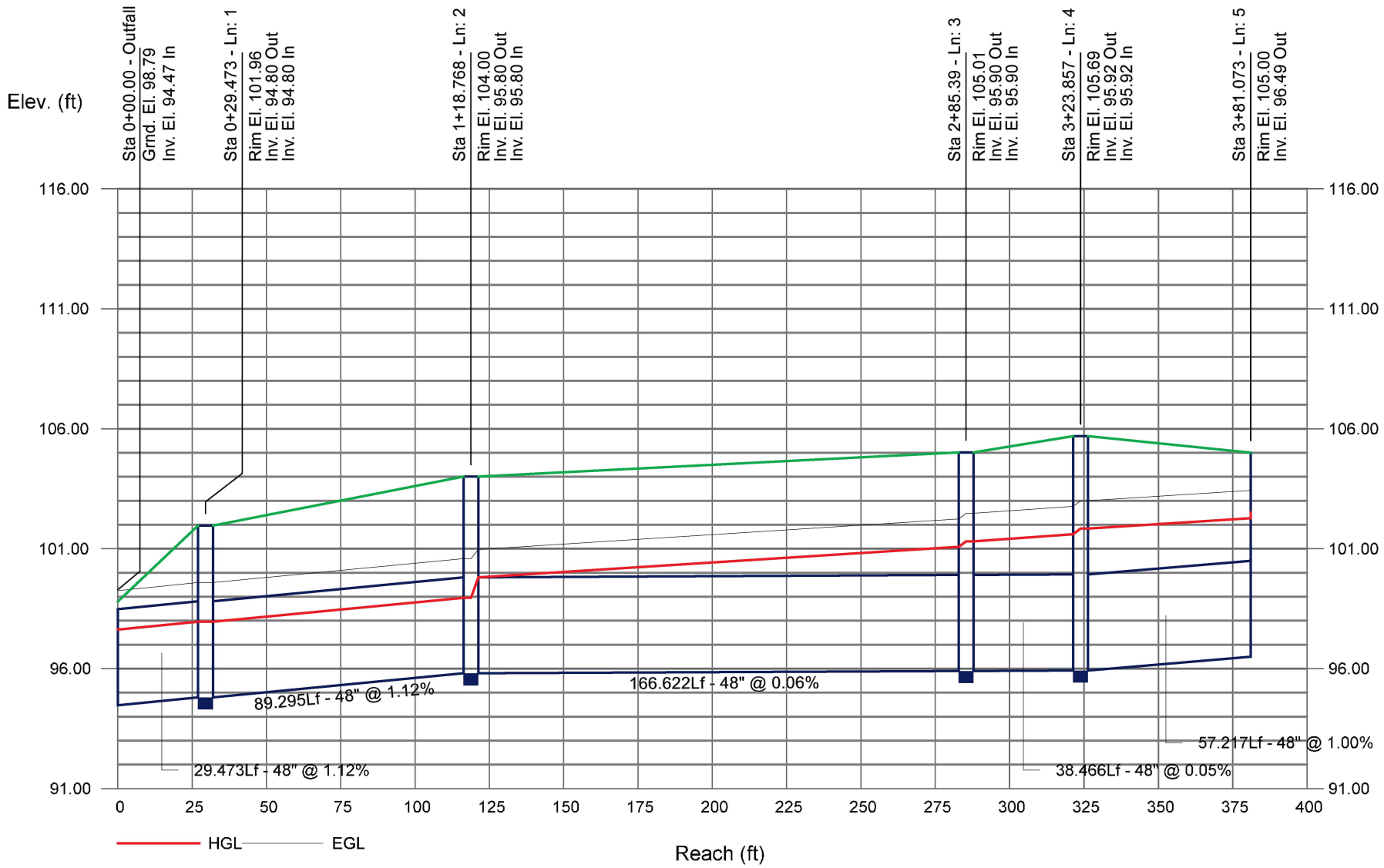
Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Walerga Ex 100-Year.stm	* Figure not OCR Compatible	Number of lines: 5	Date: 5/6/2026

Storm Sewer Profile

Proj. file: Walerga Ex 100-Year.stm



* Figure not OCR Compatible

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (42)	108.7	48	Cir	29.473	94.47	94.80	1.120	97.62	97.95	0.33	97.95	End	Manhole
2	Pipe - (41)	108.7	48	Cir	89.295	94.80	95.80	1.120	97.95	98.95	0.33	98.95	1	Manhole
3	Pipe - (40)	108.7	48	Cir	166.622	95.80	95.90	0.060	99.80*	101.07*	0.23	101.30	2	Manhole
4	Pipe - (39) (1)	108.7	48	Cir	38.466	95.90	95.92	0.052	101.30*	101.60*	0.23	101.83	3	Manhole
5	Pipe - (97)	108.7	48	Cir	57.217	95.92	96.49	0.996	101.83*	102.27*	0.23	102.50	4	Manhole

Project File: Walerga Ex 100-Year.stm | Number of lines: 5 | Run Date: 5/6/2026

NOTES: Known Qs only ; *Surcharged (HGL above crown).

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	29.473	1.00	5.00	0.40	0.40	2.00	10.0	10.7	0.0	108.7	131.7	10.24	48	1.12	94.47	94.80	97.62	97.95	98.79	101.96	Pipe - (42)
2	1	89.295	1.00	4.00	0.40	0.40	1.60	10.0	10.5	0.0	108.7	131.7	10.24	48	1.12	94.80	95.80	97.95	98.95	101.96	104.00	Pipe - (41)
3	2	166.622	1.00	3.00	0.40	0.40	1.20	10.0	10.2	0.0	108.7	30.50	8.65	48	0.06	95.80	95.90	99.80	101.07	104.00	105.01	Pipe - (40)
4	3	38.466	1.00	2.00	0.40	0.40	0.80	10.0	10.1	0.0	108.7	28.38	8.65	48	0.05	95.90	95.92	101.30	101.60	105.01	105.69	Pipe - (39) (1)
5	4	57.217	1.00	1.00	0.40	0.40	0.40	10.0	10.0	0.0	108.7	124.3	8.65	48	1.00	95.92	96.49	101.83	102.27	105.69	105.00	Pipe - (97)

Project File: Walerga Ex 100-Year.stm | Number of lines: 5 | Run Date: 5/6/2026

NOTES:Known Qs only ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
(1)	(in) (2)	(cfs) (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(ft) (12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(K) (23)	(ft) (24)
1	48	108.7	94.47	97.62	3.15	10.62	10.24	1.63	99.25	0.000	29.473	94.80	97.95	3.15**	10.62	10.24	1.63	99.58	0.000	0.000	n/a	0.20	0.33
2	48	108.7	94.80	97.95	3.15*	10.62	10.24	1.63	99.58	0.000	89.295	95.80	98.95	3.15**	10.62	10.24	1.63	100.58	0.000	0.000	n/a	0.20	0.33
3	48	108.7	95.80	99.80	4.00*	12.56	8.65	1.16	100.96	0.763	166.622	95.90	101.07	4.00	12.57	8.65	1.16	102.23	0.762	0.763	1.271	0.20	0.23
4	48	108.7	95.90	101.30	4.00	12.56	8.65	1.16	102.47	0.763	38.466	95.92	101.60	4.00	12.57	8.65	1.16	102.76	0.762	0.763	0.293	0.20	0.23
5	48	108.7	95.92	101.83	4.00	12.56	8.65	1.16	102.99	0.763	57.217	96.49	102.27	4.00	12.57	8.65	1.16	103.43	0.762	0.763	0.436	0.20	0.23

Project File: Walerga Ex 100-Year.stm | Number of lines: 5 | Run Date: 5/6/2026

Notes: * Normal depth assumed; ** Critical depth. ; c = cir e = ellip b = box

Hydraflow HGL Computation Procedure

General Procedure:

Hydraflow computes the HGL using the Bernoulli energy equation. Manning's equation is used to determine energy losses due to pipe friction. In a standard step, iterative procedure, Hydraflow assumes upstream HGLs until the energy equation balances. If the energy equation cannot balance, supercritical flow exists and critical depth is temporarily assumed at the upstream end. A supercritical flow Profile is then computed using the same procedure in a downstream direction using momentum principles.

Col. 1 The line number being computed. Calculations begin at Line 1 and proceed upstream.

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Col. 3 Total flow rate in the line.

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Col. 11 The friction slope at the downstream end (the S or Slope term in Manning's equation).

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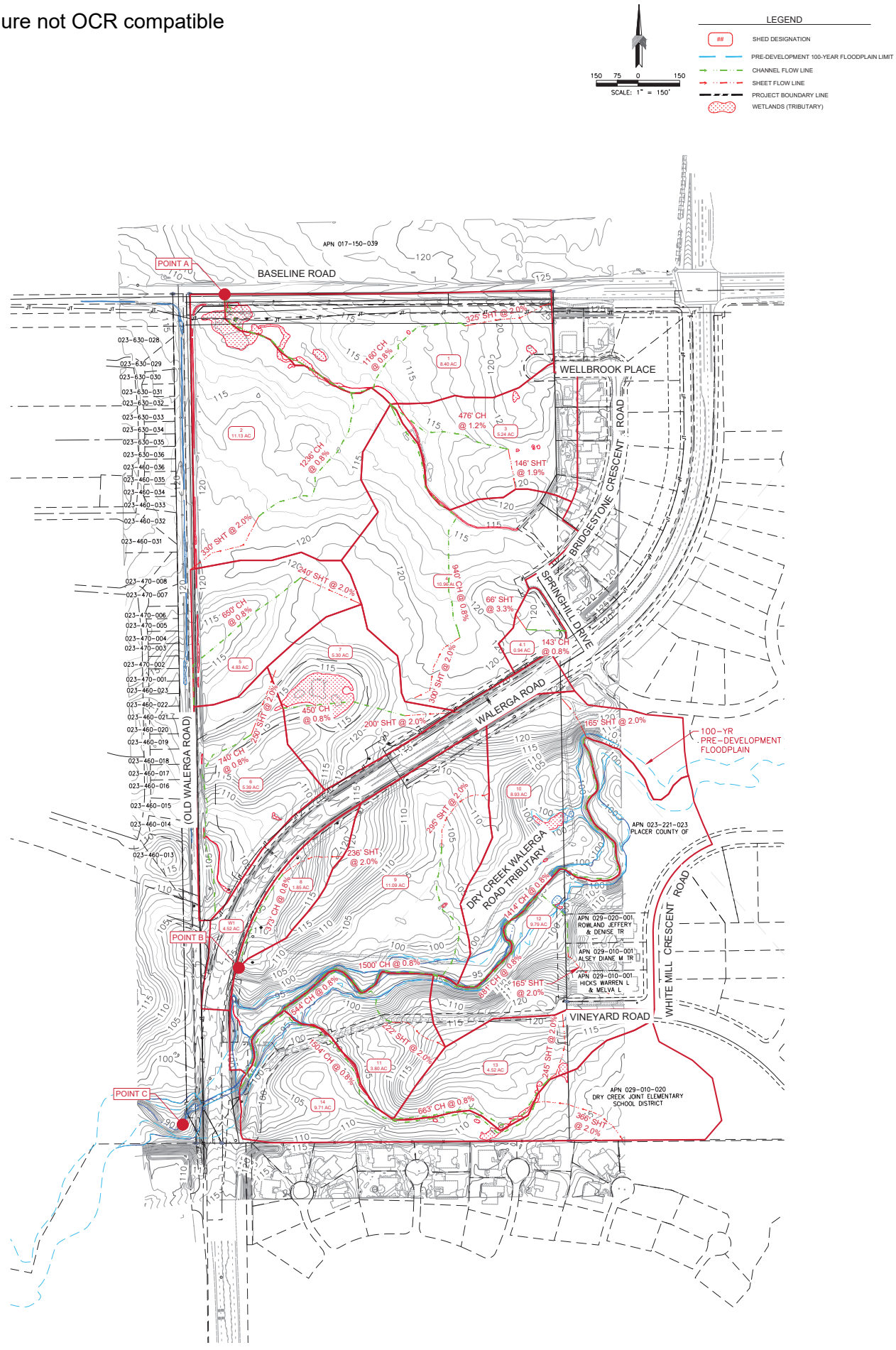
Col. 23 The junction loss coefficient (K).

Col. 24 Minor loss. (Col. 23 x Col. 18). Is added to upstream HGL and used as the starting HGL for the next upstream line(s).

EXHIBIT E

Drainage Maps

*Figure not OCR compatible

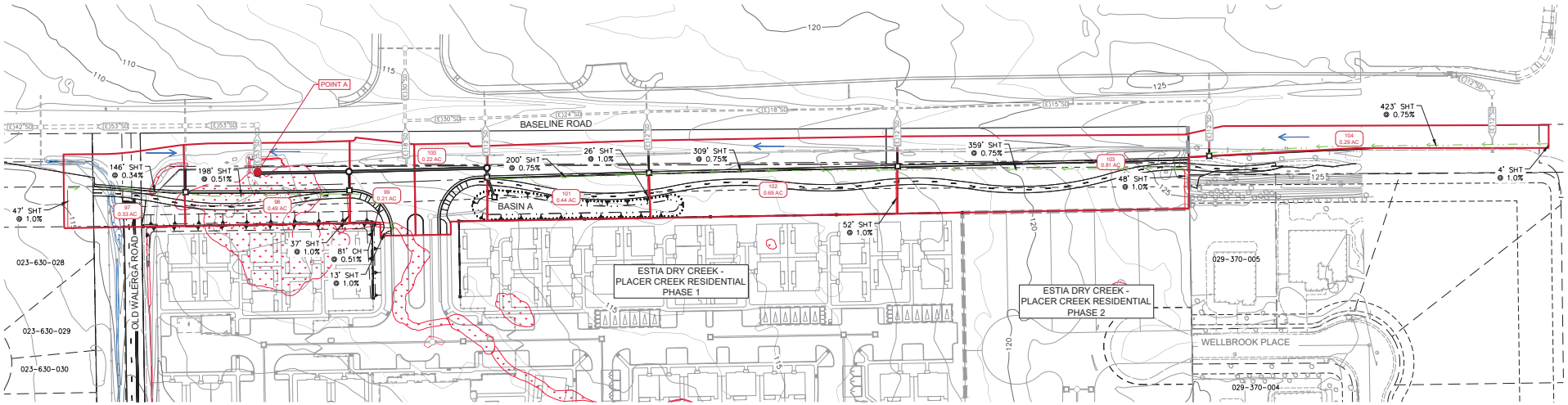


KING ENGINEERING
200 Auburn Folsom Road, Ste. 201
Auburn, California 95603
T: (530) 272-4328
E: info@King-Engineering-Inc.com

ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

DRAINAGE MAP #1 - PRE-DEVELOPMENT OVERALL

PLACER COUNTY, CALIFORNIA
JUNE 2026



ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

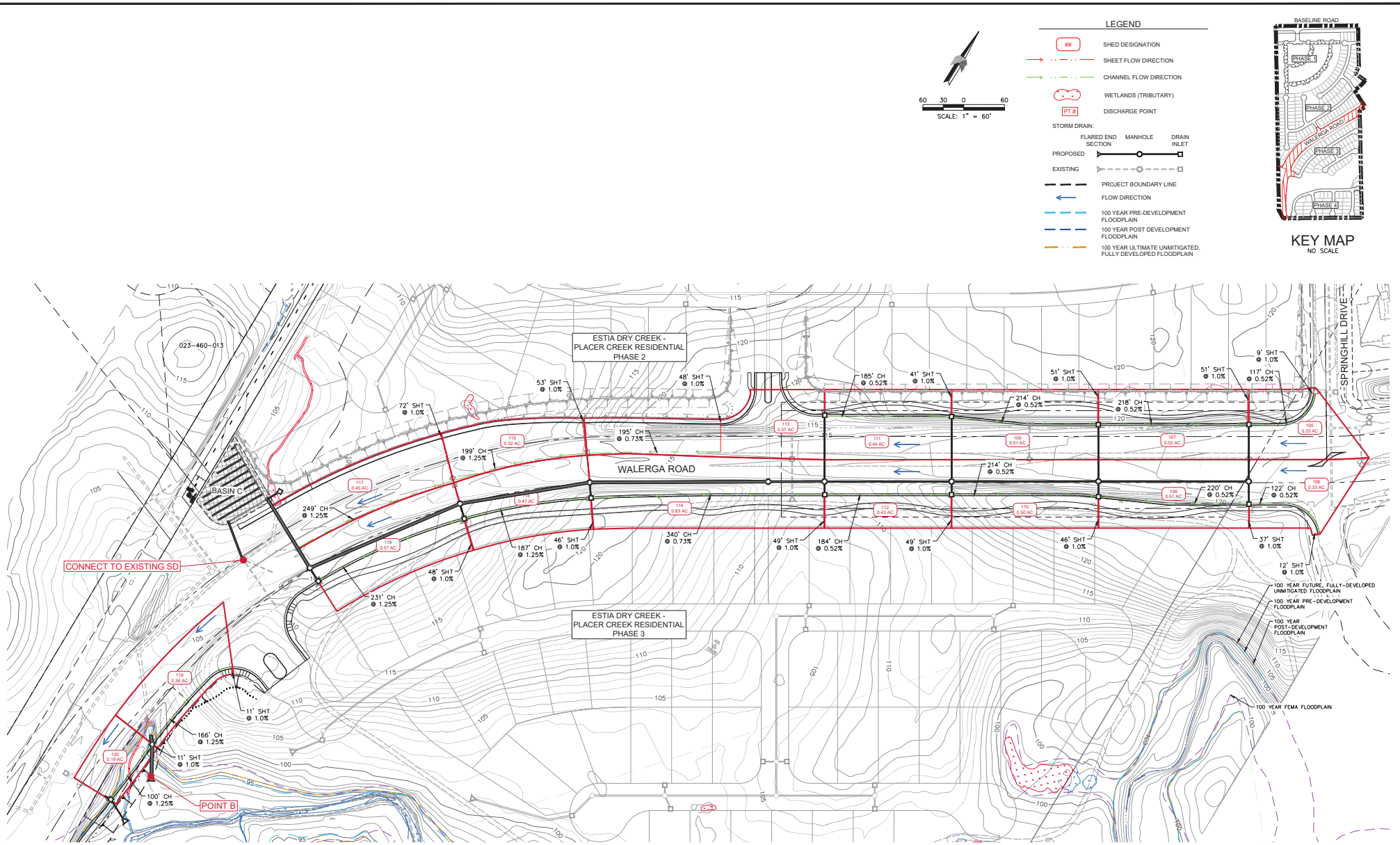
DRAINAGE MAP #2 - POST DEVELOPMENT SHED MAP - BASELINE ROAD

PLACER COUNTY, CALIFORNIA

JUNE 2026

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*Figure not OCR compatible



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ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

DRAINAGE MAP #3 - POST-DEVELOPMENT SHED MAP - WALERGA ROAD

PLACER COUNTY, CALIFORNIA

JUNE 2026

*Figure not OCR compatible

ESTIA DRY CREEK - BACKBONE		
FLOW SUMMARY		
ULT DEVELOPMENT		
DRAINAGE INLET, MH OR LID	Q10 cfs	Q100 cfs
TO POINT A		
DI-1	1.74	3.33
DI-2 (POINT A)	13.76	26.20
DI-4	13.63	25.87
DI-5	1.36	2.52
DI-6	1.72	2.99
DI-7	0.70	1.43
TO POINT B		
DI-8	0.80	1.62
DI-9	0.73	1.42
SDMH-1	1.46	2.84
DI-10	1.03	1.91
DI-11	1.09	2.08
SDMH-2	3.36	6.22
DI-10.1	1.02	1.90
DI-11.1	1.02	1.92
SDMH-2.1	5.24	9.71
DI-12	0.92	1.76
DI-13	0.86	1.62
SDMH-3	6.80	12.63
SDMH-4	51.15	96.79
DI-14	1.66	3.07
SDMH-5	51.58	97.85
DI-15	0.98	1.86
SDMH-6	51.65	98.15
DI-16	1.17	2.20
SDMH-7	51.51	98.15
DI-17	0.87	1.77
DI-18	0.46	0.93

INDEX OF GUTTER FLOWS				
Gutter No.	Q10 (cfs)	Gutter Slope	Target Inlet No.	Target Inlet Condition
TO POINT A				
g97	0.68	0.004	DI-1	SAG
g98	2.69	0.006	DI-1	SAG
g100	2.34	0.007	DI-2 (POINT A)	GRADE
g101	2.08	0.007	DI-4	GRADE
g102	2.27	0.007	DI-5	GRADE
g103	1.99	0.007	DI-6	GRADE
g104	0.70	0.007	DI-7	GRADE
TO POINT B				
g105	0.80	0.005	DI-8	GRADE
g106	0.73	0.005	DI-9	GRADE
g107	1.35	0.005	DI-10	GRADE
g108	1.33	0.005	DI-11	GRADE
g109	1.58	0.005	DI-10.1	GRADE
g110	1.58	0.005	DI-11.1	GRADE
g111	1.65	0.005	DI-12	GRADE
g112	1.62	0.005	DI-13	GRADE
EXIST	2.07	0.007	EXIST	GRADE
g114	2.54	0.007	DI-14	GRADE
EXIST	1.82	0.013	EXIST	GRADE
g116	2.32	0.013	DI-15	GRADE
EXIST	2.09	0.013	EXIST	SAG
g118	2.65	0.013	DI-16	SAG
g119	0.87	0.013	DI-17	SAG
g120	0.46	0.013	DI-18	SAG

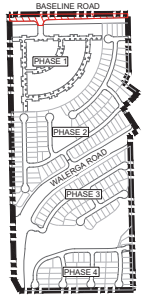
INDEX OF PIPES				
TO POINT A				
Pipe ID	Pipe Size (in)	Slope (%)	Q10 (cfs)	Q100 (cfs)
P-1	15	0.57%	1.74	3.33
P-2	15	0.70%	13.76	26.20
P-4	18	0.50%	13.63	25.87
P-5	18	0.50%	1.36	2.52
P-6	15	0.50%	1.72	2.99
P-7	24	0.50%	0.70	1.43
TO POINT B				
P-8	12	2.00%	0.80	1.62
P-9	12	2.00%	0.73	1.42
P-10	18	0.52%	1.46	2.84
P-11	12	2.00%	1.03	1.91
P-12	12	2.00%	1.09	2.08
P-13	18	0.52%	3.36	6.22
P-11.1	15	2.00%	1.02	1.90
P-12.1	15	2.00%	1.02	1.92
P-13.1	18	0.52%	5.24	9.71
P-14	12	2.00%	0.92	1.76
P-15	12	2.00%	0.86	1.62
P-16	18	0.42%	6.80	12.63
P-17	36	0.50%	51.15	96.79
P-18	12	2.00%	1.66	3.07
P-19	36	0.50%	51.58	97.85
P-20	12	2.00%	0.98	1.86
P-21	42	0.50%	51.65	98.15
P-22	12	2.00%	1.17	2.20
P-23	42	0.50%	51.51	98.15
P-24	42	0.50%	50.00	95.51
P-25	42	0.50%	0.87	1.77
P-26	12	8.54%	0.46	0.93

60 30 0 60

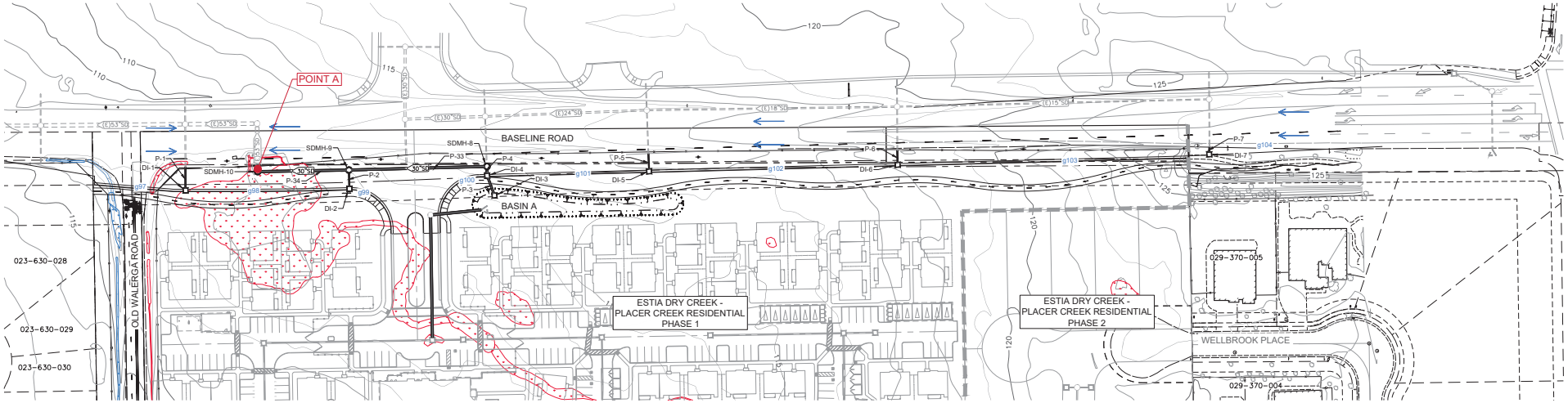
SCALE: 1" = 60'

LEGEND

- ## — SHED DESIGNATION
- WETLANDS (TRIBUTARY)
- PT.# — DISCHARGE POINT
- STORM DRAIN:
  - FLARED END SECTION
  - MANHOLE
  - DRAIN INLET
- PROPOSED
- EXISTING
- PROJECT BOUNDARY LINE
- FLOW DIRECTION



KEY MAP
NO SCALE



ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

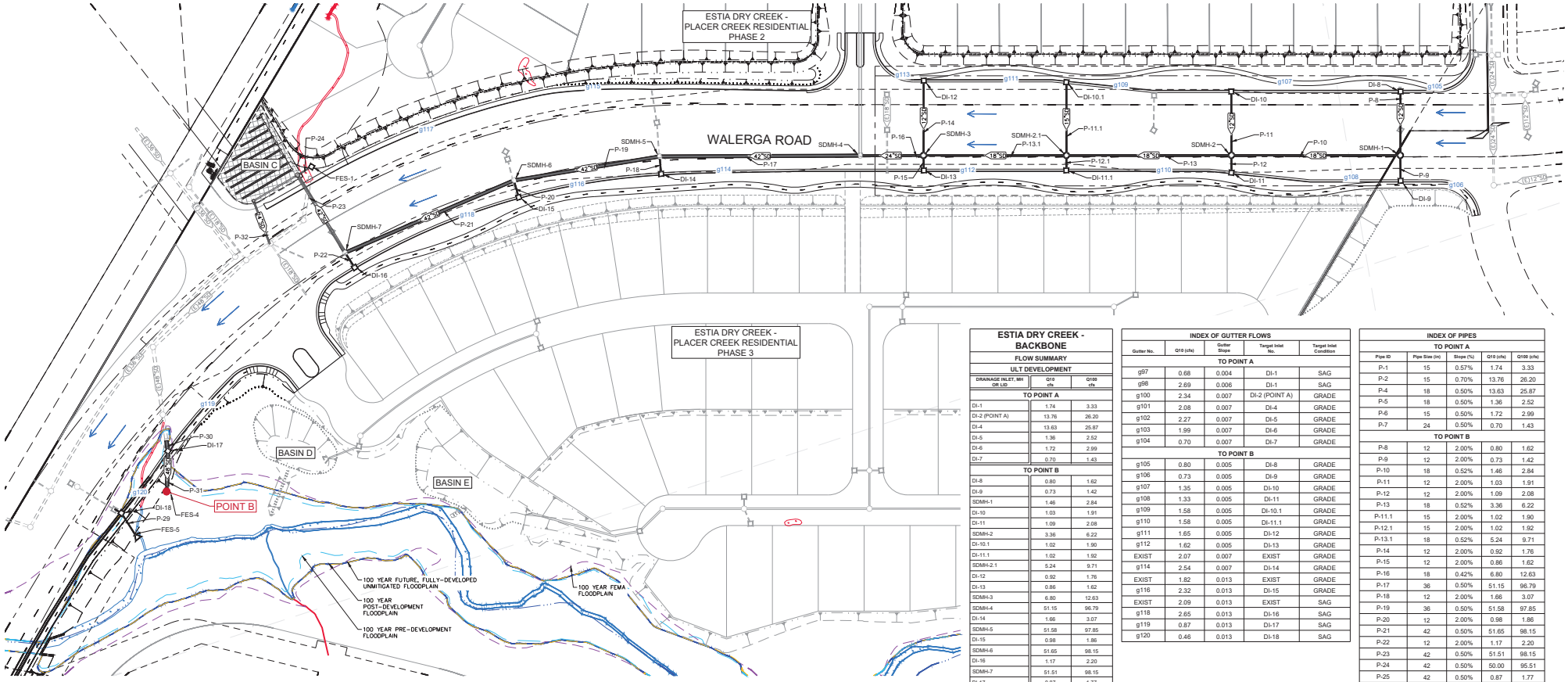
DRAINAGE MAP #4 - PROJECT INDEX - BASELINE ROAD

PLACER COUNTY, CALIFORNIA

JUNE 2026

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Auburn, California 95603
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E: Info@King-Engineering-Inc.com

*Figure not OCR compatible

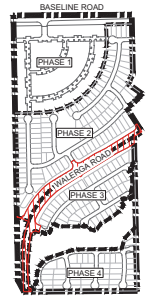


60 30 0 60

SCALE: 1" = 60'

LEGEND

- ## — SHED DESIGNATION
- WETLANDS (TRIBUTARY)
- PT # — DISCHARGE POINT
- STORM DRAIN:
- FLARED END SECTION
- MANHOLE
- DRAIN INLET
- PROPOSED
- EXISTING
- PROJECT BOUNDARY LINE
- FLOW DIRECTION
- 100 YEAR PRE-DEVELOPMENT FLOODPLAIN
- 100 YEAR POST DEVELOPMENT FLOODPLAIN
- 100 YEAR ULTIMATE UNMITIGATED, FULLY DEVELOPED FLOODPLAIN



KEY MAP
NO SCALE

ESTIA DRY CREEK - BACKBONE

FLOW SUMMARY

ULT DEVELOPMENT

DRAINAGE INLET, MH OR LID	Q10 cfs	Q100 cfs
TO POINT A		
DI-1	1.74	3.33
DI-2 (POINT A)	13.76	26.20
DI-4	13.63	25.87
DI-5	1.36	2.52
DI-6	1.72	2.99
DI-7	0.70	1.43
TO POINT B		
DI-8	0.80	1.62
DI-9	0.73	1.42
SDMH-1	1.46	2.84
DI-10	1.03	1.91
DI-11	1.09	2.08
SDMH-2	3.36	6.22
DI-10.1	1.02	1.90
DI-11.1	1.02	1.92
SDMH-2.1	5.24	9.71
DI-12	0.92	1.76
DI-13	0.86	1.62
SDMH-3	6.80	12.63
SDMH-4	51.15	96.79
DI-14	1.66	3.07
SDMH-5	51.58	97.85
DI-15	0.98	1.86
SDMH-6	51.65	98.15
DI-16	1.17	2.20
SDMH-7	51.51	98.15
DI-17	0.87	1.77
DI-18	0.46	0.93

INDEX OF GUTTER FLOWS

Gutter No.	Q10 (cfs)	Gutter Slope	Target Inlet No.	Target Inlet Condition
TO POINT A				
g97	0.68	0.004	DI-1	SAG
g98	2.69	0.006	DI-1	SAG
g100	2.34	0.007	DI-2 (POINT A)	GRADE
g101	2.08	0.007	DI-4	GRADE
g102	2.27	0.007	DI-5	GRADE
g103	1.99	0.007	DI-6	GRADE
g104	0.70	0.007	DI-7	GRADE
TO POINT B				
g105	0.80	0.005	DI-8	GRADE
g106	0.73	0.005	DI-9	GRADE
g107	1.35	0.005	DI-10	GRADE
g108	1.33	0.005	DI-11	GRADE
g109	1.58	0.005	DI-10.1	GRADE
g110	1.58	0.005	DI-11.1	GRADE
g111	1.65	0.005	DI-12	GRADE
g112	1.62	0.005	DI-13	GRADE
EXIST	2.07	0.007	EXIST	GRADE
g114	2.54	0.007	DI-14	GRADE
EXIST	1.82	0.013	EXIST	GRADE
g116	2.32	0.013	DI-15	GRADE
EXIST	2.09	0.013	EXIST	SAG
g118	2.65	0.013	DI-16	SAG
g119	0.87	0.013	DI-17	SAG
g120	0.46	0.013	DI-18	SAG

INDEX OF PIPES

Pipe ID	Pipe Size (in)	Slope (%)	Q10 (cfs)	Q100 (cfs)
TO POINT A				
P-1	15	0.57%	1.74	3.33
P-2	15	0.70%	13.76	26.20
P-4	18	0.50%	13.63	25.87
P-5	18	0.50%	1.36	2.52
P-6	15	0.50%	1.72	2.99
P-7	24	0.50%	0.70	1.43
TO POINT B				
P-8	12	2.00%	0.80	1.62
P-9	12	2.00%	0.73	1.42
P-10	18	0.52%	1.46	2.84
P-11	12	2.00%	1.03	1.91
P-12	12	2.00%	1.09	2.08
P-13	18	0.52%	3.36	6.22
P-11.1	15	2.00%	1.02	1.90
P-12.1	15	2.00%	1.02	1.92
P-13.1	18	0.52%	5.24	9.71
P-14	12	2.00%	0.92	1.76
P-15	12	2.00%	0.86	1.62
P-16	18	0.42%	6.80	12.63
P-17	36	0.50%	51.15	96.79
P-18	12	2.00%	1.66	3.07
P-19	36	0.50%	51.58	97.85
P-20	12	2.00%	0.98	1.86
P-21	42	0.50%	51.65	98.15
P-22	12	2.00%	1.17	2.20
P-23	42	0.50%	51.51	98.15
P-24	42	0.50%	50.00	95.51
P-25	42	0.50%	0.87	1.77
P-26	12	8.54%	0.46	0.93

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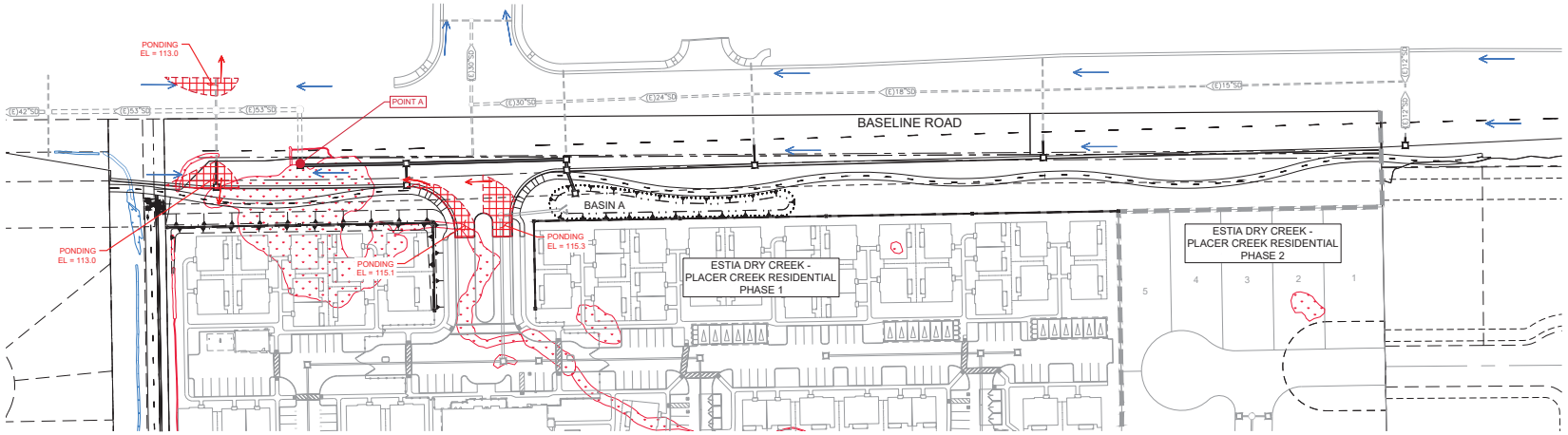
ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

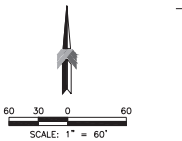
DRAINAGE MAP #5 - PROJECT INDEX - WALERGA ROAD

PLACER COUNTY, CALIFORNIA

JUNE 2026

*Figure not OCR compatible



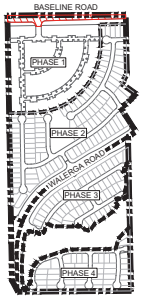


LEGEND

- ## — SHED DESIGNATION
- FLOW DIRECTION
- OVERLAND RELEASE DIRECTION
- PT.# — DISCHARGE POINT
- PONDING DESIGNATION
- WETLANDS (TRIBUTARY)
- WETLANDS (AVOIDED)
- STORM DRAIN:

	FLARED END SECTION	MANHOLE	DRAIN INLET
PROPOSED			
EXISTING			
FUTURE			

- PROJECT BOUNDARY LINE



KEY MAP
NO SCALE

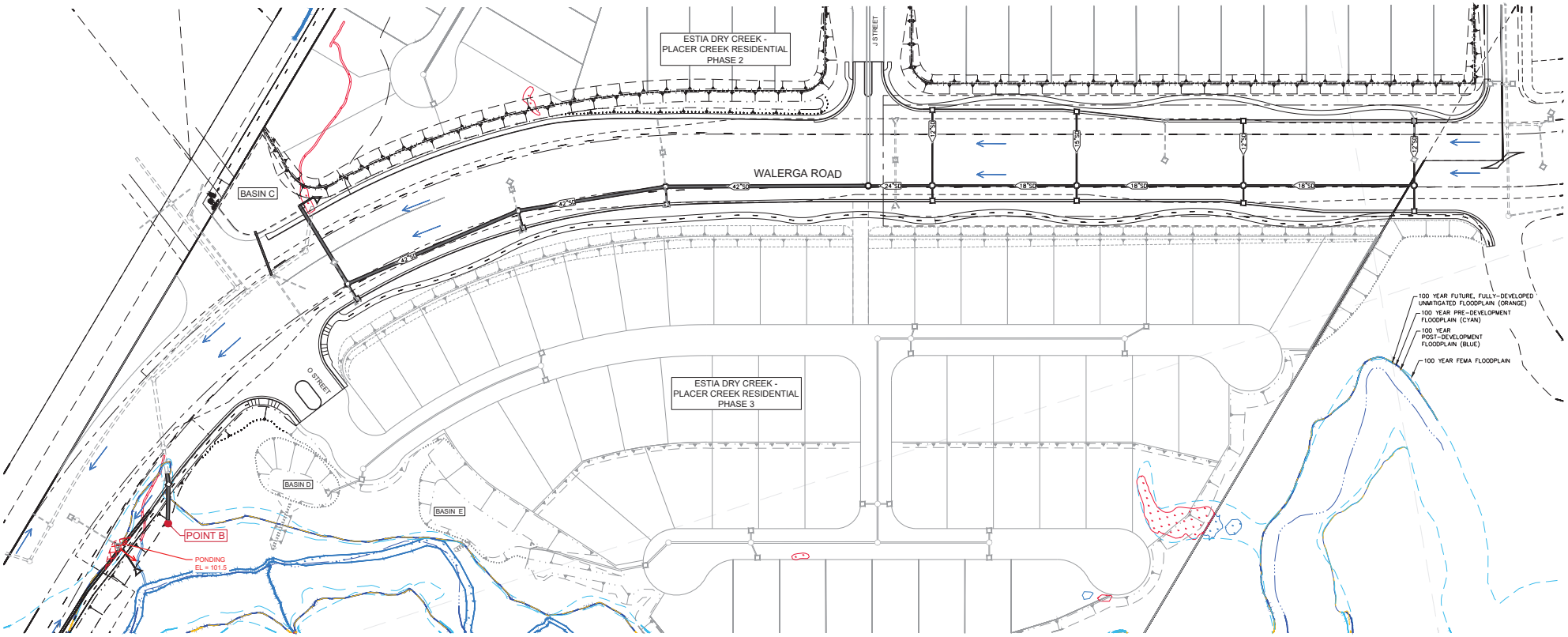
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Auburn, California 95603
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ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

DRAINAGE MAP #6 - BLOCK INLET - BASELINE ROAD

PLACER COUNTY, CALIFORNIA
JUNE 2025

*Figure not OCR compatible



ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

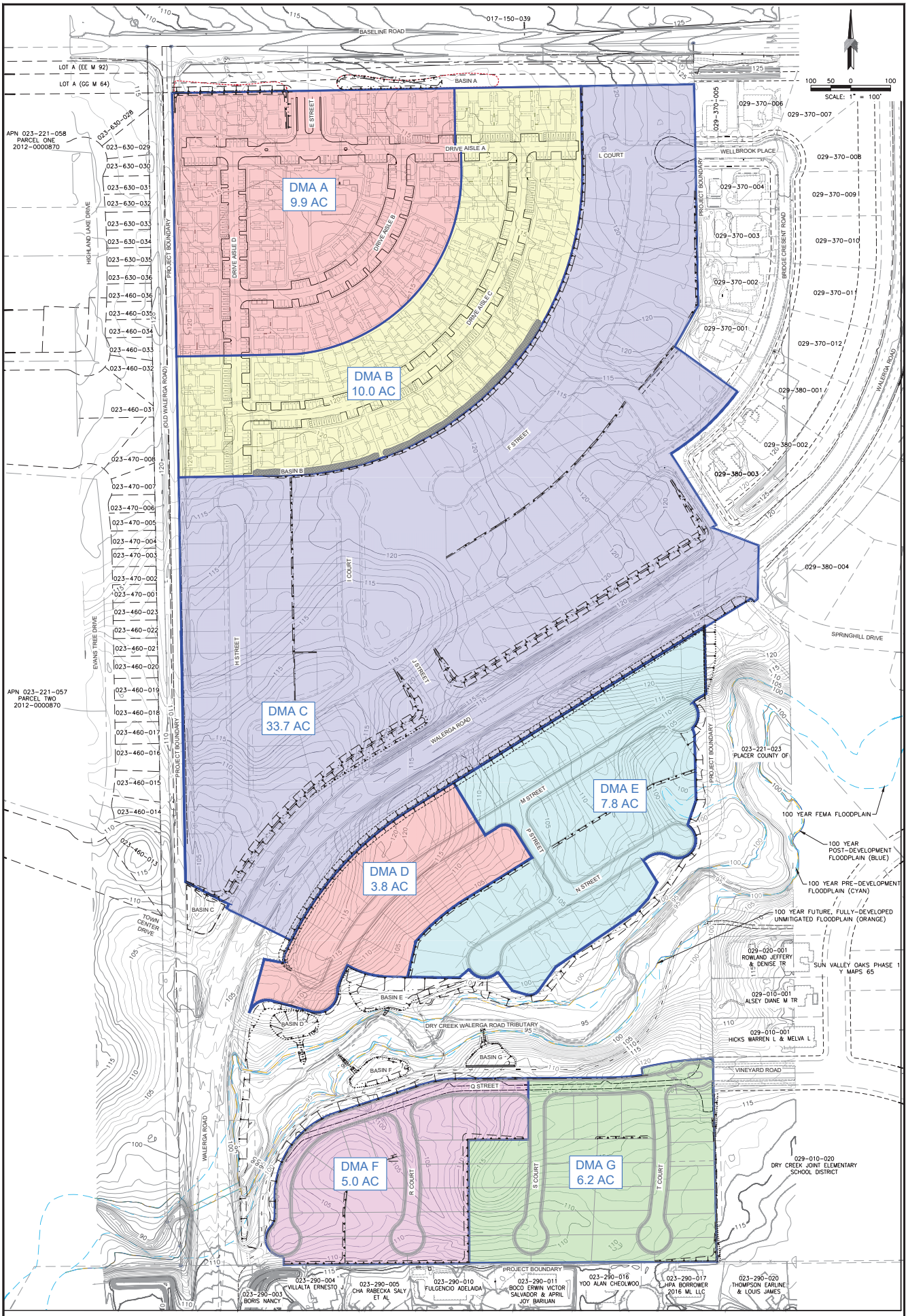
DRAINAGE MAP #7 - BLOCK INLET - WALERGA ROAD

PLACER COUNTY, CALIFORNIA

JUNE 2026

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Auburn, California 95603
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E: info@King-Engineering-Inc.com

*Figure not OCR compatible



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200 Auburn Folsom Road, Ste. 201
Auburn, California 95603
Telephone: (530) 272-8328
Email: King-Engineering-Inc.com

ESTIA DRY CREEK - PLACER CREEK RESIDENTIAL

DRAINAGE MAP #8 - SITE ASSESSMENT AND DRAINAGE MANAGEMENT AREA

OVERALL MAP

PLACER COUNTY, CALIFORNIA

JUNE 2026

*Figure not OCR compatible

150 75 0 150
SCALE: 1" = 150'

NOTES

1. CROSS SECTIONS ARE ORIENTED LEFT TO RIGHT LOOKING DOWNSTREAM
2. ELEVATIONS ARE BASED ON NGVD88 VERTICAL DATUM.
3. DATUM: NAD83, CALIFORNIA ZONE 2, LAMBERT CONFORMAL CONIC 2SP
4. DRY CREEK FLOODPLAIN IS ZONE AE AND SOUTH TRIBUTARY FLOODPLAIN IS ZONE A
5. 5' CONTOUR INTERVALS

LEGEND

- 100 YEAR REVISED FLOODPLAIN
- LINEAR CHANNEL
- PROPERTY LINE
- xx REVISED WATER SURFACE CONTOUR
- XXXX REACH STATION
- D FEMA FIS EFFECTIVE CROSS SECTION LOCATION
- SURVEY MONUMENT

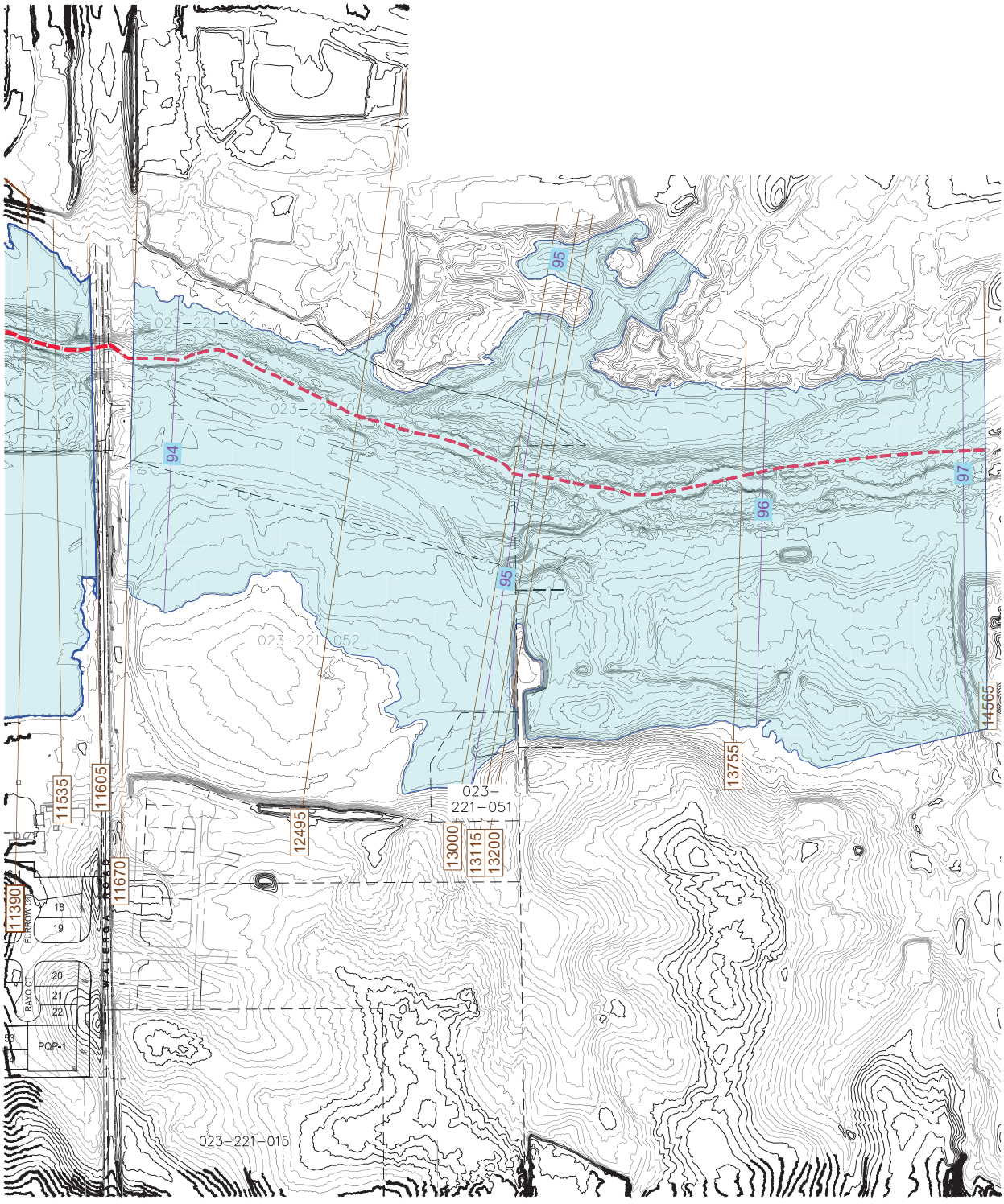


*Figure not OCR compatible

ESTIA DRY CREEK
DRAINAGE MAP #9 - CFD1 EMERGENCY STORAGE
HEC-RAS NO-RISE EXHIBIT
PLACER COUNTY, CALIFORNIA
JUNE 2026

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200 Auburn Folsom Road, Ste. 201
Auburn, California 95603
T: (530) 272-4328
E: info@King-Engineering-Inc.com

EXHIBIT F

Post-Construction Storm Water Quality Plan Workbook

Post-Construction
Storm Water Quality Plan
West Placer County

For:

ESTIA DRY CREEK
within MS4 in Placer County, CA

Prepared for:

CHRIS DICKINSON
LAND DEVELOPMENT AND ACQUISITIONS PROJECT MANAGER
HOMES BY TOWNE
11060 WHITE ROCK ROAD, SUITE 150
RANCHO CORDOVA, CA 95670
(916) 782-2424

Prepared by:

King Engineering, Inc.
200 Auburn Folsom Road
Auburn, CA 95603
(530) 272-8328

Preparation Date:_____05/05/2026_____

Placer County Approval Date:_____

Revision Date December 11 2024

Section 1 General Project Information

The undersigned owner of the subject property, is responsible for the implementation of the provisions of this Storm Water Quality Plan (SWQP), including ongoing operations and maintenance (O&M), consistent with the requirements of the West Placer Storm Water Quality Design Manual and the State of California Phase II Small MS4 General Permit (Order No: 2013-0001-DWQ). If the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement the SWQP.

For all Regulated Projects (As identified in Form 1-2 below), the undersigned owner hereby grants access to all representatives of the Jurisdictional Agency for the sole purpose of performing O&M inspections of the installed treatment system(s) and hydromodification control(s) if any.

A copy of the final signed and fully approved SWQP shall be available on the subject site for the duration of construction and then stored with the project approval documentation and improvement plans in perpetuity.

Form 1-1 Project Identification and Owner's Certification

Project Site Address:	BASELINE ROAD	
Owner Name:	CHRIS DICKINSON	
Title	LAND DEVELOPMENT AND ACQUISITIONS PROJECT MANAGER	
Company	HOMES BY TOWNE	
Address	11060 WHITE ROCK ROAD, SUITE 150	
City, State, Zip Code	RANCHO CORDOVA, CA 95670	
Email	cdickinson@hbtsac.com	
Telephone #	(916) 782-2424	
Signature	Date	
Engineer:*	Curtis King	PE Stamp* (Required for all Regulated Projects)
Title	Principal Engineer	
Company	King Engineering, Inc.	
Address	200 Auburn Folsom Road	
City, State, Zip Code	Auburn, CA 95603	
Email	Curtis.King@King-Engineering-Inc.com	
Telephone #	(530) 272-8328	
Signature		
Brief Description of Project: (Attach additional sheets as necessary)	Phases 1-4 and Backbone Roads	

* Not required for Small Projects as determined in Form 1-2 below. Project owners are responsible for ensuring that all storm water facilities are designed by an appropriately licensed and qualified professional.

Form 1-2 Project Category	
Development Category (Select all that apply)	
[1]**Small Project** – All projects, except LUPs, that create and/or replace between 2,500-5,000 ft^2 of impervious surface or detached single family homes that create and/or replace 2,500 ft^2 or more of impervious surface and are not part of a larger plan of development.	
[2]Enter total new and/or replaced impervious surface (ft^2)	
[3]**Regulated Project** – All projects that create and/or replace 5,000 ft^2 or more of impervious surface.	
[4]**Regulated Redevelopment Project** with equal to, or greater than 50 percent increase in impervious area	
[5]**Regulated Redevelopment Project** with less than 50 percent increase in impervious area	
[6]Enter total pre-project impervious surface (ft^2)	
[7]Enter total new and/or replaced impervious surface (ft^2)	
[8]**Regulated Road or linear underground/overhead project (LUP)** creating 5,000 ft^2 or more of newly constructed contiguous impervious surface.	
[9]Enter total new and/or replaced impervious surface (ft^2)	
[10]**Regulated Hydromodification Management Project** – Regulated projects that create and/or replace 1 acre or more of impervious surface. A project that does not increase impervious surface area over the pre-project condition is not a hydromodification management project.	YES
[11]Enter total new and/or replaced impervious surface (ft^2)	2255580.36

Section 3 Regulated Projects

Section 3 forms are to be completed for all Regulated Projects.

Form 3-1 Site Location and Hydrologic Features

Site coordinates: *Take GPS measurement at approximate center of site*	[1] Latitude	[2] Longitude	[3] Elevation (ft. above sea level)	[4] 85th Percentile, 24 Hour Design Storm Depth (in):
	38.75051	-121.36295	110	0.9

[5] Receiving waters *Name of stream, lake or other downstream waterbody to which the site runoff eventually drains*	Dry Creek and Curry Creek
[6] 303(d) listed pollutants of concern *Refer to State Water Resources Control Board website* www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/#impaired	
[7] Is Project going to be phased? *If yes, ensure that the SWQP evaluates each phase with distinct DMAs, requiring LID BMPs to address runoff at time of completion.*	Yes

[8] *Use this form to show a conceptual schematic depicting DMAs and conveyance features connecting DMAs to the site outlet(s). An example is provided below that can be modified for the proposed project or a drawing clearly showing DMAs and flow routing may be attached.*

Example only
Modify for project specific SWQP
Use separate sheet if necessary

Please Refer to Site Assessment and Drainage Management Area Drainage Map

Form 3-2 Site Assessment and Layout Documentation

	Has this Item been considered in the Site Layout and depicted in the Site Plan?	
	Yes	**Not Applicable (Include brief explanation)**
Define the development envelope and protected areas, identifying areas that are most suitable for development and areas to be landscaped, or left undisturbed, and used for infiltration.	X	Reference Site Plan for infiltration basins and landscaped spaces to provide
Concentrate development on portions of the site with less permeable soils and preserve areas that can promote infiltration.		N/A
Limit overall impervious coverage of the site with paving and roofs.		N/A
Set back development from creeks, wetlands, and riparian habitats.	X	Reference Site Plan for setbacks and protected regions
To the extent practicable, avoid development and LID siting within floodplains.	X	Reference Site Plan for infiltration basins and landscaped spaces to provide
Preserve significant trees.	X	Reference Site Plan for protected trees
Conform site layout along natural landforms.	X	Site layout conforms to existing tributary flow paths and flood limits
Avoid excessive grading and disturbance of vegetation and soils.		N/A
Replicate the site's natural drainage patterns.	X	Site layout conforms to existing tributary flow paths and flood limits
Detain and retain runoff throughout the site.	X	Infiltration basins are incorporated to capture runoff throughout the site

Attach a Site Plan that incorporates the applicable considerations above. Ensure that the following items are included in the Site Plan:

Site Boundary
Soil types and areal extents, test pit and infiltration test locations
Topographic data with 1 ft. contours
Existing natural hydrologic features (depressions, watercourses, wetlands, riparian corridors)
Floodplain boundaries
Environmentally sensitive areas and areas to be preserved
Proposed locations and footprints of improvements creating new, or replaced, impervious surfaces
Potential pollutant sources and locations
Entire site divided into separate DMAs with unique identifiers
Existing and proposed site drainage network with flow directions and site run-on and discharge locations
Proposed design features and surface treatments used to minimize imperviousness and reduce runoff
Proposed locations and footprints of treatment and hydromodification management facilities
Design features for managing authorized non-stormwater discharges
Areas of soil and/or groundwater contamination
Existing utilities and easements
Maintenance areas

Form 3-3 Source Control Measures			
Potential Pollutant Generating Activity or Source	Check One		Describe the source control measures to be implemented for each potential pollutant generating activity or source present on the project as listed in Appendix C and in the CASQA Fact Sheets. Include any special features, materials, or methods of construction that will be used.
	Present	Not Applicable	
Accidental spills or leaks	☑	☐	measures per SC-11 fact sheet
Interior floor drains	☐	☑	
Parking/storage areas and maintenance	☐	☑	measure per SC-21, SC-22, SC-32 and SC-43 fact sheets
Indoor and structural pest control	☑	☐	measures done mainly by licensed pest control companies per SC-34, SC-61, SC-60 fact sheets
Pools, spas, ponds, decorative fountains, and other water features	☐	☑	measures per SC-72 fact sheet
Landscape/outdoor pesticide use	☑	☐	measures per SC-41, SC-60, SC-73 and SC-75 fact sheets
Restaurants, grocery stores, and other food service operations	☐	☑	
Refuse areas	☑	☐	homewoners to take measures per SC-34, SC-60
Industrial Processes	☐	☑	
Outdoor storage of equipment or materials	☐	☑	measures per SC-32, SC-41, SC-43 fact sheets
Vehicle and equipment cleaning	☑	☐	measures per SC-21 fact sheet
Vehicle and equipment repair and maintenance	☑	☐	measures per SC-22, SC-32 fact sheets
Fuel dispensing areas	☐	☑	
Loading docks	☐	☑	
Fire sprinkler test water	☐	☑	
Drain or wash water from boiler drain lines, condensate drain lines, rooftop equipment, drainage sumps, and other sources	☐	☑	
Unauthorized non-storm water discharges	☑	☐	measures per SC-10 fact sheet
Building and grounds maintenance	☑	☐	measures per SC-4, SC-43 fact sheets

The source control measures identified in this table shall be designed consistent with recommendations from the CASQA Stormwater BMP Handbook for New Development and Redevelopment[1], or from another equivalent manual.

[1] California Stormwater BMP Handbook New Development and Redevelopment. California Stormwater Quality Association (CASQA). January 2003.

Form 3-4 Runoff Reduction Calculator for Site Design Measures on Regulated Projects

[1]DMA ID No.			1		2		3		4	
Site Design Measure	**Runoff Reduction Parameters**			**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**
[2] Adjacent/On-Site Stream Setbacks and Buffers	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[3] Soil Quality Improvement and Maintenance	A_{pond} (ft^2)	*ponding area*		0		0		0		0
	D_{pond} (ft)	*ponding depth*								
	A_{sa} (ft^2)	*soil amendment area*								
	D_{sa} (ft)	*depth of amended soil*								
	n	*porosity of amended soil*								
[4] Tree Planting and Preservation	n_e	*number of new evergreen trees*	26	966	24	874	51	1817	0	0
	n_d	*number of new deciduous trees*	79		71		145		0	
	A_{tc} (ft^2)	*canopy area of existing trees to remain on the property*	0		0		0		0	
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[5] Rooftop and Impervious Area Disconnection	A_{imp} (ft^2)	*impervious drainage area*	125475	8470	113525	7663	92400	6237	0	0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[6] Porous Pavement	A_{res} (ft^2)	*area of gravel storage layer*		0		0		0		0
	D_{res} (ft)	*depth of gravel storage layer*								
	n_{agg}	*porosity of aggregate*								
	C	*efficiency factor*								
[7] Vegetated Swales	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[8] Rain Barrels and Cisterns	N	*number of rain barrels and/or cisterns*		0		0		0		0
	V_a (ft^3)	*volume of each rain barrel and/or cistern*								
[9] Do all Site Design Measures meet the design requirements outlined in the Fact Sheets?					**Yes**		**No**			
[10] Total Volume Reduction (ft^3)			**9435**		**8537**		**8054**		**0**	
[11] Effective Treated Impervious Area (ft^2)			**139781**		**126469**		**119323**		**0**	

Form 3-4 Runoff Reduction Calculator for Site Design Measures on Regulated Projects

DMA ID No.	5		6		7		8		9		10		11		12	
Runoff Reduction Parameters		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**
impervious drainage area		0		0		0		0		0		0		0		0
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
ponding area		0		0		0		0		0		0		0		0
ponding depth																
soil amendment area																
depth of amended soil																
porosity of amended soil																
number of new evergreen trees	5	177	9	324	5	177	7	258		0		0		0		0
number of new deciduous trees	14		26		14		21									
canopy area of existing trees to remain on the property	0		0		0		0									
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
impervious drainage area	11400	770	20400	1377	11400	770	16800	1134		0		0		0		0
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
area of gravel storage layer		0		0		0		0		0		0		0		0
depth of gravel storage layer																
porosity of aggregate																
efficiency factor																
impervious drainage area		0		0		0		0		0		0		0		0
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
number of rain barrels and/or cisterns		0		0		0		0		0		0		0		0
volume of each rain barrel and/or cistern																
Total Volume Reduction	**946**		**1701**		**946**		**1392**		**0**		**0**		**0**		**0**	
Effective Treated Impervious Area	**14016**		**25196**		**14016**		**20615**		**0**		**0**		**0**		**0**	

Form 3-5 Computation of Water Quality Design Criteria for Stormwater Treatment and Baseline Hydromodification Measures

DMA ID No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
[1]Total impervious area requiring treatment	261360	261360	1027580.4		117089	239057	152155	196978														
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	121579	134891	908257	0	103073	213861	138139	176363	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)	174240	174240	440391.6		50181	97095	65209	84419														
[4] Composite DMA Runoff Coefficient (C_w) *Enter area weighted composite runoff coefficient representing entire DMA*	0.55	0.55	0.56		0.55	0.55	0.55	0.55														
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	8813	9210	40909	0	4566	9264	6058	7769	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.753	0.787	3.496	0.000	0.390	0.792	0.518	0.664	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[4] Runoff coefficient values for various materials are as follows: roofs 0.95, asphalt/concrete pavement 0.90, gravel pavement 0.80, managed turf 0.25, disturbed soil 0.25.

[5, 6] Values will equal zero if all impervious area has been treated by Site Design Measures.

DMA ID No.	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
[1]Total impervious area requiring treatment																						
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)																						
[4] Composite DMA Runoff Coefficient (Rc) *Enter area weighted composite runoff coefficient representing entire DMA*																						
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[4] Runoff coefficient values are as follows: roofs 0.95, asphalt/concrete pavement 0.90, gravel pavement 0.80, turf 0.25, disturbed soil 0.25.

[5, 6] Values will equal zero if all impervious area has been treated by Site Design Measures.

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**1/A**	**1/B**	**3/C**	
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	8813	9210	40909	
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5	5	
[4]BMP Surface Area (ft^2) *Top of BMP*	3223	7200	9805	
[5]Infiltration rate of underlying soils (in/hr)	0.12	0.12	0.12	
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	0.50	0.50	0.50	
[7]Ponding Depth (ft) *d_{BMP} = Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.5	0.5	0.5	-
[8]Infiltrating surface area, *SA_{BMP}* (ft^2) *Bottom of BMP*	3223	7200	9805	
[9]Planting media depth, *d_{media}* (ft)	1.5	1.5	1.5	
[10]Planting media porosity	0.55	0.55	0.55	
[11]Gravel depth, *d_{media}* (ft) *Only included in certain BMP types*	4.0	1.0	7.5	
[12]Gravel porosity	0.40	0.40	0.40	
[13]Retention Volume (ft^3) *$V_{retention}$ = Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	9,411.2	12,384.0	42,358.1	-
[14]Untreated Volume (ft^3) *$V_{untreated}$ = Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15] Treated Flow Rate (ft^3/s) *$Q_{treated}$ = 1/43,200*(Item 3 * Item 4)*	0.3730	0.8333	1.1349	0.0000
[16]Total Treated Flow Rate for Project (ft^3/s) *Q_{total} = Sum of Item 15 for all DMAs*	4.3276			
[17]Is WQV for each DMA treated on-site? *Check Yes if Item 14 equals 0 for all DMAs*	**Yes**	**X**	**No**	

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**4/D**	**5/E**	**6/F**	**7/G**
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	4566	9264	6058	7769
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5	5	5
[4]BMP Surface Area (ft^2) *Top of BMP*	2390	5721	5047	4005
[5]Infiltration rate of underlying soils (in/hr)	0.12	0.12	0.12	0.12
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	0.50	0.50	0.50	0.50
[7]Ponding Depth (ft) d_{BMP} *= Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.5	0.5	0.5	0.5
[8]Infiltrating surface area, SA_{BMP} (ft^2) *Bottom of BMP*	2390	5721	5047	4005
[9]Planting media depth, d_{media} (ft)	1.5	1.5	1.5	1.5
[10]Planting media porosity	0.55	0.55	0.55	0.55
[11]Gravel depth, d_{media} (ft) *Only included in certain BMP types*	2.0	1.0	1.0	2.0
[12]Gravel porosity	0.40	0.40	0.40	0.40
[13]Retention Volume (ft^3) $V_{retention}$ *= Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	5,067.2	9,839.7	8,681.0	8,490.0
[14]Untreated Volume (ft^3) $V_{untreated}$ *= Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15] Treated Flow Rate (ft^3/s) $Q_{treated}$ *= 1/43,200*(Item 3 * Item 4)*	0.2766	0.6621	0.5842	0.4635

Section 4
Regulated Hydromodification Management Projects

Form 4-1 Peak Runoff Response Time

(Complete Section 4 forms for Regulated Hydromodification Projects only)

Determine total runoff response time for pre- and post-construction conditions at each project outlet.

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	1	**2**	**3**	**4**	**1**	**2**	**3**	**4**
[1]Length of longest overland flow path *Not to exceed 100 ft*	100	100	100	100	100	100	100	100
[2]Slope of overland flow path (ft/ft)	0.0200	0.0200	0.0200	0.0200	0.0100	0.0100	0.0100	0.0100
[3]Manning's roughness coefficient for overland flow surface *See Table 5-5 of the Placer County SWMM*	0.0350	0.0350	0.0350	0.0350	0.0200	0.0200	0.0200	0.0200
[4]Overland flow response time (min) (0.355*(Item 1*Item 3)$^{0.6}$)/(Item 2$^{0.3}$)	2.43	2.43	2.43	2.43	2.14	2.14	2.14	2.14
[5]Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	D	D	D	D	D	D	D
[6]Current Land Cover Type(s) *Select from categories shown in Table 5-3 of the SWMM*	OS	OS	OS	OS	RES	RES	RES	RES
[7]Pervious Area Condition: *Based on the extent of vegetated cover Good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating*	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
[8]Infiltration Rate (in/hr) *Refer to Table 5-3 of the SWMM using Items 3, 4, and 5 above or obtain site specific field measurements (See Section 3.1.1)*	0.09	0.09	0.09	0.09	0.12	0.12	0.12	0.12
[9]Length of collector flow (ft)	600	600	1,500	100	400	100	500	600
[10]Cross-sectional area of collector flow facility (ft^2)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
[11]Wetted perimeter of collector flow facility (ft)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
[12]Manning's roughness of collector flow facility	0.060	0.060	0.060	0.060	0.015	0.015	0.015	0.015
[13]Slope of collector flow facility (ft/ft)	0.0250	0.0250	0.0250	0.0250	0.0050	0.0050	0.0050	0.0050
[14]Channel flow velocity (ft/sec) *V = (1.49 / Item 12) * (Item 10/Item 11) ^0.67 * (Item 13) ^0.5*	3.00	3.00	3.00	3.00	5.36	5.36	5.36	5.36
[15]Collector flow facility response time (min) T_c *= Item 9 /(Item 14 * 60)*	3.34	3.34	8.34	0.56	1.24	0.31	1.55	1.87
[16]Total runoff response time or T_t (min) T_t *= Item 4 + Item 15*	5.77	5.77	10.78	2.99	3.39	2.45	3.70	4.01

Section 4
Regulated Hydromodification Management Projects

Form 4-1 Peak Runoff Response Time

Determine total runoff response time for pre- and post-construction conditions at each project outlet.

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	5	6	7	8	5	6	7	8
[1]Length of longest overland flow path *Not to exceed 100 ft*	100	100	100		100	100	100	
[2]Slope of overland flow path (ft/ft)	0.0200	0.0200	0.0200		0.0100	0.0100	0.0100	
[3]Manning's roughness coefficient for overland flow surface *See Table 5-5 of the Placer County SWMM*	0.0350	0.0350	0.0350		0.0200	0.0200	0.0200	
[4]Overland flow response time (min) (0.336*(Item 1*Item 3)$^{0.6}$)/(Item 2$^{0.3}$)	2.43	2.43	2.43	0.00	2.14	2.14	2.14	0.00
[5]Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	D	D		D	D	D	
[6]Current Land Cover Type(s) *Select from categories shown in Table 5-3 of the SWMM*	OS	OS	OS		RES	RES	RES	
[7]Pervious Area Condition: *Based on the extent of vegetated cover Good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating*	GOOD	GOOD	GOOD		GOOD	GOOD	GOOD	
[8]Infiltration Rate (in/hr) *Refer to Table 5-3 of the SWMM using Items 3, 4, and 5 above or obtain site specific field measurements (See Section 3.1.1)*	0.09	0.09	0.09		0.12	0.12	0.12	
[9]Length of collector flow (ft)	1,000	500	490		1,000	1,000	1,000	
[10]Cross-sectional area of collector flow facility (ft^2)	2.00	2.00	2.00		2.00	2.00	2.00	
[11]Wetted perimeter of collector flow facility (ft)	3.00	3.00	3.00		3.00	3.00	3.00	
[12]Manning's roughness of collector flow facility	0.060	0.060	0.060		0.015	0.015	0.015	
[13]Slope of collector flow facility (ft/ft)	0.0250	0.0250	0.0250		0.0050	0.0050	0.0050	
[14]Channel flow velocity (ft/sec) *V = (1.49 / Item 12) * (Item 10/Item 11) ^0.67 * (Item 13) ^0.5*	3.00	3.00	3.00	0.00	5.36	5.36	5.36	0.00
[15]Collector flow facility response time (min) T_c *= Item 9 /(Item 14 * 60)*	5.56	2.78	2.73	0.00	3.11	3.11	3.11	0.00
[16]Total runoff response time or T_t (min) T_t *= Item 4 + Item 15*	8.00	5.22	5.16	0.00	5.25	5.25	5.25	0.00

Form 4-2 Hydromodification Target for Peak Runoff								
Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	1	2	3	4	1	2	3	4
[1] Drainage Area (ft^2) *Sum of all outlet level DMAs should equal total project area.*	435,600	435,600	1,467,972	167,270	435,600	435,600	1,467,972	167,270
[2] Impervious Area (ft^2) *Sum of all outlet level DMAs should equal total project impervious area.*	0	0	0	0	261,360	261,360	1,027,580	117,089
[3] Rainfall depth for 2yr storm with duration equal to response time (in) *See Placer County SWMM Table 5-A-1 for elevation of site and duration equal to response time*	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
[4] Unit peak runoff (cfs/acre) *q = 60/Form 4-1 Item 16 * Item 3*	2.39	2.39	1.28	4.61	4.08	5.63	3.73	3.44
[5] Infiltration factor (cfs/acre) *F_i = Form 4-1 Item 8 * (1 + 1 /(1.3 + 0.0005 * Form 3-1 Item 3))*	0.16	0.16	0.16	0.16	0.21	0.21	0.21	0.21
[6] Peak runoff from DMAs (cfs) *Q_p = Item 1 * Item 4 – Item 5 * (Item 1 - Item 2)*	22.53	22.53	38.20	17.26	40.26	55.88	124.72	13.09
[7] Total Pre-Project Peak Runof (ft^3/s) *Q_{total} = Sum of Item 6 for all Pre-construction DMAs*	141.67							
[8] Is the total post-project peak runoff equal to or less than the total pre-project peak runoff? *Yes, if Item 7 is greater than or equal to the sum of the Total Treated Flow Rates from Form 3-6 Item 16 and 3-7 Item 14.*	**YES**							

Form 4-2 Hydromodification Target for Peak Runoff								
Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	5	6	7	8	5	6	7	8
[1] Drainage Area (ft^2) *Sum of all outlet level DMAs should equal total project area.*	336,153	217,364	281,398		336,153	217,364	281,398	
[2] Impervious Area (ft^2) *Sum of all outlet level DMAs should equal total project impervious area.*	0	0	0		239,057	152,155	196,978	
[3] Rainfall depth for 2yr storm with duration equal to response time (in) *See Placer County SWMM Table 5-A-1 for elevation of site and duration equal to response time*	0.23	0.23	0.23		0.23	0.23	0.23	
[4] Unit peak runoff (cfs/acre) *q = 60/Form 4-1 Item 16 * Item 3*	1.73	2.65	2.67	-	2.63	2.63	2.63	-
[5] Infiltration factor (cfs/acre) *F_i = Form 4-1 Item 8 * (1 + 1 /(1.3 + 0.0005 * Form 3-1 Item 3))*	0.16	0.16	0.16	-	0.21	0.21	0.21	-
[6] Peak runoff from DMAs (cfs) *Q_p = Item 1 * Item 4 – Item 5 * (Item 1 - Item 2)*	12.21	12.53	16.40	-	19.98	12.91	16.71	-

Form 4-3 Detention Volumes for Hydromodification Management

	Post-construction DMAs to Project Outlet			
	1	**2**	**3**	**4**
[1] Land cover and hydrologic condition *See NRCD TR-55 Manual Table 2-2 for types*	RES	RES	RES	RES
[2] Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	D	D	D
[3] Drainage Area (A) (ft^2)	435,600	435,600	1,467,972	167,270
[4] Curve Number (CN) *Use Items 1 and 2 to select curve number from NRCS TR-55 Manual Table 2-2*	92	92	92	92
[5] Post-development soil storage capacity, S (in): *S = (1000 / Item 4) – 10*	0.9	0.9	0.9	0.9
[6] Precipitation for 2-yr, 24-hr storm (in) *See Placer County SWMM Table 5-A-1 for elevation of site and 24-hr duration depths*	1.90	1.90	1.90	1.90
[7] Post-developed runoff volume for 2-yr – 24-hour storm, V_{runoff} (ft^3): *V_{runoff} = Item 3 * (1 / 12) * [(Item 6 – 0.2 * Item 5)^2 / (Item 6 + 0.8 * Item 5)]*	41,666	41,666	140,416	16,000
[8] Attenuation Factor, $q_{out/in}$ (ratio of target outflow rate to peak inflow rate): *$q_{out/in}$ = Form 4-2 Item 6 Pre-Construction / Form 4-2 Item 6 Post-Construction*	0.56	0.40	0.31	1.32
[9] Equalization Factor, Vs/Vr (ratio of storage capacity to runoff volume) *Vs/Vr obtained using Item 8 and nomograph in Figure 6-1 of NRCS TR-55 Manual for Rainfall Type IA*	0.14	0.14	0.14	0.14
[10] Runoff detention capacity to achieve hydromodification management criteria (ft^3) *$D_{hydromod}$ = Item 7 * Item 9*	5833	5833	19658	2240
[11] Site Design Measure (SDM) Volume (ft^3): *Sum of Item 10 in Form 3-4 for all SDMs in this DMA.*				
[12] Bioretention Volume (ft3): *Sum of Item 13 in Form 3-6 for all bioretention measures in this DMA.*	9411	12384	42358	5067
[13] Flow-Through Detention Volume (ft3): *Sum of Item 10 in Form 3-7 for all flow-through facilities in this DMA.*				
[14] Supplemental Detention Volume (ft^3)[a]:				
[15] Combined Detention Volume in this DMA (ft^3): *Sum of Items 11 through 14*	9,411	12,384	42,358	5,067
[16] Is detention capacity to achieve hydromodification management criteria achieved at all project outlets? *Yes, if Item 10 is less than or equal to Item 15 for each DMA. If not provide additional storage capacity with appropriate flow controls at the discharge.*	**Yes**	**X**	**No**	

Form 4-3 Detention Volumes for Hydromodification Management

	Post-construction DMAs to Project Outlet			
	5	**6**	**7**	**8**
[1] Land cover and hydrologic condition *See NRCD TR-55 Manual Table 2-2 for types*	RES	RES	RES	
[2] Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	D	D	-
[3] Drainage Area (A) (ft^2)	336,153	217,364	281,398	-
[4] Curve Number (CN) *Use Items 1 and 2 to select curve number from NRCS TR-55 Manual Table 2-2*	92	92	92	
[5] Post-development soil storage capacity, S (in): *S = (1000 / Item 4) – 10*	0.9	0.9	0.9	#DIV/0!
[6] Precipitation for 2-yr, 24-hr storm (in) *See Placer County SWMM Table 5-A-1 for elevation of site and 24-hr duration depths*	1.90	1.90	1.90	
[7] Post-developed runoff volume for 2-yr – 24-hour storm, V_{runoff} (ft^3): *V_{runoff} = Item 3 * (1 / 12) * [(Item 6 – 0.2 * Item 5)^2 / (Item 6 + 0.8 * Item 5)]*	32,154	20,792	26,916	#DIV/0!
[8] Attenuation Factor, $q_{out/in}$ (ratio of target outflow rate to peak inflow rate): *$q_{out/in}$ = Form 4-2 Item 6 Pre-Construction / Form 4-2 Item 6 Post-Construction*	0.61	0.97	0.98	#DIV/0!
[9] Equalization Factor, Vs/Vr (ratio of storage capacity to runoff volume) *Vs/Vr obtained using Item 8 and nomograph in Figure 6-1 of NRCS TR-55 Manual for Rainfall Type IA*	0.14	0.14	0.14	
[10] Runoff detention capacity to achieve hydromodification management criteria (ft^3) *$D_{hydromod}$ = Item 7 * Item 9*	4502	2911	3768	#DIV/0!
[11] Site Design Measure (SDM) Volume (ft^3): *Sum of Item 10 in Form 3-4 for all SDMs in this DMA.*				
[12] Bioretention Volume (ft3): *Sum of Item 12 in Form 3-8 for all bioretention measures in this DMA.*	9840	8681	8490	
[13] Flow-Through Detention Volume (ft3): *Sum of Item 10 in Form 3-7 for all flow-through facilities in this DMA.*				
[14] Supplemental Detention Volume (ft^3):				
[15] Combined Detention Volume in this DMA (ft^3): *Sum of Items 11 through 14*	9,840	8,681	8,490	-

Form 4-4 Trash Controls

Type of Trash Control Measure Implemented	Check One		Describe relevant information about each trash control measure. Include number present, size of drainage area to each measure, any special features, materials, or methods of construction that will be used.
	Present	Not Applicable	
Full Capture System	☐	☑	
Multi-Benefit Trash Treatment System: Bioretention	☑	☐	
Multi-Benefit Trash Treatment System: Capture and Use Systems	☐	☑	
Multi-Benefit Trash Treatment System: Detention Basin	☐	☑	
Multi-Benefit Trash Treatment System: Infiltration Trench or Basin	☐	☑	
Multi-Benefit Trash Treatment System: Media Filter	☐	☑	

Form 5-1 BMP Inspection and Maintenance		
BMP	**Inspection Point and Frequency**	**Maintenance Activity Required**
Infiltration Basins	Inlet/Outlet	Repair Erosion
	Entire Basin	Remove Debris and Trash as needed
	Overflow structure	Remove debris to unclog

Form 6-1 Post-Construction Stormwater BMPs

Following is a summary of all BMPs included in the Project design. This checklist must be included on the cover sheet of the Improvement Plans for all Regulated Projects.

BMP		Plan Sheet Number(s)
Structural Source Controls (list BMPs)		
Site Design Measures	Stream Setbacks and Buffers	
	Soil Quality Improvement and Maintenance	
	Tree Planting and Preservation	
	Rooftop and Impervious Area Disconnection	
	Porous Pavement	
	Vegetated Swales	
	Rain Barrels and Cisterns	
Stormwater Treatment and Baseline Hydromodification Measures	Bioretention with Infiltration	
	Flow-Through Planters, Tree Box Filters and Media Filters	
Hydromodification Management Measures	Supplemental Detention	
Trash Control Measures	Full Capture System	
	Multi-Benefit Treatment System: Bioretention	
	Multi-Benefit Treatment System: Capture and Use Systems	
	Multi-Benefit Treatment System: Detention Basin	
	Multi-Benefit Treatment System: Infiltration Trench or Basin	
	Multi-Benefit Treatment System: Media Filter	

EXHIBIT G

Walerga Tributary Profile and Walerga Rd Culvert Cross Section

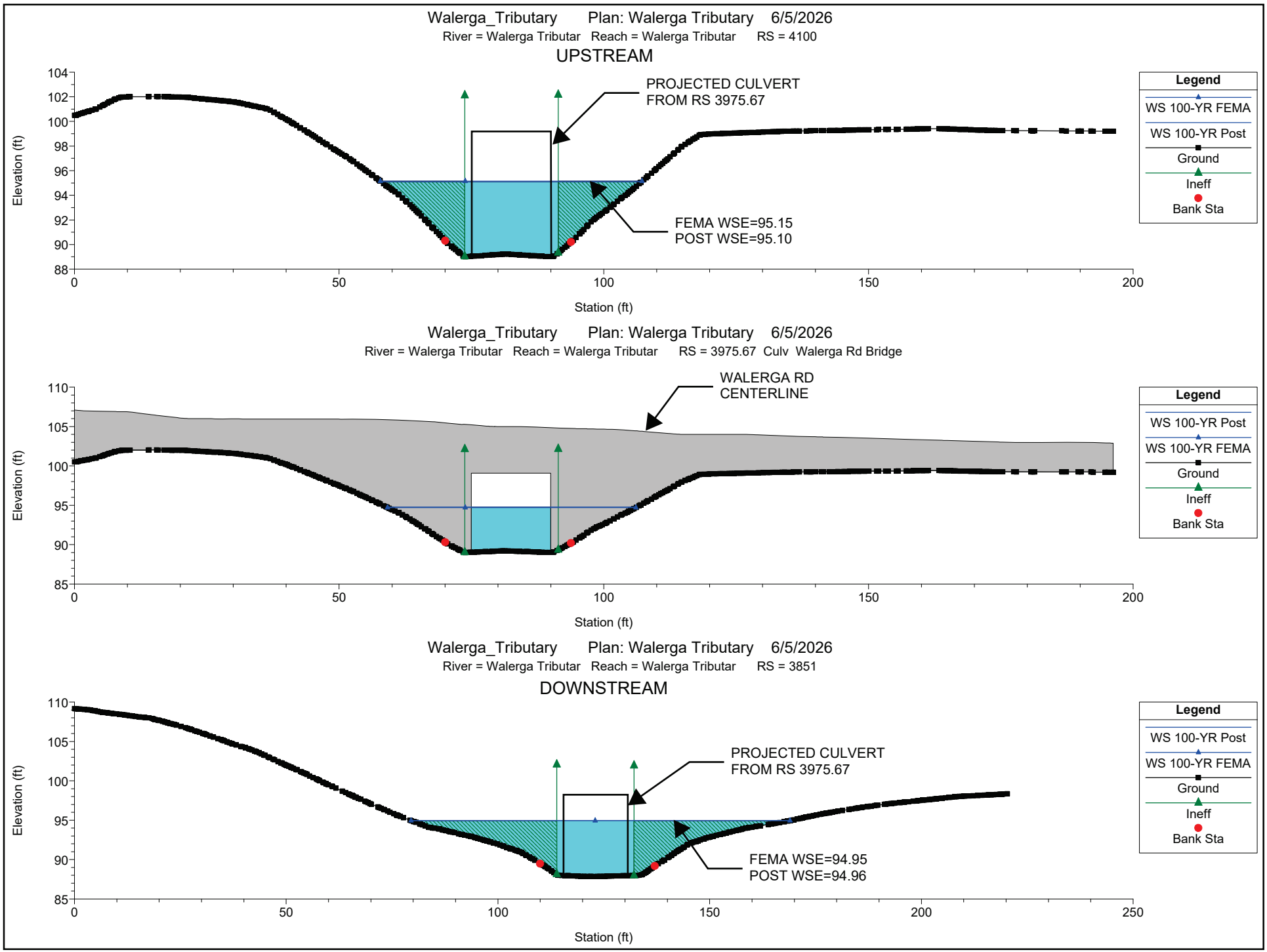


*Figure not OCR compatible

APPENDIX H

PLACER COUNTY ESTIA DRY CREEK AND PLACER CREEK RESIDENTIAL PROJECT

NOISE TECHNICAL REPORT

OCTOBER 2025



Prepared by:

RCH GROUP
planning & environmental consulting

TABLE OF CONTENTS

PLACER COUNTY ESTIA DRY CREEK AND PLACER CREEK RESIDENTIAL PROJECT

Page

INTRODUCTION **1**

CHECKLIST **1**

SETTING **1**

Noise Attenuation 2
Regulatory Context 3
Methodology and Existing Noise Environment 5
Significance thresholds 8
Discussion 9
References 30

TABLES

Table 1. Typical Noise Levels 2
Table 2. Maximum Allowable Noise Exposure from Transportation Noise Sources 4
Table 3. Sound Levels Standards (on-site) 5
Table 4. Existing Noise Levels 6
Table 5. Typical Noise Levels from Construction Equipment 9
Table 6. Predicted Noise levels from Construction Activities (Daytime) 11
Table 7. Predicted Noise levels from Construction Activities (Nighttime) 11
Table 8. Predicted Daytime Construction Noise Levels 16
Table 9. Predicted Nighttime Construction Exterior Noise Levels for Aboveground Work 19
Table 10. Predicted Nighttime Construction Noise level Impacts on Interior Noise Levels 19
Table 11. Noise Modeling for Baseline Road Traffic Noise (Phase 1 Lots) 21
Table 12. Noise Modeling for Walerga Road Traffic Noise (Phase 2 Lots) 22
Table 13. Noise Modeling for Walerga Road Traffic Noise (Phase 3 Lots) 22
Table 14. Estimated AM/PM Peak Hour Traffic Noise Levels along Roadways in the Project Vicinity 24
Table 15. Vibration (PPV) Levels during Construction 30

FIGURES

Figure 1. Noise Measurement Locations 7

Figure 2. Noise Contours for Daytime Construction Noise Levels (Phase 1) 12
Figure 3. Noise Contours for Daytime Construction Noise Levels (Phase 2) 13
Figure 4. Noise Contours for Daytime Construction Noise Levels (Phases 3 and 4)..... 14
Figure 5. Noise Contours for Nighttime Construction Noise Levels (Aboveground Work)..... 15

ATTACHMENT

Noise Appendix

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INTRODUCTION

This report analyzes the existing noise levels and potential noise impacts from the Placer County Estia Dry Creek and Placer Creek Residential Project (the "Project") in Placer County, California. The Project site is in the northern portion of the Dry Creek-West Placer Community Plan (DCWPCP) in Placer County. The Project is located on APNs 023-221-074 and -076 for a total area of approximately 88.3 acres. The Project includes the development of 212-medium density single-family residential lots, 220 multi-family apartment units, one park, and eight landscape corridors throughout four phases. The following analysis details the existing noise sources and levels in the Project vicinity and evaluates the potential noise impacts of the Project. This evaluation reviews applicable State and local noise regulations followed by analysis of noise impacts of construction and operation of the Project.

CHECKLIST

Would the project result in:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
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 groundborne vibration or groundborne 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?	☐	☐	☒	☐

SETTING

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise is defined as unwanted sound. Sound pressure level has become the most common descriptor used to characterize the "loudness" of an ambient sound level. Sound pressure level is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. Decibels are measured using different scales, and it has been found that A-weighting of sound levels best reflects the human ear's reduced sensitivity to low frequencies, and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. All references to decibels (dB) in this report will be A-weighted unless noted otherwise.

Several time-averaged scales represent noise environments and consequences of human activities. The most commonly used noise descriptors are the equivalent A–weighted sound level over a given time period (Leq)[1]; average day–night 24-hour average sound level (Ldn)[2] with a nighttime increase of 10 dB to account for sensitivity to noise during the nighttime; and community noise equivalent level (CNEL)[3], also a 24-hour average that includes both an evening and a nighttime sensitivity weighting. **Table 1** identifies decibel levels for common sounds heard in the environment. With regard to increases in A-weighted noise level, the following relationships occur (Caltrans, 1998a):

- Under controlled conditions in an acoustics laboratory, the trained healthy human ear is able to discern changes in sound levels of 1 dB;
- Outside of such controlled conditions, the trained ear can detect changes of 2 dB in normal environmental noise;
- It is widely accepted that the average healthy ear, however, can barely perceive noise levels changes of 3 dB;
- A change in level of 5 dB is a readily perceptible increase in noise level; and
- A 10-dB change is recognized as twice as loud as the original source.

TABLE 1. TYPICAL NOISE LEVELS

Noise Level (dB)	Outdoor Activity	Indoor Activity
90+	Gas lawn mower at 3 feet, jet flyover at 1,000 feet	Rock Band
80-90	Diesel truck at 50 feet	Loud television at 3 feet
70-80	Gas lawn mower at 100 feet, noisy urban area	Garbage disposal at 3 feet, vacuum cleaner at 10 feet
60-70	Commercial area	
40-60	Quiet urban daytime, traffic at 300 feet	Large business office, dishwasher next room
20-40	Quiet rural, suburban nighttime	Concert hall (background), library, bedroom at night
10-20		Broadcast / recording studio
0	Lowest threshold of human hearing	Lowest threshold of human hearing

SOURCE: (modified from Caltrans Technical Noise Supplement, 1998)

NOISE ATTENUATION

Stationary point sources of noise, including construction equipment, attenuate (lessen) at a rate of 6 to 7.5 dB per doubling of distance from the source, depending on ground absorption. Physical barriers

[1] The Equivalent Sound Level (Leq) is a single value of a constant sound level for the same measurement period duration, which has sound energy equal to the time–varying sound energy in the measurement period.

[2] Ldn is the day–night average sound level that is equal to the 24-hour A-weighted equivalent sound level with a 10-decibel penalty applied to night between 10:00 p.m. and 7:00 a.m.

[3] CNEL is the average A-weighted noise level during a 24-hour day, obtained by addition of 5 decibels in the evening from 7:00 to 10:00 p.m., and an addition of a 10–decibel penalty in the night between 10:00 p.m. and 7:00 a.m.

located between a noise source and the noise receptor, such as berms or sound walls, would increase the attenuation that occurs by distance alone. Noise from large construction sites would have characteristics of both "point" and "line" sources, so attenuation would likely range between 4.5 and 7.5 dB per doubling of distance.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. 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 and is typically expressed in units of inches per second (in/sec). The PPV is the most frequently used to describe vibration impacts on buildings. Some common sources of ground-borne vibration are trains, heavy trucks traveling on rough roads, and construction activities such as blasting, pile driving, and operation of heavy earthmoving equipment.

REGULATORY CONTEXT

Federal

There are no applicable federal noise requirements.

State

The State of California establishes noise insulation standards for new multi-family residential units, hotels, and motels that would be subject to relatively high levels of transportation-related noise. These requirements are collectively known as the California Noise Insulation Standards (Title 24, California Code of Regulations). The noise insulation standards set forth an interior standard of 45 dB, Ldn in any habitable room. They require an acoustical analysis demonstrating how dwelling units have been designed to meet this interior standard where such units are proposed in areas subject to noise levels greater than 60 dB, Ldn.

Local

Placer County General Plan

The Noise Section (Section 9) of the Placer County General Plan establishes goals and policies for both transportation and non-transportation sources (Placer County, 2013). The following goals and policies are relevant to the Project:

> Goal 9.A: To protect County residents from the harmful and annoying effects of exposure to excessive noise.
>
> Policy 9.A.3.: The County shall continue to enforce the State Noise Insulation Standards (California Code of Regulations, Title 24) of the California Building Code and Placer County Code, Article 9.36, Noise.

Policy 9.A.6.: The feasibility of proposed projects with respect to existing and future transportation noise levels shall be evaluated by comparison to Table 9-3 (shown as **Table 2** below).

Policy 9.A.8.: New development of noise-sensitive land uses shall not be permitted in areas exposed to existing or projected levels of noise from transportation noise sources, including airports, which exceed the levels specified in Table 9-3 (shown as **Table 2** below), unless the project design includes effective mitigation measures to reduce noise in outdoor activity areas and interior spaces to the levels specified in Table 9-3 (shown as **Table 2** below).

TABLE 2. MAXIMUM ALLOWABLE NOISE EXPOSURE FROM TRANSPORTATION NOISE SOURCES

Noise Sensitive Land Uses	Outdoor Activity Areas[1]	Interior Spaces	
	Ldn/CNEL, dB	Ldn/CNEL, dB	Leq, dB[2]
Residential	60[3]	45	-
Transient Lodging	60[3]	45	-
Hospitals, Nursing Homes	60[3]	45	-
Theaters, Auditoriums, Music Halls	-	-	35
Churches, Meeting Halls	60[3]	-	40
Office Buildings	-	-	45
Schools, Libraries, Museums	-	-	45
Playgrounds, Neighborhood Parks	70	-	-

Notes:

1. Where the location of the outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.
2. As determined for a typical worst-case hour during periods of use.
3. Where it is not possible to reduce noise in outdoor activity areas to 60 dB Ldn/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB Ldn/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

SOURCE: Placer County General Plan, 2013, Section 9, Table 9-3.

Placer County Noise Ordinance

The Placer County Noise Ordinance (Article 9.36) prohibits unnecessary, excessive and offensive sounds. The following regulations are relevant to the Project:

Per § 9.36.060, it is unlawful for any person at any location to create any sound, or to allow the creation of any sound, on property leased, occupied or otherwise controlled by such person that:

1. Causes the exterior sound level when measured at the property line of any affected sensitive receptor to exceed the ambient sound level by five dB; or

2. Exceeds the sound level standards as set forth in Table 1 (shown as **Table 3** below), whichever is greater.

3. Policy 9.A.6.: The feasibility of proposed projects with respect to existing and future transportation noise levels shall be evaluated by comparison to Table 9-3 (shown as **Table 2** above).

Per § 9.36.060 (A)(7), Construction (e.g., construction, alteration or repair activities) is exempt if it occurs between the hours of 6:00 a.m. and 8:00 p.m. Monday through Friday, and between the hours of 8:00 a.m. and 8:00 p.m. on Saturday and Sunday, provided that all construction equipment shall be fitted with factory installed muffling devices and that all construction equipment shall be maintained in good working order.

TABLE 3. SOUND LEVELS STANDARDS (ON-SITE)

Sound Level Descriptor	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly Leq, dB	55	45
Maximum level, (Lmax) dB	70	65

SOURCE: Placer County Municipal Code, §9.36.060, Table 1.

Dry Creek-West Placer Community Plan (DCWPCP)

The DCWPCP contains a noise section that is used to identify and appraise noise problems affecting the DCWPCP area (Placer County, 1990). The following are relevant to the Project:

Goal 2: Locate noise-sensitive land uses within areas of acceptable Community Noise Equivalent Levels (CNEL).

Policy 4: Require implementation of noise abatement techniques within new projects where warranted.

Policy 6: Require project specific noise studies for most commercial, office, public, institutional, and residential projects.

Policy 8: Where noise levels have a potential to be in excess of normally acceptable CNEL levels, landscaped setbacks should be considered versus sound walls for noise mitigation.

Sensitive Receptors

The Placer County Noise Ordinance (Article 9.36) defines noise-sensitive land uses as residential areas, schools, hospitals, churches, rest homes, cemeteries, and other public libraries. The nearest sensitive land uses to the Project site are residences to the east, west and south of the Project site. The nearest residences would be located directly east of the proposed Phase 2 lots (along Wellbrook Place and Bridgestone Crescent Road) and directly south of the proposed Phase 4 lots (along French Creek Court, Eagle Creek Court, Marsh Creek Court, and Rockporte Court).

METHODOLOGY AND EXISTING NOISE ENVIRONMENT

To quantify existing ambient noise levels, RCH group conducted three long-term (72-hour) and four short-term (10-minute) noise measurements at the Project site. Metrosonics db308 Sound Level Meters calibrated before and after the measurements were used for the long-term noise measurements. A Larson Davis SoundTrack LxT Sound Level Meter calibrated before and after the measurements was used for the short-term measurements. To measure existing 24-hour noise

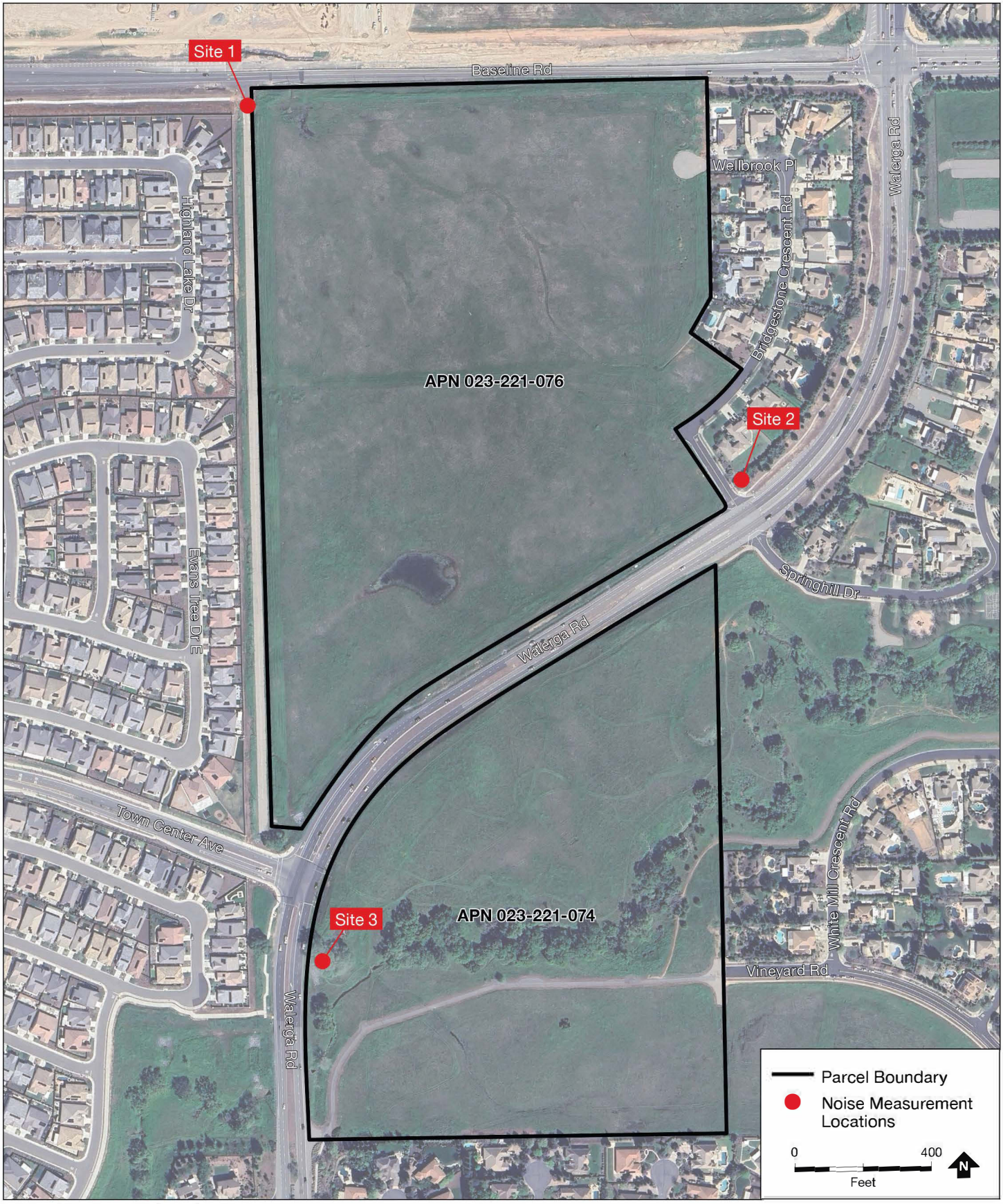
levels at the Project site, a noise meter was attached to a telephone pole at the northwest corner of the site (Site 1) with clear view of Baseline Road (the primary source of noise at the Project site). A second noise meter was attached to a tree on the intersection of Walerga Road and Springhill Drive with a clear view of Walerga Road (the primary source of noise at the Project site) (Site 2). A third noise meter was attached to a tree on the western property boundary with a clear view of Walerga Road (Site 3). Existing 24-hour noise levels at the Project site ranged from 67-74 dB, CNEL. **Table 4** summarizes the locations and results of the noise measurements. **Figure 1** shows the noise measurement locations on a map.

The **Noise Appendix** includes 24-hour noise plots for Sites 1 through 3 and hourly measurements results. Based on observations from the short-term measurements, the main source of noise in the Project vicinity was traffic noise from Baseline Road and Walerga Road. No other minor sources of noise were observed during short-term measurements.

TABLE 4. EXISTING NOISE LEVELS

Location	Time Period	Noise Levels (dB)	Noise Sources
Site 1: Northwest corner of the Project site, approximately 100 feet south of centerline of Baseline Road.	June 25, 12:00 a.m. Through June 27, 11:59 p.m., 2024 Tuesday – Thursday 72-hour measurement.	Daytime Leq's ranged from: 61-65 Nighttime Leq's ranged from: 54-65 CNELs: 67, 68, 68	Unattended noise measurements do not specifically identify noise sources.
Site 1: Northwest corner of the Project site, approximately 100 feet south of centerline of Baseline Road.	Monday June 24, 2024 9:11 a.m. to 9:21 a.m.	5-minute Leq's: 58, 59	Traffic on Baseline Road was 58-71 dB.
Site 2: Intersection of Walerga Road and Springhill Drive, approximately 70 feet north of centerline of Walerga Road.	June 25, 12:00 a.m. Through June 27, 11:59 p.m., 2024 Tuesday – Thursday 72-hour measurement.	Daytime Leq's ranged from: 69-73 Nighttime Leq's ranged from: 59-71 CNELs: 73, 74, 74	Unattended noise measurements do not specifically identify noise sources.
Site 2: Intersection of Walerga Road and Springhill Drive, approximately 70 feet north of centerline of Walerga Road.	Monday June 24, 2024 9:33 a.m. to 9:43 a.m.	5-minute Leq's: 69, 70	Traffic on Walerga Road was 65-80 dB.
Site 3: Approximately 100 feet east of centerline of Walerga Road.	June 25, 12:00 a.m. Through June 27, 11:59 p.m., 2024 Tuesday – Thursday 72-hour measurement.	Daytime Leq's ranged from: 67-70 Nighttime Leq's ranged from: 58-71 CNELs: 72, 72, 73	Unattended noise measurements do not specifically identify noise sources.
Site 3: Approximately 100 feet east of centerline of Walerga Road.	Monday June 24, 2024 9:53 a.m. to 10:03 a.m.	5-minute Leq's: 66, 71	Traffic on Walerga Road was 65-86 dB.

SOURCE: RCH GROUP, 2024



Source: RCH Group; Google Earth Pro, 2025

Figure 1
Noise Measurement Locations

* Figure not OCR Compatible

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planning & environmental consulting

SIGNIFICANCE THRESHOLDS

Appendix G of the *CEQA Guidelines* states that a Project would result in a significant impact to Noise if it would:

- Generate a substantial temporary or permanent increase in ambient noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
  - Daytime and nighttime construction activities would result in a potentially significant impact if construction activities would result in an increase of an hourly 5 dB, Leq (a readily perceptible increase) or more over existing exterior noise levels at the nearest noise-sensitive receptors.
  - Nighttime construction noise could be potentially significant if nighttime construction would expose nearby noise-sensitive receptors to noise levels exceeding an interior noise level of 45 dB, Ldn/CNEL as a result of nearby construction activities.
  - For the purposes of analyzing potential traffic noise impacts, this analysis uses a significance threshold of an increase of 5 dB, CNEL or greater where the resulting traffic noise levels are less than 60 dB, CNEL; an increase of 3 dB, CNEL or greater in traffic noise where resulting traffic noise levels are 60-65 dB, CNEL; or an increase of 1.5 dB, CNEL or greater in traffic noise where resulting traffic noise levels are above 65 dB, CNEL.
- Generate excessive groundborne vibration or groundborne noise levels; or
  - Vibration from construction would be potentially significant in vibration would exceed the 0.5 Peak Particle Velocity (PPV) Federal Transit Administration (FTA) threshold of 0.5 PPV at the nearest off-site structure.
- 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, expose persons residing or working in the project area to excessive noise levels.
  - The Project site is not within the vicinity of a private airstrip or an airport land use plan, or within 2 miles of a public use airport. The nearest airport is the Sacramento McClellan Airport and is located approximately 5 miles south of the Project site. At this distance, airport noise would not be a significant source of noise at the project site and would have no impact on people residing or working in the Project area. Therefore, airport noise impacts are not further discussed in this analysis.

DISCUSSION

a) Would the project result in 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?

Construction Related Noise Impacts

Construction would result in a temporary increase in ambient noise levels in the vicinity of the Project. Construction activities for the Project would include grading and excavation work, as well as building construction, paving, and coating. Construction activities would require the use of numerous pieces of noise-generating equipment, such as excavating machinery (e.g., loaders, excavators, etc.) and other construction equipment (e.g., dozers, dump trucks, etc.). The noise levels generated by construction equipment would vary greatly depending upon factors such as the type and specific model of the equipment, the condition of the equipment, the operation being performed, the location of the operations, and the prevailing wind direction.

The noise levels at 50 feet for various types of construction equipment that could be used during Project construction are provided in **Table 5** below. Average noise levels generated by construction equipment used for the proposed project would range from 73 to 83 dB, Leq at 50 feet. The majority of construction would occur at distances greater than 50 feet away from noise-sensitive receptors.

TABLE 5. TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT

Construction Equipment	Noise Level (dB, Leq at 50 feet)
Backhoe	74
Dozer	78
Forklift	77
Crane	73
Excavator	77
Dump Truck	73
Paver	74
Compressor (Air)	74
Generator	78
Roller	73
Concrete Mixer Truck	75
Front End Loader	75

Tractor	80
Concrete Saw	83

NOTES: delete?

SOURCE: Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM), Version 1.1

Roadway Construction Noise Model (RCNM)

Combined intermittent noise levels from the simultaneous operation of construction equipment was estimated based on equipment noise data published by the Federal Highway Administration (FHWA). The FHWA Roadway Construction Noise Model (RCNM), Version 1.1 was used for this analysis because it contains a robust inventory of off-road equipment and reference noise levels common to large-scale construction projects. Estimates of noise from the Project are based on a roster of the maximum amount of equipment used on a given day. Therefore, the noise level associated with the equipment is typical of the type of equipment and not based on any specific make or model.

Tables 6 and 7 present the results of RCNM for anticipated daytime and nighttime construction activities, respectively. For daytime construction, the grading phase was assumed to be the loudest construction phase. For nighttime construction, two phases (i.e., underground work and aboveground work) would occur. The aboveground work phase would be the loudest phase of nighttime work. For daytime construction, cumulative noise levels were modeled at 50, 200, 400, 600, and 800 feet. Distances for nighttime construction were modeled at 50, 150, and 300 feet. The predicted noise from each activity is presented as a worst-case scenario because it is assumed all equipment that would be used for that construction activity is present and operating simultaneously. Results of the RCNM noise calculations are included in the **Noise Appendix**.

Figures 2 through 4 show the predicted noise level contours from daytime construction noise from Phases 1-4 in terms of the average (Leq) noise descriptor. **Figure 5** shows the predicted noise level contours from nighttime construction (aboveground phase) noise at three locations in terms of the average (Leq) noise descriptor. These predicted noise level contours show the results of the RCNM noise calculations and are conservative, worst-case scenarios.

TABLE 6. PREDICTED NOISE LEVELS FROM CONSTRUCTION ACTIVITIES (DAYTIME)

Construction Activity	Proposed Equipment	Leq (h) Level (dB[3]) at 50 feet	Leq (h) Level (dB[3]) at 200 feet	Leq (h) Level (dB[3]) at 400 feet	Leq (h) Level (dB[3]) at 600 feet	Leq (h) Level (dB[3]) at 800 feet
Grading1	Combined Equipment Total[1]	84	72	66	62	60

NOTES:

Leq (h) = hourly Leq

1 Grading activities are assumed to be the loudest daytime construction phase.
2 See **Noise Appendix** for results of each individual piece of construction equipment. This modeling scenario assumes the following equipment for grading: (3x) excavators, (2x) loaders, and (2x) dump trucks.
3 Results from RCNM rounded to the nearest dB.

SOURCE: RCH GROUP, 2025.

TABLE 7. PREDICTED NOISE LEVELS FROM CONSTRUCTION ACTIVITIES (NIGHTTIME)

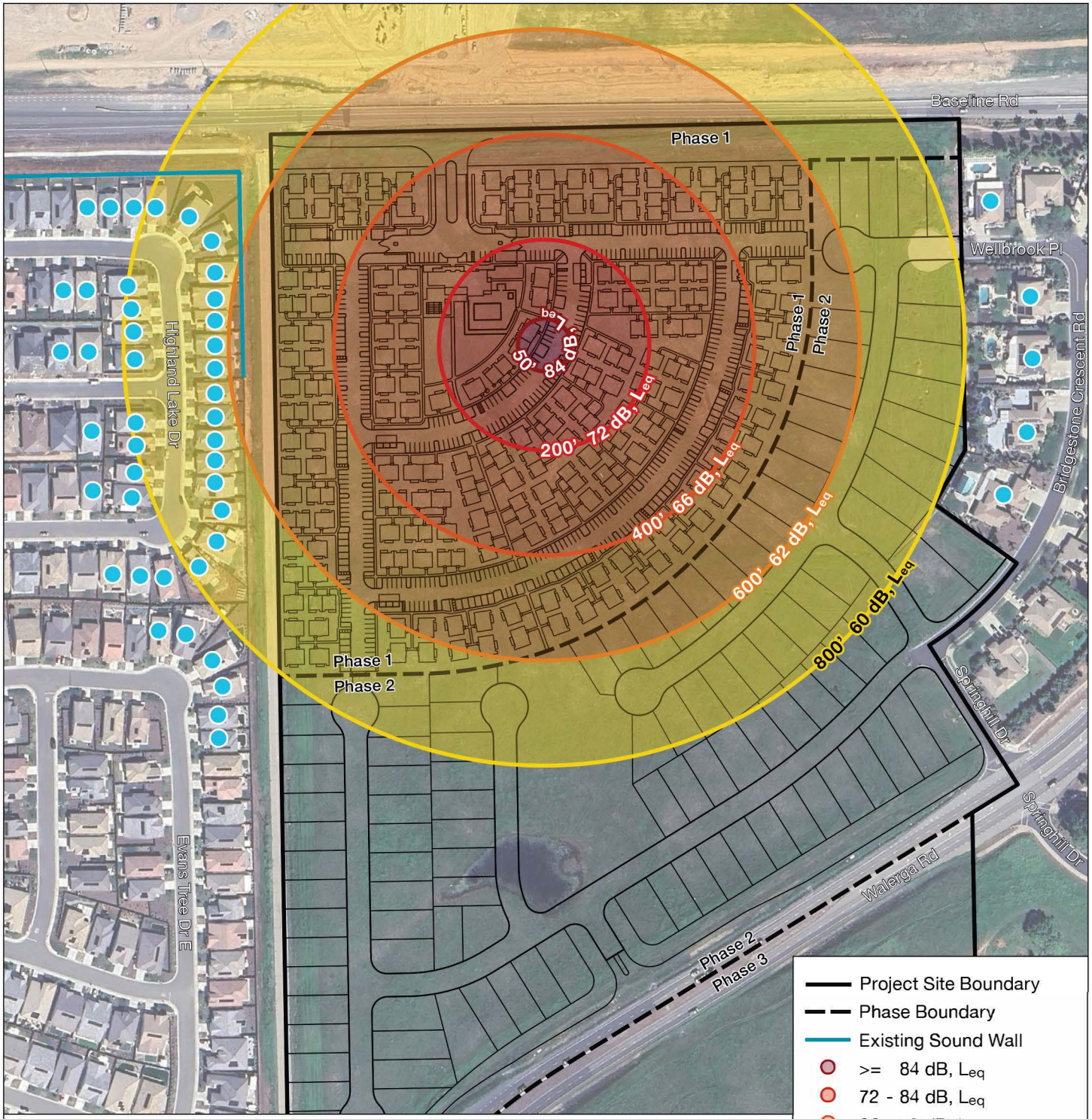
Construction Activity	Proposed Equipment	Leq (h) Level (dB[4]) at 50 feet	Leq (h) Level (dB[4]) at 150 feet	Leq (h) Level (dB[4]) at 300 feet
Underground Work[1]	Combined Equipment Total[2]	84	75	68
Aboveground Work[1]	Combined Equipment Total[3]	85	76	69

NOTES:

Leq (h) = hourly Leq

1 King Engineering provided equipment assumptions for anticipated nighttime work (King Engineering, 2025)
2 See **Noise Appendix** for results of each individual piece of construction equipment. This modeling scenario assumes the following for nighttime underground construction: tractor, front end loader, (2x) excavators, backhoe, air compressor.
3 See **Noise Appendix** for results of each individual piece of construction equipment. This modeling scenario assumes the following for nighttime aboveground construction: (2x) tractors, front end loader, paver, roller, concrete mixer truck.
4 Results from RCNM rounded to the nearest dB.

SOURCE: RCH GROUP, 2025.



Note 1: The noise contours shown in this figure do not account for topographical features. There is an existing masonry sound wall atop of an earthen berm between the Project site and the homes to the west of the Project site that would significantly reduce construction noise levels reaching the nearest homes on Highland Lake Drive. This existing masonry sound wall is approximately 10-12 feet above the grade of Baseline Road and would block the line of sight between the construction footprint and the nearest homes on Highland Lake Drive. To be conservative, a 10 dB reduction in construction noise can be assumed to occur when construction noise reaches the eastern boundary of the homes on Highland Lake Drive.

Note 2: An attenuation rate of 6.0 dB per doubling distance was used to estimate the noise propagation in this figure.

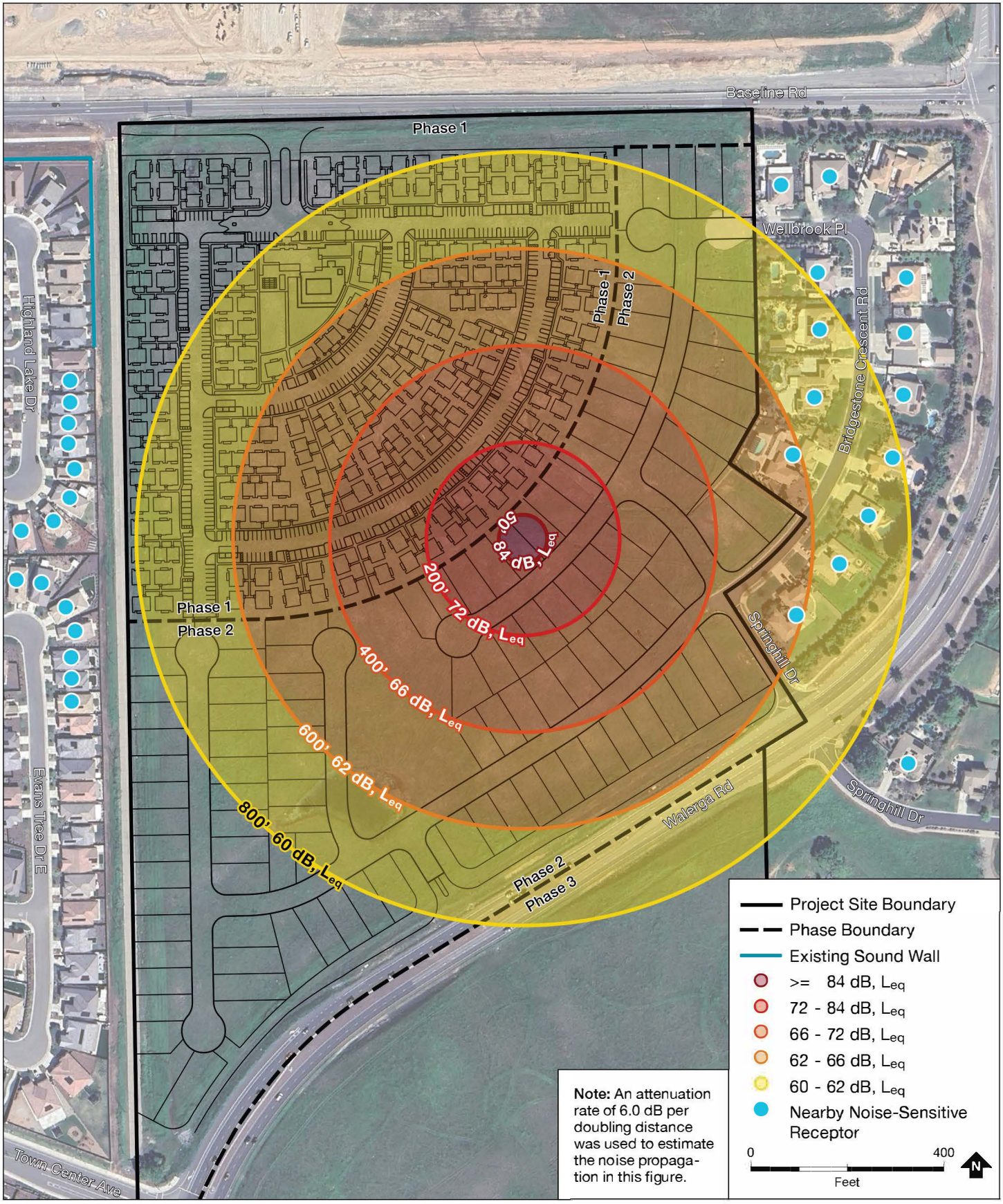
Source: RCH Group; King Engineering; Google Earth Pro, 2025

* Figure not OCR Compatible

Figure 2

Average (dB, L_{eq}) Noise Contours for Daytime Construction Noise Levels (Phase 1)

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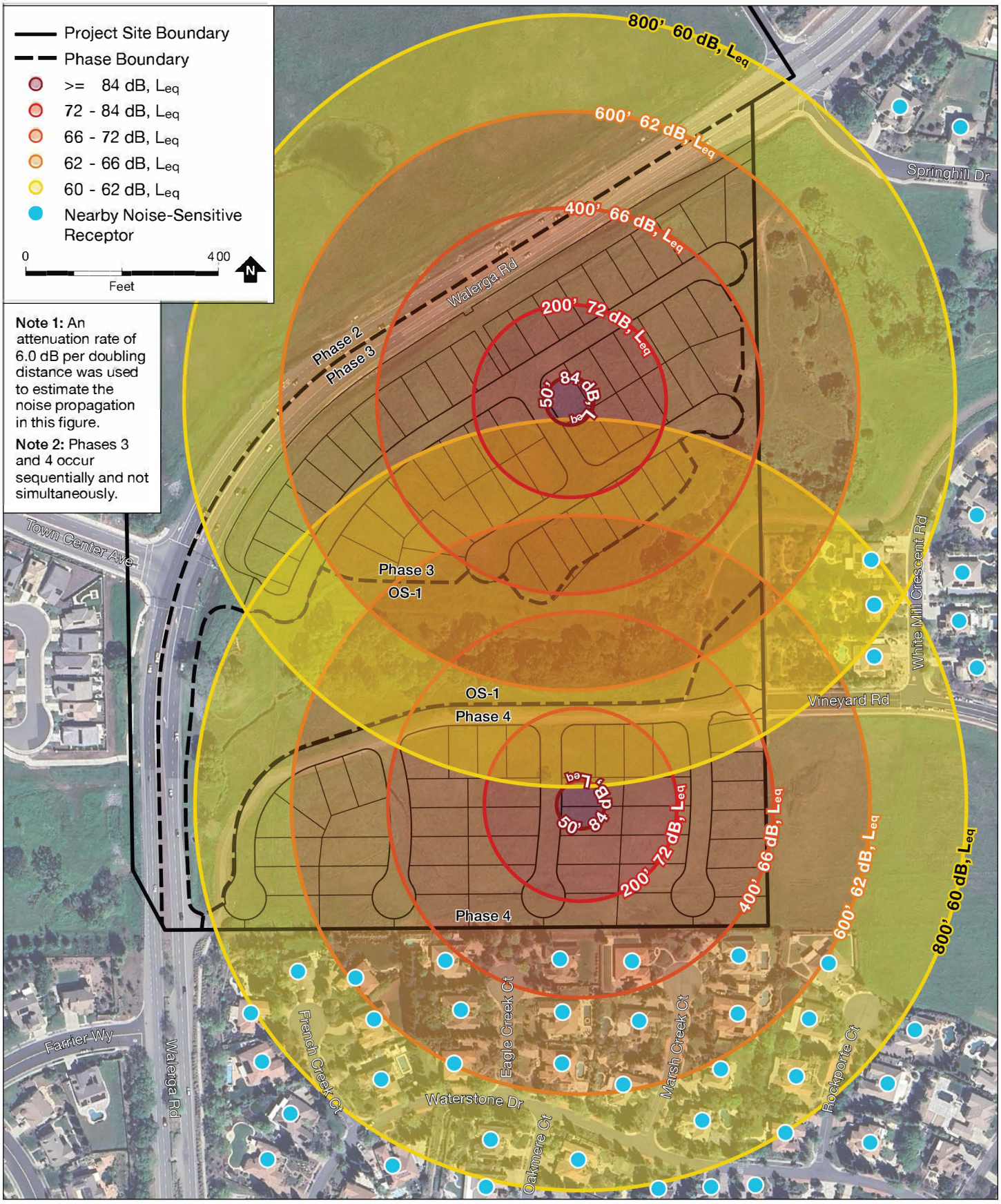


Source: RCH Group; King Engineering; Google Earth Pro, 2025

Figure 3
Average (dB, L_{eq}) Noise Contours for Daytime Construction Noise Levels (Phase 2)

* Figure not OCR Compatible

RCH GROUP
planning & environmental consulting



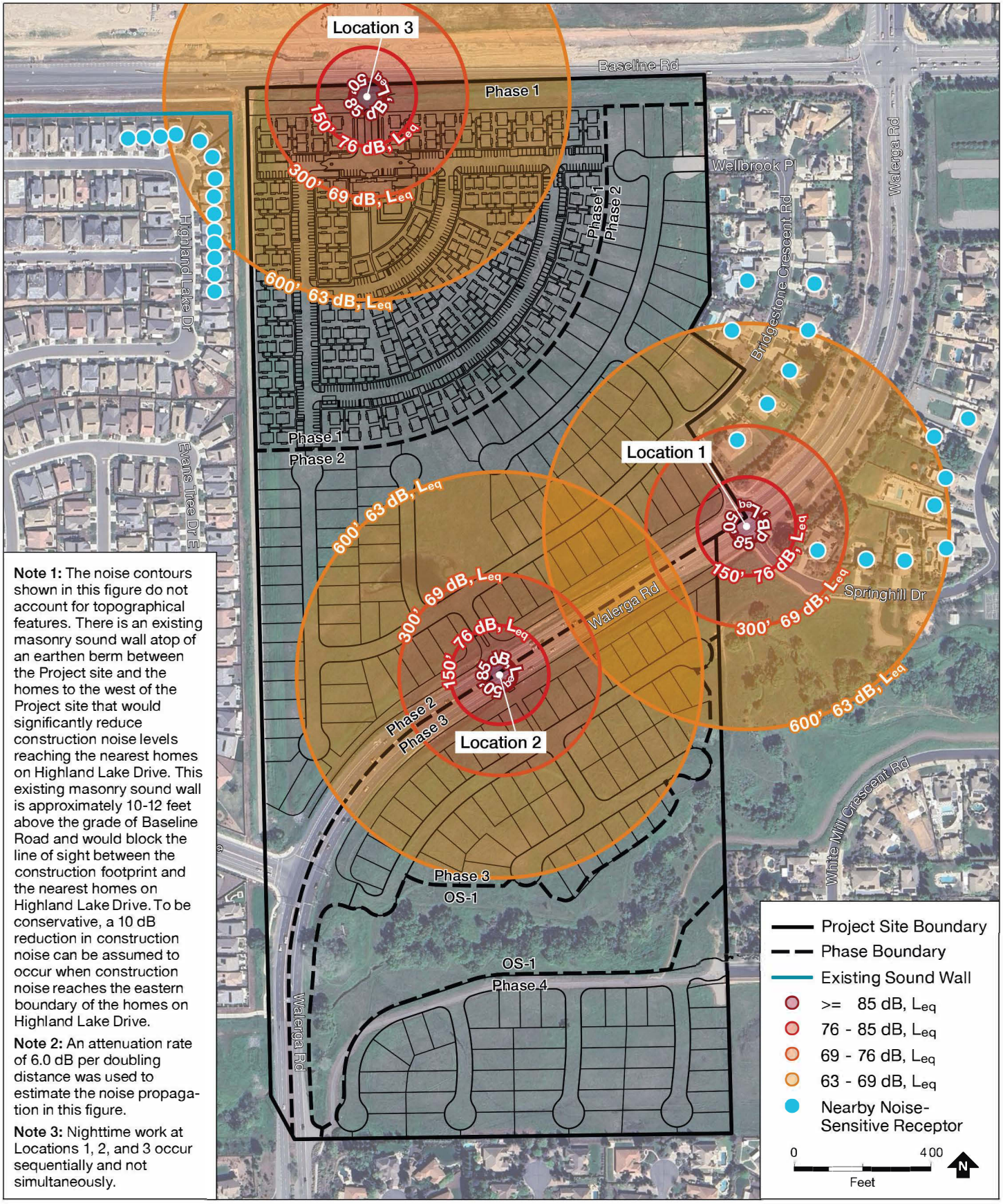
Source: RCH Group; King Engineering; Google Earth Pro, 2025

* Figure not OCR Compatible

Figure 4

Average (dB, L_{eq}) Noise Contours for Daytime Construction Noise Levels (Phases 3 and 4)

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Note 1: The noise contours shown in this figure do not account for topographical features. There is an existing masonry sound wall atop of an earthen berm between the Project site and the homes to the west of the Project site that would significantly reduce construction noise levels reaching the nearest homes on Highland Lake Drive. This existing masonry sound wall is approximately 10-12 feet above the grade of Baseline Road and would block the line of sight between the construction footprint and the nearest homes on Highland Lake Drive. To be conservative, a 10 dB reduction in construction noise can be assumed to occur when construction noise reaches the eastern boundary of the homes on Highland Lake Drive.

Note 2: An attenuation rate of 6.0 dB per doubling distance was used to estimate the noise propagation in this figure.

Note 3: Nighttime work at Locations 1, 2, and 3 occur sequentially and not simultaneously.

Source: RCH Group; King Engineering; Google Earth Pro, 2025

Figure 5

Average (dB, L_{eq}) Noise Contours for Nighttime Construction Noise Levels (Aboveground Work)

* Figure not OCR Compatible

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Daytime Construction Noise Impacts

This analysis assumes that Phases 1-4 would occur separately and not simultaneously. The equipment and activities required for construction of the Project would be typical of large-scale residential construction projects and no noise-generating equipment (i.e., pile drivers) or other similar heavy equipment would be needed. The Placer County Noise Ordinance exempts temporary construction noise when construction occurs between the hours of 6:00 a.m. and 8:00 p.m. Monday through Friday, and between the hours of 8:00 a.m. and 8:00 p.m. on Saturday and Sunday, provided that all construction equipment shall be fitted with factory installed muffling devices and that all construction equipment shall be maintained in good working order.

For the purpose of this analysis, temporary daytime construction activities would result in a potentially significant impact if daytime construction activities would result in an increase of an hourly 5 dB, Leq (1-hour) (a readily perceptible increase) or more over existing exterior noise levels at the nearest noise-sensitive receptors. **Table 8** shows the predicted daytime construction noise impacts from grading activities, which is assumed to be the loudest construction phase.

TABLE 8. PREDICTED DAYTIME CONSTRUCTION NOISE LEVELS

Phase	Construction Reference Noise Level (dB, Leq at 50 feet)	Construction Noise Level (dB, Leq at the nearest receptor)	Existing Daytime Exterior Noise Levels (dB, Leq)	Change from Existing Noise Levels (dB, Leq)	Results in increase of 5 dB, Leq or more?	Requires Mitigation?	Significant Impact?
1	84	52[1]	61-65[2]	0	No	No	No[1]
2	84	64[3]	69-73[4]	0	No	No	No
3	84	65[5]	58-62[6]	3-7	Yes	Yes	Yes
4	84	70[7]	60-64[8]	6-10	Yes	Yes	Yes

NOTES:

1. Distance is assumed to be 600 feet between the center of the Phase 1 construction site and the nearest home to the west on Highland Lake Drive. The resulting noise level would be 62 dB, Leq. However, there is an existing masonry sound wall atop of an earthen berm that would significantly reduce nighttime construction noise levels reaching the nearest homes on Highland Lake Drive. This existing masonry sound wall is approximately 10-12 feet above the grade of Baseline Road and would block the line of sight between the construction footprint and the nearest homes on Highland Lake Drive; therefore, a conservative 10 dB reduction can be applied. Thus, the resulting noise levels would be approximately 52 dB, Leq.
2. See **Table 4,** Site 1 for daytime hourly Leq's which were taken nearby the nearest homes to the west of Phase 1 construction.
3. Distance is assumed to be 500 feet between the center of the Phase 2 construction site and the nearest home to the east on Bridgestone Crescent Road.
4. See **Table 4,** Site 2 for daytime hourly Leq's which were taken nearby the homes adjacent to Walerga Road and west of Phase 2 construction.
5. Distance is assumed to be 450 feet between the center of the Phase 3 construction site and the nearest home to the east on White Mill Crescent Road.
6. Daytime hourly Leq's were estimated based on the daytime hourly Leq's taken at Site 3. These noise levels were attenuated to the nearest home to the east on White Mill Crescent Road located closest to Phase 3 construction.
7. Distance is assumed to be 250 feet between the center of the Phase 4 construction site and the nearest home to the south on Marsh Creek Court.
8. Daytime hourly Leq's were estimated based on the daytime hourly Leq's taken at Site 3. These noise levels were attenuated to the nearest home to the east on Marsh Creek Court located closest to Phase 4 construction.

SOURCE: RCH GROUP, 2025.

As discussed above, **Table 8** shows the predicted daytime construction noise impacts from grading activities (assumed to be the loudest construction phase) when measured from the center of each construction phase to the nearest existing home. The center of the site was used because of the nature of grading activities (i.e., heavy equipment in constant motion that does not remain stationary for long periods of time). When grading activities are occurring nearby homes adjacent to Phase 3 and 4, the exterior noise level would increase by approximately 3-10 dB, Leq. As discussed above, these predicted increases in exterior noise levels are considered to be conservative, worst-case scenarios because it is assumed all grading equipment would be operating simultaneously.

When other construction activities are occurring closer to nearby noise-sensitive receptors (e.g., homes along Wellbrook Place and Bridgestone Crescent Road and along French Creek Court, Eagle Creek Court, Marsh Creek Court, and Rockporte Court), these receptors would be exposed to the highest noise levels during those activities. Phases 2 and 3 would require work that would occur directly adjacent to the above-mentioned receptors and even though construction noise would be less than the noise generated by grading activities (as shown in **Table 8**), other construction phases (e.g., foundations, framing, and post-construction finishing) could also exceed the exterior noise threshold of 5 dB, Leq (1-hour), depending on the activity being performed and the duration of the construction phase.

Mitigation Measure NOI-1 has been identified to reduce exterior noise impacts at nearby noise-sensitive locations. This Mitigation Measure would reduce daytime construction noise levels reaching the nearby noise-sensitive receptors. Implementation of this Mitigation Measure would reduce construction noise impacts at the nearest residences that are directly east of the proposed Phase 2 lots (along Wellbrook Place and Bridgestone Crescent Road) to a less-than-significant impact. However, even with the implementation of these measures, daytime construction noise levels reaching nearby noise-sensitive receptors directly south of Phase 4 lots (along French Creek Court, Eagle Creek Court, Marsh Creek Court, and Rockporte Court) would likely still exceed the exterior noise threshold of 5 dB, Leq (1-hour) threshold (a readily perceptible increase) and this increase in noise would likely result in annoyances to nearby noise-sensitive receptors. This would be a **Significant and Unavoidable** impact of the Project**.**

Mitigation Measures

Mitigation Measure NOI-1: The Applicant shall implement the following construction noise reduction measures:

- A six-foot-tall temporary sound wall shall be constructed on the eastern property boundary of the proposed Phase 2 lots along the fenceline of the homes on Wellbrook Place and Bridgestone Crescent Road that are directly east of the proposed Phase 2 construction. Another six-foot-tall temporary sound wall shall be constructed on the southern property boundary of the proposed Phase 4 lots along the fenceline of the homes on French Creek Court, Eagle Creek Court, Marsh Creek Court, and Rockporte Court that are directly south of the proposed Phase 4 construction. The sound wall fencing shall consist of 0.5-inch plywood or minimum STC 27 sound curtains placed to shield nearby noise-sensitive receptors from construction noise. The plywood barrier shall be free from gaps, openings, or penetrations to ensure maximum performance. The temporary construction sound wall

shall be constructed prior to any demolition or other ground disturbing activities associated with construction.

- Prior to construction activities, the Construction Contractor shall designate a "Construction Noise Coordinator" who would be responsible for responding to any local complaints about construction noise. The Construction Noise Coordinator shall determine the cause of the complaint and shall require implementation of reasonable measures to correct the problem. The telephone number for the Construction Noise Coordinator shall be conspicuously posted at the construction site.

- At least three weeks prior to the start of construction activities, the Construction Contractor shall provide written notification to residences within 500 feet of the construction site informing them of the estimated start date and duration of construction activities, the role of the Construction Noise Coordinator, and how to contact the Construction Noise Coordinator.

- All construction equipment shall be properly maintained and in good order.

- Locate staging areas at the greatest feasible distances away from nearby noise-sensitive receptors.

- Noise-reducing enclosures or acoustic barriers shall be used around stationary noise-generating equipment (e.g., generators, air compressors).

- Require that all construction equipment powered by gasoline or diesel engines have sound control devices (i.e., mufflers) that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation.

- Operate heavy-duty construction equipment at the lowest operating power possible.

Nighttime Construction Noise Impacts

The Project would likely require nighttime work at three different locations to minimize daytime traffic circulation impacts on Walerga Road and Baseline Road, since these roads have a high volume of traffic during the daytime. Nighttime work would include improvements to sewer, drain, and water lateral systems, as well as traffic signal work. Nighttime work would be short-term and is expected to last 1-2 weeks at each location and would occur at different times. For the purpose of this analysis, temporary nighttime construction activities would result in a potentially significant impact if nighttime construction activities would result in an increase of an hourly 5 dB, Leq (1-hour) (a readily perceptible increase) or more over existing exterior noise levels at the nearest noise-sensitive receptors and if nighttime construction would expose nearby noise-sensitive receptors to noise levels exceeding an interior noise level of 45 dB, Ldn/CNEL as a result of nearby construction activities. **Table 9** shows the predicted nighttime construction exterior noise levels from aboveground activities, which would be the loudest nighttime construction phase. **Table 10** shows the predicted nighttime construction interior noise levels at nearby noise-sensitive receptors. See **Figure 5** for the predicted noise level contours from nighttime construction (aboveground phase) noise at the three locations.

TABLE 9. PREDICTED NIGHTTIME CONSTRUCTION EXTERIOR NOISE LEVELS FOR ABOVEGROUND WORK

Location	Construction Reference Noise Level (dB, Leq at 50 feet)	Construction Noise Level (dB, Leq at the nearest receptor)	Existing Nighttime Exterior Noise Levels (dB, Leq)	Change from Existing Noise Levels (dB, Leq)	Results in increase of 5 dB, Leq or more?	Requires Mitigation?	Significant Impact?
1	85	76[1]	59-71[2]	5-17	Yes	Yes	Yes
2	85	61[3]	59-71[2]	0-2	No	No	No
3	85	56[4]	54-65[6]	0-2	No	No	No[4]

NOTES:

1. Distance is assumed to be 150 feet between the center of nighttime construction Location 1 and the nearest home to the north on Springhill Drive.
2. See **Table 4,** Site 2 for nighttime hourly Leq's which were taken nearby the nearest homes to the north of Walerga Road on Springhill Drive.
3. Distance is assumed to be 800 feet between the center of nighttime construction Location 2 and the nearest home to the northeast on Springhill Drive.
4. Distance is assumed to be 450 feet between the center of nighttime construction Location 3 and the nearest home to the southwest on Highland Lake Drive. The resulting noise level would be 66 dB, Leq. However, there is an existing masonry sound wall atop of an earthen berm that would significantly reduce nighttime construction noise levels reaching the nearest homes on Highland Lake Drive. This existing masonry sound wall is approximately 10-12 feet above the grade of Baseline Road and would block the line of sight between the construction footprint and the nearest homes on Highland Lake Drive; therefore, a conservative 10 dB reduction can be applied. Thus, the resulting noise levels would be approximately 56 dB, Leq.
5. See **Table 4,** Site 1 for nighttime hourly Leq's which were taken nearby the nearest homes on Highland Lake Drive.

SOURCE: RCH GROUP, 2025.

TABLE 10. PREDICTED NIGHTTIME CONSTRUCTION NOISE LEVEL IMPACTS ON INTERIOR NOISE LEVELS

Location	Construction Reference Noise Level (dB, Leq at 50 feet)	Construction Noise Level (dB, Leq at the nearest receptor)	Predicted Interior Noise Level at the nearest receptor	Results in increase of 45 dB, Ldn/CNEL or more	Requires Mitigation?	Significant Impact?
1	85	76[1]	46-51[2]	Yes	Yes	Yes
2	85	61[3]	31-36[2]	No	No	No
3	85	56[4]	26-31[2]	No	No	No

NOTES:

1. Distance is assumed to be 150 feet between the center of nighttime construction Location 1 and the nearest home to the north on Springhill Drive and Walerga Road.
2. Noise reductions afforded by building construction can vary depending on construction materials and techniques. Standard construction practices typically provide approximately 25-30 dB exterior-to-interior reduction (with windows and doors closed) (Caltrans, 2000). This analysis assumes the nearest noise-sensitive receptors to nighttime construction are construction with materials that would provide a 25-30 dB exterior-to-interior noise reduction (with windows and doors closed).
3. Distance is assumed to be 800 feet between the center of nighttime construction Location 2 and the nearest home to the northeast on Springhill Drive.
4. Distance is assumed to be 450 feet between the center of nighttime construction Location 3 and the nearest home to the southwest on Highland Lake Drive. The resulting noise level would be 66 dB, Leq. However, there is an existing masonry sound wall atop of an earthen berm that would significantly reduce nighttime construction noise levels reaching the nearest homes on Highland Lake

Drive. This existing masonry sound wall is approximately 10-12 feet above the grade of Baseline Road, therefore, a conservative 10 dB reduction is assumed. Thus, the resulting noise levels would be approximately 56 dB, Leq.

5. See **Table 4,** Site 1 for nighttime hourly Leq's which were taken nearby the nearest homes on Highland Lake Drive.

SOURCE: RCH GROUP, 2025.

As discussed above, **Tables 9 and 10** shows the predicted nighttime construction noise impacts from aboveground activities (the loudest nighttime construction phase) when measured from the center of each nighttime construction location to the nearest home. As shown in **Tables 9 and 10,** nighttime construction activities at Location 1 would exceed the exterior noise threshold of 5 dB, Leq (1-hour) and the interior noise level threshold of 45 dB, Ldn/CNEL at the nearest receptor that is located approximately 150 feet away from the center of Location 1 construction. Using a reference noise level of 85 dB, Leq at 50 feet for aboveground nighttime construction[4], any noise-sensitive receptor within 600 feet of the center of Location 1 during aboveground work would be expected to exceed the exterior noise threshold of 5 dB, Leq (1-hour) and any noise-sensitive receptor within 300 feet of the center of Location 1 during aboveground work would be expected to exceed the interior noise level threshold of 45 dB, Ldn/CNEL. **Figure 5** shows the homes within 300 feet and 600 feet of the center of nighttime construction Location 1, respectively.

Mitigation Measure NOI-1 has been identified to reduce exterior noise impacts at nearby noise-sensitive locations. In addition, **Mitigation Measure NOI-2** has been identified to reduce interior construction noise nighttime impacts at nearby-noise sensitive locations[5]. These Mitigation Measures would greatly reduce nighttime construction noise levels reaching the nearby noise-sensitive receptors. However, even with the implementation of these measures, nighttime construction noise levels reaching nearby noise-sensitive receptors would likely still exceed the exterior noise threshold of 5 dB, Leq (1-hour) threshold (a readily perceptible increase) and the interior noise level threshold of 45 dB, Ldn/CNEL. This increase in noise would likely result in annoyances and possible sleep disturbances to nearby noise-sensitive receptors. This would be a **Significant and Unavoidable** impact of the Project**.**

Mitigation Measures

Mitigation Measure NOISE-2: At least two weeks prior to nighttime construction occurring at the intersection of Walerga Road and Springhill Drive, the Construction Contractor shall provide written notification to residences within 600 feet of the nighttime construction footprint. The written notification shall provide the estimated start time and duration of the nighttime construction, as well as provide recommendations to these residences to keep windows and doors closed during nighttime construction events.

Project Exterior Noise Impacts

CEQA does not require an analysis of the environment's effects on the Project. However, potential effects to future residents of the Project due to traffic noise along local roadways are evaluated for the purposes of considering the Project's consistency with noise-related Placer County General

[4] See **Noise Appendix** for results of each individual piece of construction equipment. This modeling scenario assumes the following for nighttime aboveground construction: (2x) tractors, front end loader, paver, roller, concrete mixer truck (King Engineering, 2025).

[5] Note that it would not be feasible to construct temporary sound walls along the homes on Springhill Drive due to the existing topography on Springhill Drive. In addition, nighttime work would be very short-term (1-2 weeks in duration).

Plan Policies. As shown in **Table 4,** existing 24-hour noise levels are 67-68 dB, CNEL at Site 1, 73-74 dB, CNEL at Site 2 and 72-73 dB, CNEL at Site 3. Site 1 was chosen to represent the typical noise levels from traffic on Baseline Road that can be expected to reach the northernmost residences in Phase 1. Sites 2 and 3 were chosen to represent the typical noise levels from traffic on Walerga Road that can be expected to reach the exterior areas residences in Phases 2 and 3 that are adjacent to Walerga road.

The Placer County General Plan (Policy 9.A.8) states that new development of noise-sensitive land uses shall not be permitted in areas exposed to existing or projected levels of noise from transportation noise sources, including airports, which exceed the 60 dB, Ldn or CNEL threshold at outdoor activity areas, unless the project design includes effective mitigation measures to reduce noise in outdoor activity areas and interior spaces. Table 9-3 of the Placer County General Plan states that exterior noise levels of up to 65 dB, Ldn or CNEL at outdoor activity areas are considered acceptable provided that the best-available noise reduction measures are implemented.

RCH conducted traffic noise modeling using methodologies from the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108) to model exterior traffic noise impacts from Baseline Road and Walerga Road. Existing and future traffic volumes were provided by Kimley-Horn and are from the Project-specific transportation analysis. The model is based upon noise emission factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The future cumulative plus Project 2044 noise modeling analysis showed that the closest outdoor activity areas to Baseline Road would have a noise level of approximately 72 dB, CNEL and that the closest outdoor activity areas to Walerga Road would have a noise level of approximately 78 dB, CNEL. Therefore, future cumulative plus Project 2044 noise levels would be in excess of the County's 65 dB, Ldn conditionally acceptable standard for exterior noise.

A sound wall would be necessary to reduce the existing and future transportation noise exposure to the closest activity areas to Baseline Road and Walerga Road. The current Tentative Map has the locations of the proposed sound walls between the northern lots of Phase 1 and Baseline Road, between the southern lots of Phase 2 and Walerga Road, and between the northern lots of Phase 3 and Walerga Road. **Tables 11 through 13** summarize the results of noise attenuation analysis of various sound wall heights.

TABLE 11. NOISE MODELING FOR BASELINE ROAD TRAFFIC NOISE (PHASE 1 LOTS)

Sound Wall Height[1]	Noise Level (dB), CNEL Existing[3,4]	Noise Level (dB), CNEL Future 2044[3,4]	Meets the Placer County Exterior Noise Standard?
No Wall[2]	68	72	No
5 Feet	63	67	No
6 Feet	61	65	Yes

NOTES:

1. The modeled sound walls assume flat site conditions where elevations, base of wall elevations and building pad elevations are approximately equivalent.
2. Sound walls less than 5 feet tall were not estimated because they would not break the line of sight between vehicles and backyards.
3. Outdoor activity area noise levels were modeled in the center of the backyards of the proposed Phase 1 Lots closest to the sound wall. These are the closest backyards to Baseline Road
4.Noise levels rounded to the nearest dB.

TABLE 12. NOISE MODELING FOR WALERGA ROAD TRAFFIC NOISE (PHASE 2 LOTS)

Sound Wall Height[1]	Noise Level (dB), CNEL Existing[3,4]	Noise Level (dB), CNEL Future 2044[3,4]	Meets the Placer County Exterior Noise Standard?
No Wall[2]	74	78	No
5 Feet	69	73	No
6 Feet	67	71	No
7 Feet	66	70	No
8 Feet	65	69	No
9 Feet	64	68	No
10 Feet	64	68	No
11 Feet	63	67	No
12 Feet	61	65	Yes

NOTES:

1. The modeled sound walls assume flat site conditions where elevations, base of wall elevations and building pad elevations are approximately equivalent.
2. Sound walls less than 5 feet tall were not estimated because they would not break the line of sight between vehicles and backyards.
3. Outdoor activity area noise levels were modeled in the center of the backyards of the proposed Phase 2 lots closest to the sound wall. These are the closest backyards to Walerga Road.
4.Noise levels rounded to the nearest dB.

TABLE 13. NOISE MODELING FOR WALERGA ROAD TRAFFIC NOISE (PHASE 3 LOTS)

Sound Wall Height[1]	Noise Level (dB), CNEL Existing[3,4]	Noise Level (dB), CNEL Future 2044[3,4]	Meets the Placer County Exterior Noise Standard?
No Wall[2]	74	78	No
5 Feet	65	69	No
6 Feet	64	68	No
7 Feet	63	67	No
8 Feet	62	66	No
9 Feet	61	65	Yes

NOTES:

1. The modeled sound walls assume that the building pad elevations along the Phase 3 lots are an average of 4 feet below the grade of Walerga Road.
2. Sound walls less than 5 feet tall were not estimated because they would not break the line of sight between vehicles and backyards.
3. Outdoor activity area noise levels were modeled in the center of the backyards of the proposed Phase 3 lots closest to the sound wall. These are the closest backyards to Walerga Road.
4.Noise levels rounded to the nearest dB.

As discussed above, CEQA does not require an analysis of the environment's effects on the Project. While not an environmental issue required for analysis under CEQA, the existing and future traffic noise would be in excess of the County's 65 dB, CNEL conditionally acceptable standard for exterior noise. The following recommendations are provided to be consistent with the Placer County General Plan.

Sound Wall Recommendations

- Under projected noise from traffic volumes on Baseline Road, it is recommended that the Applicant constructs a 6-foot-tall sound wall between the northern lots of Phase 1 and Baseline Road. This sound wall can be a combination of earthen berm and masonry wall.

- Under projected noise from traffic volumes on Walerga Road, it is recommended that the Applicant constructs a 12-foot-tall sound wall between the southern lots of Phase 2 and Walerga Road. This sound wall can be a combination of earthen berm and masonry wall.

- Under projected noise from traffic volumes on Walerga Road, it is recommended that the Applicant constructs a 9-foot-tall sound wall between the northern lots of Phase 3 and Walerga Road. This sound wall can be a combination of earthen berm and masonry wall.

Residential building facades typically provide a minimum exterior-to-interior noise reduction of 25-30 dB with windows closed (Caltrans, 2002). Since the exterior noise levels are all estimated to be below 65 dB in the future (with implementation of the abovementioned Project recommendations), the additional 25 dB exterior-to-interior noise reduction would reduce interior noise levels below 40 dB, CNEL (65 dB – 25 dB = 40 dB). Therefore, interior noise levels at the Project residences would be less than the 45 dB, CNEL noise standard.

Traffic Noise Impacts

For the purposes of analyzing potential traffic noise impacts, this analysis considers impacts to be potentially significant if the Project's traffic noise results in an increase of 5 dB, CNEL or greater where the resulting traffic noise levels are less than 60 dB, CNEL; an increase of 3 dB, CNEL or greater in traffic noise where resulting traffic noise levels are 60-65 dB, CNEL; or an increase of 1.5 dB, CNEL or greater in traffic noise where resulting traffic noise levels are above 65 dB, CNEL.

To assess the impact of Project traffic on noise-sensitive receptors adjacent to nearby roadways, noise level projections were made using the methodologies from the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108) to model the predicted future noise levels for road segments that would be used by passenger vehicles nearby the Project site (see **Noise Appendix** for traffic noise level estimates). Existing and future traffic volumes were provided by Kimley-Horn and are from the Project-specific transportation analysis.[6] Estimated traffic noise levels from AM and PM peak hour traffic turning volumes are shown in **Table 14.** Note that the Project also includes the option to develop up to 22 accessory dwelling units (ADUs) to satisfy affordable housing requirements. Since it is unknown how many ADUs would be developed, the additional traffic volume that could be generated by the ADUs was not included in the traffic noise modeling. However, the addition of 22 ADUs would increase project trip generation by less than 5 percent and the resulting traffic noise contribution distributed throughout the analyzed road segments would be negligible.

[6] Future cumulative traffic volumes include the 4-acre rezone site for up to 120 units of affordable housing.

TABLE 14 ESTIMATED AM/PM PEAK HOUR TRAFFIC NOISE LEVELS ALONG ROADWAYS IN THE PROJECT VICINITY

Roadway Segment[1]	Existing (dB, CNEL) (A)	Existing Plus Project (Full Buildout) (dB, CNEL) (B)	Incremental Increase (dB, CNEL) (B-A)	Significant? (Yes or No)	Cumulative 2044 No Project (dB, CNEL) (C)	Cumulative 2044 Plus Project (dB, CNEL) (D)	Incremental Increase (dB, CNEL) (D-C)	Significant? (Yes or No)	Cumulatively Considerable? (Yes or No)
Baseline Road east of Santucci Blvd/Watt Ave (AM)	67.5	67.9	0.4	No	69.7	69.8	0.1	No	No
Baseline Road east of Santucci Blvd/Watt Ave (PM)	68.9	69.2	0.3	No	70.4	70.5	0.1	No	No
Baseline Road east of Westbrook Blvd (AM)	67.4	67.6	0.2	No	70.1	70.2	0.1	No	No
Baseline Road east of Westbrook Blvd (PM)	69.0	69.2	0.2	No	71.1	71.2	0.1	No	No
Westbrook Blvd north of Baseline Road (AM)	60.4	60.4	0.0	No	69.1	69.1	0.0	No	No
Westbrook Blvd north of Baseline Road (PM)	60.0	60.0	0.0	No	70.2	70.2	0.0	No	No
Market Street north of Baseline Road (AM)	62.4	62.4	0.0	No	65.9	65.9	0.0	No	No
Market Street north of Baseline Road (PM)	62.5	62.5	0.0	No	67.0	67.0	0.0	No	No
Baseline Road west of Upland Drive (AM)	67.0	67.2	0.2	No	70.0	70.2	0.2	No	No

Roadway Segment[1]	Existing (dB, CNEL) (A)	Existing Plus Project (Full Buildout) (dB, CNEL) (B)	Incremental Increase (dB, CNEL) (B-A)	Significant? (Yes or No)	Cumulative 2044 No Project (dB, CNEL) (C)	Cumulative 2044 Plus Project (dB, CNEL) (D)	Incremental Increase (dB, CNEL) (D-C)	Significant? (Yes or No)	Cumulatively Considerable? (Yes or No)
Baseline Road west of Upland Drive (PM)	69.8	69.9	0.1	No	71.0	71.1	0.1	No	No
Baseline Road east of Upland Drive (AM)	67.0	67.3	0.3	No	70.6	70.7	0.1	No	No
Baseline Road east of Upland Drive (PM)	70.3	70.5	0.2	No	71.5	71.6	0.1	No	No
Fiddyment Road north of Baseline Road (AM)	71.3	71.4	0.1	No	73.1	73.1	0.0	No	No
Fiddyment Road north of Baseline Road (PM)	70.4	71.5	1.1	No	73.3	73.3	0.0	No	No
Crowder Lane south of Baseline Road (AM)	55.2	56.3	1.1	No	57.2	58.0	0.8	No	No
Crowder Lane south of Baseline Road (PM)	53.9	55.7	1.8	No	57.2	58.1	0.9	No	No
Vineyard Road west of Crowder Lane (AM)	49.0	52.7	3.7	No	51.4	54.6	3.2	No	No
Vineyard Road west of Crowder Lane (PM)	51.4	53.3	1.9	No	51.4	55.0	3.6	No	No
Crowder Lane north of Vineyard Road (AM)	55.6	56.5	0.9	No	57.2	58.0	0.8	No	No

Roadway Segment[1]	Existing (dB, CNEL) (A)	Existing Plus Project (Full Buildout) (dB, CNEL) (B)	Incremental Increase (dB, CNEL) (B-A)	Significant? (Yes or No)	Cumulative 2044 No Project (dB, CNEL) (C)	Cumulative 2044 Plus Project (dB, CNEL) (D)	Incremental Increase (dB, CNEL) (D-C)	Significant? (Yes or No)	Cumulatively Considerable? (Yes or No)
Crowder Lane north of Vineyard Road (PM)	54.4	55.3	0.9	No	56.9	57.9	1.0	No	No
Walerga Road south of Springhill Drive (AM)	68.9[2]	69.1	0.2	No	72.1	72.1	0.0	No	No
Walerga Road south of Springhill Drive (PM)	68.8[2]	69.1	0.3	No	72.3	72.4	0.1	No	No
Springhill Drive west of Walerga Road (AM)	41.1	49.0	7.9	No	45.0	50.0	5.0	No	No
Springhill Drive west of Walerga Road (PM)	39.5	46.2	6.7	No	42.9	48.0	5.1	No	No
Springhill Drive east of Walerga Road (AM)	44.1	44.1	0.0	No	46.3	46.3	0.0	No	No
Springhill Drive east of Walerga Road (PM)	43.7	44.3	0.6	No	45.0	45.0	0.0	No	No
Town Center Ave west of Walerga Road (AM)	57.8	57.8	0.0	No	58.1	58.1	0.0	No	No
Town Center Ave west of Walerga Road (PM)	57.0	57.0	0.0	No	57.2	57.2	0.0	No	No
PFE Road east of Walerga Road (AM)	63.3	63.6	0.3	No	64.2	64.4	0.2	No	No
PFE Road east of Walerga Road (PM)	63.3	63.7	0.4	No	64.6	64.9	0.3	No	No

Roadway Segment[1]	Existing (dB, CNEL) (A)	Existing Plus Project (Full Buildout) (dB, CNEL) (B)	Incremental Increase (dB, CNEL) (B-A)	Significant? (Yes or No)	Cumulative 2044 No Project (dB, CNEL) (C)	Cumulative 2044 Plus Project (dB, CNEL) (D)	Incremental Increase (dB, CNEL) (D-C)	Significant? (Yes or No)	Cumulatively Considerable? (Yes or No)
PFE Road west of Walerga Road (AM)	63.2	63.6	0.4	No	64.2	64.4	0.2	No	No
PFE Road west of Walerga Road (PM)	62.7	63.3	0.6	No	67.1	67.3	0.2	No	No

NOTES:

1 Road center to model receptor distance is 30 meters (approximately 100 feet) for values shown in this table. Noise levels were calculated using the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108). An attenuation rate of 3.0 dB was used as traffic noise is a line source and the ground absorption characteristics were soft sites for all the modeled locations.

2 The existing noise level from traffic noise is up to 74 dB, CNEL (see **Table 4**, Site 2).

Note: A total of 84 roadway segments were modeled as part of the traffic noise analysis. Other modeled roadway segments are shown in the **Noise Appendix.** The roadway segments that are not shown in this table did not result in any significant incremental noise increases.

SOURCE: RCH GROUP, 2025.

As shown in **Table 14,** traffic noise from the Project would cause a very minimal incremental increase compared to existing and future cumulative noise levels at the majority of the modeled roadway segments. The results for the Vineyard Road west of Crowder Lane segment indicate a 3.7 dB, CNEL increase for existing plus Project (AM Peak Hour) and a 3.6 dB, CNEL increase from Cumulative plus Project (PM Peak Hour). However, the resulting noise levels for both scenarios would be below 60 dB, CNEL. Thus, this incremental increase would not exceed any threshold.

As shown in **Table 14,** the results for the Springhill Drive west of Walerga Road indicate a 7.9 dB, CNEL increase for existing plus Project (AM Peak Hour), a 6.7 dB, CNEL increase for existing plus Project (PM Peak Hour), a 5.0 dB, CNEL increase for Cumulative plus Project (AM Peak Hour), and a 5.1 dB, CNEL increase for Cumulative plus Project (PM Peak Hour). The results of the modeling for this segment exceeds a 5 dB, CNEL increase for all modeled scenarios. However, this segment of roadway is only approximately 230 feet long (before it intersects with Bridgestone Crescent Road to the north) and is adjacent to only one home that is north of the corner of Walerga Road and Springhill Drive. The noise modeling indicates that highest resulting noise level on this segment would be 50.0 dB, CNEL (Cumulative plus Project, AM Peak Hour). This noise level is well below the existing traffic noise on Walerga Road (73-74 dB, CNEL) that already reaches the abovementioned home.[7] A resulting noise level of 50.0 dB, CNEL (at the highest) at this segment would be completely masked by the traffic noise that already exists on Walerga Road that reaches this home. Therefore, this increase in noise level would be negligible compared to the existing traffic noise nearby this segment and would not be perceptible at the nearest home. Therefore, incremental traffic noise increases from the Project would result in a **less-than-significant impact.**

Pickleball Noise Impacts from the Project

Once operational, the Project would include two pickleball courts as part of the Phase 2 outdoor recreation amenities. Noise generated by pickleball gameplay would be required to comply with the County's Noise Ordinance § 9.36.060 for daytime noise levels which is a maximum daytime (7 a.m. to 10 p.m.) outdoor noise level of 70 dB, Lmax when measured at the nearest property line.

To analyze potential outdoor noise impacts from pickleball courts, RCH conducted short-term measurements during a pickleball gameplay event[8]. Short-term noise measurements were taken at 50 feet from the center of the court. The gameplay consisted of two players on a single court. The primary noise level measured was the contact between the paddle and the ball which ranged from 52-61 dB, Lmax at 50 feet. The secondary source of noise was conversation between players which ranged from 50-54 dB, Lmax at 50 feet.

The nearest off-site residential property line is approximately 500 feet away. Based on the representative measurements taken during a pickleball gameplay event, pickleball gameplay noise

[7] The noise measurement taken at Site 2 was taken approximately 50 feet away from the home on the intersection of Springhill Drive and Walerga Road.

[8] Representative measurements were taken on September 30, 2025, at the Oasis Park Pickleball Courts in Elk Grove, California.

would be expected to range between 25-36 dB, Lmax[9] at the nearest residential property line. These noise levels would be well below the County's daytime outdoor noise level threshold of 70 dB, Lmax and would likely not be perceptible over other outdoor noise sources. Therefore, noise from pickleball gameplay would result in a **less-than-significant impact.**

Stationary Noise Impacts from the Project

Once operational, the Project would not produce substantial levels of on-site noise. The Project would include heating, ventilating and air conditioning equipment (HVAC) which is assumed to be rooftop mounted at the multi-family apartment units and ground-level at the single-family residential lots. Mechanical equipment would be required to comply with the most conservative threshold in the County's Noise Ordinance § 9.36.060 which is a maximum nighttime (10 p.m. to 7 a.m.) outdoor noise level of 45 dB, Hourly Leq when measured at the nearest property line.

Noise levels of up to 54 dB at a distance of 15 feet are typical for standard residential HVAC equipment[10]. Rooftop mounted HVAC equipment could be as close as 130 feet from the nearest residential property line. At this distance, noise levels from rooftop mounted HVAC equipment would attenuate to approximately 35 dB. Ground-level HVAC equipment could be as close as 50 feet from the nearest residential property line. At this distance, noise levels from ground-level HVAC equipment would attenuate to approximately 44 dB. These noise levels would not exceed the 45 dB, Hourly Leq threshold. Therefore, noise from mechanical equipment would result in a **less-than-significant impact.**

---

b) Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Construction activities have the potential to result in varying degrees of temporary ground vibration, depending on the specific construction equipment used and operations involved. In most cases, vibration induced by typical construction equipment does not result in adverse effects on people or structures (Caltrans, 2013). At the highest levels of vibration, damage to structures is primarily architectural (e.g., loosening and cracking of plaster or stucco coatings) and rarely results in structural damage. For vibration, a PPV threshold of 0.5 inch per second or greater can cause architectural damage and minor structural damage. The FTA recommends a threshold of 0.5 PPV for residential and commercial structures (FTA, 2006).

As discussed above, the nearest residences would be located directly east of the proposed Phase 2 lots (along Wellbrook Place and Bridgestone Crescent Road) and directly south of the proposed Phase 4 lots (along French Creek Court, Eagle Creek Court, Marsh Creek Court, and Rockporte Court). Based on the current site layout, several pieces of heavy equipment could be used for

[9] Assuming a 7.5 dB reduction per doubling of distance.

[10] RCH observed noise from a typical residential single-stage air conditioner unit operating at full capacity, which produced a constant noise level of 54 dB at 15 feet.

construction as near as 25 feet from nearby residential structures. The estimated PPV for heavy construction equipment that could be used at 25 feet is summarized in **Table 15** below.

TABLE 15. VIBRATION (PPV) LEVELS DURING CONSTRUCTION

Construction Equipment	PPV at 25 feet (in/sec)	Exceeds 0.5 in/sec FTA PPV Threshold?
Roller	0.21	No
Excavator[1]	0.175	No
Loaded Trucks	0.076	No
Backhoe[1]	0.028	No
Loader[1]	0.0263	No

NOTES:
[1] Construction Equipment PPV reference from NHDOT, *Ground Vibrations Emanating from Construction Equipment* (FHWA-NH-RD-12323W), 2012.

SOURCE: Federal Transit Administration, 2006.

As shown in **Table 15**, the predicted vibration levels would not exceed the FTA's 0.5 PPV threshold when they are in use at 25 feet away from the adjacent residential structures. The majority of construction would occur at distances far greater than 25 feet away from adjacent residential structures. Therefore, construction vibration would result in a **less-than-significant impact.**

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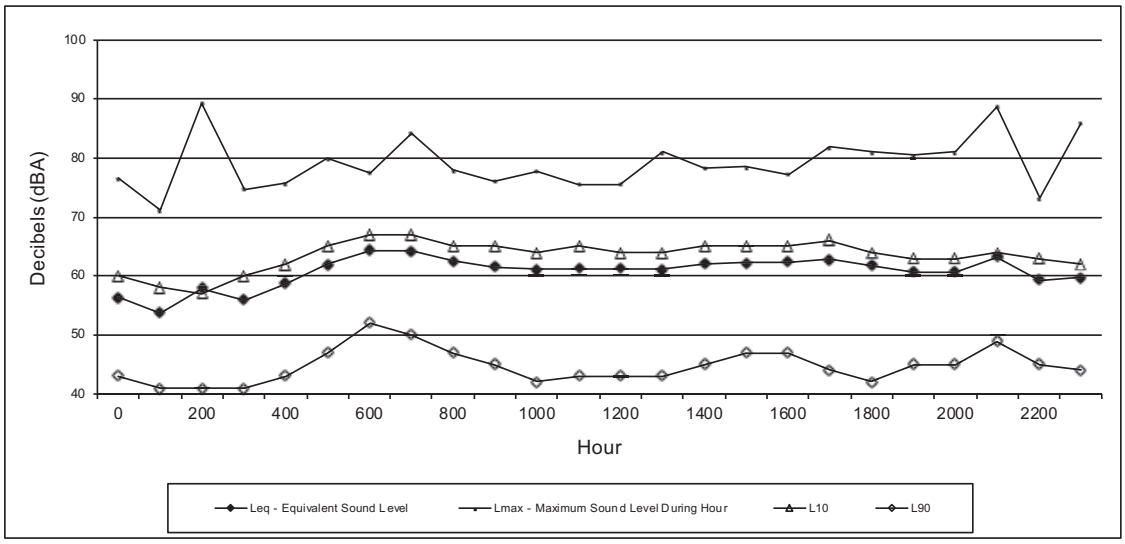
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Noise Appendix

I. Long Term Noise Measurement Graphs for Sites 1-3
II. RCNM Results
III. Traffic Noise Level Estimates

I. Long-Term Measurement Graphs for Sites 1-3

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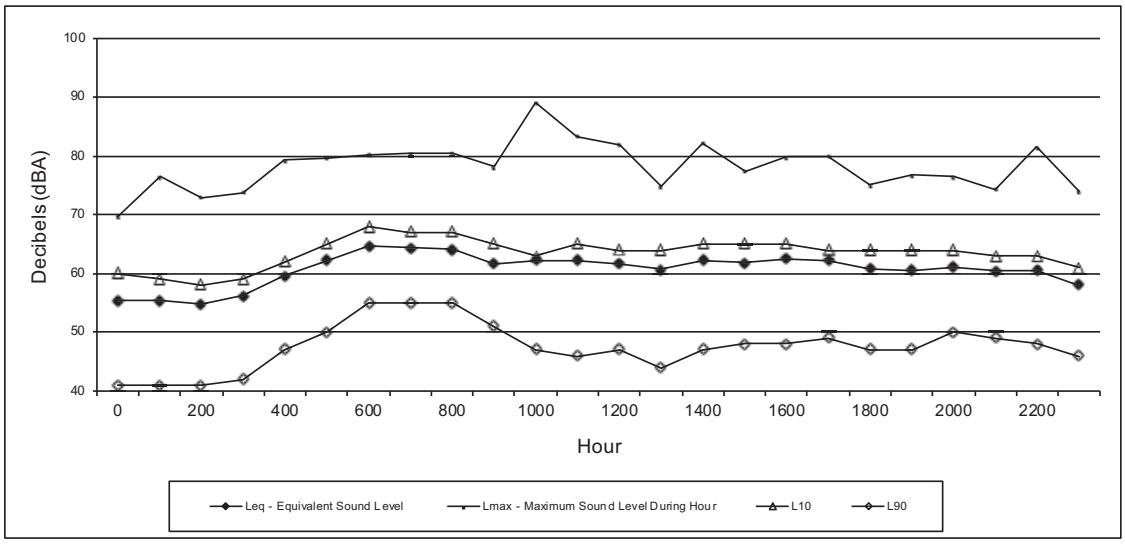


Site 1: Northwest corner of the Project site, approximately 100 feet south of centerline of Baseline Road
Tuesday June 25, 2024

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	56	77	60	43
100	54	71	58	41
200	58	89	57	41
300	56	75	60	41
400	59	76	62	43
500	62	80	65	47
600	64	78	67	52
700	64	84	67	50
800	63	78	65	47
900	62	76	65	45
1000	61	78	64	42
1100	61	76	65	43
1200	61	76	64	43
1300	61	81	64	43
1400	62	78	65	45
1500	62	79	65	47
1600	62	77	65	47
1700	63	82	66	44
1800	62	81	64	42
1900	61	81	63	45
2000	61	81	63	45
2100	63	89	64	49
2200	59	73	63	45
2300	60	86	62	44

CNEL 67

* Figure not OCR Compatible

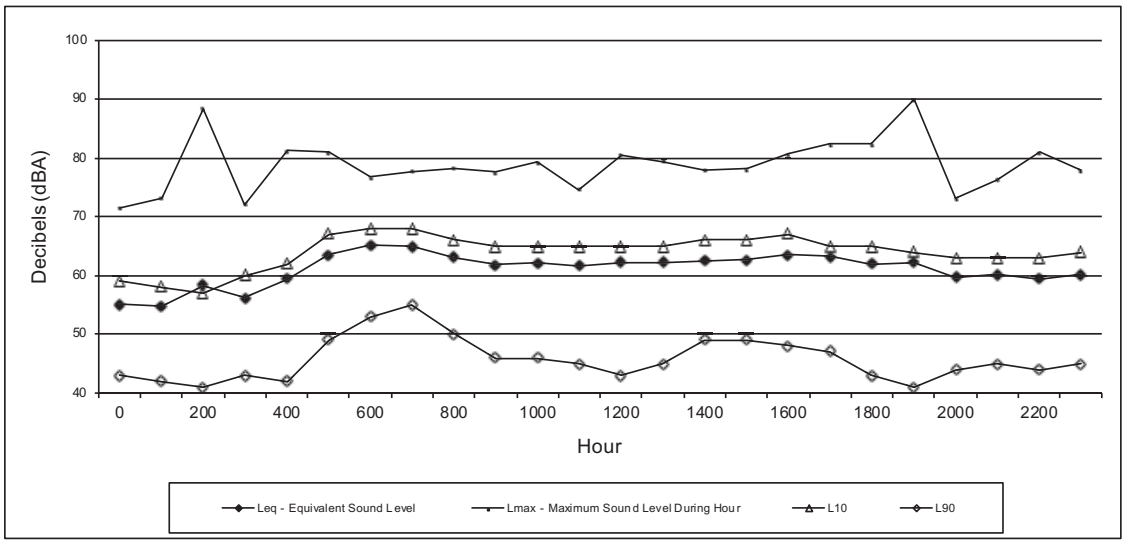


Site 1: Northwest corner of the Project site, approximately 100 feet south of centerline of Baseline Road
Wednesday June 26, 2024

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	55	70	60	41
100	55	76	59	41
200	55	73	58	41
300	56	74	59	42
400	60	79	62	47
500	62	80	65	50
600	65	80	68	55
700	64	80	67	55
800	64	81	67	55
900	62	78	65	51
1000	62	89	63	47
1100	62	83	65	46
1200	62	82	64	47
1300	61	75	64	44
1400	62	82	65	47
1500	62	77	65	48
1600	63	80	65	48
1700	62	80	64	49
1800	61	75	64	47
1900	61	77	64	47
2000	61	77	64	50
2100	60	74	63	49
2200	61	82	63	48
2300	58	74	61	46

CNEL: 67

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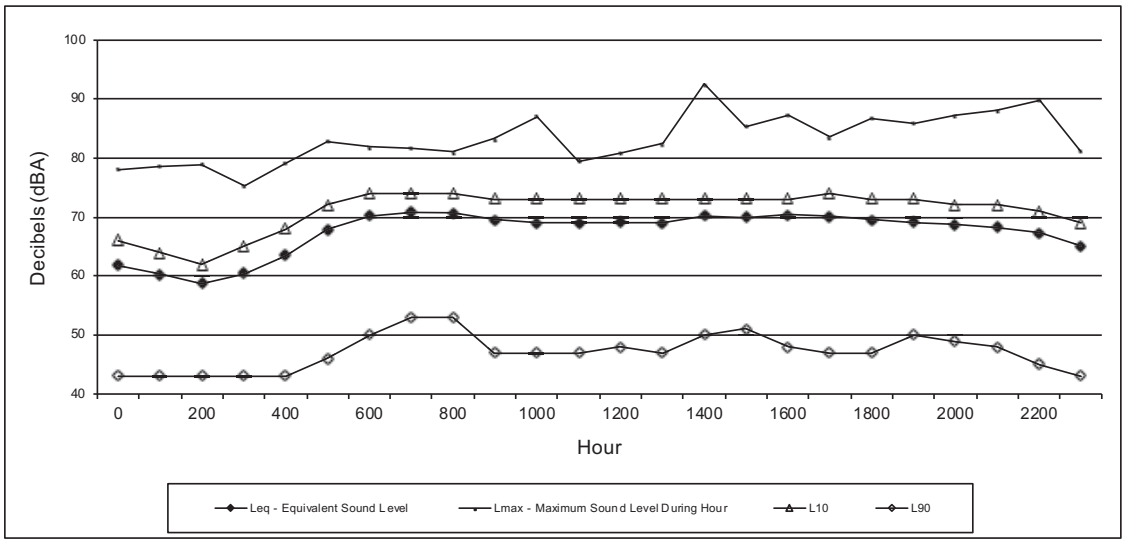


Site 1: Northwest corner of the Project site, approximately 100 feet south of centerline of Baseline Road
Thursday June 27, 2024

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	55	72	59	43
100	55	73	58	42
200	58	89	57	41
300	56	72	60	43
400	59	81	62	42
500	64	81	67	49
600	65	77	68	53
700	65	78	68	55
800	63	78	66	50
900	62	78	65	46
1000	62	79	65	46
1100	62	75	65	45
1200	62	81	65	43
1300	62	79	65	45
1400	63	78	66	49
1500	63	78	66	49
1600	64	81	67	48
1700	63	82	65	47
1800	62	82	65	43
1900	62	90	64	41
2000	60	73	63	44
2100	60	76	63	45
2200	60	81	63	44
2300	60	78	64	45

CNEL: 68

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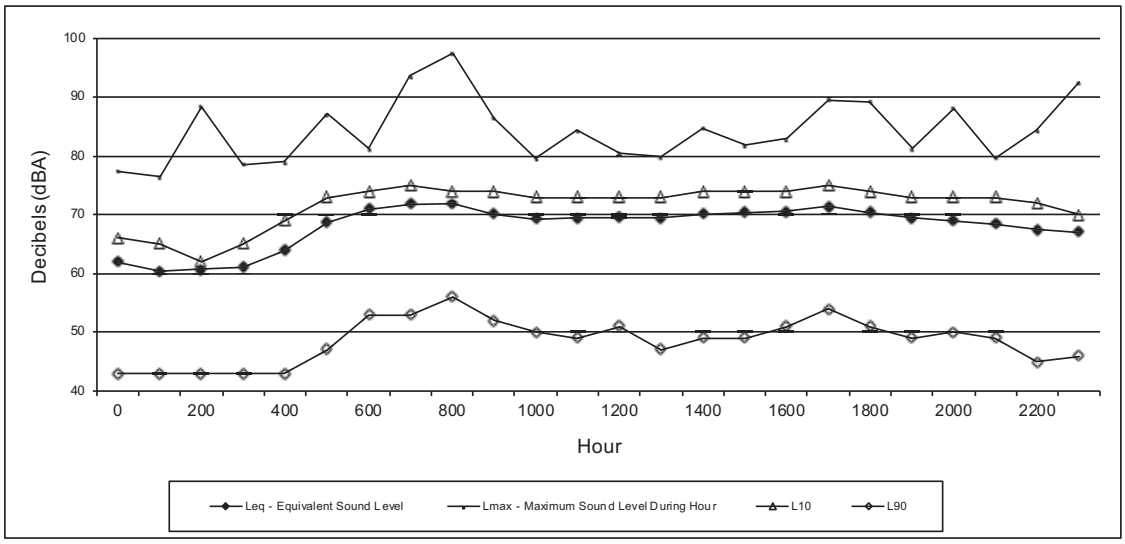


Site 2: Intersection of Walerga Road and Springhill Drive, approximately 70 feet north of centerline of Walerga Road
Tuesday June 25, 2024

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	62	78	66	43
100	60	79	64	43
200	59	79	62	43
300	60	75	65	43
400	64	79	68	43
500	68	83	72	46
600	70	82	74	50
700	71	82	74	53
800	71	81	74	53
900	70	83	73	47
1000	69	87	73	47
1100	69	80	73	47
1200	69	81	73	48
1300	69	83	73	47
1400	70	93	73	50
1500	70	85	73	51
1600	70	87	73	48
1700	70	84	74	47
1800	70	87	73	47
1900	69	86	73	50
2000	69	87	72	49
2100	68	88	72	48
2200	67	90	71	45
2300	65	81	69	43

CNEL 73

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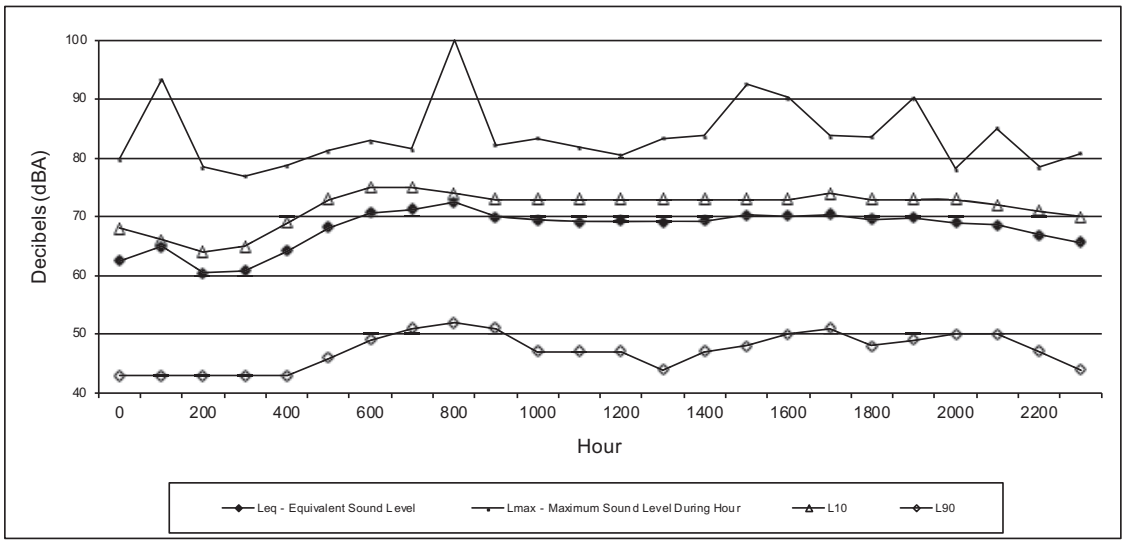


Site 2: Intersection of Walerga Road and Springhill Drive, approximately 70 feet north of centerline of Walerga Road
Wednesday June 26, 2024

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	62	77	66	43
100	60	77	65	43
200	61	88	62	43
300	61	79	65	43
400	64	79	69	43
500	69	87	73	47
600	71	81	74	53
700	72	94	75	53
800	72	98	74	56
900	70	86	74	52
1000	69	80	73	50
1100	69	84	73	49
1200	70	81	73	51
1300	70	80	73	47
1400	70	85	74	49
1500	70	82	74	49
1600	71	83	74	51
1700	71	90	75	54
1800	70	89	74	51
1900	69	81	73	49
2000	69	88	73	50
2100	69	80	73	49
2200	67	84	72	45
2300	67	93	70	46

CNEL: 74

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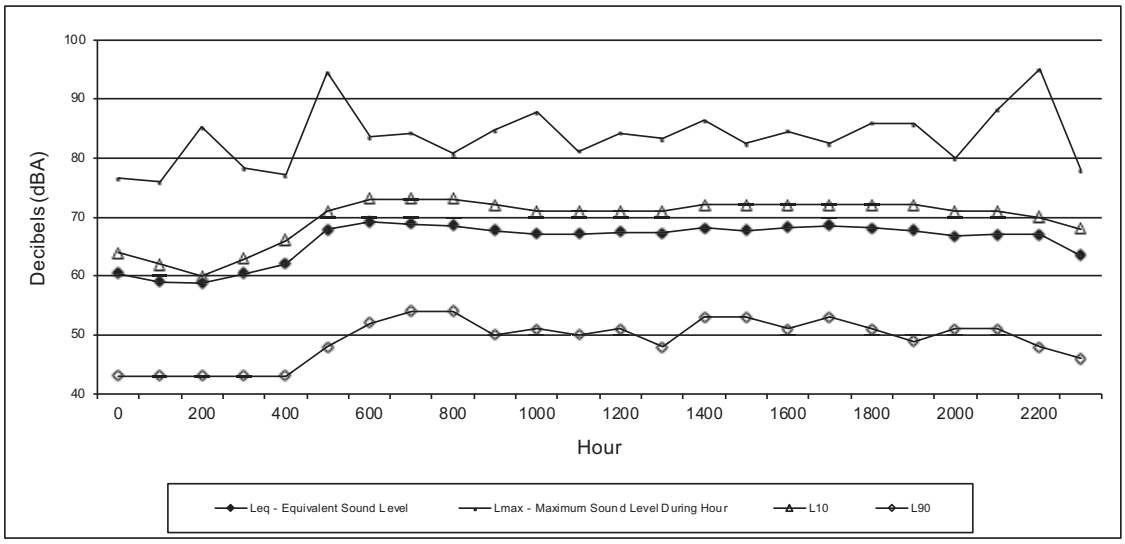


Site 2: Intersection of Walerga Road and Springhill Drive, approximately 70 feet north of centerline of Walerga Road
Thursday June 27, 2024

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	63	80	68	43
100	65	93	66	43
200	61	79	64	43
300	61	77	65	43
400	64	79	69	43
500	68	81	73	46
600	71	83	75	49
700	71	82	75	51
800	73	100	74	52
900	70	82	73	51
1000	69	83	73	47
1100	69	82	73	47
1200	69	81	73	47
1300	69	83	73	44
1400	69	84	73	47
1500	70	93	73	48
1600	70	90	73	50
1700	70	84	74	51
1800	70	84	73	48
1900	70	90	73	49
2000	69	78	73	50
2100	69	85	72	50
2200	67	78	71	47
2300	66	81	70	44

CNEL: 74

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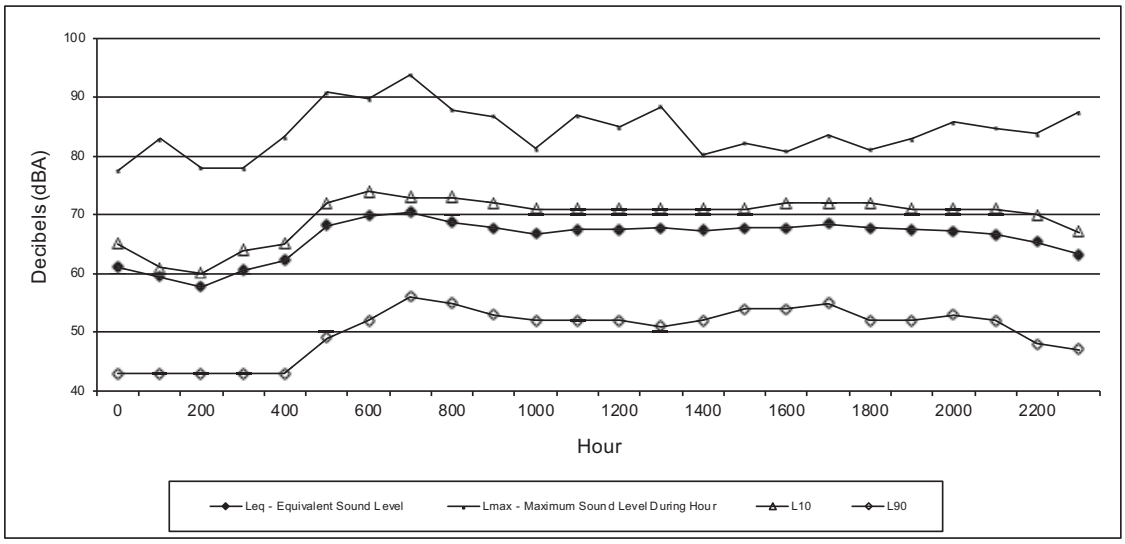


Site 3: Approximately 100 feet south of centerline of Walerga Road
Tuesday June 25, 2024

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	60	77	64	43
100	59	76	62	43
200	59	85	60	43
300	60	78	63	43
400	62	77	66	43
500	68	95	71	48
600	69	84	73	52
700	69	84	73	54
800	69	81	73	54
900	68	85	72	50
1000	67	88	71	51
1100	67	81	71	50
1200	68	84	71	51
1300	67	83	71	48
1400	68	86	72	53
1500	68	83	72	53
1600	68	85	72	51
1700	69	83	72	53
1800	68	86	72	51
1900	68	86	72	49
2000	67	80	71	51
2100	67	88	71	51
2200	67	95	70	48
2300	64	78	68	46

CNEL 72

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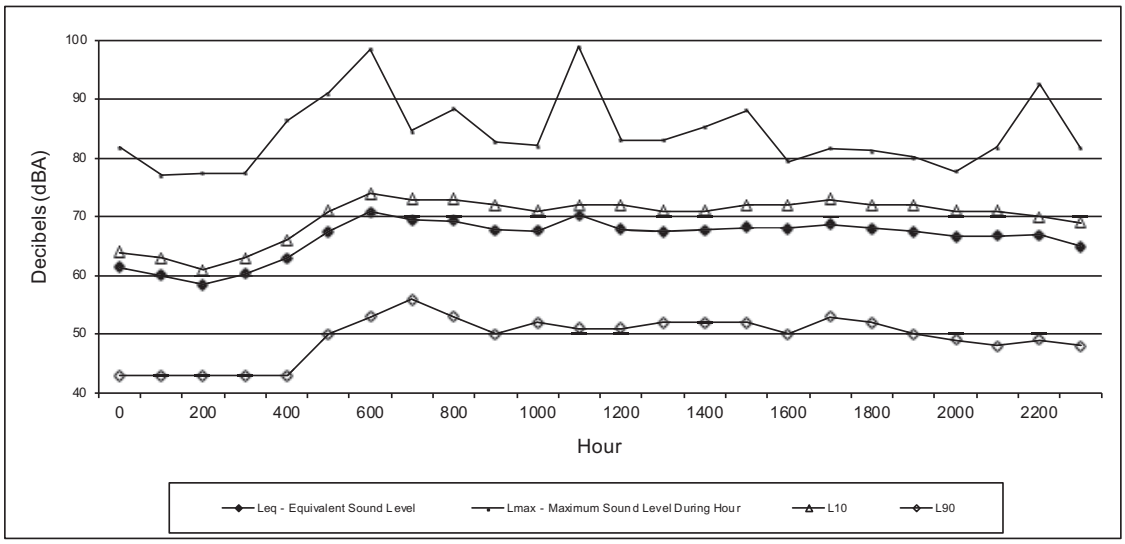


Site 3: Approximately 100 feet south of centerline of Walerga Road
Wednesday June 26, 2024

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	61	78	65	43
100	59	83	61	43
200	58	78	60	43
300	61	78	64	43
400	62	83	65	43
500	68	91	72	49
600	70	90	74	52
700	70	94	73	56
800	69	88	73	55
900	68	87	72	53
1000	67	81	71	52
1100	67	87	71	52
1200	67	85	71	52
1300	68	88	71	51
1400	67	80	71	52
1500	68	82	71	54
1600	68	81	72	54
1700	69	84	72	55
1800	68	81	72	52
1900	67	83	71	52
2000	67	86	71	53
2100	67	85	71	52
2200	65	84	70	48
2300	63	88	67	47

CNEL: 72

* Figure not OCR Compatible



Site 3: Approximately 100 feet south of centerline of Walerga Road
Thursday June 27, 2024

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	61	82	64	43
100	60	77	63	43
200	59	78	61	43
300	60	77	63	43
400	63	87	66	43
500	68	91	71	50
600	71	99	74	53
700	70	85	73	56
800	69	88	73	53
900	68	83	72	50
1000	68	82	71	52
1100	70	99	72	51
1200	68	83	72	51
1300	67	83	71	52
1400	68	85	71	52
1500	68	88	72	52
1600	68	79	72	50
1700	69	82	73	53
1800	68	81	72	52
1900	68	80	72	50
2000	67	78	71	49
2100	67	82	71	48
2200	67	93	70	49
2300	65	82	69	48

CNEL: 73

II. RCNM Results

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/10/2025
Case Description: Grading Phase – Placer Estia Dry Creek

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Grading Phase	Residential	70.0	68.0	58.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	50.0	0.0
Excavator	No	40		80.7	50.0	0.0
Excavator	No	40		80.7	50.0	0.0
Front End Loader	No	40		79.1	50.0	0.0
Front End Loader	No	40		79.1	50.0	0.0
Dump Truck	No	40		76.5	50.0	0.0
Dump Truck	No	40		76.5	50.0	0.0

Results

Calculated (dBA) Day	Evening	Night	Noise Limits (dBA) Day	Evening	Night	Noise Limit Exceedance (dBA) Day	Evening	Night

Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	76.5	72.5	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	76.5	72.5	N/A	N/A	N/A	N/A	N/A	N/A
Total	80.7	83.8	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/10/2025
Case Description: Nighttime Work - Placer County Estia Dry Creek

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nighttime Work - Aboveground	Residential	70.0	68.0	58.0

Equipment Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84.0		50.0	0.0
Tractor	No	40	84.0		50.0	0.0
Front End Loader	No	40		79.1	50.0	0.0
Paver	No	50		77.2	50.0	0.0
Roller	No	20		80.0	50.0	0.0
Concrete Mixer Truck	No	40		78.8	50.0	0.0

Results

Noise Limits (dBA)	Noise Limit Exceedance (dBA)					
	Calculated (dBA)		Day		Evening	
Night	Day	Evening	Night			

Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	77.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	80.0	73.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck	78.8	74.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	84.0	84.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/10/2025
Case Description: Nighttime Work - Placer County Estia Dry Creek

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nighttime Work - Underground	Residential	70.0	68.0	58.0

Equipment Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84.0		50.0	0.0
Front End Loader	No	40		79.1	50.0	0.0
Excavator	No	40		80.7	50.0	0.0
Excavator	No	40		80.7	50.0	0.0
Backhoe	No	40		77.6	50.0	0.0
Compressor (air)	No	40		77.7	50.0	0.0

Results

	Calculated (dBA) Day	Evening	Night	Noise Limits (dBA) Day	Evening	Night	Noise Limit Exceedance (dBA) Day	Evening	Night

Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)	77.7	73.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	84.0	84.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

III. Traffic Noise Level Estimates

Traffic Noise Level Estimates rev. 3/16/07

Placer County Dry Creek Estia - AM Peak Hour 15m= 49.2 FEET 7.768800497

ROAD SEGMENT #1: Baseline Road East of Santucci	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto %	Medium Truck MT %	Heavy Truck HT %	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	1,563	97 1,516	2 31	1 16		45 72	45 45	45 72	69.3	57.5	63.7	70.5	30	67.5	66.0	0.0
Existing Plus Project Full Buildout	1,629	97 1,580	2 33	1 16		45 72	45 72	45 72	69.4	60.9	63.9	70.9	30	67.9	66.3	0.3
Cumulative No Project	2,475	97 2,401	2 50	1 25		45 72	45 72	45 72	71.3	62.7	65.7	72.8	30	69.7	68.1	2.2
Cumulative Plus Project	2,541	97 2,465	2 51	1 25		45 72	45 72	45 72	71.4	62.8	65.8	72.9	30	69.8	68.3	2.3

ROAD SEGMENT #2: Baseline Road West of Santucci	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto %	Medium Truck MT %	Heavy Truck HT %	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	1,073	97 1,041	2 21	1 11		45 72	45 72	45 72	67.6	59.1	62.1	69.1	30	66.1	64.5	0.0
Existing Plus Project Full Buildout	1,160	97 1,125	2 23	1 12		45 72	45 72	45 72	68.0	59.4	62.4	69.5	30	66.4	64.9	0.3
Cumulative No Project	2,460	97 2,386	2 49	1 25		45 72	45 72	45 72	71.2	62.7	65.7	72.7	30	69.7	68.1	3.6
Cumulative Plus Project	2,547	97 2,471	2 51	1 25		45 72	45 72	45 72	71.4	62.8	65.8	72.9	30	69.8	68.3	3.8

ROAD SEGMENT #3: Watt Ave South of Baseline Road	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto %	Medium Truck MT %	Heavy Truck HT %	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	843	97 818	2 17	1 8		45 72	45 72	45 72	66.6	58.0	61.0	68.1	30	65.0	63.5	0.0
Existing Plus Project Full Buildout	872	97 846	2 17	1 9		45 72	45 72	45 72	66.7	58.2	61.2	68.2	30	65.2	63.6	0.1
Cumulative No Project	3,210	97 3,114	2 64	1 32		45 72	45 72	45 72	72.4	63.8	66.8	73.9	30	70.8	69.3	5.8
Cumulative Plus Project	3,239	97 3,142	2 65	1 32		45 72	45 72	45 72	72.4	63.8	66.9	73.9	30	70.9	69.3	5.8

ROAD SEGMENT #4: Santucci Blvd North of Baseline Road	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto %	Medium Truck MT %	Heavy Truck HT %	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	233	97 226	2 5	1 2		45 72	45 72	45 72	61.0	52.4	55.4	62.5	30	59.4	57.9	0.0
Existing Plue Project Full Buildout	233	97 226	2 5	1 2		45 72	45 72	45 72	61.0	52.4	55.4	62.5	30	59.4	57.9	0.0
Cumulative No Project	3,405	97 3,303	2 68	1 34		45 72	45 72	45 72	72.6	64.1	67.1	74.2	30	71.1	69.5	11.6
Cumulative Plus Project	3,405	97 3,303	2 68	1 34		45 72	45 72	45 72	72.6	64.1	67.1	74.2	30	71.1	69.5	11.6

ROAD SEGMENT #5: Baseline Road West of Westbrook Blvd	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto %	Medium Truck MT %	Heavy Truck HT %	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	1,563	97 1,516	2 31	1 16		45 72	45 72	45 72	69.3	60.7	63.7	70.8	30	67.7	66.2	0.0
Existing Plus Project Full Buildout	1,631	97 1,582	2 33	1 16		45 72	45 72	45 72	69.4	60.9	63.9	71.0	30	67.9	66.3	0.2
Cumulative No Project	2,450	97 2,377	2 49	1 25		45 72	45 72	45 72	71.2	62.6	65.6	72.7	30	69.6	68.1	2.0
Cumulative Plus Project	2,518	97 2,442	2 50	1 25		45 72	45 72	45 72	71.3	62.8	65.8	72.8	30	69.8	68.2	2.1

ROAD SEGMENT #6: Baseline Road East of Westbrook Blvd	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto %	Medium Truck MT %	Heavy Truck HT %	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	1,469	97 1,425	2 29	1 15		45 72	45 72	45 72	69.0	60.4	63.4	70.5	30	67.4	65.9	0.0
Existing Plus Project Full Buildout	1,537	97 1,491	2 31	1 15		45 72	45 72	45 72	69.2	60.6	63.6	70.7	30	67.6	66.1	0.2
Cumulative No Project	2,705	97 2,624	2 54	1 27		45 72	45 72	45 72	71.6	63.1	66.1	73.2	30	70.1	68.5	2.7
Cumulative Plus Project	2,773	97 2,690	2 55	1 28		45 72	45 72	45 72	71.7	63.2	66.2	73.3	30	70.2	68.6	2.8

ROAD SEGMENT #7: Westbrook Blvd South of Baseline Road	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto %	Medium Truck MT %	Heavy Truck HT %	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	0	97 0	2 0	1 0		45 72	45 72	45 72	27.3	18.7	21.7	28.8	30	25.8	24.2	0.0
Existing Plus Project Full Buildout	0	97 0	2 0	1 0		45 72	45 72	45 72	27.3	18.7	21.7	28.8	30	25.8	24.2	0.0
Cumulative No Project	2,375	97 2,304	2 48	1 24		45 72	45 72	45 72	71.1	62.5	65.5	72.6	30	69.5	68.0	43.8
Cumulative Plus Project	2,375	97 2,304	2 48	1 24		45 72	45 72	45 72	71.1	62.5	65.5	72.6	30	69.5	68.0	43.8

ROAD SEGMENT #8: Westbrook Blvd North of Baseline Road	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto %	Medium Truck MT %	Heavy Truck HT %	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	290	97 281	2 6	1 3		45 72	45 72	45 72	61.9	53.4	56.4	63.5	30	60.4	58.8	0.0
Existing Plus Project Full Buildout	290	97 281	2 6	1 3		45 72	45 72	45 72	61.9	53.4	56.4	63.5	30	60.4	58.8	0.0
Cumulative No Project	2,140	97 2,076	2 43	1 21		45 72	45 72	45 72	70.6	62.0	65.1	72.1	30	69.1	67.5	8.7
Cumulative Plus Project	2,140	97 2,076	2 43	1 21		45 72	45 72	45 72	70.6	62.0	65.1	72.1	30	69.1	67.5	8.7

ROAD SEGMENT #9: Baseline Road West of Market/Stargazer	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto %	Medium Truck MT %	Heavy Truck HT %	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	1,480	97 1,436	2 30	1 15		45 72	45 72	45 72	69.0	60.4	63.5	70.5	30	67.5	65.9	0.0
Existing Plus Project Full Buildout	1,548	97 1,502	2 31	1 15		45 72	45 72	45 72	69.2	60.6	63.6	70.7	30	67.6	66.1	0.2
Cumulative No Project	2,720	97 2,638	2 54	1 27		45 72	45 72	45 72	71.7	63.1	66.1	73.2	30	70.1	68.6	2.6
Cumulative Plus Project	2,788	97 2,704	2 56	1 28		45 72	45 72	45 72	71.8	63.2	66.2	73.3	30	70.2	68.7	2.8

ROAD SEGMENT #10: Baseline Road East of Market/Stargazer	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto %	Medium Truck MT %	Heavy Truck HT %	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	1,322	97 1,282	2 26	1 13		45 72	45 72	45 72	68.5	60.0	63.0	70.0	30	67.0	65.4	0.0
Existing Plus Project Full Buildout	1,390	97 1,348	2 28	1 14		45 72	45 72	45 72	68.7	60.2	63.2	70.3	30	67.2	65.6	0.2
Cumulative No Project	2,690	97 2,609	2 54	1 27		45 72	45 72	45 72	71.6	63.0	66.0	73.1	30	70.0	68.5	3.1
Cumulative Plus Project	2,758	97 2,675	2 55	1 28		45 72	45 72	45 72	71.7	63.2	66.2	73.2	30	70.2	68.6	3.2

ROAD SEGMENT #11: Market Street North of Baseline Road	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto %	Medium Truck MT %	Heavy Truck HT %	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	466	97 452	2 9	1 5		45 72	45 72	45 72	64.0	55.4	58.4	65.5	30	62.4	60.9	0.0
Existing Plus Project Full Buildout	466	97 452	2 9	1 5		45 72	45 72	45 72	64.0	55.4	58.4	65.5	30	62.4	60.9	0.0
Cumulative No Project	1,035	97 1,004	2 21	1 10		45 72	45 72	45 72	67.5	58.9	61.9	69.0	30	65.9	64.4	3.5
Cumulative Plus Project	1,035	97 1,004	2 21	1 10		45 72	45 72	45 72	67.5	58.9	61.9	69.0	30	65.9	64.4	3.5

ROAD SEGMENT #12: Stargazer Drive South of Baseline Road	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto %	Medium Truck MT %	Heavy Truck HT %	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	104	97 101	2 2	1 1		45 72	45 72	45 72	57.5	48.9	51.9	59.0	30	55.9	54.4	0.0
Existing Plus Project Full Buildout	104	97 101	2 2	1 1		45 72	45 72	45 72	57.5	48.9	51.9	59.0	30	55.9	54.4	0.0
Cumulative No Project	355	97 344	2 7	1 4		45 72	45 72	45 72	62.8	54.2	57.3	64.3	30	61.3	59.7	5.3
Cumulative Plus Project	355	97 344	2 7	1 4		45 72	45 72	45 72	62.8	54.2	57.3	64.3	30	61.3	59.7	5.3

ROAD SEGMENT #13: Baseline Road West of Upland Drive	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto %	Medium Truck MT %	Heavy Truck HT %	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	1,326	97 1,286	2 27	1 13		45 72	45 72	45 72	68.5	60.0	63.0	70.1	30	67.0	65.4	0.0
Existing Plus Project Full Buildout	1,394	97 1,352	2 28	1 14		45 72	45 72	45 72	68.8	60.2	63.2	70.3	30	67.2	65.7	0.2
Cumulative No Project	2,690	97 2,609	2 54	1 27		45 72	45 72	45 72	71.6	63.0	66.0	73.1	30	70.0	68.5	3.1
Cumulative Plus Project	2,758	97 2,675	2 55	1 28		45 72	45 72	45 72	71.7	63.2	66.2	73.2	30	70.2	68.6	3.2

ROAD SEGMENT #14: Baseline Road East of Upland Drive	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto %	Medium Truck MT %	Heavy Truck HT %	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	1,326	97 1,286	2 27	1 13		45 72	45 72	45 72	68.5	60.0	63.0	70.1	30	67.0	65.4	0.0
Existing Plus Project Full Buildout	1,429	97 1,386	2 29	1 14		45 72	45 72	45 72	68.9	60.3	63.3	70.4	30	67.3	65.8	0.3
Cumulative No Project	3,030	97 2,939	2 61	1 30		45 72	45 72	45 72	72.1	63.6	66.6	73.6	30	70.6	69.0	3.6
Cumulative Plus Project	3,133	97 3,039	2 63	1 31		45 72	45 72	45 72	72.3	63.7	66.7	73.8	30	70.7	69.2	3.7

ROAD SEGMENT #15: Upland Drive North of Baseline Road	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto %	Medium Truck MT %	Heavy Truck HT %	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	20	97 19	2 0	1 0		45 72	45 72	45 72	50.3	41.8	44.8	51.8	30	48.8	47.2	0.0
Existing Plus Project Full Buildout	20	97 19	2 0	1 0		45 72	45 72	45 72	50.3	41.8	44.8	51.8	30	48.8	47.2	0.0
Cumulative No Project	1,010	97 980	2 20	1 10		45 72	45 72	45 72	67.4	58.8	61.8	68.9	30	65.8	64.3	17.0
Cumulative Plus Project	1,010	97 980	2 20	1 10		45 72	45 72	45 72	67.4	58.8	61.8	68.9	30	65.8	64.3	17.0

ROAD SEGMENT #16: Fiddyment Road North of Baseline Road	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto %	Medium Truck MT %	Heavy Truck HT %	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	2,810	97 2,726	2 56	1 28		50 80	50 80	50 80	73.1	63.9	66.7	74.4	30	71.3	69.8	0.0

Existing Plus Project Full Buildout	2,835	97	2,750	2	57	1	28	50	80	50	80	50	80	73.2	64.0	66.7	74.5	30	71.4	69.8	0.0
Cumulative No Project	4,190	97	4,064	2	84	1	42	50	80	50	80	50	80	74.9	65.7	68.4	76.2	30	73.1	71.5	1.7
Cumulative Plus Project	4,215	97	4,089	2	84	1	42	50	80	50	80	50	80	74.9	65.7	68.4	76.2	30	73.1	71.6	1.8

ROAD SEGMENT #17: Walerga Road South of Baseline Road	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	2,098	97	2,035	2	42	1	21	45	72	45	72	45	72	70.5	62.0	65.0	72.0	30	69.0	67.4	0.0
Existing Plus Project Full Buildout	2,213	97	2,147	2	44	1	22	45	72	45	72	45	72	70.8	62.2	65.2	72.3	30	69.2	67.7	0.2
Cumulative No Project	4,245	97	4,118	2	85	1	42	45	72	45	72	45	72	73.6	65.0	68.0	75.1	30	72.0	70.5	3.1
Cumulative Plus Project	4,360	97	4,229	2	87	1	44	45	72	45	72	45	72	73.7	65.1	68.1	75.2	30	72.1	70.6	3.2

ROAD SEGMENT #18: Baseline Road East of Fiddyment/Walerga	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	1,674	97	1,624	2	33	1	17	45	72	45	72	45	72	69.6	61.0	64.0	71.1	30	68.0	66.4	0.0
Existing Plus Project Full Buildout	1,773	97	1,720	2	35	1	18	45	72	45	72	45	72	69.8	61.2	64.2	71.3	30	68.2	66.7	0.2
Cumulative No Project	3,435	97	3,332	2	69	1	34	45	72	45	72	45	72	72.7	64.1	67.1	74.2	30	71.1	69.6	3.1
Cumulative Plus Project	3,534	97	3,428	2	71	1	35	45	72	45	72	45	72	72.8	64.2	67.2	74.3	30	71.2	69.7	3.2

ROAD SEGMENT #19: Baseline Road West of Fiddyment/Walerga	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	1,316	97	1,277	2	26	1	13	45	72	45	72	45	72	68.5	59.9	62.9	70.0	30	66.9	65.4	0.0
Existing Plus Project Full Buildout	1,423	97	1,380	2	28	1	14	45	72	45	72	45	72	68.9	60.3	63.3	70.4	30	67.3	65.7	0.3
Cumulative No Project	3,310	97	3,211	2	66	1	33	45	72	45	72	45	72	72.5	63.9	66.9	74.0	30	70.9	69.4	4.0
Cumulative Plus Project	3,417	97	3,314	2	68	1	34	45	72	45	72	45	72	72.7	64.1	67.1	74.2	30	71.1	69.5	4.1

ROAD SEGMENT #20: Crowder Lane South of Baseline Road	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	157	97	152	2	3	1	2	35	56	35	56	35	56	56.1	49.0	52.7	58.3	30	55.2	53.7	0.0
Existing Plus Project Full Buildout	203	97	197	2	4	1	2	35	56	35	56	35	56	57.3	50.1	53.8	59.4	30	56.3	54.8	1.1
Cumulative No Project	250	97	243	2	5	1	3	35	56	35	56	35	56	58.2	51.0	54.7	60.3	30	57.2	55.7	2.0
Cumulative Plus Project	296	97	287	2	6	1	3	35	56	35	56	35	56	58.9	51.8	55.5	61.1	30	58.0	56.4	2.8

ROAD SEGMENT #21: Baseline Road West of Crowder Lane	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	1,707	97	1,656	2	34	1	17	45	72	45	72	45	72	69.6	61.1	64.1	71.2	30	68.1	66.5	0.0
Existing Plus Project Full Buildout	1,807	97	1,753	2	36	1	18	45	72	45	72	45	72	69.9	61.3	64.3	71.4	30	68.3	66.8	0.2
Cumulative No Project	3,435	97	3,332	2	69	1	34	45	72	45	72	45	72	72.7	64.1	67.1	74.2	30	71.1	69.6	3.0
Cumulative Plus Project	3,535	97	3,429	2	71	1	35	45	72	45	72	45	72	72.8	64.2	67.2	74.3	30	71.2	69.7	3.2

ROAD SEGMENT #22: Baseline Road East of Crowder Lane	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	1,565	97	1,518	2	31	1	16	45	72	45	72	45	72	69.3	60.7	63.7	70.8	30	67.7	66.2	0.0
Existing Plus Project Full Buildout	1,641	97	1,592	2	33	1	16	45	72	45	72	45	72	69.5	60.9	63.9	71.0	30	67.9	66.4	0.2
Cumulative No Project	3,250	97	3,153	2	65	1	33	45	72	45	72	45	72	72.4	63.9	66.9	73.9	30	70.9	69.3	3.2
Cumulative Plus Project	3,326	97	3,226	2	67	1	33	45	72	45	72	45	72	72.5	64.0	67.0	74.0	30	71.0	69.4	3.3

ROAD SEGMENT #23: Baseline Road East of Junction Blvd	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	1,321	97	1,281	2	26	1	13	45	72	45	72	45	72	68.5	60.0	63.0	70.0	30	67.0	65.4	0.0
Existing Plus Project Full Buildout	1,376	97	1,335	2	28	1	14	45	72	45	72	45	72	68.7	60.1	63.1	70.2	30	67.1	65.6	0.2
Cumulative No Project	2,715	97	2,634	2	54	1	27	45	72	45	72	45	72	71.7	63.1	66.1	73.2	30	70.1	68.5	3.1
Cumulative Plus Project	2,770	97	2,687	2	55	1	28	45	72	45	72	45	72	71.7	63.2	66.2	73.3	30	70.2	68.6	3.2

ROAD SEGMENT #24: Baseline Road West of Junction Blvd	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	1,542	97	1,496	2	31	1	15	45	72	45	72	45	72	69.2	60.6	63.6	70.7	30	67.6	66.1	0.0
Existing Plus Project Full Buildout	1,606	97	1,558	2	32	1	16	45	72	45	72	45	72	69.4	60.8	63.8	70.9	30	67.8	66.3	0.2
Cumulative No Project	3,225	97	3,128	2	65	1	32	45	72	45	72	45	72	72.4	63.8	66.8	73.9	30	70.8	69.3	3.2
Cumulative Plus Project	3,289	97	3,190	2	66	1	33	45	72	45	72	45	72	72.5	63.9	66.9	74.0	30	70.9	69.4	3.3

ROAD SEGMENT #25: Junction Blvd North of Baseline Road	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	473	97	459	2	9	1	5	45	72	45	72	45	72	64.1	55.5	58.5	65.6	30	62.5	61.0	0.0
Existing Plus Project Full Buildout	482	97	468	2	10	1	5	45	72	45	72	45	72	64.2	55.6	58.6	65.7	30	62.6	61.0	0.1
Cumulative No Project	840	97	815	2	17	1	8	45	72	45	72	45	72	66.6	58.0	61.0	68.1	30	65.0	63.5	2.5
Cumulative Plus Project	849	97	824	2	17	1	8	45	72	45	72	45	72	66.6	58.0	61.0	68.1	30	65.0	63.5	2.5

ROAD SEGMENT #26: Vineyard Road East of Crowder Lane	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	173	97	168	2	3	1	2	45	72	45	72	45	72	59.7	51.1	54.1	61.2	30	58.1	56.6	0.0
Existing Plus Project Full Buildout	185	97	179	2	4	1	2	45	72	45	72	45	72	60.0	51.4	54.4	61.5	30	58.4	56.9	0.3
Cumulative No Project	240	97	233	2	5	1	2	45	72	45	72	45	72	61.1	52.5	55.6	62.6	30	59.6	58.0	1.4
Cumulative Plus Project	252	97	244	2	5	1	3	45	72	45	72	45	72	61.3	52.8	55.8	62.8	30	59.8	58.2	1.6

ROAD SEGMENT #27: Vineyard Road West of Crowder Lane	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	21	97	20	2	0	1	0	45	72	45	72	45	72	50.5	42.0	45.0	52.1	30	49.0	47.4	0.0
Existing Plus Project Full Buildout	49	97	48	2	1	1	0	45	72	45	72	45	72	54.2	45.6	48.7	55.7	30	52.7	51.1	3.7
Cumulative No Project	37	97	36	2	1	1	0	45	72	45	72	45	72	53.0	44.4	47.4	54.5	30	51.4	49.9	2.5
Cumulative Plus Project	77	97	75	2	2	1	1	45	72	45	72	45	72	56.2	47.6	50.6	57.7	30	54.6	53.1	5.6

ROAD SEGMENT #28: Crowder Lane North of Vineyard Road	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	172	97	167	2	3	1	2	35	56	35	56	35	56	56.5	49.4	53.1	58.7	30	55.6	54.1	0.0
Existing Plus Project Full Buildout	210	97	204	2	4	1	2	35	56	35	56	35	56	57.4	50.3	54.0	59.6	30	56.5	54.9	0.9
Cumulative No Project	250	97	243	2	5	1	3	35	56	35	56	35	56	58.2	51.0	54.7	60.3	30	57.2	55.7	1.6
Cumulative Plus Project	297	97	288	2	6	1	3	35	56	35	56	35	56	58.9	51.8	55.5	61.1	30	58.0	56.5	2.4

ROAD SEGMENT #29: Walerga Road North of Springhill Drive	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	2,093	97	2,030	2	42	1	21	45	72	45	72	45	72	70.5	62.0	65.0	72.0	30	69.0	67.4	0.0
Existing Plus Project Full Buildout	2,213	97	2,147	2	44	1	22	45	72	45	72	45	72	70.8	62.2	65.2	72.3	30	69.2	67.7	0.2
Cumulative No Project	4,280	97	4,152	2	86	1	43	45	72	45	72	45	72	73.6	65.1	68.1	75.1	30	72.1	70.5	3.1
Cumulative Plus Project	4,400	97	4,268	2	88	1	44	45	72	45	72	45	72	73.8	65.2	68.2	75.3	30	72.2	70.6	3.2

ROAD SEGMENT #30: Walerga Road South of Springhill Drive	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	2,079	97	2,017	2	42	1	21	45	72	45	72	45	72	70.5	61.9	64.9	72.0	30	68.9	67.4	0.0
Existing Plus Project Full Buildout	2,160	97	2,095	2	43	1	22	45	72	45	72	45	72	70.7	62.1	65.1	72.2	30	69.1	67.6	0.2
Cumulative No Project	4,270	97	4,142	2	85	1	43	45	72	45	72	45	72	73.6	65.0	68.1	75.1	30	72.1	70.5	3.1
Cumulative Plus Project	4,351	97	4,220	2	87	1	44	45	72	45	72	45	72	73.7	65.1	68.1	75.2	30	72.1	70.6	3.2

ROAD SEGMENT #31: Springhill Drive East of Walerga Road	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	24	97	23	2	0	1	0	25	40	25	40	25	40	43.8	38.6	43.2	47.2	30	44.1	42.5	0.0
Existing Plus Project Full Buildout	24	97	23	2	0	1	0	25	40	25	40	25	40	43.8	38.6	43.2	47.2	30	44.1	42.5	0.0
Cumulative No Project	40	97	39	2	1	1	0	25	40	25	40	25	40	46.0	40.8	45.4	49.4	30	46.3	44.8	2.2
Cumulative Plus Project	40	97	39	2	1	1	0	25	40	25	40	25	40	46.0	40.8	45.4	49.4	30	46.3	44.8	2.2

ROAD SEGMENT #32: Springhill Drive West of Walerga Road	TOTAL # VEHICLES	VEHICLE TYPE % Auto	Auto	Medium Truck	MT	Heavy Truck	HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA)	Adjusted Level (dBA)	Difference b/t existing and each scenario

		%	Auto	%	MT	%	HT												3 dBA Atten	4.5 dBA Atten	
Existing	12	97	12	2	0	1	0	25	40	25	40	25	40	40.8	35.6	40.2	44.1	30	41.1	39.5	0.0
Existing Plus Project Full Buildout	75	97	73	2	2	1	1	25	40	25	40	25	40	48.7	43.5	48.2	52.1	30	49.0	47.5	8.0
Cumulative No Project	30	97	29	2	1	1	0	25	40	25	40	25	40	44.7	39.5	44.2	48.1	30	45.0	43.5	4.0
Cumulative Plus Project	93	97	90	2	2	1	1	25	40	25	40	25	40	49.7	44.4	49.1	53.0	30	50.0	48.4	8.9

ROAD SEGMENT #33: Walerga Road North of Town Center Ave

	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	2,074	97	2,012	2	41	1	21	45 72	45 72	45 72	70.5	61.9	64.9	72.0	30	68.9	67.4	0.0
Existing Plus Project Full Buildout	2,161	97	2,096	2	43	1	22	45 72	45 72	45 72	70.7	62.1	65.1	72.2	30	69.1	67.6	0.2
Cumulative No Project	4,215	97	4,089	2	84	1	42	45 72	45 72	45 72	73.6	65.0	68.0	75.1	30	72.0	70.5	3.1
Cumulative Plus Project	4,302	97	4,173	2	86	1	43	45 72	45 72	45 72	73.7	65.1	68.1	75.2	30	72.1	70.5	3.2

ROAD SEGMENT #34: Walerga Road South of Town Center Ave

	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	2,105	97	2,042	2	42	1	21	45 72	45 72	45 72	70.6	62.0	65.0	72.1	30	69.0	67.4	0.0
Existing Plus Project Full Buildout	2,175	97	2,110	2	44	1	22	45 72	45 72	45 72	70.7	62.1	65.1	72.2	30	69.1	67.6	0.1
Cumulative No Project	4,245	97	4,118	2	85	1	42	45 72	45 72	45 72	73.6	65.0	68.0	75.1	30	72.0	70.5	3.0
Cumulative Plus Project	4,315	97	4,186	2	86	1	43	45 72	45 72	45 72	73.7	65.1	68.1	75.2	30	72.1	70.6	3.1

ROAD SEGMENT #35: Town Center Ave West of Walerga Road

	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	159	97	154	2	3	1	2	45 72	45 72	45 72	59.3	50.8	53.8	60.8	30	57.8	56.2	0.0
Existing Plus Project Full Buildout	159	97	154	2	3	1	2	45 72	45 72	45 72	59.3	50.8	53.8	60.8	30	57.8	56.2	0.0
Cumulative No Project	170	97	165	2	3	1	2	45 72	45 72	45 72	59.6	51.1	54.1	61.1	30	58.1	56.5	0.3
Cumulative Plus Project	170	97	165	2	3	1	2	45 72	45 72	45 72	59.6	51.1	54.1	61.1	30	58.1	56.5	0.3

ROAD SEGMENT #36: Walerga Road North of PFE Road

	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	2,145	97	2,081	2	43	1	21	45 72	45 72	45 72	70.6	62.1	65.1	72.1	30	69.1	67.5	0.0
Existing Plus Project Full Buildout	2,215	97	2,149	2	44	1	22	45 72	45 72	45 72	70.8	62.2	65.2	72.3	30	69.2	67.7	0.1
Cumulative No Project	4,615	97	4,477	2	92	1	46	45 72	45 72	45 72	74.0	65.4	68.4	75.5	30	72.4	70.9	3.3
Cumulative Plus Project	4,685	97	4,544	2	94	1	47	45 72	45 72	45 72	74.0	65.5	68.5	75.5	30	72.5	70.9	3.4

ROAD SEGMENT #37: Walerga Road South of PFE Road

	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	2,097	97	2,034	2	42	1	21	45 72	45 72	45 72	70.5	62.0	65.0	72.0	30	69.0	67.4	0.0
Existing Plus Project Full Buildout	2,159	97	2,094	2	43	1	22	45 72	45 72	45 72	70.7	62.1	65.1	72.2	30	69.1	67.6	0.1
Cumulative No Project	5,060	97	4,908	2	101	1	51	45 72	45 72	45 72	74.4	65.8	68.8	75.9	30	72.8	71.3	3.8
Cumulative Plus Project	5,122	97	4,968	2	102	1	51	45 72	45 72	45 72	74.4	65.8	68.8	75.9	30	72.8	71.3	3.9

ROAD SEGMENT #38: PFE Road East of Walerga Road

	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	566	97	549	2	11	1	6	45 72	45 72	45 72	64.8	56.3	59.3	66.4	30	63.3	61.7	0.0
Existing Plus Project Full Buildout	605	97	587	2	12	1	6	45 72	45 72	45 72	65.1	56.6	59.6	66.6	30	63.6	62.0	0.3
Cumulative No Project	700	97	679	2	14	1	7	45 72	45 72	45 72	65.8	57.2	60.2	67.3	30	64.2	62.7	0.9
Cumulative Plus Project	739	97	717	2	15	1	7	45 72	45 72	45 72	66.0	57.4	60.4	67.5	30	64.4	62.9	1.2

ROAD SEGMENT #39: PFE Road West of Walerga Road

	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	560	97	543	2	11	1	6	45 72	45 72	45 72	64.8	56.2	59.2	66.3	30	63.2	61.7	0.0
Existing Plus Project Full Buildout	607	97	589	2	12	1	6	45 72	45 72	45 72	65.2	56.6	59.6	66.7	30	63.6	62.0	0.4
Cumulative No Project	1,165	97	1,130	2	23	1	12	45 72	45 72	45 72	68.0	59.4	62.4	69.5	30	66.4	64.9	3.2
Cumulative Plus Project	1,212	97	1,176	2	24	1	12	45 72	45 72	45 72	68.2	59.6	62.6	69.7	30	66.6	65.0	3.4

ROAD SEGMENT #40: Watt Ave North of PFE Road

	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	816	97	792	2	16	1	8	45 72	45 72	45 72	66.4	57.9	60.9	67.9	30	64.9	63.3	0.0
Existing Plus Project Full Buildout	845	97	820	2	17	1	8	45 72	45 72	45 72	66.6	58.0	61.0	68.1	30	65.0	63.5	0.2
Cumulative No Project	4,035	97	3,914	2	81	1	40	45 72	45 72	45 72	73.4	64.8	67.8	74.9	30	71.8	70.3	6.9
Cumulative Plus Project	4,061	97	3,939	2	81	1	41	45 72	45 72	45 72	73.4	64.8	67.8	74.9	30	71.8	70.3	7.0

ROAD SEGMENT #41: Watt Ave South of PFE Road

	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	1,328	97	1,288	2	27	1	13	45 72	45 72	45 72	68.6	60.0	63.0	70.1	30	67.0	65.4	0.0
Existing Plus Project Full Buildout	1,374	97	1,333	2	27	1	14	45 72	45 72	45 72	68.7	60.1	63.1	70.2	30	67.1	65.6	0.1
Cumulative No Project	4,470	97	4,336	2	89	1	45	45 72	45 72	45 72	73.8	65.2	68.3	75.3	30	72.3	70.7	5.3
Cumulative Plus Project	4,513	97	4,378	2	90	1	45	45 72	45 72	45 72	73.9	65.3	68.3	75.4	30	72.3	70.8	5.3

ROAD SEGMENT #42: PFE Road East of Watt Ave

	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	602	97	584	2	12	1	6	45 72	45 72	45 72	65.1	56.5	59.5	66.6	30	63.5	62.0	0.0
Existing Plus Project Full Buildout	669	97	649	2	13	1	7	45 72	45 72	45 72	65.6	57.0	60.0	67.1	30	64.0	62.5	0.5
Cumulative No Project	705	97	684	2	14	1	7	45 72	45 72	45 72	65.8	57.2	60.2	67.3	30	64.2	62.7	0.7
Cumulative Plus Project	772	97	749	2	15	1	8	45 72	45 72	45 72	66.2	57.6	60.6	67.7	30	64.6	63.1	1.1

Traffic Noise Level Estimates rev. 3/16/07

Placer County Dry Creek Estia - PM Peak Hour

15m= 49.2 FEET 7.768800497

ROAD SEGMENT #1: Baseline Road East of Santucci

	TOTAL # VEHICLES	Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	Auto k/h	MT k/h	HT k/h	k/h	Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	2,135	97	2,071	2	43	1	21	45	45	45	72	70.6	58.9	65.0	71.9	30	68.9	67.4	0.0
Existing Plus Project Full Buildout	2,224	97	2,157	2	44	1	22	45	45	45	72	70.8	62.2	65.2	72.3	30	69.2	67.7	0.3
Cumulative No Project	2,895	97	2,808	2	58	1	29	45	45	45	72	71.9	63.4	66.4	73.4	30	70.4	68.8	1.5
Cumulative Plus Project	2,984	97	2,894	2	60	1	30	45	45	45	72	72.1	63.5	66.5	73.6	30	70.5	69.0	1.6

ROAD SEGMENT #2: Baseline Road West of Santucci

	TOTAL # VEHICLES	Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	Auto k/h	MT k/h	HT k/h	k/h	Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	1,744	97	1,692	2	35	1	17	45	45	45	72	69.7	61.2	64.2	71.2	30	68.2	66.6	0.0
Existing Plus Project Full Buildout	1,859	97	1,803	2	37	1	19	45	45	45	72	70.0	61.4	64.4	71.5	30	68.4	66.9	0.3
Cumulative No Project	3,045	97	2,954	2	61	1	30	45	45	45	72	72.2	63.6	66.6	73.7	30	70.6	69.0	2.4
Cumulative Plus Project	3,160	97	3,065	2	63	1	32	45	45	45	72	72.3	63.7	66.7	73.8	30	70.7	69.2	2.6

ROAD SEGMENT #3: Watt Ave South of Baseline Road

	TOTAL # VEHICLES	Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	Auto k/h	MT k/h	HT k/h	k/h	Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	789	97	765	2	16	1	8	45	72	45	72	66.3	57.7	60.7	67.8	30	64.7	63.2	0.0
Existing Plus Project Full Buildout	827	97	802	2	17	1	8	45	72	45	72	66.5	57.9	60.9	68.0	30	64.9	63.4	0.2
Cumulative No Project	3,615	97	3,507	2	72	1	36	45	72	45	72	72.9	64.3	67.3	74.4	30	71.3	69.8	6.6
Cumulative Plus Project	3,653	97	3,543	2	73	1	37	45	72	45	72	72.9	64.4	67.4	74.5	30	71.4	69.8	6.7

ROAD SEGMENT #4: Santucci Blvd North of Baseline Road

	TOTAL # VEHICLES	Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	Auto k/h	MT k/h	HT k/h	k/h	Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	224	97	217	2	4	1	2	45	72	45	72	60.8	52.2	55.3	62.3	30	59.3	57.7	0.0
Existing Plue Project Full Buildout	224	97	217	2	4	1	2	45	72	45	72	60.8	52.2	55.3	62.3	30	59.3	57.7	0.0
Cumulative No Project	4,055	97	3,933	2	81	1	41	45	72	45	72	73.4	64.8	67.8	74.9	30	71.8	70.3	12.6
Cumulative Plus Project	4,055	97	3,933	2	81	1	41	45	72	45	72	73.4	64.8	67.8	74.9	30	71.8	70.3	12.6

ROAD SEGMENT #5: Baseline Road West of Westbrook Blvd

	TOTAL # VEHICLES	Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	Auto k/h	MT k/h	HT k/h	k/h	Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	2,143	97	2,079	2	43	1	21	45	72	45	72	70.6	62.1	65.1	72.1	30	69.1	67.5	0.0
Existing Plus Project Full Buildout	2,232	97	2,165	2	45	1	22	45	72	45	72	70.8	62.2	65.2	72.3	30	69.2	67.7	0.2
Cumulative No Project	3,000	97	2,910	2	60	1	30	45	72	45	72	72.1	63.5	66.5	73.6	30	70.5	69.0	1.5
Cumulative Plus Project	3,089	97	2,996	2	62	1	31	45	72	45	72	72.2	63.6	66.6	73.7	30	70.6	69.1	1.6

ROAD SEGMENT #6: Baseline Road East of Westbrook Blvd

	TOTAL # VEHICLES	Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	Auto k/h	MT k/h	HT k/h	k/h	Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	2,115	97	2,052	2	42	1	21	45	72	45	72	70.6	62.0	65.0	72.1	30	69.0	67.5	0.0
Existing Plus Project Full Buildout	2,204	97	2,138	2	44	1	22	45	72	45	72	70.8	62.2	65.2	72.3	30	69.2	67.6	0.2
Cumulative No Project	3,435	97	3,332	2	69	1	34	45	72	45	72	72.7	64.1	67.1	74.2	30	71.1	69.6	2.1
Cumulative Plus Project	3,524	97	3,418	2	70	1	35	45	72	45	72	72.8	64.2	67.2	74.3	30	71.2	69.7	2.2

ROAD SEGMENT #7: Westbrook Blvd South of Baseline Road

	TOTAL # VEHICLES	Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	Auto k/h	MT k/h	HT k/h	k/h	Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	0	97	0	2	0	1	0	45	72	45	72	27.3	18.7	21.7	28.8	30	25.8	24.2	0.0
Existing Plus Project Full Buildout	0	97	0	2	0	1	0	45	72	45	72	27.3	18.7	21.7	28.8	30	25.8	24.2	0.0
Cumulative No Project	3,255	97	3,157	2	65	1	33	45	72	45	72	72.4	63.9	66.9	74.0	30	70.9	69.3	45.1
Cumulative Plus Project	3,255	97	3,157	2	65	1	33	45	72	45	72	72.4	63.9	66.9	74.0	30	70.9	69.3	45.1

ROAD SEGMENT #8: Westbrook Blvd North of Baseline Road

	TOTAL # VEHICLES	Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	Auto k/h	MT k/h	HT k/h	k/h	Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	268	97	260	2	5	1	3	45	72	45	72	61.6	53.0	56.0	63.1	30	60.0	58.5	0.0
Existing Plus Project Full Buildout	268	97	260	2	5	1	3	45	72	45	72	61.6	53.0	56.0	63.1	30	60.0	58.5	0.0
Cumulative No Project	2,790	97	2,706	2	56	1	28	45	72	45	72	71.8	63.2	66.2	73.3	30	70.2	68.7	10.2
Cumulative Plus Project	2,790	97	2,706	2	56	1	28	45	72	45	72	71.8	63.2	66.2	73.3	30	70.2	68.7	10.2

ROAD SEGMENT #9: Baseline Road West of Market/Stargazer

	TOTAL # VEHICLES	Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	Auto k/h	MT k/h	HT k/h	k/h	Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	2,110	97	2,047	2	42	1	21	45	72	45	72	70.6	62.0	65.0	72.1	30	69.0	67.5	0.0
Existing Plus Project Full Buildout	2,199	97	2,133	2	44	1	22	45	72	45	72	70.7	62.2	65.2	72.3	30	69.2	67.6	0.2
Cumulative No Project	3,435	97	3,332	2	69	1	34	45	72	45	72	72.7	64.1	67.1	74.2	30	71.1	69.6	2.1
Cumulative Plus Project	3,524	97	3,418	2	70	1	35	45	72	45	72	72.8	64.2	67.2	74.3	30	71.2	69.7	2.2

ROAD SEGMENT #10: Baseline Road East of Market/Stargazer

	TOTAL # VEHICLES	Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	Auto k/h	MT k/h	HT k/h	k/h	Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	2,002	97	1,942	2	40	1	20	45	72	45	72	70.3	61.8	64.8	71.8	30	68.8	67.2	0.0
Existing Plus Project Full Buildout	2,091	97	2,028	2	42	1	21	45	72	45	72	70.5	61.9	65.0	72.0	30	69.0	67.4	0.2
Cumulative No Project	3,390	97	3,288	2	68	1	34	45	72	45	72	72.6	64.0	67.1	74.1	30	71.1	69.5	2.3
Cumulative Plus Project	3,479	97	3,375	2	70	1	35	45	72	45	72	72.7	64.2	67.2	74.2	30	71.2	69.6	2.4

ROAD SEGMENT #11: Market Street North of Baseline Road

	TOTAL # VEHICLES	Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	Auto k/h	MT k/h	HT k/h	k/h	Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	475	97	461	2	10	1	5	45	72	45	72	64.1	55.5	58.5	65.6	30	62.5	61.0	0.0
Existing Plus Project Full Buildout	475	97	461	2	10	1	5	45	72	45	72	64.1	55.5	58.5	65.6	30	62.5	61.0	0.0
Cumulative No Project	1,330	97	1,290	2	27	1	13	45	72	45	72	68.6	60.0	63.0	70.1	30	67.0	65.5	4.5
Cumulative Plus Project	1,330	97	1,290	2	27	1	13	45	72	45	72	68.6	60.0	63.0	70.1	30	67.0	65.5	4.5

ROAD SEGMENT #12: Stargazer Drive South of Baseline Road

	TOTAL # VEHICLES	Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	Auto k/h	MT k/h	HT k/h	k/h	Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	59	97	57	2	1	1	1	45	72	45	72	55.0	46.5	49.5	56.5	30	53.5	51.9	0.0
Existing Plus Project Full Buildout	59	97	57	2	1	1	1	45	72	45	72	55.0	46.5	49.5	56.5	30	53.5	51.9	0.0
Cumulative No Project	675	97	655	2	14	1	7	45	72	45	72	65.6	57.0	60.0	67.1	30	64.0	62.5	10.6
Cumulative Plus Project	675	97	655	2	14	1	7	45	72	45	72	65.6	57.0	60.0	67.1	30	64.0	62.5	10.6

ROAD SEGMENT #13: Baseline Road West of Upland Drive

	TOTAL # VEHICLES	Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	Auto k/h	MT k/h	HT k/h	k/h	Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	2,531	97	2,455	2	51	1	25	45	72	45	72	71.4	62.8	65.8	72.9	30	69.8	68.2	0.0
Existing Plus Project Full Buildout	2,620	97	2,541	2	52	1	26	45	72	45	72	71.5	62.9	65.9	73.0	30	69.9	68.4	0.2
Cumulative No Project	3,375	97	3,274	2	68	1	34	45	72	45	72	72.6	64.0	67.0	74.1	30	71.0	69.5	1.2
Cumulative Plus Project	3,464	97	3,360	2	69	1	35	45	72	45	72	72.7	64.1	67.1	74.2	30	71.1	69.6	1.4

ROAD SEGMENT #14: Baseline Road East of Upland Drive

	TOTAL # VEHICLES	Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	Auto k/h	MT k/h	HT k/h	k/h	Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	2,874	97	2,788	2	57	1	29	45	72	45	72	71.9	63.3	66.3	73.4	30	70.3	68.8	0.0
Existing Plus Project Full Buildout	3,008	97	2,918	2	60	1	30	45	72	45	72	72.1	63.5	66.5	73.6	30	70.5	69.0	0.2
Cumulative No Project	3,715	97	3,604	2	74	1	37	45	72	45	72	73.0	64.4	67.4	74.5	30	71.5	69.9	1.1
Cumulative Plus Project	3,849	97	3,734	2	77	1	38	45	72	45	72	73.2	64.6	67.6	74.7	30	71.6	70.1	1.3

ROAD SEGMENT #15: Upland Drive North of Baseline Road

	TOTAL # VEHICLES	Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	Auto k/h	MT k/h	HT k/h	k/h	Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	637	97	618	2	13	1	6	45	72	45	72	65.4	56.8	59.8	66.9	30	63.8	62.3	0.0
Existing Plus Project Full Buildout	637	97	618	2	13	1	6	45	72	45	72	65.4	56.8	59.8	66.9	30	63.8	62.3	0.0
Cumulative No Project	1,470	97	1,426	2	29	1	15	45	72	45	72	69.0	60.4	63.4	70.5	30	67.4	65.9	3.6
Cumulative Plus Project	1,470	97	1,426	2	29	1	15	45	72	45	72	69.0	60.4	63.4	70.5	30	67.4	65.9	3.6

ROAD SEGMENT #16: Fiddyment Road North of Baseline Road

	TOTAL # VEHICLES	Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	Auto k/h	MT k/h	HT k/h	k/h	Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	2,287	97	2,218	2	46	1	23	50	80	50	80	72.2	63.1	65.8	73.5	30	70.4	68.9	0.0
Existing Plus Project Full Buildout	2,926	97	2,838	2	59	1	29	50	80	50	80	73.3	64.1	66.8	74.6	30	71.5	70.0	1.1
Cumulative No Project	4,390	97	4,258	2	88	1	44	50	80	50	80	75.1	65.9	68.6	76.4	30	73.3	71.7	2.8
Cumulative Plus Project	4,423	97	4,290	2	88	1	44	50	80	50	80	75.1	65.9	68.6	76.4	30	73.3	71.8	2.9

															Calculated dBA	Receptor Distance from	Adjusted	Adjusted	Difference b/t

ROAD SEGMENT #17: Walerga Road South of Baseline Road	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck % Auto	MT %	Heavy Truck % HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	(15 meters from roadway center)	Roadway Center (m.)	Level (dBA) 3 dBA Atten	Level (dBA) 4.5 dBA Atten	existing and each scenario
Existing	1,448	97 1,405	2 29	1 14		45 72	45 72	45 72	68.9	60.4	63.4	70.4	30	67.4	65.8	0.0
Existing Plus Project Full Buildout	2,286	97 2,217	2 46	1 23		45 72	45 72	45 72	70.9	62.3	65.3	72.4	30	69.3	67.8	2.0
Cumulative No Project	4,450	97 4,317	2 89	1 45		45 72	45 72	45 72	73.8	65.2	68.2	75.3	30	72.2	70.7	4.9
Cumulative Plus Project	4,596	97 4,458	2 92	1 46		45 72	45 72	45 72	73.9	65.4	68.4	75.5	30	72.4	70.8	5.0

ROAD SEGMENT #18: Baseline Road East of Fiddyment/Walerga	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck % Auto	MT %	Heavy Truck % HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	3,209	97 3,113	2 64	1 32		45 72	45 72	45 72	72.4	63.8	66.8	73.9	30	70.8	69.3	0.0
Existing Plus Project Full Buildout	3,426	97 3,323	2 69	1 34		45 72	45 72	45 72	72.7	64.1	67.1	74.2	30	71.1	69.6	0.3
Cumulative No Project	4,130	97 4,006	2 83	1 41		45 72	45 72	45 72	73.5	64.9	67.9	75.0	30	71.9	70.4	1.1
Cumulative Plus Project	4,261	97 4,133	2 85	1 43		45 72	45 72	45 72	73.6	65.0	68.0	75.1	30	72.0	70.5	1.2

ROAD SEGMENT #19: Baseline Road West of Fiddyment/Walerga	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck % Auto	MT %	Heavy Truck % HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	2,874	97 2,788	2 57	1 29		45 72	45 72	45 72	71.9	63.3	66.3	73.4	30	70.3	68.8	0.0
Existing Plus Project Full Buildout	3,022	97 2,931	2 60	1 30		45 72	45 72	45 72	72.1	63.5	66.6	73.6	30	70.6	69.0	0.2
Cumulative No Project	4,100	97 3,977	2 82	1 41		45 72	45 72	45 72	73.4	64.9	67.9	75.0	30	71.9	70.3	1.5
Cumulative Plus Project	4,248	97 4,121	2 85	1 42		45 72	45 72	45 72	73.6	65.0	68.0	75.1	30	72.0	70.5	1.7

ROAD SEGMENT #20: Crowder Lane South of Baseline Road	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck % Auto	MT %	Heavy Truck % HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	116	97 113	2 2	1 1		35 56	35 56	35 56	54.8	47.7	51.4	57.0	30	53.9	52.4	0.0
Existing Plus Project Full Buildout	176	97 171	2 4	1 2		35 56	35 56	35 56	56.6	49.5	53.2	58.8	30	55.7	54.2	1.8
Cumulative No Project	245	97 238	2 5	1 2		35 56	35 56	35 56	58.1	50.9	54.6	60.2	30	57.2	55.6	3.2
Cumulative Plus Project	305	97 296	2 6	1 3		35 56	35 56	35 56	59.0	51.9	55.6	61.2	30	58.1	56.6	4.2

ROAD SEGMENT #21: Baseline Road West of Crowder Lane	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck % Auto	MT %	Heavy Truck % HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	3,245	97 3,148	2 65	1 32		45 72	45 72	45 72	72.4	63.9	66.9	73.9	30	70.9	69.3	0.0
Existing Plus Project Full Buildout	3,375	97 3,274	2 68	1 34		45 72	45 72	45 72	72.6	64.0	67.0	74.1	30	71.0	69.5	0.2
Cumulative No Project	4,095	97 3,972	2 82	1 41		45 72	45 72	45 72	73.4	64.9	67.9	75.0	30	71.9	70.3	1.0
Cumulative Plus Project	4,225	97 4,098	2 85	1 42		45 72	45 72	45 72	73.6	65.0	68.0	75.1	30	72.0	70.5	1.1

ROAD SEGMENT #22: Baseline Road East of Crowder Lane	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck % Auto	MT %	Heavy Truck % HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	3,133	97 3,039	2 63	1 31		45 72	45 72	45 72	72.3	63.7	66.7	73.8	30	70.7	69.2	0.0
Existing Plus Project Full Buildout	3,232	97 3,135	2 65	1 32		45 72	45 72	45 72	72.4	63.8	66.8	73.9	30	70.8	69.3	0.1
Cumulative No Project	3,875	97 3,759	2 78	1 39		45 72	45 72	45 72	73.2	64.6	67.6	74.7	30	71.6	70.1	0.9
Cumulative Plus Project	3,973	97 3,854	2 79	1 40		45 72	45 72	45 72	73.3	64.7	67.7	74.8	30	71.7	70.2	1.0

ROAD SEGMENT #23: Baseline Road East of Junction Blvd	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck % Auto	MT %	Heavy Truck % HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	2,912	97 2,825	2 58	1 29		45 72	45 72	45 72	72.0	63.4	66.4	73.5	30	70.4	68.9	0.0
Existing Plus Project Full Buildout	2,990	97 2,900	2 60	1 30		45 72	45 72	45 72	72.1	63.5	66.5	73.6	30	70.5	69.0	0.1
Cumulative No Project	3,020	97 2,929	2 60	1 30		45 72	45 72	45 72	72.1	63.5	66.5	73.6	30	70.6	69.0	0.2
Cumulative Plus Project	3,098	97 3,005	2 62	1 31		45 72	45 72	45 72	72.2	63.7	66.7	73.7	30	70.7	69.1	0.3

ROAD SEGMENT #24: Baseline Road West of Junction Blvd	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck % Auto	MT %	Heavy Truck % HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	3,147	97 3,053	2 63	1 31		45 72	45 72	45 72	72.3	63.7	66.7	73.8	30	70.7	69.2	0.0
Existing Plus Project Full Buildout	3,240	97 3,143	2 65	1 32		45 72	45 72	45 72	72.4	63.9	66.9	73.9	30	70.9	69.3	0.1
Cumulative No Project	3,900	97 3,783	2 78	1 39		45 72	45 72	45 72	73.2	64.7	67.7	74.7	30	71.7	70.1	0.9
Cumulative Plus Project	3,993	97 3,873	2 80	1 40		45 72	45 72	45 72	73.3	64.8	67.8	74.8	30	71.8	70.2	1.0

ROAD SEGMENT #25: Junction Blvd North of Baseline Road	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck % Auto	MT %	Heavy Truck % HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	457	97 443	2 9	1 5		45 72	45 72	45 72	63.9	55.3	58.3	65.4	30	62.4	60.8	0.0
Existing Plus Project Full Buildout	472	97 458	2 9	1 5		45 72	45 72	45 72	64.1	55.5	58.5	65.6	30	62.5	61.0	0.1
Cumulative No Project	1,120	97 1,086	2 22	1 11		45 72	45 72	45 72	67.8	59.2	62.2	69.3	30	66.2	64.7	3.9
Cumulative Plus Project	1,135	97 1,101	2 23	1 11		45 72	45 72	45 72	67.9	59.3	62.3	69.4	30	66.3	64.8	4.0

ROAD SEGMENT #26: Vineyard Road East of Crowder Lane	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck % Auto	MT %	Heavy Truck % HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	109	97 106	2 2	1 1		45 72	45 72	45 72	57.7	49.1	52.1	59.2	30	56.1	54.6	0.0
Existing Plus Project Full Buildout	126	97 122	2 3	1 1		45 72	45 72	45 72	58.3	49.7	52.8	59.8	30	56.8	55.2	0.6
Cumulative No Project	215	97 209	2 4	1 2		45 72	45 72	45 72	60.6	52.1	55.1	62.2	30	59.1	57.5	3.0
Cumulative Plus Project	232	97 225	2 5	1 2		45 72	45 72	45 72	61.0	52.4	55.4	62.5	30	59.4	57.9	3.3

ROAD SEGMENT #27: Vineyard Road West of Crowder Lane	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck % Auto	MT %	Heavy Truck % HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	37	97 36	2 1	1 0		45 72	45 72	45 72	53.0	44.4	47.4	54.5	30	51.4	49.9	0.0
Existing Plus Project Full Buildout	57	97 55	2 1	1 1		45 72	45 72	45 72	54.9	46.3	49.3	56.4	30	53.3	51.8	1.9
Cumulative No Project	37	97 36	2 1	1 0		45 72	45 72	45 72	53.0	44.4	47.4	54.5	30	51.4	49.9	0.0
Cumulative Plus Project	84	97 81	2 2	1 1		45 72	45 72	45 72	56.6	48.0	51.0	58.1	30	55.0	53.5	3.6

ROAD SEGMENT #28: Crowder Lane North of Vineyard Road	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck % Auto	MT %	Heavy Truck % HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	130	97 126	2 3	1 1		35 56	35 56	35 56	55.3	48.2	51.9	57.5	30	54.4	52.9	0.0
Existing Plus Project Full Buildout	161	97 156	2 3	1 2		35 56	35 56	35 56	56.2	49.1	52.8	58.4	30	55.3	53.8	0.9
Cumulative No Project	230	97 223	2 6	1 2		35 56	35 56	35 56	57.8	50.7	54.4	60.0	30	56.9	55.3	2.5
Cumulative Plus Project	290	97 281	2 6	1 3		35 56	35 56	35 56	58.8	51.7	55.4	61.0	30	57.9	56.3	3.5

ROAD SEGMENT #29: Walerga Road North of Springhill Drive	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck % Auto	MT %	Heavy Truck % HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	2,047	97 1,986	2 41	1 20		45 72	45 72	45 72	70.4	61.9	64.9	71.9	30	68.9	67.3	0.0
Existing Plus Project Full Buildout	2,188	97 2,122	2 44	1 22		45 72	45 72	45 72	70.7	62.1	65.1	72.2	30	69.2	67.6	0.3
Cumulative No Project	4,485	97 4,350	2 90	1 45		45 72	45 72	45 72	73.8	65.3	68.3	75.3	30	72.3	70.7	3.4
Cumulative Plus Project	4,644	97 4,505	2 93	1 46		45 72	45 72	45 72	74.0	65.4	68.4	75.5	30	72.4	70.9	3.6

ROAD SEGMENT #30: Walerga Road South of Springhill Drive	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck % Auto	MT %	Heavy Truck % HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	2,037	97 1,976	2 41	1 20		45 72	45 72	45 72	70.4	61.8	64.8	71.9	30	68.8	67.3	0.0
Existing Plus Project Full Buildout	2,159	97 2,094	2 43	1 22		45 72	45 72	45 72	70.7	62.1	65.1	72.2	30	69.1	67.6	0.3
Cumulative No Project	4,470	97 4,336	2 89	1 45		45 72	45 72	45 72	73.8	65.2	68.3	75.3	30	72.3	70.7	3.4
Cumulative Plus Project	4,597	97 4,459	2 92	1 46		45 72	45 72	45 72	73.9	65.4	68.4	75.5	30	72.4	70.8	3.5

ROAD SEGMENT #31: Springhill Drive East of Walerga Road	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck % Auto	MT %	Heavy Truck % HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	22	97 21	2 0	1 0		25 40	25 40	25 40	43.4	38.2	42.8	46.8	30	43.7	42.2	0.0
Existing Plus Project Full Buildout	25	97 19	2 1	1 0		25 40	25 40	25 40	43.9	38.7	43.4	47.3	30	44.3	42.7	0.6
Cumulative No Project	30	97 29	2 1	1 0		25 40	25 40	25 40	44.7	39.5	44.2	48.1	30	45.0	43.5	1.3
Cumulative Plus Project	30	97 29	2 1	1 0		25 40	25 40	25 40	44.7	39.5	44.2	48.1	30	45.0	43.5	1.3

ROAD SEGMENT #32: Springhill Drive West of Walerga Road	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck % Auto	MT %	Heavy Truck % HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	16	100 16	0 0	0 0		25 40	25 40	25 40	42.1	23.8	31.4	42.6	30	39.5	37.9	0.0
Existing Plus Project Full Buildout	76	100 76	0 0	0 0		25 40	25 40	25 40	48.9	30.6	38.2	49.3	30	46.2	44.7	6.8
Cumulative No Project	35	100 35	0 0	0 0		25 40	25 40	25 40	45.5	27.2	34.8	46.0	30	42.9	41.3	3.4
Cumulative Plus Project	115	100 115	0 0	0 0		25 40	25 40	25 40	50.7	32.4	40.0	51.1	30	48.0	46.5	8.6

ROAD SEGMENT #33: Walerga Road North of Town Center Ave	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck % Auto	MT %	Heavy Truck % HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
Existing	2,027	97 1,966	2 41	1 20		45 72	45 72	45 72	70.4	61.8	64.8	71.9	30	68.8	67.3	0.0

| | | |

Appendix I

ESTIA DRY CREEK

PRELIMINARY WATER REPORT

AUGUST 2025

REGISTERED PROFESSIONAL ENGINEER
ANDREW M. JENSEN
No. C97752
CIVIL
STATE OF CALIFORNIA

Prepared For
Homes By Towne



KING ENGINEERING

TABLE OF CONTENTS

Contents Page

Introduction **1**

Project Description 1

Project Phasing 1

Hydraulic Modeling **1**

References **2**

LIST OF TABLES

TABLE 1 Potable Water Demands

TABLE 2 Potable Water Distribution System Criteria

LIST OF EXHIBITS

EXHIBIT A Land Use

EXHIBIT B Project Phasing

EXHIBIT C Potable Water System

EXHIBIT D Scenario 1 – Ultimate Results – Maximum Day Demand with Fire

EXHIBIT E Scenario 2 – Ultimate Results – Peak Hour Demand

INTRODUCTION

Project Description

Estia Dry Creek is a proposed single-family residential and multi-family development within Placer County. The project is within the Dry Creek West Placer Community Plan, and is bordered by Baseline Road to the North, with Walerga Road running through its center. The purpose of this memo is to provide a feasibility study of the proposed project and the ultimate improvements. This memo demonstrates the proposed improvements can be constructed to the minimum standards established by California American Water. It should be noted that no storage is required on-site for fire protection.

Project Phasing

The project proposes to be constructed over four phases. The preliminary phasing exhibit has been provided as **Exhibit B** with this memo, with **Exhibit A** serving to provide the Land Use of each phase. The initial phase at the northern end of the project is a 220-unit multi-family housing community. Phases 2, 3, and 4 contain approximately 217 single-family residential home sites, with trails, recreation areas, and open space along the "Placer Creek" riparian area separating the Phase 3 and 4 neighborhoods.

HYDRAULIC MODELING

A hydraulic model was developed for the purposes of this memo to demonstrate that the ultimate conditions proposed with the project are adequate to support the improvements. The on-site routing is primarily made up of 8-inch mains, with 24" main connections through Baseline Road. The buildout condition showing all four phases is included in **Exhibit B**.

For this project, PCWA is the wholesaler and CalAM is the retailer. CalAM defers to the PCWA standards for setting the unit water demand, and per the PCWA Improvement Standards, a maximum-day demand is applied to each typical residential dwelling unit. For developments with more than 60 lots a maximum-day demand of 0.8 gpm per dwelling unit is applied. For peak-hour demands, Calam specifies a peaking factor of 1.5 x maximum day demand. **Table 1** shows the resulting demand values for each service connection point. The service connection points have been simplified for the purposes of this memo into 18 connection points at various locations. The locations of the assumed service connections are included in **Exhibit C**.

A hydraulic model was generated using EPANET (Version 2.2) to analyze the hydraulics of the proposed improvements. Scenario 1 analyzes the maximum day demand of the ultimate buildout condition with the fire flow considered, results are included in **Exhibit D**. The second scenario was created to demonstrate the peak-hour demand of the ultimate buildout without the additional fire flow demand on the system, results are included in **Exhibit E**.

Based on SCADA pressures in the area, it is expected that points of connection will have pressures of approximately 65 to 70 psi. For the purposes of this report, and as a conservative estimate, all points of connection in the model were set at 60 psi. The CalAM standards require the water pressure to be greater than 50 psi and lower than 80 psi with no fire demand added. The minimum pressure is reduced to 20 psi when fire demand is included. The maximum velocity is 10 ft/s for all pipes less than 16" in diameter. **Table 2** provides all potable water distribution system criteria. The results for Scenario 1 and Scenario 2 demonstrate the proposed project will operate within these conditions.

REFERENCES

1. Dry Creek-West Placer Community Plan, May 14, 1990, prepared by Placer County Planning Department with the assistance of the Placer County Department of Public Works and Division of Environmental Health.
2. Placer County Water Agency Improvement Standards, 2017 Edition.

Table 1 – Potable Water Demands

					Model Node Demand (gpm)[(a)]	
Junction Node		Elevation (feet)	Units	Unit Demand	Max-Day	Peak-Hour
Phase 1	1	111.99	24	0.8	19.20	28.80
	2	110.25	5	0.8	4.00	6.00
	3	111.16	34	0.8	27.20	40.80
	4	112.87	59	0.8	47.20	70.80
	5	114.39	43	0.8	34.40	51.60
	6	112.81	55	0.8	44.00	66.00
Subtotal Water Demand					**176.00**	**264.00**
Phase 2	7	107.75	32	0.8	25.60	38.40
	8	109.85	15	0.8	12.00	18.00
	9	110.62	11	0.8	8.80	13.20
	10	114.1	14	0.8	11.20	16.80
	11	113.03	20	0.8	16.00	24.00
	12	116.21	18	0.8	14.40	21.60
Subtotal Water Demand					**88.00**	**132.00**
Phase 3	16	105.73	19	0.8	15.20	22.80
	17	105.63	17	0.8	13.60	20.40
	18	103.54	19	0.8	15.20	22.80
Subtotal Water Demand					**44.00**	**66.00**
Phase 4	20	103.38	17	0.8	13.60	20.40
	21	108.49	14	0.8	11.20	16.80
	22	110.12	14	0.8	11.20	16.80
Subtotal Water Demand					**36.00**	**54.00**
Total			**430**		**344.00**	**516.00**

(a) See Table 2 for demand multipliers

Table 2 – Potable Water Distribution System Criteria

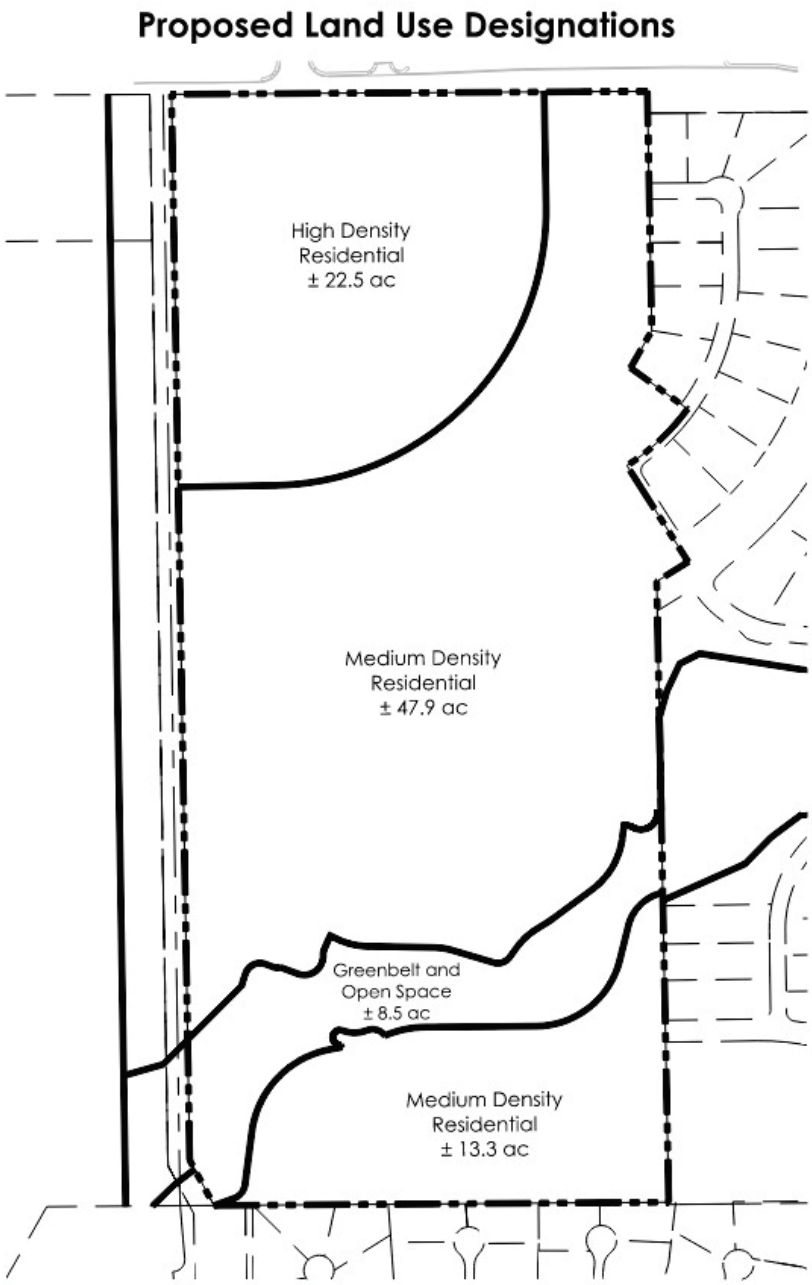
Criterion	Recommended
Distribution Pipeline Criteria	
Service Pressure Range	50 - 80 psi
Minimum Service Pressure, Fire Flow	20 psi
Residential and commercial fire flows	1,000 gpm for 2 hours
Pipe Material	For ≤ 12": PVC w/ C value of 140 For > 12": DIP w/ C value of 130
MDD peaking factor	2.25 x ADD
PHD peaking factor	1.5 x MDD
Maximum Distribution Pipe Velocity (diameter > = 16-inch)	5 ft/s
Maximum Distribution Pipe Velocity (diameter < 16-inch)	10 ft/s
Minimum Transmission Pipe Velocity	2 ft/s
Maximum Transmission Pipe Velocity	6 ft/s
Maximum Pipe Headloss (diameter > = 16-inch)	8 ft/1,000 ft pipe
Maximum Pipe Headloss (diameter < 16-inch)	10 ft/1,000 ft pipe

ADD = average day demand

MDD = maximum day demand

PHD = Peak hour demand

EXHIBIT A – Land Use



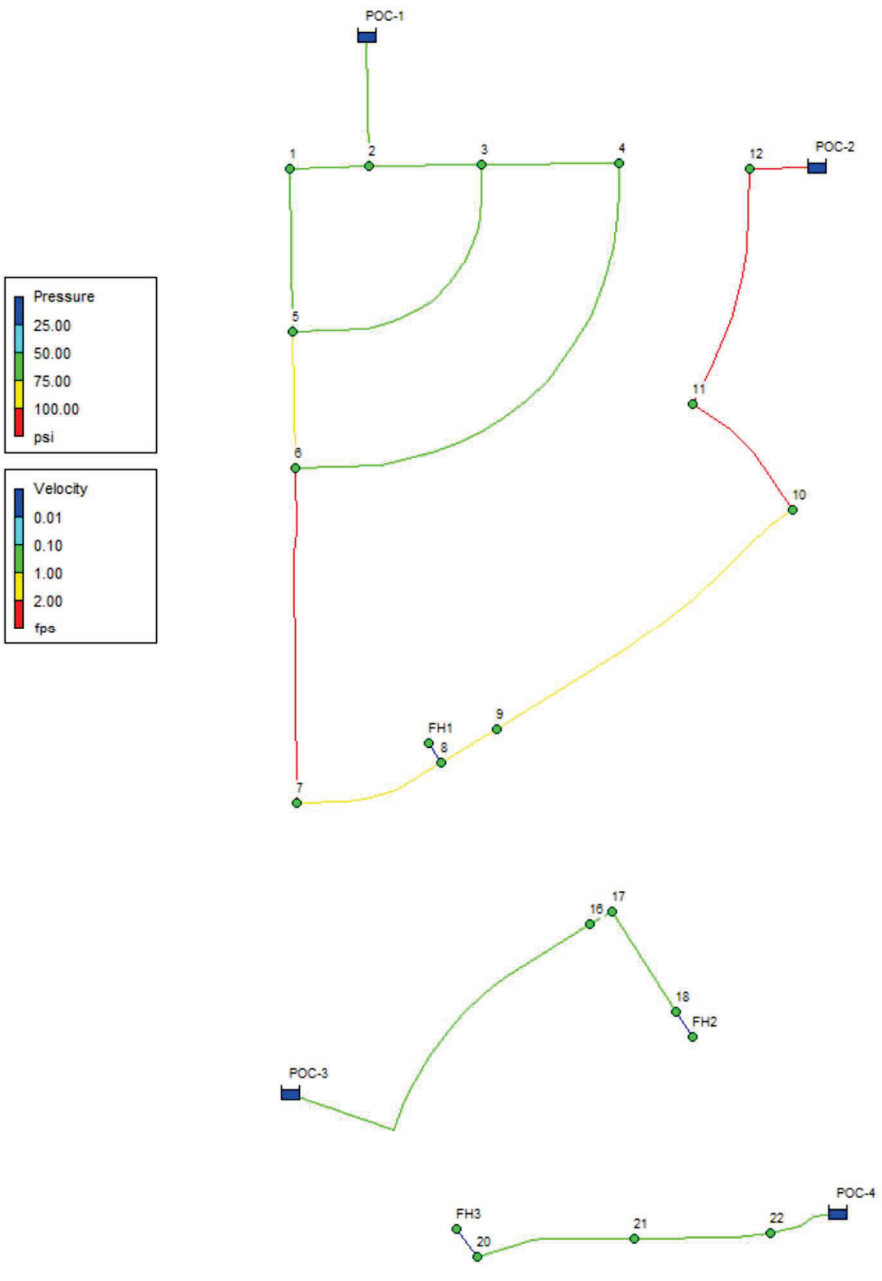
* Figure not OCR Compatible

EXHIBIT B – Project Phasing



* Figure not OCR Compatible

EXHIBIT C – Potable Water System



* Figure not OCR Compatible

EXHIBIT D – Scenario 1 – Ultimate Results – Maximum Day Demand with Fire

```
******************************************************************************
*                            E P A N E T                                     *
*                     Hydraulic and Water Quality                            *
*                     Analysis for Pipe Networks                             *
*                           Version 2.2                                      *
******************************************************************************
```

Input File: Maximum Day Demand with Fire

Link - Node Table:

Link ID	Start Node	End Node	Length ft	Diameter in
1	POC-1	2	288	12
2	1	2	175	12
3	2	3	248	12
4	3	4	302	12
5	1	5	361	8
6	5	3	655	8
7	5	6	302	8
8	6	4	1130	8
11	7	8	342	12
12	8	9	143	12
13	9	10	820	12
14	10	11	326	8
15	11	12	540	8
16	12	POC-2	147	8
20	16	17	25	8
21	17	18	264	8
24	20	21	348	8
25	21	22	301	8
26	22	POC-4	157	8
27	7	6	741	8
22	POC-3	16	922	8
10	FH1	8	10	8
9	20	FH3	15	8
17	18	FH2	15	8

Node Results:

Node ID	Demand GPM	Head ft	Pressure psi	Quality
1	19.20	247.81	58.89	0.00
2	4.00	247.86	59.22	0.00
3	27.20	247.67	59.18	0.00

4	47.20	247.59	58.36	0.00
5	34.40	247.12	57.51	0.00
6	44.00	245.85	57.65	0.00
7	25.60	239.41	57.05	0.00

Node Results: (continued)

Node ID	Demand GPM	Head ft	Pressure psi	Quality	
8	12.00	239.02	55.97	0.00	
9	8.80	239.30	55.76	0.00	
10	11.20	240.93	54.95	0.00	
11	16.00	245.70	57.49	0.00	
12	14.40	253.88	59.65	0.00	
16	15.20	204.35	42.73	0.00	
17	13.60	202.72	42.07	0.00	
18	15.20	192.31	38.46	0.00	
20	13.60	224.04	52.28	0.00	
21	11.20	237.74	56.00	0.00	
22	11.20	249.75	60.50	0.00	
FH1	1500.00	238.63	55.74	0.00	
FH2	1500.00	191.73	38.21	0.00	
FH3	1500.00	223.46	52.03	0.00	
POC-1	-846.08	248.40	0.00	0.00	Reservoir
POC-2	-917.92	257.60	0.00	0.00	Reservoir
POC-4	-1536.00	256.10	0.00	0.00	Reservoir
POC-3	-1544.00	242.00	0.00	0.00	Reservoir

Link Results:

Link ID	Flow GPM	Velocity fps	Unit Headloss ft/Kft	Status
1	846.08	2.40	1.86	Open
2	-315.26	0.89	0.30	Open
3	526.82	1.49	0.77	Open
4	309.54	0.88	0.29	Open
5	296.06	1.89	1.92	Open
6	-190.08	1.21	0.84	Open
7	451.74	2.88	4.19	Open
8	-262.34	1.67	1.53	Open
11	644.48	1.83	1.12	Open
12	-867.52	2.46	1.95	Open
13	-876.32	2.49	1.98	Open
14	-887.52	5.66	14.64	Open
15	-903.52	5.77	15.14	Open
16	-917.92	5.86	25.34	Open

20	1528.80	9.76	65.18	Open
21	1515.20	9.67	39.43	Open
24	-1513.60	9.66	39.36	Open
25	-1524.80	9.73	39.90	Open
26	-1536.00	9.80	40.44	Open
27	-670.08	4.28	8.70	Open
22	1544.00	9.86	40.83	Open
10	-1500.00	9.57	38.71	Open
9	1500.00	9.57	38.70	Open

Link Results: (continued)

Link ID	Flow GPM	Velocity fps	Unit Headloss ft/Kft	Status
17	1500.00	9.57	38.71	Open

EXHIBIT E – Scenario 2 – Ultimate Results – Peak Hour Demand

```
******************************************************************************
*                            E P A N E T                                     *
*                     Hydraulic and Water Quality                            *
*                     Analysis for Pipe Networks                             *
*                           Version 2.2                                      *
******************************************************************************
```

Input File: Peak Hour Demand

Link - Node Table:

Link ID	Start Node	End Node	Length ft	Diameter in
1	POC-1	2	288	12
2	1	2	175	12
3	2	3	248	12
4	3	4	302	12
5	1	5	361	8
6	5	3	655	8
7	5	6	302	8
8	6	4	1130	8
11	7	8	342	12
12	8	9	143	12
13	9	10	820	12
14	10	11	326	8
15	11	12	540	8
16	12	POC-2	147	8
20	16	17	25	8
21	17	18	264	8
24	20	21	348	8
25	21	22	301	8
26	22	POC-4	157	8
27	7	6	741	8
22	POC-3	16	922	8
10	FH1	8	10	8
9	20	FH3	15	8
17	18	FH2	15	8

Node Results:

Node ID	Demand GPM	Head ft	Pressure psi	Quality
1	28.80	248.42	59.15	0.00
2	6.00	248.42	59.46	0.00
3	40.80	248.42	59.50	0.00

4	70.80	248.42	58.72	0.00
5	51.60	248.50	58.11	0.00
6	66.00	248.81	58.93	0.00
7	38.40	251.21	62.16	0.00

Node Results: (continued)

Node ID	Demand GPM	Head ft	Pressure psi	Quality	
8	18.00	251.40	61.33	0.00	
9	13.20	251.48	61.03	0.00	
10	16.80	251.98	59.74	0.00	
11	24.00	253.51	60.87	0.00	
12	21.60	256.28	60.69	0.00	
16	22.80	241.89	59.00	0.00	
17	20.40	241.89	59.04	0.00	
18	22.80	241.88	59.94	0.00	
20	20.40	256.07	66.16	0.00	
21	16.80	256.07	63.95	0.00	
22	16.80	256.09	63.25	0.00	
FH1	0.00	251.40	61.27	0.00	
FH2	0.00	241.88	59.94	0.00	
FH3	0.00	256.07	66.16	0.00	
POC-1	129.31	248.40	0.00	0.00	Reservoir
POC-2	-525.31	257.60	0.00	0.00	Reservoir
POC-4	-54.00	256.10	0.00	0.00	Reservoir
POC-3	-66.00	242.00	0.00	0.00	Reservoir

Link Results:

Link ID	Flow GPM	Velocity fps	Unit Headloss ft/Kft	Status
1	-129.31	0.37	0.06	Open
2	64.03	0.18	0.02	Open
3	-71.28	0.20	0.02	Open
4	-45.69	0.13	0.01	Open
5	-92.83	0.59	0.22	Open
6	66.40	0.42	0.12	Open
7	-210.83	1.35	1.02	Open
8	116.49	0.74	0.34	Open
11	-431.71	1.22	0.53	Open
12	-449.71	1.28	0.58	Open
13	-462.91	1.31	0.61	Open
14	-479.71	3.06	4.69	Open
15	-503.71	3.22	5.13	Open
16	-525.31	3.35	9.01	Open

20	43.20	0.28	0.09	Open
21	22.80	0.15	0.02	Open
24	-20.40	0.13	0.01	Open
25	-37.20	0.24	0.04	Open
26	-54.00	0.34	0.08	Open
27	393.31	2.51	3.24	Open
22	66.00	0.42	0.12	Open
10	0.00	0.00	0.00	Open
9	0.00	0.00	0.00	Open

Link Results: (continued)

Link ID	Flow GPM	Velocity fps	Unit Headloss ft/Kft	Status
17	0.00	0.00	0.00	Open

Appendix J

ESTIA DRY CREEK & PLACER CREEK RESIDENTIAL WASTEWATER REPORT

June 2026

Prepared For
HOMES BY TOWNE



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Auburn, California 95603
Telephone: (530) 272-8328
Email: info@King-Engineering-Inc.com

TABLE OF CONTENTS

Contents Page

Introduction 2

Project Description 2

Scope of Report 3

Environmental Documentation 3

Design Criteria 3

Notes Regarding the Wastewater Master Plan and Design 3

Pipe Capacity Calculations 4

Tank Capacity Calculations 4

References 5

TABLES

TABLE 1 – Estia Dry Creek Flow Rate Calculations

EXHIBITS

EXHIBIT 1 - Sewer Shed Map - Overview

EXHIBIT 2 - Sewer Shed Map – Phase 1

EXHIBIT 3 - Sewer Shed Map – Phase 2

EXHIBIT 4 - Sewer Shed Map – Phase 3

EXHIBIT 5 - Sewer Shed Map – Phase 4

EXHIBIT 6 - Phase 1 & 2 Sewer Alt Shed Map

EXHIBIT 7 - Emergency Storage Plan

INTRODUCTION

Project Description

The proposed "Estia Dry Creek & Placer Creek Residential" (Project) includes a total of approximately 88 acres, comprised of a 52.3-acre parcel (Assessor's Parcel No. 023-221-076) located on the north side of Walerga Road and a 35.3 -acre parcel (APN 023-221-074) located south and east of Walerga Road, collectively, the "project", Estia Dry Creek.

This project is not presently within the Placer County Service Area 28, Zone 173 but proposes to annex into that Service Area. This report complies with the requirements, layout and modeling shown in the Walerga – Baseline Tentative Map and sewer studies prepared for Sewer Lift Station CFD #1 listed in the references.

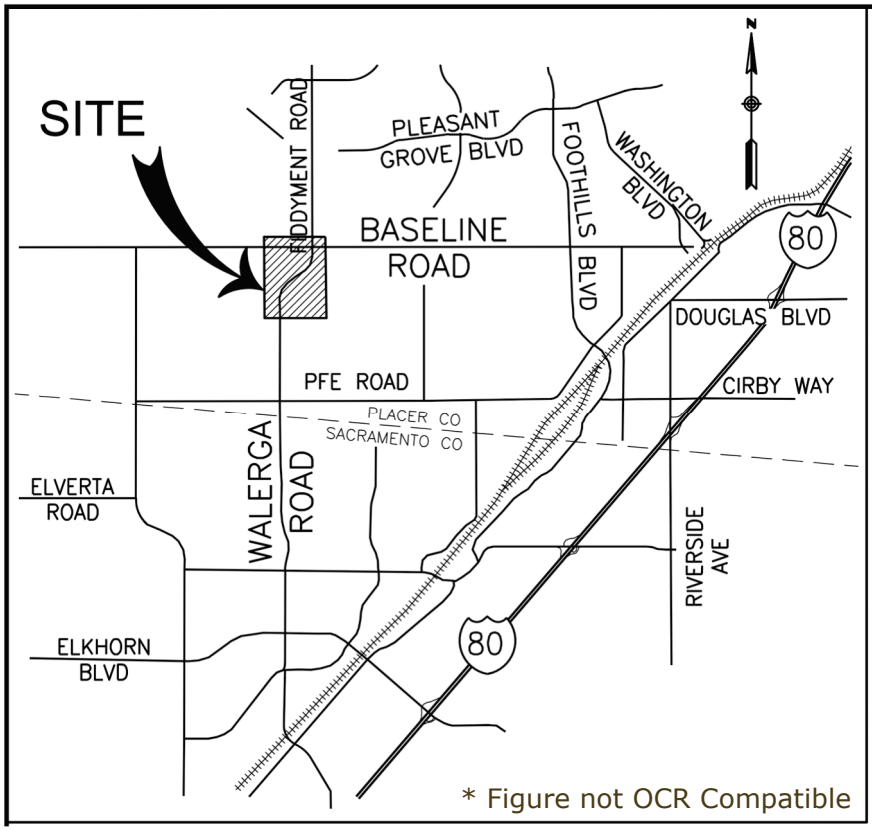


Figure 1: Project Vicinity Map

*Figure not OCR compatible

Scope of the Report

This report covers all four residential phases of the Estia Dry Creek tentative map. It also provides calculations to show downstream facilities are capable of handling proposed flows including the existing trunk mains and the emergency storage tanks at CFD1.

ENVIRONMENTAL DOCUMENTATION

Environmental documentation for this development is being prepared at the time of this report.

DESIGN CRITERIA

Hydraulic calculations have been prepared for the on-site gravity systems constructed with Estia Dry Creek in accordance with the "Placer County Land Development Manual", while average dry weather flows are sourced from the South Placer Wastewater Authority standards. Pipe sizes required to serve the service area were determined using Manning's Equation to calculate the capacity of typical pipe diameters flowing at 70% full and utilizing a Manning's Roughness Coefficient of 0.013. The Peaking Factor was assigned based on the Peaking Factor Curve of the Placer County LDM. The ratio of depth-to-diameter was found using the ASCE Hydraulic Elements Graph for Circular Pipes.

Average Dry Weather Flows (ADWF) including a Factor of Safety of 2.0

Residential Single Family Development	=380 gallons per day per EDU
Residential Multi Family Development	=260 gallons per day per EDU

Minimum Slopes

The minimum slopes for sewer pipes are set using the criterial defined in the Placer County Land Development Manual, Table 6.3 shown on page SS 11. For 8" pipe, a minimum of 0.005 slope is used whenever the design flow is low.

NOTES REGARDING THE WASTEWATER MASTER PLAN AND DESIGN

This wastewater report follows the referenced Riolo Vineyards Sanitary Sewer Master Plan Update with some differences or clarifications noted below. This report uses the EDU count presented in the Sewer Master Plan Addendum.

1. This project proposes to annex to the County Service Area (District).
2. Improvement Plans will be submitted to Placer County.
3. Watertight joints will be specified for all sanitary sewer pipe.
4. No pumped sewer lots are proposed in Estia Dry Creek. All lots will have gravity sewer

service.

5. Final EDU count to be approved by Placer County.
6. For calculating design flows in sewer pipes listed in Table 1, use sewer flow generation rates based on those cited in the RMC Technical Memo 3a.
7. Based on EDU counts to CFD#1 listed in reference 5, with 3,435 ultimate EDUs and 1,228 existing EDUs, this project is expected to contribute 432 of the total new EDUs proposed to connect to CFD #1LS.
8. Emergency storage required for this project at CFD #1 LS is calculated per the preliminary design by West Yost (Reference 5): 212 EDU x 380 gal x 1/3 + 220 HDR EDU x 260 x 1/3 = 45,930 gallons of emergency storage required with generator. Mariposa and Mason Trails at Riolo Vineyard have already built 35,250 gallons and 47,000 gallons of emergency storage at CFD#1. Other existing developments have paid into the reimbursement agreement. The combined emergency storage required for those projects and this project is calculated at (107 MP + 169 MT + 357 Others) EDU x 380 gal x 1/3 + 45,930 gallons = 126,120 gallons of emergency storage, which does not fit within the existing two tanks that are built. Therefore, the project is required to increase the emergency storage capacity at the existing lift station by constructing a 47,000 gallon underground tank.
9. Capacity calculations assume multi-family units as 260 gallons per unit.
10. Elevation drop in manholes is set at 0.10 foot.
11. Existing pipes internal to phase 4 from KC11-03 to KC11-05 may need to be upsized depending on final improvement plan wastewater report and the county's level of surcharge allowance.

PIPE CAPACITY CALCULATIONS

This report provides sewer service maps, Exhibit 1, and preliminary hydraulic calculations, Table 1, to support the layout and pipe sizes for the proposed sewer collection system design. Table 1 shows the designated EDU count and calculated peak design flow to each on site manhole listed. Design depth of flow in the pipes is listed for uniform, steady flow. Refer to the Sewer Service Maps for manhole locations and EDU counts.

REFERENCES

The referenced Master Plan includes reference data from the following studies and technical memos:

1. Riolo Vineyards Sanitary Sewer Master Plan Update, April 2016, Unico Engineering
2. Placer County. “Land Development Manual.” August 2023.
3. South Placer Wastewater Authority – South Placer Regional Wastewater 2020 Systems Evaluation Report, December 2020.
4. Technical Memorandum, Riolo Vineyard Sewer Lift Station…, September 25, 2014, Blackwater Consulting Engineers, Inc.
5. Preliminary Design of Lift Station…, April 1, 2016, West Yost Associates
6. Walerga Road Gravity Sewer collection System Evaluation, WJM Associates
7. Dry Creek West Placer CFD #1 Public Facilities Master Plan, February 1998, Spink Corporation
8. Technical Memo 3a, South Placer Regional Wastewater & Recycled Water Systems Evaluation Project, RMC

Table 1 – Flow Rate Calculations

COMPUTATION FOR ON SITE SANITARY SEWER DESIGN — PROJECT: Estia Dry Creek

Ref: Table 7.13 Handbook of Hydraulics, Brater,King,Lindell, Wei 7th edition — DATE: 7/15/2026

1. Design average flow per single family EDU = 2X190 gal/day — 2. Peak Design flow = avg flow x PF — EDU = Equivalent Dwelling Unit

3. $Q=1.49(K'/n)d^{8/3}s^{1/2}$ (K' = 0.312 at pipe full) — 4. Peaking Factor (PF) = 2.3 - 4.0 — 5. Manning's n=0.013 6. Design D/d < 0.71

ROAD OR LOCATION	MH no.		PIPE LENGTH	EDU's to MH	TOTAL EDU's	DESIGN AVG. FLOW	PEAKING FACTOR PF	Q_D DESIGN PEAK FLOW	SLOPE	MH DEPTH	d DIAMETER	Q_F CAPACITY FULL	VELOCITY FULL	Q_D/Q_F	Design D/d	DESIGN DEPTH D
	from	to	feet			gpd		cfs		feet	inches	cfs	fps			inches
Phase 1 (Multifamily)																
Aisle A	1.1	1.2	392	27	27	7,020	4.0	0.044	0.0050	8.4	8	0.858	2.46	0.051	0.145	1.16
Aisle A	1.2	1.4	418	17	44	11,440	3.9	0.070	0.0050	8.8	8	0.858	2.46	0.081	0.190	1.52
Aisle A	1.3	1.4	128	10	10	2,600	4.0	0.016	0.0050	8.1	8	0.858	2.46	0.019	0.091	0.73
Aisle B	1.5	1.6	241	18	18	4,680	4.0	0.029	0.0050	9.9	8	0.858	2.46	0.034	0.120	0.96
Aisle B	1.6	1.7	352	21	39	10,140	3.9	0.062	0.0050	12.5	8	0.858	2.46	0.072	0.177	1.41
Aisle C	1.8	1.9	500	44	44	11,440	3.9	0.070	0.0050	10.6	8	0.858	2.46	0.081	0.190	1.52
Aisle C	1.9	1.10	478	33	77	20,020	3.9	0.122	0.0050	12.8	8	0.858	2.46	0.142	0.250	2.00
Aisle D	1.4	1.7	104	23	77	20,020	3.9	0.122	0.0050	10.6	8	0.858	2.46	0.142	0.250	2.00
Aisle D	1.7	1.10	296	23	139	36,140	3.9	0.220	0.0050	14.2	8	0.858	2.46	0.256	0.343	2.75
Aisle D	1.10	2.7	141	4	220	57,200	3.7	0.330	0.0050	11.6	8	0.858	2.46	0.385	0.430	3.44

ROAD OR LOCATION	MH no.		PIPE LENGTH	EDU's to MH	TOTAL EDU's	DESIGN AVG. FLOW	PEAKING FACTOR PF	Q_D DESIGN PEAK FLOW	SLOPE	MH DEPTH	d DIAMETER	Q_F CAPACITY FULL	VELOCITY FULL	Q_D/Q_F	Design D/d	DESIGN DEPTH D
	from	to	feet			gpd		cfs		feet	inches	cfs	fps			inches
Phase 2B (Single-Family)																
L Court	FB1	2.1	81	3	3	1,140	4.0	0.007	0.0050	-	6	0.398	2.03	0.018	0.086	0.51
L Court	FB2	2.1	110	2	2	760	4.0	0.005	0.0050	-	6	0.398	2.03	0.012	0.057	0.34
F Street	2.1	2.2	222	6	11	4,180	4.0	0.026	0.0050	5.0	6	0.398	2.03	0.065	0.167	1.00
F Street	2.2	2.4	302	10	21	7,980	4.0	0.050	0.0050	5.6	6	0.398	2.03	0.028	0.235	1.41
F Court	2.6	2.4	490	17	17	6,460	4.0	0.040	0.0050	4.3	6	0.398	2.03	0.028	0.213	1.28
Spring Hill Drive	2.4	SVO#31	320	0	38	14,440	3.9	0.088	0.0050	9.4	6	0.398	2.03	0.221	0.318	1.91
Bridgestone Crescant Road		SVO#31	300	17	17	6,460	4.0	0.040	0.0050	-	6	0.398	2.03	0.101	0.213	1.28
Spring Hill Drive	SVO#31	SVO#30	376	0	55	20,900	3.9	0.127	0.0101	-	6	0.566	2.88	0.225	0.321	1.92
Phase 2A (Single-Family)																
H street	1.10	2.7	115	4	224	59,380	3.7	0.343	0.0050	-	8	0.858	2.46	0.400	0.439	3.51
H street	2.7	2.11	486	17	241	65,840	3.7	0.380	0.0050	13.6	8	0.858	2.46	0.443	0.465	3.72
H street	2.10	2.11	417	11	11	4,180	4.0	0.026	0.0050	9.4	8	0.858	2.46	0.030	0.114	0.91
I Court	2.12	2.13	203	9	9	3,420	4.0	0.021	0.0050	9.4	8	0.858	2.46	0.025	0.106	0.85
G Street	2.11	2.13	280	5	257	71,920	3.6	0.404	0.0050	13.1	8	0.858	2.46	0.471	0.482	3.86
G Street	2.13	2.14	115	1	267	75,720	3.6	0.425	0.0050	15.9	8	0.858	2.46	0.496	0.497	3.98
G Street	2.8	2.9	350	14	14	5,320	4.0	0.033	0.0050	7.7	8	0.858	2.46	0.039	0.127	1.01
G Street	2.9	2.14	284	9	23	8,740	4.0	0.055	0.0050	13.8	8	0.858	2.46	0.064	0.164	1.31
J Street	2.14	STUB	184	0	290	84,460	3.6	0.474	0.0035	17.0	8	0.718	2.06	0.661	0.595	4.76
J Street	STUB	3.1	212	0	290	84,460	3.6	0.474	0.0035	-	8	0.718	2.06	0.661	0.595	4.76

Table 1 – Flow Rate Calculations (CONT)

ROAD OR LOCATION	MH no.		PIPE LENGTH	EDU's to MH	TOTAL EDU's	DESIGN AVG. FLOW	PEAKING FACTOR PF	Q_D DESIGN PEAK FLOW	SLOPE	MH DEPTH	d DIAMETER	Q_F CAPACITY FULL	VELOCITY FULL	Q_D/Q_F	Design D/d	DESIGN DEPTH D
	from	to	feet			gpd		cfs		feet	inches	cfs	fps			inches
Phase 3 (Single-Family)																
M Street	3.1	3.5	13	0	309	91,680	3.5	0.501	0.0050	14.1	8	0.858	2.46	0.584	0.549	4.39
M Street	3.3	3.4	406	13	13	4,940	4.0	0.031	0.0050	8.4	8	0.858	2.46	0.036	0.123	0.98
M Street	3.4	3.1	211	6	19	7,220	4.0	0.045	0.0050	12.6	8	0.858	2.46	0.053	0.148	1.18
M Street	3.2	3.5	482	17	17	6,460	4.0	0.040	0.0050	10.7	8	0.858	2.46	0.047	0.139	1.11
P Street	3.5	3.7	264	0	326	98,140	3.5	0.536	0.0035	14.1	8	0.718	2.06	0.028	0.646	5.17
N Street	3.6	3.7	310	10	10	3,800	4.0	0.024	0.0050	10.9	8	0.858	2.46	0.028	0.110	0.88
N Street	3.7	3.10	254	6	342	104,220	3.4	0.553	0.0035	12.8	8	0.718	2.06	0.028	0.660	5.28
N Street	3.10	3.8	127	4	346	105,740	3.4	0.561	0.0035	12.7	8	0.718	2.06	0.028	0.667	5.34
N Street	3.8	3.9	114	0	346	105,740	3.4	0.561	0.0035	10.0	8	0.718	2.06	0.028	0.667	5.34
Creek Crossing	3.9	KC11-03	215	0	346	105,740	3.4	0.561	0.0035	16.2	8	0.718	2.06	0.782	0.667	5.34
Existing, Phase 2, Phase 4, and offsite																
Spring Hill Drive	SVO#30	KD11-07	217	1	56	21,280	3.9	0.129	0.0217	-	6	0.830	4.23	0.156	0.263	1.58
Spring Hill Drive	KD11-07	SVO#29	181	1	57	21,660	3.9	0.132	0.0050	-	6	0.398	2.03	0.028	0.396	2.38
Spring Hill Drive	KD12-07	SVO#29	200	220	220	83,600	3.6	0.469	0.0035	-	8	0.718	2.06	0.028	0.591	4.73
	SVO#29	SVO#36	181	220	277	105,260	3.4	0.558	0.0035	-	8	0.718	2.06	0.028	0.665	5.32
	SVO#36	SVO#2	331	0	277	105,260	3.4	0.558	0.0035	-	8	0.718	2.06	0.028	0.665	5.32
White Mill Crescant	SVO#2	SVO#3	352	4	281	106,780	3.4	0.566	0.0035	-	8	0.718	2.06	0.028	0.672	5.37
White Mill Crescant	SVO#3	SVO#4	281	6	287	109,060	3.4	0.578	0.0035	-	8	0.718	2.06	0.028	0.682	5.45
Vineyard Road	SVO#4	KC11-01	321	91	378	143,640	3.3	0.739	0.0035	-	8	0.718	2.06	0.028	0.861	6.89
T Court	4.1	4.2	400	12	12	4,560	4.0	0.028	0.0200	15.7	8	1.715	4.92	0.017	0.079	0.64
S Court	4.3	4.4	385	10	10	3,800	4.0	0.024	0.0200	18.5	8	1.715	4.92	0.014	0.066	0.53
R Court	4.5	4.6	355	9	9	3,420	4.0	0.021	0.0200	17.3	8	1.715	4.92	0.012	0.060	0.48
Q Court	FB3	4.7	170	3	3	1,140	4.0	0.007	0.0200	-	8	1.715	4.92	0.004	0.020	0.16
Q Court	4.7	4.8	135	1	4	1,520	4.0	0.009	0.0200	18.0	8	1.715	4.92	0.006	0.026	0.21
Q Street	KC11-01	4.2	112	0	378	143,640	3.3	0.739	0.0038	3.5	8	0.748	2.14	0.989	0.813	6.50
Q Street	4.2	KC11-02	135	2	392	148,960	3.2	0.744	0.0050	25.5	8	0.858	2.46	0.867	0.722	5.77
Q Street	KC11-02	4.4	135	2	394	149,720	3.2	0.747	0.0050	-	8	0.858	2.46	0.871	0.725	5.80
Q Street	4.4	KC11-03	225	3	407	154,660	3.2	0.772	0.0035	24.2	8	0.718	2.06	1.076	0.909	7.28
Q Street	KC11-03	4.6	120	1	754	260,780	2.8	1.139	0.0035	3.6	8	0.718	2.06	1.587	1.319	10.55
Q Street	4.6	KC11-04	264	3	766	265,340	2.8	1.159	0.0035	20.9	8	0.718	2.06	1.615	1.341	10.73
Q Street	KC11-04	4.8	290	0	766	265,340	2.8	1.159	0.0035	-	8	0.718	2.06	1.615	1.341	10.73
Q Street	4.8	KC11-05	200	0	770	266,860	2.8	1.166	0.0035	18.3	8	0.718	2.06	1.624	1.348	10.79

Table 1 – Flow Rate Calculations (CONT)

ROAD OR LOCATION	MH no.		PIPE LENGTH	EDU's to MH	TOTAL EDU's	DESIGN AVG. FLOW	PEAKING FACTOR PF	Q_D DESIGN PEAK FLOW	SLOPE	MH DEPTH	d DIAMETER	Q_F CAPACITY FULL	VELOCITY FULL	Q_D/Q_F	Design D/d	DESIGN DEPTH D
	from	to	feet			gpd		cfs		feet	inches	cfs	fps			inches
CFD1 Sheds & Walerga																
Walerga Road	KC11-05	KC11-08		0	1085	386,560	2.6	1.568	0.0035	-	10	1.301	2.39	1.205	1.013	10.13
Walerga Road	KC11-08	KB11-05		35	1120	399,860	2.6	1.622	0.0035	-	12	2.116	2.70	0.767	0.658	7.90
Placer Vineyard (B)	KC11-EOL50	KC11-05		315	315	119,700	3.4									
Walerga Road	KB11-05	KB11-126		136	1256	451,540	2.5	1.761	0.0035	-	12	2.116	2.70	0.832	0.697	8.37
Walerga Road	KB11-126	KB11-102		132	1388	501,700	2.5	1.956	0.0035	-	12	2.116	2.70	0.925	0.763	9.15
Total from Walerga North					**1388**											
MT SHED 1	Walerga South			167	167	63,460										
Mariposa Shed 2	Walerga South			250	250	95,000										
Hidden Crossing Shed 3	Walerga South			173	173	65,740										
Walerga Road	Walerga South	KB11-07			590	198,460										
Total from Walerga South					**590**											
Walerga Road	KB11-102	KB11-103			1978	725,900	2.4	2.718	0.0035	-	18	6.237	3.53	0.436	0.461	8.29
Walerga Road	KB11-103	KB11-03			1978	725,900	2.4	2.718	0.0035	-	18	6.237	3.53	0.436	0.461	8.29
East Shed to CFD1				1356	**1356**	515,280										
South Shed to CFD1	KB11-20	CFD#1		249	**249**	94,620										
TOTAL at CFD1					**3583**	1,361,540										
Alternate Sewer Offsite																
Walerga Road Alt	2.14	B1	255		290	84,460	3.6	0.474	0.0035	20.4	8	0.718	2.06	0.661	0.595	4.76
Walerga Road Alt	B1	B2	500		290	84,460	3.6	0.474	0.0035	20.4	8	0.718	2.06	0.661	0.595	4.76
Walerga Road Alt	B2	B3	337		290	84,460	3.6	0.474	0.0035	19.1	8	0.718	2.06	0.661	0.595	4.76
Walerga Road Alt	B3	B4	486		290	84,460	3.6	0.474	0.0035	16.9	8	0.718	2.06	0.661	0.595	4.76
Walerga Road Alt	B4	KC11-05	373		290	84,460	3.6	0.474	0.0035	17.5	8	0.718	2.06	0.661	0.595	4.76

EXHIBITS

EXHIBIT 1 - Sewer Shed Map - Overview

EXHIBIT 2 - Sewer Shed Map – Phase 1

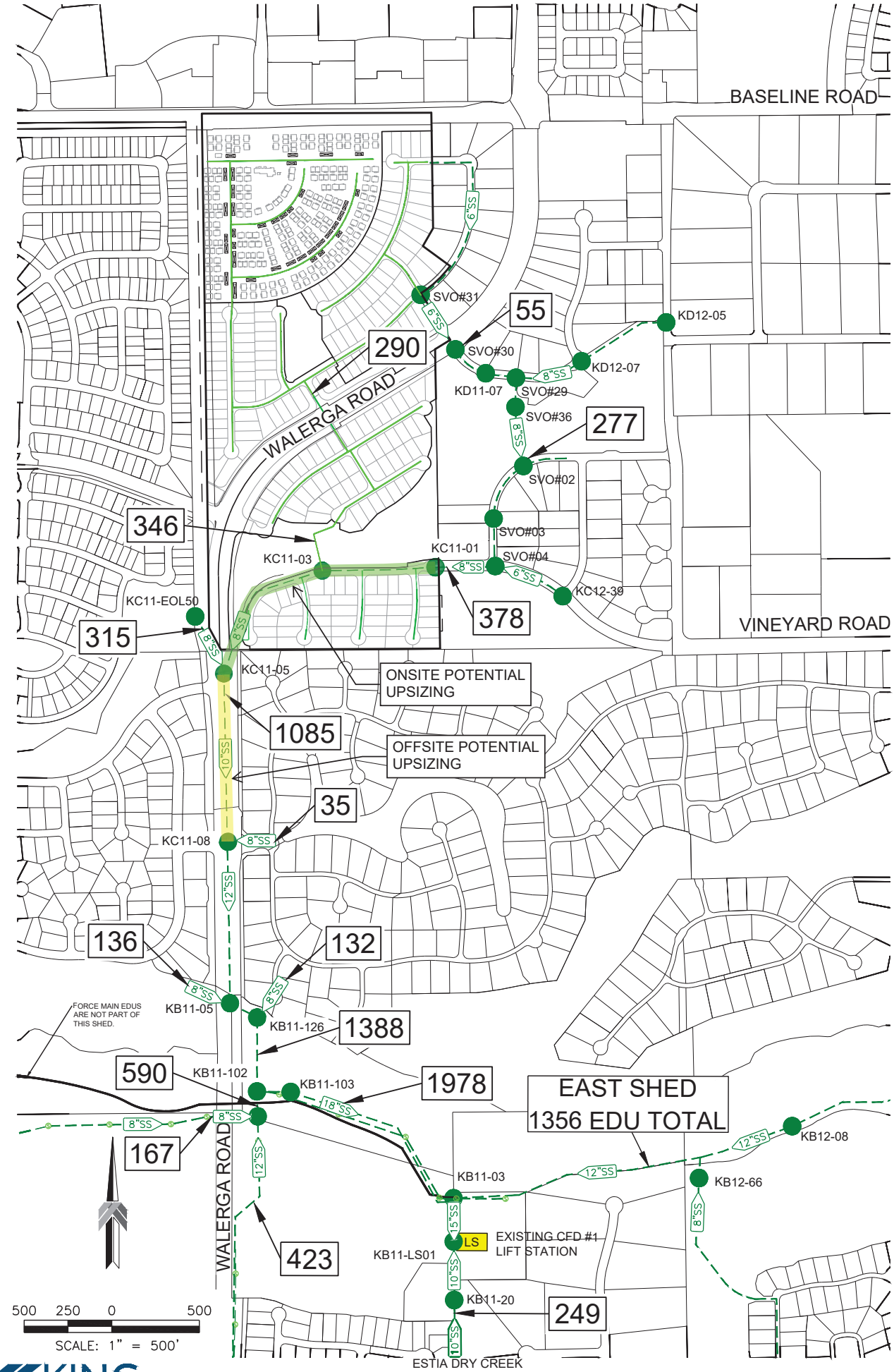
EXHIBIT 3 - Sewer Shed Map – Phase 2A & 2B

EXHIBIT 4 - Sewer Shed Map – Phase 3

EXHIBIT 5 - Sewer Shed Map – Phase 4

EXHIBIT 6 - Phase 1 & 2 Alt Shed Map

EXHIBIT 7 - Emergency Storage Plan



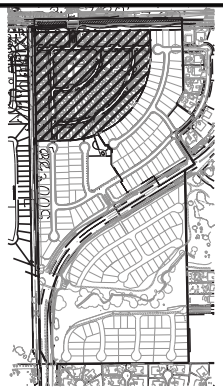
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T: (530) 272-8328
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EXHIBIT #1 - SEWER SHED MAP - OVERVIEW

PLACER COUNTY, CALIFORNIA
JULY 2026

*Figure not OCR compatible

H:\1PROJ\23-25 ESTIA DRY CREEK\CAD\SHEET SETS\TENTATIVE MAPS\EXHIBITS\SEWER EXHIBIT\23-25 - SEWER OVERVIEW MAP.DWG 7/15/2026 6:15 PM

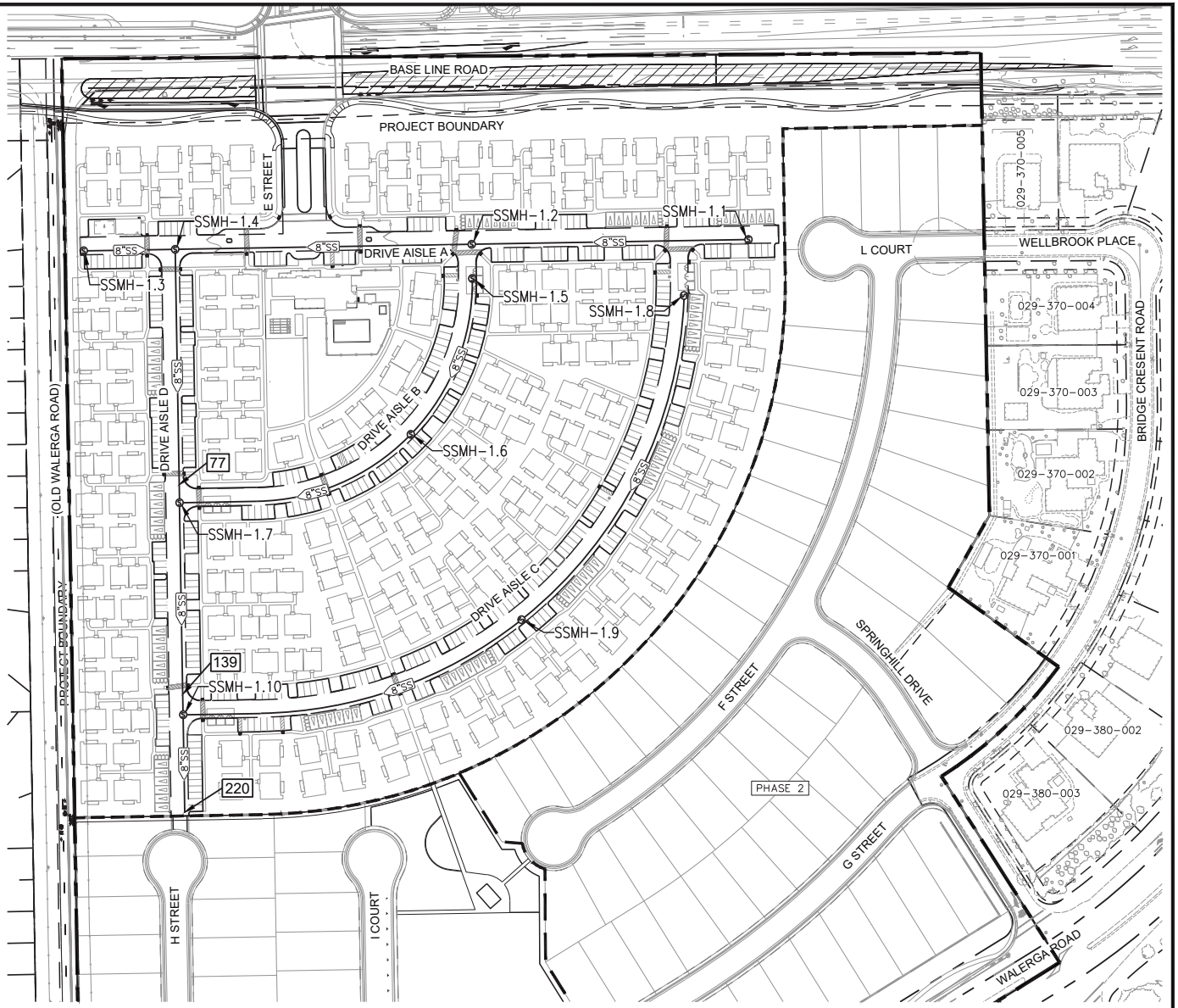


KEY MAP

NOT TO SCALE

SHED	ASSUMED EDU
PHASE 1	220

* Figure not OCR Compatible



150 75 0 150

SCALE: 1" = 150'

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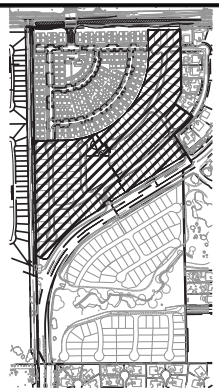
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ESTIA DRY CREEK

EXHIBIT #2 - SEWER SHED MAP - PHASE 1

PLACER COUNTY, CALIFORNIA
JUNE 2026

H:\1PROJ\23-25 ESTIA DRY CREEK\CAD\SHEET SETS\TENTATIVE MAPS\EXHIBITS\SEWER EXHIBIT\23-25 - PHASE 1 SEWER MAP.DWG 6/5/2026 4:34 PM

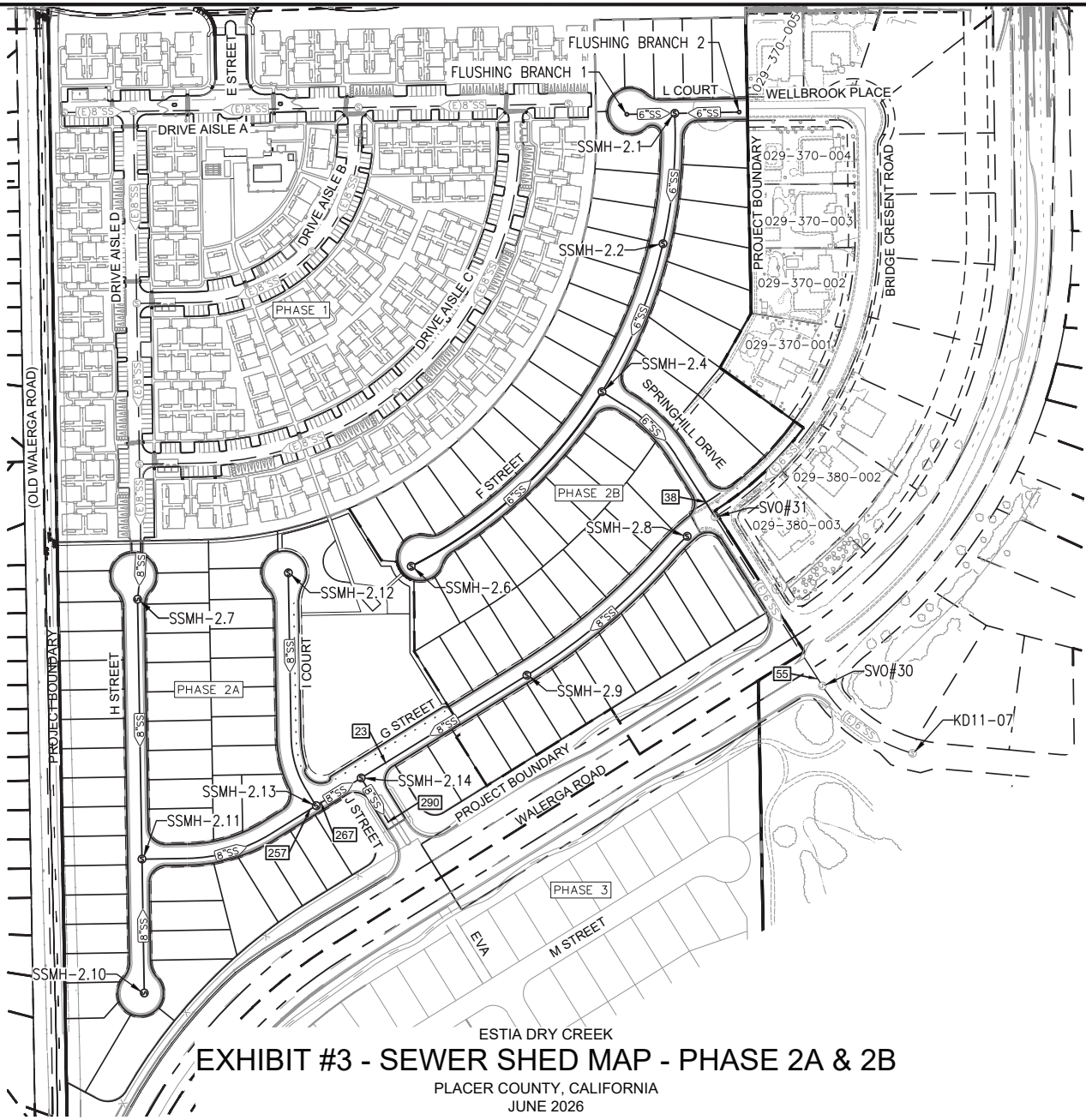


KEY MAP

NOT TO SCALE

SHED	ASSUMED EDU
PHASE 2	110

* Figure not OCR Compatible



200 100 0 200

SCALE: 1" = 200'

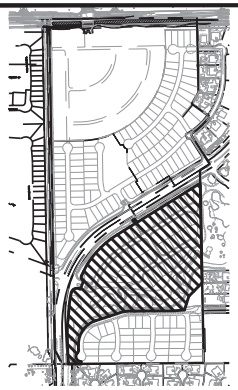
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ESTIA DRY CREEK

EXHIBIT #3 - SEWER SHED MAP - PHASE 2A & 2B

PLACER COUNTY, CALIFORNIA

JUNE 2026

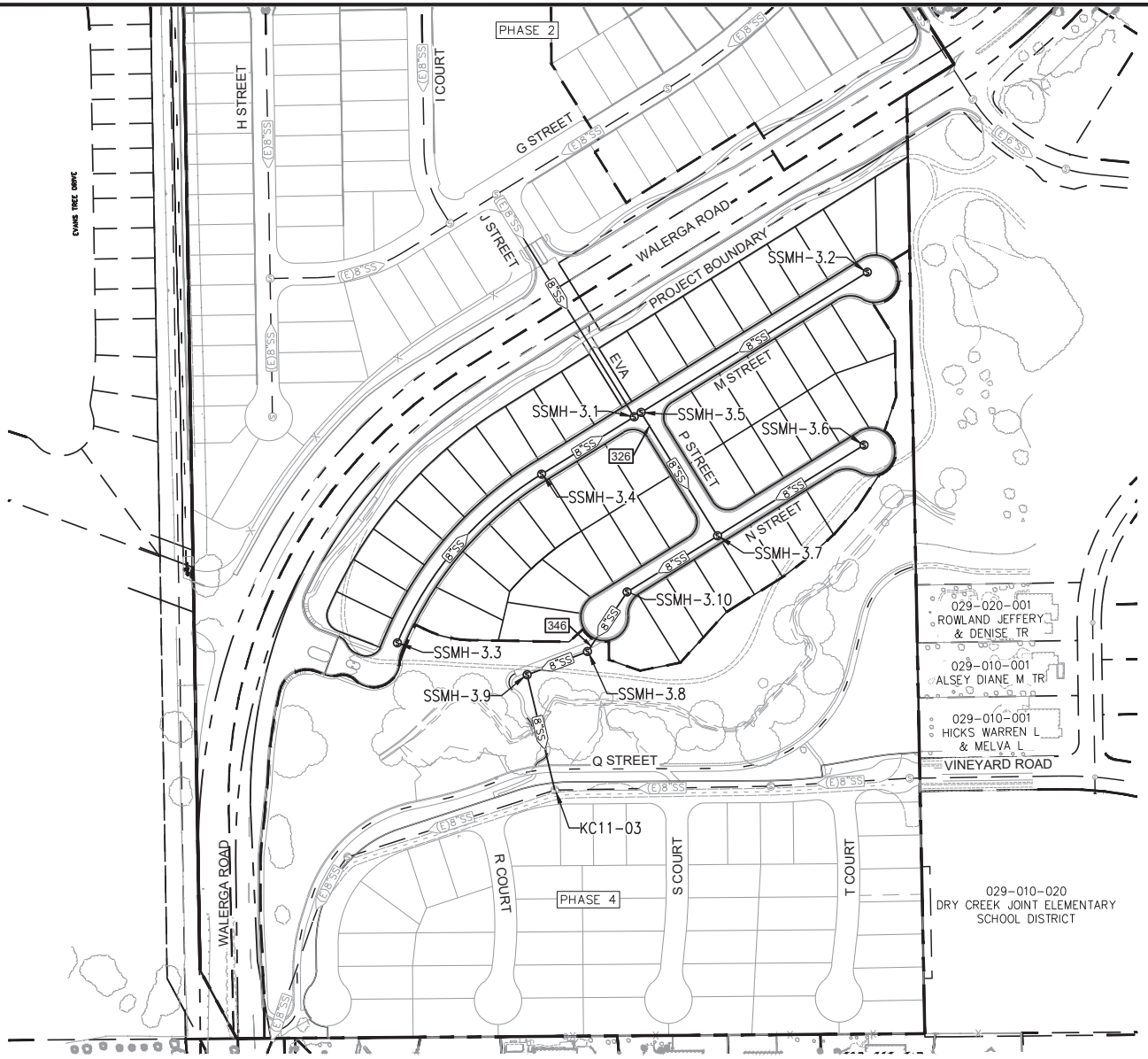


KEY MAP

NOT TO SCALE

SHED	ASSUMED EDU
PHASE 3	56

* Figure not OCR Compatible



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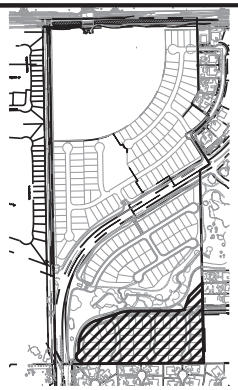
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ESTIA DRY CREEK

EXHIBIT #4 - SEWER SHED MAP - PHASE 3

PLACER COUNTY, CALIFORNIA

JUNE 2026

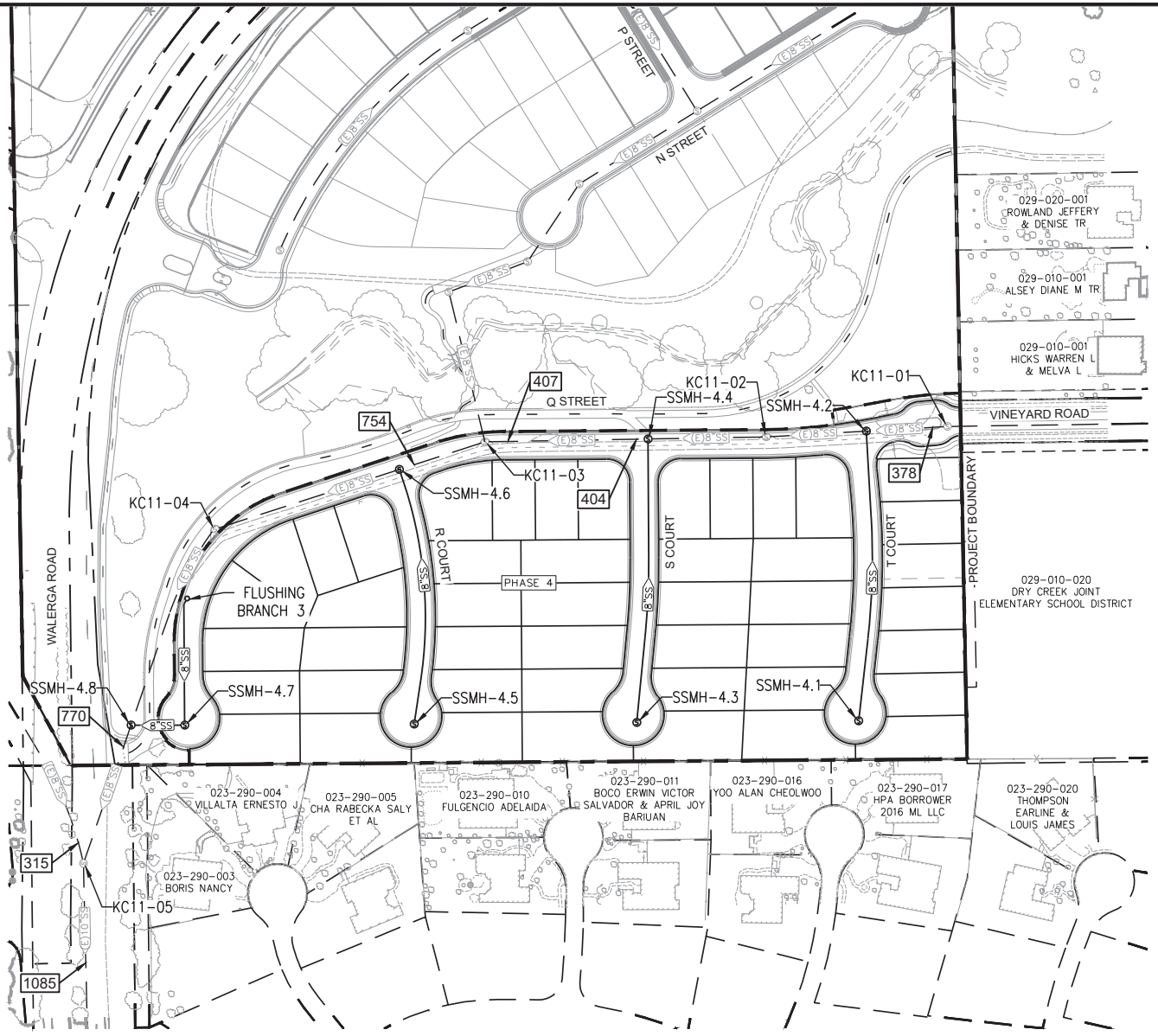


KEY MAP

NOT TO SCALE

SHED	ASSUMED EDU
PHASE 4	46

* Figure not OCR Compatible



150 75 0 150

SCALE: 1" = 150'

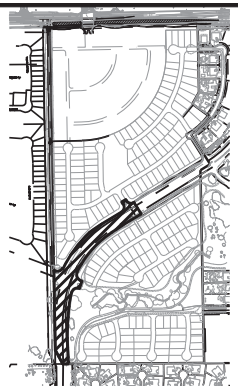
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ESTIA DRY CREEK

EXHIBIT #5 - SEWER SHED MAP - PHASE 4

PLACER COUNTY, CALIFORNIA

JUNE 2026

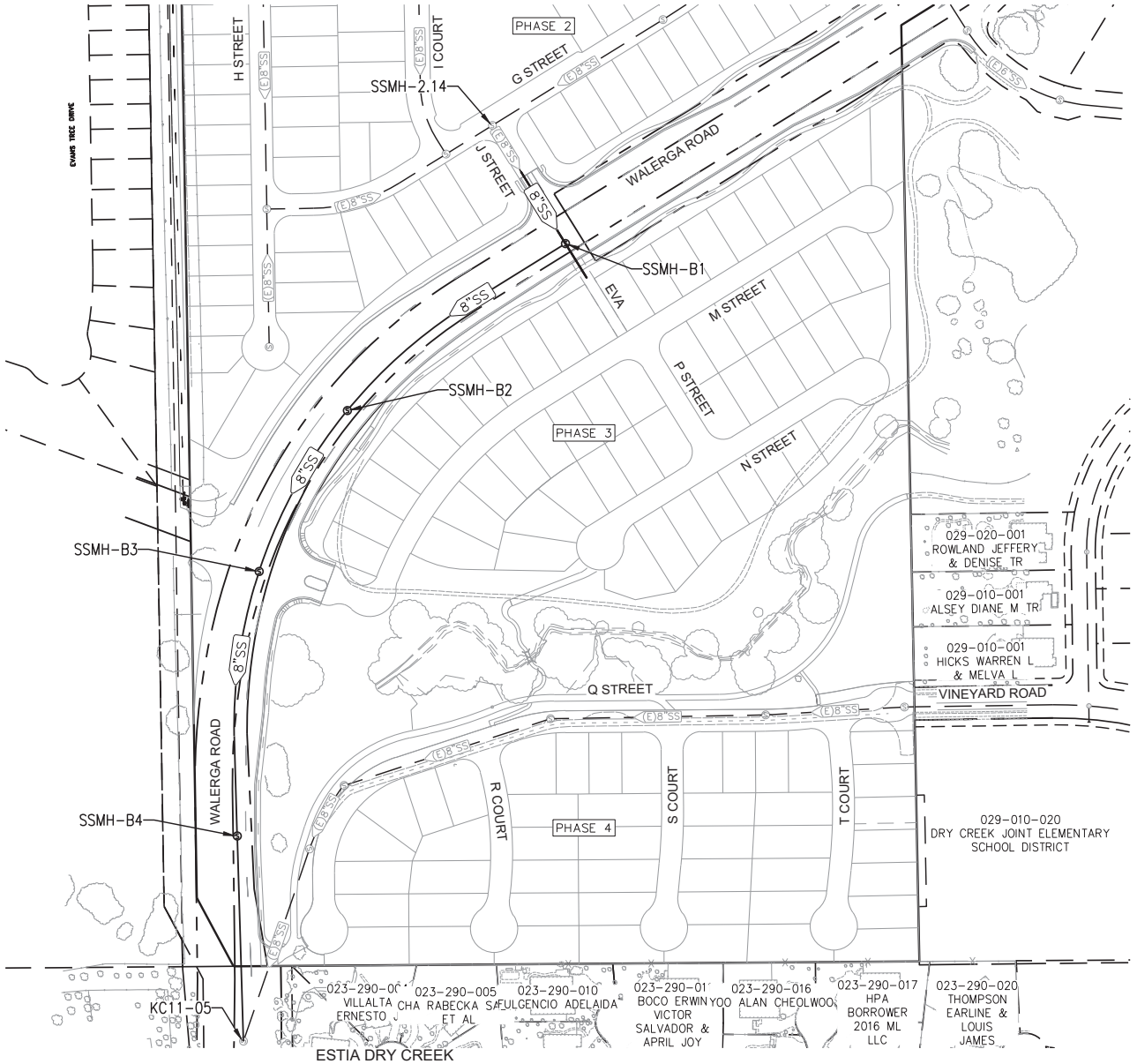


KEY MAP

NOT TO SCALE

SHED	ASSUMED EDU
PHASE 1 & 2	330

* Figure not OCR Compatible



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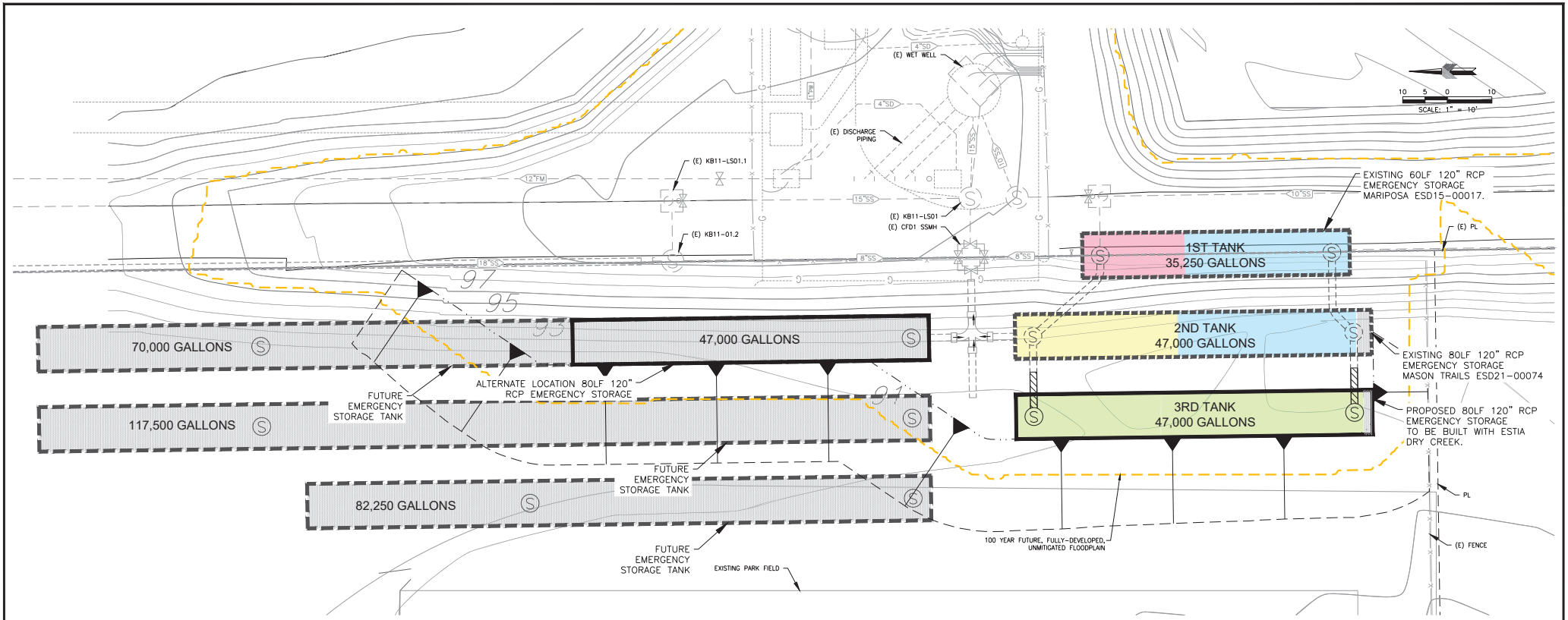
SCALE: 1" = 200'

EXHIBIT #6 - PHASE 1 & 2 SEWER ALT SHED MAP

PLACER COUNTY, CALIFORNIA

JUNE 2026

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MARIPOSA
CONTRIBUTING EDUS = 107
REQUIRED STORAGE = 13,560 GAL

MASON TRAILS
CONTRIBUTING EDUS = 169
REQUIRED STORAGE = 21,410 GAL

OTHER EXISTING (HIDDEN CROSSING, MORGAN KNOLLS, MORGAN PLACE, SABRE CITY, ETC.)
CONTRIBUTING EDUS = 357
REQUIRED STORAGE = 45,220 GAL

ESTIA DRY CREEK
CONTRIBUTING EDUS (220 MULTI + 212 SINGLE) = 432
REQUIRED STORAGE (19,070 + 26,860) = 45,930 GAL

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ESTIA DRY CREEK
EXHIBIT #7 - EMERGENCY STORAGE PLAN
PLACER COUNTY, CALIFORNIA
JUNE 2026

*Figure not OCR compatible

APPENDIX K

Kimley»Horn

Memorandum

To: Nick Pappani
Vice President
Raney Planning & Management, Inc.

From: Tyler Mickelson, P.E.
Chris Gregerson, P.E., T.E., AICP

Re: **Estia Dry Creek and Placer Creek Residential**
Vehicle Miles Traveled (VMT) Analysis

Date: October 3, 2025

In accordance with Task 3 of our Scope of Services, we are writing to summarize the Vehicle Miles Traveled (VMT) analysis completed for the proposed Estia Dry Creek development (the "Project" or "proposed Project") in Placer County, CA. This memorandum summarizes the VMT analysis and resultant findings for the proposed Project.

Project Description

The proposed Project includes the two separate sites. The first site would be developed into a residential community consisting of 220 duplex units called Estia Dry Creek, 212 single-family units and called Placer Creek Residential and 22 ADUs. The approximately 88-acre parcel site is located south of Baseline Road and is bisected by Walerga Road in the Dry Creek West Placer Community Plan Area (DCWPCP) of unincorporated Placer County. The second site is a four-acre parcel located on the corner of PFE Road and Watt Avenue (APN 023-200-056-000) and would be rezoned for residential land use and the land dedicated for the future development of up to 120 affordable housing units. The affordable community parcel is located on the northeast corner of the intersection of Watt Avenue and PFE Road. The Project locations are shown in **Exhibit 1.** The proposed site plan for the first parcel is shown in **Exhibit 2**. There is no site plan for the proposed affordable housing land dedication as that parcel is not under active development at the time of this analysis.

Purpose of Analysis

Senate Bill 743 (2013) changed the focus of transportation impact analyses in CEQA from measuring impacts to drivers, to measuring the impact of driving. The change was made by replacing Level of Service (LOS) with VMT. This shift in transportation impact focus was intended to better align transportation impact analyses and mitigation outcomes with the State's goals to reduce greenhouse gas (GHG) emissions, encourage infill development, and improve public health through more active transportation. Level of service or other delay metrics may still be used to evaluate the impact of projects on drivers as part of land use entitlement review, fee programs, and community plan conformance.

In January 2019, the Natural Resources Agency finalized updates to the CEQA Guidelines including the incorporation of SB 743 modifications. The Guidelines' changes were approved by the Office of Administrative Law and are now in effect. The provisions apply statewide as of July 1, 2020.

To aid lead agencies with SB 743 implementation, the Governor's Office of Planning and Research (OPR) produced the *Technical Advisory on Evaluating Transportation Impacts in CEQA* (December 2018) that provides guidance regarding the variety of implementation questions they face with respect to shifting to a VMT metric. Key guidance from this document includes:

- VMT is the most appropriate metric to evaluate a project's transportation impact.
- OPR recommends tour- and trip-based travel models to estimate VMT, but ultimately defers to local agencies to determine the appropriate tools.
- OPR recommends measuring VMT for residential and office Projects on a "per rate" basis (VMT per capita for residential and VMT per employee for office).
- OPR notes that residential and office projects that are located in areas with low VMT, and that incorporate similar features (i.e., density, mix of uses, transit accessibility), will tend to exhibit similarly low VMT.
- OPR recommends that maps created with VMT data, such as a travel demand model, can illustrate areas that are currently below threshold VMT. Because new development in such locations would likely result in a similar level of VMT, such maps can be used to screen out residential and office projects from needing to prepare a detailed VMT analysis.
- Lead agencies have the discretion to set or apply their own significance thresholds.

The thresholds to consider for projects located within the Unincorporated Placer County boundaries are defined by Table 2 of the County of Placer Transportation Study Guidelines[1] and are defined by project/land use type as follows:

- Residential – 15% below Unincorporated Placer County baseline household VMT per resident
- Employment-based land uses (e.g., office, industrial, hotel) – 15% below Unincorporated Placer County baseline work VMT per employee
- Customer-based non-residential land uses (e.g., retail) – Zero net increase in total VMT

Methodology and Assumptions

Based on the land use information provided, for the purposes of VMT analysis and the determination of transportation related significant impacts, the following land uses were analyzed:

- Residential

A project is considered to result in a significant impact if the VMT per capita for the proposed Project exceeds 85-percent of the Unincorporated Placer County average for the respective metric as noted in the previous section.

Analysis

The Placer County VMT Evaluation Tool[2] was used to determine whether the proposed Project will have a significant VMT impact without conducting a detailed study using the County's travel demand model. Note, the County's VMT tool is based on data contained within the latest version of the County's travel demand model and for projects that fall within the requirements for using the tool it is a method to perform a quick quantitative analysis. The Project is identified as generally consistent in size and land use type with the surrounding built environment, therefore the County VMT Evaluation was deemed appropriate for this analysis.

The Project's features were input into the tool, including the Project's location (APNs), development type (residential), and development intensity (220 duplex units, 212 single-family units, and 120 affordable housing units) to allow the tool to estimate the average household VMT per resident for the Project

[1] *County of Placer Transportation Study Guidelines*. County of Placer. Revised May 2021.
[2] *Placer County Vehicle Miles Traveled Evaluation Tool*. Placer County. https://apps.fehrandpeers.com/PlacerCountyVMT/#. Accessed April 1, 2025.

based on residential uses already within the travel demand model. Note that each Project site was analyzed separately rather than as one combined project to obtain the average VMT per resident for each individual Project site. The tool report is included as **Exhibit 3**.

For residential projects, the regional threshold is defined as the VMT per resident achieving a 15-percent reduction compared to the Unincorporated Placer County average. The Unincorporated Placer County average VMT per resident is 30.43. The Unincorporated Placer County threshold is calculated at 85-percent of the average, or 25.86 VMT per resident. The Project's estimated average VMT per resident is 18.98 for the residential units north/northwest of Walerga Road in Site 1 and 24.75 for the residential units south/southeast of Walerga Road in Site 1, which are both below the calculated threshold for Unincorporated Placer County. In addition, the Project's estimated average VMT per residents is 21.46 for Site 2, which is also below the calculated threshold for Unincorporated Placer County. Therefore, the proposed Project can be assumed to result in a less than significant impact and screens out from further VMT analysis based on the County's low VMT-generating area screening criteria.

Note that the 22 ADUs in Site 1 meet the County's definition and screening criteria for affordable housing. Therefore, the 22 ADUs can be presumed to have a less than significant VMT impact without the need for further quantitative analysis.

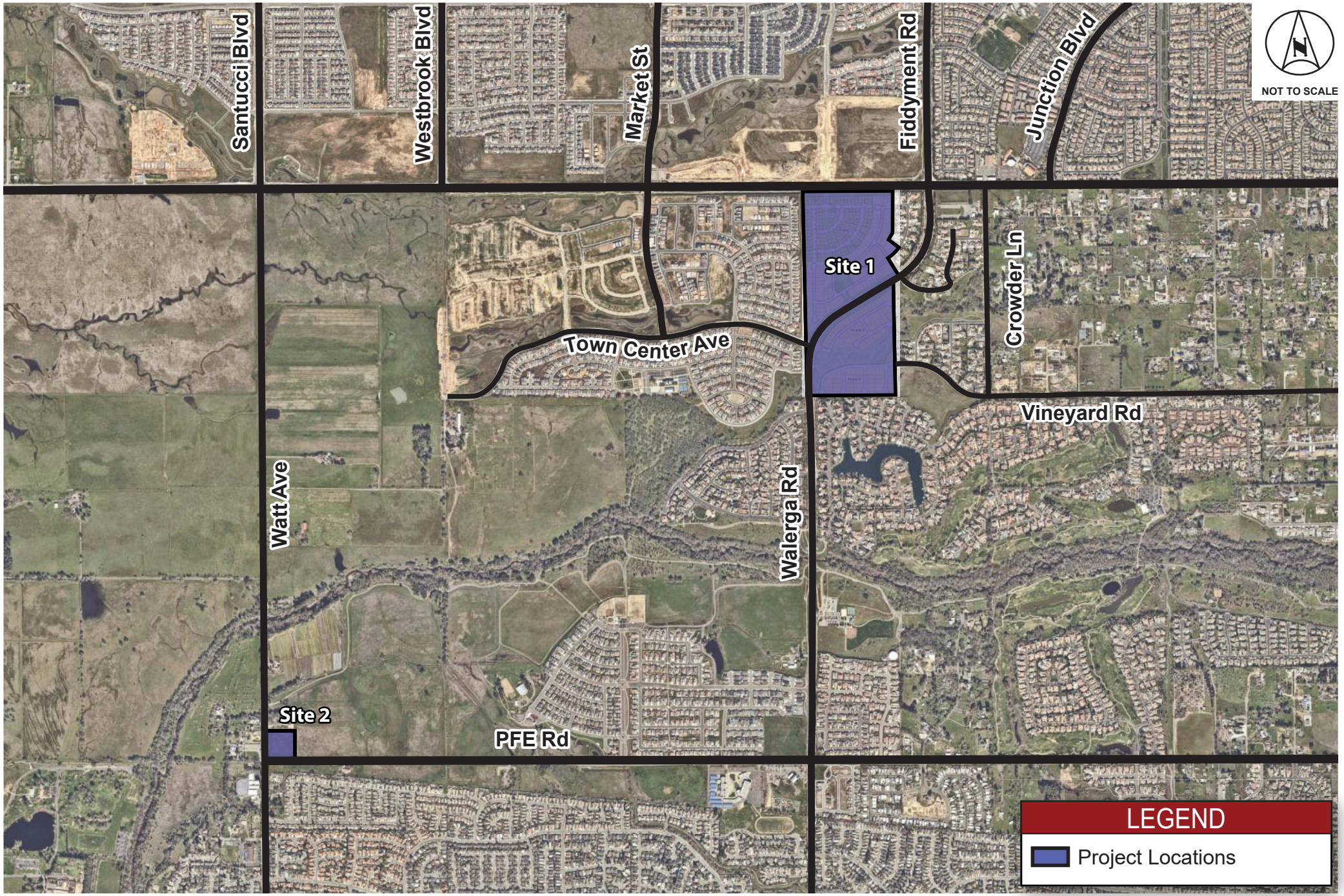
Conclusions

Based on the results of this analysis, the following conclusions are made:

- The proposed Project's estimated average VMT per resident is 18.98 for the residential units north/northwest of Walerga Road in Site 1 and 24.75 for the residential units south/southeast of Walerga Road in Site 1, which are both below the calculated threshold for Unincorporated Placer County. In addition, the Project's estimated average VMT per residents is 21.46 for Site 2, which is also below the calculated threshold for Unincorporated Placer County. **Therefore, the proposed Project is determined to have a less than significant transportation impact.**
- The proposed 22 ADUs in Site 1 meet the County's definition and screening criteria for affordable housing. Therefore, the 22 ADUs can be presumed to have a less than significant VMT impact without the need for further quantitative analysis.

Attachments:

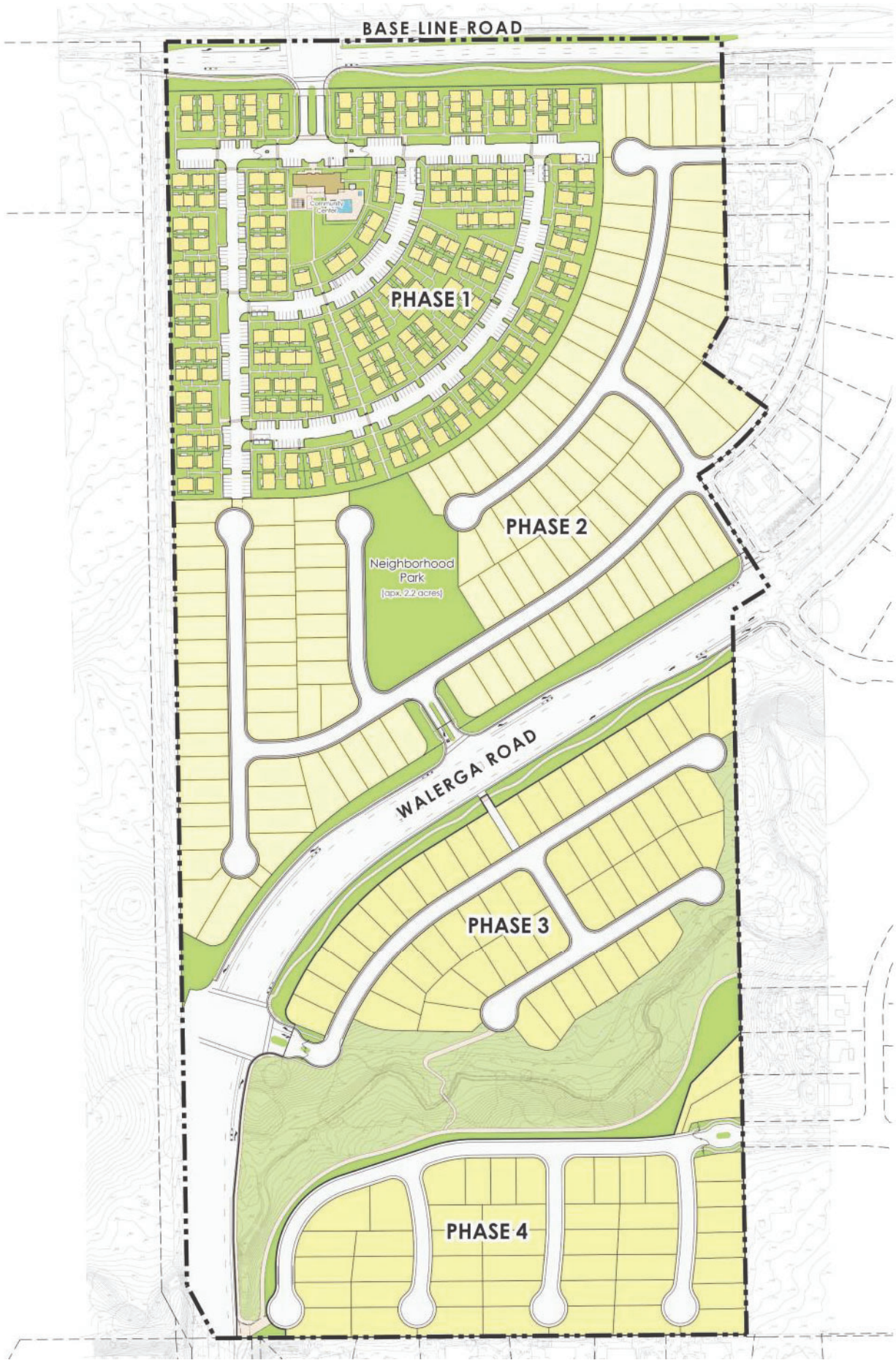
Exhibit 1 – Project Vicinity Map
Exhibit 2 – Project Site Plan
Exhibit 3 – Placer County VMT Evaluation Tool Report (Site 1)
Exhibit 4 – Placer County VMT Evaluation Tool Report (Site 2)



Kimley»Horn

*Figure not OCR compatible

Exhibit 1
Project Vicinity Map



NOT TO SCALE

* Figure not OCR Compatible

Kimley»Horn

Exhibit 2
Project Site Plan

Exhibit 3 - Placer County VMT Evaluation Tool Report (Site 1)

Project Details

Timestamp of Analysis: April 01, 2025, 01:40:11 PM

Project Name: Estia Dry Creek (Site 1)

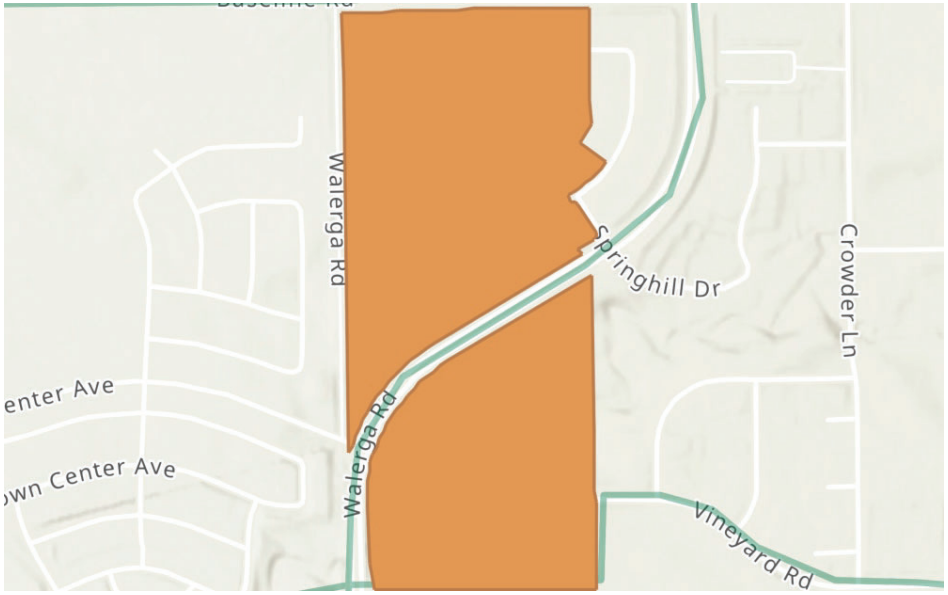
Project Description: Residential community consisting of 220 duplex units and 212 single-family units.

Project Location

Jurisdiction:
Unincorporated County

APN	TAZ
023-221-072-000	1427
023-221-061-000	1425

Inside a TPA?
No (Fail)



* Figure not OCR Compatible

Analysis Details

Data Version: Sacramento Activity-Based Travel Simulation Model - SACSIM19

Analysis Methodology: TAZ

Baseline Year: 2025

Project Land Use

Residential:

Single Family DU:	212
Multifamily DU:	220
Total DUs:	432

Non-Residential:

Office KSF:

Industrial KSF:

Residential Affordability (percent of all units):

Extremely Low Income:	0 %
Very Low Income:	0 %
Low Income:	0 %

Parking:

Motor Vehicle Parking:

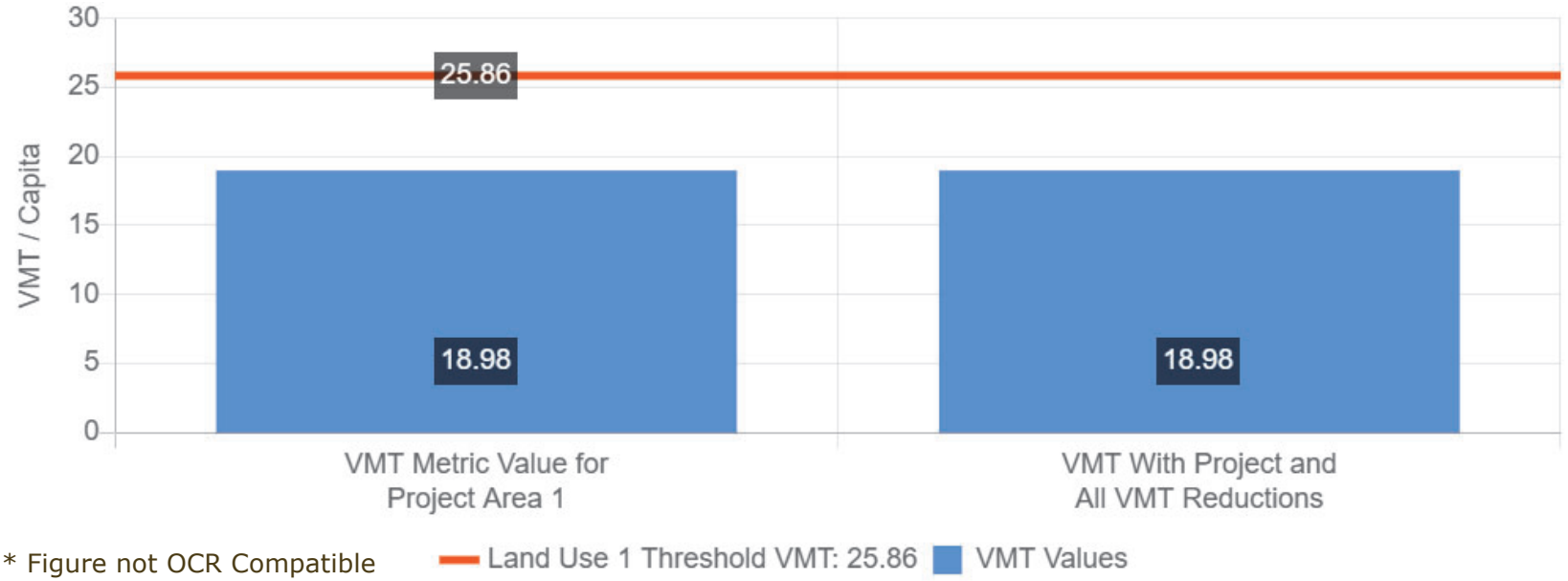
Bicycle Parking:

Exhibit 3 - Placer County VMT Evaluation Tool Report (Site 1)

Residential Vehicle Miles Traveled (VMT) Screening Results

Land Use Type 1:	Residential
VMT Metric 1:	Household VMT per Resident
VMT Baseline Description 1:	Unincorporated Average
VMT Baseline Value 1:	30.43
TAZ:	1425
VMT Threshold Description 1:	-15%

	Project Area	With Project & All VMT Reductions
Project Generated Vehicle Miles Traveled (VMT) Rate	18.98	18.98
Is VMT Below Threshold?	Yes (Pass)	Yes (Pass)



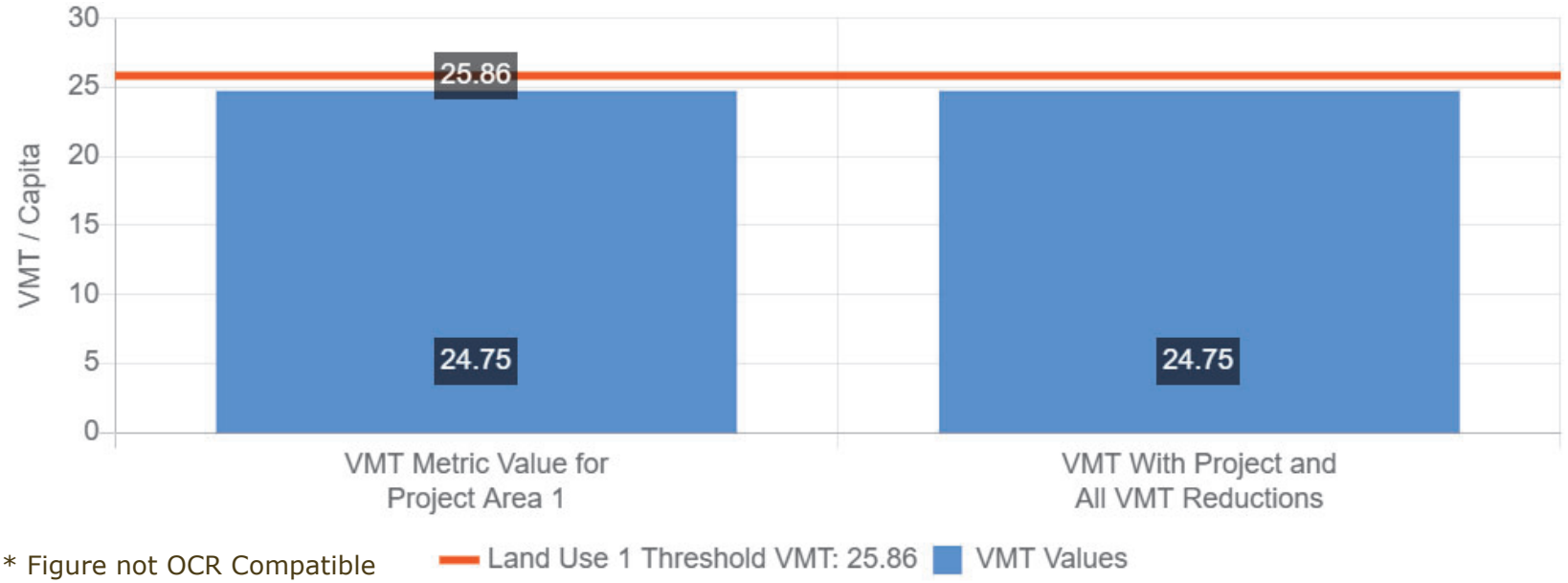
* Figure not OCR Compatible

Exhibit 3 - Placer County VMT Evaluation Tool Report (Site 1)

Residential Vehicle Miles Traveled (VMT) Screening Results

Land Use Type 1:	Residential
VMT Metric 1:	Household VMT per Resident
VMT Baseline Description 1:	Unincorporated Average
VMT Baseline Value 1:	30.43
TAZ:	1427
VMT Threshold Description 1:	-15%

	Project Area	With Project & All VMT Reductions
Project Generated Vehicle Miles Traveled (VMT) Rate	24.75	24.75
Is VMT Below Threshold?	Yes (Pass)	Yes (Pass)



* Figure not OCR Compatible

Exhibit 4 - Placer County VMT Evaluation Tool Report (Site 2)

Project Details

Timestamp of Analysis: April 01, 2025, 01:45:17 PM

Project Name: Estia Dry Creek (Site 2)

Project Description: 120 affordable housing units.

Project Location

Jurisdiction:
Unincorporated County

APN	TAZ
023-200-056-000	1426

Inside a TPA?

No (Fail)

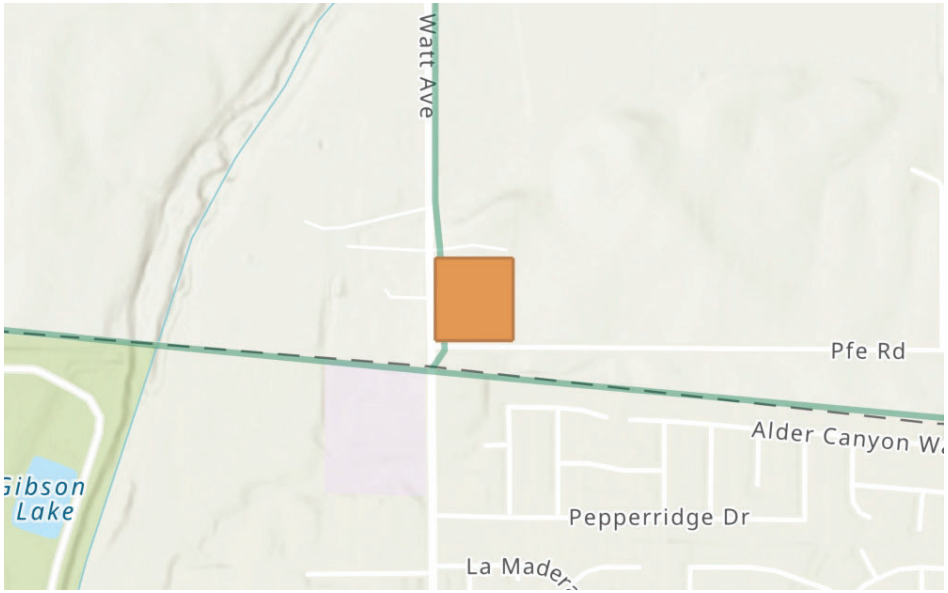


*Figure not OCR compatible

Analysis Details

Data Version: Sacramento Activity-Based Travel Simulation Model - SACSIM19

Analysis Methodology: TAZ

Baseline Year: 2025

Project Land Use

Residential:

Single Family DU:

Multifamily DU: 120

Total DUs: 120

Non-Residential:

Office KSF:

Industrial KSF:

Residential Affordability (percent of all units):

Extremely Low Income: 0 %

Very Low Income: 0 %

Low Income: 100 %

Parking:

Motor Vehicle Parking:

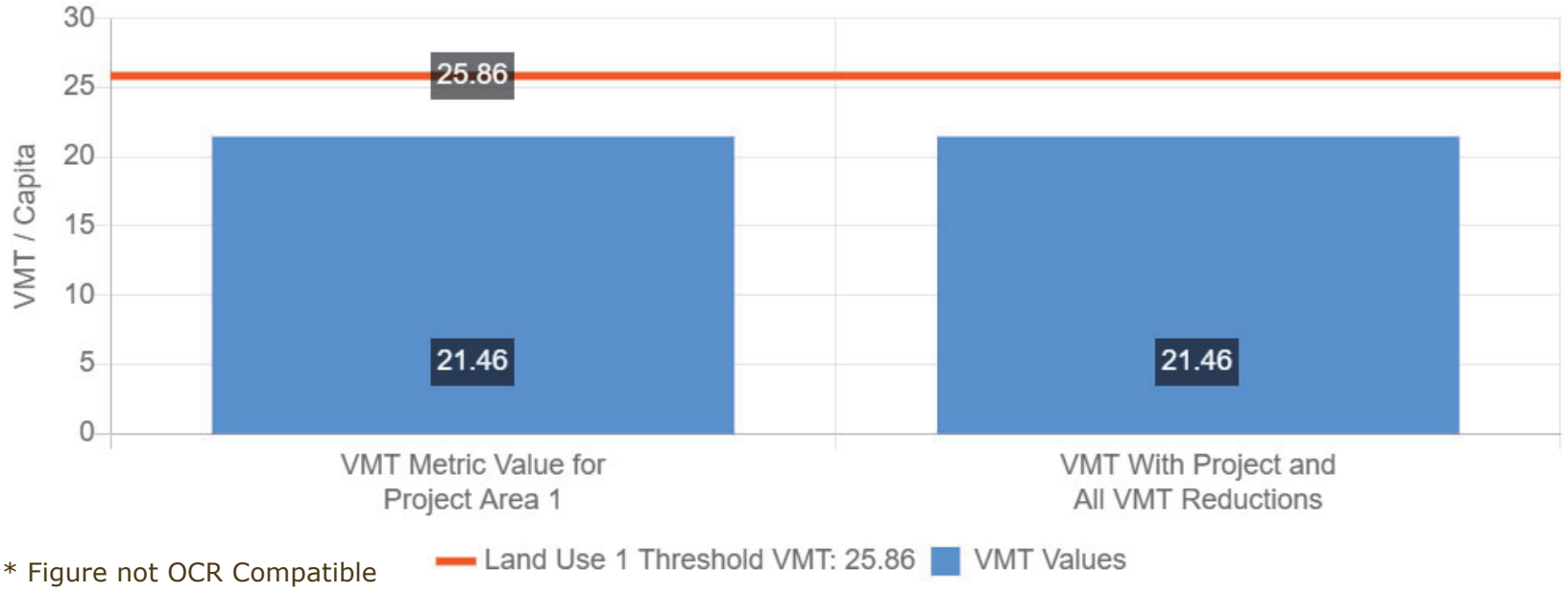
Bicycle Parking:

Exhibit 4 - Placer County VMT Evaluation Tool Report (Site 2)

Residential Vehicle Miles Traveled (VMT) Screening Results

Land Use Type 1:	Residential
VMT Metric 1:	Household VMT per Resident
VMT Baseline Description 1:	Unincorporated Average
VMT Baseline Value 1:	30.43
VMT Threshold Description 1:	-15%

	Project Area	With Project & All VMT Reductions
Project Generated Vehicle Miles Traveled (VMT) Rate	21.46	21.46
Is VMT Below Threshold?	Yes (Pass)	Yes (Pass)



* Figure not OCR Compatible

Appendix L

Local Transportation Analysis

Estia Dry Creek and Placer Creek Residential
Placer County, California

June 25, 2026

Prepared for:

Raney Planning & Management, Inc

Prepared by:

Kimley»Horn
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Phone: (916) 858-5800

TABLE OF CONTENTS

INTRODUCTION **1**
Purpose 1
Project Description 1
Study Area 3

STUDY METHODOLOGY **5**
Level of Service (LOS) Definitions 5
Intersection Analysis 5
Roadway Segment Analysis 5
Level of Service (LOS) Assessment Methodology 6

ASSESSMENT OF PROPOSED PROJECT **7**
Project Land Use, Access, and Circulation 7
Trip Generation 7
Trip Distribution and Assignment 8

EXISTING (2024) CONDITIONS **13**
Project Area Roadways 13
Intersection Geometry and Volumes 13

EXISTING (2024) PLUS PROJECT PHASE 1 CONDITIONS **17**

EXISTING (2024) PLUS PROJECT BUILDOUT CONDITIONS **21**

CUMULATIVE (2044) CONDITIONS **26**
Intersection Geometry and Volumes 26

CUMULATIVE (2044) PLUS PROJECT CONDITIONS **30**

DEFICIENCIES AND IMPROVEMENTS **35**
Summary of Deficiencies and Improvements 35

PROJECT ON-SITE OPERATIONS, ACCESS, AND SAFETY EVALUATION **37**
Emergency Vehicle Access 37
Neighborhood Gate Evaluation 37
Public Transit System 38
Pedestrian and Bicycle Access and Circulation 38
Vehicle Queuing at Intersections 38
Peak-Hour Signal Warrants 42
Safety Evaluation 43

CONCLUSIONS **45**

APPENDICES
Traffic Count Data Sheets ..... *Appendix A*
Intersection Analysis Worksheets for Existing (2024) ..... *Appendix B*
Intersection Analysis Worksheets for Existing (2024) plus Project Phase 1 ..... *Appendix C*
Intersection Analysis Worksheets for Existing (2024) plus Project Buildout ..... *Appendix D*
Intersection Analysis Worksheets for Cumulative (2044) ..... *Appendix E*
Intersection Analysis Worksheets for Cumulative (2044) plus Project Buildout ..... *Appendix F*
Intersection Analysis Worksheets for Improved Conditions ..... *Appendix G*
Peak-Hour Signal Warrants Worksheets ..... *Appendix H*

LIST OF TABLES

Table 1 – Intersection Level of Service Criteria 5
Table 2 – Placer County Roadway Segment Level of Service Criteria 5
Table 3 – Proposed Project Trip Generation 8
Table 4 – Existing (2024) Intersection Level of Service Summary 15
Table 5 – Existing (2024) Roadway Segment Level of Service Summary 16
Table 6 – Existing (2024) plus Project Phase 1 with Affordable Housing Intersection Level of Service Summary 17
Table 7 – Existing (2024) plus Project Phase 1 Only Intersection Level of Service Summary 18
Table 8 – Existing (2024) plus Project Phase 1 with Affordable Housing Roadway Segment Level of Service Summary 20
Table 9 – Existing (2024) plus Project Buildout Intersection Level of Service Summary 21
Table 10 – Existing (2024) plus Project Buildout with ADUs Only Intersection Level of Service Summary 22
Table 11 – Existing (2024) plus Project Buildout Roadway Segment Level of Service Summary 25
Table 12 – Cumulative (2044) Intersection Level of Service Summary 28
Table 13 – Cumulative (2044) Roadway Segment Level of Service Summary 29
Table 14 – Cumulative (2044) plus Project Intersection Level of Service Summary 30
Table 15 – Cumulative (2044) plus Project Roadway Segment Level of Service Summary 34
Table 16 – Existing (2024) plus Project (Improved) Intersection Level of Service Summary 36
Table 17 – Cumulative (2044) plus Project (Improved) Intersection Level of Service Summary 36
Table 18 – Gated Entry 95th Percentile Queues 38
Table 19 – Turning Lane 95th Percentile Queues 39
Table 20 – Traffic Signal Warrant Analysis Results 43
Table 21 – Intersection Crash Rate Summary 44

LIST OF FIGURES

Figure 1 – Project Site Plan and Phasing 2
Figure 2 – Project Vicinity Map 4
Figure 3 – Project Trip Distribution 9
Figure 4 – Project Phase 1 Trip Assignment 10
Figure 5 – Project Buildout Trip Assignment 11
Figure 6 – Accessory Dwelling Units (ADU's) Trip Assignment 12
Figure 7 – Existing (2024) Peak-Hour Traffic Volumes, Traffic Control, and Lane Geometry 14
Figure 8 – Existing (2024) plus Project Phase 1 Peak-Hour Traffic Volumes, Traffic Control, and Lane Geometry 19
Figure 9 – Existing (2024) plus Project Buildout Peak-Hour Traffic Volumes, Traffic Control, and Lane Geometry 23
Figure 10 – Existing (2024) plus Project Buildout with ADUs Peak-Hour Traffic Volumes, Traffic Control, and Lane Geometry 24
Figure 11 – Cumulative (2044) Peak-Hour Traffic Volumes, Traffic Control, and Lane Geometry 27
Figure 12 – Cumulative (2044) plus Project Buildout Peak-Hour Traffic Volumes, Traffic Control, and Lane Geometry 32
Figure 13 – Cumulative (2044) plus Project Buildout with ADUs Peak-Hour Traffic Volumes, Traffic Control, and Lane Geometry 33
Figure 14 – 5-Year Intersection Collision Summary 43

INTRODUCTION

Purpose

This report documents the transportation analysis completed for the proposed Estia Dry Creek and Placer Creek Residential development project located on the east and west sides of Walerga Road south of Baseline Road in the Dry Creek West Placer Community Plan Area (DCWPCP) of unincorporated Placer County (the "proposed Project" or "Project"). The purpose of this analysis was to evaluate the proposed Project's localized traffic operations and access points necessary to ensure efficient operations.

Project Description

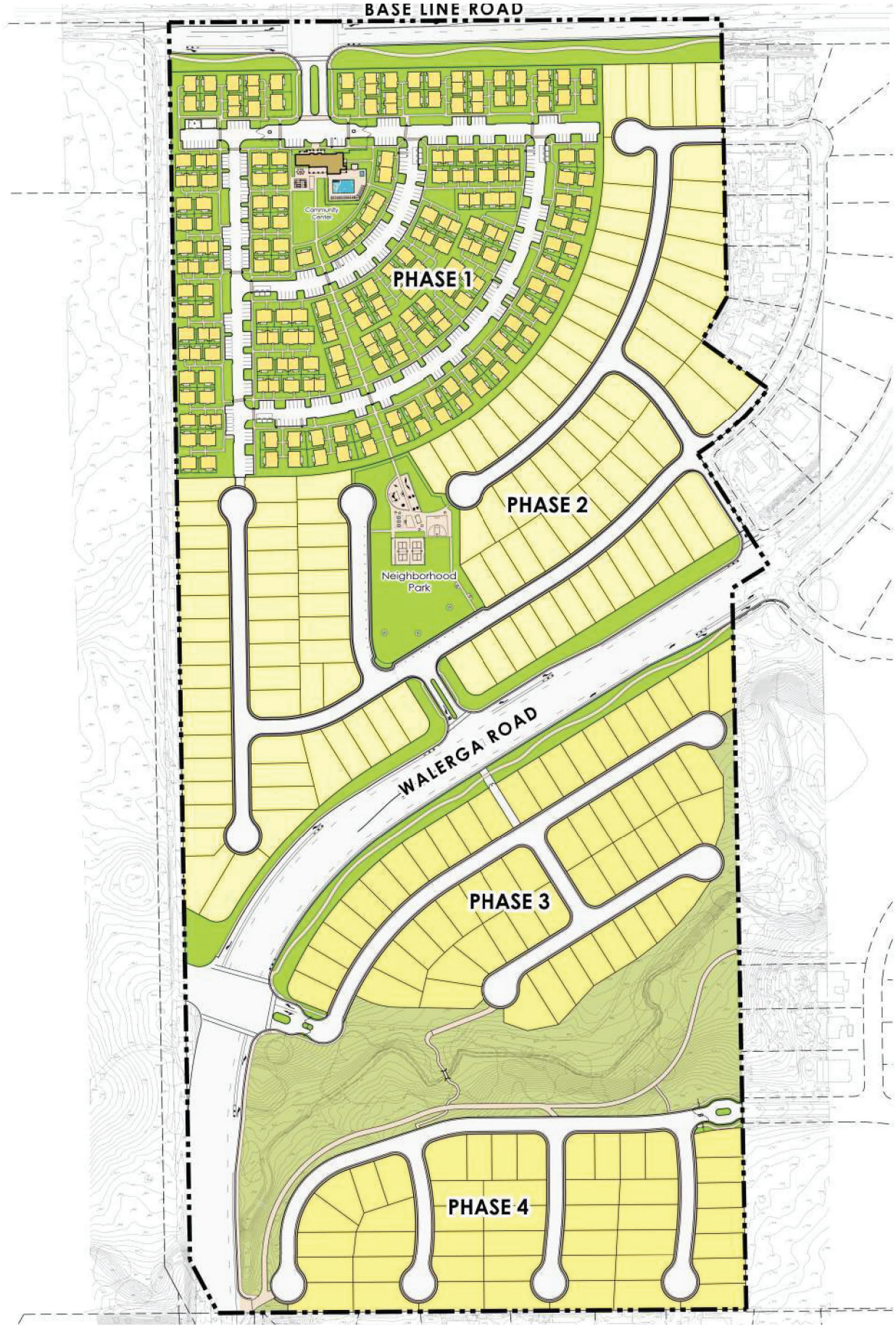
Site 1: Estia Dry Creek and Placer Creek

The project includes two sites. The first site is on the south side of Baseline Road on the east and west sides of Walerga Road. This Project site is designated in the DCWPCP as Rural Low Density Residential. The project proposes to amend the DCWPCP designations to High Density Residential and Medium Density Residential. This project proposes 220 new multifamily-family residential units and 212 new single-family residential units. The Project is anticipated to be constructed in up to five (5) phases. The Project site plan and phasing are shown in Figure 1. The site will have five access points. The access to Phase 1 of the project will be from Baseline Road, aligned a fully signalized Upland Drive intersection serving the commercial development on the north side of Baseline Road. Phase 2A/B access will be from Springhill Drive and a new unsignalized Walerga Road intersection allowing only rights in/rights out (RIRO). Phase 3 access will be from the eastern leg of the signalized Walerga Road and Town Center Avenue intersection, featuring a landscaped median with a vehicle gate. Phase 4 access will be from the western extension of Vineyard Road, which currently terminates just west of Crowder Lane and will include a gate. One emergency vehicle access from Phase 1 through Phase 2 roadways, one emergency vehicle access for Phase 3, and one emergency vehicle access for Phase 4 are proposed.

Site 2: Affordable Housing

Per County Code Section 15.65.120, the project proposes to meet the minimum requirement for affordability on the detached residential portion of the project by transferring an offsite vacant parcel to the County. This second site is located at the northeast corner of PFE Road and Watt Avenue, which is intended for future affordable housing development. Based on an assumed future affordable housing development on the second site, the site could accommodate a minimum of 80 affordable units and potentially up to 120 units if built to the maximum density allowed in the zoning district. For this analysis 120 units were considered.

Additionally, if the affordable housing at Site 2 is not feasible, up to 22 Accessory Dwelling Units (ADUs) may be included to satisfy the County's affordable housing requirements. For this analysis, a scenario that includes both the Site 2, Affordable Housing, and ADUs was considered for a more conservative trip estimate.



Site Plan Date: January 2025

* Figure not OCR Compatible

Figure 1
Project Site Plan and Phasing

Study Area

Figure 2 shows the project vicinity. A weekday AM and PM peak-hour level of service (LOS) analysis was completed for the following intersections:

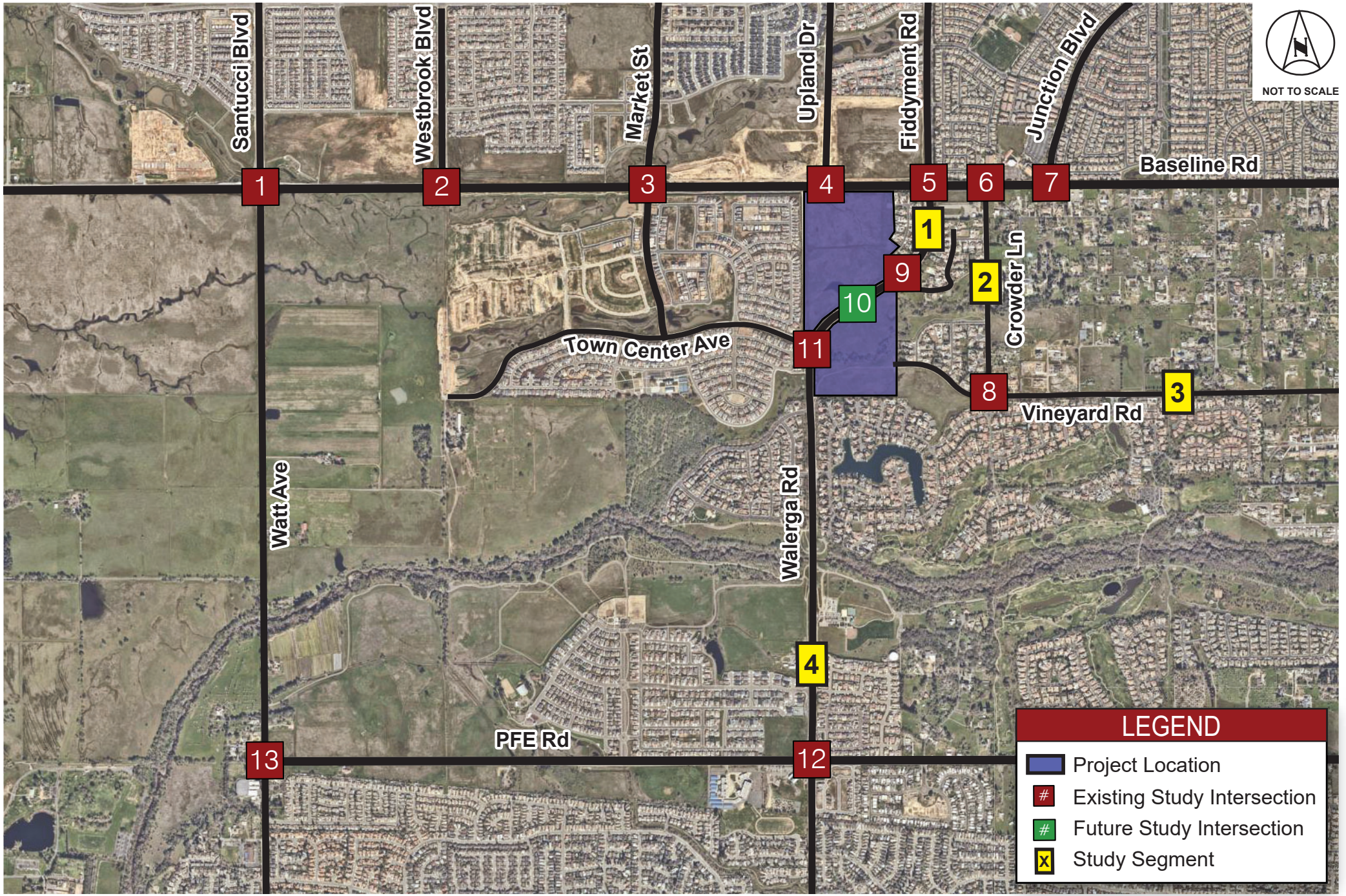
1. Baseline Road at Santucci Boulevard/Watt Avenue (City of Roseville)
2. Baseline Road at Westbrook Boulevard (City of Roseville)
3. Baseline Road at Market Street (City of Roseville)
4. Baseline Road at Project Access/Upland Drive (City of Roseville)
5. Baseline Road at Fiddyment Road/Walerga Road (City of Roseville)
6. Baseline Road at Crowder Lane (City of Roseville)
7. Baseline Road at Junction Boulevard (City of Roseville)
8. Vineyard Road at Crowder Lane (Placer County)
9. Walerga Road at Springhill Drive (Placer County)
10. Walerga Road at Project Access (Placer County)
11. Walerga Road at Town Center Drive (Placer County)
12. Walerga Road at PFE Road (Placer County)
13. Watt Avenue at PFE Road (Placer County)

Additionally, a weekday Average Daily Traffic (ADT) LOS analysis was completed for the following roadway segments:

1. Walerga Road, from Baseline Road to Springhill Drive
2. Crowder Lane, from Baseline Road to Vineyard Road
3. Vineyard Road, from Crowder Lane to Cook Riolo Road
4. Walerga Road, from PFE Road to Dry Creek Community Park Driveway

This transportation analysis was conducted for the above-listed study facilities for the following scenarios:

A. Existing (2024) Conditions
B. Existing (2024) plus Project Phase 1 Conditions
   - Includes Project Phase 1 only and Project Phase 1 with Affordable Housing Traffic
C. Existing (2024) plus Project Buildout Conditions
   - Includes all Project Phases (1,2,3,4) with Affordable Housing Traffic and Additional ADU's
D. Cumulative (2044) Conditions
E. Cumulative (2044) plus Project Buildout Conditions
   - Includes all Project Phases (1,2,3,4) with Affordable Housing Traffic and Additional ADU's



Kimley»Horn

*Figure not OCR compatible

Figure 2
Project Vicinity Map

STUDY METHODOLOGY

Level of Service (LOS) Definitions

The LOS of a facility is a qualitative measure used to describe operational conditions. LOS ranges from A, which represents minimal delay, to F, which represents heavy delay and a facility that is operating at or near its functional capacity. Levels of Service for this study were determined using methods defined in the *Highway Capacity Manual, 7th Edition (HCM).*

Intersection Analysis

The HCM includes procedures for analyzing side-street stop controlled (SSSC), all-way stop controlled (AWSC), and signalized intersections. The SSSC procedure defines LOS as a function of average control delay for the worst (most delay) minor street approach or movement. Conversely, the AWSC and signalized intersection procedures define LOS as a function of average control delay for the intersection overall. Table 1 presents intersection LOS definitions as defined in the HCM.

Table 1 – Intersection Level of Service Criteria

Level of Service (LOS)	Un-Signalized	Signalized
	Average Control Delay* (sec/veh)	Average Control Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80

Source: Highway Capacity Manual, 7th Edition
* Applied to the worst lane/lane group(s) for SSSC and AWSC

LOS for the study intersections was determined using the Synchro® traffic analysis software. Synchro uses HCM 7th Edition methodology to analyze intersection delay and LOS.

Roadway Segment Analysis

The DCWPCP Final Transportation and Circulation Element provides LOS criteria for roadway segments based on traffic volume. Roadway segments are assessed using the appropriate roadway classifications defined in the Transportation and Circulation Element. Table 2 presents the roadway segment LOS definitions as defined in the DCWPCP.

Table 2 – Placer County Roadway Segment Level of Service Criteria

Roadway Capacity Class	Maximum Daily Traffic Volume Per Lane				
	LOS A	LOS B	LOS C	LOS D	LOS E
Arterial – High Access Control	6,000	7,000	8,000	9,000	10,000
Arterial – Moderate Access Control	5,400	6,300	7,200	8,100	9,000
Arterial/Collector – Low Access Control	4,500	5,250	6,000	6,870	7,500
Rural 2-lane Highway – Level Terrain	1,500	2,950	4,800	7,750	12,500
Rural 2-lane Highway – Rolling Terrain	800	2,100	3,800	5,700	10,500

Source: Dry Creek/West Placer Community Plan Final Transportation and Circulation Element (July 2011)

Level of Service (LOS) Assessment Methodology

Placer County

Per policy within the DCWPCP[1], the worst allowable level of service is LOS D on the Community Plan area road network. The policy notes exceptions to the level of service threshold for specific facilities when fully improved. The exceptions that apply to the project facilities are listed below with their respective LOS thresholds.

Intersections

- Baseline Road/Watt Avenue: LOS F
- Baseline Road/Fiddyment Road/Walerga Road: LOS F
- PFE Road/Walerga Road: LOS F

The LOS policy defines the criteria that roadway improvements would have to exceed to be considered as having an adverse impact on the network. This criterion is listed below:

Adverse Impact Criteria

- The LOS would worsen from acceptable A, B, C, D, or E (for the selected locations identified above) to unacceptable E or F
- Any worsening of LOS E or F conditions as measured by increased volume-to-capacity (v/c) ratio of 0.05 for roadways and signalized intersections or by increased delay of 5 seconds for unsignalized intersections.

City of Roseville

The City of Roseville's standards of significance were considered for study facilities within the City of Roseville limits. Deficiencies for intersections are created when traffic from the project forces the LOS to fall below a specific threshold. The City's *General Plan*[2] specifies the following:

> "*Level of Service (LOS) expresses the City's targeted level of mobility during the life of the General Plan. Its policies and implementation measures reflect the City's desire to maintain uncongested traffic operations (LOS "C" or better at 70% of the signalized intersections during the a.m. and p.m. peak periods) on its roadway system for all hours of the day. The level of service implementation measures provide criteria to be evaluated where the City may consider a modification to the level of service "C" policy."*

Based on the guidance provided by the City, and in a manner consistent with other traffic studies completed in the City, the Project would result in a deficiency if it would:

1. Cause a signalized intersection to be degraded as follows under Existing conditions during the weekday AM or PM peak-hours:
    - For intersections currently operating at LOS C or better: worsen operations to LOS D or worse.
    - For intersections currently operating at LOS D, E, or F: cause operations to further worsen by one or more service levels.
2. Cause the overall percentage of signalized intersections operating at LOS C or better during the AM and PM peak hours to fall below 70-percent.

[1] *Dry Creek/West Placer Community Plan Final Transportation and Circulation Element*, July 2011.
[2] *Roseville General Plan 2035, Circulation Element*, City of Roseville, August 5, 2020.

ASSESSMENT OF PROPOSED PROJECT

Project Land Use, Access, and Circulation

The project proposes to amend the DCWPCP designations to High Density Residential and Medium Density Residential. The Project proposes 220 new multifamily-family residential units and 212 new single-family residential units, to be constructed in up to five (5) phases.

As per County Code Section 15.65.120, the project proposes to meet the minimum requirement for affordability on the detached residential portion of the project by transferring an offsite vacant parcel to the County. This parcel, located at the northeast corner of PFE Road and Watt Avenue, is intended for future affordable housing development. Based on an assumed future affordable housing development on the site, the site could accommodate a minimum of 80 affordable units and potentially up to 120 units if built to the maximum density allowed in the zoning district. For this analysis 120 units were considered.

Additionally, if the affordable housing at Site 2 is not feasible, up to 22 Accessory Dwelling Units (ADUs) may be included to meet the County's affordable housing requirements. For this analysis, a scenario that includes both the Site 2, Affordable Housing, and ADUs was considered for a more conservative trip estimate.

The project proposes five access points. The access to Phase 1 of the project will be from Baseline Road, aligned with a fully signalized Upland Drive intersection serving the commercial development on the north side of Baseline Road. Phase 2 access will be from Springhill Drive and a new unsignalized Walerga Road intersection allowing only rights in/rights out (RIRO). Phase 3 access will be from the eastern leg of the signalized Walerga Road and Town Center Avenue intersection, featuring a landscaped median with a vehicle gate. Phase 4 access will be from the western extension of Vineyard Road, which currently terminates just west of Crowder Lane and will include a gate.

Trip Generation

The projected number of trips generated by the proposed Project was approximated using data included in the *Trip Generation Manual, 11th Edition*, published by the Institute of Transportation Engineers (ITE). ITE Land Use Code 210 (Single-Family Detached Housing) was used to approximate single-family home trips. ITE Land Use Code 220 (Multi-Family Housing (Low-Rise)) was used to approximate the multi-family, affordable housing, and the potential ADU's home trips.

Table 3 presents the Project trip generation estimate. The Project is anticipated to generate 4,519 weekday trips, 312 trips during the AM peak-hour, and 402 during the PM peak-hour. If included, the ADU's would result in the addition of 216 weekday trips, 30 AM peak-hour trips, and 30 PM peak-hour trips.

Table 3 – Proposed Project Trip Generation

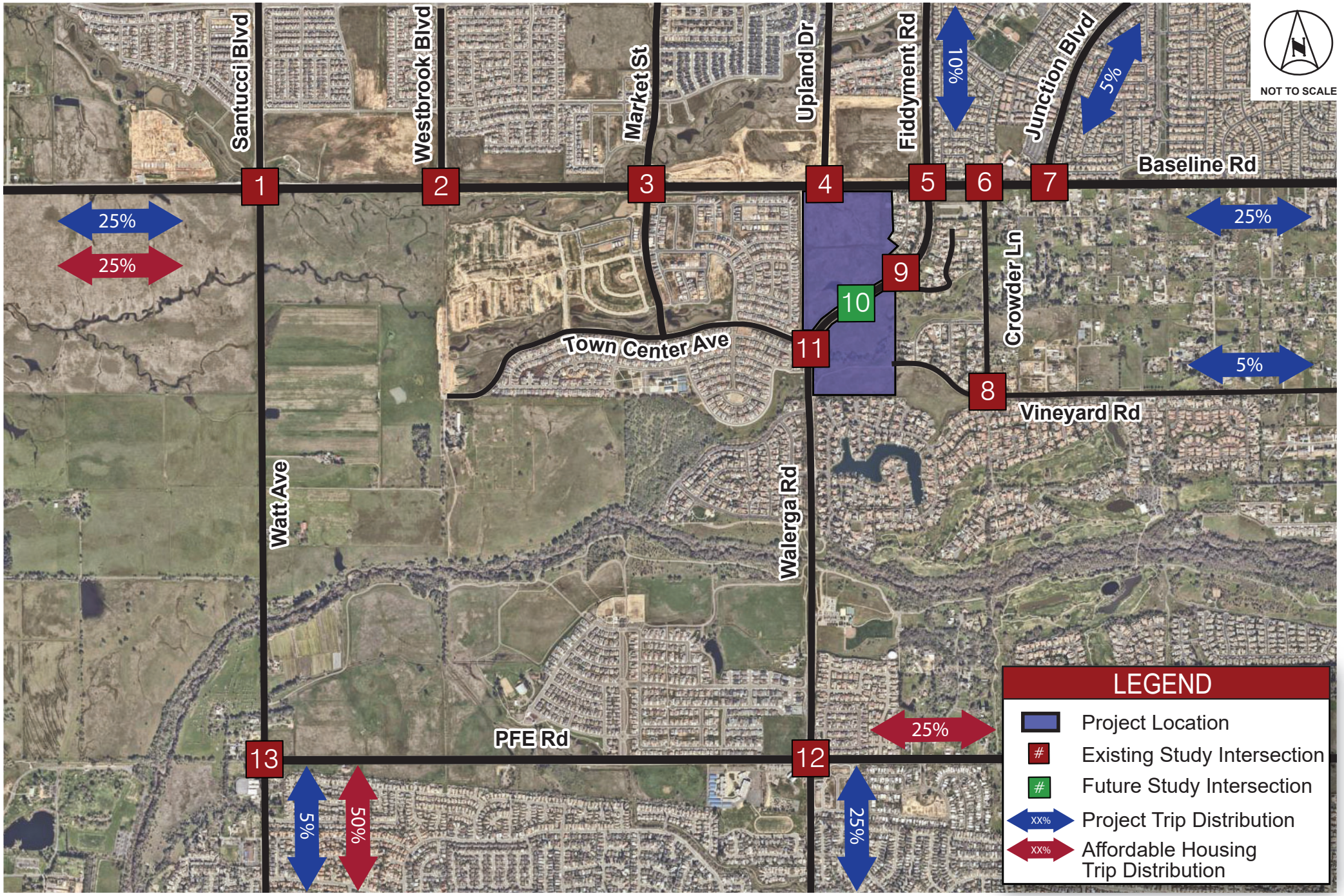
Land Use (ITE Code)[1]	Units	Daily Trips	Weekday AM Peak-Hour					Weekday PM Peak-Hour				
			Total Trips	In		Out		Total Trips	In		Out	
				%	Trips	%	Trips		%	Trips	%	Trips
Multifamily Housing (Low-Rise) (220) (Phase 1)	220 du	1,486	91	24%	22	76%	69	115	63%	73	37%	42
Single Family Detached Housing (210) (Phase 2)	110 du	1,102	81	25%	20	75%	61	109	63%	68	37%	41
Single Family Detached Housing (210) (Phase 3)	55 du	582	43	25%	11	75%	32	57	63%	36	37%	21
Single Family Detached Housing (210) (Phase 4)	47 du	504	37	25%	9	75%	28	49	63%	31	37%	18
Multifamily Housing (Low-Rise) (220) (Affordable Housing)	120 du	845	60	24%	14	76%	46	72	63%	45	37%	27
Project Trips:		**4,519**	**312**		**76**		**236**	**402**		**253**		**149**
Multifamily Housing (Low-Rise) (220) (ADU's)	22 du	216	30	24%	7	76%	23	30	63%	19	37%	11
Project Trips w ADUs:		**4,735**	**342**		**83**		**259**	**432**		**272**		**160**

[1] *ITE Trip Generation Manual, 11th Edition, Fitted Curve Equation*
du=dwelling unit

Trip Distribution and Assignment

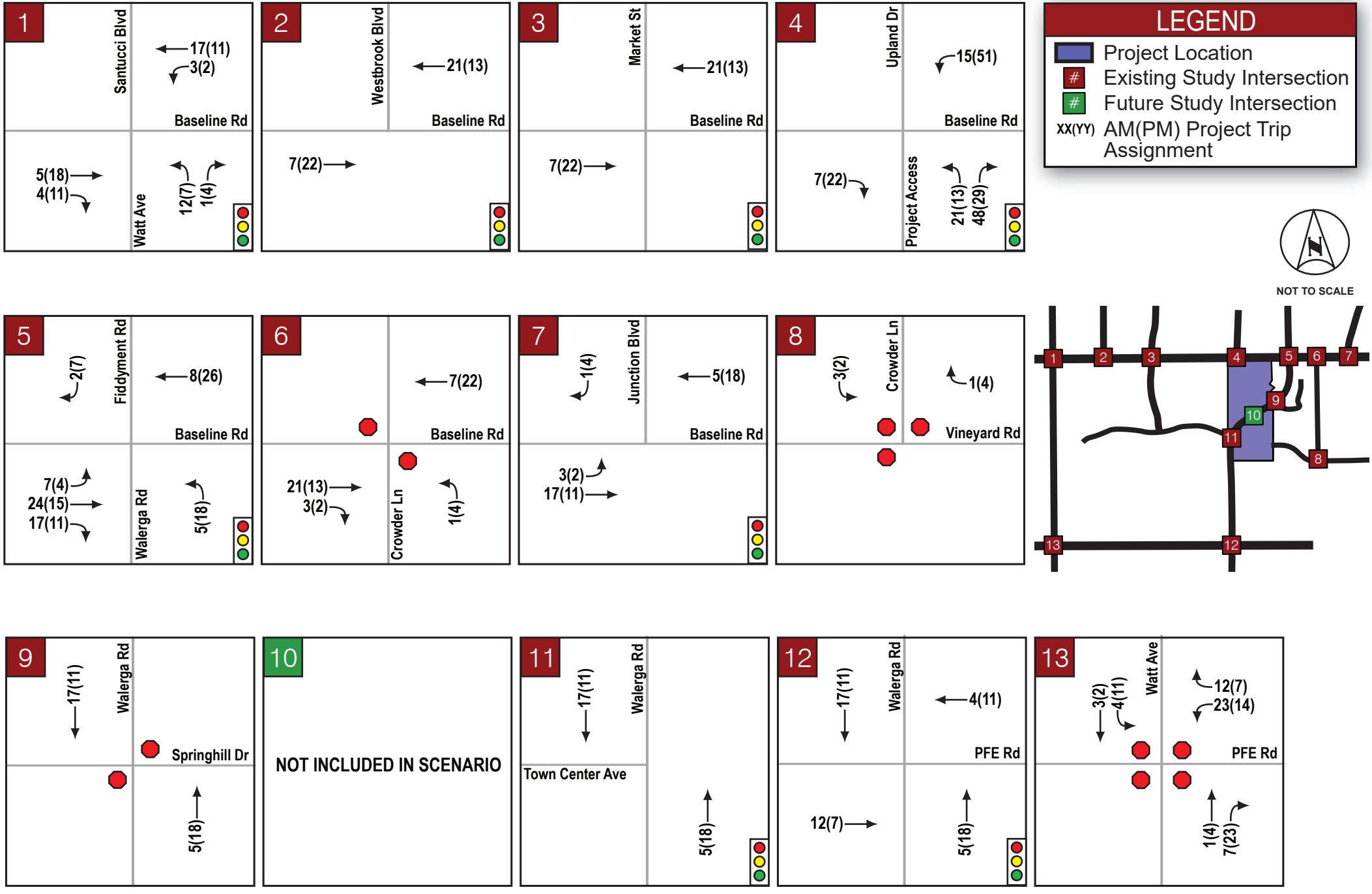
The general distribution of project traffic was developed based on traffic count data collected while nearby schools were in session, combined with an understanding of residential land uses, traffic patterns, proposed Phase accesses, and professional engineering judgment. This approach ensures the captured data accurately represents the residential trips traveling to the various schools in the surrounding area. Due to the multiple schools located in different directions, the distribution of traffic reflects the diverse travel patterns of residents. The Project is not anticipated to adversely affect traffic patterns throughout the roadway network. The general Project trip distribution is shown in Figure 3.

Project trips were assigned to the study intersections and the surrounding roadway network according to these patterns and based on the completed phases and their respective access. The Project trip assignment for Phase 1 and Affordable Housing, Buildout, and potential ADUs is reflected in Figure 4, Figure 5, and Figure 6, respectively.



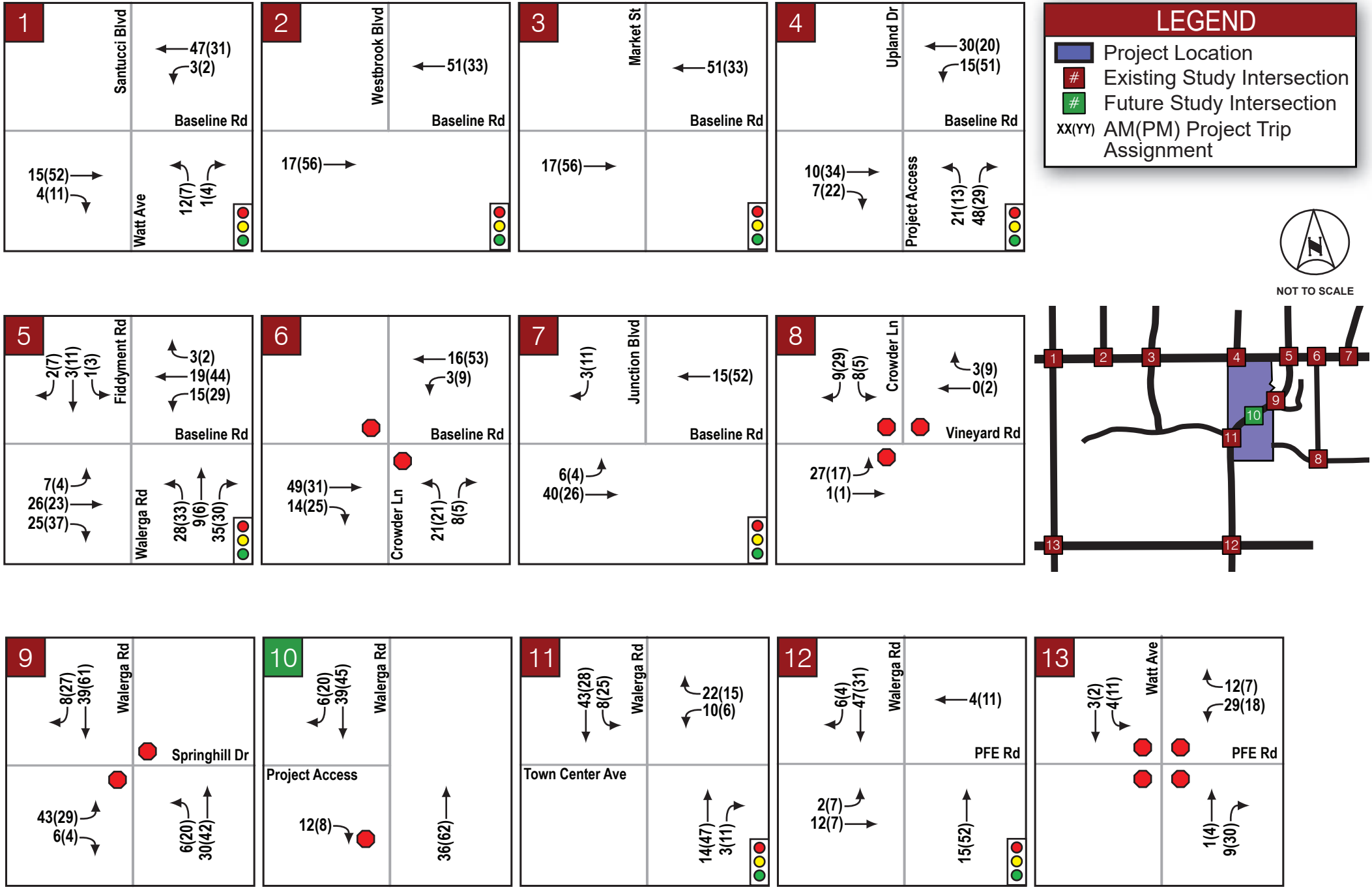
Kimley»Horn *Figure not OCR compatible

Figure 3
Project Trip Distribution



Kimley»Horn *Figure not OCR compatible

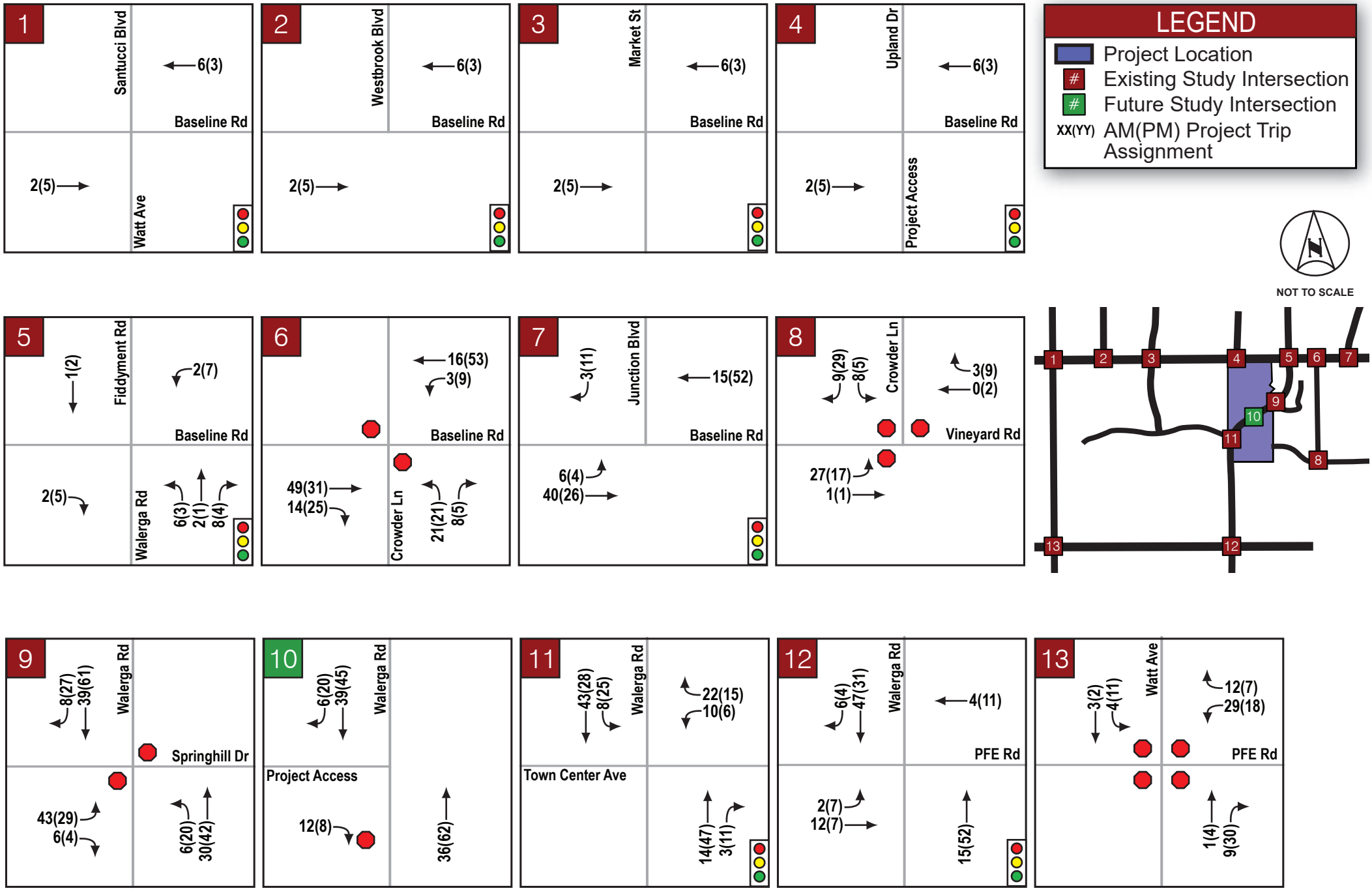
Figure 4
Project Phase 1 and Affordable Housing Trip Assignment



Kimley»Horn

*Figure not OCR compatible

Figure 5
Project Buildout Trip Assignment



Kimley»Horn

*Figure not OCR compatible

Figure 6
Accessory Dwelling Units (ADUs) Trip Assignment

EXISTING (2024) CONDITIONS

Project Area Roadways

The following are descriptions of the primary roadways near the Project site.

- Baseline Road is an east-west arterial roadway, located north of the project site, features two lanes in each direction separated by a two-way left turn lane. It has a speed limit of 45 mph and a design speed of 65 mph. It provides vehicular access to minor arterials and major collectors leading to residential and commercial areas east of Santucci Boulevard/Watt Avenue.
- Watt Avenue is a north-south major arterial that spans two lanes and connects Baseline Road with Sacramento County, where it transitions to a four-lane roadway. Watt Avenue links Western Placer County with Interstate-80 and has a speed limit of 45 mph and design speed of 65 mph.
- Walerga Road is a north-south four-lane minor arterial that connects Baseline Road to Sacramento County and provides vehicle access to the project site. The posted speed limit along Walerga Road is 50 mph and a design speed of 65 mph.
- Crowder Lane is a north-south two-lane minor collector that connects Baseline Road to Vineyard Road. The posted speed limit along Crowder Lane is 35 mph and the design speed is 50 mph.
- PFE Road is located south of the project site, this east-west rural collector intersects with Walerga Road and Watt Avenue. PFE Road offers vehicle access to arterials, local roadways, and residential driveways and has a posted speed limit of 45 mph and a design speed of 55 mph.
- Vineyard Road is an east-west two-lane major collector that provides vehicle access to the Project site, local roadways, and residential driveways. Vineyard Road intersects with Cook Riolo Road to the west and Foothills Boulevard to the east. The posted speed limit along Vineyard Road is 45 mph and the design speed is 55 mph.

Intersection Geometry and Volumes

Traffic counts were collected for the existing study intersections and study roadway segments. Weekday AM and PM peak-hour intersection turning movement counts were collected on Wednesday May 15, 2024. The study roadway segment 24-hour counts were collected concurrently. Counts for Intersection #13 (Watt Avenue at PFE Road) were collected later on Wednesday April 2, 2025. This collected data is included in Appendix A. Signal timing sheets provided by the County and the City were used to establish the baseline Existing (2024) scenario.

In coordination with the City of Roseville and Placer County, the Existing (2024) scenario reflects the completion of the West Roseville Retail Center, located north of Baseline Road. Therefore, Intersection #4 (Baseline Road at Project Access/Upland Drive) was analyzed with the stated improvements in the Retail Center traffic study[3]. The Retail Center project trips were then manually added to the study intersections to establish the baseline Existing (2024) Conditions. Based on the Retail Center traffic study[3], the project generates 1,882 gross trips during the AM peak period and 3,795 gross trips during the PM peak period. Since the AM peak-hour was not analyzed in the prior study, the calculated ratio of 50% of PM peak-hour trips was applied to estimate AM peak-hour Retail Center trips. This ensures the AM analysis does not understate background project volumes while remaining reasonable for baseline conditions. Existing (2024) peak-hour traffic volumes, traffic control, and lane geometry are illustrated in Figure 7.

[3] *Transportation Impact Study for West Roseville Retail Center in Sierra Vista Specific Plan*, Fehr & Peers, September 17, 2012.

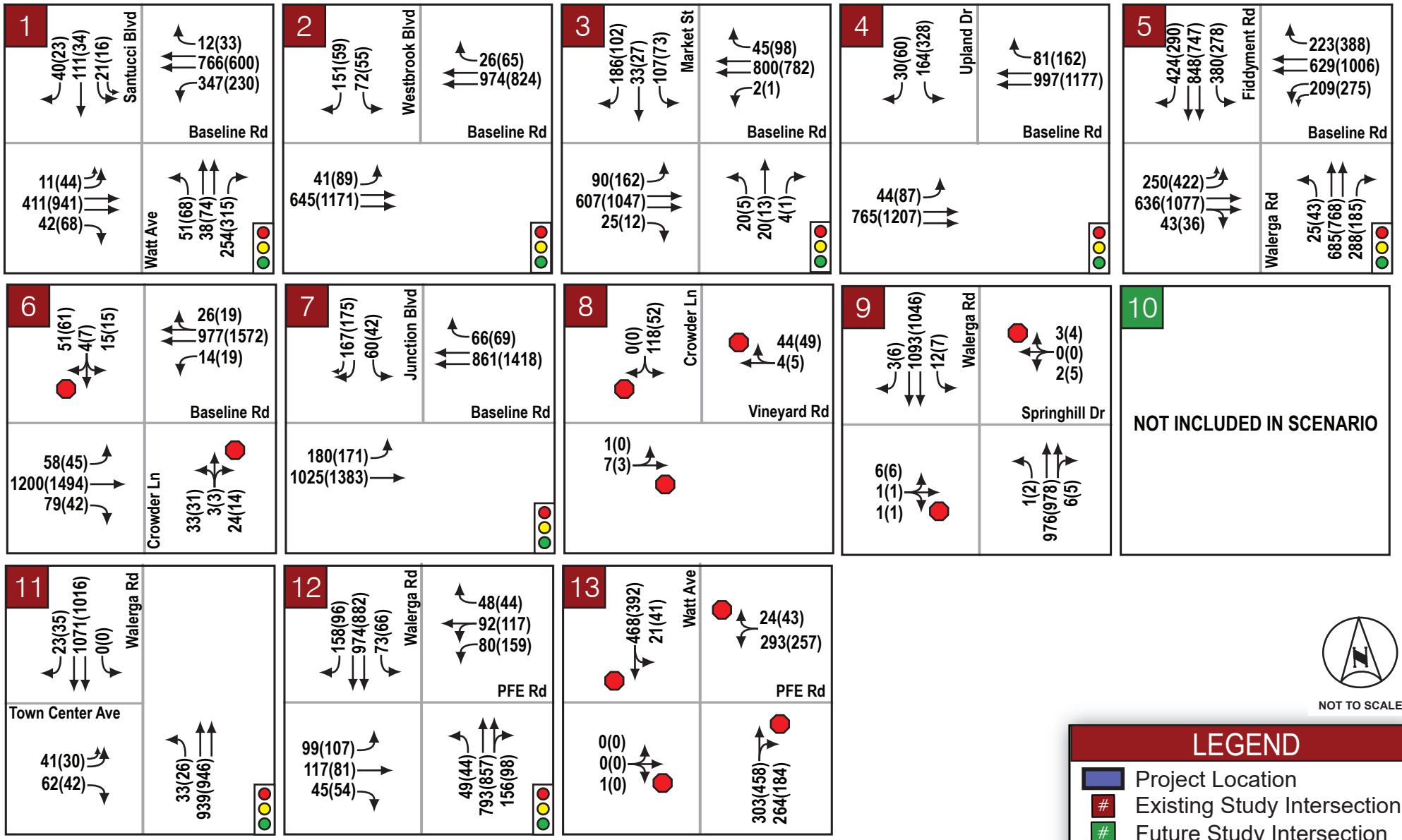


*Figure not OCR compatible

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Figure 7

Existing (2024) Peak-Hour Traffic Volumes, Traffic Control, and Lane Geometry

Intersection Level of Service

Table 4 presents the peak-hour intersection LOS analysis results for the Existing (2024) Conditions. As indicated in Table 4, the study intersections operate between LOS A and F in the Existing (2024) Conditions scenario. Intersection analysis worksheets for Existing (2024) Conditions are provided in Appendix B.

Table 4 – Existing (2024) Intersection Level of Service Summary

ID	Intersection	Peak Hour	Control	Existing (2024)	
				Delay (sec)	LOS
1	Baseline Rd at Santucci Blvd/Watt Ave	AM	Signal	26.7	C
		PM		**41.7**	**D**
2	Baseline Rd at Westbrook Blvd	AM	Signal	11.5	B
		PM		9.2	A
3	Baseline Rd at Market St	AM	Signal	17.3	B
		PM		14.2	B
4	Baseline Rd at Project Access/Upland Dr	AM	Signal	8.2	A
		PM		14.5	B
5	Baseline Rd at Fiddyment Rd/Walerga Rd	AM	Signal	**56.1**	**E**
		PM		**63.2**	**E**
6	Baseline Rd at Crowder Ln	AM	SSSC	**3.1(51.9 NB)**	**A(F)**
		PM		**7.1(115.3 NB)**	**A(F)**
7	Baseline Rd at Junction Blvd	AM	Signal	9.0	A
		PM		14.1	B
8	Vineyard Rd at Crowder Ln	AM	AWSC	8.0	A
		PM		7.3	A
9	Walerga Rd at Springhill Dr	AM	SSSC	**0.2(35.0 EB)**	**A(E)**
		PM		0.3(27.4 EB)	A(D)
10	Walerga Rd at Project Access	AM	SSSC	-	-
		PM		-	-
11	Walerga Rd at Town Center Ave	AM	Signal	6.5	A
		PM		5.9	A
12	Walerga Rd at PFE Rd	AM	Signal	23.1	C
		PM		23.7	C
13	Watt Ave at PFE Rd	AM	AWSC	**84.5**	**F**
		PM		**49.8**	**E**

Notes: **Bold** represents deficient operations. Shaded represents a project induced deficiency
Side Street Stop Controlled (SSSC) reported as intersection delay followed by worst approach's delay.

As noted previously, Placer County defines a deficient intersection as one that operates at LOS E or worse within the DCWPCP area[1]. The City of Roseville defines a deficient intersection as one that operates at LOS D or worse[2]. Intersection #1 (Baseline Road at Santucci Boulevard/Watt Avenue), Intersection #5 (Baseline Road at Fiddyment Road/Walerga Road), Intersection #6 (Baseline Road at Crowder Lane), Intersection #9 (Walerga Road at Springhill Drive), and Intersection #13 (Watt Avenue at PFE Road) operate at a deficient LOS.

Roadway Segment Level of Service

Table 5 presents the roadway segment operating conditions for Existing (2024) Conditions. As indicated in Table 5, the roadway segments operate from LOS A to LOS B.

Table 5 – Existing (2024) Roadway Segment Level of Service Summary

ID	Location	Classification	Lanes	Existing (2024)	
				Volume (ADT)	LOS
1	Walerga Road, between Baseline Road and Springhill Drive	Arterial - High Access Control	4	26,830	B
2	Crowder Lane, between Baseline Road and Vineyard Road	Rural 2-lane Highway - Rolling Terrain	2	1,372	A
3	Vineyard Road, between Crowder Lane and Cook Riolo Road	Rural 2-lane Highway - Rolling Terrain	2	1,364	A
4	Walerga Road, between PFE Road and Dry Creek Community Park Driveway	Arterial - High Access Control	4	27,803	B

As noted previously, Placer County defines a deficient roadway segment as one that operates at LOS E or worse within the DCWPCP area[1]. All study roadway segments operate within Placer County standards.

EXISTING (2024) PLUS PROJECT PHASE 1 CONDITIONS

Proposed Project Phase 1 and the affordable housing project traffic was added to the Existing (2024) peak-hour traffic volumes to establish the Existing (2024) plus Project Phase 1 peak-hour traffic volumes. **Figure 8** illustrates the Existing (2024) plus Project Phase 1 peak-hour traffic volumes, traffic control, and lane geometry. The signal timing parameters established in the baseline Existing (2024) scenario were maintained.

Intersection Level of Service

Table 6 presents the peak-hour intersection LOS analysis results for the Existing (2024) plus Project Phase 1 with Affordable Housing Conditions. As indicated in **Table 6**, the study intersections operate between LOS A and F in the Existing (2024) plus Project Phase 1 with Affordable Housing Conditions scenario. Intersection analysis worksheets for Existing (2024) plus Project Phase 1 Conditions are provided in **Appendix C.**

Table 6 – Existing (2024) plus Project Phase 1 with Affordable Housing Intersection Level of Service Summary

ID	Intersection	Peak Hour	Control	Existing (2024)		Existing (2024) plus Project Ph 1 w Affordable Housing	
				Delay (sec)	LOS	Delay (sec)	LOS
1	Baseline Rd at Santucci Blvd/Watt Ave	AM	Signal	26.7	C	27.0	C
		PM		**41.7**	**D**	**42.9**	**D**
2	Baseline Rd at Westbrook Blvd	AM	Signal	11.5	B	11.5	B
		PM		9.2	A	9.2	A
3	Baseline Rd at Market St	AM	Signal	17.3	B	17.5	B
		PM		14.2	B	14.2	B
4	Baseline Rd at Project Access/Upland Dr	AM	Signal	8.2	A	10.0	B
		PM		14.5	B	20.0	B
5	Baseline Rd at Fiddyment Rd/Walerga Rd	AM	Signal	**56.1**	**E**	**57.7**	**E**
		PM		**63.2**	**E**	**64.9**	**E**
6	Baseline Rd at Crowder Ln	AM	SSSC	**3.1(51.9 NB)**	**A(F)**	**3.2(55.6 NB)**	**A(F)**
		PM		**7.1(115.3 NB)**	**A(F)**	**7.8(136.0 NB)**	**A(F)**
7	Baseline Rd at Junction Blvd	AM	Signal	9.0	A	9.0	A
		PM		14.1	B	14.8	B
8	Vineyard Rd at Crowder Ln	AM	AWSC	8.0	A	8.0	A
		PM		7.3	A	7.3	A
9	Walerga Rd at Springhill Dr	AM	SSSC	**0.2(35.0 EB)**	**A(E)**	**0.2(35.8 EB)**	**A(E)**
		PM		0.3(27.4 EB)	A(D)	0.3(27.8 EB)	A(D)
10	Walerga Rd at Project Access	AM	SSSC	-	-	-	-
		PM		-	-	-	-
11	Walerga Rd at Town Center Ave	AM	Signal	6.5	A	6.5	A
		PM		5.9	A	5.9	A
12	Walerga Rd at PFE Rd	AM	Signal	23.1	C	24.0	C
		PM		23.7	C	24.1	C
13	Watt Ave at PFE Rd	AM	AWSC	**84.5**	**F**	**98.8**	**F**
		PM		**49.8**	**E**	**63.5**	**F**

Notes: **Bold** represents deficient operations. Shaded represents a project induced deficiency
Side Street Stop Controlled (SSSC) reported as intersection delay followed by worst approach's delay.

Intersection #1 (Baseline Road at Santucci Boulevard/Wat Avenue), Intersection #5 (Baseline Road at Fiddyment Road/Walerga Road), Intersection #6 (Baseline Road at Crowder Lane), Intersection #9 (Walerga Road at Springhill Drive), and Intersection #13 (Watt Avenue at PFE Road) operate at a deficient LOS and Intersection #13 (Watt Avenue at PFE Road) has a project induced deficiency as defined by the DCWPCP policy and City of Roseville standards.

In accordance with the County, a focused analysis was conducted on Intersection #13 (Watt Avenue at PFE Road) to determine if the affordable housing component is responsible for the project-induced deficiency. Phase 1 project trip assignments, excluding Affordable Housing, were added to the Existing (2024) traffic volumes. Intersection analysis worksheets for this focused analysis are provided in **Appendix C.** As shown in **Table 7**, Intersection #13 does not exhibit a project-induced deficiency with Phase 1 traffic only. Therefore, it is concluded that the affordable housing component triggers the project-induced deficiency.

Table 7 – Existing (2024) plus Project Phase 1 Only Intersection Level of Service Summary

ID	Intersection	Peak Hour	Control	Existing (2024)		Existing (2024) plus Project Ph 1 Only	
				Delay (sec)	LOS	Delay (sec)	LOS
13	Watt Ave at PFE Rd	AM	AWSC	**84.5**	**F**	**85.8**	**F**
		PM		**49.8**	**E**	**51.1**	**F**

Notes: **Bold** represents deficient operations. Shaded represents a project induced deficiency
Side Street Stop Controlled (SSSC) reported as intersection delay followed by worst approach's delay.

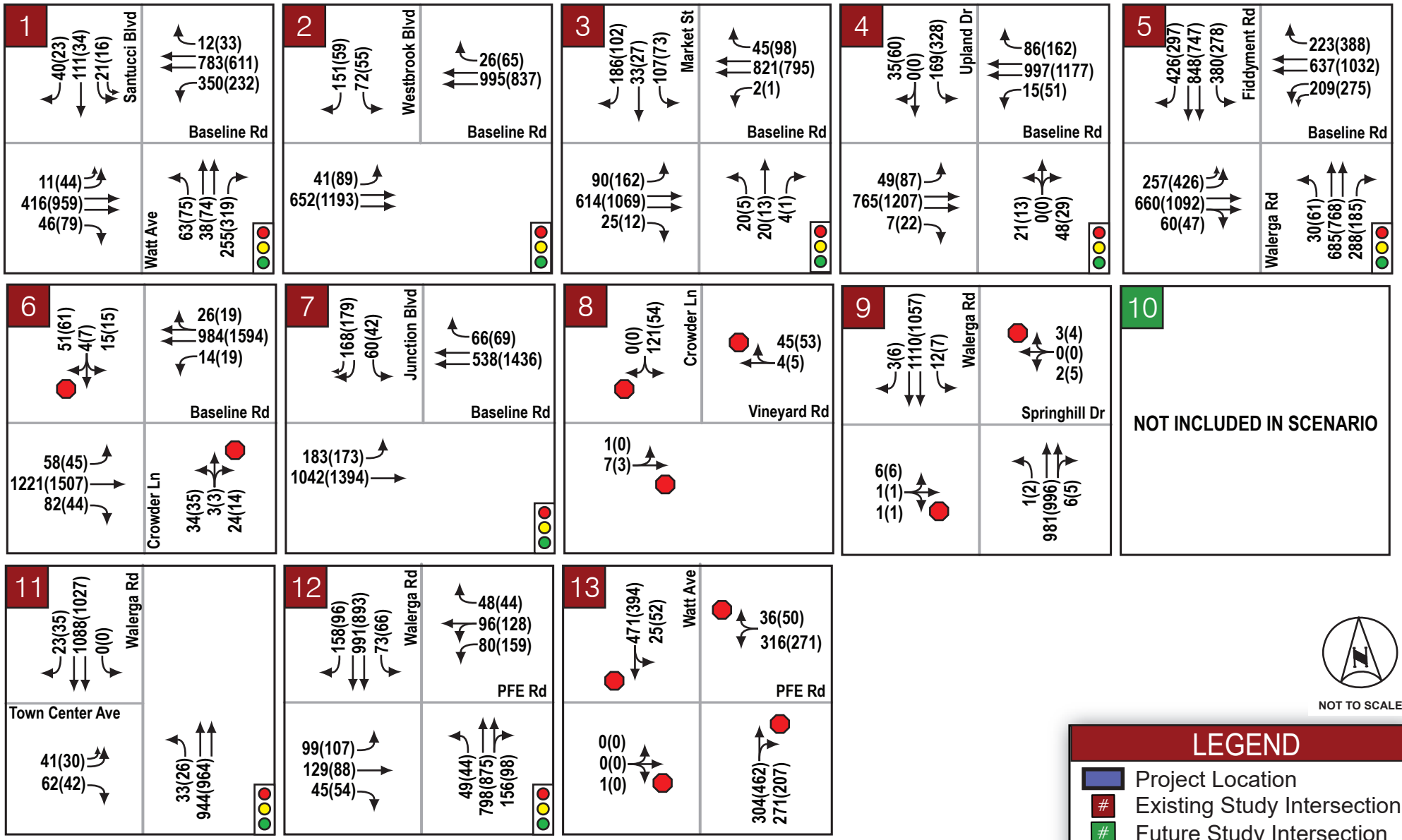


*Figure not OCR compatible

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Figure 8

Existing (2024) plus Project Phase 1 Peak-Hour Traffic Volumes, Traffic Control, and Lane Geometry

Roadway Segment Level of Service

Table 8 presents the roadway segment operating conditions for Existing (2024) plus Project Phase 1 with Affordable Housing Conditions. As indicated in Table 8, the roadway segments operate from LOS A to LOS C.

Table 8 – Existing (2024) plus Project Phase 1 with Affordable Housing Roadway Segment Level of Service Summary

ID	Location	Classification	Lanes	Existing (2024)		Existing (2024) plus Project Ph1 with Affordable Housing	
				Volume (ADT)	LOS	Volume (ADT)	LOS
1	Walerga Road, between Baseline Road and Springhill Drive	Arterial - High Access Control	4	26,830	B	27,202	B
2	Crowder Lane, between Baseline Road and Vineyard Road	Rural 2-lane Highway - Rolling Terrain	2	1,372	A	1,446	A
3	Vineyard Road, between Crowder Lane and Cook Riolo Road	Rural 2-lane Highway - Rolling Terrain	2	1,364	A	1,438	A
4	Walerga Road, between PFE Road and Dry Creek Community Park Driveway	Arterial - High Access Control	4	27,803	B	28,175	C

All study roadway segments operate within County standards.

EXISTING (2024) PLUS PROJECT BUILDOUT CONDITIONS

Proposed Project Buildout (all Project phases) traffic was added to the Existing (2024) peak-hour traffic volumes to establish the Existing (2024) plus Project Buildout peak-hour traffic volumes. Figure 9 illustrates the Existing (2024) plus Project Buildout peak-hour traffic volumes, traffic control, and lane geometry. The 22 additional ADUs traffic was added to the Project Buildout traffic and included as a separate scenario. Figure 10 illustrates the Existing (2024) plus Project Buildout with ADUs peak-hour traffic volumes, traffic control, and lane geometry. The signal timing parameters established in the baseline Existing (2024) scenario were maintained.

Intersection Level of Service

Table 9 presents the peak-hour intersection LOS analysis results for the Existing (2024) plus Project Buildout with and without ADUs Conditions. As indicated in Table 9, the study intersections operate between LOS A and F in both Existing (2024) plus Project Buildout Conditions scenario. There is nominal difference with the addition of the ADUs. Intersection analysis worksheets for Existing (2024) plus Project Buildout Conditions with and without ADUs are provided in Appendix D.

Table 9 – Existing (2024) plus Project Buildout Intersection Level of Service Summary

ID	Intersection	Peak Hour	Control	Existing (2024)		Existing (2024) plus Project Buildout		Existing (2024) plus Project Buildout w ADUs	
				Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
1	Baseline Rd at Santucci Blvd/Watt Ave	AM	Signal	26.7	C	27.2	C	27.2	C
		PM		**41.7**	**D**	**43.8**	**D**	**43.9**	**D**
2	Baseline Rd at Westbrook Blvd	AM	Signal	11.5	B	11.6	B	11.7	B
		PM		9.2	A	9.2	A	9.2	A
3	Baseline Rd at Market St	AM	Signal	17.3	B	17.7	B	17.7	B
		PM		14.2	B	14.3	B	14.3	B
4	Baseline Rd at Project Access/Upland Dr	AM	Signal	8.2	A	10.1	B	9.8	A
		PM		14.5	B	20.5	C	20.6	C
5	Baseline Rd at Fiddyment Rd/Walerga Rd	AM	Signal	**56.1**	**E**	**63.7**	**E**	**65.2**	**E**
		PM		**63.2**	**E**	**68.9**	**E**	**69.7**	**E**
6	Baseline Rd at Crowder Ln	AM	SSSC	**3.1(51.9 NB)**	**A(F)**	**6.3(104.4 NB)**	**A(F)**	**6.4(106.4 NB)**	**A(F)**
		PM		**7.1(115.3 NB)**	**A(F)**	**13.9(262.7 NB)**	**B(F)**	**14.4(273.4 NB)**	**B(F)**
7	Baseline Rd at Junction Blvd	AM	Signal	9.0	A	9.0	A	9.0	A
		PM		14.1	B	16.0	B	16.2	B
8	Vineyard Rd at Crowder Ln	AM	AWSC	8.0	A	8.2	A	8.2	A
		PM		7.3	A	7.4	A	7.5	A
9	Walerga Rd at Springhill Dr	AM	SSSC	**0.2(35.0 EB)**	**A(E)**	**1.4(60.4 EB)**	**A(F)**	**1.9(68.1 EB)**	**A(F)**
		PM		0.3(27.4 EB)	A(D)	**1.3(42.3 EB)**	**A(E)**	**1.5(45.2 EB)**	**A(E)**
10	Walerga Rd at Project Access	AM	SSSC	-	-	0.1(13.6 EB)	A(B)	0.1(13.6 EB)	A(B)
		PM		-	-	0.0(13.2 EB)	A(B)	0.1(13.3 EB)	A(B)
11	Walerga Rd at Town Center Ave	AM	Signal	6.5	A	11.9	B	12.4	B
		PM		5.9	A	11.0	B	11.4	B
12	Walerga Rd at PFE Rd	AM	Signal	23.1	C	24.2	C	24.2	C
		PM		23.7	C	24.6	C	24.7	C
13	Watt Ave at PFE Rd	AM	AWSC	**84.5**	**F**	**101.8**	**F**	**101.9**	**F**
		PM		**49.8**	**E**	**66.7**	**F**	**67.3**	**F**

Notes: **Bold** represents deficient operations. Shaded represents a project induced deficiency
Side Street Stop Controlled (SSSC) reported as intersection delay followed by worst approach's delay.

Intersection #1 (Baseline Road at Santucci Boulevard/Watt Avenue), Intersection #5 (Baseline Road at Fiddyment Road/Walerga Road), Intersection #6 (Baseline Road at Crowder Lane), Intersection #9 (Walerga Road at Springhill Drive), and Intersection #13 (Watt Avenue at PFE Road) operate at a deficient LOS and Intersection #9 (Walerga Road at Springhill Drive), and Intersection #13 (Watt Avenue at PFE Road) have project induced deficiencies as defined by the DCWPCP policy and City of Roseville standards.

A focused analysis was conducted on Intersection #13 (Watt Avenue at PFE Road) to determine if the affordable housing component is responsible for the project-induced deficiency. This focused analysis considered the Existing (2024) plus Project Buildout with ADUs, excluding Affordable Housing. Intersection analysis worksheets for this focused analysis are provided in **Appendix D.** As shown in **Table 10**, by excluding the Affordable Housing, Intersection #13 does not exhibit a project-induced deficiency. Therefore, it is concluded that the affordable housing component triggers the project-induced deficiency.

Table 10 – Existing (2024) plus Project Buildout with ADUs Only Intersection Level of Service Summary

ID	Intersection	Peak Hour	Control	Existing (2024)		Existing (2024) plus Project Buildout w ADUs Only	
				Delay (sec)	LOS	Delay (sec)	LOS
13	Watt Ave at PFE Rd	AM	AWSC	**84.5**	**F**	**88.4**	**F**
		PM		**49.8**	**E**	**54.3**	**F**

Notes: **Bold** represents deficient operations. Shaded represents a project induced deficiency
Side Street Stop Controlled (SSSC) reported as intersection delay followed by worst approach's delay.

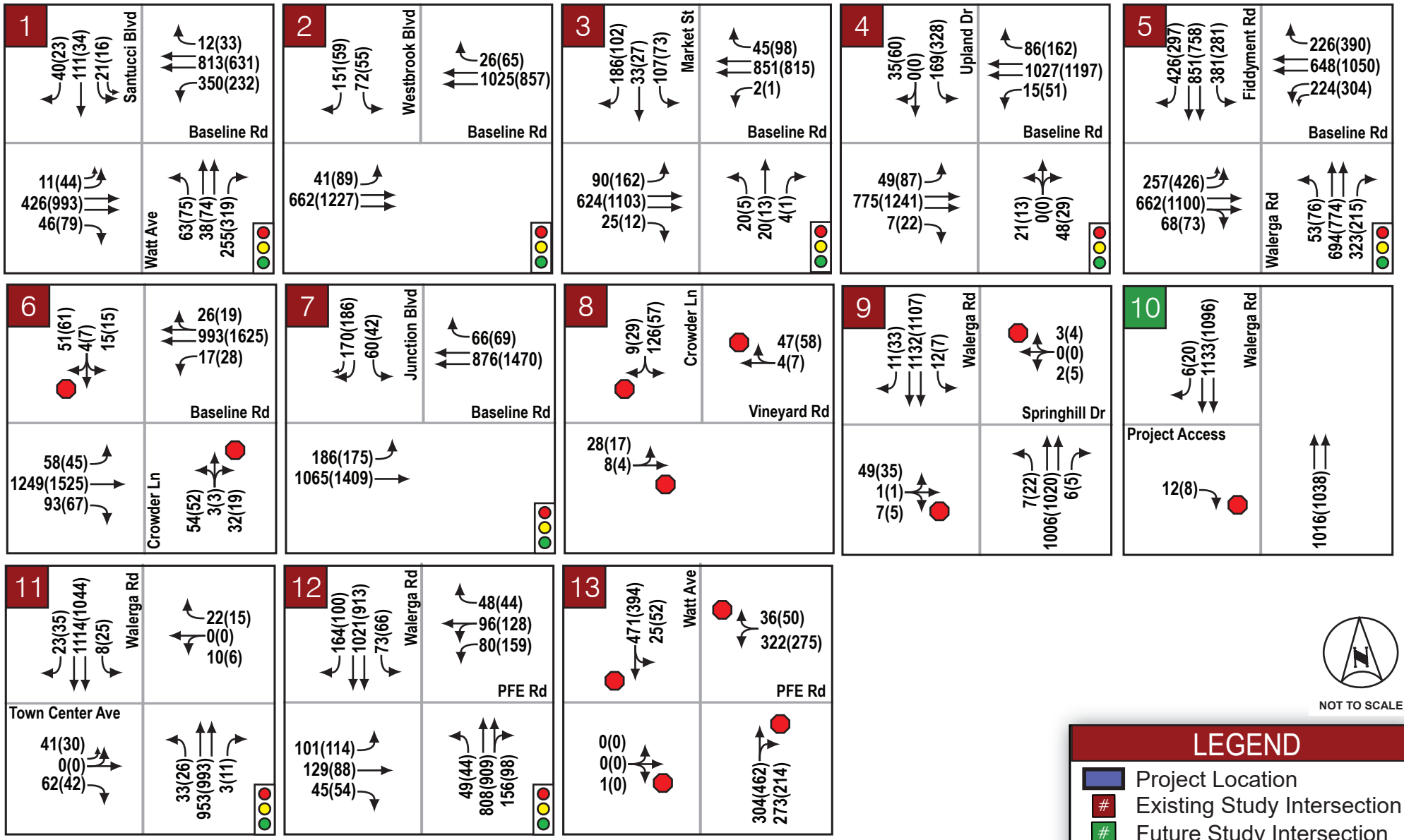


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Figure 9

Existing (2024) plus Project Buildout Peak-Hour Traffic Volumes, Traffic Control, and Lane Geometry

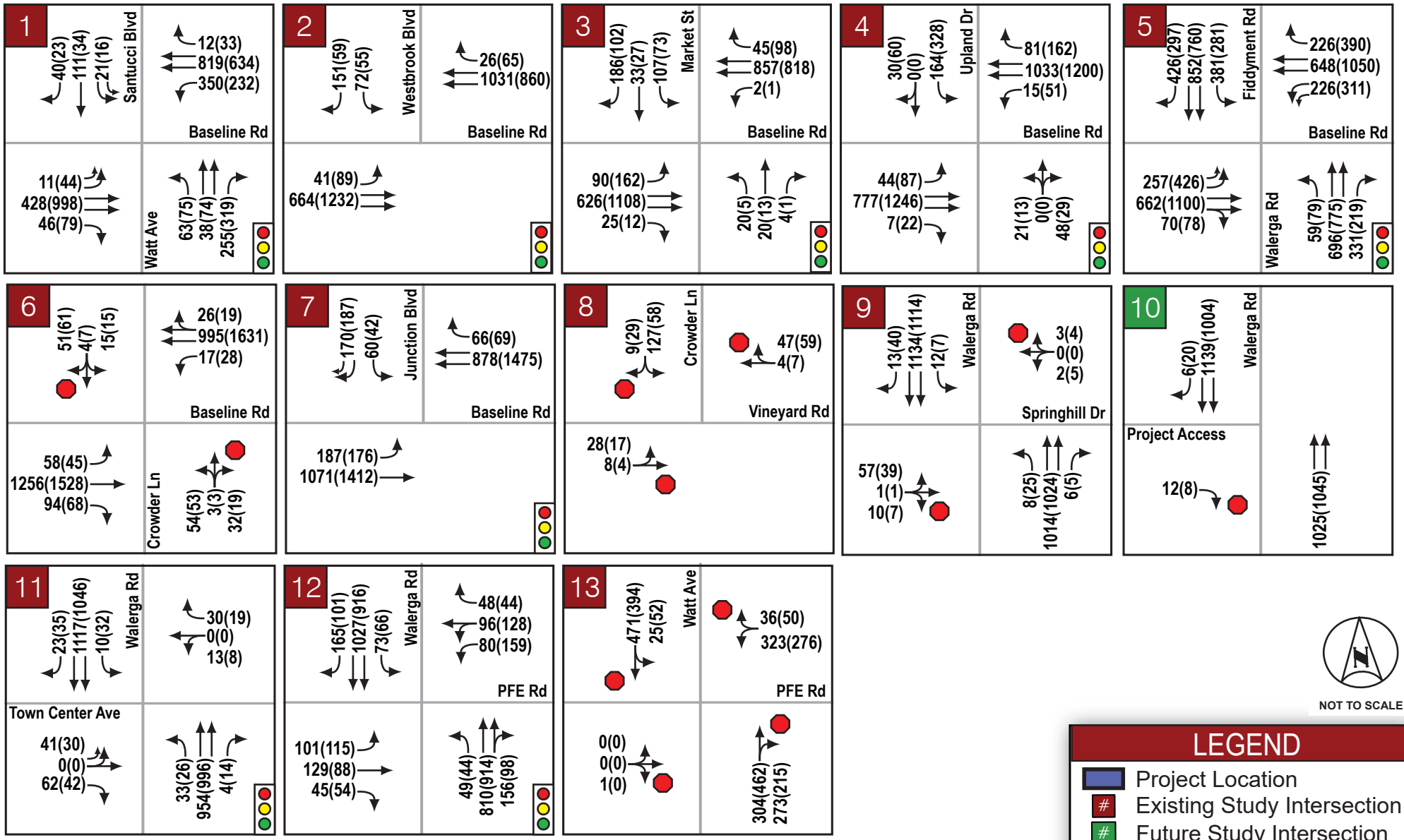


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Figure 10

Existing (2024) plus Project Buildout with ADUs Peak-Hour Traffic Volumes, Traffic Control, and Lane Geometry

Roadway Segment Level of Service

Table 11 presents the roadway segment operating conditions for Existing (2024) plus Project Buildout Conditions with and without the 22 additional ADUs. As indicated in Table 11, the roadway segments operate from LOS A to LOS C.

Table 11 – Existing (2024) plus Project Buildout Roadway Segment Level of Service Summary

ID	Location	Classification	Lanes	Existing (2024)		Existing (2024) plus Project Buildout		Existing (2024) plus Project Buildout with ADUs	
				Volume (ADT)	LOS	Volume (ADT)	LOS	Volume (ADT)	LOS
1	Walerga Road, between Baseline Road and Springhill Drive	Arterial - High Access Control	4	26,830	B	28,532	C	28,596	C
2	Crowder Lane, between Baseline Road and Vineyard Road	Rural 2-lane Highway - Rolling Terrain	2	1,372	A	2,009	B	2,215	B
3	Vineyard Road, between Crowder Lane and Cook Riolo Road	Rural 2-lane Highway - Rolling Terrain	2	1,364	A	1,548	A	1,559	A
4	Walerga Road, between PFE Road and Dry Creek Community Park Driveway	Arterial - High Access Control	4	27,803	B	28,831	C	28,885	C

All study roadway segments operate within County standards.

CUMULATIVE (2044) CONDITIONS

Intersection Geometry and Volumes

To establish Cumulative conditions, future study volumes were estimated using the South Placer Regional Transportation Authority's (SPRTA) travel demand model. To capture the relative growth predicted by the model, the "difference method" was used to develop the Cumulative volumes by first calculating the growth between the base year model scenario (representing 2019 conditions) and future year model scenario (representing 2040 conditions). The growth was then annualized and multiplied by the growth in the number of years between Existing (2024) and Cumulative (2044) (20 years). The total model volume growth was then added to the traffic counts collected for the study intersections and roadway segments resulting in traffic volumes for Cumulative Conditions.

It should be noted that the cumulative SPRTA travel demand model was confirmed to contain known future developments and roadway improvements in the project area. The model also accounts for the widening of Baseline Road between Santucci Boulevard and Fiddyment Road/Walerga Rd to 6-lanes, PFE Road from 2-lanes to 4-lanes, Walerga Road from 4-lanes to 6-lanes, and Watt Avenue from 2-lanes to 6-lanes.

The future intersection and roadway segment geometry were informed by the SPRTA model, DCWCP[1], the City of Roseville General Plan[2], and Retail Center traffic study[3] and are reflected in the intersection and segment analyses. Figure 11 illustrates the Cumulative (2044) peak-hour traffic volumes, traffic control, and lane geometry. Signal timing cycle lengths were optimized to establish the Cumulative (2044) scenario.

Intersection Level of Service

Table 12 presents the peak-hour intersection LOS analysis results for the Cumulative (2044) Conditions. As indicated in Table 12, the study intersections operate between LOS A and F in the Cumulative (2044) Conditions scenario. Intersection analysis worksheets for Cumulative (2044) Conditions are provided in Appendix E.

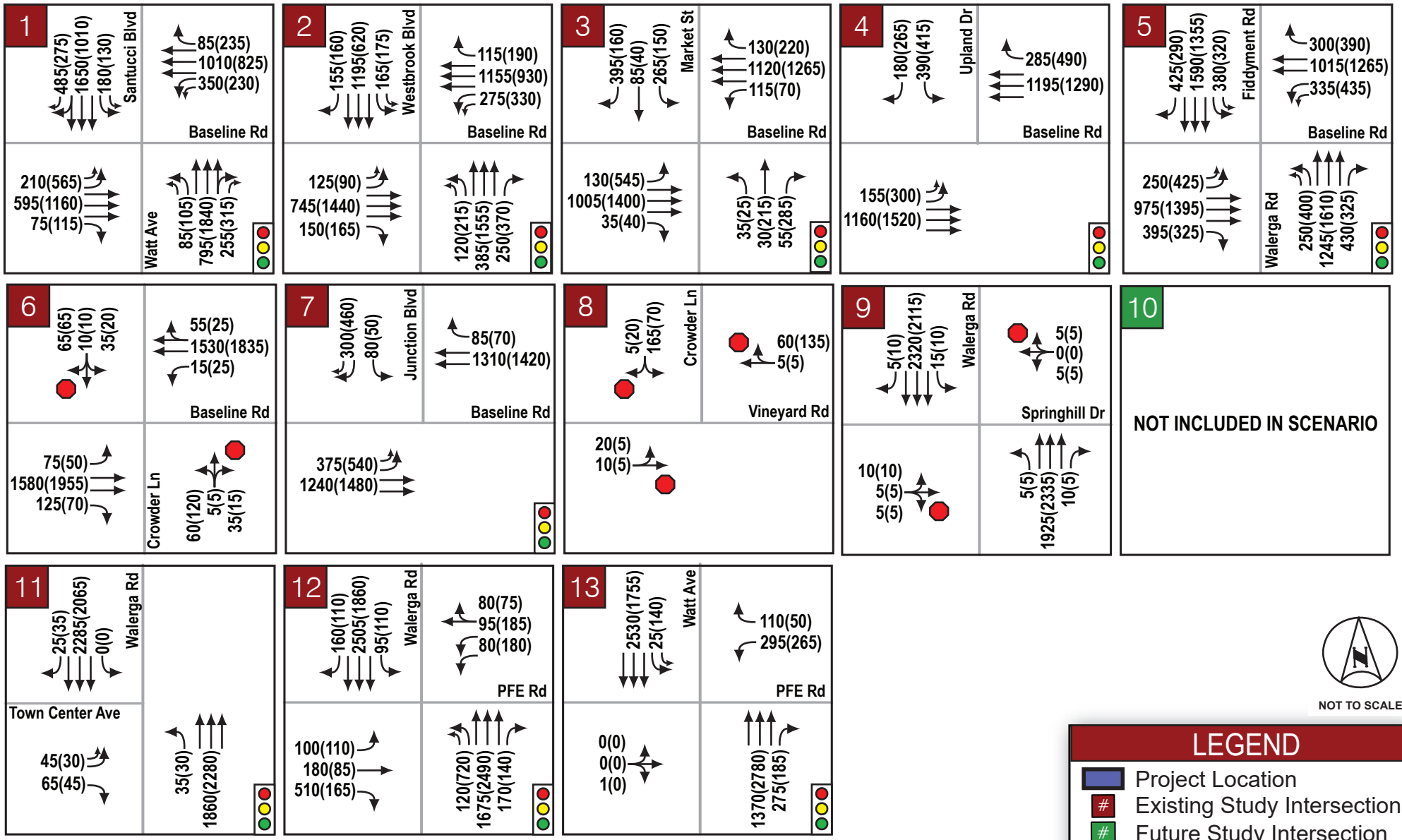


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Figure 11

Cumulative (2044) Peak-Hour Traffic Volumes, Traffic Control, and Lane Geometry

Table 12 – Cumulative (2044) Intersection Level of Service Summary

ID	Intersection	Peak Hour	Control	Cumulative (2044)	
				Delay (sec)	LOS
1	Baseline Rd at Santucci Blvd/Watt Ave	AM	Signal	**42.4**	**D**
		PM		**52.7**	**D**
2	Baseline Rd at Westbrook Blvd	AM	Signal	**36.3**	**D**
		PM		**55.6**	**E**
3	Baseline Rd at Market St	AM	Signal	**47.7**	**D**
		PM		**67.8**	**E**
4	Baseline Rd at Project Access/Upland Dr	AM	Signal	13.7	B
		PM		21.7	C
5	Baseline Rd at Fiddyment Rd/Walerga Rd	AM	Signal	**79.1**	**E**
		PM		**96.8**	**F**
6	Baseline Rd at Crowder Ln	AM	SSSC	**20.3(~300 NB)**	**C(F)**
		PM		**74.0(~300 NB)**	**F(F)**
7	Baseline Rd at Junction Blvd	AM	Signal	13.3	B
		PM		17.7	B
8	Vineyard Rd at Crowder Ln	AM	AWSC	8.2	A
		PM		7.4	A
9	Walerga Rd at Springhill Dr	AM	SSSC	**3.2(~300 EB)**	**A(F)**
		PM		**2.6(~300 EB)**	**A(F)**
10	Walerga Rd at Project Access	AM	SSSC	-	-
		PM		-	-
11	Walerga Rd at Town Center Ave	AM	Signal	6.4	A
		PM		5.3	A
12	Walerga Rd at PFE Rd	AM	Signal	110.5	F
		PM		113.3	F
13	Watt Ave at PFE Rd	AM	Signal	14.4	B
		PM		19.6	B

Notes: **Bold** represents deficient operations. Shaded represents a project induced deficiency
Side Street Stop Controlled (SSSC) reported as intersection delay followed by worst approach's delay.

Intersection #1 (Baseline Road at Santucci Boulevard/Watt Avenue), Intersection #2 (Baseline Road at Westbrook Boulevard), Intersection #3 (Baseline Road at Market Street), Intersection #5 (Baseline Road at Fiddyment Road/Walerga), Intersection #6 (Baseline Road at Crowder Lane), Intersection #9 (Walerga Road at Springhill Drive), per DCWPCP policy and City of Roseville standards.

Roadway Segment Level of Service

Table 13 presents the roadway segment operating conditions for Cumulative (2044) Conditions. As indicated in Table 13, the roadway segments operate from LOS A to LOS D.

Table 13 – Cumulative (2044) Roadway Segment Level of Service Summary

ID	Location	Classification	Lanes	Cumulative (2044)		
				Volume (ADT)	Volume (ADT) Per Lane	LOS
1	Walerga Road, between Baseline Road and Springhill Drive	Arterial - High Access Control	6	51,755	8,626	D
2	Crowder Lane, between Baseline Road and Vineyard Road	Collector - Low Access Control	2	2,430	1,215	A
3	Vineyard Road, between Crowder Lane and Cook Riolo Road	Arterial - Low Access Control	2	2,060	1,030	A
4	Walerga Road, between PFE Road and Dry Creek Community Park Driveway	Arterial - High Access Control	6	52,950	8,825	D

All study roadway segments within Placer County operate within County standards.

CUMULATIVE (2044) PLUS PROJECT CONDITIONS

The Proposed Project Buildout traffic was added to the Cumulative (2044) peak-hour traffic volumes to establish the Cumulative (2044) plus Project peak-hour traffic volumes. **Figure 12** illustrates the Cumulative (2044) plus Project study intersections, traffic control, and lane configurations. The 22 additional ADUs traffic was added to the Project Buildout traffic and included as a separate scenario. **Figure 13** illustrates the Cumulative (2044) plus Project with ADUs peak-hour traffic volumes, traffic control, and lane geometry. The signal timing parameters established in the Cumulative (2044) scenario were maintained.

Intersection Level of Service

Table 14 presents the peak-hour intersection LOS analysis results for the Cumulative (2044) plus Project with and without ADUs Conditions. As indicated in **Table 14**, the study intersections operate between LOS A and F in both Cumulative (2044) plus Project Conditions scenario. There is nominal difference with the addition of the ADUs. Intersection analysis worksheets for Cumulative (2044) plus Project Conditions with and without ADUs are provided in **Appendix F.**

Table 14 – Cumulative (2044) plus Project Intersection Level of Service Summary

ID	Intersection	Peak Hour	Control	Cumulative (2044)		Cumulative (2044) plus Project Buildout		Cumulative (2044) plus Project Buildout w ADUs	
				Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
1	Baseline Rd at Santucci Blvd/Watt Ave	AM	Signal	**42.4**	**D**	**43.2**	**D**	**43.3**	**D**
		PM		**52.7**	**D**	**53.5**	**D**	**53.5**	**D**
2	Baseline Rd at Westbrook Blvd	AM	Signal	**36.3**	**D**	**36.8**	**D**	**36.9**	**D**
		PM		**55.6**	**E**	**57.2**	**E**	**57.4**	**E**
3	Baseline Rd at Market St	AM	Signal	**47.7**	**D**	**48.3**	**D**	**48.3**	**D**
		PM		**67.8**	**E**	**69.4**	**E**	**69.6**	**E**
4	Baseline Rd at Project Access/Upland Dr	AM	Signal	13.7	B	17.8	B	17.9	B
		PM		21.7	C	33.1	B	33.1	C
5	Baseline Rd at Fiddyment Rd/Walerga Rd	AM	Signal	**79.1**	**E**	**83.0**	**F**	**83.7**	**F**
		PM		**96.8**	**F**	**103.6**	**F**	**104.2**	**F**
6	Baseline Rd at Crowder Ln	AM	SSSC	**20.3(~300 NB)**	**C(F)**	**35.0(~300 NB)**	**E(F)**	**35.4(~300 NB)**	**E(F)**
		PM		**74.0(~300 NB)**	**F(F)**	**118.8(~300 NB)**	**F(F)**	**121.6(~300 NB)**	**F(F)**
7	Baseline Rd at Junction Blvd	AM	Signal	13.3	B	13.4	B	13.4	B
		PM		17.7	B	18.6	B	18.8	B
8	Vineyard Rd at Crowder Ln	AM	AWSC	8.2	A	8.3	A	8.3	A
		PM		7.4	A	7.7	A	7.7	A
9	Walerga Rd at Springhill Dr	AM	SSSC	**3.2(~300 EB)**	**A(F)**	**43.2(~300 EB)**	**E(F)**	**56.9(~300 EB)**	**F(F)**
		PM		**2.6(~300 EB)**	**A(F)**	**19.9(~300 EB)**	**C(F)**	**24.7(~300 EB)**	**D(F)**
10	Walerga Rd at Project Access	AM	SSSC	-	-	0.1(34.7 EB)	A(D)	0.1(34.9 EB)	A(D)
		PM		-	-	0.1(29.0 EB)	A(D)	0.1(29.2 EB)	A(D)
11	Walerga Rd at Town Center Ave	AM	Signal	6.4	A	11.2	B	11.7	B
		PM		5.3	A	10.0	B	10.6	B
12	Walerga Rd at PFE Rd	AM	Signal	110.5	F	115.9	F	116.5	F
		PM		113.3	F	123.6	F	124.2	F
13	Watt Ave at PFE Rd	AM	Signal	14.4	B	16.1	B	16.1	B
		PM		19.6	B	26.4	C	26.5	C

Notes: **Bold** represents deficient operations. Shaded represents a project induced deficiency
Side Street Stop Controlled (SSSC) reported as intersection delay followed by worst approach's delay.

Intersection #1 (Baseline Road at Santucci Boulevard/Watt Avenue), Intersection #2 (Baseline Road at Westbrook Boulevard), Intersection #3 (Baseline Road at Market Street), Intersection #5 (Baseline Road at Fiddyment Road/Walerga), Intersection #6 (Baseline Road at Crowder Lane) and Intersection #9 (Walerga Road at Springhill Drive) operate at a deficient LOS and Intersection #9 (Walerga Road at Springhill Drive) has a project induced deficiency as defined by the DCWPCP policy.

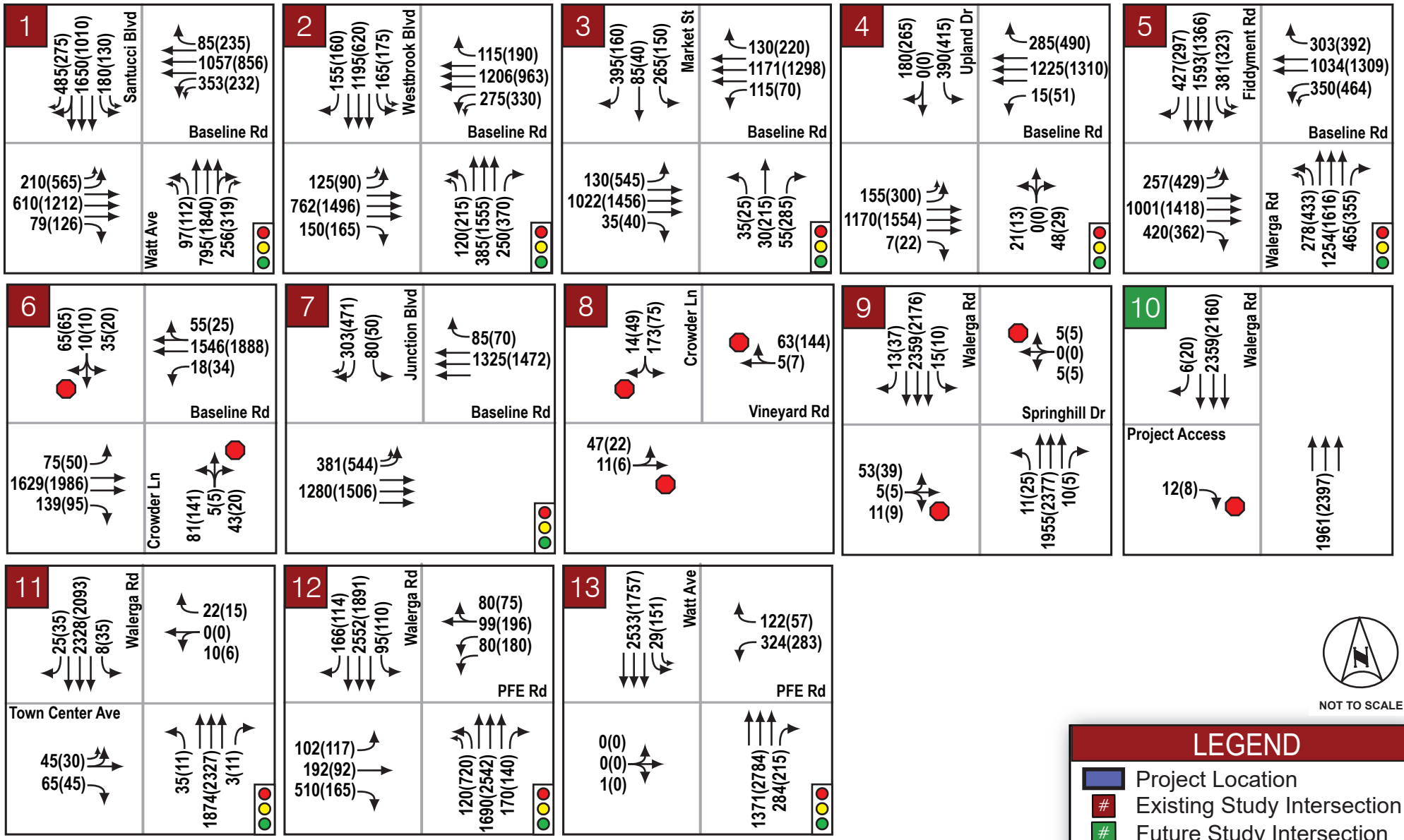


*Figure not OCR compatible

Kimley»Horn

Figure 12

Cumulative (2044) Plus Project Buildout Peak-Hour Traffic Volumes, Traffic Control, and Lane Geometry

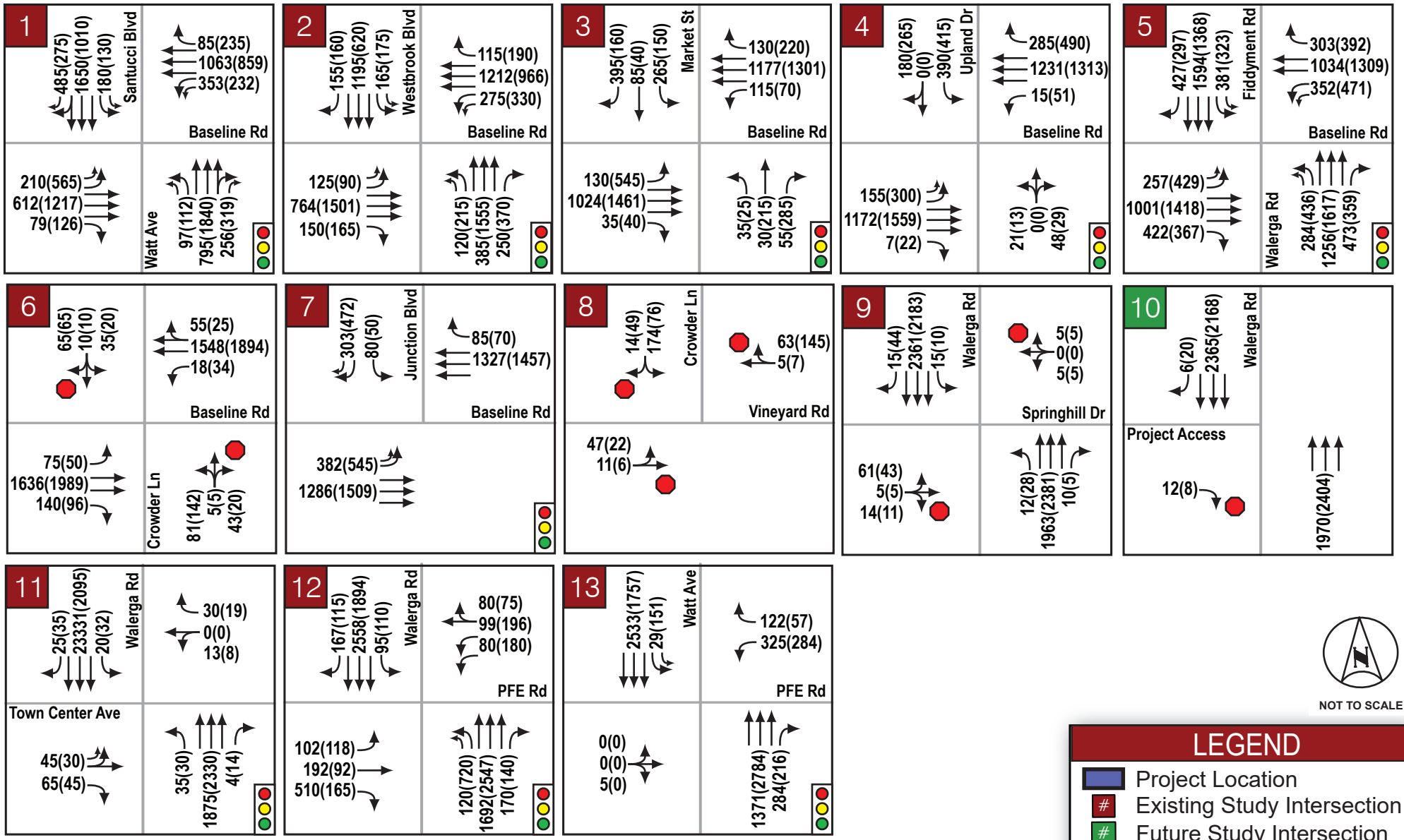


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Figure 13

Cumulative (2044) Plus Project Buildout with ADUs Peak-Hour Traffic Volumes, Traffic Control, and Lane Geometry

Roadway Segment Level of Service

Table 15 presents the roadway segment operating conditions Cumulative (2044) plus Project Conditions. As indicated in Table 15, the roadway segments operate from LOS A to LOS D.

Table 15 – Cumulative (2044) plus Project Roadway Segment Level of Service Summary

ID	Location	Classification	Lanes	Cumulative (2044)		Cumulative (2044) plus Project Buildout		Cumulative (2044) plus Project Buildout w ADUs	
				Volume (ADT)	LOS	Volume (ADT)	LOS	Volume (ADT)	LOS
1	Walerga Road, between Baseline Road and Springhill Drive	Arterial - High Access Control	6	51,755	D	53,305	D	53,457	D
2	Crowder Lane, between Baseline Road and Vineyard Road	Collector - Low Access Control	2	2,430	A	2,589	A	3,067	A
3	Vineyard Road, between Crowder Lane and Cook Riolo Road	Arterial - Low Access Control	2	2,060	A	2,219	A	2,244	A
4	Walerga Road, between PFE Road and Dry Creek Community Park Driveway	Arterial - High Access Control	6	52,950	D	53,923	D	53,977	D

All study roadway segments operate within County standards.

DEFICIENCIES AND IMPROVEMENTS

Summary of Project Induced Deficiencies and Improvements

Project Induced Deficiencies

D1. *Intersection #6, Baseline Road at Crowder Lane, Existing (2024) plus Project Phase 1 with Affordable Housing, Existing plus Project Buildout, Cumulative plus Project Buildout*
As shown in Table 6, Table 9, and Table 14, this intersection operates at LOS F in all scenario conditions during both peak-hours with and without the project.

D2. Intersection #9, Walerga Road at Springhill Drive, Existing (2024) plus Project Buildout, Cumulative (2044) plus Project Buildout
As shown in Table 9 and Table 14, this intersection operates at LOS E in the Existing (2024) conditions during the AM peak-hour without the project and at LOS F during the AM peak-hour with Phase 1 and Project Buildout. The intersection operates at LOS F in the Cumulative (2044) conditions with and without the project. The deficiency is considered project induced as the project adds more than 5 seconds of delay, per DCWPCP policy.

D3. Intersection #13, Watt Avenue at PFE Road, Existing (2024) plus Project Phase 1 with Affordable Housing and Existing (2024) plus Project Buildout
As shown in Table 6 and Table 9, this intersection operates deficiently during the AM and PM peak-hours with and without the project. The deficiency is considered project induced as the project adds more than 5 seconds of delay, per DCWPCP policy. In accordance with the County, a focused analysis was conducted to determine if the affordable housing component is responsible for the project-induced deficiency. As shown in Table 7, Intersection #13 does not exhibit a project-induced deficiency with Phase 1 traffic only. Therefore, it is concluded that the affordable housing component triggers the project-induced deficiency.

Improvements

I1. Intersection #6, Baseline Road at Crowder Lane
This deficiency can be improved by restricting northbound left turns and southbound left turns out of the intersection. Westbound project trips from Crowder Lane will instead turn right from Crowder Lane on to Baseline Road and navigate a U-turn just west of the eastbound left turn lane at the Baseline Road intersection with Junction Boulevard. Eastbound trips from the north leg will instead turn right on to Baseline Road and navigate a U-turn at the Baseline Road intersection with Fiddyment Road/Walerga Road. The northbound and southbound left-turn restrictions can be implemented by installing a mountable raised median and appropriate signage, and by constructing left turn/U-turn Lane at the driveway just west of the Baseline Road intersection with Junction Boulevard. The project will be required to coordinate with the City of Roseville to modify signage and signal timing, as necessary, with implementation of the median restriction. These changes will be required at the time the median restrictions are constructed. As shown in Table 16 and Table 17, this improvement reduces the intersection delay. Worksheets for the improved conditions are presented in Appendix G.

I2. Intersection #9, Walerga Road at Springhill Drive
This deficiency can be improved by restricting the eastbound left turn and westbound left turn. Northbound project trips from Springhill Drive will turn right on to Walerga Road and navigate a U-turn at the Walerga Road intersection with Town Center Avenue. Southbound trips from Springhill Drive will turn right on to Walerga Road and navigate a U-turn at the Walerga Road intersection with Baseline Road. The restriction can be implemented by installing a median curb restriction. Additionally, a signal can be considered in the future in order to bring the intersection to a LOS

within the DCWPCP threshold. The project will be required to coordinate with the City of Roseville to modify signage and signal timing, as necessary, with implementation of the median restriction. These changes will be required at the time the median restrictions are constructed. As shown in Table 16 and Table 17, the left turn restrictions reduce the intersection delay to below no-project levels and the signal improvement brings it to a LOS within the threshold. Worksheets for the improved conditions are presented in Appendix G.

I3. Intersection #13, Watt Avenue at PFE Road

Peak-hour traffic signal warrants finds that this intersection's traffic warrants a traffic signal as shown in Table 20. This deficiency can be improved by signalizing the intersection. As shown in Table 16, signalization of this intersection results in improvement in LOS from LOS F and E to LOS B for the AM and PM peak-hours, respectively. Worksheets for the improved conditions are presented in Appendix G.

Table 16 – Existing (2024) plus Project (Improved) Intersection Level of Service Summary

ID	Intersection	Peak Hour	Control	Existing (2024)		Existing (2024) plus Project Ph 1 w Affordable Housing (Improved)		Existing (2024) plus Project Buildout (Improved)		Existing (2024) plus Project Buildout w ADUs (Improved)	
				Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
6	Baseline Rd at Crowder Ln	AM	SSSC	**3.1(51.9 NB)**	**A(F)**	**1.9(37.3 NB)**	**A(E)**	**3.3(56.7 NB)**	**A(F)**	**3.3(59.3 NB)**	**A(F)**
		PM		**7.1(115.3 NB)**	**A(F)**	**2.0(59.4 NB)**	**A(F)**	**3.1(92.5 NB)**	**A(F)**	**3.2(95.1 NB)**	**A(F)**
9	Walerga Rd at Project Access/Springhill Dr	AM	SSSC	**0.2(35.0 EB)**	**A(E)**	-	-	0.5(15.8 EB)	A(C)	0.5(16.1 EB)	A(C)
		PM		0.3(27.4 EB)	A(D)	-	-	0.6(14.3 WB)	A(B)	0.6(14.6 EB)	A(B)
13	Watt Ave at PFE Rd	AM	Signal	**84.5**	**F**	12.7	B	12.9	B	12.9	B
		PM		**49.8**	**E**	13.4	B	13.5	B	13.5	B

Notes: **Bold** represents deficient operations. Shaded represents a project induced deficiency
Side Street Stop Controlled (SSSC) reported as intersection delay followed by worst approach's delay.

Table 17 – Cumulative (2044) plus Project (Improved) Intersection Level of Service Summary

ID	Intersection	Peak Hour	Control	Cumulative (2044)		Cumulative (2044) plus Project Buildout		Cumulative (2044) plus Project Buildout w ADUs	
				Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
6	Baseline Rd at Crowder Ln	AM	SSSC	**20.3(~300 NB)**	**C(F)**	2.3(30.1 NB)	A(D)	2.3(30.4 NB)	A(D)
		PM		**74.0(~300 NB)**	**F(F)**	**4.2(77.6 NB)**	**A(F)**	**4.3(79.2 NB)**	**A(F)**
9	Walerga Rd at Project Access/Springhill Dr	AM	SSSC	**3.2(~300 EB)**	**A(F)**	**1.4(62.0 EB)**	**A(F)**	**1.7(72.4 EB)**	**A(F)**
		PM		**2.6(~300 EB)**	**A(F)**	**1.1(41.1 EB)**	**A(E)**	**1.3(43.8 EB)**	**A(E)**
		AM	Signal	7.0	A	9.0	A	9.6	A
		PM		7.2	A	9.0	A	10.9	B

Notes: **Bold** represents deficient operations. Shaded represents a project induced deficiency
Side Street Stop Controlled (SSSC) reported as intersection delay followed by worst approach's delay.

PROJECT ON-SITE OPERATIONS, ACCESS, AND SAFETY EVALUATION

Emergency Vehicle Access

Placer County Building and Construction Code[4] states that on-site roadways shall provide an "inside turning radius for a fire access road [and it] shall be thirty (30) feet or greater. The outside turning radius for an access road shall be fifty (50) feet or greater." As shown by the turning radii in the Project site plan (Figure 1), the Project site will allow fire access.

Neighborhood Gate Evaluation

Per the site plan (Figure 1) neighborhood gates are proposed for on-site access at Phase 3 and Phase 4. The gates are located beyond the landscape median. A queueing analysis was performed to ensure safe operations. The PM peak-hour ingress volumes were analyzed as these are expected to be the highest arrival rates for the Project. As was shown in Table 3, 36 vehicles are projected to access the Project Phase 3 access, and 31 vehicles are projected to access the Project Phase 4 access during the PM peak-hour. The Project trips accessing the site were assigned to one of the following user groups:

- Resident – those who live in the Project. Residents are assumed to have familiarity with the gate operations, and may even have a keycard, gate FOB, or other automatic gate operation technology to assist them in entering the Project. These entering vehicles are expected to queue at the gate for a short period (4.5-8.3 seconds per vehicle).

- Non-resident – any other vehicles entering the site who do not live at the Project, those who may not be familiar with gate operations, or those who need authorization to enter the Project. This group of users would include visitors of residents, as well as any delivery vans or maintenance workers. Non-resident vehicles are expected to have a longer queueing time at the gate than a resident (8.0- 18.0 seconds per vehicle).

As shown in Figure 2, all entering vehicles would queue together waiting to enter the gate. It was assumed that 95-percent of entering vehicles during the PM peak-hour are residents, and the remaining 5-percent are non-residents.

A detailed queueing simulation was conducted to determine the PM peak-hour 95th percentile queue, which is the queue length that is expected to be exceeded during a PM peak-hour less than 5-percent of the time. To calculate this 95th percentile queue, an arrival time and a service time was randomly assigned to each entering vehicle during the peak-hour. Service times for this analysis were based on a range of rates reported in *Parking Structures 3rd Edition (2001)*. This manual lists the range of service rates for residents (those familiar with gate operations) as ranging from 4.5-8.3 seconds per vehicle (sec/veh) while non-residents (those unfamiliar with gate operations) as ranging from 8.0-18.0 sec/veh. The assumed "queueing length" of each vehicle was assumed to be 25 feet. The analysis contained 1,000 iterations of the gated entry queuing and results are summarized in Table 18.

[4] *Part II. Codes Adopted and Amended, Article 15.04 Building And Construction Code, Chapter 15 Building And Development, Part 2 California Building Code,* Placer County, 2022.

Table 18 – Gated Entry 95th Percentile Queues

Vehicles Entering Gate		Available Storage (ft)	Max Queue (ft)	95th% Queue (ft)	Distribution of Maximum Queue Length (%)				
					25ft	50ft	75ft	100ft	125ft
Phase 3 Entrance	36	85	100	75	10.2%	80.8%	8.5%	0.5%	0.0%
Phase 4 Entrance	31	80	100	50	20.7%	74.4%	4.8%	0.1%	0.0%

The maximum queue for the Phase 3 and Phase 4 entrances was 100 feet or 4 vehicles. However, as shown in Table 18, this is expected to occur 0.5-percent and 0.1-percent or less of the time, respectively. The 95th percentile queue for Phase 3 entrance was 75 feet or 3 vehicles. The 95th percentile queue for Phase 4 entrance was 50 feet or 2 vehicles. It is standard to provide enough storage to accommodate the 95th percentile queue length. As shown in Table 18, the site has adequate storage available.

Public Transit System

Roseville Transit service operates on fixed routes in Roseville with connections to Placer County Transit and Sacramento Regional Transit. Roseville Transit services Route R with a stop at Foothills Boulevard at Main Street/Baseline Road approximately 3.0 miles from the Project site. Roseville Transit also services Route D with a stop approximately 0.7 miles from the Project site at Baseline Road and Woodcreek Oaks Boulevard. Route D traverses the western neighborhoods of Roseville and connects to the Civic Center Junction that provides connections to commuter buses.

The site is 5.9 miles away from the Louis Orlando Transit Center which houses regional transit Route 10: Auburn/Light Rail (bus) and Route 60: Placer Commuter Express (vanpool). The transit center is located at the Orlando Avenue intersection with Louis Lane. The addition of the Project is not anticipated to conflict with the goals, policies, and objectives found in the PCTPA Short Range Transit Plan, Long Range Transit Plan, and 2040 Regional Transportation Plan.

Pedestrian and Bicycle Access and Circulation

Consistent with DCWPCP, the project includes an 8-foot separated sidewalk along the project frontages south of Baseline Road and on Walerga Road. Additionally, the project includes a 4-foot Class II bike lane on the south side of Baseline Road and the east and west side of Walerga Road along the project frontages. Lastly, the project extends the existing trail north of Vineyard Road, just north of Phase 4.

Vehicle Queuing at Intersections

Queueing analyses were conducted for select movements where Project-added trips occur at intersections with limited turning-movement storage. Table 19 summarizes the expected 95th percentile queues for exclusive turn pockets at signalized intersections along Baseline Road and Walerga Road for all analysis scenarios. The calculated vehicle queues were compared to existing vehicle storage lengths. Analysis sheets that include the anticipated vehicle queues are presented in Appendices B-F.

As presented in Table 19, the addition of the project does not contribute more than one vehicle length (25-feet) where the available storage is already exceeded, with the exception of Baseline Road at Fiddyment Road/Walerga Road (Intersection #5). At Intersection #5, the project adds more than one vehicle length to the queue for the westbound left, northbound right, and northbound left turn movements in the Cumulative (2044) plus Project Buildout Conditions. Future improvement to the intersection's turn lane storage is not under any planned or adopted fee program, and as such, is not assumed to included in our Cumulative (2044) analysis. However, there appears to be adequate right-of-way for the turn lanes to be extended under future lane conditions to accommodate the additional queuing.

Table 19 – Turning Lane 95th Percentile Queues

Intersection / Analysis Scenario	Movement	Available Storage (ft)	AM Peak-Hour 95th % Queue (ft)	PM Peak-Hour 95th % Queue (ft)
#1 Baseline Rd at Santucci Blvd/Watt Ave	**EBR**			
Existing (2024)		215	5	20
Existing (2024) plus Project Ph 1			5	30
Existing (2024) plus Project Buildout			5	30
Existing (2024) plus Project Buildout w ADUs			5	30
Cumulative (2044)			50	95
Cumulative (2044) plus Project Buildout			50	110
Cumulative (2044) plus Project Buildout w ADUs			50	110
WBL				
Existing (2024)		325	425	350
Existing (2024) plus Project Ph 1			445	360
Existing (2024) plus Project Buildout			450	360
Existing (2024) plus Project Buildout w ADUs			450	360
Cumulative (2044)			265	195
Cumulative (2044) plus Project Buildout			270	200
Cumulative (2044) plus Project Buildout w ADUs			270	200
NBL				
Existing (2024)		145	95	135
Existing (2024) plus Project Ph 1			115	150
Existing (2024) plus Project Buildout			115	150
Existing (2024) plus Project Buildout w ADUs			120	150
Cumulative (2044)			85	105
Cumulative (2044) plus Project Buildout			95	110
Cumulative (2044) plus Project Buildout w ADUs			95	110
NBR				
Existing (2024)		145	80	80
Existing (2024) plus Project Ph 1			80	75
Existing (2024) plus Project Buildout			80	75
Existing (2024) plus Project Buildout w ADUs			80	75
Cumulative (2044)			190	355
Cumulative (2044) plus Project Buildout			195	360
Cumulative (2044) plus Project Buildout w ADUs			195	360
#4 Baseline Rd at Project Access/Upland Dr	**EBR**			
Existing (2024) plus Project Ph 1			5	5
Existing (2024) plus Project Buildout			5	5
Existing (2024) plus Project Buildout w ADUs			5	5
Cumulative (2044) plus Project Buildout			5	5
Cumulative (2044) plus Project Buildout w ADUs			5	5
WBL				
Existing (2024) plus Project Ph 1			25	70
Existing (2024) plus Project Buildout			25	70
Existing (2024) plus Project Buildout w ADUs			25	70
Cumulative (2044) plus Project Buildout			25	55
Cumulative (2044) plus Project Buildout w ADUs			25	55

Notes: For approaches with dual left-turn lanes, the longest queue length is reported.
Shaded cell indicates queue exceeds storage by > 25' (one vehicle length).

Table 19 – Turning Lane 95th Percentile Queues (continued)

Intersection / Analysis Scenario	Movement	Available Storage (ft)	AM Peak-Hour 95th % Queue (ft)	PM Peak-Hour 95th % Queue (ft)
#5 Baseline Rd at Fiddyment Rd/Walerga Rd	**EBL**			
Existing (2024)		270	190	300
Existing (2024) plus Project Ph 1			195	305
Existing (2024) plus Project Buildout			195	305
Existing (2024) plus Project Buildout w ADUs			195	305
Cumulative (2044)			190	400
Cumulative (2044) plus Project Buildout			200	405
Cumulative (2044) plus Project Buildout w ADUs			200	405
	WBL			
Existing (2024)		240	165	205
Existing (2024) plus Project Ph 1			165	205
Existing (2024) plus Project Buildout			175	220
Existing (2024) plus Project Buildout w ADUs			175	225
Cumulative (2044)			230	340
Cumulative (2044) plus Project Buildout			240	375
Cumulative (2044) plus Project Buildout w ADUs			240	385
	NBR			
Existing (2024)		250	215	155
Existing (2024) plus Project Ph 1			215	155
Existing (2024) plus Project Buildout			240	180
Existing (2024) plus Project Buildout w ADUs			250	180
Cumulative (2044)			325	210
Cumulative (2044) plus Project Buildout			380	230
Cumulative (2044) plus Project Buildout w ADUs			395	235
	NBL			
Existing (2024)		250	65	95
Existing (2024) plus Project Ph 1			75	120
Existing (2024) plus Project Buildout			110	145
Existing (2024) plus Project Buildout w ADUs			120	150
Existing (2024) plus Project Buildout (Improved)			130	145
Cumulative (2044)			215	395
Cumulative (2044) plus Project Buildout			250	435
Cumulative (2044) plus Project Buildout w ADUs			260	440
Cumulative (2044) plus Project Buildout (Improved)			265	450
#7 Baseline Rd at Junction Blvd	**EBL**			
Existing (2024)		385	35	60
Existing (2024) plus Project Ph 1			35	65
Existing (2024) plus Project Buildout			35	80
Existing (2024) plus Project Buildout w ADUs			35	80
Existing (2024) plus Project Buildout (Improved)			35	80
Cumulative (2044)			130	225
Cumulative (2044) plus Project Buildout			130	225
Cumulative (2044) plus Project Buildout w ADUs			130	225
Cumulative (2044) plus Project Buildout (Improved)			175	225

Notes: For approaches with dual left-turn lanes, the longest queue length is reported.
Shaded cell indicates queue exceeds storage by > 25' (one vehicle length).

Table 19 – Turning Lane 95th Percentile Queues (continued)

Intersection / Analysis Scenario	Movement	Available Storage (ft)	AM Peak-Hour 95th % Queue (ft)	PM Peak-Hour 95th % Queue (ft)
	SBR			
Existing (2024)		200	40	90
Existing (2024) plus Project Ph 1			40	90
Existing (2024) plus Project Buildout			45	95
Existing (2024) plus Project Buildout w ADUs			50	95
Cumulative (2044)			90	145
Cumulative (2044) plus Project Buildout			90	150
Cumulative (2044) plus Project Buildout w ADUs			85	140
#9 Walerga Rd at Springhill Dr	**NBL**			
Existing (2024)		150	25	25
Existing (2024) plus Project Ph 1			25	25
Existing (2024) plus Project Buildout			25	25
Existing (2024) plus Project Buildout w ADUs			25	25
Existing (2024) plus Project Buildout (Improved)			25	25
Cumulative (2044)			25	25
Cumulative (2044) plus Project Buildout			25	50
Cumulative (2044) plus Project Buildout w ADUs			25	50
Cumulative (2044) plus Project Buildout (Improved)			25	50
	SBL			
Existing (2024)		305	25	25
Existing (2024) plus Project Ph 1			25	25
Existing (2024) plus Project Buildout			25	25
Existing (2024) plus Project Buildout w ADUs			25	25
Existing (2024) plus Project Buildout (Improved)			25	25
Cumulative (2044)			25	25
Cumulative (2044) plus Project Buildout			25	25
Cumulative (2044) plus Project Buildout w ADUs			25	25
Existing (2024) plus Project Buildout (Improved)			25	25
#11 Walerga Rd at Town Center Ave	**SBL**			
Existing (2024) plus Project Buildout			20	40
Existing (2024) plus Project Buildout w ADUs			25	45
Cumulative (2044) plus Project Buildout			25	50
Cumulative (2044) plus Project Buildout w ADUs			30	60

Notes: For approaches with dual left-turn lanes, the longest queue length is reported.
Shaded cell indicates queue exceeds storage by > 25' (one vehicle length).

Table 19 – Turning Lane 95th Percentile Queues (continued)

Intersection / Analysis Scenario	Movement	Available Storage (ft)	AM Peak-Hour 95th % Queue (ft)	PM Peak-Hour 95th % Queue (ft)
#12 Walerga Rd at PFE Rd	EBL			
Existing (2024)		580	155	165
Existing (2024) plus Project Ph 1			155	170
Existing (2024) plus Project Buildout			160	180
Existing (2024) plus Project Buildout w ADUs			160	180
Cumulative (2044)			150	170
Cumulative (2044) plus Project Buildout			155	175
Cumulative (2044) plus Project Buildout w ADUs			155	180
	SBR			
Existing (2024)		215	100	60
Existing (2024) plus Project Ph 1			105	65
Existing (2024) plus Project Buildout			110	65
Existing (2024) plus Project Buildout w ADUs			110	65
Cumulative (2044)			100	55
Cumulative (2044) plus Project Buildout			110	60
Cumulative (2044) plus Project Buildout w ADUs			110	60

Notes: For approaches with dual left-turn lanes, the longest queue length is reported.
Shaded cell indicates queue exceeds storage by > 25' (one vehicle length).

Peak-Hour Signal Warrants

A planning level assessment of the need for traffic signalization was performed for the un-signalized study intersections. This evaluation was performed consistently with the peak-hour warrant methodologies noted in Section 4C of the *California Manual on Uniform Traffic Control Devices (CAMUTCD)*[5]. A summary of the peak-hour warrant results is presented in Table 20. Detailed results of this analysis are presented in Appendix H.

As shown in Table 20 the intersection of Baseline Road with Crowder Lane (Intersection #6) and Watt Avenue with PFE Road (Intersection#13) warrant a traffic signal in all analysis scenarios.

[5] *Section 4C, California Manual on Uniform Traffic Control Devices (CAMUTCD) 2014 Edition Revision 8*, Caltrans, January 11, 2024.

Table 20 – Traffic Signal Warrant Analysis Results

ID	Intersection	Analysis Scenario				
		Existing (2024)	Existing (2024) plus Project Ph 1	Existing (2024) plus Project Buildout	Cumulative (2044)	Cumulative (2044) plus Project Buildout
6	Baseline Rd at Crowder Ln	No/Yes	No/Yes	Yes/Yes	Yes/Yes	Yes/Yes
8	Vineyard Rd at Crowder Ln	No/No	No/No	No/No	No/No	No/No
9	Walerga Rd at Springhill Dr	No/No	No/No	No/No	No/No	No/No
13	Watt Ave at PFE Rd	Yes/Yes	Yes/Yes	Yes/Yes	-	-

Results are presented in **AM / PM format**, locations where a signal is warranted during a peak hour are shaded.
Note: Peak-hour warrant is satisfied if Condition A or B is satisfied

Safety Evaluation

Collision data[6] was evaluated for the study intersections and compared against Caltrans data[7] for similar intersections. The provided crash data was combined with the calculated intersection entering average daily traffic (ADT) to develop an existing intersection crash rate. Collision data is summarized below in Figure 14.

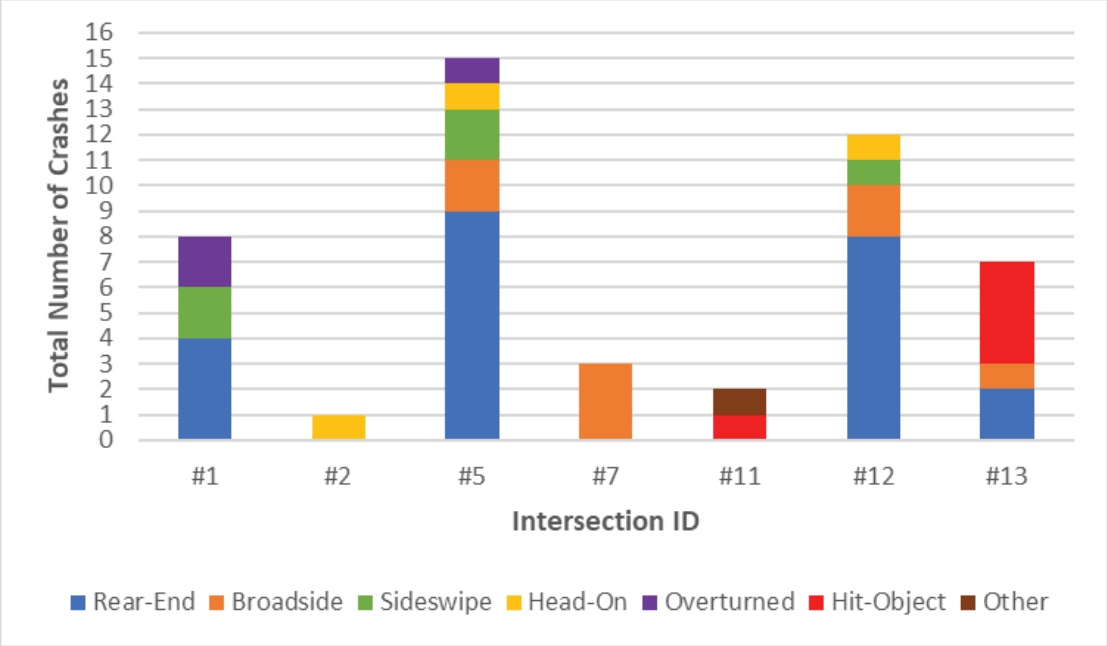


Figure 14 – 5-Year Intersection Collision Summary

*Figure not OCR compatible

[6] *2021-2025 Crash Data – Transportation Injury Mapping System (TIMS)*, Safe Transportation Research and Education Center, University of California, Berkeley, 2025.
[7] *2021 Crash Data on California State Highways*, Caltrans, August 2023.

Based on the collision data, there were eight (8) collisions at Intersection #1 (Baseline Road at Santucci Boulevard/Watt Avenue) within the five-year period between 2020 and 2024. As shown in Figure 14, the crash types were Rear-End, Sideswipe, and Overturned. The total calculated existing intersection crash rate was 0.22 crashes per million entering vehicles. The total average crash rate for similar intersections is 0.33 crashes per million entering vehicles.

The collision data revealed one (1) collision at Intersection #2 (Baseline Road at Westbrook Boulevard) within the five-year period. The crash type was Head-On. The total calculated existing intersection crash rate was 0.03 crashes per million entering vehicles. The total average crash rate for similar intersections is 0.28 crashes per million entering vehicles.

The collision data revealed 15 collisions at Intersection #5 (Baseline Road at Fiddyment Road/Walerga Rd) within the five-year period. The crash types were Rear-End, Broadside, Sideswipe, Head-On, and Overturned. The total calculated existing intersection crash rate was 0.20 crashes per million entering vehicles. The total average crash rate for similar intersections is 0.33 crashes per million entering vehicles.

The collision data revealed three (3) collisions at Intersection #7 (Baseline Road at Junction Boulevard) within the five-year period. The crash types were Broadside. The total calculated existing intersection crash rate was 0.09 crashes per million entering vehicles. The total average crash rate for similar intersections is 0.28 crashes per million entering vehicles.

The collision data revealed two (2) collisions at Intersection #11 (Walerga Road at Town Center Avenue) within the five-year period. The crash types were Hit-Object and Other. The total calculated existing intersection crash rate was 0.05 crashes per million entering vehicles. The total average crash rate for similar intersections is 0.28 crashes per million entering vehicles.

The collision data revealed 12 collisions at Intersection #12 (Walerga Road at PFE Road) within the five-year period. The crash types were Rear-End, Broadside, Sideswipe, and Head-On. The total calculated existing intersection crash rate was 0.24 crashes per million entering vehicles. The total average crash rate for similar intersections is 0.33 crashes per million entering vehicles.

The collision data revealed seven (7) collisions at Intersection #13 (Watt Avenue at PFE Road) within the five-year period. The crash types were Rear-End, Broadside, and Hit-Object. The total calculated existing intersection crash rate was 0.28 crashes per million entering vehicles. The total average crash rate for similar intersections is 0.11 crashes per million entering vehicles.

The crash rates for the study intersections are summarized in Table 21.

Table 21 – Intersection Crash Rate Summary

ID	Intersection	Statewide Average Crash Rate	Intersection Actual Crash Rate
1	Baseline Rd at Santucci Blvd/Watt Ave	0.33	0.22
2	Baseline Rd at Westbrook Blvd	0.28	0.03
5	Baseline Rd at Fiddyment Rd/Walerga Rd	0.33	0.20
7	Baseline Rd at Junction Blvd	0.28	0.09
11	Walerga Rd at Town Center Ave	0.28	0.05
12	Walerga Rd at PFE Rd	0.33	0.24
13	Watt Ave at PFE Rd	0.11	0.28

Shaded cell represents intersection crash rate higher than the statewide average

CONCLUSIONS

Significant findings of this study include:

- Intersection #6 (Baseline Road at Crowder Lane) operates at a deficient LOS in all scenarios with and without the project. This deficiency can be improved by restricting northbound left turns and southbound left turns out of the intersection. Westbound project trips from Crowder Lane will instead turn right from Crowder Lane on to Baseline Road and navigate a U-turn just west of the eastbound left turn lane at the Baseline Road intersection with Junction Boulevard. Eastbound trips from the north leg will instead turn right on to Baseline Road and navigate a U-turn at the Baseline Road intersection with Fiddyment Road/Walerga Road. The northbound and southbound left-turn restrictions can be implemented by installing a mountable raised median and appropriate signage, and by constructing left turn/U-turn Lane at the driveway just west of the Baseline Road intersection with Junction Boulevard. This improvement reduces the intersection delay.
- Intersection #9 (Walerga Road at Springhill) operates at a deficient LOS in all scenarios with and without the project. This deficiency can be improved by restricting the eastbound left turns and westbound left turns from Springhill Drive to Walerga Road. The restriction can be implemented by installing a median curb restriction. This improvement reduces the intersection delay to below no-project levels. Additionally, a signal can be considered in the future in order to bring the intersection to a LOS within the DCWPCP threshold This improvement reduces the intersection delay to within the LOS threshold.
- Intersection #13 (Watt Avenue at PFE Road) operates at a deficient LOS in all Existing (2024) scenarios with and without the project. Intersection #13 does not exhibit a project-induced deficiency with Phase 1 traffic only. Therefore, it is concluded that the affordable housing component triggers the project-induced deficiency. This deficiency can be improved by signalizing the intersection. This improvement results in acceptable LOS B for the AM and PM peak-hours.
- Intersection #13 (Watt Avenue at PFE Road) exhibits a crash rate higher than the statewide average for similar facilities. The traffic signal improvements at this intersection are expected to improve safety for all roadway users.
- The addition of the Project does not conflict with the goals, policies, and objectives of the PCTPA Short Range Transit Plan, Long Range Transit Plan, and 2040 Regional Transportation Plan.

Appendix A

Traffic Count Data Sheets

National Data & Surveying Services

Intersection Turning Movement Count

Location: Santucci Blvd/Watt Ave & Baseline Rd
City: Roseville
Control: Signalized

Project ID: 24-070087-010
Date: 5/15/2024

Data - Totals

NS/EW Streets:	Santucci Blvd/Watt Ave				Santucci Blvd/Watt Ave				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	1	0	2	1	1	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	11	10	56	0	9	24	11	0	4	72	12	0	72	168	1	0	450
7:15 AM	9	9	67	0	5	27	13	0	3	62	12	0	86	196	2	0	491
7:30 AM	16	6	70	0	5	28	7	0	4	70	7	0	90	139	3	0	445
7:45 AM	15	13	61	0	2	32	9	0	0	64	11	0	99	158	6	0	470
8:00 AM	6	14	53	0	1	17	3	0	1	75	18	0	81	135	4	0	408
8:15 AM	8	10	59	0	4	24	4	0	8	65	12	0	53	110	5	0	362
8:30 AM	13	16	73	0	5	11	5	0	6	72	13	0	41	103	6	0	364
8:45 AM	11	15	51	0	9	12	9	0	5	82	6	0	52	109	3	0	364
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	89	93	490	0	40	175	61	0	31	562	91	0	574	1118	30	0	3354
APPROACH %'s :	13.24%	13.84%	72.92%	0.00%	14.49%	63.41%	22.10%	0.00%	4.53%	82.16%	13.30%	0.00%	33.33%	64.92%	1.74%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	51	38	254	0	21	111	40	0	11	268	42	0	347	661	12	0	1856
PEAK HR FACTOR :	0.797	0.731	0.907	0.000	0.583	0.867	0.769	0.000	0.688	0.931	0.875	0.000	0.876	0.843	0.500	0.000	0.945
	0.932				0.956				0.912				0.898				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	1	0	2	1	1	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	15	18	63	0	5	8	7	0	7	129	20	0	56	99	10	0	437
4:15 PM	16	15	73	0	3	10	9	0	13	166	17	0	77	104	12	0	515
4:30 PM	14	17	69	0	2	14	6	0	5	157	14	0	59	76	5	0	438
4:45 PM	17	25	94	0	5	7	0	0	6	139	17	0	57	106	5	0	478
5:00 PM	17	20	70	0	4	6	7	0	10	151	17	0	61	110	5	0	478
5:15 PM	20	20	93	0	4	4	8	0	7	179	22	0	70	92	8	0	527
5:30 PM	10	16	80	0	3	13	3	0	9	158	12	0	52	99	7	0	462
5:45 PM	21	18	72	0	5	11	5	0	18	168	17	0	47	90	13	0	485
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	130	149	614	0	31	73	45	0	75	1247	136	0	479	776	65	0	3820
APPROACH %'s :	14.56%	16.69%	68.76%	0.00%	20.81%	48.99%	30.20%	0.00%	5.14%	85.53%	9.33%	0.00%	36.29%	58.79%	4.92%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	68	74	315	0	16	34	23	0	44	656	68	0	230	391	33	0	1952
PEAK HR FACTOR :	0.810	0.925	0.847	0.000	0.800	0.654	0.719	0.000	0.611	0.916	0.773	0.000	0.821	0.889	0.635	0.000	0.926
	0.859				0.869				0.923				0.929				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Westbrook Blvd & Baseline Rd
City: Roseville
Control: Signalized

Project ID: 24-070087-009
Date: 5/15/2024

Data - Totals

NS/EW Streets:	Westbrook Blvd				Westbrook Blvd				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	1	0	1	0	1	2	0	0	0	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	18	0	44	0	16	125	0	0	0	197	7	0	407
7:15 AM	0	0	0	0	14	0	44	0	5	129	0	0	0	249	6	0	447
7:30 AM	0	0	0	0	25	0	35	0	10	135	0	0	0	201	8	0	414
7:45 AM	0	0	0	0	15	0	28	0	10	113	0	0	0	222	5	0	393
8:00 AM	0	0	0	0	14	0	36	0	7	126	0	0	0	189	11	0	383
8:15 AM	0	0	0	0	17	0	22	0	11	116	0	0	0	141	11	0	318
8:30 AM	0	0	0	0	18	0	14	0	10	141	0	0	0	140	11	0	334
8:45 AM	0	0	0	0	23	0	12	1	8	128	0	0	0	148	13	0	333
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	144	0	235	1	77	1013	0	0	0	1487	72	0	3029
APPROACH %'s :					37.89%	0.00%	61.84%	0.26%	7.06%	92.94%	0.00%	0.00%	0.00%	95.38%	4.62%	0.00%	
PEAK HR :	**07:00 AM - 08:00 AM**																TOTAL
PEAK HR VOL :	0	0	0	0	72	0	151	0	41	502	0	0	0	869	26	0	1661
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.720	0.000	0.858	0.000	0.641	0.930	0.000	0.000	0.000	0.872	0.813	0.000	0.929
					0.899				0.936				0.877				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	1	0	1	0	1	2	0	0	0	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	14	0	14	0	17	180	0	0	0	166	19	0	410
4:15 PM	0	0	0	0	16	0	10	0	28	206	0	0	0	168	18	0	446
4:30 PM	0	0	0	0	17	0	11	0	22	214	0	0	0	134	9	0	407
4:45 PM	0	0	0	0	14	0	15	0	17	215	0	0	0	148	14	0	423
5:00 PM	0	0	0	0	7	0	14	0	15	216	0	0	0	173	12	0	437
5:15 PM	0	0	0	0	16	0	9	0	38	238	0	0	0	150	18	0	469
5:30 PM	0	0	0	0	18	0	21	0	19	217	0	0	0	144	21	0	440
5:45 PM	0	0	0	0	12	0	15	0	33	216	0	0	0	129	10	0	415
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	114	0	109	0	189	1702	0	0	0	1212	121	0	3447
APPROACH %'s :					51.12%	0.00%	48.88%	0.00%	9.99%	90.01%	0.00%	0.00%	0.00%	90.92%	9.08%	0.00%	
PEAK HR :	**04:45 PM - 05:45 PM**																TOTAL
PEAK HR VOL :	0	0	0	0	55	0	59	0	89	886	0	0	0	615	65	0	1769
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.764	0.000	0.702	0.000	0.586	0.931	0.000	0.000	0.000	0.889	0.774	0.000	0.943
					0.731				0.883				0.919				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Market St & Baseline Rd
City: Roseville
Control: Signalized

Project ID: 24-070087-007
Date: 5/15/2024

Data - Totals

NS/EW Streets:	Market St				Market St				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	1	1	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	4	8	1	1	21	6	49	0	29	111	8	0	1	154	14	0	407
7:15 AM	1	2	1	0	20	9	52	0	22	110	5	0	1	199	11	0	433
7:30 AM	6	7	2	0	37	7	42	0	17	137	6	0	0	161	5	0	427
7:45 AM	8	3	0	0	24	11	38	0	17	111	6	0	0	186	15	0	419
8:00 AM	4	5	3	0	15	10	37	0	13	113	3	0	0	154	13	0	370
8:15 AM	1	5	4	1	17	4	21	0	14	126	4	0	0	133	7	0	337
8:30 AM	4	2	0	0	17	7	22	0	16	129	5	0	2	128	14	0	346
8:45 AM	3	2	1	0	27	6	22	0	15	131	9	0	0	132	10	0	358
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	31	34	12	2	178	60	283	0	143	968	46	0	4	1247	89	0	3097
APPROACH %'s :	39.24%	43.04%	15.19%	2.53%	34.17%	11.52%	54.32%	0.00%	12.36%	83.66%	3.98%	0.00%	0.30%	93.06%	6.64%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	19	20	4	1	102	33	181	0	85	469	25	0	2	700	45	0	1686
PEAK HR FACTOR :	0.594	0.625	0.500	0.250	0.689	0.750	0.870	0.000	0.733	0.856	0.781	0.000	0.500	0.879	0.750	0.000	0.973
	0.733				0.919				0.905				0.885				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	1	1	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	6	8	0	0	18	6	30	0	32	160	3	0	2	144	19	0	428
4:15 PM	2	6	2	0	18	8	27	0	38	181	3	0	1	160	21	0	467
4:30 PM	1	7	1	0	18	0	27	0	27	196	4	0	0	112	22	0	415
4:45 PM	0	2	0	0	11	2	23	0	39	193	1	0	0	146	19	0	436
5:00 PM	1	2	1	0	17	5	30	0	38	170	2	0	1	147	22	0	436
5:15 PM	2	4	0	0	20	6	25	0	38	225	4	0	0	148	24	0	496
5:30 PM	2	5	0	0	15	14	14	0	37	184	5	0	0	142	33	0	451
5:45 PM	1	5	1	0	10	6	18	0	52	181	0	0	0	121	20	0	415
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	15	39	5	0	127	47	194	0	301	1490	22	0	4	1120	180	0	3544
APPROACH %'s :	25.42%	66.10%	8.47%	0.00%	34.51%	12.77%	52.72%	0.00%	16.60%	82.18%	1.21%	0.00%	0.31%	85.89%	13.80%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	5	13	1	0	63	27	92	0	152	772	12	0	1	583	98	0	1819
PEAK HR FACTOR :	0.625	0.650	0.250	0.000	0.788	0.482	0.767	0.000	0.974	0.858	0.600	0.000	0.250	0.985	0.742	0.000	0.917
	0.679				0.875				0.876				0.974				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Fiddyment Rd/Walerga Rd & Baseline Rd
City: Roseville
Control: Signalized

Project ID: 24-070087-001
Date: 5/15/2024

Data - Totals

NS/EW Streets:	Fiddyment Rd/Walerga Rd				Fiddyment Rd/Walerga Rd				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	2	1.5	0.5	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	6	157	39	0	61	202	91	0	58	63	13	0	44	78	41	0	853
7:15 AM	8	179	41	0	86	225	121	0	54	56	8	0	45	76	41	0	940
7:30 AM	4	194	93	0	80	185	91	0	65	82	16	0	43	77	54	0	984
7:45 AM	7	165	78	0	115	253	113	0	77	71	13	0	61	75	66	0	1094
8:00 AM	6	147	76	0	99	185	99	0	54	64	6	0	60	73	62	0	931
8:15 AM	7	103	61	0	80	155	63	0	65	77	8	0	43	59	61	0	782
8:30 AM	9	143	67	0	78	167	82	0	70	70	10	0	36	59	75	0	866
8:45 AM	10	139	49	0	88	123	81	0	66	77	13	0	47	45	63	0	801
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	57	1227	504	0	687	1495	741	0	509	560	87	0	379	542	463	0	7251
APPROACH %'s :	3.19%	68.62%	28.19%	0.00%	23.50%	51.15%	25.35%	0.00%	44.03%	48.44%	7.53%	0.00%	27.38%	39.16%	33.45%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	25	685	288	0	380	848	424	0	250	273	43	0	209	301	223	0	3949
PEAK HR FACTOR :	0.781	0.883	0.774	0.000	0.826	0.838	0.876	0.000	0.812	0.832	0.672	0.000	0.857	0.977	0.845	0.000	0.902
	0.857				0.859				0.868				0.907				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	2	1.5	0.5	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	6	186	60	0	63	192	87	0	83	82	9	0	65	77	97	0	1007
4:15 PM	8	166	52	0	66	207	87	0	69	113	10	0	73	88	94	0	1033
4:30 PM	7	157	45	1	78	175	61	0	98	117	13	0	47	60	113	0	972
4:45 PM	11	199	52	0	75	175	78	0	108	79	10	0	79	83	97	0	1046
5:00 PM	11	194	40	0	64	181	84	0	97	88	10	0	65	94	101	0	1029
5:15 PM	5	191	45	1	71	208	62	0	107	102	10	0	69	79	98	0	1048
5:30 PM	15	184	48	0	68	183	66	0	110	83	6	0	62	94	92	0	1011
5:45 PM	8	162	55	0	55	170	62	0	125	88	5	0	75	74	105	0	984
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	71	1439	397	2	540	1491	587	0	797	752	73	0	535	649	797	0	8130
APPROACH %'s :	3.72%	75.38%	20.80%	0.10%	20.63%	56.95%	22.42%	0.00%	49.14%	46.36%	4.50%	0.00%	27.01%	32.76%	40.23%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	42	768	185	1	278	747	290	0	422	352	36	0	275	350	388	0	4134
PEAK HR FACTOR :	0.700	0.965	0.889	0.250	0.927	0.898	0.863	0.000	0.959	0.863	0.900	0.000	0.870	0.931	0.960	0.000	0.986
	0.950				0.964				0.925				0.974				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Crowder Ln & Baseline Rd
City: Roseville
Control: 2-Way Stop(NB/SB)

Project ID: 24-070087-002
Date: 5/15/2024

Data - Totals

NS/EW Streets:	Crowder Ln				Crowder Ln				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0.5	0.5	0	0	1	0	0	0	1	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	3	0	1	0	3	0	7	0	9	145	4	0	4	146	4	0	326
7:15 AM	2	0	2	0	6	0	7	0	15	156	17	0	0	154	3	0	362
7:30 AM	1	1	8	0	7	1	7	0	13	225	17	0	0	165	4	0	449
7:45 AM	17	0	6	0	0	1	16	0	17	211	28	0	2	181	8	0	487
8:00 AM	9	0	6	0	3	0	14	0	14	206	27	0	5	168	3	0	455
8:15 AM	6	2	4	0	5	2	14	0	14	195	7	0	7	135	11	0	402
8:30 AM	7	0	1	0	6	0	10	0	12	198	7	0	2	156	6	0	405
8:45 AM	3	0	3	0	5	1	6	0	13	186	13	1	2	143	4	0	380
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	48	3	31	0	35	5	81	0	107	1522	120	1	22	1248	43	0	3266
APPROACH %'s :	58.54%	3.66%	37.80%	0.00%	28.93%	4.13%	66.94%	0.00%	6.11%	86.97%	6.86%	0.06%	1.68%	95.05%	3.27%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	33	3	24	0	15	4	51	0	58	837	79	0	14	649	26	0	1793
PEAK HR FACTOR :	0.485	0.375	0.750	0.000	0.536	0.500	0.797	0.000	0.853	0.930	0.705	0.000	0.500	0.896	0.591	0.000	0.920
	0.652				0.833				0.951				0.902				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0.5	0.5	0	0	1	0	0	0	1	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	6	1	4	0	1	0	5	0	5	187	8	0	7	228	6	0	458
4:15 PM	4	1	3	0	3	0	14	0	12	216	8	0	5	240	7	0	513
4:30 PM	6	1	2	0	4	3	16	0	15	206	11	0	4	195	6	0	469
4:45 PM	5	2	6	1	3	3	20	0	10	191	13	0	5	236	2	0	497
5:00 PM	11	0	3	0	0	1	17	0	13	173	4	0	4	230	5	0	461
5:15 PM	8	0	3	0	8	0	8	0	7	199	14	0	6	255	6	0	514
5:30 PM	12	0	5	0	2	0	12	0	10	179	8	0	2	224	4	0	458
5:45 PM	6	0	3	0	1	0	8	0	2	189	9	0	3	217	1	0	439
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	58	5	29	1	22	7	100	0	74	1540	75	0	36	1825	37	0	3809
APPROACH %'s :	62.37%	5.38%	31.18%	1.08%	17.05%	5.43%	77.52%	0.00%	4.38%	91.18%	4.44%	0.00%	1.90%	96.15%	1.95%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	30	3	14	1	15	7	61	0	45	769	42	0	19	916	19	0	1941
PEAK HR FACTOR :	0.682	0.375	0.583	0.250	0.469	0.583	0.763	0.000	0.750	0.933	0.750	0.000	0.792	0.898	0.792	0.000	0.944
	0.857				0.798				0.922				0.893				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Junction Blvd & Baseline Rd
City: Roseville
Control: Signalized

Project ID: 24-070087-008
Date: 5/15/2024

Data - Totals

NS/EW Streets:	Junction Blvd				Junction Blvd				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	1	0	2	0	1	1	0	0	0	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	16	0	36	0	16	132	0	0	0	105	5	0	310
7:15 AM	0	0	0	0	13	0	49	0	17	148	0	0	0	110	11	0	348
7:30 AM	0	0	0	0	14	0	37	0	48	189	0	0	0	114	7	0	409
7:45 AM	0	0	0	0	10	0	48	0	52	168	0	0	0	141	7	0	426
8:00 AM	0	0	0	0	16	0	42	0	43	170	0	0	0	145	10	0	426
8:15 AM	0	0	0	0	10	0	46	0	45	157	0	0	0	109	20	0	387
8:30 AM	0	0	0	0	24	0	31	0	40	167	0	0	0	138	29	0	429
8:45 AM	0	0	0	0	15	0	31	0	29	167	0	0	0	123	7	0	372
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	118	0	320	0	290	1298	0	0	0	985	96	0	3107
APPROACH %'s :					26.94%	0.00%	73.06%	0.00%	18.26%	81.74%	0.00%	0.00%	0.00%	91.12%	8.88%	0.00%	
PEAK HR :	**07:45 AM - 08:45 AM**																TOTAL
PEAK HR VOL :	0	0	0	0	60	0	167	0	180	662	0	0	0	533	66	0	1668
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.625	0.000	0.870	0.000	0.865	0.974	0.000	0.000	0.000	0.919	0.569	0.000	0.972
					0.978				0.957				0.897				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	1	0	2	0	1	1	0	0	0	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	11	0	44	0	48	146	0	1	0	206	21	0	477
4:15 PM	0	0	0	0	11	0	46	0	36	176	0	0	0	196	16	0	481
4:30 PM	0	0	0	0	14	0	40	0	40	176	0	0	0	159	15	0	444
4:45 PM	0	0	0	0	6	0	45	0	46	160	0	0	0	201	17	0	475
5:00 PM	0	0	0	0	11	0	51	0	33	142	0	0	0	191	16	0	444
5:15 PM	0	0	0	0	12	0	57	0	40	171	0	0	0	206	18	0	504
5:30 PM	0	0	0	0	12	0	45	0	21	163	0	0	0	183	17	0	441
5:45 PM	0	0	0	0	10	0	36	0	32	162	0	0	0	197	17	0	454
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	87	0	364	0	296	1296	0	1	0	1539	137	0	3720
APPROACH %'s :					19.29%	0.00%	80.71%	0.00%	18.58%	81.36%	0.00%	0.06%	0.00%	91.83%	8.17%	0.00%	
PEAK HR :	**04:00 PM - 05:00 PM**																TOTAL
PEAK HR VOL :	0	0	0	0	42	0	175	0	170	658	0	1	0	762	69	0	1877
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.750	0.000	0.951	0.000	0.885	0.935	0.000	0.250	0.000	0.925	0.821	0.000	0.976
					0.952				0.959				0.915				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Crowder Ln & Vineyard Rd
City: Roseville
Control: 3-Way Stop(SB/EB/WB)

Project ID: 24-070087-005
Date: 5/15/2024

Data - Totals

NS/EW Streets:	Crowder Ln				Crowder Ln				Vineyard Rd				Vineyard Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	9	0	0	0	0	1	0	0	0	0	2	0	12
7:15 AM	0	0	0	0	20	0	0	0	0	0	0	0	0	0	3	0	23
7:30 AM	0	0	0	0	20	0	0	0	0	0	0	0	0	0	6	0	26
7:45 AM	0	0	0	0	46	0	0	0	0	2	0	0	0	1	12	0	61
8:00 AM	0	0	0	0	34	0	0	0	1	1	0	0	0	1	21	0	58
8:15 AM	0	0	0	0	18	0	0	0	0	4	0	0	0	2	5	0	29
8:30 AM	0	0	0	0	7	0	1	0	0	1	0	0	0	1	6	0	16
8:45 AM	0	0	0	0	15	0	1	0	0	2	0	0	0	0	4	0	22
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	169	0	2	0	1	11	0	0	0	5	59	0	247
APPROACH %'s :					98.83%	0.00%	1.17%	0.00%	8.33%	91.67%	0.00%	0.00%	0.00%	7.81%	92.19%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	118	0	0	0	1	7	0	0	0	4	44	0	174
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.641	0.000	0.000	0.000	0.250	0.438	0.000	0.000	0.000	0.500	0.524	0.000	0.713
					0.641				0.500				0.545				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	11	0	0	0	1	1	0	0	0	1	8	0	22
4:15 PM	0	0	0	0	11	0	0	0	0	2	0	0	0	1	9	0	23
4:30 PM	0	0	0	0	9	0	0	0	0	1	0	0	0	0	11	0	21
4:45 PM	0	0	0	0	21	0	0	0	0	1	0	0	0	0	12	0	34
5:00 PM	0	0	0	0	8	0	0	0	0	1	0	0	0	1	13	0	23
5:15 PM	0	0	0	0	15	0	0	0	0	0	0	0	0	1	10	1	27
5:30 PM	0	0	0	0	8	0	0	0	0	1	0	0	0	3	14	0	26
5:45 PM	0	0	0	0	8	0	0	0	1	0	0	0	0	2	9	0	20
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	91	0	0	0	2	7	0	0	0	9	86	1	196
APPROACH %'s :					100.00%	0.00%	0.00%	0.00%	22.22%	77.78%	0.00%	0.00%	0.00%	9.38%	89.58%	1.04%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	52	0	0	0	0	3	0	0	0	5	49	1	110
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.619	0.000	0.000	0.000	0.000	0.750	0.000	0.000	0.000	0.417	0.875	0.250	0.809
					0.619				0.750				0.809				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Walerga Rd & Springhill Dr
City: Roseville
Control: 2-Way Stop(EB/WB)

Project ID: 24-070087-003
Date: 5/15/2024

Data - Totals

NS/EW Streets:	Walerga Rd				Walerga Rd				Springhill Dr				Springhill Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	0	0.5	0.5	0	0	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	213	1	0	0	256	0	0	1	0	1	0	0	0	1	0	473
7:15 AM	0	213	2	0	2	278	1	0	2	0	0	0	2	0	0	0	500
7:30 AM	1	302	2	0	2	235	1	0	2	0	0	0	0	0	2	0	547
7:45 AM	0	248	1	0	5	324	1	3	1	1	0	0	0	0	0	0	584
8:00 AM	0	208	1	0	1	248	1	1	2	1	0	0	1	1	1	0	466
8:15 AM	0	170	1	0	0	202	1	1	0	1	2	0	2	0	0	0	380
8:30 AM	2	220	1	0	0	213	0	1	1	0	1	0	2	0	0	0	441
8:45 AM	1	196	1	0	0	185	0	0	0	0	0	0	2	0	0	0	385
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	1770	10	0	10	1941	5	6	9	3	4	0	9	1	4	0	3776
APPROACH %'s :	0.22%	99.22%	0.56%	0.00%	0.51%	98.93%	0.25%	0.31%	56.25%	18.75%	25.00%	0.00%	64.29%	7.14%	28.57%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	1	976	6	0	9	1093	3	3	6	1	1	0	2	0	3	0	2104
PEAK HR FACTOR :	0.250	0.808	0.750	0.000	0.450	0.843	0.750	0.250	0.750	0.250	0.250	0.000	0.250	0.000	0.375	0.000	0.901
		0.806				0.832				1.000				0.625			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	0	0.5	0.5	0	0	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	250	4	0	1	265	0	0	1	0	0	0	1	0	1	0	523
4:15 PM	1	230	1	0	0	269	1	0	0	1	0	0	2	0	0	0	505
4:30 PM	0	210	1	0	1	251	2	2	0	0	2	0	0	0	0	0	469
4:45 PM	0	253	0	0	1	254	4	1	1	0	0	0	1	0	1	0	516
5:00 PM	2	243	1	0	2	258	0	0	3	1	1	0	1	0	2	0	514
5:15 PM	0	239	0	0	0	285	0	0	1	0	0	0	2	0	0	0	527
5:30 PM	0	243	4	0	2	249	2	1	1	0	0	0	1	0	1	0	504
5:45 PM	0	229	3	0	0	244	2	0	1	0	3	0	1	0	0	0	483
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	1897	14	0	7	2075	11	4	8	2	6	0	9	0	5	0	4041
APPROACH %'s :	0.16%	99.11%	0.73%	0.00%	0.33%	98.95%	0.52%	0.19%	50.00%	12.50%	37.50%	0.00%	64.29%	0.00%	35.71%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	2	978	5	0	5	1046	6	2	6	1	1	0	5	0	4	0	2061
PEAK HR FACTOR :	0.250	0.966	0.313	0.000	0.625	0.918	0.375	0.500	0.500	0.250	0.250	0.000	0.625	0.000	0.500	0.000	0.978
		0.973				0.929				0.400				0.750			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Walerga Rd & Town Ctr Ave
City: Roseville
Control: Signalized

Project ID: 24-070087-004
Date: 5/15/2024

Data - Totals

NS/EW Streets:	Walerga Rd				Walerga Rd				Town Ctr Ave				Town Ctr Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	1	2	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	15	203	0	0	0	234	9	0	6	0	12	0	0	0	0	0	479
7:15 AM	5	211	0	0	0	275	2	0	10	0	8	0	0	0	0	0	511
7:30 AM	8	292	0	0	0	251	4	0	13	0	15	0	0	0	0	0	583
7:45 AM	6	234	0	1	0	306	8	0	9	0	24	0	0	0	0	0	588
8:00 AM	13	202	0	0	0	239	9	0	9	0	15	0	0	0	0	0	487
8:15 AM	12	171	0	0	0	222	4	0	9	0	14	0	0	0	0	0	432
8:30 AM	6	200	0	0	0	194	6	0	12	0	16	0	0	0	0	0	434
8:45 AM	7	193	0	0	0	188	8	0	12	0	11	0	0	0	0	0	419
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	72	1706	0	1	0	1909	50	0	80	0	115	0	0	0	0	0	3933
APPROACH %'s :	4.05%	95.90%	0.00%	0.06%	0.00%	97.45%	2.55%	0.00%	41.03%	0.00%	58.97%	0.00%					
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	32	939	0	1	0	1071	23	0	41	0	62	0	0	0	0	0	2169
PEAK HR FACTOR :	0.615	0.804	0.000	0.250	0.000	0.875	0.639	0.000	0.788	0.000	0.646	0.000	0.000	0.000	0.000	0.000	0.922
		0.810				0.871				0.780							

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	1	2	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	16	252	0	0	0	248	8	0	6	0	11	0	0	0	0	0	541
4:15 PM	6	221	0	0	0	267	14	0	7	0	15	0	0	0	0	0	530
4:30 PM	8	210	0	0	0	243	7	1	8	0	10	0	0	0	0	0	487
4:45 PM	5	246	0	0	0	241	7	1	7	0	4	1	0	0	0	0	512
5:00 PM	3	229	0	0	0	262	13	0	7	0	9	0	0	0	0	0	523
5:15 PM	10	239	0	0	0	263	6	0	5	0	12	0	0	0	0	0	535
5:30 PM	8	232	0	0	0	250	9	0	10	0	17	0	0	0	0	0	526
5:45 PM	11	236	0	0	0	249	7	0	0	0	8	0	0	0	0	0	511
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	67	1865	0	0	0	2023	71	2	50	0	86	1	0	0	0	0	4165
APPROACH %'s :	3.47%	96.53%	0.00%	0.00%	0.00%	96.52%	3.39%	0.10%	36.50%	0.00%	62.77%	0.73%					
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	26	946	0	0	0	1016	35	1	29	0	42	1	0	0	0	0	2096
PEAK HR FACTOR :	0.650	0.961	0.000	0.000	0.000	0.966	0.673	0.250	0.725	0.000	0.618	0.250	0.000	0.000	0.000	0.000	0.979
		0.968				0.956				0.667							

National Data & Surveying Services

Intersection Turning Movement Count

Location: Walerga Rd & PFE Rd
City: Roseville
Control: Signalized

Project ID: 24-070087-006
Date: 5/15/2024

Data - Totals

NS/EW Streets:	Walerga Rd				Walerga Rd				PFE Rd				PFE Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	1	1	1	0	1.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	3	183	19	0	3	241	32	1	38	19	3	0	14	15	6	0	577
7:15 AM	6	193	31	0	10	263	33	5	21	20	3	0	18	19	8	0	630
7:30 AM	8	227	44	3	8	210	42	10	32	37	9	0	16	19	19	0	684
7:45 AM	18	192	60	0	17	276	44	4	23	30	16	0	26	30	10	0	746
8:00 AM	13	181	21	1	15	225	39	4	23	30	17	0	20	24	11	0	624
8:15 AM	47	165	11	1	13	185	26	7	13	19	46	0	29	26	6	0	594
8:30 AM	55	196	27	2	8	198	29	1	20	22	78	0	14	12	14	0	676
8:45 AM	17	152	17	3	4	165	13	3	28	17	22	0	18	15	6	0	480
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	167	1489	230	10	78	1763	258	35	198	194	194	0	155	160	80	0	5011
APPROACH %'s :	8.81%	78.53%	12.13%	0.53%	3.66%	82.61%	12.09%	1.64%	33.79%	33.11%	33.11%	0.00%	39.24%	40.51%	20.25%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	45	793	156	4	50	974	158	23	99	117	45	0	80	92	48	0	2684
PEAK HR FACTOR :	0.625	0.873	0.650	0.333	0.735	0.882	0.898	0.575	0.773	0.791	0.662	0.000	0.769	0.767	0.632	0.000	0.899
		0.885				0.883				0.837				0.833			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	1	1	1	0	1.5	0.5	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	10	224	24	1	14	218	34	4	28	12	19	0	49	25	6	0	668
4:15 PM	14	199	27	0	8	216	27	3	34	21	18	0	39	28	13	0	647
4:30 PM	9	206	29	0	17	256	20	6	19	17	6	0	38	32	11	0	666
4:45 PM	10	228	18	0	9	192	15	5	26	31	11	0	33	32	14	0	624
5:00 PM	5	213	19	0	10	217	16	5	12	19	7	0	34	27	9	0	593
5:15 PM	13	233	19	2	4	259	29	3	27	21	11	0	36	24	9	0	690
5:30 PM	6	209	20	0	8	241	19	4	22	14	6	0	32	29	12	0	622
5:45 PM	10	270	27	2	5	211	23	1	22	27	8	0	33	20	8	0	667
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	77	1782	183	5	75	1810	183	31	190	162	86	0	294	217	82	0	5177
APPROACH %'s :	3.76%	87.05%	8.94%	0.24%	3.57%	86.23%	8.72%	1.48%	43.38%	36.99%	19.63%	0.00%	49.58%	36.59%	13.83%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	43	857	98	1	48	882	96	18	107	81	54	0	159	117	44	0	2605
PEAK HR FACTOR :	0.768	0.940	0.845	0.250	0.706	0.861	0.706	0.750	0.787	0.653	0.711	0.000	0.811	0.914	0.786	0.000	0.975
		0.964				0.873				0.829				0.988			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Watt Ave & PFE Rd
City: Roseville
Control: 3-Way Stop(NB/SB/WB)

Project ID: 25-070075-001
Date: 4/2/2025

Data - Total

NS/EW Streets:	Watt Ave				Watt Ave				PFE Rd				PFE Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	91	32	0	0	105	0	0	0	0	0	0	46	0	6	0	280
7:15 AM	0	112	28	0	3	140	0	0	0	0	0	0	49	1	4	0	337
7:30 AM	0	91	58	0	5	120	0	0	0	0	0	0	53	2	16	0	345
7:45 AM	0	55	50	0	4	143	0	0	0	0	0	0	73	0	8	0	333
8:00 AM	0	81	46	0	4	129	0	0	0	0	0	0	64	0	1	0	325
8:15 AM	0	77	81	0	5	105	0	0	0	0	1	0	81	0	6	0	356
8:30 AM	0	90	87	0	8	91	0	0	0	0	0	0	75	0	9	0	360
8:45 AM	1	72	29	0	9	68	0	0	0	0	0	0	52	0	12	0	243
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	669	411	0	38	901	0	0	0	0	1	0	493	3	62	0	2579
APPROACH %'s :	0.09%	61.89%	38.02%	0.00%	4.05%	95.95%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	88.35%	0.54%	11.11%	0.00%	
PEAK HR :	**07:45 AM - 08:45 AM**																TOTAL
PEAK HR VOL :	0	303	264	0	21	468	0	0	0	0	1	0	293	0	24	0	1374
PEAK HR FACTOR :	0.000	0.842	0.759	0.000	0.656	0.818	0.000	0.000	0.000	0.000	0.250	0.000	0.904	0.000	0.667	0.000	0.954
		0.801				0.832				0.250				0.911			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	106	49	0	10	84	0	0	0	0	1	0	59	0	13	0	323
4:15 PM	0	112	45	0	7	107	0	0	0	0	0	0	73	0	16	0	360
4:30 PM	0	113	46	0	11	102	0	0	0	0	0	0	59	0	13	0	344
4:45 PM	0	125	38	0	13	88	0	0	0	0	0	0	64	0	7	0	335
5:00 PM	0	108	55	0	10	95	0	0	0	0	0	0	61	0	7	0	336
5:15 PM	0	112	37	0	10	93	0	1	0	0	0	0	66	0	9	0	328
5:30 PM	0	115	47	0	13	105	0	0	0	0	0	0	42	0	10	0	332
5:45 PM	0	116	50	0	9	90	0	0	0	2	1	0	49	0	6	0	323
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	907	367	0	83	764	0	1	0	2	2	0	473	0	81	0	2681
APPROACH %'s :	0.08%	71.14%	28.78%	0.00%	9.79%	90.09%	0.00%	0.12%	0.00%	50.00%	50.00%	0.00%	85.38%	0.00%	14.62%	0.00%	
PEAK HR :	**04:15 PM - 05:15 PM**																TOTAL
PEAK HR VOL :	0	458	184	0	41	392	0	0	0	0	0	0	257	0	43	0	1375
PEAK HR FACTOR :	0.000	0.916	0.836	0.000	0.788	0.916	0.000	0.000	0.000	0.000	0.000	0.000	0.880	0.000	0.672	0.000	0.955
		0.985				0.950								0.843			

Prepared by National Data & Surveying Services

VOLUME

Walerga Rd Bet Baseline Rd & Springhill Dr

Day: Wednesday
Date: 5/15/2024

City: Roseville
Project #: CA24_070088_001

DAILY TOTALS	NB	SB	EB	WB	Total
	12,800	14,030	0	0	26,830

15-Minutes Interval

TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL
0:00	16	33			49	12:00	167	184			351
0:15	33	31			64	12:15	170	157			327
0:30	17	31			48	12:30	178	177			355
0:45	27	27			54	12:45	154	165			319
1:00	14	28			42	13:00	163	180			343
1:15	15	20			35	13:15	160	194			354
1:30	19	22			41	13:30	169	161			330
1:45	11	10			21	13:45	167	207			374
2:00	7	12			19	14:00	195	236			431
2:15	10	18			28	14:15	192	220			412
2:30	13	14			27	14:30	196	269			465
2:45	10	9			19	14:45	199	282			481
3:00	14	15			29	15:00	182	242			424
3:15	11	17			28	15:15	206	225			431
3:30	19	12			31	15:30	239	315			554
3:45	30	28			58	15:45	258	304			562
4:00	19	22			41	16:00	253	265			518
4:15	25	26			51	16:15	226	280			506
4:30	47	33			80	16:30	210	248			458
4:45	37	45			82	16:45	253	261			514
5:00	35	58			93	17:00	254	261			515
5:15	42	77			119	17:15	243	292			535
5:30	118	78			196	17:30	242	255			497
5:45	133	112			245	17:45	230	251			481
6:00	105	130			235	18:00	209	211			420
6:15	154	151			305	18:15	230	225			455
6:30	216	164			380	18:30	182	202			384
6:45	221	222			443	18:45	192	168			360
7:00	209	262			471	19:00	180	190			370
7:15	220	278			498	19:15	131	178			309
7:30	294	236			530	19:30	155	154			309
7:45	259	330			589	19:45	139	140			279
8:00	215	255			470	20:00	120	165			285
8:15	179	206			385	20:15	148	164			312
8:30	217	213			430	20:30	111	152			263
8:45	197	187			384	20:45	87	134			221
9:00	218	177			395	21:00	84	131			215
9:15	162	177			339	21:15	117	138			255
9:30	158	143			301	21:30	108	103			211
9:45	176	143			319	21:45	94	103			197
10:00	171	163			334	22:00	77	98			175
10:15	162	162			324	22:15	66	83			149
10:30	166	139			305	22:30	58	77			135
10:45	140	139			279	22:45	54	72			126
11:00	143	151			294	23:00	55	66			121
11:15	151	167			318	23:15	51	68			119
11:30	156	137			293	23:30	44	63			107
11:45	154	153			307	23:45	37	51			88
TOTALS	5165	5263	0	0	10428	TOTALS	7635	8767	0	0	16402
SPLIT %	50%	50%	0%	0%	39%	SPLIT %	47%	53%	0%	0%	61%

Hourly Intervals

TIME		NB	SB	EB	WB	TOTAL
00:00	01:00	93	122			215
01:00	02:00	59	80			139
02:00	03:00	40	53			93
03:00	04:00	74	72			146
04:00	05:00	128	126			254
05:00	06:00	328	325			653
06:00	07:00	696	667			1363
07:00	08:00	982	1106			2088
08:00	09:00	808	861			1669
09:00	10:00	714	640			1354
10:00	11:00	639	603			1242
11:00	12:00	604	608			1212
12:00	13:00	669	683			1352
13:00	14:00	659	742			1401
14:00	15:00	782	1007			1789
15:00	16:00	885	1086			1971
16:00	17:00	942	1054			1996
17:00	18:00	969	1059			2028
18:00	19:00	813	806			1619
19:00	20:00	605	662			1267
20:00	21:00	466	615			1081
21:00	22:00	403	475			878
22:00	23:00	255	330			585
23:00	00:00	187	248			435

STATISTICS

	NB	SB	EB	WB	TOTAL
Peak Period	00:00	to	12:00		
Volume	5165	5263			10428
Peak Hour	7:15	7:00			7:00
Peak Volume	988	1106			2088
Peak Hour Factor	0.840	0.838			0.886
Peak Period	12:00	to	00:00		
Volume	7635	8767			16402
Peak Hour	16:45	15:30			15:30
Peak Volume	992	1164			2140
Peak Hour Factor	0.976	0.924			0.952
Peak Period	07:00	to	09:00		
Volume	1790	1967			3757
Peak Hour	7:15	7:00			7:00
Peak Volume	988	1106			2088
Peak Hour Factor	0.840	0.838			0.886
Peak Period	16:00	to	18:00		
Volume	1911	2113			4024
Peak Hour	16:45	16:45			16:45
Peak Volume	992	1069			2061
Peak Hour Factor	0.976	0.915			0.963

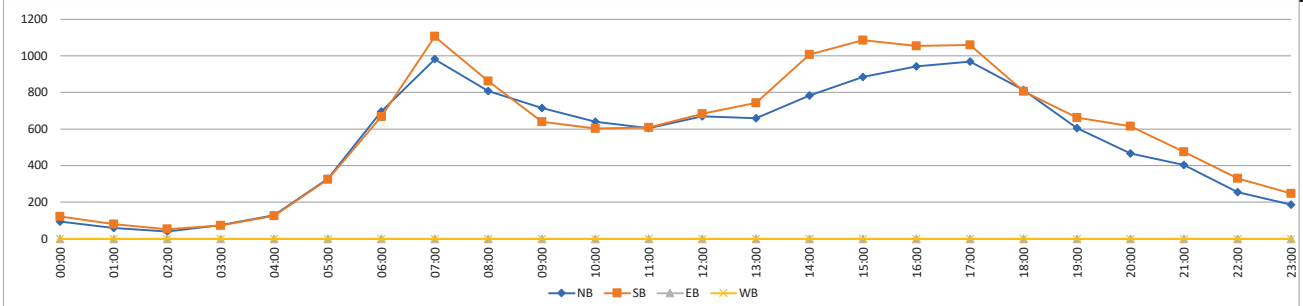


*Figure not OCR compatible

Prepared by National Data & Surveying Services

VOLUME

Crowder Ln Bet Baseline Rd & Vineyard Rd

Day: Wednesday
Date: 5/15/2024

City: Roseville
Project #: CA24_070088_002

DAILY TOTALS	NB	SB	EB	WB	Total
	607	765	0	0	1,372

DAILY TOTALS

15-Minutes Interval

TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL
0:00	1	1			2	12:00	10	8			18
0:15	0	0			0	12:15	7	8			15
0:30	0	1			1	12:30	16	9			25
0:45	1	1			2	12:45	4	12			16
1:00	1	1			2	13:00	11	9			20
1:15	1	1			2	13:15	6	4			10
1:30	0	1			1	13:30	12	17			29
1:45	0	0			0	13:45	9	19			28
2:00	1	0			1	14:00	4	13			17
2:15	1	0			1	14:15	7	16			23
2:30	0	1			1	14:30	14	19			33
2:45	1	0			1	14:45	9	16			25
3:00	0	0			0	15:00	18	14			32
3:15	0	0			0	15:15	12	11			23
3:30	0	0			0	15:30	16	21			37
3:45	1	0			1	15:45	17	13			30
4:00	0	0			0	16:00	12	14			26
4:15	1	1			2	16:15	9	11			20
4:30	0	1			1	16:30	10	18			28
4:45	2	4			6	16:45	15	20			35
5:00	2	1			3	17:00	15	8			23
5:15	1	1			2	17:15	12	18			30
5:30	2	2			4	17:30	18	8			26
5:45	3	8			11	17:45	8	9			17
6:00	2	4			6	18:00	12	12			24
6:15	2	10			12	18:15	10	10			20
6:30	6	5			11	18:30	7	11			18
6:45	7	5			12	18:45	9	9			18
7:00	6	13			19	19:00	5	10			15
7:15	5	18			23	19:15	11	4			15
7:30	7	21			28	19:30	8	7			15
7:45	19	32			51	19:45	10	6			16
8:00	21	31			52	20:00	8	4			12
8:15	7	18			25	20:15	7	6			13
8:30	11	10			21	20:30	6	6			12
8:45	4	16			20	20:45	7	3			10
9:00	8	9			17	21:00	4	9			13
9:15	14	10			24	21:15	4	8			12
9:30	9	9			18	21:30	5	8			13
9:45	4	8			12	21:45	5	2			7
10:00	8	6			14	22:00	2	4			6
10:15	5	8			13	22:15	2	1			3
10:30	7	4			11	22:30	1	4			5
10:45	7	11			18	22:45	2	1			3
11:00	2	12			14	23:00	1	1			2
11:15	8	11			19	23:15	2	2			4
11:30	7	14			21	23:30	1	1			2
11:45	11	8			19	23:45	1	3			4
TOTALS	206	318	0	0	524	TOTALS	401	447	0	0	848
SPLIT %	39%	61%	0%	0%	38%	SPLIT %	47%	53%	0%	0%	62%

Hourly Intervals

TIME		NB	SB	EB	WB	TOTAL
00:00	01:00	2	3			5
01:00	02:00	2	3			5
02:00	03:00	3	1			4
03:00	04:00	1	0			1
04:00	05:00	3	6			9
05:00	06:00	8	12			20
06:00	07:00	17	24			41
07:00	08:00	37	84			121
08:00	09:00	43	75			118
09:00	10:00	35	36			71
10:00	11:00	27	29			56
11:00	12:00	28	45			73
12:00	13:00	37	37			74
13:00	14:00	38	49			87
14:00	15:00	34	64			98
15:00	16:00	63	59			122
16:00	17:00	46	63			109
17:00	18:00	53	43			96
18:00	19:00	38	42			80
19:00	20:00	34	27			61
20:00	21:00	28	19			47
21:00	22:00	18	27			45
22:00	23:00	7	10			17
23:00	00:00	5	7			12

STATISTICS

	NB	SB	EB	WB	TOTAL
Peak Period	00:00	to	12:00		
Volume	206	318			524
Peak Hour	7:45	7:15			7:30
Peak Volume	58	102			156
Peak Hour Factor	0.690	0.797			0.750
Peak Period	12:00	to	00:00		
Volume	401	447			848
Peak Hour	15:00	13:45			15:00
Peak Volume	63	67			122
Peak Hour Factor	0.875	0.882			0.824
Peak Period	07:00	to	09:00		
Volume	80	159			239
Peak Hour	7:45	7:15			7:30
Peak Volume	58	102			156
Peak Hour Factor	0.690	0.797			0.750
Peak Period	16:00	to	18:00		
Volume	99	106			205
Peak Hour	16:45	16:30			16:30
Peak Volume	60	64			116
Peak Hour Factor	0.833	0.800			0.829

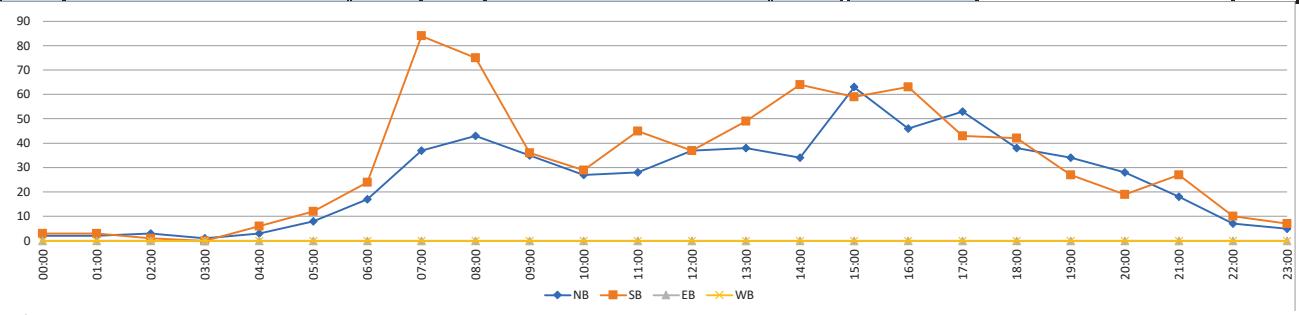


*Figure not OCR compatible

Prepared by National Data & Surveying Services

VOLUME

Vineyard Rd Bet Crowder Ln & Cook Riolo Rd

Day: Wednesday
Date: 5/15/2024

City: Roseville
Project #: CA24_070088_003

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	770	594	1,364

DAILY TOTALS

15-Minutes Interval

TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL
0:00			1	1	2	12:00			7	10	17
0:15			0	0	0	12:15			9	8	17
0:30			1	0	1	12:30			4	12	16
0:45			1	1	2	12:45			11	2	13
1:00			0	1	1	13:00			12	16	28
1:15			0	0	0	13:15			4	6	10
1:30			0	0	0	13:30			13	15	28
1:45			0	0	0	13:45			19	5	24
2:00			0	1	1	14:00			13	5	18
2:15			0	1	1	14:15			15	8	23
2:30			1	0	1	14:30			19	15	34
2:45			0	1	1	14:45			15	11	26
3:00			0	0	0	15:00			16	19	35
3:15			0	0	0	15:15			15	10	25
3:30			0	0	0	15:30			19	15	34
3:45			0	1	1	15:45			14	17	31
4:00			0	0	0	16:00			11	8	19
4:15			1	0	1	16:15			14	10	24
4:30			1	0	1	16:30			10	16	26
4:45			4	1	5	16:45			24	9	33
5:00			2	1	3	17:00			8	18	26
5:15			2	0	2	17:15			16	12	28
5:30			4	2	6	17:30			11	19	30
5:45			8	2	10	17:45			8	12	20
6:00			5	3	8	18:00			11	12	23
6:15			8	1	9	18:15			13	14	27
6:30			6	6	12	18:30			8	7	15
6:45			5	11	16	18:45			11	11	22
7:00			11	2	13	19:00			6	5	11
7:15			19	3	22	19:15			6	11	17
7:30			23	7	30	19:30			2	9	11
7:45			51	14	65	19:45			6	12	18
8:00			37	21	58	20:00			6	8	14
8:15			21	9	30	20:15			5	9	14
8:30			10	7	17	20:30			6	7	13
8:45			17	5	22	20:45			2	5	7
9:00			10	7	17	21:00			7	7	14
9:15			8	12	20	21:15			5	3	8
9:30			14	7	21	21:30			8	3	11
9:45			6	5	11	21:45			3	5	8
10:00			5	6	11	22:00			2	4	6
10:15			9	5	14	22:15			0	2	2
10:30			7	5	12	22:30			1	1	2
10:45			10	5	15	22:45			0	0	0
11:00			13	2	15	23:00			1	1	2
11:15			8	6	14	23:15			2	1	3
11:30			13	9	22	23:30			0	0	0
11:45			8	6	14	23:45			2	2	4
TOTALS	0	0	350	177	527	TOTALS	0	0	420	417	837
SPLIT %	0%	0%	66%	34%	39%	SPLIT %	0%	0%	50%	50%	61%

Hourly Intervals

TIME		NB	SB	EB	WB	TOTAL
00:00	01:00			3	2	5
01:00	02:00			0	1	1
02:00	03:00			1	3	4
03:00	04:00			0	1	1
04:00	05:00			6	1	7
05:00	06:00			16	5	21
06:00	07:00			24	21	45
07:00	08:00			104	26	130
08:00	09:00			85	42	127
09:00	10:00			38	31	69
10:00	11:00			31	21	52
11:00	12:00			42	23	65
12:00	13:00			31	32	63
13:00	14:00			48	42	90
14:00	15:00			62	39	101
15:00	16:00			64	61	125
16:00	17:00			59	43	102
17:00	18:00			43	61	104
18:00	19:00			43	44	87
19:00	20:00			20	37	57
20:00	21:00			19	29	48
21:00	22:00			23	18	41
22:00	23:00			3	7	10
23:00	00:00			5	4	9

STATISTICS

	NB	SB	EB	WB	TOTAL
Peak Period	00:00	to	12:00		
Volume			350	177	527
Peak Hour			7:30	7:30	7:30
Peak Volume			132	51	183
Peak Hour Factor			0.647	0.607	0.704
Peak Period	12:00	to	00:00		
Volume			420	417	837
Peak Hour			13:45	15:00	15:00
Peak Volume			66	61	125
Peak Hour Factor			0.868	0.803	0.893
Peak Period	07:00	to	09:00		
Volume			189	68	257
Peak Hour			7:30	7:30	7:30
Peak Volume			132	51	183
Peak Hour Factor			0.647	0.607	0.704
Peak Period	16:00	to	18:00		
Volume			102	104	206
Peak Hour			16:00	17:00	16:45
Peak Volume			59	61	117
Peak Hour Factor			0.615	0.803	0.886

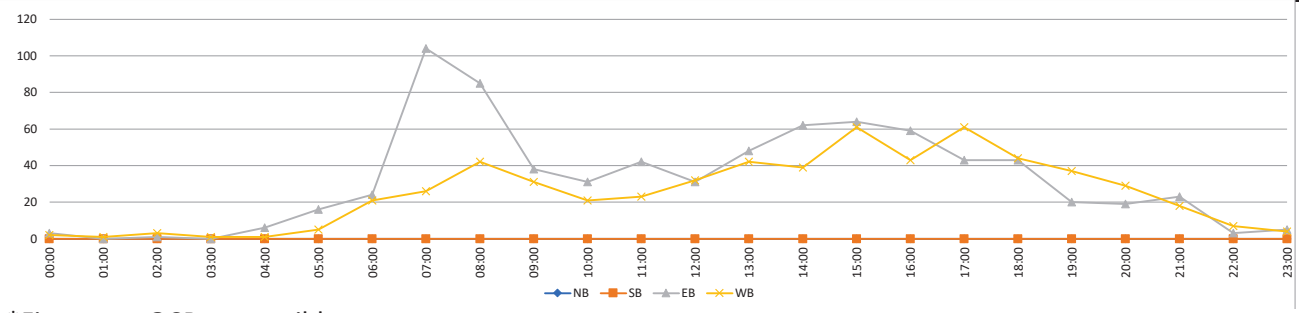


*Figure not OCR compatible

Prepared by National Data & Surveying Services

VOLUME

Walerga Rd Bet PFE Rd & Dry Creek Community Park Dwy

Day: Wednesday
Date: 5/15/2024

City: Roseville
Project #: CA24_070088_004

DAILY TOTALS	NB	SB	EB	WB	Total
	13,241	14,562	0	0	27,803

DAILY TOTALS

15-Minutes Interval

TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL
0:00	19	30			49	12:00	183	188			371
0:15	31	36			67	12:15	169	174			343
0:30	23	29			52	12:30	170	184			354
0:45	25	26			51	12:45	152	176			328
1:00	15	30			45	13:00	159	168			327
1:15	17	18			35	13:15	176	193			369
1:30	21	25			46	13:30	168	164			332
1:45	10	9			19	13:45	169	199			368
2:00	6	15			21	14:00	187	217			404
2:15	15	20			35	14:15	196	237			433
2:30	14	17			31	14:30	203	292			495
2:45	11	9			20	14:45	205	267			472
3:00	14	16			30	15:00	189	263			452
3:15	12	18			30	15:15	208	254			462
3:30	21	13			34	15:30	253	290			543
3:45	32	27			59	15:45	263	313			576
4:00	22	25			47	16:00	248	269			517
4:15	27	26			53	16:15	241	280			521
4:30	47	38			85	16:30	232	269			501
4:45	45	44			89	16:45	268	231			499
5:00	32	71			103	17:00	232	249			481
5:15	44	81			125	17:15	260	284			544
5:30	132	80			212	17:30	233	276			509
5:45	131	120			251	17:45	282	260			542
6:00	126	137			263	18:00	239	215			454
6:15	180	162			342	18:15	212	244			456
6:30	243	169			412	18:30	212	192			404
6:45	226	232			458	18:45	217	196			413
7:00	214	274			488	19:00	192	191			383
7:15	205	291			496	19:15	145	169			314
7:30	300	270			570	19:30	180	182			362
7:45	219	325			544	19:45	142	154			296
8:00	223	274			497	20:00	124	170			294
8:15	180	225			405	20:15	143	187			330
8:30	214	226			440	20:30	125	170			295
8:45	192	197			389	20:45	81	132			213
9:00	205	191			396	21:00	99	131			230
9:15	167	208			375	21:15	121	143			264
9:30	171	148			319	21:30	122	102			224
9:45	165	176			341	21:45	94	111			205
10:00	159	154			313	22:00	89	94			183
10:15	158	170			328	22:15	74	89			163
10:30	169	148			317	22:30	63	73			136
10:45	146	154			300	22:45	65	67			132
11:00	145	175			320	23:00	61	70			131
11:15	172	145			317	23:15	55	75			130
11:30	146	173			319	23:30	57	56			113
11:45	153	151			304	23:45	39	54			93
TOTALS	5244	5598	0	0	10842	TOTALS	7997	8964	0	0	16961
SPLIT %	48%	52%	0%	0%	39%	SPLIT %	47%	53%	0%	0%	61%

Hourly Intervals

TIME		NB	SB	EB	WB	TOTAL
00:00	01:00	98	121			219
01:00	02:00	63	82			145
02:00	03:00	46	61			107
03:00	04:00	79	74			153
04:00	05:00	141	133			274
05:00	06:00	339	352			691
06:00	07:00	775	700			1475
07:00	08:00	938	1160			2098
08:00	09:00	809	922			1731
09:00	10:00	708	723			1431
10:00	11:00	632	626			1258
11:00	12:00	616	644			1260
12:00	13:00	674	722			1396
13:00	14:00	672	724			1396
14:00	15:00	791	1013			1804
15:00	16:00	913	1120			2033
16:00	17:00	989	1049			2038
17:00	18:00	1007	1069			2076
18:00	19:00	880	847			1727
19:00	20:00	659	696			1355
20:00	21:00	473	659			1132
21:00	22:00	436	487			923
22:00	23:00	291	323			614
23:00	00:00	212	255			467

STATISTICS

	NB	SB	EB	WB	TOTAL
Peak Period	00:00	to	12:00		
Volume	5244	5598			10842
Peak Hour	7:15	7:00			7:15
Peak Volume	947	1160			2107
Peak Hour Factor	0.789	0.892			0.924
Peak Period	12:00	to	00:00		
Volume	7997	8964			16961
Peak Hour	17:15	15:30			15:30
Peak Volume	1014	1152			2157
Peak Hour Factor	0.899	0.920			0.936
Peak Period	07:00	to	09:00		
Volume	1747	2082			3829
Peak Hour	7:15	7:00			7:15
Peak Volume	947	1160			2107
Peak Hour Factor	0.789	0.892			0.924
Peak Period	16:00	to	18:00		
Volume	1996	2118			4114
Peak Hour	17:00	17:00			17:00
Peak Volume	1007	1069			2076
Peak Hour Factor	0.893	0.941			0.954

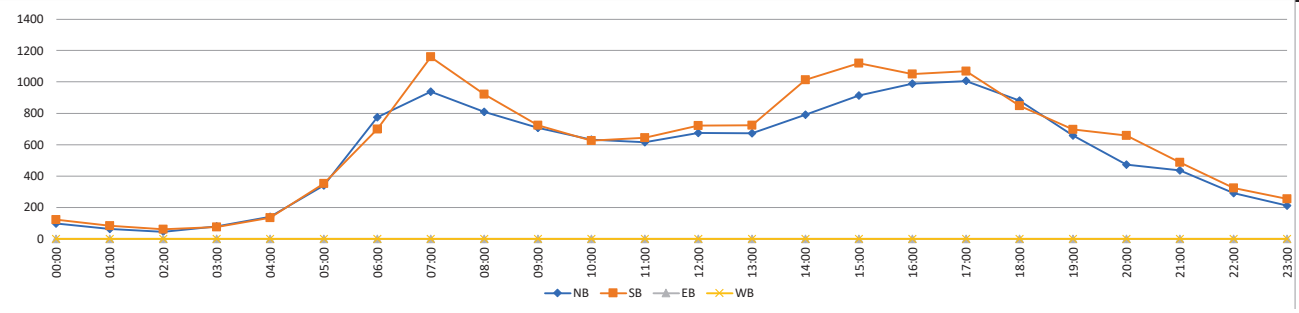


*Figure not OCR compatible

Appendix B

Intersection Analysis Worksheets for Existing (2024)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	12	452	46	386	851	13	55	41	273	22	116	42
v/c Ratio	0.05	0.50	0.10	0.75	0.43	0.01	0.35	0.06	0.50	0.09	0.38	0.12
Control Delay (s/veh)	56.5	37.4	0.4	45.2	15.8	0.0	58.1	39.4	8.7	55.9	48.0	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	56.5	37.4	0.4	45.2	15.8	0.0	58.1	39.4	8.7	55.9	48.0	0.8
Queue Length 50th (ft)	4	136	0	233	152	0	35	12	0	7	70	0
Queue Length 95th (ft)	17	243	0	427	300	0	95	34	78	25	160	0
Internal Link Dist (ft)		1037			966			719			726	
Turn Bay Length (ft)	250		215	325		235	145		145	230		
Base Capacity (vph)	1422	2658	1212	1045	3084	1388	366	1308	757	711	688	646
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.17	0.04	0.37	0.28	0.01	0.15	0.03	0.36	0.03	0.17	0.07

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	411	42	347	766	12	51	38	254	21	111	40
Future Volume (veh/h)	11	411	42	347	766	12	51	38	254	21	111	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	12	452	46	386	851	13	55	41	273	22	116	42
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.93	0.93	0.93	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	70	844	376	429	1628	726	108	751	335	116	345	292
Arrive On Green	0.02	0.24	0.24	0.24	0.46	0.46	0.06	0.21	0.21	0.03	0.18	0.18
Sat Flow, veh/h	3456	3554	1585	1781	3554	1585	1781	3554	1585	3456	1870	1585
Grp Volume(v), veh/h	12	452	46	386	851	13	55	41	273	22	116	42
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1777	1585	1781	1777	1585	1728	1870	1585
Q Serve(g_s), s	0.3	9.2	1.9	17.5	14.2	0.4	2.5	0.8	13.6	0.5	4.5	1.8
Cycle Q Clear(g_c), s	0.3	9.2	1.9	17.5	14.2	0.4	2.5	0.8	13.6	0.5	4.5	1.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	70	844	376	429	1628	726	108	751	335	116	345	292
V/C Ratio(X)	0.17	0.54	0.12	0.90	0.52	0.02	0.51	0.05	0.81	0.19	0.34	0.14
Avail Cap(c_a), veh/h	1663	3219	1436	1221	3219	1436	429	1526	681	831	803	681
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.0	27.7	24.9	30.6	16.1	12.3	37.9	26.2	31.2	39.1	29.5	28.4
Incr Delay (d2), s/veh	0.4	1.5	0.4	2.8	0.7	0.0	1.4	0.0	7.4	0.3	2.2	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	4.0	0.7	7.6	5.6	0.1	1.1	0.3	5.7	0.2	2.2	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.5	29.2	25.3	33.4	16.8	12.3	39.2	26.2	38.7	39.4	31.7	29.3
LnGrp LOS	D	C	C	C	B	B	D	C	D	D	C	C
Approach Vol, veh/h		510			1250			369			180	
Approach Delay, s/veh		29.1			21.9			37.4			32.0	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	21.6	25.0	26.4	7.8	23.9	6.7	44.8
Change Period (Y+Rc), s	5.0	6.3	5.0	6.7	5.0	6.3	5.0	6.7
Max Green Setting (Gmax), s	20.0	35.7	57.0	75.3	20.0	35.7	40.0	75.3
Max Q Clear Time (g_c+I1), s	4.5	6.5	19.5	11.2	2.5	15.6	2.3	16.2
Green Ext Time (p_c), s	0.0	2.0	0.6	8.5	0.0	1.9	0.0	18.3

Intersection Summary	
HCM 7th Control Delay, s/veh	26.7
HCM 7th LOS	C



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	44	686	1107	30	80	168
v/c Ratio	0.22	0.29	0.54	0.03	0.35	0.48
Control Delay (s/veh)	37.6	4.5	11.1	3.3	37.6	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	37.6	4.5	11.1	3.3	37.6	11.6
Queue Length 50th (ft)	19	46	163	0	34	0
Queue Length 95th (ft)	59	77	247	11	91	59
Internal Link Dist (ft)		890	754		855	
Turn Bay Length (ft)	275			240		
Base Capacity (vph)	557	3433	2849	1280	557	613
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.20	0.39	0.02	0.14	0.27

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	41	645	974	26	72	151
Future Volume (veh/h)	41	645	974	26	72	151
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	44	686	1107	30	80	168
Peak Hour Factor	0.94	0.94	0.88	0.88	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	104	2404	1900	848	242	215
Arrive On Green	0.06	0.68	0.53	0.53	0.14	0.14
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	44	686	1107	30	80	168
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585
Q Serve(g_s), s	1.6	5.2	14.1	0.6	2.7	6.9
Cycle Q Clear(g_c), s	1.6	5.2	14.1	0.6	2.7	6.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	104	2404	1900	848	242	215
V/C Ratio(X)	0.42	0.29	0.58	0.04	0.33	0.78
Avail Cap(c_a), veh/h	542	4290	2913	1299	542	482
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.5	4.3	10.5	7.4	26.2	28.0
Incr Delay (d2), s/veh	1.0	0.1	0.6	0.0	0.3	2.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.4	4.8	0.2	1.1	6.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	31.5	4.5	11.2	7.4	26.5	30.4
LnGrp LOS	C	A	B	A	C	C
Approach Vol, veh/h		730	1137		248	
Approach Delay, s/veh		6.1	11.1		29.1	
Approach LOS		A	B		C	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			52.4		14.7	9.5	42.9
Change Period (Y+Rc), s			7.0		5.6	5.6	7.0
Max Green Setting (Gmax), s			81.0		20.4	20.4	55.0
Max Q Clear Time (g_c+I1), s			7.2		8.9	3.6	16.1
Green Ext Time (p_c), s			11.9		0.3	0.0	19.8

Intersection Summary	
HCM 7th Control Delay, s/veh	11.5
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	99	667	27	2	899	51	27	27	5	116	36	202
v/c Ratio	0.41	0.33	0.03	0.01	0.56	0.07	0.14	0.08	0.01	0.40	0.11	0.44
Control Delay (s/veh)	44.7	10.4	0.0	46.5	19.3	2.9	46.0	40.8	0.0	42.7	35.7	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	44.7	10.4	0.0	46.5	19.3	2.9	46.0	40.8	0.0	42.7	35.7	9.5
Queue Length 50th (ft)	51	92	0	1	197	0	14	13	0	60	17	0
Queue Length 95th (ft)	125	186	0	9	308	15	40	39	0	140	54	65
Internal Link Dist (ft)		1187			2532			760			553	
Turn Bay Length (ft)	240		245	240		240	240		245	200		205
Base Capacity (vph)	521	3059	1377	521	3059	1377	521	576	542	521	560	617
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.22	0.02	0.00	0.29	0.04	0.05	0.05	0.01	0.22	0.06	0.33

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	607	25	2	800	45	20	20	4	107	33	186
Future Volume (veh/h)	90	607	25	2	800	45	20	20	4	107	33	186
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	99	667	27	2	899	51	27	27	5	116	36	202
Peak Hour Factor	0.91	0.91	0.91	0.89	0.89	0.89	0.73	0.73	0.73	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	152	1899	847	7	1609	718	73	209	177	159	300	254
Arrive On Green	0.09	0.53	0.53	0.00	0.45	0.45	0.04	0.11	0.11	0.09	0.16	0.16
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	99	667	27	2	899	51	27	27	5	116	36	202
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.8	7.5	0.6	0.1	13.0	1.3	1.0	0.9	0.2	4.4	1.2	8.6
Cycle Q Clear(g_c), s	3.8	7.5	0.6	0.1	13.0	1.3	1.0	0.9	0.2	4.4	1.2	8.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	152	1899	847	7	1609	718	73	209	177	159	300	254
V/C Ratio(X)	0.65	0.35	0.03	0.29	0.56	0.07	0.37	0.13	0.03	0.73	0.12	0.80
Avail Cap(c_a), veh/h	508	3815	1702	508	3815	1702	508	560	475	508	544	461
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.1	9.4	7.7	34.8	14.1	10.9	32.8	28.1	27.8	31.1	25.2	28.3
Incr Delay (d2), s/veh	1.8	0.2	0.0	8.6	0.6	0.1	1.2	0.6	0.1	2.4	0.2	6.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	2.6	0.2	0.0	4.8	0.4	0.5	0.4	0.1	1.9	0.5	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.8	9.6	7.8	43.5	14.7	10.9	33.9	28.7	27.9	33.5	25.4	35.3
LnGrp LOS	C	A	A	D	B	B	C	C	C	C	C	D
Approach Vol, veh/h		793			952			59			354	
Approach Delay, s/veh		12.4			14.5			31.0			33.7	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	12.4	4.3	43.2	6.9	15.8	10.0	37.5
Change Period (Y+Rc), s	4.0	* 4.6	4.0	5.7	4.0	4.6	4.0	5.7
Max Green Setting (Gmax), s	20.0	* 21	20.0	75.3	20.0	20.4	20.0	75.3
Max Q Clear Time (g_c+I1), s	6.4	2.9	2.1	9.5	3.0	10.6	5.8	15.0
Green Ext Time (p_c), s	0.1	0.1	0.0	10.9	0.0	0.7	0.1	16.8

Intersection Summary	
HCM 7th Control Delay, s/veh	17.3
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	48	832	1084	88	178	33
v/c Ratio	0.22	0.36	0.54	0.09	0.44	0.09
Control Delay (s/veh)	22.3	5.8	12.0	3.6	18.6	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	22.3	5.8	12.0	3.6	18.6	6.9
Queue Length 50th (ft)	9	47	68	0	31	0
Queue Length 95th (ft)	40	102	#259	22	88	16
Internal Link Dist (ft)		2532	278		450	
Turn Bay Length (ft)	200			200	150	
Base Capacity (vph)	218	2442	2023	942	785	720
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.34	0.54	0.09	0.23	0.05

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	44	765	997	81	164	30
Future Volume (veh/h)	44	765	997	81	164	30
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	48	832	1084	88	178	33
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	94	2155	1523	679	256	228
Arrive On Green	0.05	0.61	0.43	0.43	0.14	0.14
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	48	832	1084	88	178	33
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585
Q Serve(g_s), s	0.9	4.3	9.0	1.2	3.4	0.7
Cycle Q Clear(g_c), s	0.9	4.3	9.0	1.2	3.4	0.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	94	2155	1523	679	256	228
V/C Ratio(X)	0.51	0.39	0.71	0.13	0.70	0.14
Avail Cap(c_a), veh/h	247	2762	1825	814	890	792
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	3.6	8.5	6.2	14.7	13.5
Incr Delay (d2), s/veh	4.2	0.1	1.1	0.1	3.4	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.6	2.4	0.3	1.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	20.8	3.8	9.5	6.3	18.1	13.8
LnGrp LOS	C	A	A	A	B	B
Approach Vol, veh/h		880	1172		211	
Approach Delay, s/veh		4.7	9.3		17.4	
Approach LOS		A	A		B	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	26.3	9.7	6.4	19.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	28.0	18.0	5.0	18.5
Max Q Clear Time (g_c+I1), s	6.3	5.4	2.9	11.0
Green Ext Time (p_c), s	6.1	0.5	0.0	4.4

Intersection Summary	
HCM 7th Control Delay, s/veh	8.2
HCM 7th LOS	A



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	287	780	230	691	245	29	797	335	442	986	493
v/c Ratio	0.73	0.76	0.68	0.71	0.42	0.33	1.16	0.69	0.91	0.62	0.53
Control Delay (s/veh)	72.8	51.7	73.5	51.6	11.3	77.8	138.1	27.6	75.1	35.2	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	72.8	51.7	73.5	51.6	11.3	77.8	138.1	27.6	75.1	35.2	8.5
Queue Length 50th (ft)	139	353	111	311	31	27	~480	104	414	401	49
Queue Length 95th (ft)	188	427	163	400	109	62	#623	211	#631	511	141
Internal Link Dist (ft)		1047		306			1367			1181	
Turn Bay Length (ft)	270		240		240	250		250	250		350
Base Capacity (vph)	964	1137	964	1118	638	248	686	483	485	1582	934
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.69	0.24	0.62	0.38	0.12	1.16	0.69	0.91	0.62	0.53

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	636	43	209	629	223	25	685	288	380	848	424
Future Volume (veh/h)	250	636	43	209	629	223	25	685	288	380	848	424
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	287	731	49	230	691	245	29	797	335	442	986	493
Peak Hour Factor	0.87	0.87	0.87	0.91	0.91	0.91	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	349	956	64	290	945	421	53	758	338	467	1583	706
Arrive On Green	0.10	0.28	0.28	0.08	0.27	0.27	0.03	0.21	0.21	0.26	0.45	0.45
Sat Flow, veh/h	3456	3380	226	3456	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	287	384	396	230	691	245	29	797	335	442	986	493
Grp Sat Flow(s),veh/h/ln	1728	1777	1830	1728	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	10.5	25.6	25.6	8.5	22.9	17.4	2.1	27.6	27.3	31.5	27.6	32.4
Cycle Q Clear(g_c), s	10.5	25.6	25.6	8.5	22.9	17.4	2.1	27.6	27.3	31.5	27.6	32.4
Prop In Lane	1.00		0.12	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	349	503	518	290	945	421	53	758	338	467	1583	706
V/C Ratio(X)	0.82	0.76	0.76	0.79	0.73	0.58	0.54	1.05	0.99	0.95	0.62	0.70
Avail Cap(c_a), veh/h	1068	618	636	1068	1236	551	275	758	338	537	1583	706
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	42.4	42.5	58.2	43.3	41.2	61.9	50.9	50.8	46.8	27.5	28.9
Incr Delay (d2), s/veh	1.9	6.0	5.9	1.9	2.5	2.5	3.2	47.0	46.4	23.4	0.9	3.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	12.1	12.4	3.8	10.4	7.1	1.0	17.2	15.1	16.9	11.8	12.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.9	48.5	48.3	60.0	45.8	43.7	65.0	97.9	97.2	70.2	28.5	32.4
LnGrp LOS	E	D	D	E	D	D	E	F	F	E	C	C
Approach Vol, veh/h		1067			1166			1161			1921	
Approach Delay, s/veh		51.2			48.1			96.9			39.1	
Approach LOS		D			D			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	37.9	34.0	14.9	42.6	7.9	64.0	17.1	40.4
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	39.0	27.6	40.0	45.0	20.0	46.6	40.0	45.0
Max Q Clear Time (g_c+I1), s	33.5	29.6	10.5	27.6	4.1	34.4	12.5	24.9
Green Ext Time (p_c), s	0.4	0.0	0.4	7.5	0.0	8.9	0.5	9.5

Intersection Summary	
HCM 7th Control Delay, s/veh	56.1
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	58	1200	79	14	977	26	33	3	24	15	4	51
Future Vol, veh/h	58	1200	79	14	977	26	33	3	24	15	4	51
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	90	90	90	70	70	70	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	61	1263	83	16	1086	29	47	4	34	18	5	61

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1114	0	0	1346	0	0	1962	2531	1263	2519	2600	557
Stage 1	-	-	-	-	-	-	1385	1385	-	1131	1131	-
Stage 2	-	-	-	-	-	-	576	1146	-	1387	1468	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	625	-	-	510	-	-	~ 42	27	206	~ 16	25	475
Stage 1	-	-	-	-	-	-	177	210	-	217	278	-
Stage 2	-	-	-	-	-	-	470	273	-	176	191	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	625	-	-	510	-	-	~ 31	24	206	~ 12	22	475
Mov Cap-2 Maneuver	-	-	-	-	-	-	137	132	-	72	99	-
Stage 1	-	-	-	-	-	-	159	189	-	211	269	-
Stage 2	-	-	-	-	-	-	390	265	-	129	172	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.49	0.17	51.95	36.29
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	158	625	-	-	510	-	-	197
HCM Lane V/C Ratio	0.542	0.098	-	-	0.031	-	-	0.428
HCM Ctrl Dly (s/v)	51.9	11.4	-	-	12.3	-	-	36.3
HCM Lane LOS	F	B	-	-	B	-	-	E
HCM 95th %tile Q(veh)	2.7	0.3	-	-	0.1	-	-	2

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	188	1068	957	73	61	170
v/c Ratio	0.34	0.68	0.49	0.08	0.22	0.21
Control Delay (s/veh)	3.6	7.4	9.7	2.3	33.3	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	3.6	7.4	9.7	2.3	33.3	8.0
Queue Length 50th (ft)	15	213	118	0	21	5
Queue Length 95th (ft)	34	433	197	16	76	37
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	1127	1848	3124	1406	660	1951
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.58	0.31	0.05	0.09	0.09

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	180	1025	861	66	60	167
Future Volume (veh/h)	180	1025	861	66	60	167
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	188	1068	957	73	61	170
Peak Hour Factor	0.96	0.96	0.90	0.90	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	515	1368	2023	902	211	615
Arrive On Green	0.10	0.73	0.57	0.57	0.12	0.12
Sat Flow, veh/h	1781	1870	3647	1585	1781	2790
Grp Volume(v), veh/h	188	1068	957	73	61	170
Grp Sat Flow(s),veh/h/ln	1781	1870	1777	1585	1781	1395
Q Serve(g_s), s	2.3	23.8	10.6	1.4	2.1	3.4
Cycle Q Clear(g_c), s	2.3	23.8	10.6	1.4	2.1	3.4
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	515	1368	2023	902	211	615
V/C Ratio(X)	0.37	0.78	0.47	0.08	0.29	0.28
Avail Cap(c_a), veh/h	1163	2641	3150	1405	535	1123
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	5.1	5.6	8.5	6.5	26.8	21.5
Incr Delay (d2), s/veh	0.2	1.5	0.3	0.1	0.3	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	5.7	3.4	0.4	0.9	2.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	5.3	7.1	8.7	6.5	27.1	21.6
LnGrp LOS	A	A	A	A	C	C
Approach Vol, veh/h		1256	1030		231	
Approach Delay, s/veh		6.8	8.6		23.1	
Approach LOS		A	A		C	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			54.7		11.9	10.8	43.9
Change Period (Y+Rc), s			6.0		4.0	4.0	6.0
Max Green Setting (Gmax), s			94.0		20.0	31.0	59.0
Max Q Clear Time (g_c+I1), s			25.8		5.4	4.3	12.6
Green Ext Time (p_c), s			22.9		0.4	0.3	13.9

Intersection Summary	
HCM 7th Control Delay, s/veh	9.0
HCM 7th LOS	A

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	7	4	44	118	0
Future Vol, veh/h	1	7	4	44	118	0
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	10	6	63	169	0
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.5	7.1	8.4
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	0%	100%
Vol Thru, %	88%	8%	0%
Vol Right, %	0%	92%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	8	48	118
LT Vol	1	0	118
Through Vol	7	4	0
RT Vol	0	44	0
Lane Flow Rate	11	69	169
Geometry Grp	1	1	1
Degree of Util (X)	0.014	0.072	0.2
Departure Headway (Hd)	4.418	3.789	4.273
Convergence, Y/N	Yes	Yes	Yes
Cap	815	951	839
Service Time	2.42	1.789	2.302
HCM Lane V/C Ratio	0.013	0.073	0.201
HCM Control Delay, s/veh	7.5	7.1	8.4
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.2	0.7

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	1	1	2	0	3	1	976	6	12	1093	3
Future Vol, veh/h	6	1	1	2	0	3	1	976	6	12	1093	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	310	-	-	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	70	70	70	81	81	81	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	1	1	3	0	4	1	1205	7	14	1317	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1951	2561	658	1899	2561	606	1320	0	0	1212	0	0
Stage 1	1346	1346	-	1211	1211	-	-	-	-	-	-	-
Stage 2	605	1215	-	688	1349	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	39	26	407	42	26	440	519	-	-	571	-	-
Stage 1	160	218	-	193	253	-	-	-	-	-	-	-
Stage 2	451	252	-	403	217	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	37	25	407	41	25	440	519	-	-	571	-	-
Mov Cap-2 Maneuver	117	114	-	134	116	-	-	-	-	-	-	-
Stage 1	155	213	-	193	253	-	-	-	-	-	-	-
Stage 2	446	252	-	390	212	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	35.01	21.18	0.01	0.12
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	519	-	-	128	230	571	-	-
HCM Lane V/C Ratio	0.002	-	-	0.063	0.031	0.025	-	-
HCM Ctrl Dly (s/v)	12	-	-	35	21.2	11.5	-	-
HCM Lane LOS	B	-	-	E	C	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0.1	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	53	79	41	1159	1231	26
v/c Ratio	0.14	0.32	0.22	0.42	0.51	0.02
Control Delay (s/veh)	28.7	12.2	32.1	3.4	8.2	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	28.7	12.2	32.1	3.4	8.2	2.8
Queue Length 50th (ft)	9	0	14	64	142	0
Queue Length 95th (ft)	25	28	44	88	218	8
Internal Link Dist (ft)	1039			711	656	
Turn Bay Length (ft)	240	240	260			415
Base Capacity (vph)	2458	1156	654	3539	3335	1493
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.07	0.06	0.33	0.37	0.02

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	41	62	33	939	0	1071	23
Future Volume (veh/h)	41	62	33	939	0	1071	23
Initial Q (Qb), veh	0	0	0	0		0	0
Lane Width Adj.	1.00	1.00	1.00	1.00		1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870		1870	1870
Adj Flow Rate, veh/h	53	79	41	1159		1231	26
Peak Hour Factor	0.78	0.78	0.81	0.81		0.87	0.87
Percent Heavy Veh, %	2	2	2	2		2	2
Cap, veh/h	289	133	77	2558		2058	918
Arrive On Green	0.08	0.08	0.04	0.72		0.58	0.58
Sat Flow, veh/h	3456	1585	1781	3647		3647	1585
Grp Volume(v), veh/h	53	79	41	1159		1231	26
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1777		1777	1585
Q Serve(g_s), s	0.7	2.4	1.1	6.8		11.2	0.4
Cycle Q Clear(g_c), s	0.7	2.4	1.1	6.8		11.2	0.4
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	289	133	77	2558		2058	918
V/C Ratio(X)	0.18	0.60	0.53	0.45		0.60	0.03
Avail Cap(c_a), veh/h	2773	1272	711	4285		4285	1911
HCM Platoon Ratio	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	21.5	22.2	23.6	2.9		6.8	4.5
Incr Delay (d2), s/veh	0.2	3.2	2.1	0.2		0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.1	0.5	1.0		2.9	0.1
Unsig. Movement Delay, s/veh							
LnGrp Delay(d), s/veh	21.7	25.4	25.7	3.1		7.2	4.5
LnGrp LOS	C	C	C	A		A	A
Approach Vol, veh/h	132			1200		1257	
Approach Delay, s/veh	23.9			3.9		7.1	
Approach LOS	C			A		A	

Timer - Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		41.5		8.8	7.1	34.5	
Change Period (Y+Rc), s		5.3		4.6	4.9	5.3	
Max Green Setting (Gmax), s		60.7		40.4	20.1	60.7	
Max Q Clear Time (g_c+I1), s		8.8		4.4	3.1	13.2	
Green Ext Time (p_c), s		14.6		0.3	0.0	15.9	

Intersection Summary	
HCM 7th Control Delay, s/veh	6.5
HCM 7th LOS	A

Notes

User approved ignoring U-Turning movement.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	118	139	54	86	121	58	55	1066	83	1107	180
v/c Ratio	0.52	0.58	0.20	0.42	0.56	0.23	0.37	0.65	0.47	0.61	0.21
Control Delay (s/veh)	59.5	61.4	7.5	58.3	62.8	9.4	63.9	27.2	63.7	24.5	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	59.5	61.4	7.5	58.3	62.8	9.4	63.9	27.2	63.7	24.5	11.1
Queue Length 50th (ft)	90	107	0	68	98	0	43	316	64	323	39
Queue Length 95th (ft)	154	177	19	124	166	22	95	497	127	493	100
Internal Link Dist (ft)		813			837			762		707	
Turn Bay Length (ft)	580		300	325		325	530		500		215
Base Capacity (vph)	624	656	605	592	621	605	365	1800	365	1880	880
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.21	0.09	0.15	0.19	0.10	0.15	0.59	0.23	0.59	0.20

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	99	117	45	80	92	48	49	793	156	73	974	158
Future Volume (veh/h)	99	117	45	80	92	48	49	793	156	73	974	158
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	118	139	54	96	111	58	55	891	175	83	1107	180
Peak Hour Factor	0.84	0.84	0.84	0.83	0.83	0.83	0.89	0.89	0.89	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	199	209	177	168	177	150	74	1495	294	110	1866	832
Arrive On Green	0.11	0.11	0.11	0.09	0.09	0.09	0.04	0.50	0.50	0.06	0.53	0.53
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	2961	581	1781	3554	1585
Grp Volume(v), veh/h	118	139	54	96	111	58	55	535	531	83	1107	180
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1766	1781	1777	1585
Q Serve(g_s), s	5.7	6.4	2.8	4.7	5.2	3.1	2.8	19.2	19.3	4.1	19.4	5.5
Cycle Q Clear(g_c), s	5.7	6.4	2.8	4.7	5.2	3.1	2.8	19.2	19.3	4.1	19.4	5.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.33	1.00		1.00
Lane Grp Cap(c), veh/h	199	209	177	168	177	150	74	897	892	110	1866	832
V/C Ratio(X)	0.59	0.66	0.30	0.57	0.63	0.39	0.75	0.60	0.60	0.76	0.59	0.22
Avail Cap(c_a), veh/h	809	849	720	809	849	720	473	1190	1183	473	2380	1062
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.1	38.5	36.9	39.1	39.4	38.4	42.8	15.8	15.8	41.7	14.8	11.5
Incr Delay (d2), s/veh	3.4	4.3	1.2	3.6	4.4	2.0	16.3	2.3	2.3	12.0	1.1	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	3.2	1.1	2.2	2.6	1.3	1.5	7.9	7.8	2.2	7.5	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.5	42.8	38.0	42.8	43.7	40.4	59.1	18.1	18.1	53.7	15.9	12.0
LnGrp LOS	D	D	D	D	D	D	E	B	B	D	B	B
Approach Vol, veh/h		311			265			1121			1370	
Approach Delay, s/veh		41.5			42.6			20.1			17.7	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.6	52.1		15.1	7.7	53.9		13.5				
Change Period (Y+Rc), s	4.0	6.5		5.0	4.0	6.5		5.0				
Max Green Setting (Gmax), s	24.0	60.5		41.0	24.0	60.5		41.0				
Max Q Clear Time (g_c+I1), s	6.1	21.3		8.4	4.8	21.4		7.2				
Green Ext Time (p_c), s	0.2	22.2		1.7	0.1	26.0		1.4				

Intersection Summary		
HCM 7th Control Delay, s/veh	23.1	
HCM 7th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Intersection Delay, s/veh	84.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	1	293	0	24	0	303	264	21	468	0
Future Vol, veh/h	0	0	1	293	0	24	0	303	264	21	468	0
Peak Hour Factor	0.70	0.70	0.70	0.91	0.91	0.91	0.80	0.80	0.80	0.83	0.83	0.83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	1	322	0	26	0	379	330	25	564	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	11.9	26.1	122.5	73.5
HCM LOS	B	D	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	92%	4%
Vol Thru, %	53%	0%	0%	96%
Vol Right, %	47%	100%	8%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	567	1	317	489
LT Vol	0	0	293	21
Through Vol	303	0	0	468
RT Vol	264	1	24	0
Lane Flow Rate	709	1	348	589
Geometry Grp	1	1	1	1
Degree of Util (X)	1.187	0.003	0.695	1.034
Departure Headway (Hd)	6.194	8.882	7.595	6.664
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	595	405	481	548
Service Time	4.194	6.882	5.595	4.664
HCM Lane V/C Ratio	1.192	0.002	0.723	1.075
HCM Control Delay, s/veh	122.5	11.9	26.1	73.5
HCM Lane LOS	F	B	D	F
HCM 95th-tile Q	24.3	0	5.3	15.7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	48	1023	74	247	645	35	79	86	366	18	39	26
v/c Ratio	0.23	0.65	0.10	0.72	0.30	0.04	0.42	0.15	0.65	0.09	0.20	0.10
Control Delay (s/veh)	69.0	30.7	2.6	63.3	13.3	0.2	69.7	54.1	11.8	69.3	64.4	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	69.0	30.7	2.6	63.3	13.3	0.2	69.7	54.1	11.8	69.3	64.4	0.8
Queue Length 50th (ft)	20	342	0	194	135	0	64	34	0	7	30	0
Queue Length 95th (ft)	50	517	18	350	201	1	135	68	76	24	80	0
Internal Link Dist (ft)		1037			966			719			726	
Turn Bay Length (ft)	250		215	325		235	145		145	230		
Base Capacity (vph)	1167	2264	1047	857	2686	1218	301	1073	735	583	565	547
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.45	0.07	0.29	0.24	0.03	0.26	0.08	0.50	0.03	0.07	0.05

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	941	68	230	600	33	68	74	315	16	34	23
Future Volume (veh/h)	44	941	68	230	600	33	68	74	315	16	34	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	48	1023	74	247	645	35	79	86	366	18	39	26
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.86	0.86	0.86	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	148	1447	646	273	1840	821	100	876	391	88	404	342
Arrive On Green	0.04	0.41	0.41	0.15	0.52	0.52	0.06	0.25	0.25	0.03	0.22	0.22
Sat Flow, veh/h	3456	3554	1585	1781	3554	1585	1781	3554	1585	3456	1870	1585
Grp Volume(v), veh/h	48	1023	74	247	645	35	79	86	366	18	39	26
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1777	1585	1781	1777	1585	1728	1870	1585
Q Serve(g_s), s	1.9	32.9	4.0	18.7	14.7	1.5	6.0	2.6	31.1	0.7	2.3	1.8
Cycle Q Clear(g_c), s	1.9	32.9	4.0	18.7	14.7	1.5	6.0	2.6	31.1	0.7	2.3	1.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	148	1447	646	273	1840	821	100	876	391	88	404	342
V/C Ratio(X)	0.32	0.71	0.11	0.90	0.35	0.04	0.79	0.10	0.94	0.21	0.10	0.08
Avail Cap(c_a), veh/h	1007	1949	869	740	1949	869	260	924	412	503	486	412
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.8	33.9	25.3	57.1	19.5	16.3	64.0	39.9	50.7	65.5	43.1	42.9
Incr Delay (d2), s/veh	0.5	1.8	0.2	4.5	0.3	0.1	5.3	0.1	28.9	0.4	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	14.5	1.6	8.8	6.2	0.6	2.9	1.1	15.4	0.3	1.1	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	64.2	35.7	25.5	61.6	19.8	16.4	69.3	40.0	79.6	66.0	43.5	43.3
LnGrp LOS	E	D	C	E	B	B	E	D	E	E	D	D
Approach Vol, veh/h		1145			927			531			83	
Approach Delay, s/veh		36.2			30.8			71.6			48.3	
Approach LOS		D			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.7	35.9	26.1	62.6	8.5	40.1	10.9	77.8
Change Period (Y+Rc), s	5.0	6.3	5.0	6.7	5.0	6.3	5.0	6.7
Max Green Setting (Gmax), s	20.0	35.7	57.0	75.3	20.0	35.7	40.0	75.3
Max Q Clear Time (g_c+I1), s	8.0	4.3	20.7	34.9	2.7	33.1	3.9	16.7
Green Ext Time (p_c), s	0.1	0.7	0.4	21.0	0.0	0.8	0.1	12.8

Intersection Summary	
HCM 7th Control Delay, s/veh	41.7
HCM 7th LOS	D



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	101	1331	896	71	75	81
v/c Ratio	0.42	0.50	0.43	0.07	0.34	0.30
Control Delay (s/veh)	36.6	5.3	12.2	3.1	36.4	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	36.6	5.3	12.2	3.1	36.4	12.2
Queue Length 50th (ft)	37	110	123	0	28	0
Queue Length 95th (ft)	103	177	217	19	68	25
Internal Link Dist (ft)		890	754		855	
Turn Bay Length (ft)	275			240		
Base Capacity (vph)	553	3436	2926	1321	553	550
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.39	0.31	0.05	0.14	0.15

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	89	1171	824	65	55	59
Future Volume (veh/h)	89	1171	824	65	55	59
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	101	1331	896	71	75	81
Peak Hour Factor	0.88	0.88	0.92	0.92	0.73	0.73
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	160	2512	1888	842	179	160
Arrive On Green	0.09	0.71	0.53	0.53	0.10	0.10
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	101	1331	896	71	75	81
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585
Q Serve(g_s), s	3.6	11.5	10.3	1.4	2.6	3.2
Cycle Q Clear(g_c), s	3.6	11.5	10.3	1.4	2.6	3.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	160	2512	1888	842	179	160
V/C Ratio(X)	0.63	0.53	0.47	0.08	0.42	0.51
Avail Cap(c_a), veh/h	555	4398	2986	1332	555	494
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.7	4.5	9.6	7.5	27.6	27.9
Incr Delay (d2), s/veh	1.5	0.4	0.4	0.1	0.6	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	2.7	3.5	0.4	1.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	30.3	4.9	10.0	7.6	28.2	28.8
LnGrp LOS	C	A	B	A	C	C
Approach Vol, veh/h		1432	967		156	
Approach Delay, s/veh		6.7	9.8		28.5	
Approach LOS		A	A		C	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	53.3	12.2	11.5	41.8
Change Period (Y+Rc), s	7.0	5.6	5.6	7.0
Max Green Setting (Gmax), s	81.0	20.4	20.4	55.0
Max Q Clear Time (g_c+I1), s	13.5	5.2	5.6	12.3
Green Ext Time (p_c), s	32.8	0.2	0.1	16.3

Intersection Summary	
HCM 7th Control Delay, s/veh	9.2
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	184	1190	14	1	806	101	7	19	1	83	31	116
v/c Ratio	0.57	0.52	0.01	0.01	0.53	0.14	0.04	0.06	0.00	0.35	0.10	0.31
Control Delay (s/veh)	42.2	10.0	0.0	48.0	19.4	4.3	47.4	41.8	0.0	44.0	35.2	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.2	10.0	0.0	48.0	19.4	4.3	47.4	41.8	0.0	44.0	35.2	10.3
Queue Length 50th (ft)	72	87	0	0	123	0	3	7	0	34	12	0
Queue Length 95th (ft)	208	345	0	7	276	30	17	30	0	110	49	49
Internal Link Dist (ft)		1187			2532			760			553	
Turn Bay Length (ft)	240		245	240		240	240		245	200		205
Base Capacity (vph)	487	3110	1399	487	3110	1404	487	538	511	487	545	545
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.38	0.01	0.00	0.26	0.07	0.01	0.04	0.00	0.17	0.06	0.21

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	162	1047	12	1	782	98	5	13	1	73	27	102
Future Volume (veh/h)	162	1047	12	1	782	98	5	13	1	73	27	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	184	1190	14	1	806	101	7	19	1	83	31	116
Peak Hour Factor	0.88	0.88	0.88	0.97	0.97	0.97	0.70	0.70	0.70	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	229	2114	943	3	1665	743	23	104	88	144	231	196
Arrive On Green	0.13	0.59	0.59	0.00	0.47	0.47	0.01	0.06	0.06	0.08	0.12	0.12
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	184	1190	14	1	806	101	7	19	1	83	31	116
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	6.9	14.0	0.2	0.0	10.7	2.5	0.3	0.7	0.0	3.1	1.0	4.7
Cycle Q Clear(g_c), s	6.9	14.0	0.2	0.0	10.7	2.5	0.3	0.7	0.0	3.1	1.0	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	229	2114	943	3	1665	743	23	104	88	144	231	196
V/C Ratio(X)	0.81	0.56	0.01	0.29	0.48	0.14	0.31	0.18	0.01	0.57	0.13	0.59
Avail Cap(c_a), veh/h	519	3899	1739	519	3899	1739	519	572	485	519	556	471
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.1	8.5	5.7	34.2	12.5	10.4	33.6	30.9	30.6	30.4	26.8	28.4
Incr Delay (d2), s/veh	2.5	0.5	0.0	16.5	0.4	0.2	2.8	1.8	0.1	1.3	0.3	3.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	4.4	0.1	0.0	3.9	0.8	0.1	0.3	0.0	1.3	0.5	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.6	8.9	5.7	50.7	13.0	10.5	36.4	32.7	30.7	31.7	27.1	31.9
LnGrp LOS	C	A	A	D	B	B	D	C	C	C	C	C
Approach Vol, veh/h		1388			908			27			230	
Approach Delay, s/veh		11.9			12.7			33.6			31.2	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	8.4	4.1	46.5	4.9	13.1	12.8	37.9
Change Period (Y+Rc), s	4.0	* 4.6	4.0	5.7	4.0	4.6	4.0	5.7
Max Green Setting (Gmax), s	20.0	* 21	20.0	75.3	20.0	20.4	20.0	75.3
Max Q Clear Time (g_c+I1), s	5.1	2.7	2.0	16.0	2.3	6.7	8.9	12.7
Green Ext Time (p_c), s	0.1	0.1	0.0	24.8	0.0	0.5	0.2	15.1

Intersection Summary	
HCM 7th Control Delay, s/veh	14.2
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	95	1312	1279	176	357	65
v/c Ratio	0.59	0.66	0.84	0.23	0.73	0.13
Control Delay (s/veh)	44.3	11.1	23.9	3.4	28.2	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	44.3	11.1	23.9	3.4	28.2	5.5
Queue Length 50th (ft)	33	148	213	0	110	0
Queue Length 95th (ft)	#96	232	#365	32	189	22
Internal Link Dist (ft)		2532	278		450	
Turn Bay Length (ft)	200			200	150	
Base Capacity (vph)	162	2088	1516	778	609	588
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.63	0.84	0.23	0.59	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	87	1207	1177	162	328	60
Future Volume (veh/h)	87	1207	1177	162	328	60
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	95	1312	1279	176	357	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	129	2066	1499	668	434	386
Arrive On Green	0.07	0.58	0.42	0.42	0.24	0.24
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	95	1312	1279	176	357	65
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585
Q Serve(g_s), s	2.7	12.6	16.7	3.7	9.8	1.7
Cycle Q Clear(g_c), s	2.7	12.6	16.7	3.7	9.8	1.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	129	2066	1499	668	434	386
V/C Ratio(X)	0.74	0.64	0.85	0.26	0.82	0.17
Avail Cap(c_a), veh/h	173	2223	1567	699	651	579
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.4	7.2	13.4	9.7	18.4	15.3
Incr Delay (d2), s/veh	10.6	0.5	4.6	0.2	5.3	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	3.4	6.3	1.1	4.2	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	34.1	7.7	18.1	9.9	23.7	15.5
LnGrp LOS	C	A	B	A	C	B
Approach Vol, veh/h		1407	1455		422	
Approach Delay, s/veh		9.5	17.1		22.4	
Approach LOS		A	B		C	

Timer - Assigned Phs		4		6	7	8
Phs Duration (G+Y+Rc), s		34.4		17.0	8.2	26.2
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		32.2		18.8	5.0	22.7
Max Q Clear Time (g_c+I1), s		14.6		11.8	4.7	18.7
Green Ext Time (p_c), s		9.3		0.8	0.0	3.0

Intersection Summary	
HCM 7th Control Delay, s/veh	14.5
HCM 7th LOS	B



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	454	1197	284	1037	400	45	808	195	290	778	302
v/c Ratio	0.81	0.94	0.72	0.94	0.62	0.44	1.20	0.48	0.85	0.65	0.41
Control Delay (s/veh)	71.2	60.0	74.3	65.2	24.5	82.8	150.6	25.2	80.2	44.6	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	71.2	60.0	74.3	65.2	24.5	82.8	150.6	25.2	80.2	44.6	5.5
Queue Length 50th (ft)	215	572	135	502	144	42	~484	56	267	332	0
Queue Length 95th (ft)	299	#860	202	#783	306	93	#730	154	398	451	69
Internal Link Dist (ft)		1047		306			1367			1181	
Turn Bay Length (ft)	270		240		240	250		250	250		350
Base Capacity (vph)	951	1272	951	1103	645	245	676	404	478	1217	742
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.94	0.30	0.94	0.62	0.18	1.20	0.48	0.61	0.64	0.41

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	422	1077	36	275	1006	388	43	768	185	278	747	290
Future Volume (veh/h)	422	1077	36	275	1006	388	43	768	185	278	747	290
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	454	1158	39	284	1037	400	45	808	195	290	778	302
Peak Hour Factor	0.93	0.93	0.93	0.97	0.97	0.97	0.95	0.95	0.95	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	516	1310	44	342	1148	512	64	716	319	316	1218	543
Arrive On Green	0.15	0.37	0.37	0.10	0.32	0.32	0.04	0.20	0.20	0.18	0.34	0.34
Sat Flow, veh/h	3456	3508	118	3456	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	454	586	611	284	1037	400	45	808	195	290	778	302
Grp Sat Flow(s),veh/h/ln	1728	1777	1849	1728	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	17.6	42.3	42.3	11.1	38.2	31.3	3.4	27.6	15.4	21.9	25.3	21.2
Cycle Q Clear(g_c), s	17.6	42.3	42.3	11.1	38.2	31.3	3.4	27.6	15.4	21.9	25.3	21.2
Prop In Lane	1.00		0.06	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	516	664	691	342	1148	512	64	716	319	316	1218	543
V/C Ratio(X)	0.88	0.88	0.88	0.83	0.90	0.78	0.70	1.13	0.61	0.92	0.64	0.56
Avail Cap(c_a), veh/h	1008	664	691	1008	1167	520	260	716	319	507	1218	543
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.1	40.2	40.2	60.6	44.3	42.0	65.4	54.7	49.8	55.4	37.9	36.6
Incr Delay (d2), s/veh	2.0	14.0	13.6	2.0	10.3	8.5	5.2	75.2	4.2	10.6	1.4	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	20.9	21.7	5.0	18.4	13.4	1.7	19.8	6.5	10.8	11.3	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.0	54.2	53.8	62.6	54.7	50.5	70.5	129.9	54.1	66.0	39.3	38.3
LnGrp LOS	E	D	D	E	D	D	E	F	D	E	D	D
Approach Vol, veh/h		1651			1721			1048			1370	
Approach Delay, s/veh		55.4			55.0			113.2			44.7	
Approach LOS		E			D			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.3	34.0	17.6	57.2	8.9	53.4	24.5	50.3
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	39.0	27.6	40.0	45.0	20.0	46.6	40.0	45.0
Max Q Clear Time (g_c+I1), s	23.9	29.6	13.1	44.3	5.4	27.3	19.6	40.2
Green Ext Time (p_c), s	0.4	0.0	0.5	0.6	0.0	9.5	0.9	4.1

Intersection Summary	
HCM 7th Control Delay, s/veh	63.2
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	1494	42	19	1572	19	31	3	14	15	7	61
Future Vol, veh/h	45	1494	42	19	1572	19	31	3	14	15	7	61
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	89	89	89	86	86	86	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	1624	46	21	1766	21	36	3	16	19	9	76

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1788	0	0	1670	0	0	2652	3552	1624	3543	3587	894
Stage 1	-	-	-	-	-	-	1722	1722	-	1820	1820	-
Stage 2	-	-	-	-	-	-	930	1830	-	1723	1767	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	344	-	-	383	-	-	~ 13	6	126	~ 3	~ 5	285
Stage 1	-	-	-	-	-	-	113	143	-	81	128	-
Stage 2	-	-	-	-	-	-	288	126	-	112	136	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	344	-	-	383	-	-	~ 7	5	126	~ 2	~ 4	285
Mov Cap-2 Maneuver	-	-	-	-	-	-	73	56	-	32	51	-
Stage 1	-	-	-	-	-	-	97	123	-	76	121	-
Stage 2	-	-	-	-	-	-	185	119	-	82	117	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.49	0.18	115.31	178.42
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	81	344	-	-	383	-	-	100
HCM Lane V/C Ratio	0.686	0.142	-	-	0.056	-	-	1.035
HCM Ctrl Dly (s/v)	115.3	17.2	-	-	15	-	-	178.4
HCM Lane LOS	F	C	-	-	B	-	-	F
HCM 95th %tile Q(veh)	3.3	0.5	-	-	0.2	-	-	6.5

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	178	1441	1541	75	44	184
v/c Ratio	0.52	0.89	0.60	0.06	0.32	0.35
Control Delay (s/veh)	9.4	15.7	9.8	2.7	56.0	34.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	9.4	15.7	9.8	2.7	56.0	34.5
Queue Length 50th (ft)	14	532	256	4	31	56
Queue Length 95th (ft)	58	#1296	418	22	68	86
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	629	1616	2568	1163	320	1046
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.89	0.60	0.06	0.14	0.18

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	171	1383	1418	69	42	175
Future Volume (veh/h)	171	1383	1418	69	42	175
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	178	1441	1541	75	44	184
Peak Hour Factor	0.96	0.96	0.92	0.92	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	342	1545	2575	1149	146	408
Arrive On Green	0.06	0.83	0.72	0.72	0.08	0.08
Sat Flow, veh/h	1781	1870	3647	1585	1781	2790
Grp Volume(v), veh/h	178	1441	1541	75	44	184
Grp Sat Flow(s),veh/h/ln	1781	1870	1777	1585	1781	1395
Q Serve(g_s), s	2.3	63.3	22.8	1.5	2.5	6.5
Cycle Q Clear(g_c), s	2.3	63.3	22.8	1.5	2.5	6.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	342	1545	2575	1149	146	408
V/C Ratio(X)	0.52	0.93	0.60	0.07	0.30	0.45
Avail Cap(c_a), veh/h	737	1622	2575	1149	329	694
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.8	7.2	7.3	4.3	46.8	42.3
Incr Delay (d2), s/veh	0.5	10.3	0.5	0.0	0.4	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	19.2	7.5	0.4	1.1	5.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	9.3	17.4	7.7	4.3	47.3	42.6
LnGrp LOS	A	B	A	A	D	D
Approach Vol, veh/h		1619	1616		228	
Approach Delay, s/veh		16.5	7.6		43.5	
Approach LOS		B	A		D	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			95.5		12.9	11.0	84.5
Change Period (Y+Rc), s			6.0		4.0	4.0	6.0
Max Green Setting (Gmax), s			94.0		20.0	31.0	59.0
Max Q Clear Time (g_c+I1), s			65.3		8.5	4.3	24.8
Green Ext Time (p_c), s			24.2		0.3	0.2	22.5

Intersection Summary	
HCM 7th Control Delay, s/veh	14.1
HCM 7th LOS	B

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	3	5	49	52	0
Future Vol, veh/h	0	3	5	49	52	0
Peak Hour Factor	0.75	0.75	0.81	0.81	0.70	0.70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	6	60	74	0
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.2	6.8	7.7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	100%
Vol Thru, %	100%	9%	0%
Vol Right, %	0%	91%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	3	54	52
LT Vol	0	0	52
Through Vol	3	5	0
RT Vol	0	49	0
Lane Flow Rate	4	67	74
Geometry Grp	1	1	1
Degree of Util (X)	0.005	0.065	0.088
Departure Headway (Hd)	4.115	3.523	4.257
Convergence, Y/N	Yes	Yes	Yes
Cap	865	1010	844
Service Time	2.164	1.567	2.271
HCM Lane V/C Ratio	0.005	0.066	0.088
HCM Control Delay, s/veh	7.2	6.8	7.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.2	0.3

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	1	1	5	0	4	2	978	5	7	1046	6
Future Vol, veh/h	6	1	1	5	0	4	2	978	5	7	1046	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	310	-	-	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	75	75	75	97	97	97	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	1	1	7	0	5	2	1008	5	8	1125	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1648	2157	562	1593	2161	507	1131	0	0	1013	0	0
Stage 1	1140	1140	-	1015	1015	-	-	-	-	-	-	-
Stage 2	508	1018	-	578	1146	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	65	47	470	72	47	511	613	-	-	680	-	-
Stage 1	214	274	-	255	314	-	-	-	-	-	-	-
Stage 2	515	313	-	468	272	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	64	46	470	70	46	511	613	-	-	680	-	-
Mov Cap-2 Maneuver	159	152	-	178	152	-	-	-	-	-	-	-
Stage 1	212	271	-	254	313	-	-	-	-	-	-	-
Stage 2	508	312	-	459	269	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	27.38	20.1	0.02	0.07
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	613	-	-	172	250	680	-	-
HCM Lane V/C Ratio	0.003	-	-	0.066	0.048	0.011	-	-
HCM Ctrl Dly (s/v)	10.9	-	-	27.4	20.1	10.4	-	-
HCM Lane LOS	B	-	-	D	C	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	43	60	27	975	1058	36
v/c Ratio	0.10	0.24	0.14	0.36	0.43	0.03
Control Delay (s/veh)	23.9	11.0	26.5	3.4	6.8	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	23.9	11.0	26.5	3.4	6.8	2.8
Queue Length 50th (ft)	5	0	7	47	53	0
Queue Length 95th (ft)	16	18	32	80	176	10
Internal Link Dist (ft)	1039			711	656	
Turn Bay Length (ft)	240	240	260			415
Base Capacity (vph)	2736	1273	741	3539	3483	1558
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.05	0.04	0.28	0.30	0.02

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	30	42	26	946	0	1016	35
Future Volume (veh/h)	30	42	26	946	0	1016	35
Initial Q (Qb), veh	0	0	0	0		0	0
Lane Width Adj.	1.00	1.00	1.00	1.00		1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870		1870	1870
Adj Flow Rate, veh/h	43	60	27	975		1058	36
Peak Hour Factor	0.70	0.70	0.97	0.97		0.96	0.96
Percent Heavy Veh, %	2	2	2	2		2	2
Cap, veh/h	285	131	57	2441		1922	857
Arrive On Green	0.08	0.08	0.03	0.69		0.54	0.54
Sat Flow, veh/h	3456	1585	1781	3647		3647	1585
Grp Volume(v), veh/h	43	60	27	975		1058	36
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1777		1777	1585
Q Serve(g_s), s	0.5	1.5	0.6	5.1		8.4	0.5
Cycle Q Clear(g_c), s	0.5	1.5	0.6	5.1		8.4	0.5
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	285	131	57	2441		1922	857
V/C Ratio(X)	0.15	0.46	0.47	0.40		0.55	0.04
Avail Cap(c_a), veh/h	3253	1492	834	5026		5026	2242
HCM Platoon Ratio	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	18.3	18.8	20.4	2.9		6.4	4.6
Incr Delay (d2), s/veh	0.2	1.9	2.2	0.1		0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.1	0.3	0.6		2.0	0.1
Unsig. Movement Delay, s/veh							
LnGrp Delay(d), s/veh	18.5	20.6	22.7	3.0		6.7	4.7
LnGrp LOS	B	C	C	A		A	A
Approach Vol, veh/h	103			1002		1094	
Approach Delay, s/veh	19.7			3.6		6.7	
Approach LOS	B			A		A	

Timer - Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		34.8		8.1	6.3	28.5	
Change Period (Y+Rc), s		5.3		4.6	4.9	5.3	
Max Green Setting (Gmax), s		60.7		40.4	20.1	60.7	
Max Q Clear Time (g_c+I1), s		7.1		3.5	2.6	10.4	
Green Ext Time (p_c), s		11.2		0.2	0.0	12.9	

Intersection Summary	
HCM 7th Control Delay, s/veh	5.9
HCM 7th LOS	A

Notes
User approved ignoring U-Turning movement.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	129	98	65	137	142	44	46	995	76	1014	110
v/c Ratio	0.55	0.40	0.24	0.58	0.57	0.15	0.32	0.64	0.43	0.59	0.14
Control Delay (s/veh)	60.1	55.1	11.8	60.1	59.4	4.2	62.9	28.2	62.6	25.1	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	60.1	55.1	11.8	60.1	59.4	4.2	62.9	28.2	62.6	25.1	10.0
Queue Length 50th (ft)	94	70	0	105	108	0	34	287	56	285	18
Queue Length 95th (ft)	165	130	30	200	205	12	85	473	118	440	59
Internal Link Dist (ft)		813			837			762		707	
Turn Bay Length (ft)	580		300	325		325	530		500		215
Base Capacity (vph)	650	684	627	617	644	627	380	1892	380	1948	900
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.14	0.10	0.22	0.22	0.07	0.12	0.53	0.20	0.52	0.12

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	81	54	159	117	44	44	857	98	66	882	96
Future Volume (veh/h)	107	81	54	159	117	44	44	857	98	66	882	96
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	129	98	65	140	148	44	46	893	102	76	1014	110
Peak Hour Factor	0.83	0.83	0.83	0.99	0.99	0.99	0.96	0.96	0.96	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	195	204	173	213	223	189	69	1539	176	101	1765	787
Arrive On Green	0.11	0.11	0.11	0.12	0.12	0.12	0.04	0.48	0.48	0.06	0.50	0.50
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3214	367	1781	3554	1585
Grp Volume(v), veh/h	129	98	65	140	148	44	46	494	501	76	1014	110
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1804	1781	1777	1585
Q Serve(g_s), s	6.0	4.3	3.3	6.5	6.6	2.2	2.2	17.4	17.4	3.7	17.4	3.3
Cycle Q Clear(g_c), s	6.0	4.3	3.3	6.5	6.6	2.2	2.2	17.4	17.4	3.7	17.4	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	195	204	173	213	223	189	69	851	864	101	1765	787
V/C Ratio(X)	0.66	0.48	0.38	0.66	0.66	0.23	0.67	0.58	0.58	0.76	0.57	0.14
Avail Cap(c_a), veh/h	841	883	749	841	883	749	492	1238	1257	492	2477	1105
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.1	36.3	35.9	36.5	36.6	34.6	41.2	16.3	16.3	40.4	15.4	11.8
Incr Delay (d2), s/veh	4.6	2.1	1.6	4.2	4.0	0.8	12.7	2.3	2.2	12.9	1.1	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	2.0	1.3	3.0	3.2	0.9	1.2	7.2	7.3	1.9	6.8	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.7	38.4	37.5	40.7	40.6	35.4	53.9	18.6	18.6	53.3	16.5	12.1
LnGrp LOS	D	D	D	D	D	D	D	B	B	D	B	B
Approach Vol, veh/h		292			332			1041			1200	
Approach Delay, s/veh		39.7			39.9			20.1			18.4	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	48.1		14.5	7.4	49.6		15.4				
Change Period (Y+Rc), s	4.0	6.5		5.0	4.0	6.5		5.0				
Max Green Setting (Gmax), s	24.0	60.5		41.0	24.0	60.5		41.0				
Max Q Clear Time (g_c+I1), s	5.7	19.4		8.0	4.2	19.4		8.6				
Green Ext Time (p_c), s	0.2	20.9		1.5	0.1	23.7		1.8				

Intersection Summary		
HCM 7th Control Delay, s/veh	23.7	
HCM 7th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Intersection Delay, s/veh	49.8
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	257	0	43	0	458	184	41	392	0
Future Vol, veh/h	0	0	0	257	0	43	0	458	184	41	392	0
Peak Hour Factor	0.70	0.70	0.70	0.84	0.84	0.84	0.99	0.99	0.99	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	306	0	51	0	463	186	43	413	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	0	23.7	78.2	29.9
HCM LOS	-	C	F	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	86%	9%
Vol Thru, %	71%	100%	0%	91%
Vol Right, %	29%	0%	14%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	642	0	300	433
LT Vol	0	0	257	41
Through Vol	458	0	0	392
RT Vol	184	0	43	0
Lane Flow Rate	648	0	357	456
Geometry Grp	1	1	1	1
Degree of Util (X)	1.062	0	0.678	0.793
Departure Headway (Hd)	5.895	8.649	7.07	6.483
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	610	0	514	561
Service Time	3.986	6.649	5.07	4.483
HCM Lane V/C Ratio	1.062	0	0.695	0.813
HCM Control Delay, s/veh	78.2	11.6	23.7	29.9
HCM Lane LOS	F	F	C	D
HCM 95th-tile Q	18	0	5.1	7.5

Appendix C

Intersection Analysis Worksheets for Existing (2024) plus Project Phase 1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	12	457	51	389	870	13	68	41	274	22	116	42
v/c Ratio	0.05	0.51	0.11	0.75	0.44	0.01	0.40	0.05	0.50	0.09	0.39	0.13
Control Delay (s/veh)	58.1	38.5	0.8	46.1	16.3	0.0	59.7	39.7	8.6	57.4	49.5	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	58.1	38.5	0.8	46.1	16.3	0.0	59.7	39.7	8.6	57.4	49.5	0.8
Queue Length 50th (ft)	4	141	0	241	162	0	44	12	0	7	72	0
Queue Length 95th (ft)	17	253	3	441	317	0	113	34	79	26	165	0
Internal Link Dist (ft)		1037			966			719			726	
Turn Bay Length (ft)	250		215	325		235	145		145	230		
Base Capacity (vph)	1394	2611	1193	1024	3040	1369	359	1282	748	697	675	635
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.18	0.04	0.38	0.29	0.01	0.19	0.03	0.37	0.03	0.17	0.07

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	416	46	350	783	12	63	38	255	21	111	40
Future Volume (veh/h)	11	416	46	350	783	12	63	38	255	21	111	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	12	457	51	389	870	13	68	41	274	22	116	42
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.93	0.93	0.93	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	70	850	379	432	1639	731	118	752	335	116	334	283
Arrive On Green	0.02	0.24	0.24	0.24	0.46	0.46	0.07	0.21	0.21	0.03	0.18	0.18
Sat Flow, veh/h	3456	3554	1585	1781	3554	1585	1781	3554	1585	3456	1870	1585
Grp Volume(v), veh/h	12	457	51	389	870	13	68	41	274	22	116	42
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1777	1585	1781	1777	1585	1728	1870	1585
Q Serve(g_s), s	0.3	9.4	2.1	17.8	14.7	0.4	3.1	0.8	13.9	0.5	4.6	1.9
Cycle Q Clear(g_c), s	0.3	9.4	2.1	17.8	14.7	0.4	3.1	0.8	13.9	0.5	4.6	1.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	70	850	379	432	1639	731	118	752	335	116	334	283
V/C Ratio(X)	0.17	0.54	0.13	0.90	0.53	0.02	0.58	0.05	0.82	0.19	0.35	0.15
Avail Cap(c_a), veh/h	1643	3181	1419	1207	3181	1419	424	1508	673	822	794	673
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.5	27.9	25.2	30.9	16.2	12.3	38.1	26.4	31.6	39.5	30.2	29.1
Incr Delay (d2), s/veh	0.4	1.5	0.4	2.9	0.7	0.0	1.7	0.0	7.5	0.3	2.4	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	4.1	0.8	7.7	5.8	0.1	1.4	0.3	5.8	0.2	2.2	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.9	29.4	25.6	33.7	16.9	12.3	39.8	26.5	39.1	39.8	32.6	30.1
LnGrp LOS	D	C	C	C	B	B	D	C	D	D	C	C
Approach Vol, veh/h		520			1272			383			180	
Approach Delay, s/veh		29.3			22.0			37.9			32.9	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	21.3	25.4	26.8	7.8	24.1	6.7	45.5
Change Period (Y+Rc), s	5.0	6.3	5.0	6.7	5.0	6.3	5.0	6.7
Max Green Setting (Gmax), s	20.0	35.7	57.0	75.3	20.0	35.7	40.0	75.3
Max Q Clear Time (g_c+I1), s	5.1	6.6	19.8	11.4	2.5	15.9	2.3	16.7
Green Ext Time (p_c), s	0.1	2.0	0.6	8.7	0.0	1.9	0.0	18.9

Intersection Summary	
HCM 7th Control Delay, s/veh	27.0
HCM 7th LOS	C



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	44	694	1131	30	80	168
v/c Ratio	0.22	0.29	0.55	0.03	0.36	0.48
Control Delay (s/veh)	38.3	4.4	11.0	3.3	38.3	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	38.3	4.4	11.0	3.3	38.3	11.7
Queue Length 50th (ft)	19	47	168	0	35	0
Queue Length 95th (ft)	59	78	254	11	91	59
Internal Link Dist (ft)		890	754		855	
Turn Bay Length (ft)	275			240		
Base Capacity (vph)	548	3412	2823	1268	548	606
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.20	0.40	0.02	0.15	0.28

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	41	652	995	26	72	151
Future Volume (veh/h)	41	652	995	26	72	151
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	44	694	1131	30	80	168
Peak Hour Factor	0.94	0.94	0.88	0.88	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	103	2416	1918	855	241	214
Arrive On Green	0.06	0.68	0.54	0.54	0.14	0.14
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	44	694	1131	30	80	168
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585
Q Serve(g_s), s	1.6	5.3	14.6	0.6	2.8	7.0
Cycle Q Clear(g_c), s	1.6	5.3	14.6	0.6	2.8	7.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	103	2416	1918	855	241	214
V/C Ratio(X)	0.43	0.29	0.59	0.04	0.33	0.78
Avail Cap(c_a), veh/h	533	4224	2868	1279	533	475
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.0	4.3	10.6	7.4	26.7	28.5
Incr Delay (d2), s/veh	1.0	0.1	0.6	0.0	0.3	2.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.4	5.0	0.2	1.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	32.0	4.5	11.2	7.4	27.0	30.9
LnGrp LOS	C	A	B	A	C	C
Approach Vol, veh/h		738	1161		248	
Approach Delay, s/veh		6.1	11.1		29.6	
Approach LOS		A	B		C	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	53.3	14.8	9.6	43.8
Change Period (Y+Rc), s	7.0	5.6	5.6	7.0
Max Green Setting (Gmax), s	81.0	20.4	20.4	55.0
Max Q Clear Time (g_c+I1), s	7.3	9.0	3.6	16.6
Green Ext Time (p_c), s	12.1	0.3	0.0	20.1

Intersection Summary	
HCM 7th Control Delay, s/veh	11.5
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	99	675	27	2	922	51	27	27	5	116	36	202
v/c Ratio	0.42	0.33	0.03	0.01	0.56	0.07	0.15	0.08	0.01	0.41	0.11	0.45
Control Delay (s/veh)	45.8	10.3	0.0	47.5	19.2	2.9	47.0	41.8	0.0	43.6	36.5	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	45.8	10.3	0.0	47.5	19.2	2.9	47.0	41.8	0.0	43.6	36.5	9.6
Queue Length 50th (ft)	53	94	0	1	204	0	14	13	0	62	17	0
Queue Length 95th (ft)	127	190	0	10	320	14	40	39	0	143	55	66
Internal Link Dist (ft)		1187			2532			760			553	
Turn Bay Length (ft)	240		245	240		240	240		245	200		205
Base Capacity (vph)	509	3029	1364	509	3029	1364	509	562	531	509	546	607
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.22	0.02	0.00	0.30	0.04	0.05	0.05	0.01	0.23	0.07	0.33

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	614	25	2	821	45	20	20	4	107	33	186
Future Volume (veh/h)	90	614	25	2	821	45	20	20	4	107	33	186
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	99	675	27	2	922	51	27	27	5	116	36	202
Peak Hour Factor	0.91	0.91	0.91	0.89	0.89	0.89	0.73	0.73	0.73	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	1920	856	7	1634	729	72	210	178	157	298	253
Arrive On Green	0.08	0.54	0.54	0.00	0.46	0.46	0.04	0.11	0.11	0.09	0.16	0.16
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	99	675	27	2	922	51	27	27	5	116	36	202
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.9	7.7	0.6	0.1	13.5	1.3	1.1	0.9	0.2	4.5	1.2	8.8
Cycle Q Clear(g_c), s	3.9	7.7	0.6	0.1	13.5	1.3	1.1	0.9	0.2	4.5	1.2	8.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	150	1920	856	7	1634	729	72	210	178	157	298	253
V/C Ratio(X)	0.66	0.35	0.03	0.29	0.56	0.07	0.37	0.13	0.03	0.74	0.12	0.80
Avail Cap(c_a), veh/h	498	3741	1668	498	3741	1668	498	549	465	498	533	452
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.8	9.3	7.7	35.5	14.1	10.8	33.4	28.6	28.3	31.8	25.8	29.0
Incr Delay (d2), s/veh	1.9	0.2	0.0	8.6	0.6	0.1	1.2	0.6	0.1	2.6	0.2	7.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	2.7	0.2	0.1	5.0	0.4	0.5	0.4	0.1	2.0	0.5	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.6	9.6	7.7	44.2	14.7	10.9	34.6	29.2	28.4	34.4	26.0	36.0
LnGrp LOS	C	A	A	D	B	B	C	C	C	C	C	D
Approach Vol, veh/h		801			975			59			354	
Approach Delay, s/veh		12.5			14.6			31.6			34.5	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	12.6	4.3	44.3	6.9	16.0	10.0	38.6
Change Period (Y+Rc), s	4.0	* 4.6	4.0	5.7	4.0	4.6	4.0	5.7
Max Green Setting (Gmax), s	20.0	* 21	20.0	75.3	20.0	20.4	20.0	75.3
Max Q Clear Time (g_c+I1), s	6.5	2.9	2.1	9.7	3.1	10.8	5.9	15.5
Green Ext Time (p_c), s	0.1	0.1	0.0	11.1	0.0	0.7	0.1	17.4

Intersection Summary	
HCM 7th Control Delay, s/veh	17.5
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	53	832	8	16	1084	93	75	184	38
v/c Ratio	0.29	0.42	0.01	0.10	0.61	0.11	0.17	0.58	0.07
Control Delay (s/veh)	33.0	9.1	0.0	30.9	14.0	3.4	5.3	28.2	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.0	9.1	0.0	30.9	14.0	3.4	5.3	28.2	0.3
Queue Length 50th (ft)	19	68	0	6	156	0	0	62	0
Queue Length 95th (ft)	56	186	0	25	267	24	23	124	0
Internal Link Dist (ft)		2532			278		359		450
Turn Bay Length (ft)	200		200	200		200		150	
Base Capacity (vph)	180	2222	1026	164	2005	937	778	624	843
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.37	0.01	0.10	0.54	0.10	0.10	0.29	0.05

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	765	7	15	997	86	21	0	48	169	0	35
Future Volume (veh/h)	49	765	7	15	997	86	21	0	48	169	0	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	53	832	8	16	1084	93	23	0	52	184	0	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	97	1770	789	36	1649	735	155	37	188	415	0	274
Arrive On Green	0.05	0.50	0.50	0.02	0.46	0.46	0.17	0.00	0.17	0.17	0.00	0.17
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	271	212	1092	1352	0	1585
Grp Volume(v), veh/h	53	832	8	16	1084	93	75	0	0	184	0	38
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1575	0	0	1352	0	1585
Q Serve(g_s), s	1.3	6.7	0.1	0.4	10.3	1.5	0.0	0.0	0.0	3.4	0.0	0.9
Cycle Q Clear(g_c), s	1.3	6.7	0.1	0.4	10.3	1.5	1.7	0.0	0.0	5.1	0.0	0.9
Prop In Lane	1.00		1.00	1.00		1.00	0.31		0.69	1.00		1.00
Lane Grp Cap(c), veh/h	97	1770	789	36	1649	735	380	0	0	415	0	274
V/C Ratio(X)	0.55	0.47	0.01	0.44	0.66	0.13	0.20	0.00	0.00	0.44	0.00	0.14
Avail Cap(c_a), veh/h	224	2522	1125	204	2482	1107	1001	0	0	971	0	925
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.1	7.2	5.5	21.2	9.0	6.7	15.7	0.0	0.0	16.9	0.0	15.3
Incr Delay (d2), s/veh	4.8	0.2	0.0	8.4	0.5	0.1	0.3	0.0	0.0	0.7	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.8	0.0	0.2	2.9	0.4	0.6	0.0	0.0	1.6	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.9	7.4	5.5	29.5	9.5	6.7	15.9	0.0	0.0	17.6	0.0	15.5
LnGrp LOS	C	A	A	C	A	A	B			B		B
Approach Vol, veh/h		893			1193			75			222	
Approach Delay, s/veh		8.4			9.5			15.9			17.3	
Approach LOS		A			A			B			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		12.0	5.4	26.3		12.0	6.9	24.8				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		25.5	5.0	31.0		25.5	5.5	30.5				
Max Q Clear Time (g_c+I1), s		3.7	2.4	8.7		7.1	3.3	12.3				
Green Ext Time (p_c), s		0.3	0.0	6.2		0.7	0.0	8.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	10.0
HCM 7th LOS	B



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	295	828	230	700	245	35	797	335	442	986	495
v/c Ratio	0.74	0.79	0.69	0.71	0.42	0.38	1.18	0.70	0.92	0.66	0.55
Control Delay (s/veh)	73.7	52.6	74.7	51.3	11.5	79.9	144.7	28.0	78.1	38.1	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	73.7	52.6	74.7	51.3	11.5	79.9	144.7	28.0	78.1	38.1	8.9
Queue Length 50th (ft)	144	381	112	317	32	34	~489	105	421	411	51
Queue Length 95th (ft)	193	459	163	407	111	72	#626	212	#635	517	143
Internal Link Dist (ft)		1047		306			1367			1181	
Turn Bay Length (ft)	270		240		240	250		250	250		350
Base Capacity (vph)	951	1122	951	1103	631	245	676	479	478	1500	907
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.74	0.24	0.63	0.39	0.14	1.18	0.70	0.92	0.66	0.55

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	257	660	60	209	637	223	30	685	288	380	848	426
Future Volume (veh/h)	257	660	60	209	637	223	30	685	288	380	848	426
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	295	759	69	230	700	245	35	797	335	442	986	495
Peak Hour Factor	0.87	0.87	0.87	0.91	0.91	0.91	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	357	944	86	290	950	424	59	751	335	467	1565	698
Arrive On Green	0.10	0.29	0.29	0.08	0.27	0.27	0.03	0.21	0.21	0.26	0.44	0.44
Sat Flow, veh/h	3456	3294	299	3456	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	295	409	419	230	700	245	35	797	335	442	986	495
Grp Sat Flow(s),veh/h/ln	1728	1777	1816	1728	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	10.9	27.9	27.9	8.5	23.5	17.5	2.5	27.6	27.6	31.8	28.1	33.2
Cycle Q Clear(g_c), s	10.9	27.9	27.9	8.5	23.5	17.5	2.5	27.6	27.6	31.8	28.1	33.2
Prop In Lane	1.00		0.16	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	357	509	521	290	950	424	59	751	335	467	1565	698
V/C Ratio(X)	0.83	0.80	0.80	0.79	0.74	0.58	0.59	1.06	1.00	0.95	0.63	0.71
Avail Cap(c_a), veh/h	1059	612	626	1059	1225	546	273	751	335	532	1565	698
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.4	43.2	43.2	58.7	43.7	41.5	62.3	51.5	51.5	47.3	28.3	29.7
Incr Delay (d2), s/veh	1.9	8.0	7.9	1.9	2.6	2.4	3.5	50.2	49.1	23.8	1.0	3.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	13.4	13.7	3.8	10.7	7.1	1.2	17.5	15.5	17.1	12.1	13.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.3	51.2	51.1	60.6	46.3	43.9	65.8	101.7	100.6	71.1	29.3	33.5
LnGrp LOS	E	D	D	E	D	D	E	F	F	E	C	C
Approach Vol, veh/h		1123			1175			1167			1923	
Approach Delay, s/veh		53.3			48.6			100.3			40.0	
Approach LOS		D			D			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	38.2	34.0	14.9	43.4	8.3	63.9	17.5	40.9
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	39.0	27.6	40.0	45.0	20.0	46.6	40.0	45.0
Max Q Clear Time (g_c+I1), s	33.8	29.6	10.5	29.9	4.5	35.2	12.9	25.5
Green Ext Time (p_c), s	0.4	0.0	0.4	7.3	0.0	8.5	0.5	9.4

Intersection Summary	
HCM 7th Control Delay, s/veh	57.7
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	58	1221	82	14	984	26	34	3	24	15	4	51
Future Vol, veh/h	58	1221	82	14	984	26	34	3	24	15	4	51
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	90	90	90	70	70	70	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	61	1285	86	16	1093	29	49	4	34	18	5	61

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1122	0	0	1372	0	0	1988	2561	1285	2548	2633	561
Stage 1	-	-	-	-	-	-	1407	1407	-	1139	1139	-
Stage 2	-	-	-	-	-	-	580	1153	-	1410	1494	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	620	-	-	498	-	-	~ 41	26	200	~ 16	23	472
Stage 1	-	-	-	-	-	-	171	204	-	215	275	-
Stage 2	-	-	-	-	-	-	468	271	-	171	186	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	620	-	-	498	-	-	~ 29	23	200	~ 11	20	472
Mov Cap-2 Maneuver	-	-	-	-	-	-	133	129	-	70	97	-
Stage 1	-	-	-	-	-	-	155	184	-	208	267	-
Stage 2	-	-	-	-	-	-	387	262	-	125	167	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.49	0.17	55.6	37.61
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	153	620	-	-	498	-	-	192
HCM Lane V/C Ratio	0.568	0.098	-	-	0.031	-	-	0.439
HCM Ctrl Dly (s/v)	55.6	11.4	-	-	12.5	-	-	37.6
HCM Lane LOS	F	B	-	-	B	-	-	E
HCM 95th %tile Q(veh)	2.9	0.3	-	-	0.1	-	-	2

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	191	1085	962	73	61	171
v/c Ratio	0.35	0.69	0.48	0.08	0.22	0.21
Control Delay (s/veh)	3.6	7.4	9.4	2.2	34.6	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	3.6	7.4	9.4	2.2	34.6	8.6
Queue Length 50th (ft)	15	221	120	0	22	6
Queue Length 95th (ft)	35	446	194	16	78	39
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	1116	1838	3091	1392	648	1916
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.59	0.31	0.05	0.09	0.09

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	183	1042	866	66	60	168
Future Volume (veh/h)	183	1042	866	66	60	168
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	191	1085	962	73	61	171
Peak Hour Factor	0.96	0.96	0.90	0.90	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	514	1380	2060	919	206	601
Arrive On Green	0.10	0.74	0.58	0.58	0.12	0.12
Sat Flow, veh/h	1781	1870	3647	1585	1781	2790
Grp Volume(v), veh/h	191	1085	962	73	61	171
Grp Sat Flow(s),veh/h/ln	1781	1870	1777	1585	1781	1395
Q Serve(g_s), s	2.4	24.7	10.7	1.4	2.1	3.5
Cycle Q Clear(g_c), s	2.4	24.7	10.7	1.4	2.1	3.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	514	1380	2060	919	206	601
V/C Ratio(X)	0.37	0.79	0.47	0.08	0.30	0.28
Avail Cap(c_a), veh/h	1145	2574	3070	1369	522	1095
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	5.1	5.6	8.3	6.3	27.7	22.4
Incr Delay (d2), s/veh	0.2	1.5	0.2	0.1	0.3	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	6.0	3.4	0.4	0.9	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	5.2	7.1	8.5	6.4	27.9	22.5
LnGrp LOS	A	A	A	A	C	C
Approach Vol, veh/h		1276	1035		232	
Approach Delay, s/veh		6.8	8.4		23.9	
Approach LOS		A	A		C	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	56.4	11.9	10.8	45.6
Change Period (Y+Rc), s	6.0	4.0	4.0	6.0
Max Green Setting (Gmax), s	94.0	20.0	31.0	59.0
Max Q Clear Time (g_c+I1), s	26.7	5.5	4.4	12.7
Green Ext Time (p_c), s	23.7	0.4	0.3	14.0

Intersection Summary	
HCM 7th Control Delay, s/veh	9.0
HCM 7th LOS	A

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	7	4	45	121	0
Future Vol, veh/h	1	7	4	45	121	0
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	10	6	64	173	0
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.5	7.1	8.4
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	0%	100%
Vol Thru, %	88%	8%	0%
Vol Right, %	0%	92%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	8	49	121
LT Vol	1	0	121
Through Vol	7	4	0
RT Vol	0	45	0
Lane Flow Rate	11	70	173
Geometry Grp	1	1	1
Degree of Util (X)	0.014	0.074	0.205
Departure Headway (Hd)	4.43	3.798	4.274
Convergence, Y/N	Yes	Yes	Yes
Cap	812	949	838
Service Time	2.432	1.798	2.305
HCM Lane V/C Ratio	0.014	0.074	0.206
HCM Control Delay, s/veh	7.5	7.1	8.4
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.2	0.8

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	1	1	2	0	3	1	981	6	12	1110	3
Future Vol, veh/h	6	1	1	2	0	3	1	981	6	12	1110	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	310	-	-	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	70	70	70	81	81	81	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	1	1	3	0	4	1	1211	7	14	1337	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1974	2587	669	1915	2587	609	1341	0	0	1219	0	0
Stage 1	1366	1366	-	1217	1217	-	-	-	-	-	-	-
Stage 2	608	1221	-	698	1370	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	37	25	400	41	25	438	510	-	-	568	-	-
Stage 1	155	213	-	192	252	-	-	-	-	-	-	-
Stage 2	450	251	-	397	212	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	36	24	400	39	24	438	510	-	-	568	-	-
Mov Cap-2 Maneuver	114	112	-	132	114	-	-	-	-	-	-	-
Stage 1	151	208	-	191	251	-	-	-	-	-	-	-
Stage 2	444	250	-	384	207	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	35.81	21.35	0.01	0.12
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	510	-	-	125	227	568	-	-
HCM Lane V/C Ratio	0.002	-	-	0.064	0.031	0.025	-	-
HCM Ctrl Dly (s/v)	12.1	-	-	35.8	21.4	11.5	-	-
HCM Lane LOS	B	-	-	E	C	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0.1	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	53	79	41	1165	1251	26
v/c Ratio	0.14	0.32	0.23	0.42	0.51	0.02
Control Delay (s/veh)	29.4	12.4	32.8	3.4	8.1	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	29.4	12.4	32.8	3.4	8.1	2.7
Queue Length 50th (ft)	9	0	14	65	146	0
Queue Length 95th (ft)	25	28	45	89	222	8
Internal Link Dist (ft)	1039			711	656	
Turn Bay Length (ft)	240	240	260			415
Base Capacity (vph)	2434	1145	647	3539	3308	1481
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.07	0.06	0.33	0.38	0.02

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	41	62	33	944	0	1088	23
Future Volume (veh/h)	41	62	33	944	0	1088	23
Initial Q (Qb), veh	0	0	0	0		0	0
Lane Width Adj.	1.00	1.00	1.00	1.00		1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870		1870	1870
Adj Flow Rate, veh/h	53	79	41	1165		1251	26
Peak Hour Factor	0.78	0.78	0.81	0.81		0.87	0.87
Percent Heavy Veh, %	2	2	2	2		2	2
Cap, veh/h	286	131	77	2570		2076	926
Arrive On Green	0.08	0.08	0.04	0.72		0.58	0.58
Sat Flow, veh/h	3456	1585	1781	3647		3647	1585
Grp Volume(v), veh/h	53	79	41	1165		1251	26
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1777		1777	1585
Q Serve(g_s), s	0.7	2.5	1.2	6.9		11.5	0.4
Cycle Q Clear(g_c), s	0.7	2.5	1.2	6.9		11.5	0.4
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	286	131	77	2570		2076	926
V/C Ratio(X)	0.19	0.60	0.53	0.45		0.60	0.03
Avail Cap(c_a), veh/h	2734	1254	701	4224		4224	1884
HCM Platoon Ratio	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	21.8	22.6	23.9	2.9		6.8	4.5
Incr Delay (d2), s/veh	0.2	3.3	2.1	0.2		0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	2.3	0.5	1.0		3.0	0.1
Unsig. Movement Delay, s/veh							
LnGrp Delay(d), s/veh	22.0	25.9	26.0	3.1		7.2	4.5
LnGrp LOS	C	C	C	A		A	A
Approach Vol, veh/h	132			1206		1277	
Approach Delay, s/veh	24.3			3.8		7.1	
Approach LOS	C			A		A	

Timer - Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		42.2		8.8	7.1	35.1	
Change Period (Y+Rc), s		5.3		4.6	4.9	5.3	
Max Green Setting (Gmax), s		60.7		40.4	20.1	60.7	
Max Q Clear Time (g_c+I1), s		8.9		4.5	3.2	13.5	
Green Ext Time (p_c), s		14.7		0.3	0.0	16.3	

Intersection Summary	
HCM 7th Control Delay, s/veh	6.5
HCM 7th LOS	A

Notes

User approved ignoring U-Turning movement.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	118	154	54	86	126	58	55	1072	83	1126	180
v/c Ratio	0.49	0.61	0.19	0.41	0.58	0.22	0.38	0.66	0.48	0.63	0.21
Control Delay (s/veh)	58.3	62.2	7.1	58.5	63.9	9.5	65.1	28.3	64.9	25.8	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	58.3	62.2	7.1	58.5	63.9	9.5	65.1	28.3	64.9	25.8	11.6
Queue Length 50th (ft)	91	121	0	69	104	0	43	327	65	341	41
Queue Length 95th (ft)	155	195	19	125	173	23	96	517	129	523	104
Internal Link Dist (ft)		813			837			762		707	
Turn Bay Length (ft)	580		300	325		325	530		500		215
Base Capacity (vph)	611	643	594	580	609	594	358	1768	358	1844	864
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.24	0.09	0.15	0.21	0.10	0.15	0.61	0.23	0.61	0.21

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	99	129	45	80	96	48	49	798	156	73	991	158
Future Volume (veh/h)	99	129	45	80	96	48	49	798	156	73	991	158
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	118	154	54	96	116	58	55	897	175	83	1126	180
Peak Hour Factor	0.84	0.84	0.84	0.83	0.83	0.83	0.89	0.89	0.89	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	213	224	190	172	181	153	73	1486	290	109	1855	827
Arrive On Green	0.12	0.12	0.12	0.10	0.10	0.10	0.04	0.50	0.50	0.06	0.52	0.52
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	2965	578	1781	3554	1585
Grp Volume(v), veh/h	118	154	54	96	116	58	55	537	535	83	1126	180
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1766	1781	1777	1585
Q Serve(g_s), s	5.8	7.3	2.9	4.8	5.5	3.2	2.8	20.1	20.1	4.3	20.6	5.7
Cycle Q Clear(g_c), s	5.8	7.3	2.9	4.8	5.5	3.2	2.8	20.1	20.1	4.3	20.6	5.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.33	1.00		1.00
Lane Grp Cap(c), veh/h	213	224	190	172	181	153	73	891	885	109	1855	827
V/C Ratio(X)	0.55	0.69	0.28	0.56	0.64	0.38	0.76	0.60	0.60	0.76	0.61	0.22
Avail Cap(c_a), veh/h	787	826	700	787	826	700	461	1158	1151	461	2317	1033
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.5	39.2	37.2	40.0	40.4	39.3	44.1	16.5	16.5	42.9	15.5	12.0
Incr Delay (d2), s/veh	2.7	4.5	1.0	3.4	4.5	1.9	17.3	2.4	2.4	12.1	1.2	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	3.6	1.2	2.2	2.8	1.3	1.6	8.3	8.2	2.2	8.1	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.2	43.7	38.2	43.4	44.9	41.2	61.4	18.9	18.9	55.0	16.7	12.4
LnGrp LOS	D	D	D	D	D	D	E	B	B	D	B	B
Approach Vol, veh/h		326			270			1127			1389	
Approach Delay, s/veh		41.9			43.6			21.0			18.4	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.7	53.0		16.1	7.8	54.9		14.0				
Change Period (Y+Rc), s	4.0	6.5		5.0	4.0	6.5		5.0				
Max Green Setting (Gmax), s	24.0	60.5		41.0	24.0	60.5		41.0				
Max Q Clear Time (g_c+I1), s	6.3	22.1		9.3	4.8	22.6		7.5				
Green Ext Time (p_c), s	0.2	22.1		1.8	0.1	25.9		1.4				

Intersection Summary		
HCM 7th Control Delay, s/veh		24.0
HCM 7th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Intersection Delay, s/veh	98.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	1	316	0	36	0	304	271	25	471	0
Future Vol, veh/h	0	0	1	316	0	36	0	304	271	25	471	0
Peak Hour Factor	0.70	0.70	0.70	0.91	0.91	0.91	0.80	0.80	0.80	0.83	0.83	0.83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	1	347	0	40	0	380	339	30	567	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	12.3	31.2	144	88.5
HCM LOS	B	D	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	90%	5%
Vol Thru, %	53%	0%	0%	95%
Vol Right, %	47%	100%	10%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	575	1	352	496
LT Vol	0	0	316	25
Through Vol	304	0	0	471
RT Vol	271	1	36	0
Lane Flow Rate	719	1	387	598
Geometry Grp	1	1	1	1
Degree of Util (X)	1.24	0.003	0.761	1.08
Departure Headway (Hd)	6.403	9.308	7.691	6.891
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	575	387	476	532
Service Time	4.403	7.308	5.691	4.891
HCM Lane V/C Ratio	1.25	0.003	0.813	1.124
HCM Control Delay, s/veh	144	12.3	31.2	88.5
HCM Lane LOS	F	B	D	F
HCM 95th-tile Q	26.7	0	6.5	17.4



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	48	1042	86	249	657	35	87	86	371	18	39	26
v/c Ratio	0.23	0.66	0.11	0.73	0.30	0.04	0.46	0.15	0.66	0.09	0.20	0.10
Control Delay (s/veh)	70.6	31.1	4.1	65.2	13.4	0.1	71.1	54.8	11.8	70.7	66.0	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	70.6	31.1	4.1	65.2	13.4	0.1	71.1	54.8	11.8	70.7	66.0	0.8
Queue Length 50th (ft)	20	357	0	202	141	0	72	35	0	7	31	0
Queue Length 95th (ft)	51	540	28	356	208	1	147	69	75	24	80	0
Internal Link Dist (ft)		1037			966			719			726	
Turn Bay Length (ft)	250		215	325		235	145		145	230		
Base Capacity (vph)	1138	2209	1023	836	2640	1198	293	1047	729	569	551	536
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.47	0.08	0.30	0.25	0.03	0.30	0.08	0.51	0.03	0.07	0.05

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	959	79	232	611	33	75	74	319	16	34	23
Future Volume (veh/h)	44	959	79	232	611	33	75	74	319	16	34	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	48	1042	86	249	657	35	87	86	371	18	39	26
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.86	0.86	0.86	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	146	1456	649	275	1854	827	108	879	392	87	396	335
Arrive On Green	0.04	0.41	0.41	0.15	0.52	0.52	0.06	0.25	0.25	0.03	0.21	0.21
Sat Flow, veh/h	3456	3554	1585	1781	3554	1585	1781	3554	1585	3456	1870	1585
Grp Volume(v), veh/h	48	1042	86	249	657	35	87	86	371	18	39	26
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1777	1585	1781	1777	1585	1728	1870	1585
Q Serve(g_s), s	1.9	34.4	4.8	19.3	15.2	1.5	6.8	2.6	32.3	0.7	2.4	1.8
Cycle Q Clear(g_c), s	1.9	34.4	4.8	19.3	15.2	1.5	6.8	2.6	32.3	0.7	2.4	1.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	146	1456	649	275	1854	827	108	879	392	87	396	335
V/C Ratio(X)	0.33	0.72	0.13	0.91	0.35	0.04	0.80	0.10	0.95	0.21	0.10	0.08
Avail Cap(c_a), veh/h	983	1904	849	722	1904	849	253	903	403	492	475	403
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.4	34.6	25.9	58.4	19.7	16.4	65.2	40.8	52.0	67.1	44.6	44.4
Incr Delay (d2), s/veh	0.5	1.9	0.3	4.6	0.3	0.1	5.1	0.1	31.5	0.4	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	15.3	1.9	9.1	6.5	0.6	3.2	1.2	16.3	0.3	1.2	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	65.9	36.6	26.1	63.0	20.0	16.5	70.3	40.9	83.5	67.6	45.0	44.8
LnGrp LOS	E	D	C	E	C	B	E	D	F	E	D	D
Approach Vol, veh/h		1176			941			544			83	
Approach Delay, s/veh		37.0			31.3			74.7			49.8	
Approach LOS		D			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.5	36.0	26.7	64.3	8.5	41.1	10.9	80.0
Change Period (Y+Rc), s	5.0	6.3	5.0	6.7	5.0	6.3	5.0	6.7
Max Green Setting (Gmax), s	20.0	35.7	57.0	75.3	20.0	35.7	40.0	75.3
Max Q Clear Time (g_c+I1), s	8.8	4.4	21.3	36.4	2.7	34.3	3.9	17.2
Green Ext Time (p_c), s	0.1	0.7	0.4	21.2	0.0	0.4	0.1	13.1

Intersection Summary	
HCM 7th Control Delay, s/veh	42.9
HCM 7th LOS	D



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	101	1356	910	71	75	81
v/c Ratio	0.43	0.50	0.43	0.07	0.35	0.31
Control Delay (s/veh)	37.8	5.2	12.1	3.0	37.5	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	37.8	5.2	12.1	3.0	37.5	12.5
Queue Length 50th (ft)	38	113	126	0	28	0
Queue Length 95th (ft)	106	184	224	20	70	25
Internal Link Dist (ft)		890	754		855	
Turn Bay Length (ft)	275			240		
Base Capacity (vph)	541	3417	2881	1301	541	540
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.40	0.32	0.05	0.14	0.15

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	89	1193	837	65	55	59
Future Volume (veh/h)	89	1193	837	65	55	59
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	101	1356	910	71	75	81
Peak Hour Factor	0.88	0.88	0.92	0.92	0.73	0.73
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	158	2531	1917	855	176	157
Arrive On Green	0.09	0.71	0.54	0.54	0.10	0.10
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	101	1356	910	71	75	81
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585
Q Serve(g_s), s	3.7	11.9	10.6	1.4	2.6	3.2
Cycle Q Clear(g_c), s	3.7	11.9	10.6	1.4	2.6	3.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	158	2531	1917	855	176	157
V/C Ratio(X)	0.64	0.54	0.47	0.08	0.42	0.52
Avail Cap(c_a), veh/h	545	4314	2929	1306	545	485
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.4	4.5	9.5	7.4	28.3	28.5
Incr Delay (d2), s/veh	1.6	0.4	0.4	0.1	0.6	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	2.8	3.6	0.4	1.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	31.0	4.9	9.9	7.5	28.9	29.5
LnGrp LOS	C	A	A	A	C	C
Approach Vol, veh/h		1457	981		156	
Approach Delay, s/veh		6.7	9.7		29.2	
Approach LOS		A	A		C	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			54.5		12.2	11.5	43.0
Change Period (Y+Rc), s			7.0		5.6	5.6	7.0
Max Green Setting (Gmax), s			81.0		20.4	20.4	55.0
Max Q Clear Time (g_c+I1), s			13.9		5.2	5.7	12.6
Green Ext Time (p_c), s			33.7		0.2	0.1	16.5

Intersection Summary	
HCM 7th Control Delay, s/veh	9.2
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	184	1215	14	1	820	101	7	19	1	83	31	116
v/c Ratio	0.57	0.53	0.01	0.01	0.54	0.14	0.04	0.06	0.00	0.36	0.10	0.31
Control Delay (s/veh)	42.9	10.0	0.0	49.0	19.4	4.3	48.0	42.5	0.0	44.8	36.0	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.9	10.0	0.0	49.0	19.4	4.3	48.0	42.5	0.0	44.8	36.0	10.5
Queue Length 50th (ft)	74	90	0	0	127	0	3	7	0	35	13	0
Queue Length 95th (ft)	212	355	0	7	282	30	17	31	0	112	50	51
Internal Link Dist (ft)		1187			2532			760			553	
Turn Bay Length (ft)	240		245	240		240	240		245	200		205
Base Capacity (vph)	481	3096	1393	481	3096	1398	481	532	506	481	539	540
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.39	0.01	0.00	0.26	0.07	0.01	0.04	0.00	0.17	0.06	0.21

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	162	1069	12	1	795	98	5	13	1	73	27	102
Future Volume (veh/h)	162	1069	12	1	795	98	5	13	1	73	27	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	184	1215	14	1	820	101	7	19	1	83	31	116
Peak Hour Factor	0.88	0.88	0.88	0.97	0.97	0.97	0.70	0.70	0.70	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	228	2136	953	3	1688	753	23	103	88	143	229	194
Arrive On Green	0.13	0.60	0.60	0.00	0.48	0.48	0.01	0.06	0.06	0.08	0.12	0.12
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	184	1215	14	1	820	101	7	19	1	83	31	116
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	7.0	14.5	0.2	0.0	11.0	2.5	0.3	0.7	0.0	3.1	1.0	4.8
Cycle Q Clear(g_c), s	7.0	14.5	0.2	0.0	11.0	2.5	0.3	0.7	0.0	3.1	1.0	4.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	228	2136	953	3	1688	753	23	103	88	143	229	194
V/C Ratio(X)	0.81	0.57	0.01	0.29	0.49	0.13	0.31	0.18	0.01	0.58	0.14	0.60
Avail Cap(c_a), veh/h	509	3825	1706	509	3825	1706	509	561	476	509	545	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.7	8.5	5.6	34.9	12.5	10.3	34.2	31.5	31.2	31.0	27.4	29.1
Incr Delay (d2), s/veh	2.6	0.5	0.0	16.5	0.4	0.2	2.8	1.8	0.1	1.4	0.3	3.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	4.6	0.1	0.0	4.0	0.8	0.1	0.3	0.0	1.4	0.5	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.2	8.9	5.6	51.3	13.0	10.5	37.1	33.4	31.4	32.4	27.7	32.7
LnGrp LOS	C	A	A	D	B	B	D	C	C	C	C	C
Approach Vol, veh/h		1413			922			27			230	
Approach Delay, s/veh		11.9			12.7			34.2			31.9	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	8.5	4.1	47.8	4.9	13.2	13.0	38.9
Change Period (Y+Rc), s	4.0	* 4.6	4.0	5.7	4.0	4.6	4.0	5.7
Max Green Setting (Gmax), s	20.0	* 21	20.0	75.3	20.0	20.4	20.0	75.3
Max Q Clear Time (g_c+I1), s	5.1	2.7	2.0	16.5	2.3	6.8	9.0	13.0
Green Ext Time (p_c), s	0.1	0.1	0.0	25.6	0.0	0.5	0.2	15.5

Intersection Summary	
HCM 7th Control Delay, s/veh	14.2
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	95	1312	24	55	1279	176	46	357	65
v/c Ratio	0.65	0.79	0.03	0.41	0.83	0.22	0.08	0.82	0.11
Control Delay (s/veh)	57.0	22.3	0.1	43.5	25.0	3.4	1.6	40.1	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	57.0	22.3	0.1	43.5	25.0	3.4	1.6	40.1	0.3
Queue Length 50th (ft)	44	288	0	25	280	0	0	147	0
Queue Length 95th (ft)	#119	#426	0	#66	#414	34	7	#281	0
Internal Link Dist (ft)		2532			278		359		450
Turn Bay Length (ft)	200		200	200		200		150	
Base Capacity (vph)	147	1757	830	134	1634	825	662	522	713
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.75	0.03	0.41	0.78	0.21	0.07	0.68	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	1207	22	51	1177	162	13	0	29	328	0	60
Future Volume (veh/h)	87	1207	22	51	1177	162	13	0	29	328	0	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	95	1312	24	55	1279	176	14	0	32	357	0	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	122	1613	719	87	1543	688	173	35	308	516	0	456
Arrive On Green	0.07	0.45	0.45	0.05	0.43	0.43	0.29	0.00	0.29	0.29	0.00	0.29
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	348	121	1070	1377	0	1585
Grp Volume(v), veh/h	95	1312	24	55	1279	176	46	0	0	357	0	65
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1539	0	0	1377	0	1585
Q Serve(g_s), s	3.4	20.6	0.5	1.9	20.5	4.5	0.0	0.0	0.0	14.2	0.0	2.0
Cycle Q Clear(g_c), s	3.4	20.6	0.5	1.9	20.5	4.5	1.3	0.0	0.0	15.5	0.0	2.0
Prop In Lane	1.00		1.00	1.00		1.00	0.30		0.70	1.00		1.00
Lane Grp Cap(c), veh/h	122	1613	719	87	1543	688	516	0	0	516	0	456
V/C Ratio(X)	0.78	0.81	0.03	0.63	0.83	0.26	0.09	0.00	0.00	0.69	0.00	0.14
Avail Cap(c_a), veh/h	152	1713	764	138	1685	752	679	0	0	666	0	628
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.5	15.2	9.7	30.0	16.1	11.6	16.8	0.0	0.0	21.7	0.0	17.0
Incr Delay (d2), s/veh	18.2	3.0	0.0	7.5	3.4	0.2	0.1	0.0	0.0	2.1	0.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	7.8	0.2	1.0	8.0	1.5	0.5	0.0	0.0	5.0	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.7	18.2	9.8	37.5	19.5	11.8	16.9	0.0	0.0	23.8	0.0	17.2
LnGrp LOS	D	B	A	D	B	B	B			C		B
Approach Vol, veh/h		1431			1510			46			422	
Approach Delay, s/veh		20.0			19.2			16.9			22.8	
Approach LOS		C			B			B			C	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	7.6	33.7		23.0	8.9	32.4				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		25.5	5.0	31.0		25.5	5.5	30.5				
Max Q Clear Time (g_c+I1), s		3.3	3.9	22.6		17.5	5.4	22.5				
Green Ext Time (p_c), s		0.2	0.0	5.5		1.0	0.0	5.5				

Intersection Summary	
HCM 7th Control Delay, s/veh	20.0
HCM 7th LOS	B



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	458	1225	284	1064	400	64	808	195	290	778	309
v/c Ratio	0.81	0.96	0.72	0.97	0.62	0.54	1.20	0.48	0.85	0.66	0.42
Control Delay (s/veh)	71.3	63.6	74.3	69.6	25.3	84.5	151.5	25.3	80.3	46.5	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	71.3	63.6	74.3	69.6	25.3	84.5	151.5	25.3	80.3	46.5	5.8
Queue Length 50th (ft)	218	594	135	522	150	60	~485	56	267	339	0
Queue Length 95th (ft)	302	#894	202	#817	313	120	#732	155	399	463	73
Internal Link Dist (ft)		1047		306			1367			1181	
Turn Bay Length (ft)	270		240		240	250		250	250		350
Base Capacity (vph)	950	1272	950	1102	641	245	675	404	477	1191	738
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.96	0.30	0.97	0.62	0.26	1.20	0.48	0.61	0.65	0.42

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	426	1092	47	275	1032	388	61	768	185	278	747	297
Future Volume (veh/h)	426	1092	47	275	1032	388	61	768	185	278	747	297
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	458	1174	51	284	1064	400	64	808	195	290	778	309
Peak Hour Factor	0.93	0.93	0.93	0.97	0.97	0.97	0.95	0.95	0.95	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	520	1302	57	342	1151	513	82	712	318	316	1178	525
Arrive On Green	0.15	0.38	0.38	0.10	0.32	0.32	0.05	0.20	0.20	0.18	0.33	0.33
Sat Flow, veh/h	3456	3469	151	3456	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	458	601	624	284	1064	400	64	808	195	290	778	309
Grp Sat Flow(s),veh/h/ln	1728	1777	1843	1728	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	17.9	44.0	44.0	11.1	39.8	31.4	4.9	27.6	15.5	22.0	25.8	22.3
Cycle Q Clear(g_c), s	17.9	44.0	44.0	11.1	39.8	31.4	4.9	27.6	15.5	22.0	25.8	22.3
Prop In Lane	1.00		0.08	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	520	667	692	342	1151	513	82	712	318	316	1178	525
V/C Ratio(X)	0.88	0.90	0.90	0.83	0.92	0.78	0.78	1.13	0.61	0.92	0.66	0.59
Avail Cap(c_a), veh/h	1004	667	692	1004	1161	518	259	712	318	504	1202	536
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.3	40.6	40.6	60.9	45.0	42.1	65.0	55.1	50.2	55.7	39.4	38.2
Incr Delay (d2), s/veh	2.0	16.0	15.6	2.0	12.6	8.4	5.9	77.3	4.3	10.8	1.6	2.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	22.0	22.8	5.0	19.5	13.5	2.4	20.0	6.5	10.9	11.5	9.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.3	56.6	56.3	62.9	57.6	50.5	70.9	132.4	54.5	66.5	41.0	40.4
LnGrp LOS	E	E	E	E	E	D	E	F	D	E	D	D
Approach Vol, veh/h		1683			1748			1067			1377	
Approach Delay, s/veh		57.2			56.8			114.5			46.2	
Approach LOS		E			E			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.4	34.0	17.6	57.7	10.3	52.1	24.7	50.6
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	39.0	27.6	40.0	45.0	20.0	46.6	40.0	45.0
Max Q Clear Time (g_c+I1), s	24.0	29.6	13.1	46.0	6.9	27.8	19.9	41.8
Green Ext Time (p_c), s	0.4	0.0	0.5	0.0	0.0	9.4	0.9	2.8

Intersection Summary	
HCM 7th Control Delay, s/veh	64.9
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	7.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	1507	44	19	1594	19	35	3	14	15	7	61
Future Vol, veh/h	45	1507	44	19	1594	19	35	3	14	15	7	61
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	89	89	89	86	86	86	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	1638	48	21	1791	21	41	3	16	19	9	76

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1812	0	0	1686	0	0	2678	3591	1638	3582	3628	906
Stage 1	-	-	-	-	-	-	1736	1736	-	1844	1844	-
Stage 2	-	-	-	-	-	-	943	1855	-	1738	1784	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	337	-	-	377	-	-	~ 12	5	123	~ 3	~ 5	280
Stage 1	-	-	-	-	-	-	111	141	-	78	124	-
Stage 2	-	-	-	-	-	-	283	123	-	110	133	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	337	-	-	377	-	-	~ 6	4	123	~ 2	~ 4	280
Mov Cap-2 Maneuver	-	-	-	-	-	-	71	54	-	30	49	-
Stage 1	-	-	-	-	-	-	95	120	-	73	117	-
Stage 2	-	-	-	-	-	-	180	116	-	80	114	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.49	0.18	136.05	191.75
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	78	337	-	-	377	-	-	97
HCM Lane V/C Ratio	0.772	0.145	-	-	0.057	-	-	1.068
HCM Ctrl Dly (s/v)	136	17.5	-	-	15.1	-	-	191.8
HCM Lane LOS	F	C	-	-	C	-	-	F
HCM 95th %tile Q(veh)	3.8	0.5	-	-	0.2	-	-	6.7

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	180	1452	1561	75	44	188
v/c Ratio	0.54	0.90	0.61	0.06	0.32	0.35
Control Delay (s/veh)	10.5	16.4	10.0	2.7	56.0	35.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	10.5	16.4	10.0	2.7	56.0	35.1
Queue Length 50th (ft)	14	552	263	4	31	59
Queue Length 95th (ft)	65	#1313	430	22	68	89
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	625	1616	2564	1162	320	1045
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.90	0.61	0.06	0.14	0.18

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	173	1394	1436	69	42	179
Future Volume (veh/h)	173	1394	1436	69	42	179
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	180	1452	1561	75	44	188
Peak Hour Factor	0.96	0.96	0.92	0.92	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	336	1544	2578	1150	148	409
Arrive On Green	0.06	0.83	0.73	0.73	0.08	0.08
Sat Flow, veh/h	1781	1870	3647	1585	1781	2790
Grp Volume(v), veh/h	180	1452	1561	75	44	188
Grp Sat Flow(s),veh/h/ln	1781	1870	1777	1585	1781	1395
Q Serve(g_s), s	2.4	66.3	23.6	1.5	2.5	6.8
Cycle Q Clear(g_c), s	2.4	66.3	23.6	1.5	2.5	6.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	336	1544	2578	1150	148	409
V/C Ratio(X)	0.54	0.94	0.61	0.07	0.30	0.46
Avail Cap(c_a), veh/h	726	1605	2578	1150	325	687
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.5	7.4	7.4	4.3	47.2	42.8
Incr Delay (d2), s/veh	0.5	11.3	0.5	0.0	0.4	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	20.5	7.8	0.4	1.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	10.0	18.7	7.9	4.4	47.6	43.1
LnGrp LOS	A	B	A	A	D	D
Approach Vol, veh/h		1632	1636		232	
Approach Delay, s/veh		17.7	7.7		43.9	
Approach LOS		B	A		D	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	96.4	13.1	11.0	85.5
Change Period (Y+Rc), s	6.0	4.0	4.0	6.0
Max Green Setting (Gmax), s	94.0	20.0	31.0	59.0
Max Q Clear Time (g_c+I1), s	68.3	8.8	4.4	25.6
Green Ext Time (p_c), s	22.2	0.4	0.2	22.5

Intersection Summary	
HCM 7th Control Delay, s/veh	14.8
HCM 7th LOS	B

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	3	5	53	54	0
Future Vol, veh/h	0	3	5	53	54	0
Peak Hour Factor	0.75	0.75	0.81	0.81	0.70	0.70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	6	65	77	0
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.2	6.8	7.7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	100%
Vol Thru, %	100%	9%	0%
Vol Right, %	0%	91%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	3	58	54
LT Vol	0	0	54
Through Vol	3	5	0
RT Vol	0	53	0
Lane Flow Rate	4	72	77
Geometry Grp	1	1	1
Degree of Util (X)	0.005	0.07	0.091
Departure Headway (Hd)	4.125	3.525	4.267
Convergence, Y/N	Yes	Yes	Yes
Cap	862	1010	842
Service Time	2.175	1.569	2.281
HCM Lane V/C Ratio	0.005	0.071	0.091
HCM Control Delay, s/veh	7.2	6.8	7.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.2	0.3

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	1	1	5	0	4	2	996	5	7	1057	6
Future Vol, veh/h	6	1	1	5	0	4	2	996	5	7	1057	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	310	-	-	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	75	75	75	97	97	97	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	1	1	7	0	5	2	1027	5	8	1137	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1669	2188	568	1618	2192	516	1143	0	0	1032	0	0
Stage 1	1152	1152	-	1034	1034	-	-	-	-	-	-	-
Stage 2	518	1036	-	584	1158	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	63	45	466	69	45	504	607	-	-	669	-	-
Stage 1	210	270	-	249	308	-	-	-	-	-	-	-
Stage 2	509	307	-	465	269	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	61	44	466	67	44	504	607	-	-	669	-	-
Mov Cap-2 Maneuver	156	149	-	174	149	-	-	-	-	-	-	-
Stage 1	208	267	-	248	307	-	-	-	-	-	-	-
Stage 2	502	306	-	456	266	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	27.84	20.46	0.02	0.07
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	607	-	-	169	245	669	-	-
HCM Lane V/C Ratio	0.003	-	-	0.068	0.049	0.011	-	-
HCM Ctrl Dly (s/v)	11	-	-	27.8	20.5	10.4	-	-
HCM Lane LOS	B	-	-	D	C	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	43	60	27	994	1070	36
v/c Ratio	0.10	0.24	0.14	0.37	0.44	0.03
Control Delay (s/veh)	24.0	11.1	26.6	3.4	6.8	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.0	11.1	26.6	3.4	6.8	2.8
Queue Length 50th (ft)	5	0	7	49	54	0
Queue Length 95th (ft)	16	18	32	82	178	10
Internal Link Dist (ft)	1039			711	656	
Turn Bay Length (ft)	240	240	260			415
Base Capacity (vph)	2729	1270	739	3539	3480	1557
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.05	0.04	0.28	0.31	0.02

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	30	42	26	964	0	1027	35
Future Volume (veh/h)	30	42	26	964	0	1027	35
Initial Q (Qb), veh	0	0	0	0		0	0
Lane Width Adj.	1.00	1.00	1.00	1.00		1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870		1870	1870
Adj Flow Rate, veh/h	43	60	27	994		1070	36
Peak Hour Factor	0.70	0.70	0.97	0.97		0.96	0.96
Percent Heavy Veh, %	2	2	2	2		2	2
Cap, veh/h	283	130	57	2450		1934	863
Arrive On Green	0.08	0.08	0.03	0.69		0.54	0.54
Sat Flow, veh/h	3456	1585	1781	3647		3647	1585
Grp Volume(v), veh/h	43	60	27	994		1070	36
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1777		1777	1585
Q Serve(g_s), s	0.5	1.6	0.6	5.2		8.5	0.5
Cycle Q Clear(g_c), s	0.5	1.6	0.6	5.2		8.5	0.5
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	283	130	57	2450		1934	863
V/C Ratio(X)	0.15	0.46	0.47	0.41		0.55	0.04
Avail Cap(c_a), veh/h	3224	1479	827	4981		4981	2222
HCM Platoon Ratio	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	18.5	19.0	20.6	2.9		6.4	4.6
Incr Delay (d2), s/veh	0.2	1.9	2.2	0.1		0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.1	0.3	0.6		2.1	0.1
Unsig. Movement Delay, s/veh							
LnGrp Delay(d), s/veh	18.7	20.9	22.8	3.0		6.7	4.6
LnGrp LOS	B	C	C	A		A	A
Approach Vol, veh/h	103			1021		1106	
Approach Delay, s/veh	19.9			3.6		6.7	
Approach LOS	B			A		A	

Timer - Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		35.2		8.2	6.3	28.9	
Change Period (Y+Rc), s		5.3		4.6	4.9	5.3	
Max Green Setting (Gmax), s		60.7		40.4	20.1	60.7	
Max Q Clear Time (g_c+I1), s		7.2		3.6	2.6	10.5	
Green Ext Time (p_c), s		11.6		0.2	0.0	13.1	

Intersection Summary	
HCM 7th Control Delay, s/veh	5.9
HCM 7th LOS	A

Notes

User approved ignoring U-Turning movement.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	129	106	65	142	148	44	46	1013	76	1026	110
v/c Ratio	0.56	0.43	0.24	0.59	0.59	0.15	0.33	0.65	0.44	0.59	0.14
Control Delay (s/veh)	60.9	56.5	11.7	60.8	60.2	4.1	63.5	28.6	63.4	25.4	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	60.9	56.5	11.7	60.8	60.2	4.1	63.5	28.6	63.4	25.4	10.1
Queue Length 50th (ft)	96	78	0	111	115	0	35	297	57	292	18
Queue Length 95th (ft)	166	140	30	207	213	12	85	488	118	452	60
Internal Link Dist (ft)		813			837			762		707	
Turn Bay Length (ft)	580		300	325		325	530		500		215
Base Capacity (vph)	640	674	620	608	636	620	375	1865	375	1920	888
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.16	0.10	0.23	0.23	0.07	0.12	0.54	0.20	0.53	0.12

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	88	54	159	128	44	44	875	98	66	893	96
Future Volume (veh/h)	107	88	54	159	128	44	44	875	98	66	893	96
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	129	106	65	145	151	44	46	911	102	76	1026	110
Peak Hour Factor	0.83	0.83	0.83	0.99	0.99	0.99	0.96	0.96	0.96	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	195	205	174	216	227	192	68	1544	173	101	1768	788
Arrive On Green	0.11	0.11	0.11	0.12	0.12	0.12	0.04	0.48	0.48	0.06	0.50	0.50
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3222	361	1781	3554	1585
Grp Volume(v), veh/h	129	106	65	145	151	44	46	502	511	76	1026	110
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1805	1781	1777	1585
Q Serve(g_s), s	6.1	4.7	3.3	6.8	6.8	2.2	2.2	18.0	18.0	3.7	17.9	3.3
Cycle Q Clear(g_c), s	6.1	4.7	3.3	6.8	6.8	2.2	2.2	18.0	18.0	3.7	17.9	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	195	205	174	216	227	192	68	852	865	101	1768	788
V/C Ratio(X)	0.66	0.52	0.37	0.67	0.66	0.23	0.67	0.59	0.59	0.76	0.58	0.14
Avail Cap(c_a), veh/h	831	872	739	831	872	739	486	1223	1243	486	2446	1091
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.6	36.9	36.3	36.9	36.9	34.9	41.7	16.6	16.6	40.9	15.6	11.9
Incr Delay (d2), s/veh	4.6	2.4	1.6	4.3	4.0	0.7	13.0	2.4	2.3	12.9	1.1	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	2.3	1.4	3.2	3.3	0.9	1.2	7.4	7.6	2.0	7.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	42.1	39.4	38.0	41.2	40.9	35.6	54.7	19.0	18.9	53.8	16.7	12.2
LnGrp LOS	D	D	D	D	D	D	D	B	B	D	B	B
Approach Vol, veh/h		300			340			1059			1212	
Approach Delay, s/veh		40.3			40.3			20.5			18.6	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.0	48.6		14.6	7.4	50.2		15.7				
Change Period (Y+Rc), s	4.0	6.5		5.0	4.0	6.5		5.0				
Max Green Setting (Gmax), s	24.0	60.5		41.0	24.0	60.5		41.0				
Max Q Clear Time (g_c+I1), s	5.7	20.0		8.1	4.2	19.9		8.8				
Green Ext Time (p_c), s	0.2	21.2		1.5	0.1	23.8		1.8				

Intersection Summary		
HCM 7th Control Delay, s/veh		24.1
HCM 7th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Intersection Delay, s/veh	63.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	271	0	50	0	462	207	52	394	0
Future Vol, veh/h	0	0	0	271	0	50	0	462	207	52	394	0
Peak Hour Factor	0.70	0.70	0.70	0.84	0.84	0.84	0.99	0.99	0.99	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	323	0	60	0	467	209	55	415	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	0	27.3	103.9	34.9
HCM LOS	-	D	F	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	84%	12%
Vol Thru, %	69%	100%	0%	88%
Vol Right, %	31%	0%	16%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	669	0	321	446
LT Vol	0	0	271	52
Through Vol	462	0	0	394
RT Vol	207	0	50	0
Lane Flow Rate	676	0	382	469
Geometry Grp	1	1	1	1
Degree of Util (X)	1.137	0	0.73	0.834
Departure Headway (Hd)	6.059	9.042	7.214	6.7
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	595	0	504	545
Service Time	4.139	7.042	5.214	4.7
HCM Lane V/C Ratio	1.136	0	0.758	0.861
HCM Control Delay, s/veh	103.9	12	27.3	34.9
HCM Lane LOS	F	F	D	D
HCM 95th-tile Q	21.6	0	6	8.5

Intersection	
Intersection Delay, s/veh	85.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	1	293	0	24	0	304	264	21	471	0
Future Vol, veh/h	0	0	1	293	0	24	0	304	264	21	471	0
Peak Hour Factor	0.70	0.70	0.70	0.91	0.91	0.91	0.80	0.80	0.80	0.83	0.83	0.83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	1	322	0	26	0	380	330	25	567	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	11.9	26.2	123.7	75.5
HCM LOS	B	D	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	92%	4%
Vol Thru, %	54%	0%	0%	96%
Vol Right, %	46%	100%	8%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	568	1	317	492
LT Vol	0	0	293	21
Through Vol	304	0	0	471
RT Vol	264	1	24	0
Lane Flow Rate	710	1	348	593
Geometry Grp	1	1	1	1
Degree of Util (X)	1.19	0.003	0.695	1.041
Departure Headway (Hd)	6.202	8.904	7.607	6.667
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	589	404	477	551
Service Time	4.202	6.904	5.607	4.667
HCM Lane V/C Ratio	1.205	0.002	0.73	1.076
HCM Control Delay, s/veh	123.7	11.9	26.2	75.5
HCM Lane LOS	F	B	D	F
HCM 95th-tile Q	24.4	0	5.3	16

Intersection	
Intersection Delay, s/veh	51.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	257	0	43	0	462	184	41	394	0
Future Vol, veh/h	0	0	0	257	0	43	0	462	184	41	394	0
Peak Hour Factor	0.70	0.70	0.70	0.84	0.84	0.84	0.99	0.99	0.99	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	306	0	51	0	467	186	43	415	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	0	23.7	80.7	30.3
HCM LOS	-	C	F	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	86%	9%
Vol Thru, %	72%	100%	0%	91%
Vol Right, %	28%	0%	14%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	646	0	300	435
LT Vol	0	0	257	41
Through Vol	462	0	0	394
RT Vol	184	0	43	0
Lane Flow Rate	653	0	357	458
Geometry Grp	1	1	1	1
Degree of Util (X)	1.07	0	0.678	0.797
Departure Headway (Hd)	5.904	8.676	7.086	6.492
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	613	0	514	563
Service Time	3.991	6.676	5.086	4.492
HCM Lane V/C Ratio	1.065	0	0.695	0.813
HCM Control Delay, s/veh	80.7	11.7	23.7	30.3
HCM Lane LOS	F	F	C	D
HCM 95th-tile Q	18.4	0	5.1	7.6

Appendix D

Intersection Analysis Worksheets for Existing (2024) plus Project Buildout



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	12	468	51	389	903	13	68	41	274	22	116	42
v/c Ratio	0.05	0.51	0.11	0.75	0.45	0.01	0.41	0.06	0.50	0.09	0.39	0.13
Control Delay (s/veh)	59.1	38.5	0.8	46.7	16.4	0.0	60.7	40.4	8.7	58.3	50.3	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	59.1	38.5	0.8	46.7	16.4	0.0	60.7	40.4	8.7	58.3	50.3	0.8
Queue Length 50th (ft)	4	146	0	247	171	0	46	12	0	7	73	0
Queue Length 95th (ft)	17	261	2	448	333	0	115	34	80	26	168	0
Internal Link Dist (ft)		1037			966			719			726	
Turn Bay Length (ft)	250		215	325		235	145		145	230		
Base Capacity (vph)	1380	2588	1183	1014	3012	1357	355	1270	743	690	668	630
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.18	0.04	0.38	0.30	0.01	0.19	0.03	0.37	0.03	0.17	0.07

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	426	46	350	813	12	63	38	255	21	111	40
Future Volume (veh/h)	11	426	46	350	813	12	63	38	255	21	111	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	12	468	51	389	903	13	68	41	274	22	116	42
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.93	0.93	0.93	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	70	864	385	431	1652	737	117	750	335	115	334	283
Arrive On Green	0.02	0.24	0.24	0.24	0.46	0.46	0.07	0.21	0.21	0.03	0.18	0.18
Sat Flow, veh/h	3456	3554	1585	1781	3554	1585	1781	3554	1585	3456	1870	1585
Grp Volume(v), veh/h	12	468	51	389	903	13	68	41	274	22	116	42
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1777	1585	1781	1777	1585	1728	1870	1585
Q Serve(g_s), s	0.3	9.8	2.1	18.0	15.5	0.4	3.2	0.8	14.0	0.5	4.6	1.9
Cycle Q Clear(g_c), s	0.3	9.8	2.1	18.0	15.5	0.4	3.2	0.8	14.0	0.5	4.6	1.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	70	864	385	431	1652	737	117	750	335	115	334	283
V/C Ratio(X)	0.17	0.54	0.13	0.90	0.55	0.02	0.58	0.05	0.82	0.19	0.35	0.15
Avail Cap(c_a), veh/h	1625	3146	1403	1194	3146	1403	419	1491	665	813	785	665
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.0	28.1	25.2	31.3	16.3	12.3	38.6	26.8	32.0	40.0	30.6	29.5
Incr Delay (d2), s/veh	0.4	1.5	0.4	2.9	0.8	0.0	1.7	0.0	7.6	0.3	2.4	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	4.2	0.8	7.8	6.1	0.1	1.4	0.3	5.9	0.2	2.3	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.4	29.5	25.6	34.2	17.1	12.3	40.3	26.8	39.6	40.3	33.0	30.4
LnGrp LOS	D	C	C	C	B	B	D	C	D	D	C	C
Approach Vol, veh/h		531			1305			383			180	
Approach Delay, s/veh		29.4			22.1			38.4			33.3	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	21.5	25.6	27.4	7.8	24.3	6.7	46.2
Change Period (Y+Rc), s	5.0	6.3	5.0	6.7	5.0	6.3	5.0	6.7
Max Green Setting (Gmax), s	20.0	35.7	57.0	75.3	20.0	35.7	40.0	75.3
Max Q Clear Time (g_c+I1), s	5.2	6.6	20.0	11.8	2.5	16.0	2.3	17.5
Green Ext Time (p_c), s	0.1	2.0	0.6	8.9	0.0	1.9	0.0	19.8

Intersection Summary	
HCM 7th Control Delay, s/veh	27.2
HCM 7th LOS	C



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	44	704	1165	30	80	168
v/c Ratio	0.22	0.29	0.56	0.03	0.36	0.49
Control Delay (s/veh)	38.9	4.4	11.1	3.3	39.0	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	38.9	4.4	11.1	3.3	39.0	11.9
Queue Length 50th (ft)	20	48	177	0	36	0
Queue Length 95th (ft)	59	80	265	11	91	59
Internal Link Dist (ft)		890	754		855	
Turn Bay Length (ft)	275			240		
Base Capacity (vph)	538	3396	2798	1258	538	598
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.21	0.42	0.02	0.15	0.28

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	41	662	1025	26	72	151
Future Volume (veh/h)	41	662	1025	26	72	151
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	44	704	1165	30	80	168
Peak Hour Factor	0.94	0.94	0.88	0.88	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	103	2432	1941	866	240	213
Arrive On Green	0.06	0.68	0.55	0.55	0.13	0.13
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	44	704	1165	30	80	168
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585
Q Serve(g_s), s	1.7	5.4	15.4	0.6	2.8	7.1
Cycle Q Clear(g_c), s	1.7	5.4	15.4	0.6	2.8	7.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	103	2432	1941	866	240	213
V/C Ratio(X)	0.43	0.29	0.60	0.03	0.33	0.79
Avail Cap(c_a), veh/h	522	4135	2808	1252	522	465
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.7	4.3	10.7	7.3	27.3	29.2
Incr Delay (d2), s/veh	1.1	0.1	0.6	0.0	0.3	2.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.5	5.3	0.2	1.2	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	32.7	4.5	11.3	7.3	27.6	31.6
LnGrp LOS	C	A	B	A	C	C
Approach Vol, veh/h		748	1195		248	
Approach Delay, s/veh		6.1	11.2		30.3	
Approach LOS		A	B		C	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	54.6	15.0	9.6	45.0
Change Period (Y+Rc), s	7.0	5.6	5.6	7.0
Max Green Setting (Gmax), s	81.0	20.4	20.4	55.0
Max Q Clear Time (g_c+I1), s	7.4	9.1	3.7	17.4
Green Ext Time (p_c), s	12.3	0.3	0.0	20.6

Intersection Summary	
HCM 7th Control Delay, s/veh	11.6
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	99	686	27	2	956	51	27	27	5	116	36	202
v/c Ratio	0.42	0.33	0.03	0.01	0.57	0.06	0.15	0.09	0.02	0.42	0.11	0.45
Control Delay (s/veh)	47.3	10.1	0.0	49.5	19.2	2.7	48.6	43.4	0.0	45.2	38.0	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	47.3	10.1	0.0	49.5	19.2	2.7	48.6	43.4	0.0	45.2	38.0	9.9
Queue Length 50th (ft)	55	96	0	1	216	0	15	14	0	64	18	0
Queue Length 95th (ft)	131	193	0	10	337	14	42	40	0	149	57	67
Internal Link Dist (ft)		1187			2532			760			553	
Turn Bay Length (ft)	240		245	240		240	240		245	200		205
Base Capacity (vph)	497	2981	1344	497	2981	1344	497	549	520	497	533	597
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.23	0.02	0.00	0.32	0.04	0.05	0.05	0.01	0.23	0.07	0.34

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	624	25	2	851	45	20	20	4	107	33	186
Future Volume (veh/h)	90	624	25	2	851	45	20	20	4	107	33	186
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	99	686	27	2	956	51	27	27	5	116	36	202
Peak Hour Factor	0.91	0.91	0.91	0.89	0.89	0.89	0.73	0.73	0.73	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	147	1950	870	7	1670	745	72	211	179	154	297	251
Arrive On Green	0.08	0.55	0.55	0.00	0.47	0.47	0.04	0.11	0.11	0.09	0.16	0.16
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	99	686	27	2	956	51	27	27	5	116	36	202
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.0	7.9	0.6	0.1	14.4	1.3	1.1	1.0	0.2	4.7	1.2	9.0
Cycle Q Clear(g_c), s	4.0	7.9	0.6	0.1	14.4	1.3	1.1	1.0	0.2	4.7	1.2	9.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	147	1950	870	7	1670	745	72	211	179	154	297	251
V/C Ratio(X)	0.67	0.35	0.03	0.29	0.57	0.07	0.38	0.13	0.03	0.76	0.12	0.80
Avail Cap(c_a), veh/h	484	3634	1621	484	3634	1621	484	533	452	484	518	439
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.8	9.3	7.6	36.6	14.1	10.7	34.4	29.4	29.1	32.9	26.6	29.9
Incr Delay (d2), s/veh	2.0	0.2	0.0	8.7	0.6	0.1	1.2	0.6	0.1	2.8	0.2	7.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	2.8	0.2	0.1	5.3	0.4	0.5	0.5	0.1	2.1	0.5	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.8	9.5	7.7	45.2	14.8	10.8	35.6	30.0	29.2	35.7	26.8	37.2
LnGrp LOS	C	A	A	D	B	B	D	C	C	D	C	D
Approach Vol, veh/h		812			1009			59			354	
Approach Delay, s/veh		12.5			14.6			32.5			35.6	
Approach LOS		B			B			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	12.9	4.3	46.1	7.0	16.3	10.1	40.3
Change Period (Y+Rc), s	4.0	* 4.6	4.0	5.7	4.0	4.6	4.0	5.7
Max Green Setting (Gmax), s	20.0	* 21	20.0	75.3	20.0	20.4	20.0	75.3
Max Q Clear Time (g_c+I1), s	6.7	3.0	2.1	9.9	3.1	11.0	6.0	16.4
Green Ext Time (p_c), s	0.1	0.1	0.0	11.3	0.0	0.7	0.1	18.2

Intersection Summary	
HCM 7th Control Delay, s/veh	17.7
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	53	842	8	16	1116	93	75	184	38
v/c Ratio	0.30	0.42	0.01	0.10	0.63	0.11	0.17	0.58	0.07
Control Delay (s/veh)	33.2	9.1	0.0	30.9	14.2	3.4	5.3	28.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.2	9.1	0.0	30.9	14.2	3.4	5.3	28.3	0.3
Queue Length 50th (ft)	19	69	0	6	163	0	0	63	0
Queue Length 95th (ft)	56	190	0	25	278	24	23	124	0
Internal Link Dist (ft)		2532			278		359		450
Turn Bay Length (ft)	200		200	200		200		150	
Base Capacity (vph)	179	2214	1022	163	1990	930	774	620	837
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.38	0.01	0.10	0.56	0.10	0.10	0.30	0.05

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	775	7	15	1027	86	21	0	48	169	0	35
Future Volume (veh/h)	49	775	7	15	1027	86	21	0	48	169	0	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	53	842	8	16	1116	93	23	0	52	184	0	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	96	1791	799	36	1671	745	152	36	188	411	0	273
Arrive On Green	0.05	0.50	0.50	0.02	0.47	0.47	0.17	0.00	0.17	0.17	0.00	0.17
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	271	212	1092	1352	0	1585
Grp Volume(v), veh/h	53	842	8	16	1116	93	75	0	0	184	0	38
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1575	0	0	1352	0	1585
Q Serve(g_s), s	1.3	6.8	0.1	0.4	10.8	1.5	0.0	0.0	0.0	3.4	0.0	0.9
Cycle Q Clear(g_c), s	1.3	6.8	0.1	0.4	10.8	1.5	1.7	0.0	0.0	5.2	0.0	0.9
Prop In Lane	1.00		1.00	1.00		1.00	0.31		0.69	1.00		1.00
Lane Grp Cap(c), veh/h	96	1791	799	36	1671	745	377	0	0	411	0	273
V/C Ratio(X)	0.55	0.47	0.01	0.45	0.67	0.12	0.20	0.00	0.00	0.45	0.00	0.14
Avail Cap(c_a), veh/h	220	2479	1106	200	2439	1088	984	0	0	955	0	909
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.5	7.2	5.5	21.5	9.1	6.6	16.0	0.0	0.0	17.2	0.0	15.6
Incr Delay (d2), s/veh	4.8	0.2	0.0	8.4	0.5	0.1	0.3	0.0	0.0	0.8	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.8	0.0	0.2	3.1	0.4	0.6	0.0	0.0	1.6	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.3	7.4	5.5	29.9	9.6	6.7	16.2	0.0	0.0	18.0	0.0	15.8
LnGrp LOS	C	A	A	C	A	A	B			B		B
Approach Vol, veh/h		903			1225			75			222	
Approach Delay, s/veh		8.4			9.6			16.2			17.6	
Approach LOS		A			A			B			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		12.1	5.4	26.9		12.1	6.9	25.4				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		25.5	5.0	31.0		25.5	5.5	30.5				
Max Q Clear Time (g_c+I1), s		3.7	2.4	8.8		7.2	3.3	12.8				
Green Ext Time (p_c), s		0.3	0.0	6.2		0.7	0.0	8.1				

Intersection Summary	
HCM 7th Control Delay, s/veh	10.1
HCM 7th LOS	B



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	295	839	246	712	248	62	807	376	443	990	495
v/c Ratio	0.74	0.80	0.70	0.70	0.42	0.53	1.20	0.76	0.93	0.69	0.56
Control Delay (s/veh)	74.3	53.5	74.9	51.1	11.9	83.7	154.2	30.7	80.4	41.0	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	74.3	53.5	74.9	51.1	11.9	83.7	154.2	30.7	80.4	41.0	9.6
Queue Length 50th (ft)	145	390	121	324	35	60	~505	126	426	430	54
Queue Length 95th (ft)	193	470	173	416	116	109	#636	240	#637	538	152
Internal Link Dist (ft)		1047		306			1367			1181	
Turn Bay Length (ft)	270		240		240	250		250	250		350
Base Capacity (vph)	943	1106	943	1094	627	243	671	497	474	1440	886
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.76	0.26	0.65	0.40	0.26	1.20	0.76	0.93	0.69	0.56

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	257	662	68	224	648	226	53	694	323	381	851	426
Future Volume (veh/h)	257	662	68	224	648	226	53	694	323	381	851	426
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	295	761	78	246	712	248	62	807	376	443	990	495
Peak Hour Factor	0.87	0.87	0.87	0.91	0.91	0.91	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	356	933	96	305	967	431	80	741	331	467	1514	675
Arrive On Green	0.10	0.29	0.29	0.09	0.27	0.27	0.04	0.21	0.21	0.26	0.43	0.43
Sat Flow, veh/h	3456	3254	333	3456	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	295	415	424	246	712	248	62	807	376	443	990	495
Grp Sat Flow(s),veh/h/ln	1728	1777	1810	1728	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	11.1	28.8	28.8	9.2	24.1	17.9	4.6	27.6	27.6	32.3	29.3	34.5
Cycle Q Clear(g_c), s	11.1	28.8	28.8	9.2	24.1	17.9	4.6	27.6	27.6	32.3	29.3	34.5
Prop In Lane	1.00		0.18	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	356	509	519	305	967	431	80	741	331	467	1514	675
V/C Ratio(X)	0.83	0.82	0.82	0.81	0.74	0.57	0.78	1.09	1.14	0.95	0.65	0.73
Avail Cap(c_a), veh/h	1045	604	616	1045	1208	539	269	741	331	525	1514	675
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.2	43.9	43.9	59.2	43.8	41.6	62.5	52.4	52.4	47.9	30.2	31.7
Incr Delay (d2), s/veh	1.9	8.8	8.7	1.9	2.7	2.3	6.0	59.8	92.1	24.6	1.2	4.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	13.9	14.2	4.1	11.0	7.3	2.2	18.4	19.4	17.5	12.8	14.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.1	52.8	52.7	61.1	46.5	43.9	68.5	112.2	144.4	72.5	31.4	36.3
LnGrp LOS	E	D	D	E	D	D	E	F	F	E	C	D
Approach Vol, veh/h		1134			1206			1245			1928	
Approach Delay, s/veh		54.7			48.9			119.8			42.1	
Approach LOS		D			D			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	38.7	34.0	15.7	43.9	9.9	62.8	17.6	42.0
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	39.0	27.6	40.0	45.0	20.0	46.6	40.0	45.0
Max Q Clear Time (g_c+I1), s	34.3	29.6	11.2	30.8	6.6	36.5	13.1	26.1
Green Ext Time (p_c), s	0.4	0.0	0.4	7.1	0.0	7.7	0.5	9.4

Intersection Summary	
HCM 7th Control Delay, s/veh	63.7
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	58	1249	93	17	993	26	54	3	32	15	4	51
Future Vol, veh/h	58	1249	93	17	993	26	54	3	32	15	4	51
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	90	90	90	70	70	70	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	61	1315	98	19	1103	29	77	4	46	18	5	61

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1132	0	0	1413	0	0	2029	2607	1315	2595	2690	566
Stage 1	-	-	-	-	-	-	1437	1437	-	1156	1156	-
Stage 2	-	-	-	-	-	-	592	1170	-	1439	1535	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	615	-	-	481	-	-	~ 38	24	192	~ 14	22	468
Stage 1	-	-	-	-	-	-	165	198	-	210	270	-
Stage 2	-	-	-	-	-	-	461	266	-	164	177	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	615	-	-	481	-	-	~ 27	21	192	~ 9	19	468
Mov Cap-2 Maneuver	-	-	-	-	-	-	128	124	-	61	91	-
Stage 1	-	-	-	-	-	-	149	178	-	202	260	-
Stage 2	-	-	-	-	-	-	377	256	-	110	160	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.48	0.21	103.98	43.21
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	146	615	-	-	481	-	-	175
HCM Lane V/C Ratio	0.874	0.099	-	-	0.039	-	-	0.481
HCM Ctrl Dly (s/v)	104	11.5	-	-	12.8	-	-	43.2
HCM Lane LOS	F	B	-	-	B	-	-	E
HCM 95th %tile Q(veh)	5.9	0.3	-	-	0.1	-	-	2.3

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	194	1109	973	73	61	173
v/c Ratio	0.35	0.70	0.48	0.08	0.23	0.22
Control Delay (s/veh)	3.6	7.5	9.1	2.0	36.2	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	3.6	7.5	9.1	2.0	36.2	9.8
Queue Length 50th (ft)	15	233	122	0	22	7
Queue Length 95th (ft)	35	468	190	15	81	44
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	1103	1821	3076	1385	635	1875
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.61	0.32	0.05	0.10	0.09

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	186	1065	876	66	60	170
Future Volume (veh/h)	186	1065	876	66	60	170
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	194	1109	973	73	61	173
Peak Hour Factor	0.96	0.96	0.90	0.90	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	512	1397	2111	941	199	581
Arrive On Green	0.10	0.75	0.59	0.59	0.11	0.11
Sat Flow, veh/h	1781	1870	3647	1585	1781	2790
Grp Volume(v), veh/h	194	1109	973	73	61	173
Grp Sat Flow(s),veh/h/ln	1781	1870	1777	1585	1781	1395
Q Serve(g_s), s	2.4	26.1	10.8	1.4	2.2	3.7
Cycle Q Clear(g_c), s	2.4	26.1	10.8	1.4	2.2	3.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	512	1397	2111	941	199	581
V/C Ratio(X)	0.38	0.79	0.46	0.08	0.31	0.30
Avail Cap(c_a), veh/h	1119	2482	2960	1320	503	1057
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	5.0	5.6	8.0	6.1	28.9	23.7
Incr Delay (d2), s/veh	0.2	1.6	0.2	0.1	0.3	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	6.3	3.5	0.4	0.9	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	5.1	7.1	8.3	6.2	29.3	23.8
LnGrp LOS	A	A	A	A	C	C
Approach Vol, veh/h		1303	1046		234	
Approach Delay, s/veh		6.8	8.1		25.2	
Approach LOS		A	A		C	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	58.9	11.9	10.8	48.1
Change Period (Y+Rc), s	6.0	4.0	4.0	6.0
Max Green Setting (Gmax), s	94.0	20.0	31.0	59.0
Max Q Clear Time (g_c+I1), s	28.1	5.7	4.4	12.8
Green Ext Time (p_c), s	24.8	0.4	0.3	14.2

Intersection Summary	
HCM 7th Control Delay, s/veh	9.0
HCM 7th LOS	A

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	28	8	4	47	126	9
Future Vol, veh/h	28	8	4	47	126	9
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	11	6	67	180	13
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.9	7.2	8.7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	78%	0%	93%
Vol Thru, %	22%	8%	0%
Vol Right, %	0%	92%	7%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	36	51	135
LT Vol	28	0	126
Through Vol	8	4	0
RT Vol	0	47	9
Lane Flow Rate	51	73	193
Geometry Grp	1	1	1
Degree of Util (X)	0.066	0.079	0.23
Departure Headway (Hd)	4.615	3.892	4.296
Convergence, Y/N	Yes	Yes	Yes
Cap	780	926	829
Service Time	2.618	1.893	2.361
HCM Lane V/C Ratio	0.065	0.079	0.233
HCM Control Delay, s/veh	7.9	7.2	8.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.3	0.9

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	49	1	7	2	0	3	7	1006	6	12	1132	11
Future Vol, veh/h	49	1	7	2	0	3	7	1006	6	12	1132	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	310	-	150	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	70	70	70	81	81	81	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	1	7	3	0	4	9	1242	7	14	1364	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2031	2659	682	1971	2665	621	1377	0	0	1249	0	0
Stage 1	1393	1393	-	1259	1259	-	-	-	-	-	-	-
Stage 2	638	1267	-	711	1406	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 33	22	392	37	22	430	494	-	-	553	-	-
Stage 1	149	207	-	181	240	-	-	-	-	-	-	-
Stage 2	431	238	-	390	204	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 32	21	392	35	21	430	494	-	-	553	-	-
Mov Cap-2 Maneuver	108	106	-	122	106	-	-	-	-	-	-	-
Stage 1	145	202	-	177	236	-	-	-	-	-	-	-
Stage 2	419	234	-	371	199	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	60.45	22.37	0.09	0.12
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	494	-	-	119	214	553	-	-
HCM Lane V/C Ratio	0.017	-	-	0.479	0.033	0.026	-	-
HCM Ctrl Dly (s/v)	12.4	-	-	60.4	22.4	11.7	-	-
HCM Lane LOS	B	-	-	F	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.2	0.1	0.1	-	-

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	12	0	1016	1133	6
Future Vol, veh/h	0	12	0	1016	1133	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	13	0	1104	1232	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	616	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	434	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	434	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	13.56	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	434	-	-
HCM Lane V/C Ratio	-	0.03	-	-
HCM Ctrl Dly (s/v)	-	13.6	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	26	27	79	11	24	41	1177	4	9	1280	26
v/c Ratio	0.18	0.18	0.34	0.07	0.10	0.33	0.47	0.00	0.07	0.55	0.02
Control Delay (s/veh)	35.5	35.7	8.3	34.1	0.9	41.9	8.3	0.0	35.8	11.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.5	35.7	8.3	34.1	0.9	41.9	8.3	0.0	35.8	11.9	0.0
Queue Length 50th (ft)	12	12	0	5	0	19	134	0	4	225	0
Queue Length 95th (ft)	32	33	15	20	0	46	239	0	18	306	0
Internal Link Dist (ft)		1039		556			711			604	
Turn Bay Length (ft)	240		240			260		150	240		415
Base Capacity (vph)	786	786	797	451	484	125	2530	1160	125	2343	1082
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.10	0.02	0.05	0.33	0.47	0.00	0.07	0.55	0.02

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	0	62	10	0	22	33	953	3	8	1114	23
Future Volume (veh/h)	41	0	62	10	0	22	33	953	3	8	1114	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	53	0	79	11	0	24	41	1177	4	9	1280	26
Peak Hour Factor	0.78	0.78	0.78	0.92	0.92	0.92	0.81	0.81	0.81	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	276	0	123	66	0	59	74	1951	870	21	1819	812
Arrive On Green	0.08	0.00	0.08	0.04	0.00	0.04	0.04	0.55	0.55	0.01	0.51	0.51
Sat Flow, veh/h	3563	0	1585	1781	0	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	53	0	79	11	0	24	41	1177	4	9	1280	26
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	0.8	0.0	2.8	0.3	0.0	0.9	1.3	13.0	0.1	0.3	16.0	0.5
Cycle Q Clear(g_c), s	0.8	0.0	2.8	0.3	0.0	0.9	1.3	13.0	0.1	0.3	16.0	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	276	0	123	66	0	59	74	1951	870	21	1819	812
V/C Ratio(X)	0.19	0.00	0.64	0.17	0.00	0.41	0.55	0.60	0.00	0.43	0.70	0.03
Avail Cap(c_a), veh/h	2021	0	899	551	0	490	153	2449	1092	153	2425	1082
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.1	0.0	26.1	27.1	0.0	27.4	27.3	8.9	5.9	28.6	10.8	7.0
Incr Delay (d2), s/veh	0.2	0.0	4.1	1.2	0.0	4.5	2.4	0.4	0.0	13.7	0.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	1.1	0.2	0.0	0.4	0.6	4.0	0.0	0.2	5.2	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.4	0.0	30.2	28.3	0.0	31.9	29.7	9.2	5.9	42.2	11.5	7.1
LnGrp LOS	C		C	C		C	C	A	A	D	B	A
Approach Vol, veh/h		132			35			1222			1315	
Approach Delay, s/veh		28.2			30.7			9.9			11.7	
Approach LOS		C			C			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.2	37.2		9.1	7.3	35.1		6.7				
Change Period (Y+Rc), s	4.5	5.3		4.6	4.9	5.3		4.5				
Max Green Setting (Gmax), s	5.0	40.1		33.0	5.0	39.7		18.0				
Max Q Clear Time (g_c+I1), s	2.3	15.0		4.8	3.3	18.0		2.9				
Green Ext Time (p_c), s	0.0	11.5		0.3	0.0	11.8		0.1				

Intersection Summary	
HCM 7th Control Delay, s/veh	11.9
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	120	154	54	86	126	58	55	1083	83	1160	186
v/c Ratio	0.50	0.61	0.19	0.42	0.58	0.22	0.38	0.66	0.48	0.64	0.22
Control Delay (s/veh)	58.8	62.8	7.2	58.7	64.4	9.5	65.3	28.2	65.2	26.1	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	58.8	62.8	7.2	58.7	64.4	9.5	65.3	28.2	65.2	26.1	11.8
Queue Length 50th (ft)	93	121	0	69	104	0	43	333	65	356	43
Queue Length 95th (ft)	157	195	19	125	173	23	96	525	129	545	108
Internal Link Dist (ft)		813			837			762		707	
Turn Bay Length (ft)	580		300	325		325	530		500		215
Base Capacity (vph)	601	633	586	571	599	586	352	1739	352	1814	851
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.24	0.09	0.15	0.21	0.10	0.16	0.62	0.24	0.64	0.22

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	129	45	80	96	48	49	808	156	73	1021	164
Future Volume (veh/h)	101	129	45	80	96	48	49	808	156	73	1021	164
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	120	154	54	96	116	58	55	908	175	83	1160	186
Peak Hour Factor	0.84	0.84	0.84	0.83	0.83	0.83	0.89	0.89	0.89	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	212	223	189	171	180	152	72	1504	290	109	1872	835
Arrive On Green	0.12	0.12	0.12	0.10	0.10	0.10	0.04	0.51	0.51	0.06	0.53	0.53
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	2972	572	1781	3554	1585
Grp Volume(v), veh/h	120	154	54	96	116	58	55	543	540	83	1160	186
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1767	1781	1777	1585
Q Serve(g_s), s	6.0	7.5	2.9	4.9	5.6	3.2	2.9	20.5	20.5	4.3	21.6	5.9
Cycle Q Clear(g_c), s	6.0	7.5	2.9	4.9	5.6	3.2	2.9	20.5	20.5	4.3	21.6	5.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.32	1.00		1.00
Lane Grp Cap(c), veh/h	212	223	189	171	180	152	72	899	894	109	1872	835
V/C Ratio(X)	0.57	0.69	0.29	0.56	0.65	0.38	0.76	0.60	0.60	0.76	0.62	0.22
Avail Cap(c_a), veh/h	774	813	689	774	813	689	453	1140	1134	453	2280	1017
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.2	39.9	37.9	40.7	41.1	40.0	44.8	16.6	16.6	43.6	15.7	12.0
Incr Delay (d2), s/veh	2.8	4.6	1.0	3.5	4.6	1.9	17.9	2.4	2.4	12.2	1.2	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	3.7	1.2	2.3	2.8	1.3	1.6	8.4	8.4	2.3	8.5	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	42.1	44.4	38.9	44.2	45.7	41.9	62.7	18.9	19.0	55.7	16.9	12.4
LnGrp LOS	D	D	D	D	D	D	E	B	B	E	B	B
Approach Vol, veh/h		328			270			1138			1429	
Approach Delay, s/veh		42.6			44.3			21.1			18.6	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.8	54.2		16.2	7.8	56.2		14.1				
Change Period (Y+Rc), s	4.0	6.5		5.0	4.0	6.5		5.0				
Max Green Setting (Gmax), s	24.0	60.5		41.0	24.0	60.5		41.0				
Max Q Clear Time (g_c+I1), s	6.3	22.5		9.5	4.9	23.6		7.6				
Green Ext Time (p_c), s	0.2	22.2		1.8	0.1	26.1		1.4				

Intersection Summary		
HCM 7th Control Delay, s/veh	24.2	
HCM 7th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Intersection Delay, s/veh	101.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	1	322	0	36	0	304	273	25	471	0
Future Vol, veh/h	0	0	1	322	0	36	0	304	273	25	471	0
Peak Hour Factor	0.70	0.70	0.70	0.91	0.91	0.91	0.80	0.80	0.80	0.83	0.83	0.83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	1	354	0	40	0	380	341	30	567	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	12.4	32.7	148.9	90.7
HCM LOS	B	D	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	90%	5%
Vol Thru, %	53%	0%	0%	95%
Vol Right, %	47%	100%	10%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	577	1	358	496
LT Vol	0	0	322	25
Through Vol	304	0	0	471
RT Vol	273	1	36	0
Lane Flow Rate	721	1	393	598
Geometry Grp	1	1	1	1
Degree of Util (X)	1.252	0.003	0.776	1.086
Departure Headway (Hd)	6.445	9.397	7.713	6.943
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	570	383	472	526
Service Time	4.445	7.397	5.713	4.943
HCM Lane V/C Ratio	1.265	0.003	0.833	1.137
HCM Control Delay, s/veh	148.9	12.4	32.7	90.7
HCM Lane LOS	F	B	D	F
HCM 95th-tile Q	27.2	0	6.8	17.6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	48	1079	86	249	678	35	87	86	371	18	39	26
v/c Ratio	0.24	0.67	0.11	0.73	0.31	0.03	0.46	0.16	0.66	0.09	0.20	0.10
Control Delay (s/veh)	71.9	31.2	4.0	67.1	13.3	0.1	72.7	55.9	11.9	71.8	67.2	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	71.9	31.2	4.0	67.1	13.3	0.1	72.7	55.9	11.9	71.8	67.2	0.8
Queue Length 50th (ft)	21	376	0	207	146	0	74	35	0	7	32	0
Queue Length 95th (ft)	51	565	28	356	216	1	147	69	75	24	80	0
Internal Link Dist (ft)		1037			966			719			726	
Turn Bay Length (ft)	250		215	325		235	145		145	230		
Base Capacity (vph)	1116	2167	1006	820	2619	1189	287	1027	722	558	540	528
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.50	0.09	0.30	0.26	0.03	0.30	0.08	0.51	0.03	0.07	0.05

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	993	79	232	631	33	75	74	319	16	34	23
Future Volume (veh/h)	44	993	79	232	631	33	75	74	319	16	34	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	48	1079	86	249	678	35	87	86	371	18	39	26
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.86	0.86	0.86	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	143	1478	659	274	1877	837	108	873	389	86	393	333
Arrive On Green	0.04	0.42	0.42	0.15	0.53	0.53	0.06	0.25	0.25	0.02	0.21	0.21
Sat Flow, veh/h	3456	3554	1585	1781	3554	1585	1781	3554	1585	3456	1870	1585
Grp Volume(v), veh/h	48	1079	86	249	678	35	87	86	371	18	39	26
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1777	1585	1781	1777	1585	1728	1870	1585
Q Serve(g_s), s	1.9	36.7	4.8	19.8	16.0	1.5	6.9	2.7	33.2	0.7	2.4	1.9
Cycle Q Clear(g_c), s	1.9	36.7	4.8	19.8	16.0	1.5	6.9	2.7	33.2	0.7	2.4	1.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	143	1478	659	274	1877	837	108	873	389	86	393	333
V/C Ratio(X)	0.33	0.73	0.13	0.91	0.36	0.04	0.81	0.10	0.95	0.21	0.10	0.08
Avail Cap(c_a), veh/h	960	1858	829	705	1877	837	247	881	393	480	464	393
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	67.1	35.3	26.0	59.9	19.8	16.4	66.8	42.0	53.5	68.8	45.9	45.7
Incr Delay (d2), s/veh	0.5	2.1	0.2	4.7	0.3	0.1	5.2	0.1	33.6	0.4	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	16.3	1.9	9.3	6.8	0.6	3.3	1.2	16.9	0.3	1.2	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	67.6	37.4	26.2	64.6	20.1	16.4	72.0	42.1	87.1	69.3	46.3	46.1
LnGrp LOS	E	D	C	E	C	B	E	D	F	E	D	D
Approach Vol, veh/h		1213			962			544			83	
Approach Delay, s/veh		37.8			31.5			77.6			51.2	
Approach LOS		D			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.7	36.5	27.2	66.6	8.6	41.7	11.0	82.8
Change Period (Y+Rc), s	5.0	6.3	5.0	6.7	5.0	6.3	5.0	6.7
Max Green Setting (Gmax), s	20.0	35.7	57.0	75.3	20.0	35.7	40.0	75.3
Max Q Clear Time (g_c+I1), s	8.9	4.4	21.8	38.7	2.7	35.2	3.9	18.0
Green Ext Time (p_c), s	0.1	0.7	0.4	21.2	0.0	0.2	0.1	13.6

Intersection Summary	
HCM 7th Control Delay, s/veh	43.8
HCM 7th LOS	D



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	101	1394	932	71	75	81
v/c Ratio	0.44	0.51	0.43	0.07	0.36	0.31
Control Delay (s/veh)	39.9	5.2	11.8	2.9	39.7	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	39.9	5.2	11.8	2.9	39.7	13.1
Queue Length 50th (ft)	40	120	131	0	30	0
Queue Length 95th (ft)	111	191	231	19	73	25
Internal Link Dist (ft)		890	754		855	
Turn Bay Length (ft)	275			240		
Base Capacity (vph)	521	3388	2814	1273	521	523
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.41	0.33	0.06	0.14	0.15

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	89	1227	857	65	55	59
Future Volume (veh/h)	89	1227	857	65	55	59
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	101	1394	932	71	75	81
Peak Hour Factor	0.88	0.88	0.92	0.92	0.73	0.73
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	155	2558	1959	874	172	153
Arrive On Green	0.09	0.72	0.55	0.55	0.10	0.10
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	101	1394	932	71	75	81
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585
Q Serve(g_s), s	3.8	12.4	11.0	1.4	2.7	3.3
Cycle Q Clear(g_c), s	3.8	12.4	11.0	1.4	2.7	3.3
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	155	2558	1959	874	172	153
V/C Ratio(X)	0.65	0.54	0.48	0.08	0.44	0.53
Avail Cap(c_a), veh/h	529	4192	2846	1270	529	471
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.3	4.4	9.4	7.2	29.2	29.5
Incr Delay (d2), s/veh	1.7	0.4	0.4	0.1	0.6	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	3.0	3.7	0.4	1.2	3.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	32.1	4.8	9.8	7.3	29.9	30.6
LnGrp LOS	C	A	A	A	C	C
Approach Vol, veh/h		1495	1003		156	
Approach Delay, s/veh		6.7	9.6		30.2	
Approach LOS		A	A		C	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			56.4		12.2	11.6	44.8
Change Period (Y+Rc), s			7.0		5.6	5.6	7.0
Max Green Setting (Gmax), s			81.0		20.4	20.4	55.0
Max Q Clear Time (g_c+I1), s			14.4		5.3	5.8	13.0
Green Ext Time (p_c), s			35.0		0.2	0.1	17.0

Intersection Summary	
HCM 7th Control Delay, s/veh	9.2
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	184	1253	14	1	840	101	7	19	1	83	31	116
v/c Ratio	0.56	0.54	0.01	0.01	0.55	0.14	0.04	0.06	0.00	0.36	0.10	0.32
Control Delay (s/veh)	43.5	10.0	0.0	50.0	19.3	4.2	49.2	43.6	0.0	45.9	37.0	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	43.5	10.0	0.0	50.0	19.3	4.2	49.2	43.6	0.0	45.9	37.0	10.8
Queue Length 50th (ft)	75	94	0	0	133	0	3	7	0	35	13	0
Queue Length 95th (ft)	219	369	0	7	289	29	17	31	0	115	51	52
Internal Link Dist (ft)		1187			2532			760			553	
Turn Bay Length (ft)	240		245	240		240	240		245	200		205
Base Capacity (vph)	475	3080	1386	475	3080	1391	475	525	501	475	533	535
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.41	0.01	0.00	0.27	0.07	0.01	0.04	0.00	0.17	0.06	0.22

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	162	1103	12	1	815	98	5	13	1	73	27	102
Future Volume (veh/h)	162	1103	12	1	815	98	5	13	1	73	27	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	184	1253	14	1	840	101	7	19	1	83	31	116
Peak Hour Factor	0.88	0.88	0.88	0.97	0.97	0.97	0.70	0.70	0.70	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	227	2168	967	3	1722	768	23	103	87	140	226	192
Arrive On Green	0.13	0.61	0.61	0.00	0.48	0.48	0.01	0.05	0.05	0.08	0.12	0.12
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	184	1253	14	1	840	101	7	19	1	83	31	116
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	7.2	15.3	0.3	0.0	11.5	2.5	0.3	0.7	0.0	3.2	1.1	5.0
Cycle Q Clear(g_c), s	7.2	15.3	0.3	0.0	11.5	2.5	0.3	0.7	0.0	3.2	1.1	5.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	227	2168	967	3	1722	768	23	103	87	140	226	192
V/C Ratio(X)	0.81	0.58	0.01	0.29	0.49	0.13	0.31	0.18	0.01	0.59	0.14	0.60
Avail Cap(c_a), veh/h	495	3717	1658	495	3717	1658	495	546	462	495	530	449
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.6	8.4	5.5	35.9	12.5	10.2	35.2	32.5	32.2	32.0	28.3	30.0
Incr Delay (d2), s/veh	2.6	0.5	0.0	16.5	0.4	0.1	2.8	1.8	0.1	1.5	0.3	3.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	4.9	0.1	0.0	4.2	0.8	0.1	0.4	0.0	1.4	0.5	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.2	8.9	5.5	52.4	12.9	10.4	38.1	34.3	32.3	33.5	28.6	33.8
LnGrp LOS	C	A	A	D	B	B	D	C	C	C	C	C
Approach Vol, veh/h		1451			942			27			230	
Approach Delay, s/veh		12.0			12.7			35.2			33.0	
Approach LOS		B			B			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.7	8.6	4.1	49.6	4.9	13.3	13.2	40.6
Change Period (Y+Rc), s	4.0	* 4.6	4.0	5.7	4.0	4.6	4.0	5.7
Max Green Setting (Gmax), s	20.0	* 21	20.0	75.3	20.0	20.4	20.0	75.3
Max Q Clear Time (g_c+I1), s	5.2	2.7	2.0	17.3	2.3	7.0	9.2	13.5
Green Ext Time (p_c), s	0.1	0.1	0.0	26.6	0.0	0.5	0.2	16.0

Intersection Summary	
HCM 7th Control Delay, s/veh	14.3
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	95	1349	24	55	1301	176	46	357	65
v/c Ratio	0.66	0.81	0.03	0.42	0.84	0.22	0.08	0.83	0.11
Control Delay (s/veh)	57.9	23.1	0.1	43.8	25.5	3.4	1.6	40.6	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	57.9	23.1	0.1	43.8	25.5	3.4	1.6	40.6	0.4
Queue Length 50th (ft)	44	301	0	25	288	0	0	147	0
Queue Length 95th (ft)	#119	#446	0	#66	#426	34	7	#281	0
Internal Link Dist (ft)		2532			278		359		450
Turn Bay Length (ft)	200		200	200		200		150	
Base Capacity (vph)	145	1734	820	132	1612	817	654	515	705
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.78	0.03	0.42	0.81	0.22	0.07	0.69	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	1241	22	51	1197	162	13	0	29	328	0	60
Future Volume (veh/h)	87	1241	22	51	1197	162	13	0	29	328	0	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	95	1349	24	55	1301	176	14	0	32	357	0	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	122	1620	723	86	1550	691	173	34	308	515	0	455
Arrive On Green	0.07	0.46	0.46	0.05	0.44	0.44	0.29	0.00	0.29	0.29	0.00	0.29
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	348	120	1070	1377	0	1585
Grp Volume(v), veh/h	95	1349	24	55	1301	176	46	0	0	357	0	65
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1539	0	0	1377	0	1585
Q Serve(g_s), s	3.4	21.6	0.5	2.0	21.1	4.6	0.0	0.0	0.0	14.3	0.0	2.0
Cycle Q Clear(g_c), s	3.4	21.6	0.5	2.0	21.1	4.6	1.3	0.0	0.0	15.6	0.0	2.0
Prop In Lane	1.00		1.00	1.00		1.00	0.30		0.70	1.00		1.00
Lane Grp Cap(c), veh/h	122	1620	723	86	1550	691	515	0	0	515	0	455
V/C Ratio(X)	0.78	0.83	0.03	0.64	0.84	0.25	0.09	0.00	0.00	0.69	0.00	0.14
Avail Cap(c_a), veh/h	151	1699	758	137	1672	746	674	0	0	661	0	623
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.7	15.5	9.7	30.3	16.3	11.6	16.9	0.0	0.0	21.9	0.0	17.2
Incr Delay (d2), s/veh	18.5	3.6	0.0	7.5	3.8	0.2	0.1	0.0	0.0	2.2	0.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	8.3	0.2	1.0	8.3	1.5	0.5	0.0	0.0	5.0	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.3	19.0	9.8	37.8	20.0	11.8	17.0	0.0	0.0	24.0	0.0	17.3
LnGrp LOS	D	B	A	D	C	B	B			C		B
Approach Vol, veh/h		1468			1532			46			422	
Approach Delay, s/veh		20.8			19.7			17.0			23.0	
Approach LOS		C			B			B			C	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.1	7.6	34.1		23.1	8.9	32.8				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		25.5	5.0	31.0		25.5	5.5	30.5				
Max Q Clear Time (g_c+I1), s		3.3	4.0	23.6		17.6	5.4	23.1				
Green Ext Time (p_c), s		0.2	0.0	5.1		1.0	0.0	5.2				

Intersection Summary	
HCM 7th Control Delay, s/veh	20.5
HCM 7th LOS	C



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	458	1261	313	1082	402	80	815	226	293	790	309
v/c Ratio	0.81	1.02	0.75	0.99	0.63	0.60	1.20	0.54	0.86	0.72	0.44
Control Delay (s/veh)	71.7	77.7	74.2	74.4	26.1	85.6	152.2	26.3	80.9	50.1	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	71.7	77.7	74.2	74.4	26.1	85.6	152.2	26.3	80.9	50.1	6.1
Queue Length 50th (ft)	221	~680	152	547	158	76	~484	67	275	351	0
Queue Length 95th (ft)	302	#957	219	#838	319	142	#742	177	404	480	74
Internal Link Dist (ft)		1047		306			1367			1181	
Turn Bay Length (ft)	270		240		240	250		250	250		350
Base Capacity (vph)	945	1234	945	1096	636	243	680	420	475	1154	724
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	1.02	0.33	0.99	0.63	0.33	1.20	0.54	0.62	0.68	0.43

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	426	1100	73	304	1050	390	76	774	215	281	758	297
Future Volume (veh/h)	426	1100	73	304	1050	390	76	774	215	281	758	297
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	458	1183	78	313	1082	402	80	815	226	293	790	309
Peak Hour Factor	0.93	0.93	0.93	0.97	0.97	0.97	0.95	0.95	0.95	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	520	1241	82	372	1150	513	101	709	316	319	1144	510
Arrive On Green	0.15	0.37	0.37	0.11	0.32	0.32	0.06	0.20	0.20	0.18	0.32	0.32
Sat Flow, veh/h	3456	3384	223	3456	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	458	621	640	313	1082	402	80	815	226	293	790	309
Grp Sat Flow(s),veh/h/ln	1728	1777	1830	1728	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	18.0	47.0	47.2	12.3	41.0	31.8	6.1	27.6	18.4	22.4	26.8	22.7
Cycle Q Clear(g_c), s	18.0	47.0	47.2	12.3	41.0	31.8	6.1	27.6	18.4	22.4	26.8	22.7
Prop In Lane	1.00		0.12	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	520	651	671	372	1150	513	101	709	316	319	1144	510
V/C Ratio(X)	0.88	0.95	0.95	0.84	0.94	0.78	0.79	1.15	0.71	0.92	0.69	0.61
Avail Cap(c_a), veh/h	999	651	671	999	1156	516	258	709	316	502	1197	534
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.5	42.6	42.7	60.6	45.5	42.4	64.5	55.4	51.7	55.8	40.9	39.5
Incr Delay (d2), s/veh	2.0	24.4	24.3	2.0	14.8	8.7	5.3	83.0	8.4	11.5	1.9	2.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	24.9	25.7	5.5	20.3	13.7	2.9	20.5	8.1	11.1	12.1	9.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.5	67.1	67.0	62.6	60.2	51.1	69.7	138.4	60.0	67.3	42.8	41.9
LnGrp LOS	E	E	E	E	E	D	E	F	E	E	D	D
Approach Vol, veh/h		1719			1797			1121			1392	
Approach Delay, s/veh		65.0			58.6			117.7			47.8	
Approach LOS		E			E			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.7	34.0	18.9	56.7	11.8	50.9	24.8	50.8
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	39.0	27.6	40.0	45.0	20.0	46.6	40.0	45.0
Max Q Clear Time (g_c+I1), s	24.4	29.6	14.3	49.2	8.1	28.8	20.0	43.0
Green Ext Time (p_c), s	0.4	0.0	0.6	0.0	0.1	9.2	0.9	1.8

Intersection Summary	
HCM 7th Control Delay, s/veh	68.9
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	13.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	1525	67	28	1625	19	52	3	19	15	7	61
Future Vol, veh/h	45	1525	67	28	1625	19	52	3	19	15	7	61
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	89	89	89	86	86	86	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	1658	73	31	1826	21	60	3	22	19	9	76

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1847	0	0	1730	0	0	2736	3666	1658	3657	3728	924
Stage 1	-	-	-	-	-	-	1755	1755	-	1899	1899	-
Stage 2	-	-	-	-	-	-	980	1910	-	1757	1828	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	326	-	-	362	-	-	~ 11	5	120	~ 2	~ 4	272
Stage 1	-	-	-	-	-	-	108	138	-	72	117	-
Stage 2	-	-	-	-	-	-	269	115	-	107	127	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	326	-	-	362	-	-	~ 5	4	120	~ 1	~ 3	272
Mov Cap-2 Maneuver	-	-	-	-	-	-	65	47	-	24	42	-
Stage 1	-	-	-	-	-	-	92	117	-	66	107	-
Stage 2	-	-	-	-	-	-	162	105	-	72	108	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.49	0.27	262.7	286.19
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	73	326	-	-	362	-	-	81
HCM Lane V/C Ratio	1.182	0.15	-	-	0.087	-	-	1.284
HCM Ctrl Dly (s/v)	262.7	18	-	-	15.9	-	-	286.2
HCM Lane LOS	F	C	-	-	C	-	-	F
HCM 95th %tile Q(veh)	6.6	0.5	-	-	0.3	-	-	7.8

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	182	1468	1598	75	44	196
v/c Ratio	0.55	0.91	0.62	0.06	0.32	0.37
Control Delay (s/veh)	12.6	17.4	10.4	2.8	55.9	35.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	12.6	17.4	10.4	2.8	55.9	35.8
Queue Length 50th (ft)	14	580	275	4	31	62
Queue Length 95th (ft)	76	#1337	450	22	68	93
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	617	1616	2559	1159	321	1045
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.91	0.62	0.06	0.14	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	175	1409	1470	69	42	186
Future Volume (veh/h)	175	1409	1470	69	42	186
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	182	1468	1598	75	44	196
Peak Hour Factor	0.96	0.96	0.92	0.92	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	325	1542	2579	1150	152	414
Arrive On Green	0.06	0.82	0.73	0.73	0.09	0.09
Sat Flow, veh/h	1781	1870	3647	1585	1781	2790
Grp Volume(v), veh/h	182	1468	1598	75	44	196
Grp Sat Flow(s),veh/h/ln	1781	1870	1777	1585	1781	1395
Q Serve(g_s), s	2.4	71.2	24.9	1.5	2.6	7.2
Cycle Q Clear(g_c), s	2.4	71.2	24.9	1.5	2.6	7.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	325	1542	2579	1150	152	414
V/C Ratio(X)	0.56	0.95	0.62	0.07	0.29	0.47
Avail Cap(c_a), veh/h	710	1581	2579	1150	320	677
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.8	8.0	7.6	4.4	47.7	43.4
Incr Delay (d2), s/veh	0.6	13.0	0.5	0.0	0.4	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	23.0	8.3	0.4	1.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	11.3	21.0	8.1	4.4	48.1	43.7
LnGrp LOS	B	C	A	A	D	D
Approach Vol, veh/h		1650	1673		240	
Approach Delay, s/veh		19.9	8.0		44.5	
Approach LOS		B	A		D	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	97.7	13.5	11.0	86.7
Change Period (Y+Rc), s	6.0	4.0	4.0	6.0
Max Green Setting (Gmax), s	94.0	20.0	31.0	59.0
Max Q Clear Time (g_c+I1), s	73.2	9.2	4.4	26.9
Green Ext Time (p_c), s	18.5	0.4	0.2	22.4

Intersection Summary	
HCM 7th Control Delay, s/veh	16.0
HCM 7th LOS	B

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	17	4	7	58	57	29
Future Vol, veh/h	17	4	7	58	57	29
Peak Hour Factor	0.75	0.75	0.81	0.81	0.70	0.70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	5	9	72	81	41
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.6	7	7.7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	81%	0%	66%
Vol Thru, %	19%	11%	0%
Vol Right, %	0%	89%	34%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	21	65	86
LT Vol	17	0	57
Through Vol	4	7	0
RT Vol	0	58	29
Lane Flow Rate	28	80	123
Geometry Grp	1	1	1
Degree of Util (X)	0.034	0.081	0.138
Departure Headway (Hd)	4.374	3.634	4.05
Convergence, Y/N	Yes	Yes	Yes
Cap	811	974	882
Service Time	2.441	1.7	2.087
HCM Lane V/C Ratio	0.035	0.082	0.139
HCM Control Delay, s/veh	7.6	7	7.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.3	0.5

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	1	5	5	0	4	22	1020	5	7	1107	33
Future Vol, veh/h	35	1	5	5	0	4	22	1020	5	7	1107	33
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	310	-	150	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	75	75	75	97	97	97	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	50	1	7	7	0	5	23	1052	5	8	1190	35

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1777	2307	595	1708	2338	526	1226	0	0	1057	0	0
Stage 1	1205	1205	-	1097	1097	-	-	-	-	-	-	-
Stage 2	571	1102	-	611	1241	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	52	38	447	59	36	497	564	-	-	655	-	-
Stage 1	195	255	-	227	287	-	-	-	-	-	-	-
Stage 2	473	286	-	448	245	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 49	36	447	54	34	497	564	-	-	655	-	-
Mov Cap-2 Maneuver	141	135	-	152	127	-	-	-	-	-	-	-
Stage 1	193	252	-	218	276	-	-	-	-	-	-	-
Stage 2	449	274	-	433	242	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	42.29	22.32	0.24	0.06
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	564	-	-	153	220	655	-	-
HCM Lane V/C Ratio	0.04	-	-	0.382	0.055	0.011	-	-
HCM Ctrl Dly (s/v)	11.6	-	-	42.3	22.3	10.6	-	-
HCM Lane LOS	B	-	-	E	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.6	0.2	0	-	-

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	0	1038	1096	20
Future Vol, veh/h	0	8	0	1038	1096	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	0	1128	1191	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	596	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	447	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	447	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	13.21	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	447	-	-
HCM Lane V/C Ratio	-	0.019	-	-
HCM Ctrl Dly (s/v)	-	13.2	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	21	22	60	7	16	27	1024	11	26	1088	36
v/c Ratio	0.11	0.12	0.22	0.04	0.06	0.16	0.43	0.01	0.15	0.46	0.03
Control Delay (s/veh)	30.9	30.9	4.0	30.8	0.4	33.1	8.8	0.0	33.1	9.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.9	30.9	4.0	30.8	0.4	33.1	8.8	0.0	33.1	9.2	0.1
Queue Length 50th (ft)	5	5	0	2	0	7	51	0	6	55	0
Queue Length 95th (ft)	24	25	0	15	0	38	224	0	37	246	0
Internal Link Dist (ft)		1039		556			711			604	
Turn Bay Length (ft)	240		240			260		150	240		415
Base Capacity (vph)	1081	1081	1056	621	625	172	2642	1207	172	2623	1199
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.06	0.01	0.03	0.16	0.39	0.01	0.15	0.41	0.03

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	0	42	6	0	15	26	993	11	25	1044	35
Future Volume (veh/h)	30	0	42	6	0	15	26	993	11	25	1044	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	43	0	60	7	0	16	27	1024	11	26	1088	36
Peak Hour Factor	0.70	0.70	0.70	0.92	0.92	0.92	0.97	0.97	0.97	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	270	0	120	49	0	43	56	1748	780	54	1716	766
Arrive On Green	0.08	0.00	0.08	0.03	0.00	0.03	0.03	0.49	0.49	0.03	0.48	0.48
Sat Flow, veh/h	3563	0	1585	1781	0	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	43	0	60	7	0	16	27	1024	11	26	1088	36
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	0.6	0.0	1.8	0.2	0.0	0.5	0.8	10.4	0.2	0.7	11.5	0.6
Cycle Q Clear(g_c), s	0.6	0.0	1.8	0.2	0.0	0.5	0.8	10.4	0.2	0.7	11.5	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	270	0	120	49	0	43	56	1748	780	54	1716	766
V/C Ratio(X)	0.16	0.00	0.50	0.14	0.00	0.37	0.49	0.59	0.01	0.48	0.63	0.05
Avail Cap(c_a), veh/h	2332	0	1037	636	0	566	177	2826	1261	177	2798	1248
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.8	0.0	22.4	23.9	0.0	24.1	24.0	9.1	6.6	24.1	9.7	6.9
Incr Delay (d2), s/veh	0.2	0.0	2.4	1.3	0.0	5.2	2.4	0.4	0.0	6.5	0.5	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.7	0.1	0.0	0.2	0.3	3.1	0.0	0.4	3.5	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.0	0.0	24.8	25.3	0.0	29.3	26.4	9.5	6.6	30.6	10.2	6.9
LnGrp LOS	C		C	C		C	C	A	A	C	B	A
Approach Vol, veh/h		103			23			1062			1150	
Approach Delay, s/veh		23.6			28.1			9.9			10.5	
Approach LOS		C			C			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.0	30.1		8.4	6.5	29.7		5.9				
Change Period (Y+Rc), s	4.5	5.3		4.6	4.9	5.3		4.5				
Max Green Setting (Gmax), s	5.0	40.1		33.0	5.0	39.7		18.0				
Max Q Clear Time (g_c+I1), s	2.7	12.4		3.8	2.8	13.5		2.5				
Green Ext Time (p_c), s	0.0	10.2		0.2	0.0	10.9		0.0				

Intersection Summary		
HCM 7th Control Delay, s/veh	11.0	
HCM 7th LOS	B	

Notes
User approved volume balancing among the lanes for turning movement.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	137	106	65	142	148	44	46	1049	76	1049	115
v/c Ratio	0.58	0.43	0.24	0.60	0.59	0.15	0.33	0.67	0.45	0.60	0.14
Control Delay (s/veh)	61.9	56.4	11.6	62.0	61.3	4.2	64.5	29.3	64.4	25.8	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	61.9	56.4	11.6	62.0	61.3	4.2	64.5	29.3	64.4	25.8	10.6
Queue Length 50th (ft)	104	79	0	113	118	0	35	317	58	305	21
Queue Length 95th (ft)	176	140	30	207	213	12	85	520	119	472	64
Internal Link Dist (ft)		813			837			762		707	
Turn Bay Length (ft)	580		300	325		325	530		500		215
Base Capacity (vph)	626	658	606	594	621	606	366	1822	366	1878	870
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.16	0.11	0.24	0.24	0.07	0.13	0.58	0.21	0.56	0.13

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	114	88	54	159	128	44	44	909	98	66	913	100
Future Volume (veh/h)	114	88	54	159	128	44	44	909	98	66	913	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	137	106	65	145	151	44	46	947	102	76	1049	115
Peak Hour Factor	0.83	0.83	0.83	0.99	0.99	0.99	0.96	0.96	0.96	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	202	212	180	215	226	191	68	1558	168	101	1776	792
Arrive On Green	0.11	0.11	0.11	0.12	0.12	0.12	0.04	0.48	0.48	0.06	0.50	0.50
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3236	349	1781	3554	1585
Grp Volume(v), veh/h	137	106	65	145	151	44	46	520	529	76	1049	115
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1808	1781	1777	1585
Q Serve(g_s), s	6.6	4.8	3.4	7.0	6.9	2.3	2.3	19.3	19.3	3.8	18.8	3.5
Cycle Q Clear(g_c), s	6.6	4.8	3.4	7.0	6.9	2.3	2.3	19.3	19.3	3.8	18.8	3.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	202	212	180	215	226	191	68	855	870	101	1776	792
V/C Ratio(X)	0.68	0.50	0.36	0.68	0.67	0.23	0.68	0.61	0.61	0.76	0.59	0.15
Avail Cap(c_a), veh/h	813	854	723	813	854	723	476	1197	1217	476	2394	1068
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.2	37.4	36.8	37.8	37.8	35.7	42.7	17.1	17.1	41.8	15.9	12.1
Incr Delay (d2), s/veh	4.7	2.2	1.5	4.4	4.1	0.7	13.5	2.5	2.5	13.0	1.1	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	2.3	1.4	3.3	3.4	0.9	1.3	8.0	8.1	2.0	7.4	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.0	39.6	38.3	42.2	41.9	36.5	56.1	19.6	19.6	54.7	17.1	12.4
LnGrp LOS	D	D	D	D	D	D	E	B	B	D	B	B
Approach Vol, veh/h		308			340			1095			1240	
Approach Delay, s/veh		40.8			41.3			21.1			19.0	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.1	49.7		15.2	7.4	51.4		15.8				
Change Period (Y+Rc), s	4.0	6.5		5.0	4.0	6.5		5.0				
Max Green Setting (Gmax), s	24.0	60.5		41.0	24.0	60.5		41.0				
Max Q Clear Time (g_c+I1), s	5.8	21.3		8.6	4.3	20.8		9.0				
Green Ext Time (p_c), s	0.2	21.7		1.6	0.1	24.1		1.8				

Intersection Summary		
HCM 7th Control Delay, s/veh		24.6
HCM 7th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Intersection Delay, s/veh	66.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	275	0	50	0	462	214	52	394	0
Future Vol, veh/h	0	0	0	275	0	50	0	462	214	52	394	0
Peak Hour Factor	0.70	0.70	0.70	0.84	0.84	0.84	0.99	0.99	0.99	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	327	0	60	0	467	216	55	415	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	0	28.1	110.1	35.4
HCM LOS	-	D	F	E

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	85%	12%
Vol Thru, %	68%	100%	0%	88%
Vol Right, %	32%	0%	15%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	676	0	325	446
LT Vol	0	0	275	52
Through Vol	462	0	0	394
RT Vol	214	0	50	0
Lane Flow Rate	683	0	387	469
Geometry Grp	1	1	1	1
Degree of Util (X)	1.154	0	0.739	0.837
Departure Headway (Hd)	6.085	9.111	7.243	6.741
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	594	0	503	540
Service Time	4.159	7.111	5.243	4.741
HCM Lane V/C Ratio	1.15	0	0.769	0.869
HCM Control Delay, s/veh	110.1	12.1	28.1	35.4
HCM Lane LOS	F	F	D	E
HCM 95th-tile Q	22.5	0	6.2	8.6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	12	470	51	389	910	13	68	41	274	22	116	42
v/c Ratio	0.05	0.51	0.11	0.75	0.46	0.01	0.41	0.06	0.50	0.09	0.39	0.13
Control Delay (s/veh)	59.2	38.5	0.8	46.8	16.4	0.0	60.8	40.5	8.7	58.4	50.5	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	59.2	38.5	0.8	46.8	16.4	0.0	60.8	40.5	8.7	58.4	50.5	0.8
Queue Length 50th (ft)	4	147	0	247	172	0	46	12	0	7	74	0
Queue Length 95th (ft)	17	262	2	449	336	0	116	34	79	26	168	0
Internal Link Dist (ft)		1037			966			719			726	
Turn Bay Length (ft)	250		215	325		235	145		145	230		
Base Capacity (vph)	1379	2586	1182	1013	3010	1356	355	1268	743	689	667	629
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.18	0.04	0.38	0.30	0.01	0.19	0.03	0.37	0.03	0.17	0.07

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	428	46	350	819	12	63	38	255	21	111	40
Future Volume (veh/h)	11	428	46	350	819	12	63	38	255	21	111	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	12	470	51	389	910	13	68	41	274	22	116	42
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.93	0.93	0.93	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	70	866	386	431	1654	738	117	750	334	115	334	283
Arrive On Green	0.02	0.24	0.24	0.24	0.47	0.47	0.07	0.21	0.21	0.03	0.18	0.18
Sat Flow, veh/h	3456	3554	1585	1781	3554	1585	1781	3554	1585	3456	1870	1585
Grp Volume(v), veh/h	12	470	51	389	910	13	68	41	274	22	116	42
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1777	1585	1781	1777	1585	1728	1870	1585
Q Serve(g_s), s	0.3	9.8	2.1	18.1	15.7	0.4	3.2	0.8	14.1	0.5	4.6	1.9
Cycle Q Clear(g_c), s	0.3	9.8	2.1	18.1	15.7	0.4	3.2	0.8	14.1	0.5	4.6	1.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	70	866	386	431	1654	738	117	750	334	115	334	283
V/C Ratio(X)	0.17	0.54	0.13	0.90	0.55	0.02	0.58	0.05	0.82	0.19	0.35	0.15
Avail Cap(c_a), veh/h	1622	3139	1400	1191	3139	1400	418	1488	664	811	783	664
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.0	28.1	25.2	31.3	16.4	12.3	38.7	26.8	32.1	40.1	30.7	29.5
Incr Delay (d2), s/veh	0.4	1.5	0.4	2.9	0.8	0.0	1.7	0.0	7.6	0.3	2.4	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	4.2	0.8	7.8	6.2	0.1	1.4	0.3	5.9	0.2	2.3	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.5	29.5	25.6	34.2	17.2	12.3	40.4	26.9	39.7	40.4	33.0	30.5
LnGrp LOS	D	C	C	C	B	B	D	C	D	D	C	C
Approach Vol, veh/h		533			1312			383			180	
Approach Delay, s/veh		29.4			22.2			38.5			33.3	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	21.5	25.6	27.5	7.8	24.3	6.7	46.4
Change Period (Y+Rc), s	5.0	6.3	5.0	6.7	5.0	6.3	5.0	6.7
Max Green Setting (Gmax), s	20.0	35.7	57.0	75.3	20.0	35.7	40.0	75.3
Max Q Clear Time (g_c+I1), s	5.2	6.6	20.1	11.8	2.5	16.1	2.3	17.7
Green Ext Time (p_c), s	0.1	2.0	0.6	9.0	0.0	1.9	0.0	20.0

Intersection Summary	
HCM 7th Control Delay, s/veh	27.2
HCM 7th LOS	C



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	44	706	1172	30	80	168
v/c Ratio	0.23	0.29	0.56	0.03	0.37	0.49
Control Delay (s/veh)	39.3	4.3	11.0	3.2	39.4	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	39.3	4.3	11.0	3.2	39.4	12.0
Queue Length 50th (ft)	20	48	180	0	37	0
Queue Length 95th (ft)	59	81	267	11	91	59
Internal Link Dist (ft)		890	754		855	
Turn Bay Length (ft)	275			240		
Base Capacity (vph)	532	3387	2784	1251	532	593
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.21	0.42	0.02	0.15	0.28

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	41	664	1031	26	72	151
Future Volume (veh/h)	41	664	1031	26	72	151
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	44	706	1172	30	80	168
Peak Hour Factor	0.94	0.94	0.88	0.88	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	102	2435	1946	868	240	213
Arrive On Green	0.06	0.69	0.55	0.55	0.13	0.13
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	44	706	1172	30	80	168
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585
Q Serve(g_s), s	1.7	5.5	15.6	0.6	2.8	7.2
Cycle Q Clear(g_c), s	1.7	5.5	15.6	0.6	2.8	7.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	102	2435	1946	868	240	213
V/C Ratio(X)	0.43	0.29	0.60	0.03	0.33	0.79
Avail Cap(c_a), veh/h	520	4118	2796	1247	520	463
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.8	4.3	10.7	7.3	27.4	29.3
Incr Delay (d2), s/veh	1.1	0.1	0.6	0.0	0.3	2.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.5	5.3	0.2	1.2	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	32.9	4.5	11.3	7.3	27.7	31.7
LnGrp LOS	C	A	B	A	C	C
Approach Vol, veh/h		750	1202		248	
Approach Delay, s/veh		6.1	11.2		30.4	
Approach LOS		A	B		C	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	54.9	15.0	9.6	45.3
Change Period (Y+Rc), s	7.0	5.6	5.6	7.0
Max Green Setting (Gmax), s	81.0	20.4	20.4	55.0
Max Q Clear Time (g_c+I1), s	7.5	9.2	3.7	17.6
Green Ext Time (p_c), s	12.4	0.3	0.0	20.7

Intersection Summary	
HCM 7th Control Delay, s/veh	11.7
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	99	688	27	2	963	51	27	27	5	116	36	202
v/c Ratio	0.43	0.33	0.03	0.01	0.57	0.06	0.15	0.09	0.02	0.42	0.11	0.45
Control Delay (s/veh)	47.5	10.1	0.0	49.5	19.3	2.7	48.7	43.5	0.0	45.3	38.2	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	47.5	10.1	0.0	49.5	19.3	2.7	48.7	43.5	0.0	45.3	38.2	9.9
Queue Length 50th (ft)	55	97	0	1	219	0	15	14	0	64	18	0
Queue Length 95th (ft)	131	194	0	10	341	14	42	41	0	148	57	67
Internal Link Dist (ft)		1187			2532			760			553	
Turn Bay Length (ft)	240		245	240		240	240		245	200		205
Base Capacity (vph)	496	2976	1342	496	2976	1342	496	548	519	496	532	596
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.23	0.02	0.00	0.32	0.04	0.05	0.05	0.01	0.23	0.07	0.34

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	626	25	2	857	45	20	20	4	107	33	186
Future Volume (veh/h)	90	626	25	2	857	45	20	20	4	107	33	186
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	99	688	27	2	963	51	27	27	5	116	36	202
Peak Hour Factor	0.91	0.91	0.91	0.89	0.89	0.89	0.73	0.73	0.73	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	146	1956	872	7	1678	748	72	211	179	153	296	251
Arrive On Green	0.08	0.55	0.55	0.00	0.47	0.47	0.04	0.11	0.11	0.09	0.16	0.16
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	99	688	27	2	963	51	27	27	5	116	36	202
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.0	8.0	0.6	0.1	14.5	1.3	1.1	1.0	0.2	4.7	1.2	9.1
Cycle Q Clear(g_c), s	4.0	8.0	0.6	0.1	14.5	1.3	1.1	1.0	0.2	4.7	1.2	9.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	146	1956	872	7	1678	748	72	211	179	153	296	251
V/C Ratio(X)	0.68	0.35	0.03	0.29	0.57	0.07	0.38	0.13	0.03	0.76	0.12	0.80
Avail Cap(c_a), veh/h	481	3612	1611	481	3612	1611	481	530	449	481	515	437
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.0	9.3	7.6	36.8	14.2	10.7	34.6	29.6	29.2	33.1	26.7	30.1
Incr Delay (d2), s/veh	2.0	0.2	0.0	8.7	0.6	0.1	1.2	0.6	0.1	2.9	0.2	7.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	2.8	0.2	0.1	5.4	0.4	0.5	0.5	0.1	2.1	0.5	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	35.1	9.5	7.6	45.5	14.8	10.7	35.8	30.2	29.4	36.0	27.0	37.4
LnGrp LOS	D	A	A	D	B	B	D	C	C	D	C	D
Approach Vol, veh/h		814			1016			59			354	
Approach Delay, s/veh		12.5			14.6			32.7			35.9	
Approach LOS		B			B			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.4	13.0	4.3	46.5	7.0	16.3	10.1	40.7
Change Period (Y+Rc), s	4.0	* 4.6	4.0	5.7	4.0	4.6	4.0	5.7
Max Green Setting (Gmax), s	20.0	* 21	20.0	75.3	20.0	20.4	20.0	75.3
Max Q Clear Time (g_c+I1), s	6.7	3.0	2.1	10.0	3.1	11.1	6.0	16.5
Green Ext Time (p_c), s	0.1	0.1	0.0	11.4	0.0	0.7	0.1	18.4

Intersection Summary	
HCM 7th Control Delay, s/veh	17.7
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	48	845	8	16	1123	88	75	178	33
v/c Ratio	0.27	0.42	0.01	0.10	0.63	0.10	0.17	0.57	0.06
Control Delay (s/veh)	32.5	9.0	0.0	30.7	14.0	3.5	5.3	28.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.5	9.0	0.0	30.7	14.0	3.5	5.3	28.3	0.2
Queue Length 50th (ft)	17	68	0	6	162	0	0	61	0
Queue Length 95th (ft)	52	188	0	25	277	23	23	120	0
Internal Link Dist (ft)		2532			278		359		450
Turn Bay Length (ft)	200		200	200		200		150	
Base Capacity (vph)	179	2216	1023	163	1991	929	774	620	838
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.38	0.01	0.10	0.56	0.09	0.10	0.29	0.04

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	777	7	15	1033	81	21	0	48	164	0	30
Future Volume (veh/h)	44	777	7	15	1033	81	21	0	48	164	0	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	48	845	8	16	1123	88	23	0	52	178	0	33
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	90	1795	801	36	1688	753	153	35	182	407	0	264
Arrive On Green	0.05	0.51	0.51	0.02	0.47	0.47	0.17	0.00	0.17	0.17	0.00	0.17
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	276	207	1092	1352	0	1585
Grp Volume(v), veh/h	48	845	8	16	1123	88	75	0	0	178	0	33
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1575	0	0	1352	0	1585
Q Serve(g_s), s	1.2	6.8	0.1	0.4	10.6	1.4	0.0	0.0	0.0	3.2	0.0	0.8
Cycle Q Clear(g_c), s	1.2	6.8	0.1	0.4	10.6	1.4	1.7	0.0	0.0	4.9	0.0	0.8
Prop In Lane	1.00		1.00	1.00		1.00	0.31		0.69	1.00		1.00
Lane Grp Cap(c), veh/h	90	1795	801	36	1688	753	370	0	0	407	0	264
V/C Ratio(X)	0.53	0.47	0.01	0.44	0.67	0.12	0.20	0.00	0.00	0.44	0.00	0.12
Avail Cap(c_a), veh/h	223	2511	1120	203	2471	1102	998	0	0	967	0	921
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.3	7.0	5.4	21.2	8.8	6.4	15.9	0.0	0.0	17.1	0.0	15.5
Incr Delay (d2), s/veh	4.8	0.2	0.0	8.4	0.5	0.1	0.3	0.0	0.0	0.7	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.8	0.0	0.2	3.0	0.3	0.6	0.0	0.0	1.5	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.2	7.2	5.4	29.6	9.3	6.5	16.2	0.0	0.0	17.9	0.0	15.8
LnGrp LOS	C	A	A	C	A	A	B			B		B
Approach Vol, veh/h		901			1227			75			211	
Approach Delay, s/veh		8.2			9.4			16.2			17.5	
Approach LOS		A			A			B			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		11.8	5.4	26.7		11.8	6.7	25.3				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		25.5	5.0	31.0		25.5	5.5	30.5				
Max Q Clear Time (g_c+I1), s		3.7	2.4	8.8		6.9	3.2	12.6				
Green Ext Time (p_c), s		0.3	0.0	6.3		0.6	0.0	8.2				

Intersection Summary	
HCM 7th Control Delay, s/veh	9.8
HCM 7th LOS	A



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	295	841	248	712	248	69	809	385	443	991	495
v/c Ratio	0.74	0.80	0.70	0.70	0.42	0.57	1.21	0.77	0.93	0.72	0.57
Control Delay (s/veh)	74.4	53.6	75.0	51.1	11.9	84.5	155.7	31.3	80.6	43.2	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	74.4	53.6	75.0	51.1	11.9	84.5	155.7	31.3	80.6	43.2	10.0
Queue Length 50th (ft)	145	392	122	324	35	66	~507	131	426	433	55
Queue Length 95th (ft)	193	472	174	416	116	117	#638	246	#637	543	154
Internal Link Dist (ft)		1047		306			1367			1181	
Turn Bay Length (ft)	270		240		240	250		250	250		350
Base Capacity (vph)	942	1104	942	1093	626	243	670	501	474	1374	864
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.76	0.26	0.65	0.40	0.28	1.21	0.77	0.93	0.72	0.57

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	257	662	70	226	648	226	59	696	331	381	852	426
Future Volume (veh/h)	257	662	70	226	648	226	59	696	331	381	852	426
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	295	761	80	248	712	248	69	809	385	443	991	495
Peak Hour Factor	0.87	0.87	0.87	0.91	0.91	0.91	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	356	931	98	307	970	433	88	740	330	467	1495	667
Arrive On Green	0.10	0.29	0.29	0.09	0.27	0.27	0.05	0.21	0.21	0.26	0.42	0.42
Sat Flow, veh/h	3456	3245	341	3456	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	295	417	424	248	712	248	69	809	385	443	991	495
Grp Sat Flow(s),veh/h/ln	1728	1777	1809	1728	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	11.1	29.0	29.0	9.3	24.2	17.9	5.1	27.6	27.6	32.4	29.7	34.9
Cycle Q Clear(g_c), s	11.1	29.0	29.0	9.3	24.2	17.9	5.1	27.6	27.6	32.4	29.7	34.9
Prop In Lane	1.00		0.19	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	356	510	519	307	970	433	88	740	330	467	1495	667
V/C Ratio(X)	0.83	0.82	0.82	0.81	0.73	0.57	0.78	1.09	1.17	0.95	0.66	0.74
Avail Cap(c_a), veh/h	1042	603	614	1042	1206	538	269	740	330	524	1495	667
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.3	44.0	44.0	59.3	43.8	41.5	62.3	52.5	52.5	48.1	30.9	32.4
Incr Delay (d2), s/veh	1.9	9.0	8.8	1.9	2.6	2.3	5.6	61.7	103.0	24.7	1.3	4.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	14.0	14.2	4.2	11.0	7.3	2.4	18.6	20.4	17.5	13.0	14.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.3	53.0	52.9	61.2	46.5	43.9	67.9	114.2	155.5	72.8	32.2	37.3
LnGrp LOS	E	D	D	E	D	D	E	F	F	E	C	D
Approach Vol, veh/h		1136			1208			1263			1929	
Approach Delay, s/veh		54.8			49.0			124.3			42.8	
Approach LOS		D			D			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	38.8	34.0	15.8	44.1	10.6	62.2	17.6	42.2
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	39.0	27.6	40.0	45.0	20.0	46.6	40.0	45.0
Max Q Clear Time (g_c+I1), s	34.4	29.6	11.3	31.0	7.1	36.9	13.1	26.2
Green Ext Time (p_c), s	0.4	0.0	0.5	7.1	0.1	7.4	0.5	9.4

Intersection Summary	
HCM 7th Control Delay, s/veh	65.2
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	58	1256	94	17	995	26	54	3	32	15	4	51
Future Vol, veh/h	58	1256	94	17	995	26	54	3	32	15	4	51
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	90	90	90	70	70	70	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	61	1322	99	19	1106	29	77	4	46	18	5	61

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1134	0	0	1421	0	0	2037	2616	1322	2604	2701	567
Stage 1	-	-	-	-	-	-	1444	1444	-	1158	1158	-
Stage 2	-	-	-	-	-	-	593	1172	-	1446	1543	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	614	-	-	477	-	-	~ 37	24	190	~ 14	21	467
Stage 1	-	-	-	-	-	-	163	196	-	209	270	-
Stage 2	-	-	-	-	-	-	460	265	-	163	176	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	614	-	-	477	-	-	~ 27	21	190	~ 9	18	467
Mov Cap-2 Maneuver	-	-	-	-	-	-	127	123	-	60	90	-
Stage 1	-	-	-	-	-	-	147	177	-	201	259	-
Stage 2	-	-	-	-	-	-	376	255	-	109	158	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.47	0.21	106.41	43.86
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	144	614	-	-	477	-	-	174
HCM Lane V/C Ratio	0.882	0.099	-	-	0.04	-	-	0.485
HCM Ctrl Dly (s/v)	106.4	11.5	-	-	12.9	-	-	43.9
HCM Lane LOS	F	B	-	-	B	-	-	E
HCM 95th %tile Q(veh)	5.9	0.3	-	-	0.1	-	-	2.3

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	195	1116	976	73	61	173
v/c Ratio	0.38	0.76	0.50	0.08	0.24	0.20
Control Delay (s/veh)	4.3	9.7	10.1	1.9	37.4	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	4.3	9.7	10.1	1.9	37.4	9.9
Queue Length 50th (ft)	16	237	123	0	23	7
Queue Length 95th (ft)	35	475	189	15	83	46
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	1036	1817	3063	1380	595	1888
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.61	0.32	0.05	0.10	0.09

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	187	1071	878	66	60	170
Future Volume (veh/h)	187	1071	878	66	60	170
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	195	1116	976	73	61	173
Peak Hour Factor	0.96	0.96	0.90	0.90	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	511	1402	2125	948	197	576
Arrive On Green	0.10	0.75	0.60	0.60	0.11	0.11
Sat Flow, veh/h	1781	1870	3647	1585	1781	2790
Grp Volume(v), veh/h	195	1116	976	73	61	173
Grp Sat Flow(s),veh/h/ln	1781	1870	1777	1585	1781	1395
Q Serve(g_s), s	2.4	26.5	10.9	1.4	2.3	3.8
Cycle Q Clear(g_c), s	2.4	26.5	10.9	1.4	2.3	3.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	511	1402	2125	948	197	576
V/C Ratio(X)	0.38	0.80	0.46	0.08	0.31	0.30
Avail Cap(c_a), veh/h	1112	2456	2929	1306	498	1046
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	4.9	5.6	8.0	6.1	29.3	24.0
Incr Delay (d2), s/veh	0.2	1.6	0.2	0.1	0.3	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	6.4	3.5	0.4	1.0	3.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	5.1	7.1	8.2	6.1	29.6	24.1
LnGrp LOS	A	A	A	A	C	C
Approach Vol, veh/h		1311	1049		234	
Approach Delay, s/veh		6.8	8.1		25.6	
Approach LOS		A	A		C	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	59.7	11.9	10.9	48.8
Change Period (Y+Rc), s	6.0	4.0	4.0	6.0
Max Green Setting (Gmax), s	94.0	20.0	31.0	59.0
Max Q Clear Time (g_c+I1), s	28.5	5.8	4.4	12.9
Green Ext Time (p_c), s	25.2	0.4	0.3	14.3

Intersection Summary	
HCM 7th Control Delay, s/veh	9.0
HCM 7th LOS	A

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	28	8	4	47	127	9
Future Vol, veh/h	28	8	4	47	127	9
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	11	6	67	181	13
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.9	7.2	8.7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	78%	0%	93%
Vol Thru, %	22%	8%	0%
Vol Right, %	0%	92%	7%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	36	51	136
LT Vol	28	0	127
Through Vol	8	4	0
RT Vol	0	47	9
Lane Flow Rate	51	73	194
Geometry Grp	1	1	1
Degree of Util (X)	0.066	0.079	0.232
Departure Headway (Hd)	4.619	3.896	4.296
Convergence, Y/N	Yes	Yes	Yes
Cap	780	925	828
Service Time	2.622	1.897	2.361
HCM Lane V/C Ratio	0.065	0.079	0.234
HCM Control Delay, s/veh	7.9	7.2	8.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.3	0.9

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	57	1	10	2	0	3	8	1014	6	12	1134	13
Future Vol, veh/h	57	1	10	2	0	3	8	1014	6	12	1134	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	310	-	150	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	70	70	70	81	81	81	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	57	1	10	3	0	4	10	1252	7	14	1366	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2041	2674	683	1984	2682	626	1382	0	0	1259	0	0
Stage 1	1395	1395	-	1272	1272	-	-	-	-	-	-	-
Stage 2	646	1279	-	713	1411	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 33	22	392	36	22	427	492	-	-	548	-	-
Stage 1	149	206	-	177	237	-	-	-	-	-	-	-
Stage 2	427	235	-	389	203	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 31	21	392	33	21	427	492	-	-	548	-	-
Mov Cap-2 Maneuver	108	105	-	120	104	-	-	-	-	-	-	-
Stage 1	145	201	-	174	232	-	-	-	-	-	-	-
Stage 2	414	230	-	367	198	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	68.06	22.66	0.1	0.12
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	492	-	-	120	211	548	-	-
HCM Lane V/C Ratio	0.02	-	-	0.565	0.034	0.026	-	-
HCM Ctrl Dly (s/v)	12.5	-	-	68.1	22.7	11.7	-	-
HCM Lane LOS	B	-	-	F	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.7	0.1	0.1	-	-

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	12	0	1025	1139	6
Future Vol, veh/h	0	12	0	1025	1139	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	13	0	1114	1238	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	619	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	432	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	432	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	13.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	432	-	-
HCM Lane V/C Ratio	-	0.03	-	-
HCM Ctrl Dly (s/v)	-	13.6	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	26	27	79	14	33	41	1178	5	11	1284	26
v/c Ratio	0.18	0.18	0.34	0.09	0.14	0.33	0.47	0.00	0.09	0.55	0.02
Control Delay (s/veh)	35.6	35.7	8.3	34.4	1.2	41.9	8.4	0.0	36.2	12.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.6	35.7	8.3	34.4	1.2	41.9	8.4	0.0	36.2	12.0	0.0
Queue Length 50th (ft)	12	12	0	6	0	19	134	0	5	227	0
Queue Length 95th (ft)	32	33	15	24	0	46	241	0	21	309	0
Internal Link Dist (ft)		1039		556			711			604	
Turn Bay Length (ft)	240		240			260		150	240		415
Base Capacity (vph)	787	787	798	452	484	125	2524	1157	125	2337	1080
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.10	0.03	0.07	0.33	0.47	0.00	0.09	0.55	0.02

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	0	62	13	0	30	33	954	4	10	1117	23
Future Volume (veh/h)	41	0	62	13	0	30	33	954	4	10	1117	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	53	0	79	14	0	33	41	1178	5	11	1284	26
Peak Hour Factor	0.78	0.78	0.78	0.92	0.92	0.92	0.81	0.81	0.81	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	276	0	123	81	0	72	74	1932	862	25	1810	807
Arrive On Green	0.08	0.00	0.08	0.05	0.00	0.05	0.04	0.54	0.54	0.01	0.51	0.51
Sat Flow, veh/h	3563	0	1585	1781	0	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	53	0	79	14	0	33	41	1178	5	11	1284	26
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	0.8	0.0	2.9	0.4	0.0	1.2	1.3	13.4	0.1	0.4	16.4	0.5
Cycle Q Clear(g_c), s	0.8	0.0	2.9	0.4	0.0	1.2	1.3	13.4	0.1	0.4	16.4	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	276	0	123	81	0	72	74	1932	862	25	1810	807
V/C Ratio(X)	0.19	0.00	0.64	0.17	0.00	0.46	0.56	0.61	0.01	0.44	0.71	0.03
Avail Cap(c_a), veh/h	1988	0	885	542	0	483	151	2410	1075	151	2386	1064
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.5	0.0	26.5	27.1	0.0	27.5	27.8	9.2	6.2	28.9	11.1	7.2
Incr Delay (d2), s/veh	0.2	0.0	4.2	1.0	0.0	4.5	2.4	0.4	0.0	11.8	0.8	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	1.2	0.2	0.0	0.5	0.6	4.2	0.0	0.2	5.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.8	0.0	30.6	28.1	0.0	32.0	30.2	9.6	6.2	40.7	11.9	7.3
LnGrp LOS	C		C	C		C	C	A	A	D	B	A
Approach Vol, veh/h		132			47			1224			1321	
Approach Delay, s/veh		28.7			30.8			10.3			12.1	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	37.4		9.2	7.4	35.4		7.2				
Change Period (Y+Rc), s	4.5	5.3		4.6	4.9	5.3		4.5				
Max Green Setting (Gmax), s	5.0	40.1		33.0	5.0	39.7		18.0				
Max Q Clear Time (g_c+I1), s	2.4	15.4		4.9	3.3	18.4		3.2				
Green Ext Time (p_c), s	0.0	11.4		0.3	0.0	11.7		0.1				

Intersection Summary	
HCM 7th Control Delay, s/veh	12.4
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	120	154	54	86	126	58	55	1085	83	1167	188
v/c Ratio	0.50	0.61	0.19	0.42	0.58	0.22	0.38	0.66	0.48	0.64	0.22
Control Delay (s/veh)	58.8	62.8	7.2	58.7	64.4	9.5	65.3	28.3	65.2	26.3	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	58.8	62.8	7.2	58.7	64.4	9.5	65.3	28.3	65.2	26.3	11.8
Queue Length 50th (ft)	93	121	0	69	104	0	43	334	65	360	44
Queue Length 95th (ft)	157	195	19	125	173	23	96	527	129	550	110
Internal Link Dist (ft)		813			837			762		707	
Turn Bay Length (ft)	580		300	325		325	530		500		215
Base Capacity (vph)	601	633	586	571	599	586	352	1739	352	1814	852
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.24	0.09	0.15	0.21	0.10	0.16	0.62	0.24	0.64	0.22

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	129	45	80	96	48	49	810	156	73	1027	165
Future Volume (veh/h)	101	129	45	80	96	48	49	810	156	73	1027	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	120	154	54	96	116	58	55	910	175	83	1167	188
Peak Hour Factor	0.84	0.84	0.84	0.83	0.83	0.83	0.89	0.89	0.89	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	212	223	189	171	179	152	72	1507	290	109	1876	837
Arrive On Green	0.12	0.12	0.12	0.10	0.10	0.10	0.04	0.51	0.51	0.06	0.53	0.53
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	2973	571	1781	3554	1585
Grp Volume(v), veh/h	120	154	54	96	116	58	55	544	541	83	1167	188
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1767	1781	1777	1585
Q Serve(g_s), s	6.0	7.5	2.9	4.9	5.7	3.2	2.9	20.6	20.6	4.3	21.8	6.0
Cycle Q Clear(g_c), s	6.0	7.5	2.9	4.9	5.7	3.2	2.9	20.6	20.6	4.3	21.8	6.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.32	1.00		1.00
Lane Grp Cap(c), veh/h	212	223	189	171	179	152	72	901	896	109	1876	837
V/C Ratio(X)	0.57	0.69	0.29	0.56	0.65	0.38	0.76	0.60	0.60	0.76	0.62	0.22
Avail Cap(c_a), veh/h	772	810	687	772	810	687	452	1136	1130	452	2272	1013
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.4	40.0	38.0	40.9	41.2	40.1	44.9	16.6	16.6	43.7	15.7	12.0
Incr Delay (d2), s/veh	2.8	4.6	1.0	3.5	4.7	1.9	17.9	2.4	2.4	12.2	1.2	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	3.7	1.2	2.3	2.8	1.3	1.6	8.5	8.5	2.3	8.6	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	42.2	44.6	39.0	44.3	45.9	42.0	62.8	18.9	19.0	55.9	16.9	12.5
LnGrp LOS	D	D	D	D	D	D	E	B	B	E	B	B
Approach Vol, veh/h		328			270			1140			1438	
Approach Delay, s/veh		42.8			44.5			21.1			18.6	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.8	54.5		16.3	7.8	56.5		14.1				
Change Period (Y+Rc), s	4.0	6.5		5.0	4.0	6.5		5.0				
Max Green Setting (Gmax), s	24.0	60.5		41.0	24.0	60.5		41.0				
Max Q Clear Time (g_c+I1), s	6.3	22.6		9.5	4.9	23.8		7.7				
Green Ext Time (p_c), s	0.2	22.2		1.8	0.1	26.1		1.4				

Intersection Summary	
HCM 7th Control Delay, s/veh	24.2
HCM 7th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Intersection Delay, s/veh	101.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	1	323	0	36	0	304	273	25	471	0
Future Vol, veh/h	0	0	1	323	0	36	0	304	273	25	471	0
Peak Hour Factor	0.70	0.70	0.70	0.91	0.91	0.91	0.80	0.80	0.80	0.83	0.83	0.83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	1	355	0	40	0	380	341	30	567	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	12.4	32.8	148.9	91
HCM LOS	B	D	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	90%	5%
Vol Thru, %	53%	0%	0%	95%
Vol Right, %	47%	100%	10%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	577	1	359	496
LT Vol	0	0	323	25
Through Vol	304	0	0	471
RT Vol	273	1	36	0
Lane Flow Rate	721	1	395	598
Geometry Grp	1	1	1	1
Degree of Util (X)	1.252	0.003	0.778	1.087
Departure Headway (Hd)	6.451	9.406	7.715	6.948
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	570	383	473	526
Service Time	4.451	7.406	5.715	4.948
HCM Lane V/C Ratio	1.265	0.003	0.835	1.137
HCM Control Delay, s/veh	148.9	12.4	32.8	91
HCM Lane LOS	F	B	D	F
HCM 95th-tile Q	27.2	0	6.9	17.6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	48	1085	86	249	682	35	87	86	371	18	39	26
v/c Ratio	0.24	0.67	0.11	0.74	0.31	0.03	0.47	0.16	0.66	0.09	0.21	0.10
Control Delay (s/veh)	72.1	31.1	4.0	67.5	13.2	0.1	72.9	56.1	12.0	71.9	67.5	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	72.1	31.1	4.0	67.5	13.2	0.1	72.9	56.1	12.0	71.9	67.5	0.9
Queue Length 50th (ft)	21	379	0	210	147	0	75	36	0	7	33	0
Queue Length 95th (ft)	51	570	28	356	217	1	147	69	75	24	80	0
Internal Link Dist (ft)		1037			966			719			726	
Turn Bay Length (ft)	250		215	325		235	145		145	230		
Base Capacity (vph)	1108	2209	1024	814	2614	1187	285	1020	720	554	537	525
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.49	0.08	0.31	0.26	0.03	0.31	0.08	0.52	0.03	0.07	0.05

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	998	79	232	634	33	75	74	319	16	34	23
Future Volume (veh/h)	44	998	79	232	634	33	75	74	319	16	34	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	48	1085	86	249	682	35	87	86	371	18	39	26
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.86	0.86	0.86	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	143	1482	661	274	1881	839	108	872	389	86	392	332
Arrive On Green	0.04	0.42	0.42	0.15	0.53	0.53	0.06	0.25	0.25	0.02	0.21	0.21
Sat Flow, veh/h	3456	3554	1585	1781	3554	1585	1781	3554	1585	3456	1870	1585
Grp Volume(v), veh/h	48	1085	86	249	682	35	87	86	371	18	39	26
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1777	1585	1781	1777	1585	1728	1870	1585
Q Serve(g_s), s	2.0	37.0	4.8	19.9	16.2	1.5	7.0	2.7	33.3	0.7	2.4	1.9
Cycle Q Clear(g_c), s	2.0	37.0	4.8	19.9	16.2	1.5	7.0	2.7	33.3	0.7	2.4	1.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	143	1482	661	274	1881	839	108	872	389	86	392	332
V/C Ratio(X)	0.34	0.73	0.13	0.91	0.36	0.04	0.81	0.10	0.95	0.21	0.10	0.08
Avail Cap(c_a), veh/h	956	1851	826	702	1881	839	246	878	391	478	462	391
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	67.4	35.4	26.0	60.2	19.8	16.4	67.1	42.2	53.8	69.1	46.1	45.9
Incr Delay (d2), s/veh	0.5	2.2	0.2	4.7	0.3	0.1	5.2	0.1	33.9	0.4	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	16.5	1.9	9.4	6.8	0.6	3.3	1.2	16.9	0.3	1.2	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	67.9	37.6	26.2	64.9	20.1	16.4	72.3	42.3	87.7	69.5	46.5	46.3
LnGrp LOS	E	D	C	E	C	B	E	D	F	E	D	D
Approach Vol, veh/h		1219			966			544			83	
Approach Delay, s/veh		37.9			31.5			78.1			51.4	
Approach LOS		D			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.8	36.6	27.2	67.0	8.6	41.8	11.0	83.2
Change Period (Y+Rc), s	5.0	6.3	5.0	6.7	5.0	6.3	5.0	6.7
Max Green Setting (Gmax), s	20.0	35.7	57.0	75.3	20.0	35.7	40.0	75.3
Max Q Clear Time (g_c+I1), s	9.0	4.4	21.9	39.0	2.7	35.3	4.0	18.2
Green Ext Time (p_c), s	0.1	0.7	0.4	21.2	0.0	0.1	0.1	13.7

Intersection Summary	
HCM 7th Control Delay, s/veh	43.9
HCM 7th LOS	D



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	101	1400	935	71	75	81
v/c Ratio	0.44	0.51	0.43	0.07	0.36	0.31
Control Delay (s/veh)	40.3	5.2	11.8	2.9	40.0	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	40.3	5.2	11.8	2.9	40.0	13.1
Queue Length 50th (ft)	41	120	132	0	30	0
Queue Length 95th (ft)	112	193	232	19	73	25
Internal Link Dist (ft)		890	754		855	
Turn Bay Length (ft)	275			240		
Base Capacity (vph)	517	3383	2796	1265	517	520
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.41	0.33	0.06	0.15	0.16

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	89	1232	860	65	55	59
Future Volume (veh/h)	89	1232	860	65	55	59
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	101	1400	935	71	75	81
Peak Hour Factor	0.88	0.88	0.92	0.92	0.73	0.73
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	155	2562	1965	876	172	153
Arrive On Green	0.09	0.72	0.55	0.55	0.10	0.10
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	101	1400	935	71	75	81
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585
Q Serve(g_s), s	3.8	12.5	11.0	1.4	2.7	3.4
Cycle Q Clear(g_c), s	3.8	12.5	11.0	1.4	2.7	3.4
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	155	2562	1965	876	172	153
V/C Ratio(X)	0.65	0.55	0.48	0.08	0.44	0.53
Avail Cap(c_a), veh/h	527	4173	2834	1264	527	469
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.5	4.4	9.4	7.2	29.4	29.7
Incr Delay (d2), s/veh	1.7	0.4	0.4	0.1	0.7	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	3.0	3.7	0.4	1.2	3.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	32.2	4.8	9.7	7.3	30.0	30.7
LnGrp LOS	C	A	A	A	C	C
Approach Vol, veh/h		1501	1006		156	
Approach Delay, s/veh		6.7	9.6		30.4	
Approach LOS		A	A		C	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	56.7	12.2	11.6	45.1
Change Period (Y+Rc), s	7.0	5.6	5.6	7.0
Max Green Setting (Gmax), s	81.0	20.4	20.4	55.0
Max Q Clear Time (g_c+I1), s	14.5	5.4	5.8	13.0
Green Ext Time (p_c), s	35.2	0.2	0.1	17.0

Intersection Summary	
HCM 7th Control Delay, s/veh	9.2
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	184	1259	14	1	843	101	7	19	1	83	31	116
v/c Ratio	0.57	0.54	0.01	0.01	0.55	0.14	0.04	0.06	0.00	0.36	0.10	0.32
Control Delay (s/veh)	43.8	10.0	0.0	51.0	19.3	4.1	49.4	43.8	0.0	46.1	37.3	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	43.8	10.0	0.0	51.0	19.3	4.1	49.4	43.8	0.0	46.1	37.3	10.8
Queue Length 50th (ft)	75	95	0	0	133	0	3	8	0	35	13	0
Queue Length 95th (ft)	219	372	0	7	290	29	17	31	0	115	51	52
Internal Link Dist (ft)		1187			2532			760			553	
Turn Bay Length (ft)	240		245	240		240	240		245	200		205
Base Capacity (vph)	474	3074	1384	474	3074	1388	474	524	499	474	531	534
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.41	0.01	0.00	0.27	0.07	0.01	0.04	0.00	0.18	0.06	0.22

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	162	1108	12	1	818	98	5	13	1	73	27	102
Future Volume (veh/h)	162	1108	12	1	818	98	5	13	1	73	27	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	184	1259	14	1	843	101	7	19	1	83	31	116
Peak Hour Factor	0.88	0.88	0.88	0.97	0.97	0.97	0.70	0.70	0.70	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	227	2173	969	3	1727	770	23	103	87	140	226	191
Arrive On Green	0.13	0.61	0.61	0.00	0.49	0.49	0.01	0.05	0.05	0.08	0.12	0.12
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	184	1259	14	1	843	101	7	19	1	83	31	116
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	7.3	15.4	0.3	0.0	11.6	2.5	0.3	0.7	0.0	3.3	1.1	5.0
Cycle Q Clear(g_c), s	7.3	15.4	0.3	0.0	11.6	2.5	0.3	0.7	0.0	3.3	1.1	5.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	227	2173	969	3	1727	770	23	103	87	140	226	191
V/C Ratio(X)	0.81	0.58	0.01	0.29	0.49	0.13	0.31	0.19	0.01	0.59	0.14	0.61
Avail Cap(c_a), veh/h	493	3700	1650	493	3700	1650	493	543	460	493	528	447
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.7	8.4	5.5	36.0	12.5	10.2	35.4	32.6	32.3	32.2	28.4	30.2
Incr Delay (d2), s/veh	2.6	0.5	0.0	16.5	0.4	0.1	2.8	1.8	0.1	1.5	0.3	3.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	4.9	0.1	0.0	4.2	0.8	0.1	0.4	0.0	1.4	0.5	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.3	8.9	5.5	52.5	12.9	10.3	38.2	34.5	32.4	33.7	28.8	34.0
LnGrp LOS	C	A	A	D	B	B	D	C	C	C	C	C
Approach Vol, veh/h		1457			945			27			230	
Approach Delay, s/veh		12.0			12.7			35.4			33.2	
Approach LOS		B			B			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.7	8.6	4.1	49.9	4.9	13.3	13.2	40.8
Change Period (Y+Rc), s	4.0	* 4.6	4.0	5.7	4.0	4.6	4.0	5.7
Max Green Setting (Gmax), s	20.0	* 21	20.0	75.3	20.0	20.4	20.0	75.3
Max Q Clear Time (g_c+I1), s	5.3	2.7	2.0	17.4	2.3	7.0	9.3	13.6
Green Ext Time (p_c), s	0.1	0.1	0.0	26.8	0.0	0.5	0.2	16.0

Intersection Summary	
HCM 7th Control Delay, s/veh	14.3
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	95	1354	24	55	1304	176	46	357	65
v/c Ratio	0.66	0.81	0.03	0.42	0.84	0.22	0.08	0.83	0.11
Control Delay (s/veh)	58.0	23.2	0.1	43.8	25.5	3.4	1.6	40.7	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	58.0	23.2	0.1	43.8	25.5	3.4	1.6	40.7	0.4
Queue Length 50th (ft)	44	303	0	25	289	0	0	147	0
Queue Length 95th (ft)	#119	#448	0	#66	#428	34	7	#281	0
Internal Link Dist (ft)		2532			278		359		450
Turn Bay Length (ft)	200		200	200		200		150	
Base Capacity (vph)	145	1733	819	132	1611	816	653	515	704
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.78	0.03	0.42	0.81	0.22	0.07	0.69	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	1246	22	51	1200	162	13	0	29	328	0	60
Future Volume (veh/h)	87	1246	22	51	1200	162	13	0	29	328	0	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	95	1354	24	55	1304	176	14	0	32	357	0	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	122	1621	723	86	1551	692	172	34	308	515	0	455
Arrive On Green	0.07	0.46	0.46	0.05	0.44	0.44	0.29	0.00	0.29	0.29	0.00	0.29
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	348	120	1070	1377	0	1585
Grp Volume(v), veh/h	95	1354	24	55	1304	176	46	0	0	357	0	65
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1539	0	0	1377	0	1585
Q Serve(g_s), s	3.4	21.7	0.5	2.0	21.2	4.6	0.0	0.0	0.0	14.3	0.0	2.0
Cycle Q Clear(g_c), s	3.4	21.7	0.5	2.0	21.2	4.6	1.3	0.0	0.0	15.7	0.0	2.0
Prop In Lane	1.00		1.00	1.00		1.00	0.30		0.70	1.00		1.00
Lane Grp Cap(c), veh/h	122	1621	723	86	1551	692	514	0	0	515	0	455
V/C Ratio(X)	0.78	0.84	0.03	0.64	0.84	0.25	0.09	0.00	0.00	0.69	0.00	0.14
Avail Cap(c_a), veh/h	151	1698	757	137	1670	745	673	0	0	660	0	623
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.8	15.5	9.7	30.3	16.3	11.6	16.9	0.0	0.0	21.9	0.0	17.2
Incr Delay (d2), s/veh	18.6	3.7	0.0	7.6	3.8	0.2	0.1	0.0	0.0	2.2	0.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	8.4	0.2	1.0	8.3	1.5	0.5	0.0	0.0	5.1	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.3	19.2	9.8	37.9	20.1	11.8	17.0	0.0	0.0	24.1	0.0	17.3
LnGrp LOS	D	B	A	D	C	B	B			C		B
Approach Vol, veh/h		1473			1535			46			422	
Approach Delay, s/veh		20.9			19.8			17.0			23.0	
Approach LOS		C			B			B			C	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.1	7.6	34.1		23.1	8.9	32.8				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		25.5	5.0	31.0		25.5	5.5	30.5				
Max Q Clear Time (g_c+I1), s		3.3	4.0	23.7		17.7	5.4	23.2				
Green Ext Time (p_c), s		0.2	0.0	5.0		1.0	0.0	5.1				

Intersection Summary	
HCM 7th Control Delay, s/veh	20.6
HCM 7th LOS	C



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	458	1267	321	1082	402	83	816	231	293	792	309
v/c Ratio	0.81	1.03	0.75	0.99	0.63	0.61	1.20	0.54	0.86	0.73	0.44
Control Delay (s/veh)	71.8	81.1	74.1	74.5	26.1	85.9	152.3	26.2	81.0	50.5	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	71.8	81.1	74.1	74.5	26.1	85.9	152.3	26.2	81.0	50.5	6.1
Queue Length 50th (ft)	222	~692	156	~549	159	79	~483	68	275	353	0
Queue Length 95th (ft)	302	#969	224	#838	319	147	#742	179	404	483	74
Internal Link Dist (ft)		1047		306			1367			1181	
Turn Bay Length (ft)	270		240		240	250		250	250		350
Base Capacity (vph)	945	1225	945	1096	636	243	681	424	475	1151	723
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	1.03	0.34	0.99	0.63	0.34	1.20	0.54	0.62	0.69	0.43

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	426	1100	78	311	1050	390	79	775	219	281	760	297
Future Volume (veh/h)	426	1100	78	311	1050	390	79	775	219	281	760	297
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	458	1183	84	321	1082	402	83	816	231	293	792	309
Peak Hour Factor	0.93	0.93	0.93	0.97	0.97	0.97	0.95	0.95	0.95	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	520	1226	87	380	1150	513	104	709	316	319	1137	507
Arrive On Green	0.15	0.36	0.36	0.11	0.32	0.32	0.06	0.20	0.20	0.18	0.32	0.32
Sat Flow, veh/h	3456	3366	239	3456	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	458	624	643	321	1082	402	83	816	231	293	792	309
Grp Sat Flow(s),veh/h/ln	1728	1777	1827	1728	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	18.0	47.6	47.7	12.6	41.0	31.8	6.4	27.6	18.9	22.4	27.0	22.8
Cycle Q Clear(g_c), s	18.0	47.6	47.7	12.6	41.0	31.8	6.4	27.6	18.9	22.4	27.0	22.8
Prop In Lane	1.00		0.13	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	520	647	666	380	1150	513	104	709	316	319	1137	507
V/C Ratio(X)	0.88	0.96	0.97	0.85	0.94	0.78	0.80	1.15	0.73	0.92	0.70	0.61
Avail Cap(c_a), veh/h	999	647	666	999	1156	516	258	709	316	502	1197	534
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.5	43.1	43.1	60.4	45.5	42.4	64.3	55.4	51.9	55.8	41.2	39.7
Incr Delay (d2), s/veh	2.0	26.8	26.8	2.0	14.8	8.7	5.2	83.6	9.3	11.5	2.0	2.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	25.5	26.3	5.6	20.3	13.7	3.0	20.6	8.3	11.1	12.2	9.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.5	69.9	69.9	62.4	60.2	51.1	69.5	139.0	61.1	67.3	43.1	42.2
LnGrp LOS	E	E	E	E	E	D	E	F	E	E	D	D
Approach Vol, veh/h		1725			1805			1130			1394	
Approach Delay, s/veh		67.2			58.6			117.9			48.0	
Approach LOS		E			E			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.7	34.0	19.2	56.4	12.1	50.7	24.8	50.8
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	39.0	27.6	40.0	45.0	20.0	46.6	40.0	45.0
Max Q Clear Time (g_c+I1), s	24.4	29.6	14.6	49.7	8.4	29.0	20.0	43.0
Green Ext Time (p_c), s	0.4	0.0	0.6	0.0	0.1	9.2	0.9	1.8

Intersection Summary	
HCM 7th Control Delay, s/veh	69.7
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	14.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	1528	68	28	1631	19	53	3	19	15	7	61
Future Vol, veh/h	45	1528	68	28	1631	19	53	3	19	15	7	61
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	89	89	89	86	86	86	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	1661	74	31	1833	21	62	3	22	19	9	76

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1854	0	0	1735	0	0	2742	3676	1661	3667	3739	927
Stage 1	-	-	-	-	-	-	1759	1759	-	1906	1906	-
Stage 2	-	-	-	-	-	-	984	1917	-	1760	1833	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	325	-	-	361	-	-	~ 11	5	120	~ 2	~ 4	271
Stage 1	-	-	-	-	-	-	107	137	-	71	116	-
Stage 2	-	-	-	-	-	-	267	114	-	107	126	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	325	-	-	361	-	-	~ 5	4	120	~ 1	~ 3	271
Mov Cap-2 Maneuver	-	-	-	-	-	-	65	46	-	23	42	-
Stage 1	-	-	-	-	-	-	91	117	-	65	106	-
Stage 2	-	-	-	-	-	-	161	104	-	72	107	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.5	0.27	273.4	291.91
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	72	325	-	-	361	-	-	80
HCM Lane V/C Ratio	1.209	0.151	-	-	0.087	-	-	1.297
HCM Ctrl Dly (s/v)	273.4	18.1	-	-	15.9	-	-	291.9
HCM Lane LOS	F	C	-	-	C	-	-	F
HCM 95th %tile Q(veh)	6.7	0.5	-	-	0.3	-	-	7.9

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	183	1471	1603	75	44	197
v/c Ratio	0.56	0.91	0.63	0.06	0.32	0.37
Control Delay (s/veh)	13.0	17.6	10.5	2.9	55.9	35.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	13.0	17.6	10.5	2.9	55.9	35.7
Queue Length 50th (ft)	14	586	278	4	31	63
Queue Length 95th (ft)	78	#1342	454	22	68	93
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	616	1616	2555	1157	321	1045
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.91	0.63	0.06	0.14	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	176	1412	1475	69	42	187
Future Volume (veh/h)	176	1412	1475	69	42	187
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	183	1471	1603	75	44	197
Peak Hour Factor	0.96	0.96	0.92	0.92	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	324	1542	2580	1151	153	414
Arrive On Green	0.06	0.82	0.73	0.73	0.09	0.09
Sat Flow, veh/h	1781	1870	3647	1585	1781	2790
Grp Volume(v), veh/h	183	1471	1603	75	44	197
Grp Sat Flow(s),veh/h/ln	1781	1870	1777	1585	1781	1395
Q Serve(g_s), s	2.5	72.1	25.1	1.5	2.6	7.2
Cycle Q Clear(g_c), s	2.5	72.1	25.1	1.5	2.6	7.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	324	1542	2580	1151	153	414
V/C Ratio(X)	0.57	0.95	0.62	0.07	0.29	0.48
Avail Cap(c_a), veh/h	708	1577	2580	1151	320	675
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.0	8.0	7.6	4.4	47.7	43.5
Incr Delay (d2), s/veh	0.6	13.4	0.6	0.0	0.4	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	23.3	8.4	0.5	1.2	5.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	11.6	21.4	8.2	4.4	48.1	43.8
LnGrp LOS	B	C	A	A	D	D
Approach Vol, veh/h		1654	1678		241	
Approach Delay, s/veh		20.3	8.0		44.6	
Approach LOS		C	A		D	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	97.9	13.6	11.0	86.9
Change Period (Y+Rc), s	6.0	4.0	4.0	6.0
Max Green Setting (Gmax), s	94.0	20.0	31.0	59.0
Max Q Clear Time (g_c+I1), s	74.1	9.2	4.5	27.1
Green Ext Time (p_c), s	17.8	0.4	0.2	22.3

Intersection Summary	
HCM 7th Control Delay, s/veh	16.2
HCM 7th LOS	B

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	17	4	7	59	58	29
Future Vol, veh/h	17	4	7	59	58	29
Peak Hour Factor	0.75	0.75	0.81	0.81	0.70	0.70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	5	9	73	83	41
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.6	7	7.8
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	81%	0%	67%
Vol Thru, %	19%	11%	0%
Vol Right, %	0%	89%	33%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	21	66	87
LT Vol	17	0	58
Through Vol	4	7	0
RT Vol	0	59	29
Lane Flow Rate	28	81	124
Geometry Grp	1	1	1
Degree of Util (X)	0.034	0.082	0.14
Departure Headway (Hd)	4.377	3.635	4.056
Convergence, Y/N	Yes	Yes	Yes
Cap	810	974	881
Service Time	2.446	1.703	2.092
HCM Lane V/C Ratio	0.035	0.083	0.141
HCM Control Delay, s/veh	7.6	7	7.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.3	0.5

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	39	1	7	5	0	4	25	1024	5	7	1114	40
Future Vol, veh/h	39	1	7	5	0	4	25	1024	5	7	1114	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	310	-	150	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	75	75	75	97	97	97	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	56	1	10	7	0	5	26	1056	5	8	1198	43

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1792	2325	599	1722	2363	528	1241	0	0	1061	0	0
Stage 1	1213	1213	-	1107	1107	-	-	-	-	-	-	-
Stage 2	579	1112	-	615	1256	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 51	37	445	57	35	495	557	-	-	652	-	-
Stage 1	193	253	-	224	284	-	-	-	-	-	-	-
Stage 2	468	282	-	445	241	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 47	35	445	52	33	495	557	-	-	652	-	-
Mov Cap-2 Maneuver	139	133	-	149	123	-	-	-	-	-	-	-
Stage 1	191	250	-	214	271	-	-	-	-	-	-	-
Stage 2	441	269	-	428	238	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	45.19	22.68	0.28	0.06
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	557	-	-	154	216	652	-	-
HCM Lane V/C Ratio	0.046	-	-	0.435	0.056	0.012	-	-
HCM Ctrl Dly (s/v)	11.8	-	-	45.2	22.7	10.6	-	-
HCM Lane LOS	B	-	-	E	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2	0.2	0	-	-

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	0	1045	1104	20
Future Vol, veh/h	0	8	0	1045	1104	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	0	1136	1200	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	600	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	444	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	444	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	13.27	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	444	-	-
HCM Lane V/C Ratio	-	0.02	-	-
HCM Ctrl Dly (s/v)	-	13.3	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	21	22	60	9	21	27	1027	14	33	1090	36
v/c Ratio	0.11	0.12	0.22	0.05	0.08	0.16	0.43	0.01	0.20	0.46	0.03
Control Delay (s/veh)	31.3	31.4	4.0	31.1	0.5	33.7	8.8	0.0	34.1	9.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	31.3	31.4	4.0	31.1	0.5	33.7	8.8	0.0	34.1	9.2	0.1
Queue Length 50th (ft)	6	6	0	2	0	7	52	0	9	56	0
Queue Length 95th (ft)	24	25	0	18	0	38	226	0	43	248	0
Internal Link Dist (ft)		1039		556			711			604	
Turn Bay Length (ft)	240		240			260		150	240		415
Base Capacity (vph)	1059	1059	1037	608	615	169	2589	1185	169	2570	1177
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.06	0.01	0.03	0.16	0.40	0.01	0.20	0.42	0.03

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	0	42	8	0	19	26	996	14	32	1046	35
Future Volume (veh/h)	30	0	42	8	0	19	26	996	14	32	1046	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	43	0	60	9	0	21	27	1027	14	33	1090	36
Peak Hour Factor	0.70	0.70	0.70	0.92	0.92	0.92	0.97	0.97	0.97	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	268	0	119	60	0	54	56	1719	767	65	1710	763
Arrive On Green	0.08	0.00	0.08	0.03	0.00	0.03	0.03	0.48	0.48	0.04	0.48	0.48
Sat Flow, veh/h	3563	0	1585	1781	0	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	43	0	60	9	0	21	27	1027	14	33	1090	36
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	0.6	0.0	1.9	0.3	0.0	0.7	0.8	10.7	0.2	0.9	11.7	0.6
Cycle Q Clear(g_c), s	0.6	0.0	1.9	0.3	0.0	0.7	0.8	10.7	0.2	0.9	11.7	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	268	0	119	60	0	54	56	1719	767	65	1710	763
V/C Ratio(X)	0.16	0.00	0.50	0.15	0.00	0.39	0.49	0.60	0.02	0.51	0.64	0.05
Avail Cap(c_a), veh/h	2305	0	1026	629	0	559	175	2794	1246	175	2766	1234
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.1	0.0	22.7	23.9	0.0	24.1	24.3	9.6	6.9	24.1	9.9	7.0
Incr Delay (d2), s/veh	0.2	0.0	2.4	1.1	0.0	4.6	2.4	0.4	0.0	5.9	0.5	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.7	0.1	0.0	0.3	0.3	3.3	0.1	0.5	3.6	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.3	0.0	25.1	25.0	0.0	28.7	26.7	10.0	6.9	30.1	10.4	7.1
LnGrp LOS	C		C	C		C	C	A	A	C	B	A
Approach Vol, veh/h		103			30			1068			1159	
Approach Delay, s/veh		23.9			27.6			10.4			10.8	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.4	30.0		8.4	6.5	29.8		6.2				
Change Period (Y+Rc), s	4.5	5.3		4.6	4.9	5.3		4.5				
Max Green Setting (Gmax), s	5.0	40.1		33.0	5.0	39.7		18.0				
Max Q Clear Time (g_c+I1), s	2.9	12.7		3.9	2.8	13.7		2.7				
Green Ext Time (p_c), s	0.0	10.2		0.2	0.0	10.8		0.0				

Intersection Summary		
HCM 7th Control Delay, s/veh	11.4	
HCM 7th LOS	B	

Notes
User approved volume balancing among the lanes for turning movement.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	139	106	65	142	148	44	46	1054	76	1053	116
v/c Ratio	0.58	0.42	0.24	0.60	0.60	0.15	0.33	0.67	0.45	0.60	0.14
Control Delay (s/veh)	62.4	56.5	11.6	62.7	61.9	4.2	65.0	29.4	64.9	25.8	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	62.4	56.5	11.6	62.7	61.9	4.2	65.0	29.4	64.9	25.8	10.6
Queue Length 50th (ft)	108	80	0	115	121	0	36	320	59	308	21
Queue Length 95th (ft)	178	140	30	208	214	12	85	524	119	475	65
Internal Link Dist (ft)		813			837			762		707	
Turn Bay Length (ft)	580		300	325		325	530		500		215
Base Capacity (vph)	620	653	602	589	617	602	363	1807	363	1873	868
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.16	0.11	0.24	0.24	0.07	0.13	0.58	0.21	0.56	0.13

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	88	54	159	128	44	44	914	98	66	916	101
Future Volume (veh/h)	115	88	54	159	128	44	44	914	98	66	916	101
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	139	106	65	145	151	44	46	952	102	76	1053	116
Peak Hour Factor	0.83	0.83	0.83	0.99	0.99	0.99	0.96	0.96	0.96	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	204	214	181	214	225	191	68	1559	167	100	1777	793
Arrive On Green	0.11	0.11	0.11	0.12	0.12	0.12	0.04	0.48	0.48	0.06	0.50	0.50
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3238	347	1781	3554	1585
Grp Volume(v), veh/h	139	106	65	145	151	44	46	522	532	76	1053	116
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1808	1781	1777	1585
Q Serve(g_s), s	6.8	4.8	3.4	7.0	7.0	2.3	2.3	19.5	19.5	3.8	19.0	3.6
Cycle Q Clear(g_c), s	6.8	4.8	3.4	7.0	7.0	2.3	2.3	19.5	19.5	3.8	19.0	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	204	214	181	214	225	191	68	856	871	100	1777	793
V/C Ratio(X)	0.68	0.50	0.36	0.68	0.67	0.23	0.68	0.61	0.61	0.76	0.59	0.15
Avail Cap(c_a), veh/h	810	850	720	810	850	720	474	1192	1212	474	2383	1063
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.4	37.5	36.9	38.0	38.0	35.9	42.9	17.2	17.2	42.0	16.0	12.2
Incr Delay (d2), s/veh	4.8	2.1	1.4	4.4	4.1	0.7	13.6	2.6	2.5	13.0	1.2	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	2.3	1.4	3.3	3.4	0.9	1.3	8.1	8.2	2.0	7.5	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.2	39.6	38.3	42.4	42.1	36.6	56.4	19.7	19.7	54.9	17.2	12.5
LnGrp LOS	D	D	D	D	D	D	E	B	B	D	B	B
Approach Vol, veh/h		310			340			1100			1245	
Approach Delay, s/veh		40.9			41.5			21.2			19.0	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.1	49.9		15.3	7.4	51.6		15.9				
Change Period (Y+Rc), s	4.0	6.5		5.0	4.0	6.5		5.0				
Max Green Setting (Gmax), s	24.0	60.5		41.0	24.0	60.5		41.0				
Max Q Clear Time (g_c+I1), s	5.8	21.5		8.8	4.3	21.0		9.0				
Green Ext Time (p_c), s	0.2	21.8		1.6	0.1	24.1		1.8				

Intersection Summary		
HCM 7th Control Delay, s/veh	24.7	
HCM 7th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Intersection Delay, s/veh	67.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	276	0	50	0	462	215	52	394	0
Future Vol, veh/h	0	0	0	276	0	50	0	462	215	52	394	0
Peak Hour Factor	0.70	0.70	0.70	0.84	0.84	0.84	0.99	0.99	0.99	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	329	0	60	0	467	217	55	415	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	0	28.3	111.3	35.5
HCM LOS	-	D	F	E

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	85%	12%
Vol Thru, %	68%	100%	0%	88%
Vol Right, %	32%	0%	15%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	677	0	326	446
LT Vol	0	0	276	52
Through Vol	462	0	0	394
RT Vol	215	0	50	0
Lane Flow Rate	684	0	388	469
Geometry Grp	1	1	1	1
Degree of Util (X)	1.157	0	0.742	0.838
Departure Headway (Hd)	6.092	9.128	7.248	6.752
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	595	0	501	540
Service Time	4.166	7.128	5.248	4.752
HCM Lane V/C Ratio	1.15	0	0.774	0.869
HCM Control Delay, s/veh	111.3	12.1	28.3	35.5
HCM Lane LOS	F	F	D	E
HCM 95th-tile Q	22.6	0	6.2	8.6

Intersection	
Intersection Delay, s/veh	88.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	1	300	0	24	0	304	266	21	471	0
Future Vol, veh/h	0	0	1	300	0	24	0	304	266	21	471	0
Peak Hour Factor	0.70	0.70	0.70	0.91	0.91	0.91	0.80	0.80	0.80	0.83	0.83	0.83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	1	330	0	26	0	380	333	25	567	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	12	27.2	128.1	77.5
HCM LOS	B	D	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	93%	4%
Vol Thru, %	53%	0%	0%	96%
Vol Right, %	47%	100%	7%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	570	1	324	492
LT Vol	0	0	300	21
Through Vol	304	0	0	471
RT Vol	266	1	24	0
Lane Flow Rate	713	1	356	593
Geometry Grp	1	1	1	1
Degree of Util (X)	1.201	0.003	0.71	1.047
Departure Headway (Hd)	6.244	8.987	7.629	6.717
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	584	401	477	545
Service Time	4.244	6.987	5.629	4.717
HCM Lane V/C Ratio	1.221	0.002	0.746	1.088
HCM Control Delay, s/veh	128.1	12	27.2	77.5
HCM Lane LOS	F	B	D	F
HCM 95th-tile Q	24.9	0	5.5	16.2

Intersection	
Intersection Delay, s/veh	54.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	262	0	43	0	462	192	41	394	0
Future Vol, veh/h	0	0	0	262	0	43	0	462	192	41	394	0
Peak Hour Factor	0.70	0.70	0.70	0.84	0.84	0.84	0.99	0.99	0.99	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	312	0	51	0	467	194	43	415	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	0	24.5	86.9	30.8
HCM LOS	-	C	F	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	86%	9%
Vol Thru, %	71%	100%	0%	91%
Vol Right, %	29%	0%	14%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	654	0	305	435
LT Vol	0	0	262	41
Through Vol	462	0	0	394
RT Vol	192	0	43	0
Lane Flow Rate	661	0	363	458
Geometry Grp	1	1	1	1
Degree of Util (X)	1.089	0	0.69	0.801
Departure Headway (Hd)	5.934	8.757	7.12	6.542
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	608	0	512	559
Service Time	4.018	6.757	5.12	4.542
HCM Lane V/C Ratio	1.087	0	0.709	0.819
HCM Control Delay, s/veh	86.9	11.8	24.5	30.8
HCM Lane LOS	F	F	C	D
HCM 95th-tile Q	19.3	0	5.3	7.7

Appendix E

Intersection Analysis Worksheets for Cumulative (2044)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	228	647	82	380	1098	92	92	892	249	196	1846	474
v/c Ratio	0.68	0.55	0.19	0.79	0.79	0.18	0.46	0.48	0.40	0.66	0.93	0.68
Control Delay (s/veh)	76.4	52.7	10.1	74.7	54.9	4.8	76.7	36.6	15.6	77.2	51.0	25.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	76.4	52.7	10.1	74.7	54.9	4.8	76.7	36.6	15.6	77.2	51.0	25.0
Queue Length 50th (ft)	108	201	0	179	358	0	43	239	66	93	624	225
Queue Length 95th (ft)	171	269	46	262	449	30	82	359	189	152	#934	472
Internal Link Dist (ft)		1037			966			719			726	
Turn Bay Length (ft)	250		215	325		235	145		145	230		230
Base Capacity (vph)	1023	1791	610	674	1391	513	349	1849	621	465	1987	694
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.36	0.13	0.56	0.79	0.18	0.26	0.48	0.40	0.42	0.93	0.68

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	595	75	350	1010	85	85	795	255	180	1650	485
Future Volume (veh/h)	210	595	75	350	1010	85	85	795	255	180	1650	485
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	228	647	82	380	1098	92	92	864	277	196	1793	527
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	285	1100	342	439	1327	412	176	2352	665	251	2470	698
Arrive On Green	0.08	0.22	0.22	0.13	0.26	0.26	0.05	0.42	0.42	0.07	0.44	0.44
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3563	5611	1585	3563	5611	1585
Grp Volume(v), veh/h	228	647	82	380	1098	92	92	864	277	196	1793	527
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	8.9	15.6	5.9	14.8	27.8	6.2	3.5	14.5	16.9	7.4	36.0	38.2
Cycle Q Clear(g_c), s	8.9	15.6	5.9	14.8	27.8	6.2	3.5	14.5	16.9	7.4	36.0	38.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	285	1100	342	439	1327	412	176	2352	665	251	2470	698
V/C Ratio(X)	0.80	0.59	0.24	0.87	0.83	0.22	0.52	0.37	0.42	0.78	0.73	0.76
Avail Cap(c_a), veh/h	1109	1937	601	731	1379	428	390	2352	665	520	2497	705
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.8	48.3	44.5	58.7	47.8	39.8	63.5	27.3	28.0	62.6	31.6	32.2
Incr Delay (d2), s/veh	2.0	1.4	1.0	3.0	5.1	0.7	0.9	0.2	0.7	2.0	1.7	6.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	6.8	2.4	6.7	12.4	2.6	1.6	6.6	6.6	3.4	16.6	15.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	63.8	49.7	45.5	61.6	52.9	40.6	64.4	27.5	28.7	64.7	33.3	39.0
LnGrp LOS	E	D	D	E	D	D	E	C	C	E	C	D
Approach Vol, veh/h		957			1570			1233			2516	
Approach Delay, s/veh		52.7			54.3			30.5			36.9	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.8	66.6	22.4	36.2	14.7	63.8	16.3	42.3
Change Period (Y+Rc), s	5.0	6.3	5.0	6.7	5.0	6.3	5.0	6.7
Max Green Setting (Gmax), s	15.0	61.0	29.0	52.0	20.0	56.0	44.0	37.0
Max Q Clear Time (g_c+I1), s	5.5	40.2	16.8	17.6	9.4	18.9	10.9	29.8
Green Ext Time (p_c), s	0.1	20.1	0.6	11.6	0.3	14.0	0.4	5.8

Intersection Summary	
HCM 7th Control Delay, s/veh	42.4
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	136	810	163	299	1255	125	130	418	272	179	1299	168
v/c Ratio	0.74	0.50	0.27	0.78	0.67	0.19	0.48	0.26	0.41	0.60	0.79	0.28
Control Delay (s/veh)	85.7	38.7	6.2	72.5	38.0	5.1	65.7	33.9	7.4	68.0	44.2	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	85.7	38.7	6.2	72.5	38.0	5.1	65.7	33.9	7.4	68.0	44.2	9.5
Queue Length 50th (ft)	60	204	0	130	324	0	56	98	15	77	373	20
Queue Length 95th (ft)	#129	287	53	#225	443	40	97	133	82	125	445	73
Internal Link Dist (ft)		890			754			625			855	
Turn Bay Length (ft)	275		200	200		240	200		200	200		200
Base Capacity (vph)	185	1689	636	400	1963	693	440	1760	709	742	2109	735
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.48	0.26	0.75	0.64	0.18	0.30	0.24	0.38	0.24	0.62	0.23

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	745	150	275	1155	115	120	385	250	165	1195	155
Future Volume (veh/h)	125	745	150	275	1155	115	120	385	250	165	1195	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	136	810	163	299	1255	125	130	418	272	179	1299	168
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	208	1705	529	363	1886	586	192	1496	464	244	1620	503
Arrive On Green	0.06	0.33	0.33	0.11	0.37	0.37	0.06	0.29	0.29	0.07	0.32	0.32
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	136	810	163	299	1255	125	130	418	272	179	1299	168
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	4.4	14.4	8.8	9.7	23.6	6.2	4.2	7.2	16.8	5.8	26.8	9.3
Cycle Q Clear(g_c), s	4.4	14.4	8.8	9.7	23.6	6.2	4.2	7.2	16.8	5.8	26.8	9.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	208	1705	529	363	1886	586	192	1496	464	244	1620	503
V/C Ratio(X)	0.65	0.48	0.31	0.82	0.67	0.21	0.68	0.28	0.59	0.73	0.80	0.33
Avail Cap(c_a), veh/h	210	1910	593	454	2221	690	499	1879	583	842	2386	741
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.8	30.3	28.4	50.4	30.3	24.8	53.3	31.3	34.7	52.4	35.9	30.0
Incr Delay (d2), s/veh	5.5	0.4	0.7	9.5	1.0	0.4	4.1	0.1	1.2	1.6	0.7	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	6.0	3.4	4.7	9.7	2.4	2.0	3.0	6.6	2.6	11.1	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.4	30.7	29.1	59.9	31.3	25.2	57.4	31.4	35.9	54.0	36.6	30.1
LnGrp LOS	E	C	C	E	C	C	E	C	D	D	D	C
Approach Vol, veh/h		1109			1679			820			1646	
Approach Delay, s/veh		33.9			35.9			37.0			37.9	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.7	39.3	16.6	45.4	10.9	42.1	12.5	49.5
Change Period (Y+Rc), s	5.6	* 5.6	4.5	7.0	4.5	5.6	5.6	7.0
Max Green Setting (Gmax), s	28.0	* 42	15.1	43.0	16.6	53.7	7.0	50.0
Max Q Clear Time (g_c+I1), s	7.8	18.8	11.7	16.4	6.2	28.8	6.4	25.6
Green Ext Time (p_c), s	0.3	3.9	0.3	12.3	0.3	7.7	0.0	16.8

Intersection Summary	
HCM 7th Control Delay, s/veh	36.3
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	141	1092	38	125	1217	141	38	33	60	288	92	429
v/c Ratio	0.59	0.49	0.05	0.57	0.56	0.19	0.27	0.12	0.18	1.27	0.25	0.65
Control Delay (s/veh)	48.8	19.4	1.0	50.8	21.5	6.7	48.5	37.8	2.0	188.0	35.2	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	48.8	19.4	1.0	50.8	21.5	6.7	48.5	37.8	2.0	188.0	35.2	9.0
Queue Length 50th (ft)	75	165	0	65	189	11	20	16	0	~207	45	0
Queue Length 95th (ft)	156	224	5	#162	284	52	61	49	5	#463	103	91
Internal Link Dist (ft)		1187			2532			760			553	
Turn Bay Length (ft)	240		245	240		240	240		245	200		205
Base Capacity (vph)	679	3271	1044	247	2183	741	143	1062	950	226	1136	1132
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.33	0.04	0.51	0.56	0.19	0.27	0.03	0.06	1.27	0.08	0.38

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	1005	35	115	1120	130	35	30	55	265	85	395
Future Volume (veh/h)	130	1005	35	115	1120	130	35	30	55	265	85	395
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	141	1092	38	125	1217	141	38	33	60	288	92	429
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	174	1896	589	155	1841	571	82	449	381	202	574	487
Arrive On Green	0.10	0.37	0.37	0.09	0.36	0.36	0.05	0.24	0.24	0.11	0.31	0.31
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	141	1092	38	125	1217	141	38	33	60	288	92	429
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	7.5	16.6	1.5	6.7	19.4	6.1	2.0	1.3	2.9	11.0	3.5	25.0
Cycle Q Clear(g_c), s	7.5	16.6	1.5	6.7	19.4	6.1	2.0	1.3	2.9	11.0	3.5	25.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	174	1896	589	155	1841	571	82	449	381	202	574	487
V/C Ratio(X)	0.81	0.58	0.06	0.81	0.66	0.25	0.46	0.07	0.16	1.43	0.16	0.88
Avail Cap(c_a), veh/h	605	2907	902	220	1841	571	128	943	800	202	1009	855
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.9	24.4	19.7	43.6	26.1	21.8	45.1	28.5	29.1	43.1	24.5	32.0
Incr Delay (d2), s/veh	3.4	0.5	0.1	9.1	1.2	0.4	1.5	0.1	0.4	218.7	0.2	6.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	6.6	0.6	3.3	7.9	2.3	0.9	0.6	1.1	17.0	1.6	10.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	46.3	25.0	19.8	52.6	27.2	22.2	46.6	28.7	29.6	261.8	24.7	38.6
LnGrp LOS	D	C	B	D	C	C	D	C	C	F	C	D
Approach Vol, veh/h		1271			1483			131			809	
Approach Delay, s/veh		27.2			28.9			34.3			116.5	
Approach LOS		C			C			C			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	27.9	12.4	41.8	8.5	34.4	13.5	40.7
Change Period (Y+Rc), s	4.0	* 4.6	4.0	5.7	4.0	4.6	4.0	5.7
Max Green Setting (Gmax), s	11.0	* 49	12.0	55.3	7.0	52.4	33.0	34.3
Max Q Clear Time (g_c+I1), s	13.0	4.9	8.7	18.6	4.0	27.0	9.5	21.4
Green Ext Time (p_c), s	0.0	0.8	0.0	17.5	0.0	2.9	0.2	9.7

Intersection Summary	
HCM 7th Control Delay, s/veh	47.7
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	168	1261	1299	310	424	196
v/c Ratio	0.43	0.49	0.72	0.41	0.77	0.31
Control Delay (s/veh)	27.0	9.2	18.1	4.0	27.7	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	27.0	9.2	18.1	4.0	27.7	4.2
Queue Length 50th (ft)	27	89	137	0	120	0
Queue Length 95th (ft)	52	120	184	44	#240	35
Internal Link Dist (ft)		2532	278		450	
Turn Bay Length (ft)	200			200	150	
Base Capacity (vph)	388	2925	1880	780	654	708
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.43	0.69	0.40	0.65	0.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	155	1160	1195	285	390	180
Future Volume (veh/h)	155	1160	1195	285	390	180
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	168	1261	1299	310	424	196
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	319	2699	1756	545	510	454
Arrive On Green	0.09	0.53	0.34	0.34	0.29	0.29
Sat Flow, veh/h	3456	5274	5274	1585	1781	1585
Grp Volume(v), veh/h	168	1261	1299	310	424	196
Grp Sat Flow(s),veh/h/ln	1728	1702	1702	1585	1781	1585
Q Serve(g_s), s	2.3	7.5	10.9	7.8	10.8	4.9
Cycle Q Clear(g_c), s	2.3	7.5	10.9	7.8	10.8	4.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	319	2699	1756	545	510	454
V/C Ratio(X)	0.53	0.47	0.74	0.57	0.83	0.43
Avail Cap(c_a), veh/h	391	2941	1890	587	659	587
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.1	7.2	14.0	13.0	16.3	14.1
Incr Delay (d2), s/veh	1.4	0.1	1.5	1.1	7.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.0	3.7	2.5	4.8	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	22.4	7.3	15.5	14.1	23.3	14.8
LnGrp LOS	C	A	B	B	C	B
Approach Vol, veh/h		1429	1609		620	
Approach Delay, s/veh		9.1	15.2		20.6	
Approach LOS		A	B		C	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			30.2		18.4	9.0	21.2
Change Period (Y+Rc), s			4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s			28.0		18.0	5.5	18.0
Max Q Clear Time (g_c+I1), s			9.5		12.8	4.3	12.9
Green Ext Time (p_c), s			8.9		1.1	0.1	3.8

Intersection Summary		
HCM 7th Control Delay, s/veh		13.7
HCM 7th LOS		B



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	272	1060	429	364	1103	326	272	1353	467	413	1728	462
v/c Ratio	0.81	0.61	0.65	0.82	0.84	0.46	0.89	0.85	0.70	1.57	1.14	0.73
Control Delay (s/veh)	81.8	41.6	28.3	76.0	48.4	16.6	93.3	52.8	25.7	313.9	115.6	29.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	81.8	41.6	28.3	76.0	48.4	16.6	93.3	52.8	25.7	313.9	115.6	29.8
Queue Length 50th (ft)	130	305	203	174	497	97	133	442	184	~285	~704	206
Queue Length 95th (ft)	#190	361	334	228	591	187	#214	505	322	#395	#800	347
Internal Link Dist (ft)		1047			306			1367			1181	
Turn Bay Length (ft)	270		420	240		240	250		250	250		350
Base Capacity (vph)	360	1734	657	503	1334	711	311	1584	667	263	1519	634
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.61	0.65	0.72	0.83	0.46	0.87	0.85	0.70	1.57	1.14	0.73

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	975	395	335	1015	300	250	1245	430	380	1590	425
Future Volume (veh/h)	250	975	395	335	1015	300	250	1245	430	380	1590	425
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	272	1060	429	364	1103	326	272	1353	467	413	1728	462
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	320	1729	537	416	1302	581	318	1620	503	271	1551	481
Arrive On Green	0.09	0.34	0.34	0.12	0.37	0.37	0.09	0.32	0.32	0.08	0.30	0.30
Sat Flow, veh/h	3456	5106	1585	3456	3554	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	272	1060	429	364	1103	326	272	1353	467	413	1728	462
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1777	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	10.9	24.3	34.4	14.5	40.0	23.0	10.9	34.5	40.0	11.0	42.6	40.2
Cycle Q Clear(g_c), s	10.9	24.3	34.4	14.5	40.0	23.0	10.9	34.5	40.0	11.0	42.6	40.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	320	1729	537	416	1302	581	318	1620	503	271	1551	481
V/C Ratio(X)	0.85	0.61	0.80	0.88	0.85	0.56	0.86	0.84	0.93	1.52	1.11	0.96
Avail Cap(c_a), veh/h	370	1747	542	517	1368	610	320	1624	504	271	1551	481
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.7	38.7	42.1	60.7	40.8	35.5	62.8	44.5	46.4	64.6	48.8	48.0
Incr Delay (d2), s/veh	13.6	0.9	9.1	11.5	5.5	1.8	18.9	4.2	24.1	253.7	61.0	31.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	10.3	14.8	7.1	18.4	9.2	5.6	15.2	19.1	14.4	26.7	19.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	76.3	39.6	51.1	72.2	46.4	37.3	81.7	48.7	70.4	318.3	109.8	79.1
LnGrp LOS	E	D	D	E	D	D	F	D	E	F	F	E
Approach Vol, veh/h		1761			1793			2092			2603	
Approach Delay, s/veh		48.1			50.0			57.8			137.4	
Approach LOS		D			D			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	50.9	20.9	53.5	16.9	49.0	17.0	57.4
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	11.0	44.6	21.0	48.0	13.0	42.6	15.0	54.0
Max Q Clear Time (g_c+I1), s	13.0	42.0	16.5	36.4	12.9	44.6	12.9	42.0
Green Ext Time (p_c), s	0.0	2.4	0.3	9.0	0.0	0.0	0.1	9.4

Intersection Summary	
HCM 7th Control Delay, s/veh	79.1
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	20.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	1580	125	15	1530	55	60	5	35	35	10	65
Future Vol, veh/h	75	1580	125	15	1530	55	60	5	35	35	10	65
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	82	1717	136	16	1663	60	65	5	38	38	11	71

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1723	0	0	1853	0	0	2750	3636	859	2750	3742	861
Stage 1	-	-	-	-	-	-	1880	1880	-	1726	1726	-
Stage 2	-	-	-	-	-	-	870	1755	-	1024	2016	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	363	-	-	323	-	-	~ 9	~ 5	300	~ 9	~ 4	299
Stage 1	-	-	-	-	-	-	73	119	-	92	142	-
Stage 2	-	-	-	-	-	-	313	137	-	252	101	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	363	-	-	323	-	-	~ 4	~ 4	300	~ 5	~ 3	299
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 48	40	-	52	40	-
Stage 1	-	-	-	-	-	-	~ 57	92	-	87	135	-
Stage 2	-	-	-	-	-	-	208	130	-	160	78	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.75	0.16	$ 436.88	250.36
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	67	363	-	-	323	-	-	96
HCM Lane V/C Ratio	1.613	0.225	-	-	0.05	-	-	1.24
HCM Ctrl Dly (s/v)	$ 436.9	17.8	-	-	16.7	-	-	250.4
HCM Lane LOS	F	C	-	-	C	-	-	F
HCM 95th %tile Q(veh)	9.5	0.8	-	-	0.2	-	-	8.3

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	408	1348	1424	92	87	326
v/c Ratio	0.67	0.48	0.77	0.11	0.38	0.36
Control Delay (s/veh)	31.9	4.0	17.0	2.7	34.1	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	31.9	4.0	17.0	2.7	34.1	15.6
Queue Length 50th (ft)	84	95	248	0	35	48
Queue Length 95th (ft)	127	128	340	20	77	81
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	726	2831	2015	940	230	1001
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.48	0.71	0.10	0.38	0.33

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	375	1240	1310	85	80	300
Future Volume (veh/h)	375	1240	1310	85	80	300
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	408	1348	1424	92	87	326
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	519	2556	1800	803	222	767
Arrive On Green	0.15	0.72	0.51	0.51	0.12	0.12
Sat Flow, veh/h	3456	3647	3647	1585	1781	2790
Grp Volume(v), veh/h	408	1348	1424	92	87	326
Grp Sat Flow(s),veh/h/ln	1728	1777	1777	1585	1781	1395
Q Serve(g_s), s	7.3	11.0	21.1	1.9	2.9	6.1
Cycle Q Clear(g_c), s	7.3	11.0	21.1	1.9	2.9	6.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	519	2556	1800	803	222	767
V/C Ratio(X)	0.79	0.53	0.79	0.11	0.39	0.42
Avail Cap(c_a), veh/h	701	2883	1941	866	222	767
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.2	4.1	13.0	8.3	25.8	19.1
Incr Delay (d2), s/veh	2.9	0.3	2.4	0.1	0.4	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	2.4	7.6	0.6	1.2	5.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	29.1	4.3	15.4	8.4	26.2	19.2
LnGrp LOS	C	A	B	A	C	B
Approach Vol, veh/h		1756	1516		413	
Approach Delay, s/veh		10.1	15.0		20.7	
Approach LOS		B	B		C	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			52.1		12.0	13.6	38.5
Change Period (Y+Rc), s			6.0		4.0	4.0	6.0
Max Green Setting (Gmax), s			52.0		8.0	13.0	35.0
Max Q Clear Time (g_c+I1), s			13.0		8.1	9.3	23.1
Green Ext Time (p_c), s			20.1		0.0	0.3	9.3

Intersection Summary		
HCM 7th Control Delay, s/veh		13.3
HCM 7th LOS		B

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	10	5	60	165	5
Future Vol, veh/h	20	10	5	60	165	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	11	5	65	179	5
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.8	7.2	8.6
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	67%	0%	97%
Vol Thru, %	33%	8%	0%
Vol Right, %	0%	92%	3%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	30	65	170
LT Vol	20	0	165
Through Vol	10	5	0
RT Vol	0	60	5
Lane Flow Rate	33	71	185
Geometry Grp	1	1	1
Degree of Util (X)	0.041	0.076	0.22
Departure Headway (Hd)	4.57	3.849	4.289
Convergence, Y/N	Yes	Yes	Yes
Cap	788	936	833
Service Time	2.572	1.85	2.337
HCM Lane V/C Ratio	0.042	0.076	0.222
HCM Control Delay, s/veh	7.8	7.2	8.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.2	0.8

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	5	5	5	0	5	5	1925	10	15	2320	5
Future Vol, veh/h	10	5	5	5	0	5	5	1925	10	15	2320	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	310	-	-	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	5	5	5	0	5	5	2092	11	16	2522	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3402	4668	1261	3153	4668	1052	2527	0	0	2103	0	0
Stage 1	2554	2554	-	2109	2109	-	-	-	-	-	-	-
Stage 2	848	2114	-	1044	2560	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	~ 8	~ 1	139	12	1	192	67	-	-	111	-	-
Stage 1	15	53	-	32	91	-	-	-	-	-	-	-
Stage 2	292	90	-	221	53	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 6	~ 1	139	7	1	192	67	-	-	111	-	-
Mov Cap-2 Maneuver	11	25	-	24	25	-	-	-	-	-	-	-
Stage 1	13	45	-	29	83	-	-	-	-	-	-	-
Stage 2	261	83	-	159	45	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	$ 581.44	115.08	0.16	0.28
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	67	-	-	18	43	111	-	-
HCM Lane V/C Ratio	0.081	-	-	1.203	0.253	0.147	-	-
HCM Ctrl Dly (s/v)	63.4	-	-	$ 581.4	115.1	43	-	-
HCM Lane LOS	F	-	-	F	F	E	-	-
HCM 95th %tile Q(veh)	0.3	-	-	3.1	0.8	0.5	-	-

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	49	71	38	2022	2484	27
v/c Ratio	0.17	0.36	0.32	0.48	0.66	0.02
Control Delay (s/veh)	32.6	14.2	40.4	3.1	8.2	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.6	14.2	40.4	3.1	8.2	2.2
Queue Length 50th (ft)	10	0	17	84	244	0
Queue Length 95th (ft)	26	35	46	126	332	8
Internal Link Dist (ft)	1039			711	656	
Turn Bay Length (ft)	240	240	260			415
Base Capacity (vph)	1547	752	120	4191	3782	1184
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.09	0.32	0.48	0.66	0.02

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	45	65	35	1860	0	2285	25
Future Volume (veh/h)	45	65	35	1860	0	2285	25
Initial Q (Qb), veh	0	0	0	0		0	0
Lane Width Adj.	1.00	1.00	1.00	1.00		1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870		1870	1870
Adj Flow Rate, veh/h	49	71	38	2022		2484	27
Peak Hour Factor	0.92	0.92	0.92	0.92		0.92	0.92
Percent Heavy Veh, %	2	2	2	2		2	2
Cap, veh/h	239	110	68	3993		3424	1063
Arrive On Green	0.07	0.07	0.04	0.78		0.67	0.67
Sat Flow, veh/h	3456	1585	1781	5274		5274	1585
Grp Volume(v), veh/h	49	71	38	2022		2484	27
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1702		1702	1585
Q Serve(g_s), s	0.9	2.9	1.4	9.5		20.8	0.4
Cycle Q Clear(g_c), s	0.9	2.9	1.4	9.5		20.8	0.4
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	239	110	68	3993		3424	1063
V/C Ratio(X)	0.20	0.65	0.56	0.51		0.73	0.03
Avail Cap(c_a), veh/h	1713	786	134	4380		3620	1124
HCM Platoon Ratio	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	29.2	30.2	31.5	2.6		7.0	3.7
Incr Delay (d2), s/veh	0.3	4.7	2.7	0.1		0.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.7	0.6	1.3		5.4	0.1
Unsig. Movement Delay, s/veh							
LnGrp Delay(d), s/veh	29.6	34.9	34.2	2.7		7.8	3.7
LnGrp LOS	C	C	C	A		A	A
Approach Vol, veh/h	120			2060		2511	
Approach Delay, s/veh	32.7			3.3		7.7	
Approach LOS	C			A		A	

Timer - Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		57.4		9.2	7.4	49.9	
Change Period (Y+Rc), s		5.3		4.6	4.9	5.3	
Max Green Setting (Gmax), s		57.1		33.0	5.0	47.2	
Max Q Clear Time (g_c+I1), s		11.5		4.9	3.4	22.8	
Green Ext Time (p_c), s		30.1		0.3	0.0	21.9	

Intersection Summary	
HCM 7th Control Delay, s/veh	6.4
HCM 7th LOS	A

Notes

User approved ignoring U-Turning movement.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	109	196	554	87	190	130	1821	185	103	2723	174
v/c Ratio	0.34	0.58	0.88	0.18	0.72	0.46	0.78	0.23	0.94	1.22	0.23
Control Delay (s/veh)	50.1	56.8	29.9	51.1	62.5	64.4	34.5	10.1	134.5	137.5	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	50.1	56.8	29.9	51.1	62.5	64.4	34.5	10.1	134.5	137.5	12.0
Queue Length 50th (ft)	81	153	120	34	137	56	485	31	90	~1073	33
Queue Length 95th (ft)	147	248	#315	62	229	95	648	91	#234	#1377	99
Internal Link Dist (ft)		813			837		762			707	
Turn Bay Length (ft)	580		300	325		530			500		215
Base Capacity (vph)	423	445	696	821	434	583	2336	792	109	2228	754
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.44	0.80	0.11	0.44	0.22	0.78	0.23	0.94	1.22	0.23

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	180	510	80	95	80	120	1675	170	95	2505	160
Future Volume (veh/h)	100	180	510	80	95	80	120	1675	170	95	2505	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	109	196	554	87	103	87	130	1821	185	103	2723	174
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	405	425	360	457	124	105	187	2204	684	104	2227	691
Arrive On Green	0.23	0.23	0.23	0.13	0.13	0.13	0.05	0.43	0.43	0.06	0.44	0.44
Sat Flow, veh/h	1781	1870	1585	3456	937	791	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	109	196	554	87	0	190	130	1821	185	103	2723	174
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	0	1728	1728	1702	1585	1781	1702	1585
Q Serve(g_s), s	6.9	12.3	31.0	3.1	0.0	14.6	5.0	43.0	10.2	7.9	59.5	9.5
Cycle Q Clear(g_c), s	6.9	12.3	31.0	3.1	0.0	14.6	5.0	43.0	10.2	7.9	59.5	9.5
Prop In Lane	1.00		1.00	1.00		0.46	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	405	425	360	457	0	228	187	2204	684	104	2227	691
V/C Ratio(X)	0.27	0.46	1.54	0.19	0.00	0.83	0.69	0.83	0.27	0.99	1.22	0.25
Avail Cap(c_a), veh/h	405	425	360	785	0	393	557	2227	691	104	2227	691
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.4	45.5	52.7	52.7	0.0	57.7	63.4	34.2	24.9	64.1	38.5	24.4
Incr Delay (d2), s/veh	0.4	0.9	255.6	0.2	0.0	9.1	5.5	3.4	0.8	83.4	104.6	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	5.9	37.9	1.4	0.0	7.0	2.4	18.3	4.1	6.0	45.9	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.8	46.4	308.3	52.9	0.0	66.8	68.9	37.7	25.7	147.5	143.0	25.0
LnGrp LOS	D	D	F	D		E	E	D	C	F	F	C
Approach Vol, veh/h		859			277			2136			3000	
Approach Delay, s/veh		215.0			62.4			38.5			136.3	
Approach LOS		F			E			D			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.0	65.4		36.0	11.4	66.0		23.0				
Change Period (Y+Rc), s	4.0	6.5		5.0	4.0	6.5		5.0				
Max Green Setting (Gmax), s	8.0	59.5		31.0	22.0	45.5		31.0				
Max Q Clear Time (g_c+I1), s	9.9	45.0		33.0	7.0	61.5		16.6				
Green Ext Time (p_c), s	0.0	13.9		0.0	0.4	0.0		1.4				

Intersection Summary												
HCM 7th Control Delay, s/veh			110.5									
HCM 7th LOS			F									



Lane Group	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	1	321	120	1489	299	27	2750
v/c Ratio	0.00	0.90	0.24	0.49	0.28	0.13	0.85
Control Delay (s/veh)	0.0	61.7	6.4	10.9	2.0	40.9	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	0.0	61.7	6.4	10.9	2.0	40.9	15.0
Queue Length 50th (ft)	0	153	0	131	0	6	373
Queue Length 95th (ft)	0	#344	39	221	34	21	443
Internal Link Dist (ft)	337		445	706			646
Turn Bay Length (ft)					200	200	
Base Capacity (vph)	485	359	498	3039	1066	203	3253
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.89	0.24	0.49	0.28	0.13	0.85

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	1	295	0	110	0	1370	275	25	2530	0
Future Volume (veh/h)	0	0	1	295	0	110	0	1370	275	25	2530	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	1	321	0	120	0	1489	299	27	2750	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	0	399	449	0	399	2	2787	865	98	3228	0
Arrive On Green	0.00	0.00	0.25	0.25	0.00	0.25	0.00	0.55	0.55	0.03	0.63	0.00
Sat Flow, veh/h	0	0	1585	1416	0	1585	1781	5106	1585	3456	5274	0
Grp Volume(v), veh/h	0	0	1	321	0	120	0	1489	299	27	2750	0
Grp Sat Flow(s),veh/h/ln	0	0	1585	1416	0	1585	1781	1702	1585	1728	1702	0
Q Serve(g_s), s	0.0	0.0	0.0	17.0	0.0	4.8	0.0	14.5	8.2	0.6	33.3	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	17.0	0.0	4.8	0.0	14.5	8.2	0.6	33.3	0.0
Prop In Lane	0.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	399	449	0	399	2	2787	865	98	3228	0
V/C Ratio(X)	0.00	0.00	0.00	0.72	0.00	0.30	0.00	0.53	0.35	0.27	0.85	0.00
Avail Cap(c_a), veh/h	0	0	440	485	0	440	115	3294	1022	223	3294	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	21.7	28.1	0.0	23.5	0.0	11.3	9.9	36.9	11.4	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	4.6	0.0	0.4	0.0	0.2	0.2	1.5	2.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	6.1	0.0	1.8	0.0	4.9	2.6	0.3	10.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	21.7	32.7	0.0	23.9	0.0	11.4	10.1	38.4	13.7	0.0
LnGrp LOS			C	C		C		B	B	D	B	
Approach Vol, veh/h		1			441			1788			2777	
Approach Delay, s/veh		21.7			30.3			11.2			13.9	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.7	46.8		24.0	0.0	53.5		24.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	50.0		21.5	5.0	50.0		21.5				
Max Q Clear Time (g_c+I1), s	2.6	16.5		2.0	0.0	35.3		19.0				
Green Ext Time (p_c), s	0.0	16.4		0.0	0.0	13.7		0.5				

Intersection Summary	
HCM 7th Control Delay, s/veh	14.4
HCM 7th LOS	B



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	614	1261	125	250	897	255	114	2034	308	141	1128	269
v/c Ratio	0.87	0.75	0.22	0.73	0.78	0.53	0.55	1.18	0.55	0.61	0.64	0.43
Control Delay (s/veh)	77.7	52.6	16.7	85.2	66.0	25.3	86.3	132.4	30.9	86.5	45.7	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	77.7	52.6	16.7	85.2	66.0	25.3	86.3	132.4	30.9	86.5	45.7	12.7
Queue Length 50th (ft)	334	444	33	137	336	86	62	~1009	194	77	386	53
Queue Length 95th (ft)	417	542	91	195	429	198	103	#1249	351	122	496	165
Internal Link Dist (ft)		1037			966			719			726	
Turn Bay Length (ft)	250		215	325		235	145		145	230		230
Base Capacity (vph)	924	1693	580	609	1153	484	315	1724	562	420	1788	636
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.74	0.22	0.41	0.78	0.53	0.36	1.18	0.55	0.34	0.63	0.42

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	565	1160	115	230	825	235	105	1840	315	130	1010	275
Future Volume (veh/h)	565	1160	115	230	825	235	105	1840	315	130	1010	275
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	614	1261	125	250	897	255	114	2000	342	141	1098	299
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	673	1715	532	301	1165	362	164	2082	588	190	2123	600
Arrive On Green	0.19	0.34	0.34	0.09	0.23	0.23	0.05	0.37	0.37	0.05	0.38	0.38
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3563	5611	1585	3563	5611	1585
Grp Volume(v), veh/h	614	1261	125	250	897	255	114	2000	342	141	1098	299
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	26.2	32.8	8.6	10.7	24.8	22.3	4.8	52.5	26.1	5.9	22.8	21.8
Cycle Q Clear(g_c), s	26.2	32.8	8.6	10.7	24.8	22.3	4.8	52.5	26.1	5.9	22.8	21.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	673	1715	532	301	1165	362	164	2082	588	190	2123	600
V/C Ratio(X)	0.91	0.74	0.23	0.83	0.77	0.70	0.70	0.96	0.58	0.74	0.52	0.50
Avail Cap(c_a), veh/h	1008	1761	547	665	1253	389	354	2084	589	472	2270	641
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.4	44.2	36.1	67.7	54.5	53.5	70.9	46.3	38.0	70.4	36.2	35.9
Incr Delay (d2), s/veh	6.6	2.2	0.6	2.3	3.8	8.1	2.0	11.9	1.9	2.2	0.8	2.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.1	14.3	3.5	4.9	11.1	9.8	2.2	26.6	10.5	2.8	10.7	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	66.1	46.4	36.7	70.0	58.3	61.6	72.9	58.2	39.9	72.5	37.0	38.4
LnGrp LOS	E	D	D	E	E	E	E	E	D	E	D	D
Approach Vol, veh/h		2000			1402			2456			1538	
Approach Delay, s/veh		51.8			61.0			56.4			40.5	
Approach LOS		D			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.9	63.4	18.1	57.4	13.0	62.3	34.4	41.1
Change Period (Y+Rc), s	5.0	6.3	5.0	6.7	5.0	6.3	5.0	6.7
Max Green Setting (Gmax), s	15.0	61.0	29.0	52.0	20.0	56.0	44.0	37.0
Max Q Clear Time (g_c+I1), s	6.8	24.8	12.7	34.8	7.9	54.5	28.2	26.8
Green Ext Time (p_c), s	0.1	25.7	0.4	13.6	0.2	1.4	1.2	7.6

Intersection Summary	
HCM 7th Control Delay, s/veh	52.7
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	98	1565	179	359	1011	207	234	1690	402	190	674	174
v/c Ratio	0.55	0.96	0.29	0.93	0.53	0.29	0.65	1.05	0.63	0.63	0.44	0.31
Control Delay (s/veh)	74.3	58.8	7.4	89.5	34.2	4.8	66.7	81.3	24.8	68.6	39.2	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	74.3	58.8	7.4	89.5	34.2	4.8	66.7	81.3	24.8	68.6	39.2	11.1
Queue Length 50th (ft)	43	487	8	161	249	0	102	~584	154	83	173	23
Queue Length 95th (ft)	76	#619	63	#265	308	53	148	#712	280	124	219	83
Internal Link Dist (ft)		890			754			625			855	
Turn Bay Length (ft)	275		200	200		240	200		200	200		200
Base Capacity (vph)	179	1635	621	387	1901	721	426	1608	634	718	2041	717
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.96	0.29	0.93	0.53	0.29	0.55	1.05	0.63	0.26	0.33	0.24

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	1440	165	330	930	190	215	1555	370	175	620	160
Future Volume (veh/h)	90	1440	165	330	930	190	215	1555	370	175	620	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	98	1565	179	359	1011	207	234	1690	402	190	674	174
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	178	1655	514	394	1932	600	292	1630	506	247	1606	499
Arrive On Green	0.05	0.32	0.32	0.11	0.38	0.38	0.08	0.32	0.32	0.07	0.31	0.31
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	98	1565	179	359	1011	207	234	1690	402	190	674	174
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	3.7	39.6	11.4	13.6	20.3	12.4	8.8	42.3	30.6	7.2	13.8	11.2
Cycle Q Clear(g_c), s	3.7	39.6	11.4	13.6	20.3	12.4	8.8	42.3	30.6	7.2	13.8	11.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	178	1655	514	394	1932	600	292	1630	506	247	1606	499
V/C Ratio(X)	0.55	0.95	0.35	0.91	0.52	0.35	0.80	1.04	0.79	0.77	0.42	0.35
Avail Cap(c_a), veh/h	183	1657	514	394	1932	600	433	1630	506	730	2070	642
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.3	43.6	34.1	58.0	31.9	29.5	59.6	45.1	41.1	60.4	35.9	35.0
Incr Delay (d2), s/veh	1.8	12.0	0.9	24.9	0.5	0.7	6.5	32.4	8.5	1.9	0.1	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	18.4	4.6	7.3	8.5	4.9	4.1	22.6	13.1	3.2	5.8	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	63.2	55.6	35.0	83.0	32.4	30.2	66.1	77.5	49.7	62.4	35.9	35.1
LnGrp LOS	E	E	C	F	C	C	E	F	D	E	D	D
Approach Vol, veh/h		1842			1577			2326			1038	
Approach Delay, s/veh		54.0			43.6			71.5			40.6	
Approach LOS		D			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.1	47.9	19.6	49.9	15.7	47.3	12.4	57.1
Change Period (Y+Rc), s	5.6	* 5.6	4.5	7.0	4.5	5.6	5.6	7.0
Max Green Setting (Gmax), s	28.0	* 42	15.1	43.0	16.6	53.7	7.0	50.0
Max Q Clear Time (g_c+I1), s	9.2	44.3	15.6	41.6	10.8	15.8	5.7	22.3
Green Ext Time (p_c), s	0.3	0.0	0.0	1.3	0.4	3.8	0.0	15.9

Intersection Summary	
HCM 7th Control Delay, s/veh	55.6
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	592	1522	43	76	1375	239	27	234	310	163	43	174
v/c Ratio	1.22	0.60	0.05	0.55	0.95	0.42	0.26	0.63	0.66	1.01	0.09	0.32
Control Delay (s/veh)	153.0	24.3	1.6	69.5	56.3	14.8	63.2	51.7	22.9	127.5	35.1	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	153.0	24.3	1.6	69.5	56.3	14.8	63.2	51.7	22.9	127.5	35.1	6.7
Queue Length 50th (ft)	~559	308	0	57	380	44	20	167	79	~128	26	0
Queue Length 95th (ft)	#870	435	9	115	#546	128	55	251	177	#301	57	54
Internal Link Dist (ft)		1187			2532			760			553	
Turn Bay Length (ft)	240		245	240		240	240		245	200		205
Base Capacity (vph)	487	2555	831	177	1455	569	103	761	762	162	814	789
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.22	0.60	0.05	0.43	0.95	0.42	0.26	0.31	0.41	1.01	0.05	0.22

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	545	1400	40	70	1265	220	25	215	285	150	40	160
Future Volume (veh/h)	545	1400	40	70	1265	220	25	215	285	150	40	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	592	1522	43	76	1375	239	27	234	310	163	43	174
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	462	2423	752	96	1376	427	60	451	382	154	550	466
Arrive On Green	0.26	0.47	0.47	0.05	0.27	0.27	0.03	0.24	0.24	0.09	0.29	0.29
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	592	1522	43	76	1375	239	27	234	310	163	43	174
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	33.0	28.4	1.9	5.4	34.3	16.5	1.9	13.8	23.5	11.0	2.1	11.1
Cycle Q Clear(g_c), s	33.0	28.4	1.9	5.4	34.3	16.5	1.9	13.8	23.5	11.0	2.1	11.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	462	2423	752	96	1376	427	60	451	382	154	550	466
V/C Ratio(X)	1.28	0.63	0.06	0.79	1.00	0.56	0.45	0.52	0.81	1.06	0.08	0.37
Avail Cap(c_a), veh/h	462	2423	752	168	1376	427	98	720	610	154	770	652
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.2	25.0	18.1	59.5	46.5	40.0	60.3	41.9	45.6	58.2	32.5	35.7
Incr Delay (d2), s/veh	142.8	0.7	0.1	5.3	24.2	2.6	1.9	2.0	8.6	89.1	0.1	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	32.8	11.5	0.7	2.6	17.5	6.8	0.9	6.6	10.1	8.8	1.0	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	189.9	25.8	18.1	64.8	70.7	42.6	62.3	43.9	54.2	147.3	32.6	36.3
LnGrp LOS	F	C	B	E	E	D	E	D	D	F	C	D
Approach Vol, veh/h		2157			1690			571			380	
Approach Delay, s/veh		70.7			66.4			50.3			83.5	
Approach LOS		E			E			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	35.3	10.9	66.1	8.3	42.0	37.0	40.0
Change Period (Y+Rc), s	4.0	* 4.6	4.0	5.7	4.0	4.6	4.0	5.7
Max Green Setting (Gmax), s	11.0	* 49	12.0	55.3	7.0	52.4	33.0	34.3
Max Q Clear Time (g_c+I1), s	13.0	25.5	7.4	30.4	3.9	13.1	35.0	36.3
Green Ext Time (p_c), s	0.0	5.2	0.0	18.8	0.0	1.1	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	67.8
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	326	1652	1402	533	451	288
v/c Ratio	0.92	0.62	0.82	0.60	0.83	0.43
Control Delay (s/veh)	61.1	10.6	21.9	5.0	32.7	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	61.1	10.6	21.9	5.0	32.7	5.4
Queue Length 50th (ft)	56	130	152	0	130	7
Queue Length 95th (ft)	#123	172	#212	56	#263	51
Internal Link Dist (ft)		2532	278		450	
Turn Bay Length (ft)	200			200	150	
Base Capacity (vph)	353	2664	1712	886	596	703
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.62	0.82	0.60	0.76	0.41

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	300	1520	1290	490	415	265
Future Volume (veh/h)	300	1520	1290	490	415	265
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	326	1652	1402	533	451	288
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	362	2721	1749	543	527	469
Arrive On Green	0.10	0.53	0.34	0.34	0.30	0.30
Sat Flow, veh/h	3456	5274	5274	1585	1781	1585
Grp Volume(v), veh/h	326	1652	1402	533	451	288
Grp Sat Flow(s),veh/h/ln	1728	1702	1702	1585	1781	1585
Q Serve(g_s), s	4.9	11.7	13.1	17.5	12.5	8.2
Cycle Q Clear(g_c), s	4.9	11.7	13.1	17.5	12.5	8.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	362	2721	1749	543	527	469
V/C Ratio(X)	0.90	0.61	0.80	0.98	0.86	0.61
Avail Cap(c_a), veh/h	362	2721	1749	543	610	543
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.2	8.5	15.6	17.1	17.4	15.9
Incr Delay (d2), s/veh	24.6	0.4	2.8	33.8	10.4	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	3.3	4.8	10.5	6.0	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	47.9	8.9	18.4	50.9	27.8	17.5
LnGrp LOS	D	A	B	D	C	B
Approach Vol, veh/h		1978	1935		739	
Approach Delay, s/veh		15.3	27.4		23.8	
Approach LOS		B	C		C	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	32.5	20.0	10.0	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	28.0	18.0	5.5	18.0
Max Q Clear Time (g_c+I1), s	13.7	14.5	6.9	19.5
Green Ext Time (p_c), s	9.7	1.0	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	21.7
HCM 7th LOS	C



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	462	1516	353	473	1375	424	435	1750	353	348	1473	315
v/c Ratio	1.30	0.90	0.55	0.95	1.04	0.61	1.42	1.12	0.55	1.34	0.99	0.51
Control Delay (s/veh)	203.7	54.6	23.0	91.0	81.0	24.9	251.1	108.4	19.0	224.6	70.9	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	203.7	54.6	23.0	91.0	81.0	24.9	251.1	108.4	19.0	224.6	70.9	15.7
Queue Length 50th (ft)	~287	500	137	231	~738	190	~284	~694	103	~220	508	68
Queue Length 95th (ft)	#400	566	241	#340	#878	308	#394	#790	207	#323	#618	163
Internal Link Dist (ft)		1047			306			1367			1181	
Turn Bay Length (ft)	270		420	240		240	250		250	250		350
Base Capacity (vph)	355	1683	639	497	1317	699	307	1564	637	260	1493	620
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.30	0.90	0.55	0.95	1.04	0.61	1.42	1.12	0.55	1.34	0.99	0.51

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	425	1395	325	435	1265	390	400	1610	325	320	1355	290
Future Volume (veh/h)	425	1395	325	435	1265	390	400	1610	325	320	1355	290
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	462	1516	353	473	1375	424	435	1750	353	348	1473	315
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	357	1690	525	500	1323	590	310	1571	488	262	1500	466
Arrive On Green	0.10	0.33	0.33	0.14	0.37	0.37	0.09	0.31	0.31	0.08	0.29	0.29
Sat Flow, veh/h	3456	5106	1585	3456	3554	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	462	1516	353	473	1375	424	435	1750	353	348	1473	315
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1777	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	15.0	41.0	27.8	19.7	54.0	33.2	13.0	44.6	28.8	11.0	41.5	25.4
Cycle Q Clear(g_c), s	15.0	41.0	27.8	19.7	54.0	33.2	13.0	44.6	28.8	11.0	41.5	25.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	357	1690	525	500	1323	590	310	1571	488	262	1500	466
V/C Ratio(X)	1.29	0.90	0.67	0.95	1.04	0.72	1.40	1.11	0.72	1.33	0.98	0.68
Avail Cap(c_a), veh/h	357	1690	525	500	1323	590	310	1571	488	262	1500	466
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.0	46.1	41.7	61.4	45.5	39.0	66.0	50.2	44.7	67.0	50.8	45.1
Incr Delay (d2), s/veh	151.0	7.1	4.2	26.7	35.5	5.0	200.2	60.9	5.9	171.3	19.0	4.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.1	18.4	11.5	10.5	30.1	13.8	14.4	27.7	12.1	11.1	20.3	10.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	216.0	53.2	45.9	88.2	81.0	44.0	266.2	111.1	50.6	238.3	69.9	49.6
LnGrp LOS	F	D	D	F	F	D	F	F	D	F	E	D
Approach Vol, veh/h		2331			2272			2538			2136	
Approach Delay, s/veh		84.4			75.6			129.2			94.3	
Approach LOS		F			E			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	51.0	25.0	54.0	17.0	49.0	19.0	60.0
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	11.0	44.6	21.0	48.0	13.0	42.6	15.0	54.0
Max Q Clear Time (g_c+I1), s	13.0	46.6	21.7	43.0	15.0	43.5	17.0	56.0
Green Ext Time (p_c), s	0.0	0.0	0.0	4.7	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	96.8
HCM 7th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	74

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	1955	70	25	1835	25	120	5	15	20	10	65
Future Vol, veh/h	50	1955	70	25	1835	25	120	5	15	20	10	65
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	54	2125	76	27	1995	27	130	5	16	22	11	71

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2022	0	0	2201	0	0	3291	4310	1063	3236	4372	1011
Stage 1	-	-	-	-	-	-	2234	2234	-	2063	2063	-
Stage 2	-	-	-	-	-	-	1057	2076	-	1174	2310	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	277	-	-	236	-	-	~ 3	~ 2	219	~ 4	~ 2	237
Stage 1	-	-	-	-	-	-	~ 44	78	-	56	96	-
Stage 2	-	-	-	-	-	-	240	94	-	204	71	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	277	-	-	236	-	-	~ 1	~ 1	219	~ 2	~ 1	237
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 29	24	-	32	21	-
Stage 1	-	-	-	-	-	-	~ 35	63	-	50	85	-
Stage 2	-	-	-	-	-	-	~ 130	83	-	139	57	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.51	0.3	$ 1943.64	$ 387.15
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	32	277	-	-	236	-	-	69
HCM Lane V/C Ratio	4.764	0.196	-	-	0.115	-	-	1.497
HCM Ctrl Dly (s/v)	$ 1943.6	21.1	-	-	22.2	-	-	$ 387.1
HCM Lane LOS	F	C	-	-	C	-	-	F
HCM 95th %tile Q(veh)	18.2	0.7	-	-	0.4	-	-	8.7

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	587	1609	1522	76	54	500
v/c Ratio	0.84	0.54	0.80	0.09	0.24	0.57
Control Delay (s/veh)	40.1	3.9	17.8	2.9	30.9	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	40.1	3.9	17.8	2.9	30.9	20.1
Queue Length 50th (ft)	129	129	283	0	22	87
Queue Length 95th (ft)	#221	175	#388	18	53	133
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	708	2992	1966	913	224	882
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.54	0.77	0.08	0.24	0.57

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	540	1480	1400	70	50	460
Future Volume (veh/h)	540	1480	1400	70	50	460
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	587	1609	1522	76	54	500
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	651	2627	1753	782	206	848
Arrive On Green	0.19	0.74	0.49	0.49	0.12	0.12
Sat Flow, veh/h	3456	3647	3647	1585	1781	2790
Grp Volume(v), veh/h	587	1609	1522	76	54	500
Grp Sat Flow(s),veh/h/ln	1728	1777	1777	1585	1781	1395
Q Serve(g_s), s	11.5	14.9	26.2	1.8	1.9	8.0
Cycle Q Clear(g_c), s	11.5	14.9	26.2	1.8	1.9	8.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	651	2627	1753	782	206	848
V/C Ratio(X)	0.90	0.61	0.87	0.10	0.26	0.59
Avail Cap(c_a), veh/h	651	2676	1801	803	206	848
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.4	4.3	15.5	9.3	27.8	20.4
Incr Delay (d2), s/veh	15.5	0.5	4.9	0.1	0.2	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	3.3	10.3	0.6	0.8	8.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	42.9	4.8	20.4	9.4	28.1	21.1
LnGrp LOS	D	A	C	A	C	C
Approach Vol, veh/h		2196	1598		554	
Approach Delay, s/veh		15.0	19.9		21.8	
Approach LOS		B	B		C	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			57.1		12.0	17.0	40.1
Change Period (Y+Rc), s			6.0		4.0	4.0	6.0
Max Green Setting (Gmax), s			52.0		8.0	13.0	35.0
Max Q Clear Time (g_c+I1), s			16.9		10.0	13.5	28.2
Green Ext Time (p_c), s			23.5		0.0	0.0	5.8

Intersection Summary		
HCM 7th Control Delay, s/veh		17.7
HCM 7th LOS		B

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	5	5	135	70	20
Future Vol, veh/h	5	5	5	135	70	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	5	5	147	76	22
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.5	7.2	7.8
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	50%	0%	78%
Vol Thru, %	50%	4%	0%
Vol Right, %	0%	96%	22%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	10	140	90
LT Vol	5	0	70
Through Vol	5	5	0
RT Vol	0	135	20
Lane Flow Rate	11	152	98
Geometry Grp	1	1	1
Degree of Util (X)	0.013	0.149	0.115
Departure Headway (Hd)	4.323	3.535	4.239
Convergence, Y/N	Yes	Yes	Yes
Cap	820	1004	844
Service Time	2.393	1.592	2.271
HCM Lane V/C Ratio	0.013	0.151	0.116
HCM Control Delay, s/veh	7.5	7.2	7.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.5	0.4

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	5	5	5	0	5	5	2335	5	10	2115	10
Future Vol, veh/h	10	5	5	5	0	5	5	2335	5	10	2115	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	310	-	-	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	5	5	5	0	5	5	2538	5	11	2299	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3347	4875	1149	3496	4883	1272	2310	0	0	2543	0	0
Stage 1	2321	2321	-	2552	2552	-	-	-	-	-	-	-
Stage 2	1026	2554	-	944	2332	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	~ 9	~ 1	165	7	1	136	87	-	-	66	-	-
Stage 1	22	71	-	15	53	-	-	-	-	-	-	-
Stage 2	227	53	-	255	70	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 6	~ 1	165	~ 4	1	136	87	-	-	66	-	-
Mov Cap-2 Maneuver	16	22	-	12	24	-	-	-	-	-	-	-
Stage 1	19	59	-	14	50	-	-	-	-	-	-	-
Stage 2	204	50	-	187	58	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	$ 409.79	265.08	0.1	0.33
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	87	-	-	23	23	66	-	-
HCM Lane V/C Ratio	0.063	-	-	0.949	0.479	0.165	-	-
HCM Ctrl Dly (s/v)	49.2	-	-	$ 409.8	265.1	70.3	-	-
HCM Lane LOS	E	-	-	F	F	F	-	-
HCM 95th %tile Q(veh)	0.2	-	-	2.8	1.4	0.6	-	-

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	33	49	33	2478	2245	38
v/c Ratio	0.13	0.30	0.29	0.58	0.56	0.03
Control Delay (s/veh)	33.6	15.2	41.2	3.5	5.9	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.6	15.2	41.2	3.5	5.9	1.9
Queue Length 50th (ft)	8	0	17	116	97	0
Queue Length 95th (ft)	20	30	41	172	268	9
Internal Link Dist (ft)	1039			711	656	
Turn Bay Length (ft)	240	240	260			415
Base Capacity (vph)	1442	693	112	4259	3986	1249
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.07	0.29	0.58	0.56	0.03

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	30	45	30	2280	0	2065	35
Future Volume (veh/h)	30	45	30	2280	0	2065	35
Initial Q (Qb), veh	0	0	0	0		0	0
Lane Width Adj.	1.00	1.00	1.00	1.00		1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870		1870	1870
Adj Flow Rate, veh/h	33	49	33	2478		2245	38
Peak Hour Factor	0.92	0.92	0.92	0.92		0.92	0.92
Percent Heavy Veh, %	2	2	2	2		2	2
Cap, veh/h	208	95	62	4007		3437	1067
Arrive On Green	0.06	0.06	0.03	0.78		0.67	0.67
Sat Flow, veh/h	3456	1585	1781	5274		5274	1585
Grp Volume(v), veh/h	33	49	33	2478		2245	38
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1702		1702	1585
Q Serve(g_s), s	0.6	1.9	1.2	12.9		16.4	0.5
Cycle Q Clear(g_c), s	0.6	1.9	1.2	12.9		16.4	0.5
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	208	95	62	4007		3437	1067
V/C Ratio(X)	0.16	0.51	0.53	0.62		0.65	0.04
Avail Cap(c_a), veh/h	1788	820	140	4571		3779	1173
HCM Platoon Ratio	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	28.4	29.1	30.3	2.9		6.1	3.5
Incr Delay (d2), s/veh	0.3	3.2	2.6	0.2		0.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.8	0.5	1.6		4.0	0.1
Unsig. Movement Delay, s/veh							
LnGrp Delay(d), s/veh	28.7	32.2	32.9	3.1		6.5	3.5
LnGrp LOS	C	C	C	A		A	A
Approach Vol, veh/h	82			2511		2283	
Approach Delay, s/veh	30.8			3.5		6.4	
Approach LOS	C			A		A	

Timer - Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		55.4		8.4	7.1	48.2	
Change Period (Y+Rc), s		5.3		4.6	4.9	5.3	
Max Green Setting (Gmax), s		57.1		33.0	5.0	47.2	
Max Q Clear Time (g_c+I1), s		14.9		3.9	3.2	18.4	
Green Ext Time (p_c), s		35.1		0.2	0.0	23.8	

Intersection Summary	
HCM 7th Control Delay, s/veh	5.3
HCM 7th LOS	A

Notes

User approved ignoring U-Turning movement.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	120	92	179	196	283	783	2707	152	120	2022	120
v/c Ratio	0.58	0.42	0.52	0.30	0.80	1.32	1.14	0.19	1.09	1.12	0.19
Control Delay (s/veh)	65.9	59.5	13.0	45.7	64.9	199.1	102.6	11.9	166.8	99.3	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	65.9	59.5	13.0	45.7	64.9	199.1	102.6	11.9	166.8	99.3	8.1
Queue Length 50th (ft)	97	73	0	72	216	~438	~974	33	~113	~715	6
Queue Length 95th (ft)	167	133	68	114	340	#637	#1228	88	#267	#936	53
Internal Link Dist (ft)		813			837		762			707	
Turn Bay Length (ft)	580		300	325		530			500		215
Base Capacity (vph)	429	452	519	833	441	591	2369	780	110	1811	634
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.20	0.34	0.24	0.64	1.32	1.14	0.19	1.09	1.12	0.19

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	85	165	180	185	75	720	2490	140	110	1860	110
Future Volume (veh/h)	110	85	165	180	185	75	720	2490	140	110	1860	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	120	92	179	196	201	82	783	2707	152	120	2022	120
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	245	257	218	638	233	95	586	2340	726	110	1790	556
Arrive On Green	0.14	0.14	0.14	0.18	0.18	0.18	0.17	0.46	0.46	0.06	0.35	0.35
Sat Flow, veh/h	1781	1870	1585	3456	1263	515	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	120	92	179	196	0	283	783	2707	152	120	2022	120
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	0	1778	1728	1702	1585	1781	1702	1585
Q Serve(g_s), s	8.1	5.8	14.3	6.4	0.0	20.0	22.0	59.5	7.5	8.0	45.5	6.9
Cycle Q Clear(g_c), s	8.1	5.8	14.3	6.4	0.0	20.0	22.0	59.5	7.5	8.0	45.5	6.9
Prop In Lane	1.00		1.00	1.00		0.29	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	245	257	218	638	0	328	586	2340	726	110	1790	556
V/C Ratio(X)	0.49	0.36	0.82	0.31	0.00	0.86	1.34	1.16	0.21	1.09	1.13	0.22
Avail Cap(c_a), veh/h	425	447	378	825	0	424	586	2340	726	110	1790	556
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	50.8	54.4	45.7	0.0	51.3	53.9	35.2	21.1	60.9	42.2	29.6
Incr Delay (d2), s/veh	1.8	1.0	8.9	0.3	0.0	14.1	163.0	75.8	0.5	113.2	66.2	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	2.8	6.2	2.8	0.0	10.2	22.8	40.4	2.9	7.1	29.8	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	53.6	51.8	63.4	46.1	0.0	65.4	217.0	111.0	21.6	174.1	108.4	30.3
LnGrp LOS	D	D	E	D		E	F	F	C	F	F	C
Approach Vol, veh/h		391			479			3642			2262	
Approach Delay, s/veh		57.7			57.5			130.0			107.7	
Approach LOS		E			E			F			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.0	66.0		22.8	26.0	52.0		29.0				
Change Period (Y+Rc), s	4.0	6.5		5.0	4.0	6.5		5.0				
Max Green Setting (Gmax), s	8.0	59.5		31.0	22.0	45.5		31.0				
Max Q Clear Time (g_c+I1), s	10.0	61.5		16.3	24.0	47.5		22.0				
Green Ext Time (p_c), s	0.0	0.0		1.6	0.0	0.0		1.9				

Intersection Summary												
HCM 7th Control Delay, s/veh			113.3									
HCM 7th LOS			F									



Lane Group	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	288	54	3022	201	152	1908
v/c Ratio	1.00	0.14	0.98	0.20	0.84	0.53
Control Delay (s/veh)	93.6	3.9	31.7	3.1	83.3	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	93.6	3.9	31.7	3.1	83.3	7.6
Queue Length 50th (ft)	185	0	632	12	50	182
Queue Length 95th (ft)	#354	16	#813	40	#107	215
Internal Link Dist (ft)		445	706			646
Turn Bay Length (ft)				200	200	
Base Capacity (vph)	289	391	3086	1019	181	3584
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.14	0.98	0.20	0.84	0.53

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	265	0	50	0	2780	185	140	1755	0
Future Volume (veh/h)	0	0	0	265	0	50	0	2780	185	140	1755	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	288	0	54	0	3022	201	152	1908	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	341	0	399	0	289	2	3187	989	189	3702	0
Arrive On Green	0.00	0.00	0.00	0.18	0.00	0.18	0.00	0.62	0.62	0.05	0.73	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	5106	1585	3456	5274	0
Grp Volume(v), veh/h	0	0	0	288	0	54	0	3022	201	152	1908	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1702	1585	1728	1702	0
Q Serve(g_s), s	0.0	0.0	0.0	15.3	0.0	2.8	0.0	52.9	5.3	4.2	15.9	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	15.3	0.0	2.8	0.0	52.9	5.3	4.2	15.9	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	341	0	399	0	289	2	3187	989	189	3702	0
V/C Ratio(X)	0.00	0.00	0.00	0.72	0.00	0.19	0.00	0.95	0.20	0.81	0.52	0.00
Avail Cap(c_a), veh/h	0	395	0	450	0	335	92	3192	991	189	3702	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	38.7	0.0	33.6	0.0	16.8	7.9	45.4	5.9	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	4.9	0.0	0.3	0.0	7.2	0.1	22.0	0.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	7.1	0.0	1.1	0.0	20.0	1.7	2.4	4.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	43.6	0.0	33.9	0.0	24.0	8.0	67.4	6.0	0.0
LnGrp LOS				D		C		C	A	E	A	
Approach Vol, veh/h		0			342			3223			2060	
Approach Delay, s/veh		0.0			42.1			23.0			10.5	
Approach LOS					D			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.8	65.1		22.2	0.0	74.9		22.2				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.3	60.7		20.5	5.0	61.0		20.5				
Max Q Clear Time (g_c+I1), s	6.2	54.9		0.0	0.0	17.9		17.3				
Green Ext Time (p_c), s	0.0	5.7		0.0	0.0	23.3		0.4				

Intersection Summary												
HCM 7th Control Delay, s/veh			19.6									
HCM 7th LOS			B									

Appendix F

Intersection Analysis Worksheets for Cumulative (2044) plus Project Buildout



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	228	663	86	384	1149	92	105	892	250	196	1846	474
v/c Ratio	0.69	0.56	0.20	0.79	0.82	0.18	0.50	0.48	0.40	0.66	0.94	0.69
Control Delay (s/veh)	77.3	53.1	9.8	75.3	56.2	4.7	78.0	37.3	15.9	78.2	53.1	25.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	77.3	53.1	9.8	75.3	56.2	4.7	78.0	37.3	15.9	78.2	53.1	25.8
Queue Length 50th (ft)	109	209	0	184	383	0	50	243	68	94	636	230
Queue Length 95th (ft)	173	276	46	268	475	30	93	367	194	153	#967	484
Internal Link Dist (ft)		1037			966			719			726	
Turn Bay Length (ft)	250		215	325		235	145		145	230		230
Base Capacity (vph)	1014	1775	608	668	1408	518	345	1842	619	461	1964	688
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.37	0.14	0.57	0.82	0.18	0.30	0.48	0.40	0.43	0.94	0.69

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	610	79	353	1057	85	97	795	256	180	1650	485
Future Volume (veh/h)	210	610	79	353	1057	85	97	795	256	180	1650	485
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	228	663	86	384	1149	92	105	864	278	196	1793	527
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	285	1109	344	442	1342	417	178	2342	662	251	2457	694
Arrive On Green	0.08	0.22	0.22	0.13	0.26	0.26	0.05	0.42	0.42	0.07	0.44	0.44
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3563	5611	1585	3563	5611	1585
Grp Volume(v), veh/h	228	663	86	384	1149	92	105	864	278	196	1793	527
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	8.9	16.1	6.2	15.0	29.5	6.3	4.0	14.6	17.1	7.5	36.4	38.6
Cycle Q Clear(g_c), s	8.9	16.1	6.2	15.0	29.5	6.3	4.0	14.6	17.1	7.5	36.4	38.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	285	1109	344	442	1342	417	178	2342	662	251	2457	694
V/C Ratio(X)	0.80	0.60	0.25	0.87	0.86	0.22	0.59	0.37	0.42	0.78	0.73	0.76
Avail Cap(c_a), veh/h	1103	1927	598	727	1371	426	388	2342	662	517	2484	702
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.1	48.5	44.6	58.9	48.3	39.7	64.1	27.6	28.4	63.0	32.0	32.6
Incr Delay (d2), s/veh	2.0	1.4	1.0	3.3	6.3	0.7	1.2	0.2	0.7	2.0	1.8	7.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	7.0	2.6	6.8	13.3	2.6	1.8	6.6	6.7	3.5	16.8	16.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	64.1	49.9	45.7	62.3	54.6	40.5	65.3	27.8	29.0	65.0	33.8	39.6
LnGrp LOS	E	D	D	E	D	D	E	C	C	E	C	D
Approach Vol, veh/h		977			1625			1247			2516	
Approach Delay, s/veh		52.9			55.6			31.2			37.4	
Approach LOS		D			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.9	66.7	22.6	36.6	14.7	63.8	16.4	42.9
Change Period (Y+Rc), s	5.0	6.3	5.0	6.7	5.0	6.3	5.0	6.7
Max Green Setting (Gmax), s	15.0	61.0	29.0	52.0	20.0	56.0	44.0	37.0
Max Q Clear Time (g_c+I1), s	6.0	40.6	17.0	18.1	9.5	19.1	10.9	31.5
Green Ext Time (p_c), s	0.1	19.8	0.6	11.8	0.3	13.9	0.4	4.6

Intersection Summary	
HCM 7th Control Delay, s/veh	43.2
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	136	828	163	299	1311	125	130	418	272	179	1299	168
v/c Ratio	0.74	0.51	0.26	0.78	0.70	0.19	0.48	0.26	0.41	0.60	0.79	0.28
Control Delay (s/veh)	86.4	38.8	6.2	72.9	38.7	5.1	65.8	34.0	7.5	68.2	44.4	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	86.4	38.8	6.2	72.9	38.7	5.1	65.8	34.0	7.5	68.2	44.4	9.5
Queue Length 50th (ft)	60	210	0	130	343	0	56	98	16	77	373	20
Queue Length 95th (ft)	#129	294	53	#225	468	40	97	133	83	125	445	73
Internal Link Dist (ft)		890			754			625			855	
Turn Bay Length (ft)	275		200	200		240	200		200	200		200
Base Capacity (vph)	184	1678	633	397	1951	689	437	1750	706	737	2095	731
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.49	0.26	0.75	0.67	0.18	0.30	0.24	0.39	0.24	0.62	0.23

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	762	150	275	1206	115	120	385	250	165	1195	155
Future Volume (veh/h)	125	762	150	275	1206	115	120	385	250	165	1195	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	136	828	163	299	1311	125	130	418	272	179	1299	168
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	205	1729	537	362	1914	594	191	1490	463	243	1614	501
Arrive On Green	0.06	0.34	0.34	0.10	0.37	0.37	0.06	0.29	0.29	0.07	0.32	0.32
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	136	828	163	299	1311	125	130	418	272	179	1299	168
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	4.5	14.9	8.8	9.9	25.2	6.2	4.3	7.4	17.1	5.9	27.2	9.5
Cycle Q Clear(g_c), s	4.5	14.9	8.8	9.9	25.2	6.2	4.3	7.4	17.1	5.9	27.2	9.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	1729	537	362	1914	594	191	1490	463	243	1614	501
V/C Ratio(X)	0.66	0.48	0.30	0.83	0.69	0.21	0.68	0.28	0.59	0.74	0.80	0.34
Avail Cap(c_a), veh/h	207	1881	584	447	2187	679	491	1850	574	829	2349	729
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.8	30.5	28.4	51.2	30.7	24.8	54.1	31.9	35.3	53.2	36.6	30.5
Incr Delay (d2), s/veh	6.1	0.4	0.7	10.0	1.2	0.4	4.2	0.1	1.2	1.7	0.8	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	6.2	3.5	4.8	10.4	2.4	2.0	3.1	6.7	2.6	11.3	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.9	30.9	29.1	61.3	31.8	25.1	58.3	32.0	36.5	54.9	37.4	30.7
LnGrp LOS	E	C	C	E	C	C	E	C	D	D	D	C
Approach Vol, veh/h		1127			1735			820			1646	
Approach Delay, s/veh		34.1			36.4			37.7			38.6	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.8	39.7	16.7	46.5	11.0	42.5	12.5	50.7
Change Period (Y+Rc), s	5.6	* 5.6	4.5	7.0	4.5	5.6	5.6	7.0
Max Green Setting (Gmax), s	28.0	* 42	15.1	43.0	16.6	53.7	7.0	50.0
Max Q Clear Time (g_c+I1), s	7.9	19.1	11.9	16.9	6.3	29.2	6.5	27.2
Green Ext Time (p_c), s	0.3	3.9	0.3	12.5	0.3	7.7	0.0	16.5

Intersection Summary	
HCM 7th Control Delay, s/veh	36.8
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	141	1111	38	125	1273	141	38	33	60	288	92	429
v/c Ratio	0.59	0.49	0.05	0.57	0.58	0.19	0.27	0.12	0.18	1.29	0.25	0.65
Control Delay (s/veh)	49.5	19.3	1.0	51.7	21.7	7.1	49.2	38.5	1.9	193.2	35.9	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	49.5	19.3	1.0	51.7	21.7	7.1	49.2	38.5	1.9	193.2	35.9	9.1
Queue Length 50th (ft)	76	169	0	67	201	12	21	17	0	~213	46	0
Queue Length 95th (ft)	158	229	5	#167	300	54	62	49	5	#470	105	92
Internal Link Dist (ft)		1187			2532			760			553	
Turn Bay Length (ft)	240		245	240		240	240		245	200		205
Base Capacity (vph)	674	3245	1036	244	2205	745	142	1053	943	224	1126	1126
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.34	0.04	0.51	0.58	0.19	0.27	0.03	0.06	1.29	0.08	0.38

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	1022	35	115	1171	130	35	30	55	265	85	395
Future Volume (veh/h)	130	1022	35	115	1171	130	35	30	55	265	85	395
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	141	1111	38	125	1273	141	38	33	60	288	92	429
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	174	1912	593	155	1856	576	82	450	382	199	574	486
Arrive On Green	0.10	0.37	0.37	0.09	0.36	0.36	0.05	0.24	0.24	0.11	0.31	0.31
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	141	1111	38	125	1273	141	38	33	60	288	92	429
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	7.6	17.1	1.5	6.8	20.8	6.1	2.0	1.3	2.9	11.0	3.5	25.3
Cycle Q Clear(g_c), s	7.6	17.1	1.5	6.8	20.8	6.1	2.0	1.3	2.9	11.0	3.5	25.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	174	1912	593	155	1856	576	82	450	382	199	574	486
V/C Ratio(X)	0.81	0.58	0.06	0.81	0.69	0.24	0.46	0.07	0.16	1.44	0.16	0.88
Avail Cap(c_a), veh/h	598	2873	892	217	1856	576	127	933	790	199	997	845
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.5	24.6	19.7	44.1	26.5	21.8	45.7	28.8	29.4	43.6	24.8	32.4
Incr Delay (d2), s/veh	3.4	0.5	0.1	9.6	1.3	0.4	1.5	0.1	0.4	226.0	0.2	6.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	6.8	0.6	3.4	8.4	2.3	0.9	0.6	1.2	17.3	1.6	10.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	46.9	25.1	19.8	53.7	27.8	22.3	47.2	29.0	29.9	269.6	25.0	39.3
LnGrp LOS	D	C	B	D	C	C	D	C	C	F	C	D
Approach Vol, veh/h		1290			1539			131			809	
Approach Delay, s/veh		27.4			29.4			34.7			119.7	
Approach LOS		C			C			C			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	28.3	12.5	42.5	8.5	34.7	13.6	41.4
Change Period (Y+Rc), s	4.0	* 4.6	4.0	5.7	4.0	4.6	4.0	5.7
Max Green Setting (Gmax), s	11.0	* 49	12.0	55.3	7.0	52.4	33.0	34.3
Max Q Clear Time (g_c+I1), s	13.0	4.9	8.8	19.1	4.0	27.3	9.6	22.8
Green Ext Time (p_c), s	0.0	0.8	0.0	17.7	0.0	2.9	0.2	9.1

Intersection Summary	
HCM 7th Control Delay, s/veh	48.3
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	168	1272	8	16	1332	310	75	424	196
v/c Ratio	0.42	0.55	0.01	0.11	0.78	0.42	0.12	0.88	0.27
Control Delay (s/veh)	30.3	14.1	0.0	29.8	23.5	4.4	2.7	41.4	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.3	14.1	0.0	29.8	23.5	4.4	2.7	41.4	3.1
Queue Length 50th (ft)	32	115	0	6	177	0	0	153	0
Queue Length 95th (ft)	59	203	0	23	#231	49	16	#311	30
Internal Link Dist (ft)		2532			278		427		450
Turn Bay Length (ft)	200		200	200		200		150	
Base Capacity (vph)	415	2359	788	146	1718	740	658	519	756
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.54	0.01	0.11	0.78	0.42	0.11	0.82	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	1170	7	15	1225	285	21	0	48	390	0	180
Future Volume (veh/h)	155	1170	7	15	1225	285	21	0	48	390	0	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	168	1272	8	16	1332	310	23	0	52	424	0	196
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	279	2018	626	35	1705	529	196	39	347	601	0	557
Arrive On Green	0.08	0.40	0.40	0.02	0.33	0.33	0.35	0.00	0.35	0.35	0.00	0.35
Sat Flow, veh/h	3456	5106	1585	1781	5106	1585	326	111	988	1352	0	1585
Grp Volume(v), veh/h	168	1272	8	16	1332	310	75	0	0	424	0	196
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1781	1702	1585	1425	0	0	1352	0	1585
Q Serve(g_s), s	2.7	11.6	0.2	0.5	13.6	9.3	0.0	0.0	0.0	11.7	0.0	5.3
Cycle Q Clear(g_c), s	2.7	11.6	0.2	0.5	13.6	9.3	5.3	0.0	0.0	17.0	0.0	5.3
Prop In Lane	1.00		1.00	1.00		1.00	0.31		0.69	1.00		1.00
Lane Grp Cap(c), veh/h	279	2018	626	35	1705	529	582	0	0	601	0	557
V/C Ratio(X)	0.60	0.63	0.01	0.46	0.78	0.59	0.13	0.00	0.00	0.70	0.00	0.35
Avail Cap(c_a), veh/h	437	2018	626	154	1806	561	670	0	0	685	0	654
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.6	14.0	10.6	28.0	17.3	15.9	12.7	0.0	0.0	17.6	0.0	13.9
Incr Delay (d2), s/veh	2.1	0.6	0.0	9.1	2.2	1.4	0.1	0.0	0.0	2.8	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	4.0	0.1	0.3	5.0	3.2	0.6	0.0	0.0	5.1	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.7	14.7	10.6	37.0	19.5	17.3	12.8	0.0	0.0	20.4	0.0	14.2
LnGrp LOS	C	B	B	D	B	B	B			C		B
Approach Vol, veh/h		1448			1658			75			620	
Approach Delay, s/veh		16.2			19.2			12.8			18.5	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	24.7	5.6	27.3	24.7	9.2	23.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	23.8	5.0	22.7	23.8	7.3	20.4
Max Q Clear Time (g_c+I1), s	7.3	2.5	13.6	19.0	4.7	15.6
Green Ext Time (p_c), s	0.3	0.0	5.6	1.3	0.1	3.7

Intersection Summary	
HCM 7th Control Delay, s/veh	17.8
HCM 7th LOS	B



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	279	1088	457	380	1124	329	302	1363	505	414	1732	464
v/c Ratio	0.82	0.63	0.70	0.84	0.85	0.47	0.97	0.86	0.76	1.58	1.15	0.74
Control Delay (s/veh)	83.3	42.2	31.2	77.3	49.2	17.0	109.8	53.7	30.3	318.6	120.6	30.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	83.3	42.2	31.2	77.3	49.2	17.0	109.8	53.7	30.3	318.6	120.6	30.5
Queue Length 50th (ft)	135	318	236	181	511	100	149	447	228	~286	~706	209
Queue Length 95th (ft)	#198	372	375	239	607	191	#248	510	380	#396	#802	352
Internal Link Dist (ft)		1047			306			1367			1181	
Turn Bay Length (ft)	270		420	240		240	250		250	250		350
Base Capacity (vph)	358	1722	654	501	1328	708	310	1577	664	262	1506	630
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.63	0.70	0.76	0.85	0.46	0.97	0.86	0.76	1.58	1.15	0.74

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	257	1001	420	350	1034	303	278	1254	465	381	1593	427
Future Volume (veh/h)	257	1001	420	350	1034	303	278	1254	465	381	1593	427
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	279	1088	457	380	1124	329	302	1363	505	414	1732	464
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	326	1722	535	430	1306	582	318	1613	501	269	1540	478
Arrive On Green	0.09	0.34	0.34	0.12	0.37	0.37	0.09	0.32	0.32	0.08	0.30	0.30
Sat Flow, veh/h	3456	5106	1585	3456	3554	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	279	1088	457	380	1124	329	302	1363	505	414	1732	464
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1777	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	11.2	25.3	37.9	15.3	41.3	23.4	12.3	35.2	44.6	11.0	42.6	40.8
Cycle Q Clear(g_c), s	11.2	25.3	37.9	15.3	41.3	23.4	12.3	35.2	44.6	11.0	42.6	40.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	326	1722	535	430	1306	582	318	1613	501	269	1540	478
V/C Ratio(X)	0.85	0.63	0.85	0.88	0.86	0.56	0.95	0.85	1.01	1.54	1.12	0.97
Avail Cap(c_a), veh/h	367	1735	539	514	1359	606	318	1613	501	269	1540	478
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.0	39.4	43.6	60.8	41.3	35.7	63.8	45.1	48.3	65.1	49.3	48.7
Incr Delay (d2), s/veh	14.8	1.0	13.5	13.2	6.2	1.9	36.8	4.6	42.4	259.9	65.1	33.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	10.8	16.8	7.5	19.2	9.4	7.0	15.5	23.4	14.6	27.3	20.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	77.8	40.4	57.0	74.0	47.5	37.5	100.6	49.7	90.8	325.1	114.4	82.3
LnGrp LOS	E	D	E	E	D	D	F	D	F	F	F	F
Approach Vol, veh/h		1824			1833			2170			2610	
Approach Delay, s/veh		50.3			51.2			66.3			142.1	
Approach LOS		D			D			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	51.0	21.6	53.6	17.0	49.0	17.3	57.9
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	11.0	44.6	21.0	48.0	13.0	42.6	15.0	54.0
Max Q Clear Time (g_c+I1), s	13.0	46.6	17.3	39.9	14.3	44.6	13.2	43.3
Green Ext Time (p_c), s	0.0	0.0	0.3	6.7	0.0	0.0	0.1	8.6

Intersection Summary	
HCM 7th Control Delay, s/veh	83.0
HCM 7th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	35

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	1629	139	18	1546	55	81	5	43	35	10	65
Future Vol, veh/h	75	1629	139	18	1546	55	81	5	43	35	10	65
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	82	1771	151	20	1680	60	88	5	47	38	11	71

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1740	0	0	1922	0	0	2818	3713	885	2801	3834	870
Stage 1	-	-	-	-	-	-	1934	1934	-	1749	1749	-
Stage 2	-	-	-	-	-	-	885	1779	-	1051	2085	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	357	-	-	304	-	-	~ 8	~ 4	288	~ 8	~ 4	295
Stage 1	-	-	-	-	-	-	~ 68	112	-	89	138	-
Stage 2	-	-	-	-	-	-	306	133	-	242	93	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	357	-	-	304	-	-	~ 3	~ 3	288	~ 5	~ 3	295
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 44	36	-	48	35	-
Stage 1	-	-	-	-	-	-	~ 52	86	-	83	129	-
Stage 2	-	-	-	-	-	-	199	125	-	147	72	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.73	0.2	$ 736.6	297.18
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	61	357	-	-	304	-	-	89
HCM Lane V/C Ratio	2.294	0.228	-	-	0.064	-	-	1.344
HCM Ctrl Dly (s/v)	$ 736.6	18	-	-	17.7	-	-	297.2
HCM Lane LOS	F	C	-	-	C	-	-	F
HCM 95th %tile Q(veh)	13.7	0.9	-	-	0.2	-	-	8.9

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	414	1391	1440	92	87	329
v/c Ratio	0.68	0.50	0.78	0.11	0.38	0.36
Control Delay (s/veh)	32.1	4.1	17.3	2.7	34.1	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.1	4.1	17.3	2.7	34.1	15.8
Queue Length 50th (ft)	86	101	254	0	35	50
Queue Length 95th (ft)	129	135	346	20	77	82
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	723	2830	2008	938	229	997
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.49	0.72	0.10	0.38	0.33

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	381	1280	1325	85	80	303
Future Volume (veh/h)	381	1280	1325	85	80	303
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	414	1391	1440	92	87	329
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	524	2561	1802	804	221	769
Arrive On Green	0.15	0.72	0.51	0.51	0.12	0.12
Sat Flow, veh/h	3456	3647	3647	1585	1781	2790
Grp Volume(v), veh/h	414	1391	1440	92	87	329
Grp Sat Flow(s),veh/h/ln	1728	1777	1777	1585	1781	1395
Q Serve(g_s), s	7.4	11.6	21.6	2.0	2.9	6.2
Cycle Q Clear(g_c), s	7.4	11.6	21.6	2.0	2.9	6.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	524	2561	1802	804	221	769
V/C Ratio(X)	0.79	0.54	0.80	0.11	0.39	0.43
Avail Cap(c_a), veh/h	697	2867	1929	861	221	769
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.4	4.1	13.2	8.3	26.0	19.2
Incr Delay (d2), s/veh	3.2	0.3	2.5	0.1	0.4	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	2.5	7.8	0.6	1.2	5.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	29.5	4.4	15.7	8.4	26.4	19.3
LnGrp LOS	C	A	B	A	C	B
Approach Vol, veh/h		1805	1532		416	
Approach Delay, s/veh		10.2	15.3		20.8	
Approach LOS		B	B		C	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			52.5		12.0	13.8	38.7
Change Period (Y+Rc), s			6.0		4.0	4.0	6.0
Max Green Setting (Gmax), s			52.0		8.0	13.0	35.0
Max Q Clear Time (g_c+I1), s			13.6		8.2	9.4	23.6
Green Ext Time (p_c), s			20.8		0.0	0.3	9.0

Intersection Summary	
HCM 7th Control Delay, s/veh	13.4
HCM 7th LOS	B

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	47	11	5	63	173	14
Future Vol, veh/h	47	11	5	63	173	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	51	12	5	68	188	15
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	8.1	7.3	8.8
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	81%	0%	93%
Vol Thru, %	19%	7%	0%
Vol Right, %	0%	93%	7%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	58	68	187
LT Vol	47	0	173
Through Vol	11	5	0
RT Vol	0	63	14
Lane Flow Rate	63	74	203
Geometry Grp	1	1	1
Degree of Util (X)	0.081	0.081	0.243
Departure Headway (Hd)	4.649	3.928	4.31
Convergence, Y/N	Yes	Yes	Yes
Cap	775	917	823
Service Time	2.652	1.93	2.386
HCM Lane V/C Ratio	0.081	0.081	0.247
HCM Control Delay, s/veh	8.1	7.3	8.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.3	0.3	1

Intersection	
Int Delay, s/veh	43.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	53	5	11	5	0	5	11	1955	10	15	2359	13
Future Vol, veh/h	53	5	11	5	0	5	11	1955	10	15	2359	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	310	-	150	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	58	5	12	5	0	5	12	2125	11	16	2564	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3471	4757	1282	3210	4760	1063	2578	0	0	2136	0	0
Stage 1	2597	2597	-	2149	2149	-	-	-	-	-	-	-
Stage 2	874	2160	-	1061	2611	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	~ 7	~ 1	134	11	1	188	63	-	-	107	-	-
Stage 1	~ 14	51	-	30	87	-	-	-	-	-	-	-
Stage 2	282	85	-	215	50	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 5	~ 1	134	~ 5	1	188	63	-	-	107	-	-
Mov Cap-2 Maneuver	~ 11	22	-	20	19	-	-	-	-	-	-	-
Stage 1	~ 12	43	-	24	70	-	-	-	-	-	-	-
Stage 2	222	69	-	145	42	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	$ 2739.58	143.24	0.42	0.28
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	63	-	-	13	36	107	-	-
HCM Lane V/C Ratio	0.19	-	-	5.801	0.301	0.153	-	-
HCM Ctrl Dly (s/v)	75	-	-	$ 2739.6	143.2	44.8	-	-
HCM Lane LOS	F	-	-	F	F	E	-	-
HCM 95th %tile Q(veh)	0.6	-	-	10.5	1	0.5	-	-

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	12	0	1961	2359	6
Future Vol, veh/h	0	12	0	1961	2359	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	13	0	2132	2564	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1282	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	134	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	134	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	34.74	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	134	-	-
HCM Lane V/C Ratio	-	0.097	-	-
HCM Ctrl Dly (s/v)	-	34.7	-	-
HCM Lane LOS	-	D	-	-
HCM 95th %tile Q(veh)	-	0.3	-	-



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	24	25	71	11	24	38	2037	3	9	2530	27
v/c Ratio	0.22	0.23	0.39	0.10	0.14	0.44	0.51	0.00	0.10	0.68	0.02
Control Delay (s/veh)	52.7	53.0	14.6	50.3	1.6	66.2	6.5	0.0	52.6	11.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	52.7	53.0	14.6	50.3	1.6	66.2	6.5	0.0	52.6	11.7	0.0
Queue Length 50th (ft)	16	17	0	7	0	26	181	0	6	395	0
Queue Length 95th (ft)	45	47	34	26	0	#67	339	0	23	504	0
Internal Link Dist (ft)		1039		375			711			546	
Turn Bay Length (ft)	240		240			260		150	240		415
Base Capacity (vph)	543	543	569	312	349	86	4031	1271	86	3737	1184
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.05	0.12	0.04	0.07	0.44	0.51	0.00	0.10	0.68	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	0	65	10	0	22	35	1874	3	8	2328	25
Future Volume (veh/h)	45	0	65	10	0	22	35	1874	3	8	2328	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	49	0	71	11	0	24	38	2037	3	9	2530	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	230	0	102	56	0	50	59	3559	1105	20	3426	1064
Arrive On Green	0.06	0.00	0.06	0.03	0.00	0.03	0.03	0.70	0.70	0.01	0.67	0.67
Sat Flow, veh/h	3563	0	1585	1781	0	1585	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	49	0	71	11	0	24	38	2037	3	9	2530	27
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1585	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	1.3	0.0	4.2	0.6	0.0	1.4	2.0	19.4	0.1	0.5	31.2	0.6
Cycle Q Clear(g_c), s	1.3	0.0	4.2	0.6	0.0	1.4	2.0	19.4	0.1	0.5	31.2	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	230	0	102	56	0	50	59	3559	1105	20	3426	1064
V/C Ratio(X)	0.21	0.00	0.69	0.20	0.00	0.48	0.64	0.57	0.00	0.45	0.74	0.03
Avail Cap(c_a), veh/h	1217	0	541	332	0	295	92	3705	1150	92	3684	1144
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.9	0.0	44.2	45.6	0.0	46.0	46.1	7.4	4.4	47.5	10.4	5.3
Incr Delay (d2), s/veh	0.3	0.0	6.1	1.7	0.0	7.0	4.3	0.2	0.0	15.4	0.8	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	1.8	0.3	0.0	0.7	1.0	6.0	0.0	0.3	10.2	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.2	0.0	50.3	47.3	0.0	53.0	50.5	7.6	4.4	62.9	11.2	5.3
LnGrp LOS	D		D	D		D	D	A	A	E	B	A
Approach Vol, veh/h		120			35			2078			2566	
Approach Delay, s/veh		47.4			51.2			8.4			11.3	
Approach LOS		D			D			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.6	72.6		10.8	8.1	70.1		7.5				
Change Period (Y+Rc), s	4.5	5.3		4.6	4.9	5.3		4.5				
Max Green Setting (Gmax), s	5.0	70.1		33.0	5.0	69.7		18.0				
Max Q Clear Time (g_c+I1), s	2.5	21.4		6.2	4.0	33.2		3.4				
Green Ext Time (p_c), s	0.0	31.7		0.3	0.0	31.6		0.1				

Intersection Summary		
HCM 7th Control Delay, s/veh	11.2	
HCM 7th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	111	209	554	87	195	130	1837	185	103	2774	180
v/c Ratio	0.35	0.62	0.88	0.18	0.72	0.46	0.79	0.24	0.95	1.26	0.24
Control Delay (s/veh)	50.6	58.5	29.8	50.8	62.9	64.9	35.5	10.4	137.3	152.6	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	50.6	58.5	29.8	50.8	62.9	64.9	35.5	10.4	137.3	152.6	12.7
Queue Length 50th (ft)	83	165	121	34	144	56	496	32	91	~1115	37
Queue Length 95th (ft)	151	267	#325	62	235	96	670	94	#237	#1439	106
Internal Link Dist (ft)		813			837		762			707	
Turn Bay Length (ft)	580		300	325		530			500		215
Base Capacity (vph)	420	442	693	815	430	578	2316	786	108	2207	748
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.47	0.80	0.11	0.45	0.22	0.79	0.24	0.95	1.26	0.24

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	102	192	510	80	99	80	120	1690	170	95	2552	166
Future Volume (veh/h)	102	192	510	80	99	80	120	1690	170	95	2552	166
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	111	209	554	87	108	87	130	1837	185	103	2774	180
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	403	424	359	466	129	104	187	2199	683	104	2221	689
Arrive On Green	0.23	0.23	0.23	0.13	0.13	0.13	0.05	0.43	0.43	0.06	0.43	0.43
Sat Flow, veh/h	1781	1870	1585	3456	959	772	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	111	209	554	87	0	195	130	1837	185	103	2774	180
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	0	1731	1728	1702	1585	1781	1702	1585
Q Serve(g_s), s	7.0	13.3	31.0	3.1	0.0	15.0	5.1	43.8	10.3	7.9	59.5	9.9
Cycle Q Clear(g_c), s	7.0	13.3	31.0	3.1	0.0	15.0	5.1	43.8	10.3	7.9	59.5	9.9
Prop In Lane	1.00		1.00	1.00		0.45	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	403	424	359	466	0	233	187	2199	683	104	2221	689
V/C Ratio(X)	0.28	0.49	1.54	0.19	0.00	0.84	0.70	0.84	0.27	0.99	1.25	0.26
Avail Cap(c_a), veh/h	403	424	359	783	0	392	555	2219	689	104	2221	689
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.7	46.1	53.0	52.6	0.0	57.7	63.6	34.7	25.1	64.4	38.7	24.7
Incr Delay (d2), s/veh	0.4	1.1	258.1	0.2	0.0	9.1	5.5	3.7	0.8	84.7	116.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	6.4	38.0	1.4	0.0	7.2	2.4	18.7	4.1	6.0	48.2	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.1	47.2	311.0	52.8	0.0	66.8	69.1	38.3	25.9	149.1	154.7	25.4
LnGrp LOS	D	D	F	D		E	E	D	C	F	F	C
Approach Vol, veh/h		874			282			2152			3057	
Approach Delay, s/veh		214.0			62.5			39.1			146.9	
Approach LOS		F			E			D			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.0	65.4		36.0	11.4	66.0		23.5				
Change Period (Y+Rc), s	4.0	6.5		5.0	4.0	6.5		5.0				
Max Green Setting (Gmax), s	8.0	59.5		31.0	22.0	45.5		31.0				
Max Q Clear Time (g_c+I1), s	9.9	45.8		33.0	7.1	61.5		17.0				
Green Ext Time (p_c), s	0.0	13.1		0.0	0.4	0.0		1.4				

Intersection Summary			
HCM 7th Control Delay, s/veh		115.9	
HCM 7th LOS		F	



Lane Group	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	1	352	133	1490	309	32	2753
v/c Ratio	0.00	0.98	0.27	0.51	0.30	0.16	0.85
Control Delay (s/veh)	0.0	78.7	7.8	12.2	2.0	41.5	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	0.0	78.7	7.8	12.2	2.0	41.5	15.1
Queue Length 50th (ft)	0	181	3	182	0	8	375
Queue Length 95th (ft)	0	#387	48	221	35	23	445
Internal Link Dist (ft)	224		445	706			646
Turn Bay Length (ft)					200	200	
Base Capacity (vph)	483	358	495	3005	1061	202	3251
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.98	0.27	0.50	0.29	0.16	0.85

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	1	324	0	122	0	1371	284	29	2533	0
Future Volume (veh/h)	0	0	1	324	0	122	0	1371	284	29	2533	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	1	352	0	133	0	1490	309	32	2753	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	0	425	470	0	425	2	2708	841	110	3159	0
Arrive On Green	0.00	0.00	0.27	0.27	0.00	0.27	0.00	0.53	0.53	0.03	0.62	0.00
Sat Flow, veh/h	0	0	1585	1416	0	1585	1781	5106	1585	3456	5274	0
Grp Volume(v), veh/h	0	0	1	352	0	133	0	1490	309	32	2753	0
Grp Sat Flow(s),veh/h/ln	0	0	1585	1416	0	1585	1781	1702	1585	1728	1702	0
Q Serve(g_s), s	0.0	0.0	0.0	19.3	0.0	5.3	0.0	15.4	9.1	0.7	35.5	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	19.3	0.0	5.3	0.0	15.4	9.1	0.7	35.5	0.0
Prop In Lane	0.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	425	470	0	425	2	2708	841	110	3159	0
V/C Ratio(X)	0.00	0.00	0.00	0.75	0.00	0.31	0.00	0.55	0.37	0.29	0.87	0.00
Avail Cap(c_a), veh/h	0	0	428	472	0	428	112	3207	995	217	3207	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	21.3	28.4	0.0	23.3	0.0	12.4	10.9	37.7	12.6	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	6.5	0.0	0.4	0.0	0.2	0.3	1.4	2.9	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	7.1	0.0	2.0	0.0	5.3	2.9	0.3	11.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	21.3	34.9	0.0	23.7	0.0	12.6	11.2	39.1	15.4	0.0
LnGrp LOS			C	C		C		B	B	D	B	
Approach Vol, veh/h		1			485			1799			2785	
Approach Delay, s/veh		21.3			31.8			12.3			15.7	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	46.7		25.9	0.0	53.8		25.9				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	50.0		21.5	5.0	50.0		21.5				
Max Q Clear Time (g_c+I1), s	2.7	17.4		2.0	0.0	37.5		21.3				
Green Ext Time (p_c), s	0.0	16.2		0.0	0.0	11.7		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	16.1
HCM 7th LOS	B



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	614	1317	137	252	930	255	122	2035	312	141	1128	269
v/c Ratio	0.88	0.78	0.24	0.73	0.80	0.53	0.57	1.18	0.56	0.61	0.64	0.43
Control Delay (s/veh)	78.1	54.2	18.7	85.6	67.2	25.4	86.9	132.4	31.3	86.9	46.1	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	78.1	54.2	18.7	85.6	67.2	25.4	86.9	132.4	31.3	86.9	46.1	12.7
Queue Length 50th (ft)	335	473	42	138	353	86	67	~1010	198	77	388	54
Queue Length 95th (ft)	418	576	106	197	450	199	110	#1251	359	123	499	165
Internal Link Dist (ft)		1037			966			719			726	
Turn Bay Length (ft)	250		215	325		235	145		145	230		230
Base Capacity (vph)	920	1685	578	606	1157	485	313	1726	562	418	1780	634
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.78	0.24	0.42	0.80	0.53	0.39	1.18	0.56	0.34	0.63	0.42

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	565	1212	126	232	856	235	112	1840	319	130	1010	275
Future Volume (veh/h)	565	1212	126	232	856	235	112	1840	319	130	1010	275
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	614	1317	137	252	930	255	122	2000	347	141	1098	299
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	673	1724	535	303	1178	366	169	2073	586	190	2106	595
Arrive On Green	0.19	0.34	0.34	0.09	0.23	0.23	0.05	0.37	0.37	0.05	0.38	0.38
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3563	5611	1585	3563	5611	1585
Grp Volume(v), veh/h	614	1317	137	252	930	255	122	2000	347	141	1098	299
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	26.4	34.9	9.5	10.9	26.0	22.3	5.1	52.9	26.8	5.9	23.0	22.0
Cycle Q Clear(g_c), s	26.4	34.9	9.5	10.9	26.0	22.3	5.1	52.9	26.8	5.9	23.0	22.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	673	1724	535	303	1178	366	169	2073	586	190	2106	595
V/C Ratio(X)	0.91	0.76	0.26	0.83	0.79	0.70	0.72	0.96	0.59	0.74	0.52	0.50
Avail Cap(c_a), veh/h	1004	1753	544	662	1247	387	353	2074	586	470	2260	638
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.7	44.8	36.4	68.0	54.8	53.4	71.2	46.8	38.5	70.7	36.7	36.4
Incr Delay (d2), s/veh	6.8	2.6	0.7	2.3	4.4	7.8	2.2	12.6	2.1	2.2	0.8	2.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.2	15.2	3.8	4.9	11.7	9.7	2.4	26.9	10.8	2.8	10.8	9.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	66.5	47.4	37.1	70.3	59.2	61.2	73.3	59.4	40.6	72.9	37.5	38.9
LnGrp LOS	E	D	D	E	E	E	E	E	D	E	D	D
Approach Vol, veh/h		2068			1437			2469			1538	
Approach Delay, s/veh		52.4			61.5			57.4			41.0	
Approach LOS		D			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.2	63.2	18.3	57.9	13.1	62.3	34.5	41.6
Change Period (Y+Rc), s	5.0	6.3	5.0	6.7	5.0	6.3	5.0	6.7
Max Green Setting (Gmax), s	15.0	61.0	29.0	52.0	20.0	56.0	44.0	37.0
Max Q Clear Time (g_c+I1), s	7.1	25.0	12.9	36.9	7.9	54.9	28.4	28.0
Green Ext Time (p_c), s	0.1	25.6	0.4	12.5	0.2	1.1	1.2	7.0

Intersection Summary	
HCM 7th Control Delay, s/veh	53.5
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	98	1626	179	359	1047	207	234	1690	402	190	674	174
v/c Ratio	0.55	0.99	0.29	0.93	0.55	0.29	0.65	1.05	0.63	0.63	0.44	0.31
Control Delay (s/veh)	74.3	66.3	7.4	89.5	34.6	4.8	66.7	81.3	24.8	68.6	39.2	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	74.3	66.3	7.4	89.5	34.6	4.8	66.7	81.3	24.8	68.6	39.2	11.3
Queue Length 50th (ft)	43	515	8	161	260	1	102	~584	154	83	173	24
Queue Length 95th (ft)	76	#660	63	#265	320	53	148	#712	280	124	219	84
Internal Link Dist (ft)		890			754			625			855	
Turn Bay Length (ft)	275		200	200		240	200		200	200		200
Base Capacity (vph)	179	1635	621	387	1901	720	426	1608	634	718	2041	717
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.99	0.29	0.93	0.55	0.29	0.55	1.05	0.63	0.26	0.33	0.24

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	1496	165	330	963	190	215	1555	370	175	620	160
Future Volume (veh/h)	90	1496	165	330	963	190	215	1555	370	175	620	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	98	1626	179	359	1047	207	234	1690	402	190	674	174
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	178	1656	514	394	1933	600	292	1629	506	247	1605	498
Arrive On Green	0.05	0.32	0.32	0.11	0.38	0.38	0.08	0.32	0.32	0.07	0.31	0.31
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	98	1626	179	359	1047	207	234	1690	402	190	674	174
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	3.7	41.8	11.4	13.6	21.2	12.4	8.8	42.3	30.7	7.2	13.8	11.2
Cycle Q Clear(g_c), s	3.7	41.8	11.4	13.6	21.2	12.4	8.8	42.3	30.7	7.2	13.8	11.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	178	1656	514	394	1933	600	292	1629	506	247	1605	498
V/C Ratio(X)	0.55	0.98	0.35	0.91	0.54	0.34	0.80	1.04	0.79	0.77	0.42	0.35
Avail Cap(c_a), veh/h	182	1656	514	394	1933	600	433	1629	506	730	2068	642
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.4	44.4	34.1	58.1	32.2	29.4	59.6	45.1	41.2	60.5	35.9	35.0
Incr Delay (d2), s/veh	1.8	18.0	0.9	25.0	0.6	0.7	6.5	32.6	8.6	1.9	0.1	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	20.2	4.6	7.3	8.9	4.9	4.1	22.6	13.1	3.2	5.8	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	63.2	62.4	35.0	83.1	32.8	30.2	66.1	77.7	49.7	62.4	36.0	35.2
LnGrp LOS	E	E	C	F	C	C	E	F	D	E	D	D
Approach Vol, veh/h		1903			1613			2326			1038	
Approach Delay, s/veh		59.8			43.6			71.7			40.7	
Approach LOS		E			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.1	47.9	19.6	50.0	15.7	47.3	12.4	57.2
Change Period (Y+Rc), s	5.6	* 5.6	4.5	7.0	4.5	5.6	5.6	7.0
Max Green Setting (Gmax), s	28.0	* 42	15.1	43.0	16.6	53.7	7.0	50.0
Max Q Clear Time (g_c+I1), s	9.2	44.3	15.6	43.8	10.8	15.8	5.7	23.2
Green Ext Time (p_c), s	0.3	0.0	0.0	0.0	0.4	3.8	0.0	16.1

Intersection Summary	
HCM 7th Control Delay, s/veh	57.2
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	592	1583	43	76	1411	239	27	234	310	163	43	174
v/c Ratio	1.22	0.62	0.05	0.55	0.97	0.42	0.26	0.63	0.66	1.01	0.09	0.32
Control Delay (s/veh)	153.0	24.9	1.6	69.5	60.4	15.3	63.2	51.7	22.9	127.5	35.1	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	153.0	24.9	1.6	69.5	60.4	15.3	63.2	51.7	22.9	127.5	35.1	6.7
Queue Length 50th (ft)	~559	326	0	57	393	46	20	167	79	~128	26	0
Queue Length 95th (ft)	#870	458	9	115	#569	131	55	251	177	#301	57	54
Internal Link Dist (ft)		1187			2532			760			553	
Turn Bay Length (ft)	240		245	240		240	240		245	200		205
Base Capacity (vph)	487	2555	831	177	1455	566	103	761	762	162	814	789
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.22	0.62	0.05	0.43	0.97	0.42	0.26	0.31	0.41	1.01	0.05	0.22

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	545	1456	40	70	1298	220	25	215	285	150	40	160
Future Volume (veh/h)	545	1456	40	70	1298	220	25	215	285	150	40	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	592	1583	43	76	1411	239	27	234	310	163	43	174
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	462	2423	752	96	1376	427	60	451	382	154	550	466
Arrive On Green	0.26	0.47	0.47	0.05	0.27	0.27	0.03	0.24	0.24	0.09	0.29	0.29
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	592	1583	43	76	1411	239	27	234	310	163	43	174
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	33.0	30.1	1.9	5.4	34.3	16.5	1.9	13.8	23.5	11.0	2.1	11.1
Cycle Q Clear(g_c), s	33.0	30.1	1.9	5.4	34.3	16.5	1.9	13.8	23.5	11.0	2.1	11.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	462	2423	752	96	1376	427	60	451	382	154	550	466
V/C Ratio(X)	1.28	0.65	0.06	0.79	1.03	0.56	0.45	0.52	0.81	1.06	0.08	0.37
Avail Cap(c_a), veh/h	462	2423	752	168	1376	427	98	720	610	154	770	652
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.2	25.5	18.1	59.5	46.5	40.0	60.3	41.9	45.6	58.2	32.5	35.7
Incr Delay (d2), s/veh	142.8	0.8	0.1	5.3	31.0	2.6	1.9	2.0	8.6	89.1	0.1	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	32.8	12.2	0.7	2.6	18.4	6.8	0.9	6.6	10.1	8.8	1.0	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	189.9	26.3	18.1	64.8	77.6	42.6	62.3	43.9	54.2	147.3	32.6	36.3
LnGrp LOS	F	C	B	E	F	D	E	D	D	F	C	D
Approach Vol, veh/h		2218			1726			571			380	
Approach Delay, s/veh		69.8			72.2			50.3			83.5	
Approach LOS		E			E			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	35.3	10.9	66.1	8.3	42.0	37.0	40.0
Change Period (Y+Rc), s	4.0	* 4.6	4.0	5.7	4.0	4.6	4.0	5.7
Max Green Setting (Gmax), s	11.0	* 49	12.0	55.3	7.0	52.4	33.0	34.3
Max Q Clear Time (g_c+I1), s	13.0	25.5	7.4	32.1	3.9	13.1	35.0	36.3
Green Ext Time (p_c), s	0.0	5.2	0.0	18.3	0.0	1.1	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	69.4
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	326	1689	24	55	1424	533	46	451	288
v/c Ratio	0.84	0.80	0.03	0.40	0.88	0.62	0.08	0.93	0.41
Control Delay (s/veh)	49.3	22.6	0.1	37.6	29.2	5.4	0.8	50.1	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	49.3	22.6	0.1	37.6	29.2	5.4	0.8	50.1	6.5
Queue Length 50th (ft)	66	234	0	21	194	0	0	166	18
Queue Length 95th (ft)	#130	#336	0	53	#279	62	4	#333	66
Internal Link Dist (ft)		2532			278		427		450
Turn Bay Length (ft)	200		200	200		200		150	
Base Capacity (vph)	390	2106	714	138	1616	866	624	502	723
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.80	0.03	0.40	0.88	0.62	0.07	0.90	0.40

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	300	1554	22	51	1310	490	13	0	29	415	0	265
Future Volume (veh/h)	300	1554	22	51	1310	490	13	0	29	415	0	265
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	326	1689	24	55	1424	533	14	0	32	451	0	288
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	388	1929	599	86	1603	497	168	35	299	552	0	580
Arrive On Green	0.11	0.38	0.38	0.05	0.31	0.31	0.37	0.00	0.37	0.37	0.00	0.37
Sat Flow, veh/h	3456	5106	1585	1781	5106	1585	261	96	816	1377	0	1585
Grp Volume(v), veh/h	326	1689	24	55	1424	533	46	0	0	451	0	288
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1781	1702	1585	1173	0	0	1377	0	1585
Q Serve(g_s), s	6.0	20.0	0.6	2.0	17.2	20.4	0.2	0.0	0.0	14.5	0.0	9.1
Cycle Q Clear(g_c), s	6.0	20.0	0.6	2.0	17.2	20.4	9.3	0.0	0.0	23.8	0.0	9.1
Prop In Lane	1.00		1.00	1.00		1.00	0.30		0.70	1.00		1.00
Lane Grp Cap(c), veh/h	388	1929	599	86	1603	497	502	0	0	552	0	580
V/C Ratio(X)	0.84	0.88	0.04	0.64	0.89	1.07	0.09	0.00	0.00	0.82	0.00	0.50
Avail Cap(c_a), veh/h	388	1929	599	137	1603	497	502	0	0	552	0	580
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.3	18.8	12.8	30.4	21.2	22.3	13.6	0.0	0.0	21.9	0.0	16.0
Incr Delay (d2), s/veh	15.1	4.9	0.0	7.6	6.5	60.8	0.1	0.0	0.0	9.4	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	7.9	0.2	1.0	7.2	15.3	0.4	0.0	0.0	7.7	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.4	23.7	12.8	37.9	27.8	83.1	13.7	0.0	0.0	31.2	0.0	16.6
LnGrp LOS	D	C	B	D	C	F	B			C		B
Approach Vol, veh/h		2039			2012			46			739	
Approach Delay, s/veh		26.7			42.7			13.7			25.5	
Approach LOS		C			D			B			C	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		28.3	7.6	29.1		28.3	11.8	24.9				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		23.8	5.0	22.7		23.8	7.3	20.4				
Max Q Clear Time (g_c+I1), s		11.3	4.0	22.0		25.8	8.0	22.4				
Green Ext Time (p_c), s		0.1	0.0	0.6		0.0	0.0	0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	33.1
HCM 7th LOS	C



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	466	1541	393	504	1423	426	471	1757	386	351	1485	323
v/c Ratio	1.31	0.92	0.62	1.01	1.08	0.61	1.53	1.12	0.59	1.35	0.99	0.52
Control Delay (s/veh)	208.0	56.0	26.6	104.3	92.6	25.0	297.8	110.1	19.9	228.9	72.7	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	208.0	56.0	26.6	104.3	92.6	25.0	297.8	110.1	19.9	228.9	72.7	16.6
Queue Length 50th (ft)	~291	511	175	~253	~787	192	~320	~699	117	~223	514	76
Queue Length 95th (ft)	#405	579	292	#374	#927	310	#434	#795	229	#327	#627	174
Internal Link Dist (ft)		1047			306			1367			1181	
Turn Bay Length (ft)	270		420	240		240	250		250	250		350
Base Capacity (vph)	355	1683	639	497	1317	699	307	1564	650	260	1493	619
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.31	0.92	0.62	1.01	1.08	0.61	1.53	1.12	0.59	1.35	0.99	0.52

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	429	1418	362	464	1309	392	433	1616	355	323	1366	297
Future Volume (veh/h)	429	1418	362	464	1309	392	433	1616	355	323	1366	297
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	466	1541	393	504	1423	426	471	1757	386	351	1485	323
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	357	1690	525	500	1323	590	310	1571	488	262	1500	466
Arrive On Green	0.10	0.33	0.33	0.14	0.37	0.37	0.09	0.31	0.31	0.08	0.29	0.29
Sat Flow, veh/h	3456	5106	1585	3456	3554	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	466	1541	393	504	1423	426	471	1757	386	351	1485	323
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1777	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	15.0	41.9	32.0	21.0	54.0	33.4	13.0	44.6	32.3	11.0	42.0	26.2
Cycle Q Clear(g_c), s	15.0	41.9	32.0	21.0	54.0	33.4	13.0	44.6	32.3	11.0	42.0	26.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	357	1690	525	500	1323	590	310	1571	488	262	1500	466
V/C Ratio(X)	1.30	0.91	0.75	1.01	1.08	0.72	1.52	1.12	0.79	1.34	0.99	0.69
Avail Cap(c_a), veh/h	357	1690	525	500	1323	590	310	1571	488	262	1500	466
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.0	46.5	43.1	62.0	45.5	39.1	66.0	50.2	45.9	67.0	51.0	45.4
Incr Delay (d2), s/veh	155.6	8.2	6.8	42.0	47.7	5.1	250.0	62.6	9.3	176.0	20.8	5.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.3	19.0	13.6	12.1	32.4	13.9	16.5	28.0	14.0	11.3	20.7	11.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	220.6	54.6	49.9	104.0	93.2	44.2	316.0	112.8	55.2	243.0	71.8	50.5
LnGrp LOS	F	D	D	F	F	D	F	F	E	F	E	D
Approach Vol, veh/h		2400			2353			2614			2159	
Approach Delay, s/veh		86.1			86.6			140.9			96.4	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	51.0	25.0	54.0	17.0	49.0	19.0	60.0
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	11.0	44.6	21.0	48.0	13.0	42.6	15.0	54.0
Max Q Clear Time (g_c+I1), s	13.0	46.6	23.0	43.9	15.0	44.0	17.0	56.0
Green Ext Time (p_c), s	0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	103.6
HCM 7th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	118.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	1986	95	34	1888	25	141	5	20	20	10	65
Future Vol, veh/h	50	1986	95	34	1888	25	141	5	20	20	10	65
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	54	2159	103	37	2052	27	153	5	22	22	11	71

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2079	0	0	2262	0	0	3373	4421	1079	3330	4510	1040
Stage 1	-	-	-	-	-	-	2267	2267	-	2140	2140	-
Stage 2	-	-	-	-	-	-	1105	2153	-	1191	2371	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	263	-	-	223	-	-	~ 3	~ 1	214	~ 3	~ 1	227
Stage 1	-	-	-	-	-	-	~ 41	75	-	50	88	-
Stage 2	-	-	-	-	-	-	225	86	-	199	66	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	263	-	-	223	-	-	~ 0	~ 1	214	~ 1	~ 1	227
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 26	16	-	27	12	-
Stage 1	-	-	-	-	-	-	~ 33	60	-	42	73	-
Stage 2	-	-	-	-	-	-	~ 110	72	-	129	53	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.52	0.42	$ 2722.23	$ 648.8
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	28	263	-	-	223	-	-	51
HCM Lane V/C Ratio	6.434	0.206	-	-	0.166	-	-	2.025
HCM Ctrl Dly (s/v)	$ 2722.2	22.2	-	-	24.3	-	-	$ 648.8
HCM Lane LOS	F	C	-	-	C	-	-	F
HCM 95th %tile Q(veh)	22.1	0.8	-	-	0.6	-	-	10.3

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	591	1637	1578	76	54	512
v/c Ratio	0.86	0.55	0.83	0.09	0.24	0.59
Control Delay (s/veh)	41.6	3.9	18.8	2.9	31.0	20.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	41.6	3.9	18.8	2.9	31.0	20.8
Queue Length 50th (ft)	130	133	302	0	22	90
Queue Length 95th (ft)	#222	181	#462	18	53	138
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	697	2949	1935	900	221	871
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.56	0.82	0.08	0.24	0.59

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	544	1506	1452	70	50	471
Future Volume (veh/h)	544	1506	1452	70	50	471
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	591	1637	1578	76	54	512
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	647	2633	1763	786	205	844
Arrive On Green	0.19	0.74	0.50	0.50	0.12	0.12
Sat Flow, veh/h	3456	3647	3647	1585	1781	2790
Grp Volume(v), veh/h	591	1637	1578	76	54	512
Grp Sat Flow(s),veh/h/ln	1728	1777	1777	1585	1781	1395
Q Serve(g_s), s	11.6	15.4	28.0	1.8	1.9	8.0
Cycle Q Clear(g_c), s	11.6	15.4	28.0	1.8	1.9	8.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	647	2633	1763	786	205	844
V/C Ratio(X)	0.91	0.62	0.90	0.10	0.26	0.61
Avail Cap(c_a), veh/h	647	2661	1791	799	205	844
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.7	4.3	15.9	9.3	28.0	20.7
Incr Delay (d2), s/veh	17.2	0.5	6.4	0.1	0.3	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	3.4	11.3	0.6	0.8	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	44.8	4.9	22.3	9.3	28.3	21.6
LnGrp LOS	D	A	C	A	C	C
Approach Vol, veh/h		2228	1654		566	
Approach Delay, s/veh		15.5	21.7		22.2	
Approach LOS		B	C		C	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			57.4		12.0	17.0	40.4
Change Period (Y+Rc), s			6.0		4.0	4.0	6.0
Max Green Setting (Gmax), s			52.0		8.0	13.0	35.0
Max Q Clear Time (g_c+I1), s			17.4		10.0	13.6	30.0
Green Ext Time (p_c), s			23.7		0.0	0.0	4.5

Intersection Summary	
HCM 7th Control Delay, s/veh	18.6
HCM 7th LOS	B

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	22	6	7	144	75	49
Future Vol, veh/h	22	6	7	144	75	49
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	7	8	157	82	53
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.7	7.4	8
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	79%	0%	60%
Vol Thru, %	21%	5%	0%
Vol Right, %	0%	95%	40%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	28	151	124
LT Vol	22	0	75
Through Vol	6	7	0
RT Vol	0	144	49
Lane Flow Rate	30	164	135
Geometry Grp	1	1	1
Degree of Util (X)	0.038	0.165	0.155
Departure Headway (Hd)	4.458	3.621	4.153
Convergence, Y/N	Yes	Yes	Yes
Cap	792	975	857
Service Time	2.546	1.7	2.21
HCM Lane V/C Ratio	0.038	0.168	0.158
HCM Control Delay, s/veh	7.7	7.4	8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.6	0.5

Intersection	
Int Delay, s/veh	19.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	39	5	9	5	0	5	25	2377	5	10	2176	37
Future Vol, veh/h	39	5	9	5	0	5	25	2377	5	10	2176	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	310	-	150	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	42	5	10	5	0	5	27	2584	5	11	2365	40

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3475	5030	1183	3609	5065	1292	2405	0	0	2589	0	0
Stage 1	2387	2387	-	2638	2638	-	-	-	-	-	-	-
Stage 2	1088	2643	-	971	2427	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	~ 7	~ 1	156	6	1	132	77	-	-	62	-	-
Stage 1	~ 20	65	-	13	48	-	-	-	-	-	-	-
Stage 2	207	48	-	245	62	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 4	~ 0	156	~ 2	0	132	77	-	-	62	-	-
Mov Cap-2 Maneuver	~ 14	13	-	7	13	-	-	-	-	-	-	-
Stage 1	~ 16	54	-	8	31	-	-	-	-	-	-	-
Stage 2	129	31	-	171	51	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	$ 1613.03	$ 511.67	0.78	0.34
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	77	-	-	16	14	62	-	-
HCM Lane V/C Ratio	0.351	-	-	3.525	0.772	0.175	-	-
HCM Ctrl Dly (s/v)	74.7	-	-	$ 1613	$ 511.7	74.7	-	-
HCM Lane LOS	F	-	-	F	F	F	-	-
HCM 95th %tile Q(veh)	1.3	-	-	7.9	1.8	0.6	-	-

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	0	2397	2160	20
Future Vol, veh/h	0	8	0	2397	2160	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	0	2605	2348	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1174	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	159	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	159	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	29.01	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	159	-	-
HCM Lane V/C Ratio	-	0.055	-	-
HCM Ctrl Dly (s/v)	-	29	-	-
HCM Lane LOS	-	D	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	16	17	49	7	16	33	2529	12	27	2275	38
v/c Ratio	0.16	0.17	0.28	0.07	0.09	0.38	0.64	0.01	0.31	0.58	0.03
Control Delay (s/veh)	50.2	50.5	7.0	48.5	1.0	60.9	9.1	0.0	57.8	8.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	50.2	50.5	7.0	48.5	1.0	60.9	9.1	0.0	57.8	8.2	0.2
Queue Length 50th (ft)	9	10	0	4	0	20	248	0	16	207	0
Queue Length 95th (ft)	34	35	13	20	0	55	478	0	48	397	1
Internal Link Dist (ft)		1039		375			711			546	
Turn Bay Length (ft)	240		240			260		150	240		415
Base Capacity (vph)	555	555	579	318	355	88	3949	1247	88	3937	1243
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.08	0.02	0.05	0.38	0.64	0.01	0.31	0.58	0.03

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	0	45	6	0	15	30	2327	11	25	2093	35
Future Volume (veh/h)	30	0	45	6	0	15	30	2327	11	25	2093	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	33	0	49	7	0	16	33	2529	12	27	2275	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	170	0	75	43	0	38	55	3554	1103	48	3512	1090
Arrive On Green	0.05	0.00	0.05	0.02	0.00	0.02	0.03	0.70	0.70	0.03	0.69	0.69
Sat Flow, veh/h	3563	0	1585	1781	0	1585	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	33	0	49	7	0	16	33	2529	12	27	2275	38
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1585	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	0.8	0.0	2.8	0.4	0.0	0.9	1.7	27.5	0.2	1.4	23.1	0.7
Cycle Q Clear(g_c), s	0.8	0.0	2.8	0.4	0.0	0.9	1.7	27.5	0.2	1.4	23.1	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	170	0	75	43	0	38	55	3554	1103	48	3512	1090
V/C Ratio(X)	0.19	0.00	0.65	0.16	0.00	0.42	0.60	0.71	0.01	0.56	0.65	0.03
Avail Cap(c_a), veh/h	1276	0	568	348	0	310	97	3886	1206	97	3864	1199
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.2	0.0	43.1	44.0	0.0	44.3	44.1	8.4	4.3	44.3	8.1	4.6
Incr Delay (d2), s/veh	0.4	0.0	6.8	1.7	0.0	7.1	3.8	0.6	0.0	9.8	0.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.2	0.2	0.0	0.4	0.8	8.4	0.1	0.7	7.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	42.6	0.0	49.9	45.8	0.0	51.4	47.9	9.0	4.3	54.0	8.5	4.6
LnGrp LOS	D		D	D		D	D	A	A	D	A	A
Approach Vol, veh/h		82			23			2574			2340	
Approach Delay, s/veh		46.9			49.7			9.5			8.9	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	69.4		9.0	7.8	68.6		6.7				
Change Period (Y+Rc), s	4.5	5.3		4.6	4.9	5.3		4.5				
Max Green Setting (Gmax), s	5.0	70.1		33.0	5.0	69.7		18.0				
Max Q Clear Time (g_c+I1), s	3.4	29.5		4.8	3.7	25.1		2.9				
Green Ext Time (p_c), s	0.0	34.6		0.2	0.0	34.2		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	10.0
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	127	100	179	196	295	783	2763	152	120	2055	124
v/c Ratio	0.60	0.45	0.51	0.29	0.81	1.34	1.18	0.20	1.10	1.15	0.20
Control Delay (s/veh)	66.7	60.2	12.7	45.7	66.2	205.4	118.4	12.1	170.9	112.0	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	66.7	60.2	12.7	45.7	66.2	205.4	118.4	12.1	170.9	112.0	8.7
Queue Length 50th (ft)	104	81	0	72	229	~450	~1039	34	~116	~757	8
Queue Length 95th (ft)	175	142	68	115	357	#642	#1277	89	#270	#967	57
Internal Link Dist (ft)		813			837		762			707	
Turn Bay Length (ft)	580		300	325		530			500		215
Base Capacity (vph)	424	447	516	823	437	584	2342	772	109	1791	628
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.22	0.35	0.24	0.68	1.34	1.18	0.20	1.10	1.15	0.20

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	92	165	180	196	75	720	2542	140	110	1891	114
Future Volume (veh/h)	117	92	165	180	196	75	720	2542	140	110	1891	114
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	127	100	179	196	213	82	783	2763	152	120	2055	124
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	245	258	218	657	245	94	581	2320	720	109	1774	551
Arrive On Green	0.14	0.14	0.14	0.19	0.19	0.19	0.17	0.45	0.45	0.06	0.35	0.35
Sat Flow, veh/h	1781	1870	1585	3456	1286	495	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	127	100	179	196	0	295	783	2763	152	120	2055	124
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	0	1781	1728	1702	1585	1781	1702	1585
Q Serve(g_s), s	8.7	6.4	14.4	6.4	0.0	21.0	22.0	59.5	7.6	8.0	45.5	7.3
Cycle Q Clear(g_c), s	8.7	6.4	14.4	6.4	0.0	21.0	22.0	59.5	7.6	8.0	45.5	7.3
Prop In Lane	1.00		1.00	1.00		0.28	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	245	258	218	657	0	339	581	2320	720	109	1774	551
V/C Ratio(X)	0.52	0.39	0.82	0.30	0.00	0.87	1.35	1.19	0.21	1.10	1.16	0.23
Avail Cap(c_a), veh/h	422	443	375	818	0	422	581	2320	720	109	1774	551
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	51.4	54.9	45.5	0.0	51.5	54.5	35.7	21.6	61.5	42.7	30.2
Incr Delay (d2), s/veh	2.0	1.2	8.8	0.3	0.0	15.7	168.0	90.5	0.5	116.6	78.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	3.1	6.3	2.8	0.0	10.9	23.1	43.5	3.0	7.1	31.7	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	54.5	52.6	63.7	45.8	0.0	67.1	222.5	126.2	22.1	178.0	120.7	31.0
LnGrp LOS	D	D	E	D		E	F	F	C	F	F	C
Approach Vol, veh/h		406			491			3698			2299	
Approach Delay, s/veh		58.1			58.6			142.3			118.8	
Approach LOS		E			E			F			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.0	66.0		23.0	26.0	52.0		29.9				
Change Period (Y+Rc), s	4.0	6.5		5.0	4.0	6.5		5.0				
Max Green Setting (Gmax), s	8.0	59.5		31.0	22.0	45.5		31.0				
Max Q Clear Time (g_c+I1), s	10.0	61.5		16.4	24.0	47.5		23.0				
Green Ext Time (p_c), s	0.0	0.0		1.7	0.0	0.0		1.9				

Intersection Summary												
HCM 7th Control Delay, s/veh			123.6									
HCM 7th LOS			F									



Lane Group	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	308	62	3026	234	164	1910
v/c Ratio	0.93	0.14	1.07	0.24	0.86	0.57
Control Delay (s/veh)	70.7	2.9	58.8	3.8	80.5	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	70.7	2.9	58.8	3.8	80.5	8.9
Queue Length 50th (ft)	171	0	~706	16	48	190
Queue Length 95th (ft)	#327	13	#799	49	#105	228
Internal Link Dist (ft)		445	706			646
Turn Bay Length (ft)				200	200	
Base Capacity (vph)	338	456	2840	959	191	3379
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.14	1.07	0.24	0.86	0.57

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	283	0	57	0	2784	215	151	1757	0
Future Volume (veh/h)	0	0	0	283	0	57	0	2784	215	151	1757	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	308	0	62	0	3026	234	164	1910	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	371	0	437	0	314	2	2988	928	202	3556	0
Arrive On Green	0.00	0.00	0.00	0.20	0.00	0.20	0.00	0.59	0.59	0.06	0.70	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	5106	1585	3456	5274	0
Grp Volume(v), veh/h	0	0	0	308	0	62	0	3026	234	164	1910	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1702	1585	1728	1702	0
Q Serve(g_s), s	0.0	0.0	0.0	14.3	0.0	2.8	0.0	50.0	6.1	4.0	15.5	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	14.3	0.0	2.8	0.0	50.0	6.1	4.0	15.5	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	371	0	437	0	314	2	2988	928	202	3556	0
V/C Ratio(X)	0.00	0.00	0.00	0.70	0.00	0.20	0.00	1.01	0.25	0.81	0.54	0.00
Avail Cap(c_a), veh/h	0	471	0	533	0	399	104	2988	928	202	3556	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	33.2	0.0	28.6	0.0	17.7	8.6	39.7	6.3	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	3.2	0.0	0.3	0.0	19.6	0.1	21.4	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	6.4	0.0	1.1	0.0	22.2	1.9	2.3	4.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	36.4	0.0	28.9	0.0	37.3	8.8	61.2	6.4	0.0
LnGrp LOS				D		C		F	A	E	A	
Approach Vol, veh/h		0			370			3260			2074	
Approach Delay, s/veh		0.0			35.2			35.3			10.8	
Approach LOS					D			D			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.5	54.5		21.4	0.0	64.0		21.4				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	50.0		21.5	5.0	50.0		21.5				
Max Q Clear Time (g_c+I1), s	6.0	52.0		0.0	0.0	17.5		16.3				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	19.8		0.6				

Intersection Summary		
HCM 7th Control Delay, s/veh		26.4
HCM 7th LOS		C



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	228	665	86	384	1155	92	105	892	250	196	1846	474
v/c Ratio	0.69	0.56	0.20	0.79	0.82	0.18	0.50	0.48	0.40	0.66	0.94	0.69
Control Delay (s/veh)	77.3	53.1	9.8	75.4	56.4	4.7	78.0	37.3	15.9	78.3	53.2	25.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	77.3	53.1	9.8	75.4	56.4	4.7	78.0	37.3	15.9	78.3	53.2	25.8
Queue Length 50th (ft)	109	209	0	184	385	0	50	243	68	94	636	230
Queue Length 95th (ft)	173	278	46	268	479	30	93	367	194	153	#967	484
Internal Link Dist (ft)		1037			966			719			726	
Turn Bay Length (ft)	250		215	325		235	145		145	230		230
Base Capacity (vph)	1013	1774	608	668	1409	518	345	1841	619	460	1963	688
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.37	0.14	0.57	0.82	0.18	0.30	0.48	0.40	0.43	0.94	0.69

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	612	79	353	1063	85	97	795	256	180	1650	485
Future Volume (veh/h)	210	612	79	353	1063	85	97	795	256	180	1650	485
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	228	665	86	384	1155	92	105	864	278	196	1793	527
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	285	1112	345	442	1345	417	178	2340	661	251	2456	694
Arrive On Green	0.08	0.22	0.22	0.13	0.26	0.26	0.05	0.42	0.42	0.07	0.44	0.44
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3563	5611	1585	3563	5611	1585
Grp Volume(v), veh/h	228	665	86	384	1155	92	105	864	278	196	1793	527
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	8.9	16.2	6.2	15.0	29.7	6.3	4.0	14.6	17.1	7.5	36.4	38.6
Cycle Q Clear(g_c), s	8.9	16.2	6.2	15.0	29.7	6.3	4.0	14.6	17.1	7.5	36.4	38.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	285	1112	345	442	1345	417	178	2340	661	251	2456	694
V/C Ratio(X)	0.80	0.60	0.25	0.87	0.86	0.22	0.59	0.37	0.42	0.78	0.73	0.76
Avail Cap(c_a), veh/h	1103	1925	598	727	1370	425	387	2340	661	517	2482	701
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.2	48.5	44.6	59.0	48.4	39.7	64.1	27.7	28.4	63.1	32.0	32.7
Incr Delay (d2), s/veh	2.0	1.4	1.0	3.4	6.5	0.7	1.2	0.2	0.7	2.0	1.8	7.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	7.0	2.6	6.8	13.4	2.6	1.8	6.6	6.7	3.5	16.8	16.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	64.2	49.9	45.6	62.4	54.8	40.4	65.3	27.8	29.1	65.1	33.8	39.7
LnGrp LOS	E	D	D	E	D	D	E	C	C	E	C	D
Approach Vol, veh/h		979			1631			1247			2516	
Approach Delay, s/veh		52.9			55.8			31.3			37.5	
Approach LOS		D			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.9	66.7	22.7	36.7	14.7	63.8	16.4	43.0
Change Period (Y+Rc), s	5.0	6.3	5.0	6.7	5.0	6.3	5.0	6.7
Max Green Setting (Gmax), s	15.0	61.0	29.0	52.0	20.0	56.0	44.0	37.0
Max Q Clear Time (g_c+I1), s	6.0	40.6	17.0	18.2	9.5	19.1	10.9	31.7
Green Ext Time (p_c), s	0.1	19.7	0.6	11.9	0.3	13.9	0.4	4.5

Intersection Summary	
HCM 7th Control Delay, s/veh	43.3
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	136	830	163	299	1317	125	130	418	272	179	1299	168
v/c Ratio	0.74	0.51	0.26	0.78	0.70	0.19	0.48	0.26	0.41	0.60	0.79	0.28
Control Delay (s/veh)	86.5	38.9	6.2	73.0	38.8	5.1	65.8	34.0	7.6	68.2	44.4	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	86.5	38.9	6.2	73.0	38.8	5.1	65.8	34.0	7.6	68.2	44.4	9.5
Queue Length 50th (ft)	60	210	0	130	345	0	56	98	16	77	373	20
Queue Length 95th (ft)	#129	295	53	#225	471	40	97	133	83	125	445	73
Internal Link Dist (ft)		890			754			625			855	
Turn Bay Length (ft)	275		200	200		240	200		200	200		200
Base Capacity (vph)	184	1677	633	397	1950	689	437	1748	705	737	2094	731
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.49	0.26	0.75	0.68	0.18	0.30	0.24	0.39	0.24	0.62	0.23

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	764	150	275	1212	115	120	385	250	165	1195	155
Future Volume (veh/h)	125	764	150	275	1212	115	120	385	250	165	1195	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	136	830	163	299	1317	125	130	418	272	179	1299	168
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	204	1732	538	362	1917	595	191	1490	462	243	1613	501
Arrive On Green	0.06	0.34	0.34	0.10	0.38	0.38	0.06	0.29	0.29	0.07	0.32	0.32
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	136	830	163	299	1317	125	130	418	272	179	1299	168
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	4.5	15.0	8.9	9.9	25.4	6.3	4.3	7.4	17.2	5.9	27.3	9.5
Cycle Q Clear(g_c), s	4.5	15.0	8.9	9.9	25.4	6.3	4.3	7.4	17.2	5.9	27.3	9.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	204	1732	538	362	1917	595	191	1490	462	243	1613	501
V/C Ratio(X)	0.67	0.48	0.30	0.83	0.69	0.21	0.68	0.28	0.59	0.74	0.81	0.34
Avail Cap(c_a), veh/h	207	1878	583	446	2184	678	491	1848	574	828	2345	728
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.9	30.5	28.5	51.3	30.7	24.8	54.2	31.9	35.4	53.3	36.7	30.6
Incr Delay (d2), s/veh	6.2	0.4	0.7	10.1	1.2	0.4	4.2	0.1	1.2	1.7	0.8	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	6.2	3.5	4.8	10.5	2.4	2.0	3.1	6.7	2.6	11.3	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.1	30.9	29.1	61.4	31.9	25.1	58.4	32.0	36.6	54.9	37.5	30.7
LnGrp LOS	E	C	C	E	C	C	E	C	D	D	D	C
Approach Vol, veh/h		1129			1741			820			1646	
Approach Delay, s/veh		34.2			36.5			37.7			38.7	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.8	39.7	16.7	46.7	11.0	42.5	12.5	50.9
Change Period (Y+Rc), s	5.6	* 5.6	4.5	7.0	4.5	5.6	5.6	7.0
Max Green Setting (Gmax), s	28.0	* 42	15.1	43.0	16.6	53.7	7.0	50.0
Max Q Clear Time (g_c+I1), s	7.9	19.2	11.9	17.0	6.3	29.3	6.5	27.4
Green Ext Time (p_c), s	0.3	3.9	0.3	12.5	0.3	7.7	0.0	16.5

Intersection Summary	
HCM 7th Control Delay, s/veh	36.9
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	141	1113	38	125	1279	141	38	33	60	288	92	429
v/c Ratio	0.59	0.49	0.05	0.57	0.58	0.19	0.27	0.12	0.18	1.29	0.25	0.65
Control Delay (s/veh)	49.4	19.3	1.0	51.7	21.8	7.1	49.2	38.5	1.9	193.2	35.9	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	49.4	19.3	1.0	51.7	21.8	7.1	49.2	38.5	1.9	193.2	35.9	9.1
Queue Length 50th (ft)	76	169	0	67	203	12	21	17	0	~213	46	0
Queue Length 95th (ft)	158	229	5	#167	302	54	62	49	5	#470	105	92
Internal Link Dist (ft)		1187			2532			760			553	
Turn Bay Length (ft)	240		245	240		240	240		245	200		205
Base Capacity (vph)	674	3245	1036	244	2204	745	142	1053	943	224	1126	1126
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.34	0.04	0.51	0.58	0.19	0.27	0.03	0.06	1.29	0.08	0.38

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	1024	35	115	1177	130	35	30	55	265	85	395
Future Volume (veh/h)	130	1024	35	115	1177	130	35	30	55	265	85	395
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	141	1113	38	125	1279	141	38	33	60	288	92	429
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	174	1913	594	155	1858	577	82	450	382	199	573	486
Arrive On Green	0.10	0.37	0.37	0.09	0.36	0.36	0.05	0.24	0.24	0.11	0.31	0.31
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	141	1113	38	125	1279	141	38	33	60	288	92	429
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	7.6	17.1	1.5	6.8	20.9	6.1	2.0	1.3	2.9	11.0	3.5	25.3
Cycle Q Clear(g_c), s	7.6	17.1	1.5	6.8	20.9	6.1	2.0	1.3	2.9	11.0	3.5	25.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	174	1913	594	155	1858	577	82	450	382	199	573	486
V/C Ratio(X)	0.81	0.58	0.06	0.81	0.69	0.24	0.46	0.07	0.16	1.45	0.16	0.88
Avail Cap(c_a), veh/h	597	2870	891	217	1858	577	127	931	789	199	996	844
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.5	24.6	19.7	44.1	26.6	21.9	45.8	28.9	29.5	43.7	24.9	32.4
Incr Delay (d2), s/veh	3.4	0.5	0.1	9.7	1.4	0.4	1.5	0.1	0.4	226.8	0.2	6.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	6.8	0.6	3.4	8.5	2.3	0.9	0.6	1.2	17.3	1.6	10.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	46.9	25.1	19.8	53.8	27.9	22.3	47.3	29.0	29.9	270.5	25.0	39.4
LnGrp LOS	D	C	B	D	C	C	D	C	C	F	C	D
Approach Vol, veh/h		1292			1545			131			809	
Approach Delay, s/veh		27.4			29.5			34.7			120.0	
Approach LOS		C			C			C			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	28.3	12.5	42.6	8.5	34.8	13.6	41.5
Change Period (Y+Rc), s	4.0	* 4.6	4.0	5.7	4.0	4.6	4.0	5.7
Max Green Setting (Gmax), s	11.0	* 49	12.0	55.3	7.0	52.4	33.0	34.3
Max Q Clear Time (g_c+I1), s	13.0	4.9	8.8	19.1	4.0	27.3	9.6	22.9
Green Ext Time (p_c), s	0.0	0.8	0.0	17.7	0.0	2.9	0.2	9.0

Intersection Summary	
HCM 7th Control Delay, s/veh	48.3
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	168	1274	8	16	1338	310	75	424	196
v/c Ratio	0.42	0.55	0.01	0.11	0.78	0.42	0.12	0.88	0.27
Control Delay (s/veh)	30.3	14.1	0.0	29.8	23.6	4.4	2.7	41.4	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.3	14.1	0.0	29.8	23.6	4.4	2.7	41.4	3.1
Queue Length 50th (ft)	32	115	0	6	178	0	0	153	0
Queue Length 95th (ft)	59	204	0	23	#233	49	16	#311	30
Internal Link Dist (ft)		2532			278		427		450
Turn Bay Length (ft)	200		200	200		200		150	
Base Capacity (vph)	415	2359	788	146	1718	740	658	519	756
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.54	0.01	0.11	0.78	0.42	0.11	0.82	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	1172	7	15	1231	285	21	0	48	390	0	180
Future Volume (veh/h)	155	1172	7	15	1231	285	21	0	48	390	0	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	168	1274	8	16	1338	310	23	0	52	424	0	196
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	279	2019	627	35	1707	530	196	39	347	601	0	557
Arrive On Green	0.08	0.40	0.40	0.02	0.33	0.33	0.35	0.00	0.35	0.35	0.00	0.35
Sat Flow, veh/h	3456	5106	1585	1781	5106	1585	326	111	988	1352	0	1585
Grp Volume(v), veh/h	168	1274	8	16	1338	310	75	0	0	424	0	196
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1781	1702	1585	1424	0	0	1352	0	1585
Q Serve(g_s), s	2.7	11.6	0.2	0.5	13.6	9.3	0.0	0.0	0.0	11.7	0.0	5.3
Cycle Q Clear(g_c), s	2.7	11.6	0.2	0.5	13.6	9.3	5.3	0.0	0.0	17.0	0.0	5.3
Prop In Lane	1.00		1.00	1.00		1.00	0.31		0.69	1.00		1.00
Lane Grp Cap(c), veh/h	279	2019	627	35	1707	530	582	0	0	601	0	557
V/C Ratio(X)	0.60	0.63	0.01	0.46	0.78	0.59	0.13	0.00	0.00	0.71	0.00	0.35
Avail Cap(c_a), veh/h	437	2019	627	154	1804	560	670	0	0	684	0	654
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.6	14.1	10.6	28.0	17.3	15.9	12.7	0.0	0.0	17.6	0.0	13.9
Incr Delay (d2), s/veh	2.1	0.6	0.0	9.1	2.2	1.4	0.1	0.0	0.0	2.8	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	4.0	0.1	0.3	5.1	3.2	0.6	0.0	0.0	5.1	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.7	14.7	10.6	37.1	19.6	17.3	12.8	0.0	0.0	20.5	0.0	14.2
LnGrp LOS	C	B	B	D	B	B	B			C		B
Approach Vol, veh/h		1450			1664			75			620	
Approach Delay, s/veh		16.2			19.3			12.8			18.5	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	24.8	5.6	27.3	24.8	9.2	23.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	23.8	5.0	22.7	23.8	7.3	20.4
Max Q Clear Time (g_c+I1), s	7.3	2.5	13.6	19.0	4.7	15.6
Green Ext Time (p_c), s	0.3	0.0	5.6	1.3	0.1	3.6

Intersection Summary	
HCM 7th Control Delay, s/veh	17.9
HCM 7th LOS	B



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	279	1088	459	383	1124	329	309	1365	514	414	1733	464
v/c Ratio	0.82	0.63	0.70	0.84	0.85	0.47	1.00	0.87	0.77	1.58	1.15	0.74
Control Delay (s/veh)	83.3	42.3	31.6	77.5	49.2	17.0	115.1	53.8	31.4	318.6	120.9	30.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	83.3	42.3	31.6	77.5	49.2	17.0	115.1	53.8	31.4	318.6	120.9	30.6
Queue Length 50th (ft)	135	318	240	182	511	100	~153	447	239	~286	~707	210
Queue Length 95th (ft)	#198	372	379	240	607	191	#256	511	395	#396	#803	353
Internal Link Dist (ft)		1047			306			1367			1181	
Turn Bay Length (ft)	270		420	240		240	250		250	250		350
Base Capacity (vph)	358	1719	652	501	1328	708	310	1577	664	262	1506	629
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.63	0.70	0.76	0.85	0.46	1.00	0.87	0.77	1.58	1.15	0.74

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	257	1001	422	352	1034	303	284	1256	473	381	1594	427
Future Volume (veh/h)	257	1001	422	352	1034	303	284	1256	473	381	1594	427
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	279	1088	459	383	1124	329	309	1365	514	414	1733	464
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	326	1718	533	433	1306	582	318	1613	501	269	1540	478
Arrive On Green	0.09	0.34	0.34	0.13	0.37	0.37	0.09	0.32	0.32	0.08	0.30	0.30
Sat Flow, veh/h	3456	5106	1585	3456	3554	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	279	1088	459	383	1124	329	309	1365	514	414	1733	464
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1777	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	11.2	25.4	38.2	15.4	41.3	23.4	12.6	35.3	44.6	11.0	42.6	40.8
Cycle Q Clear(g_c), s	11.2	25.4	38.2	15.4	41.3	23.4	12.6	35.3	44.6	11.0	42.6	40.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	326	1718	533	433	1306	582	318	1613	501	269	1540	478
V/C Ratio(X)	0.85	0.63	0.86	0.88	0.86	0.56	0.97	0.85	1.03	1.54	1.13	0.97
Avail Cap(c_a), veh/h	367	1735	539	514	1359	606	318	1613	501	269	1540	478
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.0	39.5	43.8	60.8	41.3	35.7	63.9	45.1	48.3	65.1	49.3	48.7
Incr Delay (d2), s/veh	14.8	1.0	14.0	13.4	6.2	1.9	42.4	4.6	47.2	259.9	65.4	33.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	10.8	17.0	7.6	19.2	9.4	7.4	15.6	24.1	14.6	27.3	20.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	77.8	40.5	57.8	74.2	47.5	37.5	106.3	49.7	95.6	325.1	114.7	82.3
LnGrp LOS	E	D	E	E	D	D	F	D	F	F	F	F
Approach Vol, veh/h		1826			1836			2188			2611	
Approach Delay, s/veh		50.5			51.3			68.5			142.3	
Approach LOS		D			D			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	51.0	21.7	53.5	17.0	49.0	17.3	57.9
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	11.0	44.6	21.0	48.0	13.0	42.6	15.0	54.0
Max Q Clear Time (g_c+I1), s	13.0	46.6	17.4	40.2	14.6	44.6	13.2	43.3
Green Ext Time (p_c), s	0.0	0.0	0.3	6.5	0.0	0.0	0.1	8.6

Intersection Summary	
HCM 7th Control Delay, s/veh	83.7
HCM 7th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	35.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	1636	140	18	1548	55	81	5	43	35	10	65
Future Vol, veh/h	75	1636	140	18	1548	55	81	5	43	35	10	65
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	82	1778	152	20	1683	60	88	5	47	38	11	71

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1742	0	0	1930	0	0	2827	3723	889	2807	3845	871
Stage 1	-	-	-	-	-	-	1941	1941	-	1752	1752	-
Stage 2	-	-	-	-	-	-	886	1782	-	1055	2093	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	357	-	-	301	-	-	~ 8	~ 4	286	~ 8	~ 4	294
Stage 1	-	-	-	-	-	-	~ 67	111	-	89	138	-
Stage 2	-	-	-	-	-	-	306	133	-	241	92	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	357	-	-	301	-	-	~ 3	~ 3	286	~ 4	~ 3	294
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 44	36	-	48	35	-
Stage 1	-	-	-	-	-	-	~ 52	85	-	83	129	-
Stage 2	-	-	-	-	-	-	199	124	-	146	71	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.73	0.2	$ 748.19	$ 301.28
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	61	357	-	-	301	-	-	88
HCM Lane V/C Ratio	2.318	0.229	-	-	0.065	-	-	1.352
HCM Ctrl Dly (s/v)	$ 748.2	18.1	-	-	17.8	-	-	$ 301.3
HCM Lane LOS	F	C	-	-	C	-	-	F
HCM 95th %tile Q(veh)	13.8	0.9	-	-	0.2	-	-	8.9

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	415	1398	1442	92	87	329
v/c Ratio	0.68	0.50	0.78	0.11	0.38	0.36
Control Delay (s/veh)	32.1	4.1	17.4	2.7	34.1	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.1	4.1	17.4	2.7	34.1	15.8
Queue Length 50th (ft)	86	102	254	0	35	50
Queue Length 95th (ft)	130	136	347	20	77	82
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	722	2830	2006	937	229	997
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.49	0.72	0.10	0.38	0.33

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	382	1286	1327	85	80	303
Future Volume (veh/h)	382	1286	1327	85	80	303
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	415	1398	1442	92	87	329
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	525	2562	1802	804	221	770
Arrive On Green	0.15	0.72	0.51	0.51	0.12	0.12
Sat Flow, veh/h	3456	3647	3647	1585	1781	2790
Grp Volume(v), veh/h	415	1398	1442	92	87	329
Grp Sat Flow(s),veh/h/ln	1728	1777	1777	1585	1781	1395
Q Serve(g_s), s	7.5	11.7	21.7	2.0	2.9	6.2
Cycle Q Clear(g_c), s	7.5	11.7	21.7	2.0	2.9	6.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	525	2562	1802	804	221	770
V/C Ratio(X)	0.79	0.55	0.80	0.11	0.39	0.43
Avail Cap(c_a), veh/h	696	2864	1928	860	221	770
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.4	4.1	13.2	8.3	26.0	19.2
Incr Delay (d2), s/veh	3.2	0.3	2.6	0.1	0.4	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	2.5	7.9	0.6	1.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	29.6	4.4	15.7	8.4	26.5	19.3
LnGrp LOS	C	A	B	A	C	B
Approach Vol, veh/h		1813	1534		416	
Approach Delay, s/veh		10.2	15.3		20.8	
Approach LOS		B	B		C	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			52.5		12.0	13.8	38.7
Change Period (Y+Rc), s			6.0		4.0	4.0	6.0
Max Green Setting (Gmax), s			52.0		8.0	13.0	35.0
Max Q Clear Time (g_c+I1), s			13.7		8.2	9.5	23.7
Green Ext Time (p_c), s			20.9		0.0	0.3	9.0

Intersection Summary	
HCM 7th Control Delay, s/veh	13.4
HCM 7th LOS	B

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	47	11	5	63	174	14
Future Vol, veh/h	47	11	5	63	174	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	51	12	5	68	189	15
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	8.1	7.3	8.8
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	81%	0%	93%
Vol Thru, %	19%	7%	0%
Vol Right, %	0%	93%	7%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	58	68	188
LT Vol	47	0	174
Through Vol	11	5	0
RT Vol	0	63	14
Lane Flow Rate	63	74	204
Geometry Grp	1	1	1
Degree of Util (X)	0.081	0.081	0.245
Departure Headway (Hd)	4.653	3.932	4.311
Convergence, Y/N	Yes	Yes	Yes
Cap	774	917	824
Service Time	2.656	1.934	2.387
HCM Lane V/C Ratio	0.081	0.081	0.248
HCM Control Delay, s/veh	8.1	7.3	8.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.3	0.3	1

Intersection	
Int Delay, s/veh	56.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	61	5	14	5	0	5	12	1963	10	15	2361	15
Future Vol, veh/h	61	5	14	5	0	5	12	1963	10	15	2361	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	310	-	150	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	66	5	15	5	0	5	13	2134	11	16	2566	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3478	4770	1283	3222	4775	1067	2583	0	0	2145	0	0
Stage 1	2599	2599	-	2160	2160	-	-	-	-	-	-	-
Stage 2	880	2171	-	1062	2615	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	~ 7	~ 1	134	10	1	187	63	-	-	106	-	-
Stage 1	~ 14	50	-	29	85	-	-	-	-	-	-	-
Stage 2	279	84	-	215	49	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 5	~ 1	134	~ 5	1	187	63	-	-	106	-	-
Mov Cap-2 Maneuver	~ 10	21	-	19	19	-	-	-	-	-	-	-
Stage 1	~ 12	43	-	23	68	-	-	-	-	-	-	-
Stage 2	215	67	-	141	42	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	$ 3140.12	150.69	0.46	0.28
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	63	-	-	13	35	106	-	-
HCM Lane V/C Ratio	0.208	-	-	6.7	0.314	0.154	-	-
HCM Ctrl Dly (s/v)	76.9	-	-	$ 3140.1	150.7	45.2	-	-
HCM Lane LOS	F	-	-	F	F	E	-	-
HCM 95th %tile Q(veh)	0.7	-	-	12	1	0.5	-	-

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	12	0	1970	2365	6
Future Vol, veh/h	0	12	0	1970	2365	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	13	0	2141	2571	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1285	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	133	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	133	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	34.91	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	133	-	-
HCM Lane V/C Ratio	-	0.098	-	-
HCM Ctrl Dly (s/v)	-	34.9	-	-
HCM Lane LOS	-	D	-	-
HCM 95th %tile Q(veh)	-	0.3	-	-



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	24	25	71	14	33	38	2038	4	11	2534	27
v/c Ratio	0.22	0.23	0.39	0.13	0.18	0.44	0.51	0.00	0.13	0.68	0.02
Control Delay (s/veh)	52.7	53.0	14.6	50.5	2.2	66.3	6.6	0.0	53.4	11.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	52.7	53.0	14.6	50.5	2.2	66.3	6.6	0.0	53.4	11.9	0.0
Queue Length 50th (ft)	16	17	0	9	0	26	183	0	7	400	0
Queue Length 95th (ft)	46	47	34	30	0	#68	342	0	27	510	0
Internal Link Dist (ft)		1039		375			711			546	
Turn Bay Length (ft)	240		240			260		150	240		415
Base Capacity (vph)	544	544	570	313	350	86	4021	1268	86	3726	1181
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.05	0.12	0.04	0.09	0.44	0.51	0.00	0.13	0.68	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	0	65	13	0	30	35	1875	4	10	2331	25
Future Volume (veh/h)	45	0	65	13	0	30	35	1875	4	10	2331	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	49	0	71	14	0	33	38	2038	4	11	2534	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	230	0	102	66	0	59	59	3530	1096	24	3408	1058
Arrive On Green	0.06	0.00	0.06	0.04	0.00	0.04	0.03	0.69	0.69	0.01	0.67	0.67
Sat Flow, veh/h	3563	0	1585	1781	0	1585	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	49	0	71	14	0	33	38	2038	4	11	2534	27
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1585	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	1.3	0.0	4.3	0.7	0.0	2.0	2.1	20.0	0.1	0.6	31.9	0.6
Cycle Q Clear(g_c), s	1.3	0.0	4.3	0.7	0.0	2.0	2.1	20.0	0.1	0.6	31.9	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	230	0	102	66	0	59	59	3530	1096	24	3408	1058
V/C Ratio(X)	0.21	0.00	0.69	0.21	0.00	0.56	0.65	0.58	0.00	0.47	0.74	0.03
Avail Cap(c_a), veh/h	1207	0	537	329	0	293	91	3674	1141	91	3653	1134
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.2	0.0	44.6	45.5	0.0	46.1	46.5	7.7	4.7	47.7	10.7	5.5
Incr Delay (d2), s/veh	0.3	0.0	6.1	1.6	0.0	8.2	4.4	0.2	0.0	13.7	0.8	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	1.8	0.4	0.0	0.9	1.0	6.2	0.0	0.4	10.5	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.6	0.0	50.8	47.1	0.0	54.4	50.9	8.0	4.7	61.4	11.5	5.5
LnGrp LOS	D		D	D		D	D	A	A	E	B	A
Approach Vol, veh/h		120			47			2080			2572	
Approach Delay, s/veh		47.8			52.2			8.7			11.7	
Approach LOS		D			D			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	72.6		10.9	8.1	70.3		8.1				
Change Period (Y+Rc), s	4.5	5.3		4.6	4.9	5.3		4.5				
Max Green Setting (Gmax), s	5.0	70.1		33.0	5.0	69.7		18.0				
Max Q Clear Time (g_c+I1), s	2.6	22.0		6.3	4.1	33.9		4.0				
Green Ext Time (p_c), s	0.0	31.5		0.3	0.0	31.1		0.1				

Intersection Summary	
HCM 7th Control Delay, s/veh	11.7
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	111	209	554	87	195	130	1839	185	103	2780	182
v/c Ratio	0.35	0.62	0.88	0.18	0.72	0.46	0.79	0.24	0.95	1.26	0.24
Control Delay (s/veh)	50.6	58.5	29.8	50.8	62.9	64.9	35.6	10.4	137.3	153.7	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	50.6	58.5	29.8	50.8	62.9	64.9	35.6	10.4	137.3	153.7	12.8
Queue Length 50th (ft)	83	165	121	34	144	56	497	32	91	~1119	38
Queue Length 95th (ft)	151	267	#325	62	235	96	671	94	#237	#1442	108
Internal Link Dist (ft)		813			837		762			707	
Turn Bay Length (ft)	580		300	325		530			500		215
Base Capacity (vph)	420	442	693	815	430	578	2316	786	108	2207	748
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.47	0.80	0.11	0.45	0.22	0.79	0.24	0.95	1.26	0.24

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	102	192	510	80	99	80	120	1692	170	95	2558	167
Future Volume (veh/h)	102	192	510	80	99	80	120	1692	170	95	2558	167
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	111	209	554	87	108	87	130	1839	185	103	2780	182
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	403	423	359	466	129	104	187	2199	683	104	2221	689
Arrive On Green	0.23	0.23	0.23	0.13	0.13	0.13	0.05	0.43	0.43	0.06	0.43	0.43
Sat Flow, veh/h	1781	1870	1585	3456	959	772	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	111	209	554	87	0	195	130	1839	185	103	2780	182
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	0	1731	1728	1702	1585	1781	1702	1585
Q Serve(g_s), s	7.0	13.3	31.0	3.1	0.0	15.0	5.1	43.9	10.3	7.9	59.5	10.0
Cycle Q Clear(g_c), s	7.0	13.3	31.0	3.1	0.0	15.0	5.1	43.9	10.3	7.9	59.5	10.0
Prop In Lane	1.00		1.00	1.00		0.45	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	403	423	359	466	0	233	187	2199	683	104	2221	689
V/C Ratio(X)	0.28	0.49	1.54	0.19	0.00	0.84	0.70	0.84	0.27	0.99	1.25	0.26
Avail Cap(c_a), veh/h	403	423	359	782	0	392	555	2219	689	104	2221	689
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.7	46.1	53.0	52.6	0.0	57.7	63.6	34.7	25.1	64.4	38.7	24.7
Incr Delay (d2), s/veh	0.4	1.1	258.1	0.2	0.0	9.1	5.5	3.7	0.8	84.8	117.2	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	6.4	38.0	1.4	0.0	7.2	2.4	18.7	4.1	6.0	48.5	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.1	47.2	311.1	52.8	0.0	66.9	69.2	38.4	25.9	149.2	155.9	25.4
LnGrp LOS	D	D	F	D		E	E	D	C	F	F	C
Approach Vol, veh/h		874			282			2154			3065	
Approach Delay, s/veh		214.1			62.5			39.2			147.9	
Approach LOS		F			E			D			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.0	65.5		36.0	11.4	66.0		23.5				
Change Period (Y+Rc), s	4.0	6.5		5.0	4.0	6.5		5.0				
Max Green Setting (Gmax), s	8.0	59.5		31.0	22.0	45.5		31.0				
Max Q Clear Time (g_c+I1), s	9.9	45.9		33.0	7.1	61.5		17.0				
Green Ext Time (p_c), s	0.0	13.1		0.0	0.4	0.0		1.4				

Intersection Summary			
HCM 7th Control Delay, s/veh		116.5	
HCM 7th LOS		F	



Lane Group	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	1	353	133	1490	309	32	2753
v/c Ratio	0.00	0.99	0.27	0.51	0.30	0.16	0.85
Control Delay (s/veh)	0.0	79.4	7.8	12.2	2.0	41.5	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	0.0	79.4	7.8	12.2	2.0	41.5	15.1
Queue Length 50th (ft)	0	182	3	182	0	8	375
Queue Length 95th (ft)	0	#388	48	221	35	23	445
Internal Link Dist (ft)	224		445	706			646
Turn Bay Length (ft)					200	200	
Base Capacity (vph)	483	358	495	3005	1061	202	3251
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.99	0.27	0.50	0.29	0.16	0.85

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	1	325	0	122	0	1371	284	29	2533	0
Future Volume (veh/h)	0	0	1	325	0	122	0	1371	284	29	2533	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	1	353	0	133	0	1490	309	32	2753	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	0	426	470	0	426	2	2706	840	110	3157	0
Arrive On Green	0.00	0.00	0.27	0.27	0.00	0.27	0.00	0.53	0.53	0.03	0.62	0.00
Sat Flow, veh/h	0	0	1585	1416	0	1585	1781	5106	1585	3456	5274	0
Grp Volume(v), veh/h	0	0	1	353	0	133	0	1490	309	32	2753	0
Grp Sat Flow(s),veh/h/ln	0	0	1585	1416	0	1585	1781	1702	1585	1728	1702	0
Q Serve(g_s), s	0.0	0.0	0.0	19.4	0.0	5.3	0.0	15.4	9.1	0.7	35.6	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	19.4	0.0	5.3	0.0	15.4	9.1	0.7	35.6	0.0
Prop In Lane	0.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	426	470	0	426	2	2706	840	110	3157	0
V/C Ratio(X)	0.00	0.00	0.00	0.75	0.00	0.31	0.00	0.55	0.37	0.29	0.87	0.00
Avail Cap(c_a), veh/h	0	0	428	472	0	428	112	3204	995	217	3204	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	21.3	28.4	0.0	23.3	0.0	12.4	10.9	37.7	12.6	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	6.6	0.0	0.4	0.0	0.2	0.3	1.4	2.9	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	7.1	0.0	2.0	0.0	5.3	2.9	0.3	12.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	21.3	35.0	0.0	23.7	0.0	12.6	11.2	39.1	15.5	0.0
LnGrp LOS			C	C		C		B	B	D	B	
Approach Vol, veh/h		1			486			1799			2785	
Approach Delay, s/veh		21.3			31.9			12.4			15.8	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	46.7		25.9	0.0	53.8		25.9				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	50.0		21.5	5.0	50.0		21.5				
Max Q Clear Time (g_c+I1), s	2.7	17.4		2.0	0.0	37.6		21.4				
Green Ext Time (p_c), s	0.0	16.2		0.0	0.0	11.7		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	16.1
HCM 7th LOS	B



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	614	1323	137	252	934	255	122	2035	312	141	1128	269
v/c Ratio	0.88	0.79	0.24	0.73	0.81	0.53	0.57	1.18	0.56	0.61	0.64	0.43
Control Delay (s/veh)	78.1	54.4	18.7	85.6	67.3	25.4	86.9	132.4	31.3	86.9	46.1	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	78.1	54.4	18.7	85.6	67.3	25.4	86.9	132.4	31.3	86.9	46.1	12.7
Queue Length 50th (ft)	335	476	42	138	355	86	67	~1010	198	77	388	54
Queue Length 95th (ft)	418	579	106	197	452	199	110	#1251	359	123	499	165
Internal Link Dist (ft)		1037			966			719			726	
Turn Bay Length (ft)	250		215	325		235	145		145	230		230
Base Capacity (vph)	920	1685	578	606	1157	485	313	1726	562	418	1780	634
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.79	0.24	0.42	0.81	0.53	0.39	1.18	0.56	0.34	0.63	0.42

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	565	1217	126	232	859	235	112	1840	319	130	1010	275
Future Volume (veh/h)	565	1217	126	232	859	235	112	1840	319	130	1010	275
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	614	1323	137	252	934	255	122	2000	347	141	1098	299
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	673	1726	536	303	1179	366	169	2072	585	190	2105	595
Arrive On Green	0.19	0.34	0.34	0.09	0.23	0.23	0.05	0.37	0.37	0.05	0.38	0.38
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3563	5611	1585	3563	5611	1585
Grp Volume(v), veh/h	614	1323	137	252	934	255	122	2000	347	141	1098	299
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	26.4	35.1	9.5	10.9	26.1	22.3	5.1	52.9	26.8	5.9	23.0	22.0
Cycle Q Clear(g_c), s	26.4	35.1	9.5	10.9	26.1	22.3	5.1	52.9	26.8	5.9	23.0	22.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	673	1726	536	303	1179	366	169	2072	585	190	2105	595
V/C Ratio(X)	0.91	0.77	0.26	0.83	0.79	0.70	0.72	0.97	0.59	0.74	0.52	0.50
Avail Cap(c_a), veh/h	1003	1752	544	661	1247	387	353	2073	586	470	2258	638
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.8	44.8	36.4	68.0	54.9	53.4	71.2	46.8	38.6	70.7	36.8	36.5
Incr Delay (d2), s/veh	6.8	2.7	0.7	2.3	4.4	7.8	2.2	12.7	2.1	2.2	0.8	2.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.2	15.3	3.8	4.9	11.7	9.7	2.4	26.9	10.8	2.8	10.8	9.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	66.5	47.5	37.0	70.3	59.3	61.2	73.4	59.5	40.6	72.9	37.6	39.0
LnGrp LOS	E	D	D	E	E	E	E	E	D	E	D	D
Approach Vol, veh/h		2074			1441			2469			1538	
Approach Delay, s/veh		52.4			61.6			57.5			41.1	
Approach LOS		D			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.2	63.2	18.3	57.9	13.1	62.3	34.5	41.7
Change Period (Y+Rc), s	5.0	6.3	5.0	6.7	5.0	6.3	5.0	6.7
Max Green Setting (Gmax), s	15.0	61.0	29.0	52.0	20.0	56.0	44.0	37.0
Max Q Clear Time (g_c+I1), s	7.1	25.0	12.9	37.1	7.9	54.9	28.4	28.1
Green Ext Time (p_c), s	0.1	25.6	0.4	12.4	0.2	1.0	1.2	6.9

Intersection Summary	
HCM 7th Control Delay, s/veh	53.5
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	98	1632	179	359	1050	207	234	1690	402	190	674	174
v/c Ratio	0.55	1.00	0.29	0.93	0.55	0.29	0.65	1.05	0.63	0.63	0.44	0.31
Control Delay (s/veh)	74.3	67.1	7.4	89.5	34.6	4.9	66.7	81.3	24.8	68.6	39.2	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	74.3	67.1	7.4	89.5	34.6	4.9	66.7	81.3	24.8	68.6	39.2	11.3
Queue Length 50th (ft)	43	517	8	161	261	1	102	~584	154	83	173	24
Queue Length 95th (ft)	76	#664	63	#265	322	54	148	#712	280	124	219	84
Internal Link Dist (ft)		890			754			625			855	
Turn Bay Length (ft)	275		200	200		240	200		200	200		200
Base Capacity (vph)	179	1635	621	387	1901	720	426	1608	634	718	2041	717
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	1.00	0.29	0.93	0.55	0.29	0.55	1.05	0.63	0.26	0.33	0.24

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	1501	165	330	966	190	215	1555	370	175	620	160
Future Volume (veh/h)	90	1501	165	330	966	190	215	1555	370	175	620	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	98	1632	179	359	1050	207	234	1690	402	190	674	174
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	178	1656	514	394	1933	600	292	1629	506	247	1605	498
Arrive On Green	0.05	0.32	0.32	0.11	0.38	0.38	0.08	0.32	0.32	0.07	0.31	0.31
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	98	1632	179	359	1050	207	234	1690	402	190	674	174
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	3.7	42.1	11.4	13.6	21.3	12.4	8.8	42.3	30.7	7.2	13.8	11.2
Cycle Q Clear(g_c), s	3.7	42.1	11.4	13.6	21.3	12.4	8.8	42.3	30.7	7.2	13.8	11.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	178	1656	514	394	1933	600	292	1629	506	247	1605	498
V/C Ratio(X)	0.55	0.99	0.35	0.91	0.54	0.34	0.80	1.04	0.79	0.77	0.42	0.35
Avail Cap(c_a), veh/h	182	1656	514	394	1933	600	433	1629	506	730	2068	642
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.4	44.5	34.1	58.1	32.2	29.4	59.6	45.1	41.2	60.5	35.9	35.0
Incr Delay (d2), s/veh	1.8	18.7	0.9	25.0	0.6	0.7	6.5	32.6	8.6	1.9	0.1	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	20.5	4.6	7.3	8.9	4.9	4.1	22.6	13.1	3.2	5.8	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	63.2	63.2	35.0	83.1	32.8	30.2	66.1	77.7	49.7	62.4	36.0	35.2
LnGrp LOS	E	E	C	F	C	C	E	F	D	E	D	D
Approach Vol, veh/h		1909			1616			2326			1038	
Approach Delay, s/veh		60.5			43.6			71.7			40.7	
Approach LOS		E			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.1	47.9	19.6	50.0	15.7	47.3	12.4	57.2
Change Period (Y+Rc), s	5.6	* 5.6	4.5	7.0	4.5	5.6	5.6	7.0
Max Green Setting (Gmax), s	28.0	* 42	15.1	43.0	16.6	53.7	7.0	50.0
Max Q Clear Time (g_c+I1), s	9.2	44.3	15.6	44.1	10.8	15.8	5.7	23.3
Green Ext Time (p_c), s	0.3	0.0	0.0	0.0	0.4	3.8	0.0	16.1

Intersection Summary	
HCM 7th Control Delay, s/veh	57.4
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	592	1588	43	76	1414	239	27	234	310	163	43	174
v/c Ratio	1.22	0.62	0.05	0.55	0.97	0.42	0.26	0.63	0.66	1.01	0.09	0.32
Control Delay (s/veh)	153.0	24.9	1.6	69.5	60.7	15.3	63.2	51.7	22.9	127.5	35.1	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	153.0	24.9	1.6	69.5	60.7	15.3	63.2	51.7	22.9	127.5	35.1	6.7
Queue Length 50th (ft)	~559	327	0	57	395	46	20	167	79	~128	26	0
Queue Length 95th (ft)	#870	461	9	115	#572	131	55	251	177	#301	57	54
Internal Link Dist (ft)		1187			2532			760			553	
Turn Bay Length (ft)	240		245	240		240	240		245	200		205
Base Capacity (vph)	487	2555	831	177	1455	566	103	761	762	162	814	789
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.22	0.62	0.05	0.43	0.97	0.42	0.26	0.31	0.41	1.01	0.05	0.22

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	545	1461	40	70	1301	220	25	215	285	150	40	160
Future Volume (veh/h)	545	1461	40	70	1301	220	25	215	285	150	40	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	592	1588	43	76	1414	239	27	234	310	163	43	174
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	462	2423	752	96	1376	427	60	451	382	154	550	466
Arrive On Green	0.26	0.47	0.47	0.05	0.27	0.27	0.03	0.24	0.24	0.09	0.29	0.29
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	592	1588	43	76	1414	239	27	234	310	163	43	174
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	33.0	30.2	1.9	5.4	34.3	16.5	1.9	13.8	23.5	11.0	2.1	11.1
Cycle Q Clear(g_c), s	33.0	30.2	1.9	5.4	34.3	16.5	1.9	13.8	23.5	11.0	2.1	11.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	462	2423	752	96	1376	427	60	451	382	154	550	466
V/C Ratio(X)	1.28	0.66	0.06	0.79	1.03	0.56	0.45	0.52	0.81	1.06	0.08	0.37
Avail Cap(c_a), veh/h	462	2423	752	168	1376	427	98	720	610	154	770	652
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.2	25.5	18.1	59.5	46.5	40.0	60.3	41.9	45.6	58.2	32.5	35.7
Incr Delay (d2), s/veh	142.8	0.8	0.1	5.3	31.7	2.6	1.9	2.0	8.6	89.1	0.1	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	32.8	12.3	0.7	2.6	18.4	6.8	0.9	6.6	10.1	8.8	1.0	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	189.9	26.4	18.1	64.8	78.2	42.6	62.3	43.9	54.2	147.3	32.6	36.3
LnGrp LOS	F	C	B	E	F	D	E	D	D	F	C	D
Approach Vol, veh/h		2223			1729			571			380	
Approach Delay, s/veh		69.8			72.7			50.3			83.5	
Approach LOS		E			E			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	35.3	10.9	66.1	8.3	42.0	37.0	40.0
Change Period (Y+Rc), s	4.0	* 4.6	4.0	5.7	4.0	4.6	4.0	5.7
Max Green Setting (Gmax), s	11.0	* 49	12.0	55.3	7.0	52.4	33.0	34.3
Max Q Clear Time (g_c+I1), s	13.0	25.5	7.4	32.2	3.9	13.1	35.0	36.3
Green Ext Time (p_c), s	0.0	5.2	0.0	18.2	0.0	1.1	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	69.6
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	326	1695	24	55	1427	533	46	451	288
v/c Ratio	0.84	0.80	0.03	0.40	0.88	0.62	0.08	0.93	0.41
Control Delay (s/veh)	49.3	22.7	0.1	37.6	29.3	5.4	0.8	50.1	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	49.3	22.7	0.1	37.6	29.3	5.4	0.8	50.1	6.5
Queue Length 50th (ft)	66	234	0	21	194	0	0	166	18
Queue Length 95th (ft)	#130	#338	0	53	#280	62	4	#333	66
Internal Link Dist (ft)		2532			278		427		450
Turn Bay Length (ft)	200		200	200		200		150	
Base Capacity (vph)	390	2106	714	138	1616	866	624	502	723
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.80	0.03	0.40	0.88	0.62	0.07	0.90	0.40

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	300	1559	22	51	1313	490	13	0	29	415	0	265
Future Volume (veh/h)	300	1559	22	51	1313	490	13	0	29	415	0	265
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	326	1695	24	55	1427	533	14	0	32	451	0	288
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	388	1929	599	86	1603	497	168	35	299	552	0	580
Arrive On Green	0.11	0.38	0.38	0.05	0.31	0.31	0.37	0.00	0.37	0.37	0.00	0.37
Sat Flow, veh/h	3456	5106	1585	1781	5106	1585	261	96	816	1377	0	1585
Grp Volume(v), veh/h	326	1695	24	55	1427	533	46	0	0	451	0	288
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1781	1702	1585	1173	0	0	1377	0	1585
Q Serve(g_s), s	6.0	20.1	0.6	2.0	17.3	20.4	0.2	0.0	0.0	14.5	0.0	9.1
Cycle Q Clear(g_c), s	6.0	20.1	0.6	2.0	17.3	20.4	9.3	0.0	0.0	23.8	0.0	9.1
Prop In Lane	1.00		1.00	1.00		1.00	0.30		0.70	1.00		1.00
Lane Grp Cap(c), veh/h	388	1929	599	86	1603	497	502	0	0	552	0	580
V/C Ratio(X)	0.84	0.88	0.04	0.64	0.89	1.07	0.09	0.00	0.00	0.82	0.00	0.50
Avail Cap(c_a), veh/h	388	1929	599	137	1603	497	502	0	0	552	0	580
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.3	18.8	12.8	30.4	21.2	22.3	13.6	0.0	0.0	21.9	0.0	16.0
Incr Delay (d2), s/veh	15.1	5.0	0.0	7.6	6.7	60.8	0.1	0.0	0.0	9.4	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	8.0	0.2	1.0	7.3	15.3	0.4	0.0	0.0	7.7	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.4	23.9	12.8	37.9	27.9	83.1	13.7	0.0	0.0	31.2	0.0	16.6
LnGrp LOS	D	C	B	D	C	F	B			C		B
Approach Vol, veh/h		2045			2015			46			739	
Approach Delay, s/veh		26.8			42.8			13.7			25.5	
Approach LOS		C			D			B			C	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		28.3	7.6	29.1		28.3	11.8	24.9				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		23.8	5.0	22.7		23.8	7.3	20.4				
Max Q Clear Time (g_c+I1), s		11.3	4.0	22.1		25.8	8.0	22.4				
Green Ext Time (p_c), s		0.1	0.0	0.5		0.0	0.0	0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	33.1
HCM 7th LOS	C



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	466	1541	399	512	1423	426	474	1758	390	351	1487	323
v/c Ratio	1.31	0.92	0.62	1.03	1.08	0.61	1.54	1.12	0.60	1.35	1.00	0.52
Control Delay (s/veh)	208.0	56.0	27.3	107.8	92.6	25.0	301.8	110.3	19.9	228.9	73.1	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	208.0	56.0	27.3	107.8	92.6	25.0	301.8	110.3	19.9	228.9	73.1	16.6
Queue Length 50th (ft)	~291	511	182	~265	~787	192	~323	~700	118	~223	515	76
Queue Length 95th (ft)	#405	579	301	#381	#927	310	#437	#796	232	#327	#628	174
Internal Link Dist (ft)		1047			306			1367			1181	
Turn Bay Length (ft)	270		420	240		240	250		250	250		350
Base Capacity (vph)	355	1683	639	497	1317	699	307	1564	652	260	1493	619
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.31	0.92	0.62	1.03	1.08	0.61	1.54	1.12	0.60	1.35	1.00	0.52

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	429	1418	367	471	1309	392	436	1617	359	323	1368	297
Future Volume (veh/h)	429	1418	367	471	1309	392	436	1617	359	323	1368	297
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	466	1541	399	512	1423	426	474	1758	390	351	1487	323
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	357	1690	525	500	1323	590	310	1571	488	262	1500	466
Arrive On Green	0.10	0.33	0.33	0.14	0.37	0.37	0.09	0.31	0.31	0.08	0.29	0.29
Sat Flow, veh/h	3456	5106	1585	3456	3554	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	466	1541	399	512	1423	426	474	1758	390	351	1487	323
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1777	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	15.0	41.9	32.6	21.0	54.0	33.4	13.0	44.6	32.8	11.0	42.1	26.2
Cycle Q Clear(g_c), s	15.0	41.9	32.6	21.0	54.0	33.4	13.0	44.6	32.8	11.0	42.1	26.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	357	1690	525	500	1323	590	310	1571	488	262	1500	466
V/C Ratio(X)	1.30	0.91	0.76	1.02	1.08	0.72	1.53	1.12	0.80	1.34	0.99	0.69
Avail Cap(c_a), veh/h	357	1690	525	500	1323	590	310	1571	488	262	1500	466
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.0	46.5	43.4	62.0	45.5	39.1	66.0	50.2	46.1	67.0	51.0	45.4
Incr Delay (d2), s/veh	155.6	8.2	7.3	46.2	47.7	5.1	254.2	62.9	9.8	176.0	21.1	5.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.3	19.0	13.9	12.4	32.4	13.9	16.7	28.0	14.3	11.3	20.8	11.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	220.6	54.6	50.6	108.2	93.2	44.2	320.2	113.1	55.9	243.0	72.1	50.5
LnGrp LOS	F	D	D	F	F	D	F	F	E	F	E	D
Approach Vol, veh/h		2406			2361			2622			2161	
Approach Delay, s/veh		86.1			87.6			142.0			96.6	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	51.0	25.0	54.0	17.0	49.0	19.0	60.0
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	11.0	44.6	21.0	48.0	13.0	42.6	15.0	54.0
Max Q Clear Time (g_c+I1), s	13.0	46.6	23.0	43.9	15.0	44.1	17.0	56.0
Green Ext Time (p_c), s	0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	104.2
HCM 7th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	121.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	1989	96	34	1894	25	142	5	20	20	10	65
Future Vol, veh/h	50	1989	96	34	1894	25	142	5	20	20	10	65
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	54	2162	104	37	2059	27	154	5	22	22	11	71

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2086	0	0	2266	0	0	3379	4430	1081	3339	4521	1043
Stage 1	-	-	-	-	-	-	2271	2271	-	2146	2146	-
Stage 2	-	-	-	-	-	-	1109	2160	-	1192	2375	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	262	-	-	222	-	-	~ 3	~ 1	213	~ 3	~ 1	226
Stage 1	-	-	-	-	-	-	~ 41	75	-	50	87	-
Stage 2	-	-	-	-	-	-	224	85	-	199	66	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	262	-	-	222	-	-	~ 0	~ 1	213	~ 1	~ 1	226
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 25	15	-	27	12	-
Stage 1	-	-	-	-	-	-	~ 33	59	-	41	72	-
Stage 2	-	-	-	-	-	-	~ 109	71	-	128	52	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.52	0.42	$ 2777.44	$ 662.98
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	28	262	-	-	222	-	-	50
HCM Lane V/C Ratio	6.55	0.208	-	-	0.166	-	-	2.053
HCM Ctrl Dly (s/v)	$ 2777.4	22.3	-	-	24.4	-	-	$ 663
HCM Lane LOS	F	C	-	-	C	-	-	F
HCM 95th %tile Q(veh)	22.3	0.8	-	-	0.6	-	-	10.4

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	592	1640	1584	76	54	513
v/c Ratio	0.86	0.55	0.83	0.09	0.24	0.60
Control Delay (s/veh)	41.8	4.0	18.9	2.9	31.0	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	41.8	4.0	18.9	2.9	31.0	20.9
Queue Length 50th (ft)	130	134	304	0	22	91
Queue Length 95th (ft)	#223	182	#465	18	53	138
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	696	2946	1934	899	221	869
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.56	0.82	0.08	0.24	0.59

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	545	1509	1457	70	50	472
Future Volume (veh/h)	545	1509	1457	70	50	472
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	592	1640	1584	76	54	513
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	647	2633	1764	787	205	843
Arrive On Green	0.19	0.74	0.50	0.50	0.12	0.12
Sat Flow, veh/h	3456	3647	3647	1585	1781	2790
Grp Volume(v), veh/h	592	1640	1584	76	54	513
Grp Sat Flow(s),veh/h/ln	1728	1777	1777	1585	1781	1395
Q Serve(g_s), s	11.7	15.4	28.1	1.8	1.9	8.0
Cycle Q Clear(g_c), s	11.7	15.4	28.1	1.8	1.9	8.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	647	2633	1764	787	205	843
V/C Ratio(X)	0.92	0.62	0.90	0.10	0.26	0.61
Avail Cap(c_a), veh/h	647	2660	1790	798	205	843
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.7	4.3	15.9	9.3	28.1	20.7
Incr Delay (d2), s/veh	17.5	0.5	6.6	0.1	0.3	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	3.4	11.4	0.6	0.8	8.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	45.2	4.9	22.5	9.3	28.3	21.6
LnGrp LOS	D	A	C	A	C	C
Approach Vol, veh/h		2232	1660		567	
Approach Delay, s/veh		15.6	21.9		22.3	
Approach LOS		B	C		C	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	57.5	12.0	17.0	40.5
Change Period (Y+Rc), s	6.0	4.0	4.0	6.0
Max Green Setting (Gmax), s	52.0	8.0	13.0	35.0
Max Q Clear Time (g_c+I1), s	17.4	10.0	13.7	30.1
Green Ext Time (p_c), s	23.7	0.0	0.0	4.3

Intersection Summary	
HCM 7th Control Delay, s/veh	18.8
HCM 7th LOS	B

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	22	6	7	145	76	49
Future Vol, veh/h	22	6	7	145	76	49
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	7	8	158	83	53
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.7	7.4	8
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	79%	0%	61%
Vol Thru, %	21%	5%	0%
Vol Right, %	0%	95%	39%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	28	152	125
LT Vol	22	0	76
Through Vol	6	7	0
RT Vol	0	145	49
Lane Flow Rate	30	165	136
Geometry Grp	1	1	1
Degree of Util (X)	0.038	0.166	0.157
Departure Headway (Hd)	4.46	3.623	4.157
Convergence, Y/N	Yes	Yes	Yes
Cap	792	975	856
Service Time	2.551	1.704	2.214
HCM Lane V/C Ratio	0.038	0.169	0.159
HCM Control Delay, s/veh	7.7	7.4	8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.6	0.6

Intersection	
Int Delay, s/veh	24.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	43	5	11	5	0	5	28	2381	5	10	2183	44
Future Vol, veh/h	43	5	11	5	0	5	28	2381	5	10	2183	44
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	310	-	150	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	47	5	12	5	0	5	30	2588	5	11	2373	48

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3491	5049	1186	3623	5091	1294	2421	0	0	2593	0	0
Stage 1	2395	2395	-	2649	2649	-	-	-	-	-	-	-
Stage 2	1096	2654	-	974	2442	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	~ 7	~ 1	156	6	0	132	76	-	-	62	-	-
Stage 1	~ 20	65	-	13	47	-	-	-	-	-	-	-
Stage 2	205	47	-	244	61	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 3	~ 0	156	~ 2	0	132	76	-	-	62	-	-
Mov Cap-2 Maneuver	~ 14	12	-	7	11	-	-	-	-	-	-	-
Stage 1	~ 16	53	-	8	28	-	-	-	-	-	-	-
Stage 2	118	28	-	167	50	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	$ 1824.23	$ 579.53	0.94	0.34
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	76	-	-	16	13	62	-	-
HCM Lane V/C Ratio	0.4	-	-	3.986	0.847	0.176	-	-
HCM Ctrl Dly (s/v)	80.8	-	-	$ 1824.2	$ 579.5	75.2	-	-
HCM Lane LOS	F	-	-	F	F	F	-	-
HCM 95th %tile Q(veh)	1.6	-	-	8.8	1.9	0.6	-	-

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	0	2404	2168	20
Future Vol, veh/h	0	8	0	2404	2168	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	0	2613	2357	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1178	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	158	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	158	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	29.19	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	158	-	-
HCM Lane V/C Ratio	-	0.055	-	-
HCM Ctrl Dly (s/v)	-	29.2	-	-
HCM Lane LOS	-	D	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	16	17	49	9	21	33	2533	15	35	2277	38
v/c Ratio	0.16	0.17	0.28	0.09	0.12	0.38	0.65	0.01	0.41	0.59	0.03
Control Delay (s/veh)	51.3	51.6	7.1	49.6	1.4	62.6	10.3	0.0	63.8	9.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	51.3	51.6	7.1	49.6	1.4	62.6	10.3	0.0	63.8	9.3	0.1
Queue Length 50th (ft)	11	11	0	6	0	22	384	0	24	318	0
Queue Length 95th (ft)	34	35	13	22	0	55	481	0	#59	400	1
Internal Link Dist (ft)		1039		375			711			546	
Turn Bay Length (ft)	240		240			260		150	240		415
Base Capacity (vph)	543	543	569	312	350	86	3872	1224	86	3861	1221
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.09	0.03	0.06	0.38	0.65	0.01	0.41	0.59	0.03

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	0	45	8	0	19	30	2330	14	32	2095	35
Future Volume (veh/h)	30	0	45	8	0	19	30	2330	14	32	2095	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	33	0	49	9	0	21	33	2533	15	35	2277	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	168	0	75	52	0	46	55	3521	1093	57	3505	1088
Arrive On Green	0.05	0.00	0.05	0.03	0.00	0.03	0.03	0.69	0.69	0.03	0.69	0.69
Sat Flow, veh/h	3563	0	1585	1781	0	1585	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	33	0	49	9	0	21	33	2533	15	35	2277	38
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1585	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	0.8	0.0	2.8	0.5	0.0	1.2	1.7	28.6	0.3	1.8	23.6	0.7
Cycle Q Clear(g_c), s	0.8	0.0	2.8	0.5	0.0	1.2	1.7	28.6	0.3	1.8	23.6	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	168	0	75	52	0	46	55	3521	1093	57	3505	1088
V/C Ratio(X)	0.20	0.00	0.65	0.17	0.00	0.46	0.60	0.72	0.01	0.62	0.65	0.03
Avail Cap(c_a), veh/h	1258	0	560	343	0	305	95	3831	1189	95	3809	1182
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.8	0.0	43.8	44.3	0.0	44.6	44.7	8.9	4.5	44.7	8.3	4.7
Incr Delay (d2), s/veh	0.4	0.0	7.0	1.6	0.0	7.0	3.9	0.7	0.0	10.3	0.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.2	0.2	0.0	0.6	0.8	8.9	0.1	1.0	7.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.2	0.0	50.7	45.9	0.0	51.6	48.6	9.6	4.6	55.0	8.7	4.7
LnGrp LOS	D		D	D		D	D	A	A	D	A	A
Approach Vol, veh/h		82			30			2581			2350	
Approach Delay, s/veh		47.7			49.9			10.1			9.3	
Approach LOS		D			D			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	69.7		9.0	7.8	69.4		7.2				
Change Period (Y+Rc), s	4.5	5.3		4.6	4.9	5.3		4.5				
Max Green Setting (Gmax), s	5.0	70.1		33.0	5.0	69.7		18.0				
Max Q Clear Time (g_c+I1), s	3.8	30.6		4.8	3.7	25.6		3.2				
Green Ext Time (p_c), s	0.0	33.9		0.2	0.0	33.9		0.0				

Intersection Summary		
HCM 7th Control Delay, s/veh		10.6
HCM 7th LOS		B

Notes

User approved volume balancing among the lanes for turning movement.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	128	100	179	196	295	783	2768	152	120	2059	125
v/c Ratio	0.60	0.44	0.51	0.29	0.81	1.34	1.18	0.20	1.10	1.15	0.20
Control Delay (s/veh)	66.8	60.1	12.6	45.7	66.4	205.7	119.6	12.1	170.9	113.1	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	66.8	60.1	12.6	45.7	66.4	205.7	119.6	12.1	170.9	113.1	8.8
Queue Length 50th (ft)	105	81	0	72	229	~450	~1043	34	~117	~761	9
Queue Length 95th (ft)	177	142	68	115	357	#642	#1280	89	#270	#969	58
Internal Link Dist (ft)		813			837		762			707	
Turn Bay Length (ft)	580		300	325		530			500		215
Base Capacity (vph)	424	446	515	823	437	584	2341	772	109	1790	628
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.22	0.35	0.24	0.68	1.34	1.18	0.20	1.10	1.15	0.20

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	92	165	180	196	75	720	2547	140	110	1894	115
Future Volume (veh/h)	118	92	165	180	196	75	720	2547	140	110	1894	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	100	179	196	213	82	783	2768	152	120	2059	125
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	245	258	218	657	245	94	581	2320	720	109	1774	551
Arrive On Green	0.14	0.14	0.14	0.19	0.19	0.19	0.17	0.45	0.45	0.06	0.35	0.35
Sat Flow, veh/h	1781	1870	1585	3456	1286	495	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	128	100	179	196	0	295	783	2768	152	120	2059	125
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	0	1781	1728	1702	1585	1781	1702	1585
Q Serve(g_s), s	8.7	6.4	14.4	6.4	0.0	21.0	22.0	59.5	7.6	8.0	45.5	7.3
Cycle Q Clear(g_c), s	8.7	6.4	14.4	6.4	0.0	21.0	22.0	59.5	7.6	8.0	45.5	7.3
Prop In Lane	1.00		1.00	1.00		0.28	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	245	258	218	657	0	339	581	2320	720	109	1774	551
V/C Ratio(X)	0.52	0.39	0.82	0.30	0.00	0.87	1.35	1.19	0.21	1.10	1.16	0.23
Avail Cap(c_a), veh/h	422	443	375	818	0	422	581	2320	720	109	1774	551
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	51.4	54.9	45.5	0.0	51.5	54.5	35.7	21.6	61.5	42.7	30.3
Incr Delay (d2), s/veh	2.1	1.2	8.8	0.3	0.0	15.7	168.1	91.4	0.5	116.6	78.9	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	3.1	6.3	2.8	0.0	10.9	23.1	43.7	3.0	7.1	31.9	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	54.5	52.6	63.7	45.8	0.0	67.1	222.5	127.1	22.1	178.1	121.6	31.0
LnGrp LOS	D	D	E	D		E	F	F	C	F	F	C
Approach Vol, veh/h		407			491			3703			2304	
Approach Delay, s/veh		58.1			58.6			143.0			119.7	
Approach LOS		E			E			F			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.0	66.0		23.0	26.0	52.0		29.9				
Change Period (Y+Rc), s	4.0	6.5		5.0	4.0	6.5		5.0				
Max Green Setting (Gmax), s	8.0	59.5		31.0	22.0	45.5		31.0				
Max Q Clear Time (g_c+I1), s	10.0	61.5		16.4	24.0	47.5		23.0				
Green Ext Time (p_c), s	0.0	0.0		1.7	0.0	0.0		1.9				

Intersection Summary												
HCM 7th Control Delay, s/veh			124.2									
HCM 7th LOS			F									



Lane Group	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	309	62	3026	235	164	1910
v/c Ratio	0.93	0.14	1.07	0.25	0.86	0.57
Control Delay (s/veh)	71.0	2.9	59.0	3.8	80.5	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	71.0	2.9	59.0	3.8	80.5	8.9
Queue Length 50th (ft)	172	0	~706	16	48	190
Queue Length 95th (ft)	#328	13	#799	49	#105	228
Internal Link Dist (ft)		445	706			646
Turn Bay Length (ft)				200	200	
Base Capacity (vph)	338	456	2839	959	191	3378
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.14	1.07	0.25	0.86	0.57

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	284	0	57	0	2784	216	151	1757	0
Future Volume (veh/h)	0	0	0	284	0	57	0	2784	216	151	1757	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	309	0	62	0	3026	235	164	1910	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	372	0	438	0	315	2	2987	927	202	3554	0
Arrive On Green	0.00	0.00	0.00	0.20	0.00	0.20	0.00	0.58	0.58	0.06	0.70	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	5106	1585	3456	5274	0
Grp Volume(v), veh/h	0	0	0	309	0	62	0	3026	235	164	1910	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1702	1585	1728	1702	0
Q Serve(g_s), s	0.0	0.0	0.0	14.4	0.0	2.8	0.0	50.0	6.2	4.0	15.5	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	14.4	0.0	2.8	0.0	50.0	6.2	4.0	15.5	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	372	0	438	0	315	2	2987	927	202	3554	0
V/C Ratio(X)	0.00	0.00	0.00	0.71	0.00	0.20	0.00	1.01	0.25	0.81	0.54	0.00
Avail Cap(c_a), veh/h	0	470	0	532	0	399	104	2987	927	202	3554	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	33.2	0.0	28.6	0.0	17.7	8.6	39.8	6.3	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	3.3	0.0	0.3	0.0	19.8	0.1	21.5	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	6.4	0.0	1.1	0.0	22.2	2.0	2.3	4.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	36.5	0.0	28.9	0.0	37.6	8.8	61.3	6.5	0.0
LnGrp LOS				D		C		F	A	E	A	
Approach Vol, veh/h		0			371			3261			2074	
Approach Delay, s/veh		0.0			35.2			35.5			10.8	
Approach LOS					D			D			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.5	54.5		21.5	0.0	64.0		21.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	50.0		21.5	5.0	50.0		21.5				
Max Q Clear Time (g_c+I1), s	6.0	52.0		0.0	0.0	17.5		16.4				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	19.8		0.6				

Intersection Summary	
HCM 7th Control Delay, s/veh	26.5
HCM 7th LOS	C

Appendix G

Intersection Analysis Worksheets for Improved Conditions

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	58	1236	86	14	1018	26	0	0	61	0	0	70
Future Vol, veh/h	58	1236	86	14	1018	26	0	0	61	0	0	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	90	90	90	70	70	70	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	61	1301	91	16	1131	29	0	0	87	0	0	84

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1160	0	0	1392	0	0	-	-	1301	-	-	580
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.13	-	-	4.13	-	-	-	-	6.23	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	-	-	3.319	-	-	3.319
Pot Cap-1 Maneuver	600	-	-	490	-	-	0	0	196	0	0	459
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	600	-	-	490	-	-	-	-	196	-	-	459
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.49	0.17	37.3	14.61
HCM LOS			E	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	196	600	-	-	490	-	-	459
HCM Lane V/C Ratio	0.445	0.102	-	-	0.032	-	-	0.184
HCM Ctrl Dly (s/v)	37.3	11.7	-	-	12.6	-	-	14.6
HCM Lane LOS	E	B	-	-	B	-	-	B
HCM 95th %tile Q(veh)	2.1	0.3	-	-	0.1	-	-	0.7



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	191	1085	962	73	61	171
v/c Ratio	0.35	0.68	0.47	0.08	0.23	0.22
Control Delay (s/veh)	3.6	7.1	8.1	1.8	34.8	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	3.6	7.1	8.1	1.8	34.8	5.8
Queue Length 50th (ft)	15	221	113	0	22	0
Queue Length 95th (ft)	32	416	168	14	77	28
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	583	1863	3486	1560	357	866
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.58	0.28	0.05	0.17	0.20

Intersection Summary



Lane Group	EBT	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	1	387	380	339	30	567
v/c Ratio	0.00	0.75	0.50	0.40	0.14	0.65
Control Delay (s/veh)	0.0	23.5	14.9	3.5	25.6	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	0.0	23.5	14.9	3.5	25.6	13.3
Queue Length 50th (ft)	0	58	66	0	7	112
Queue Length 95th (ft)	0	#227	152	29	30	179
Internal Link Dist (ft)	108	445	337			355
Turn Bay Length (ft)				200	200	
Base Capacity (vph)	876	651	979	993	217	1104
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.59	0.39	0.34	0.14	0.51

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	1	316	0	36	0	304	271	25	471	0
Future Volume (veh/h)	0	0	1	316	0	36	0	304	271	25	471	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	1	347	0	40	0	380	339	30	567	0
Peak Hour Factor	0.92	0.92	0.92	0.91	0.92	0.91	0.92	0.80	0.80	0.83	0.83	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	0	515	584	0	48	4	580	492	63	851	0
Arrive On Green	0.00	0.00	0.33	0.33	0.00	0.33	0.00	0.31	0.31	0.04	0.46	0.00
Sat Flow, veh/h	0	0	1585	1282	0	148	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	0	0	1	387	0	0	0	380	339	30	567	0
Grp Sat Flow(s),veh/h/ln	0	0	1585	1430	0	0	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	0.0	0.0	0.0	10.2	0.0	0.0	0.0	7.2	7.7	0.7	9.7	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	10.3	0.0	0.0	0.0	7.2	7.7	0.7	9.7	0.0
Prop In Lane	0.00		1.00	0.90		0.10	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	515	632	0	0	4	580	492	63	851	0
V/C Ratio(X)	0.00	0.00	0.00	0.61	0.00	0.00	0.00	0.66	0.69	0.48	0.67	0.00
Avail Cap(c_a), veh/h	0	0	716	813	0	0	217	1036	878	230	1050	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	9.3	12.8	0.0	0.0	0.0	12.2	12.4	19.4	8.7	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.3	1.7	5.5	1.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	2.7	0.0	0.0	0.0	2.6	2.4	0.3	3.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	9.3	13.8	0.0	0.0	0.0	13.5	14.1	24.9	9.9	0.0
LnGrp LOS			A	B				B	B	C	A	
Approach Vol, veh/h		1			387			719			597	
Approach Delay, s/veh		9.3			13.8			13.8			10.6	
Approach LOS		A			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	17.2		17.8	0.0	23.2		17.8				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.3	22.7		18.5	5.0	23.0		18.5				
Max Q Clear Time (g_c+I1), s	2.7	9.7		2.0	0.0	11.7		12.3				
Green Ext Time (p_c), s	0.0	3.0		0.0	0.0	2.9		1.2				

Intersection Summary	
HCM 7th Control Delay, s/veh	12.7
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	1507	44	19	1594	19	0	0	52	0	0	83
Future Vol, veh/h	45	1507	44	19	1594	19	0	0	52	0	0	83
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	89	89	89	86	86	86	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	1638	48	21	1791	21	0	0	60	0	0	104

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1812	0	0	1686	0	0	-	-	1638	-	-	906
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.13	-	-	4.13	-	-	-	-	6.23	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	-	-	3.319	-	-	3.319
Pot Cap-1 Maneuver	337	-	-	377	-	-	0	0	123	0	0	280
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	337	-	-	377	-	-	-	-	123	-	-	280
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.49	0.18	59.36	25.28
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	123	337	-	-	377	-	-	280
HCM Lane V/C Ratio	0.49	0.145	-	-	0.057	-	-	0.371
HCM Ctrl Dly (s/v)	59.4	17.5	-	-	15.1	-	-	25.3
HCM Lane LOS	F	C	-	-	C	-	-	D
HCM 95th %tile Q(veh)	2.2	0.5	-	-	0.2	-	-	1.6



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	180	1452	1561	75	44	188
v/c Ratio	0.54	0.85	0.59	0.06	0.28	0.39
Control Delay (s/veh)	10.1	11.7	6.9	1.1	59.0	23.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	10.1	11.7	6.9	1.1	59.0	23.0
Queue Length 50th (ft)	14	561	238	0	35	32
Queue Length 95th (ft)	56	#1107	335	12	76	69
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	408	1700	3019	1361	156	618
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.85	0.52	0.06	0.28	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	383	467	209	55	415
v/c Ratio	0.75	0.67	0.29	0.26	0.47
Control Delay (s/veh)	24.0	19.3	3.5	28.4	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.0	19.3	3.5	28.4	10.2
Queue Length 50th (ft)	83	135	0	19	79
Queue Length 95th (ft)	#221	229	35	50	137
Internal Link Dist (ft)	445	337			198
Turn Bay Length (ft)			200	200	
Base Capacity (vph)	663	1003	949	212	1173
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.58	0.47	0.22	0.26	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	271	0	50	0	462	207	52	394	0
Future Volume (veh/h)	0	0	0	271	0	50	0	462	207	52	394	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	323	0	60	0	467	209	55	415	0
Peak Hour Factor	0.92	0.92	0.92	0.84	0.92	0.84	0.92	0.99	0.99	0.95	0.95	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	587	0	529	0	71	4	618	523	98	908	0
Arrive On Green	0.00	0.00	0.00	0.31	0.00	0.31	0.00	0.33	0.33	0.06	0.49	0.00
Sat Flow, veh/h	0	1870	0	1216	0	226	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	0	0	0	383	0	0	0	467	209	55	415	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1441	0	0	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	0.0	0.0	0.0	11.2	0.0	0.0	0.0	10.0	4.6	1.4	6.6	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	11.2	0.0	0.0	0.0	10.0	4.6	1.4	6.6	0.0
Prop In Lane	0.00		0.00	0.84		0.16	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	587	0	600	0	0	4	618	523	98	908	0
V/C Ratio(X)	0.00	0.00	0.00	0.64	0.00	0.00	0.00	0.76	0.40	0.56	0.46	0.00
Avail Cap(c_a), veh/h	0	770	0	741	0	0	198	953	808	202	957	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	14.4	0.0	0.0	0.0	13.4	11.6	20.7	7.6	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.3	0.0	0.0	0.0	1.9	0.5	4.9	0.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	3.2	0.0	0.0	0.0	3.7	1.4	0.6	2.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	15.7	0.0	0.0	0.0	15.4	12.1	25.6	8.0	0.0
LnGrp LOS				B				B	B	C	A	
Approach Vol, veh/h		0			383			676			470	
Approach Delay, s/veh		0.0			15.7			14.3			10.1	
Approach LOS					B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	19.3		18.6	0.0	26.3		18.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	22.9		18.5	5.0	23.0		18.5				
Max Q Clear Time (g_c+I1), s	3.4	12.0		0.0	0.0	8.6		13.2				
Green Ext Time (p_c), s	0.0	2.8		0.0	0.0	2.2		1.1				

Intersection Summary	
HCM 7th Control Delay, s/veh	13.4
HCM 7th LOS	B



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	295	839	267	712	248	64	807	376	443	990	495
v/c Ratio	0.94	0.82	0.80	0.68	0.41	0.61	0.95	0.69	0.97	0.64	0.57
Control Delay (s/veh)	116.1	67.0	97.4	59.4	12.4	105.3	87.6	32.4	99.8	42.5	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	116.1	67.0	97.4	59.4	12.4	105.3	87.6	32.4	99.8	42.5	15.7
Queue Length 50th (ft)	185	491	163	393	40	76	512	178	533	494	156
Queue Length 95th (ft)	#267	559	217	469	123	127	#603	280	#714	558	255
Internal Link Dist (ft)		484		306			1367			1181	
Turn Bay Length (ft)	270		240		240	250		250	250		350
Base Capacity (vph)	315	1020	377	1081	623	145	848	547	459	1551	872
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.82	0.71	0.66	0.40	0.44	0.95	0.69	0.97	0.64	0.57

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	58	1264	97	17	993	26	0	0	89	0	0	70
Future Vol, veh/h	58	1264	97	17	993	26	0	0	89	0	0	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	90	90	90	70	70	70	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	61	1331	102	19	1103	29	0	0	127	0	0	84

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1132	0	0	1433	0	0	-	-	1331	-	-	566
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.13	-	-	4.13	-	-	-	-	6.23	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	-	-	3.319	-	-	3.319
Pot Cap-1 Maneuver	615	-	-	472	-	-	0	0	188	0	0	468
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	615	-	-	472	-	-	-	-	188	-	-	468
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.47	0.21	56.65	14.37
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	188	615	-	-	472	-	-	468
HCM Lane V/C Ratio	0.675	0.099	-	-	0.04	-	-	0.18
HCM Ctrl Dly (s/v)	56.7	11.5	-	-	12.9	-	-	14.4
HCM Lane LOS	F	B	-	-	B	-	-	B
HCM 95th %tile Q(veh)	4.1	0.3	-	-	0.1	-	-	0.7



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	194	1109	973	73	61	173
v/c Ratio	0.36	0.70	0.46	0.08	0.23	0.23
Control Delay (s/veh)	3.7	7.3	8.0	1.7	36.3	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	3.7	7.3	8.0	1.7	36.3	6.0
Queue Length 50th (ft)	15	233	114	0	23	0
Queue Length 95th (ft)	33	446	172	14	80	30
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	579	1863	3452	1546	350	851
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.60	0.28	0.05	0.17	0.20

Intersection Summary

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	57	0	0	5	7	1056	6	12	1134	11
Future Vol, veh/h	0	0	57	0	0	5	7	1056	6	12	1134	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	310	-	-	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	70	70	70	81	81	81	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	57	0	0	7	9	1304	7	14	1366	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	683	-	-	656	1380	0	0	1311	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	0	0	392	0	0	408	493	-	-	524	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	392	-	-	408	493	-	-	524	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	15.75	13.97	0.08	0.13
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	493	-	-	392	408	524	-	-
HCM Lane V/C Ratio	0.018	-	-	0.146	0.017	0.028	-	-
HCM Ctrl Dly (s/v)	12.4	-	-	15.8	14	12.1	-	-
HCM Lane LOS	B	-	-	C	B	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.1	0.1	-	-



Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Group Flow (vph)	53	79	41	1177	57	1280	26
v/c Ratio	0.14	0.33	0.23	0.42	0.18	0.51	0.02
Control Delay (s/veh)	31.4	13.1	35.0	3.2	8.0	7.9	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	31.4	13.1	35.0	3.2	8.0	7.9	2.5
Queue Length 50th (ft)	9	0	15	67	9	153	0
Queue Length 95th (ft)	27	30	47	89	29	227	8
Internal Link Dist (ft)	1039			711		656	
Turn Bay Length (ft)	240	240	260		240		415
Base Capacity (vph)	2359	1112	627	3539	408	3236	1449
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.07	0.07	0.33	0.14	0.40	0.02

Intersection Summary



Lane Group	EBT	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	1	394	380	341	30	567
v/c Ratio	0.00	0.76	0.51	0.41	0.14	0.65
Control Delay (s/veh)	0.0	23.9	15.1	3.5	25.6	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	0.0	23.9	15.1	3.5	25.6	13.5
Queue Length 50th (ft)	0	60	67	0	8	115
Queue Length 95th (ft)	0	#234	152	29	30	179
Internal Link Dist (ft)	108	445	337			355
Turn Bay Length (ft)				200	200	
Base Capacity (vph)	873	647	974	990	216	1099
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.61	0.39	0.34	0.14	0.52

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	1	322	0	36	0	304	273	25	471	0
Future Volume (veh/h)	0	0	1	322	0	36	0	304	273	25	471	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	1	354	0	40	0	380	341	30	567	0
Peak Hour Factor	0.70	0.70	0.70	0.91	0.91	0.91	0.80	0.80	0.80	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	0	521	588	0	48	4	580	491	63	849	0
Arrive On Green	0.00	0.00	0.33	0.33	0.00	0.33	0.00	0.31	0.31	0.04	0.45	0.00
Sat Flow, veh/h	0	0	1585	1285	0	145	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	0	0	1	394	0	0	0	380	341	30	567	0
Grp Sat Flow(s),veh/h/ln	0	0	1585	1430	0	0	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	0.0	0.0	0.0	10.6	0.0	0.0	0.0	7.3	7.8	0.7	9.8	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	10.6	0.0	0.0	0.0	7.3	7.8	0.7	9.8	0.0
Prop In Lane	0.00		1.00	0.90		0.10	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	522	635	0	0	4	580	491	63	849	0
V/C Ratio(X)	0.00	0.00	0.00	0.62	0.00	0.00	0.00	0.66	0.69	0.48	0.67	0.00
Avail Cap(c_a), veh/h	0	0	708	803	0	0	215	1025	868	228	1038	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	9.3	12.9	0.0	0.0	0.0	12.4	12.6	19.6	8.9	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.3	1.8	5.5	1.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	2.8	0.0	0.0	0.0	2.6	2.4	0.3	3.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	9.3	13.9	0.0	0.0	0.0	13.6	14.3	25.2	10.1	0.0
LnGrp LOS			A	B				B	B	C	B	
Approach Vol, veh/h		1			394			721			597	
Approach Delay, s/veh		9.3			13.9			14.0			10.8	
Approach LOS		A			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.0	17.3		18.1	0.0	23.3		18.1				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.3	22.7		18.5	5.0	23.0		18.5				
Max Q Clear Time (g_c+I1), s	2.7	9.8		2.0	0.0	11.8		12.6				
Green Ext Time (p_c), s	0.0	3.0		0.0	0.0	2.8		1.2				

Intersection Summary	
HCM 7th Control Delay, s/veh	12.9
HCM 7th LOS	B



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	458	1261	336	1082	402	85	815	226	293	790	309
v/c Ratio	1.26	0.93	0.95	0.80	0.54	0.67	0.89	0.41	1.50	0.75	0.48
Control Delay (s/veh)	186.6	55.1	100.1	45.1	18.2	90.6	64.3	10.8	292.9	51.5	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	186.6	55.1	100.1	45.1	18.2	90.6	64.3	10.8	292.9	51.5	11.3
Queue Length 50th (ft)	~287	604	168	482	135	80	397	23	~389	363	39
Queue Length 95th (ft)	#402	#751	#271	574	241	141	#503	96	#582	447	129
Internal Link Dist (ft)		484		306			1367			1181	
Turn Bay Length (ft)	270		240		240	250		250	250		350
Base Capacity (vph)	364	1357	355	1357	740	150	927	558	195	1054	649
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.26	0.93	0.95	0.80	0.54	0.57	0.88	0.41	1.50	0.75	0.48

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	1540	74	28	1625	19	0	0	74	0	0	83
Future Vol, veh/h	45	1540	74	28	1625	19	0	0	74	0	0	83
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	89	89	89	86	86	86	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	1674	80	31	1826	21	0	0	86	0	0	104

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1847	0	0	1754	0	0	-	-	1674	-	-	924
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.13	-	-	4.13	-	-	-	-	6.23	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	-	-	3.319	-	-	3.319
Pot Cap-1 Maneuver	326	-	-	355	-	-	0	0	118	0	0	272
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	326	-	-	355	-	-	-	-	118	-	-	272
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.49	0.27	92.54	26.14
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	118	326	-	-	355	-	-	272
HCM Lane V/C Ratio	0.732	0.15	-	-	0.089	-	-	0.381
HCM Ctrl Dly (s/v)	92.5	18	-	-	16.1	-	-	26.1
HCM Lane LOS	F	C	-	-	C	-	-	D
HCM 95th %tile Q(veh)	4	0.5	-	-	0.3	-	-	1.7



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	182	1468	1598	75	44	196
v/c Ratio	0.56	0.86	0.60	0.06	0.29	0.40
Control Delay (s/veh)	11.7	12.4	7.3	1.2	59.5	25.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	11.7	12.4	7.3	1.2	59.5	25.2
Queue Length 50th (ft)	14	589	248	0	35	39
Queue Length 95th (ft)	67	#1407	363	13	76	75
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	395	1700	2978	1344	153	605
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.86	0.54	0.06	0.29	0.32

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	41	0	0	9	22	1055	5	7	1112	33
Future Vol, veh/h	0	0	41	0	0	9	22	1055	5	7	1112	33
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	55	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	310	-	-	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	75	75	75	97	97	97	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	59	0	0	12	23	1088	5	8	1196	35

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	598	-	-	601	1231	0	0	1148	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	0	0	446	0	0	443	562	-	-	604	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	446	-	-	420	562	-	-	573	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	14.3	13.82	0.24	0.07
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	562	-	-	446	420	573	-	-
HCM Lane V/C Ratio	0.04	-	-	0.131	0.029	0.013	-	-
HCM Ctrl Dly (s/v)	11.7	-	-	14.3	13.8	11.4	-	-
HCM Lane LOS	B	-	-	B	B	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.1	0	-	-



Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Group Flow (vph)	43	60	27	1024	38	1088	36
v/c Ratio	0.10	0.25	0.14	0.38	0.10	0.44	0.03
Control Delay (s/veh)	24.9	11.4	27.6	3.4	6.8	6.7	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.9	11.4	27.6	3.4	6.8	6.7	2.7
Queue Length 50th (ft)	6	0	8	52	3	57	0
Queue Length 95th (ft)	17	18	33	86	20	184	10
Internal Link Dist (ft)	1039			711		656	
Turn Bay Length (ft)	240	240	260		240		415
Base Capacity (vph)	2684	1250	727	3539	510	3457	1547
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.05	0.04	0.29	0.07	0.31	0.02

Intersection Summary



Lane Group	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	387	467	216	55	415
v/c Ratio	0.76	0.67	0.30	0.26	0.47
Control Delay (s/veh)	24.2	19.5	3.5	28.4	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.2	19.5	3.5	28.4	10.2
Queue Length 50th (ft)	84	136	0	19	80
Queue Length 95th (ft)	#194	229	36	50	137
Internal Link Dist (ft)	445	337			198
Turn Bay Length (ft)			200	200	
Base Capacity (vph)	663	1002	951	212	1171
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.58	0.47	0.23	0.26	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	275	0	50	0	462	214	52	394	0
Future Volume (veh/h)	0	0	0	275	0	50	0	462	214	52	394	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	327	0	60	0	467	216	55	415	0
Peak Hour Factor	0.92	0.92	0.92	0.84	0.84	0.84	0.99	0.99	0.99	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	592	0	532	0	71	4	617	523	98	906	0
Arrive On Green	0.00	0.00	0.00	0.32	0.00	0.32	0.00	0.33	0.33	0.06	0.48	0.00
Sat Flow, veh/h	0	1870	0	1218	0	223	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	0	0	0	387	0	0	0	467	216	55	415	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1441	0	0	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	0.0	0.0	0.0	11.3	0.0	0.0	0.0	10.1	4.8	1.4	6.6	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	11.3	0.0	0.0	0.0	10.1	4.8	1.4	6.6	0.0
Prop In Lane	0.00		0.00	0.84		0.16	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	592	0	603	0	0	4	617	523	98	906	0
V/C Ratio(X)	0.00	0.00	0.00	0.64	0.00	0.00	0.00	0.76	0.41	0.56	0.46	0.00
Avail Cap(c_a), veh/h	0	765	0	737	0	0	197	947	803	201	952	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	14.4	0.0	0.0	0.0	13.5	11.7	20.8	7.7	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.4	0.0	0.0	0.0	1.9	0.5	4.9	0.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	3.2	0.0	0.0	0.0	3.8	1.5	0.6	2.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	15.8	0.0	0.0	0.0	15.5	12.3	25.7	8.1	0.0
LnGrp LOS				B				B	B	C	A	
Approach Vol, veh/h		0			387			683			470	
Approach Delay, s/veh		0.0			15.8			14.4			10.1	
Approach LOS					B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	19.4		18.8	0.0	26.4		18.8				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	22.9		18.5	5.0	23.0		18.5				
Max Q Clear Time (g_c+I1), s	3.4	12.1		0.0	0.0	8.6		13.3				
Green Ext Time (p_c), s	0.0	2.8		0.0	0.0	2.2		1.1				

Intersection Summary		
HCM 7th Control Delay, s/veh		13.5
HCM 7th LOS		B



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	295	424	269	352	248	71	809	385	443	991	495
v/c Ratio	0.90	0.58	0.80	0.47	0.47	0.62	0.80	0.60	0.86	0.54	0.48
Control Delay (s/veh)	108.6	66.1	97.6	65.0	9.0	104.5	66.1	21.9	76.3	31.0	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	108.6	66.1	97.6	65.0	9.0	104.5	66.1	21.9	76.3	31.0	5.5
Queue Length 50th (ft)	185	247	164	205	0	85	453	122	504	383	35
Queue Length 95th (ft)	#267	288	219	251	83	136	#567	237	586	483	101
Internal Link Dist (ft)		484		306			1367			1181	
Turn Bay Length (ft)	270		240		240	250		250	250		350
Base Capacity (vph)	328	1002	377	1081	655	148	1011	637	520	1819	1023
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.42	0.71	0.33	0.38	0.48	0.80	0.60	0.85	0.54	0.48

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	58	1279	98	17	1049	26	0	0	89	0	0	70
Future Vol, veh/h	58	1279	98	17	1049	26	0	0	89	0	0	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	90	90	90	70	70	70	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	61	1346	103	19	1166	29	0	0	127	0	0	84

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1194	0	0	1449	0	0	-	-	1346	-	-	597
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.13	-	-	4.13	-	-	-	-	6.23	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	-	-	3.319	-	-	3.319
Pot Cap-1 Maneuver	582	-	-	465	-	-	0	0	184	0	0	447
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	582	-	-	465	-	-	-	-	184	-	-	447
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.48	0.2	59.34	14.92
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	184	582	-	-	465	-	-	447
HCM Lane V/C Ratio	0.69	0.105	-	-	0.041	-	-	0.189
HCM Ctrl Dly (s/v)	59.3	11.9	-	-	13.1	-	-	14.9
HCM Lane LOS	F	B	-	-	B	-	-	B
HCM 95th %tile Q(veh)	4.2	0.3	-	-	0.1	-	-	0.7



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	195	1116	976	73	61	173
v/c Ratio	0.36	0.70	0.47	0.08	0.23	0.22
Control Delay (s/veh)	3.7	7.5	8.6	1.9	37.1	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	3.7	7.5	8.6	1.9	37.1	5.8
Queue Length 50th (ft)	16	237	120	0	23	0
Queue Length 95th (ft)	35	476	191	15	83	29
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	737	1829	3337	1497	501	1171
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.61	0.29	0.05	0.12	0.15

Intersection Summary

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	68	0	0	5	8	1064	7	12	1136	13
Future Vol, veh/h	0	0	68	0	0	5	8	1064	7	12	1136	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	310	-	-	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	70	70	70	81	81	81	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	68	0	0	7	10	1314	9	14	1369	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	684	-	-	661	1384	0	0	1322	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	0	0	391	0	0	405	491	-	-	518	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	391	-	-	405	491	-	-	518	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	16.14	14.05	0.09	0.13
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	491	-	-	391	405	518	-	-
HCM Lane V/C Ratio	0.02	-	-	0.174	0.018	0.028	-	-
HCM Ctrl Dly (s/v)	12.5	-	-	16.1	14.1	12.1	-	-
HCM Lane LOS	B	-	-	C	B	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.1	0.1	-	-



Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Group Flow (vph)	53	79	41	1178	67	1284	26
v/c Ratio	0.14	0.33	0.23	0.41	0.21	0.51	0.02
Control Delay (s/veh)	31.6	13.2	35.4	3.2	8.4	7.8	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	31.6	13.2	35.4	3.2	8.4	7.8	2.4
Queue Length 50th (ft)	9	0	15	67	12	154	0
Queue Length 95th (ft)	27	30	47	89	34	227	8
Internal Link Dist (ft)	1039			711		656	
Turn Bay Length (ft)	240	240	260		240		415
Base Capacity (vph)	2342	1105	622	3538	407	3223	1444
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.07	0.07	0.33	0.16	0.40	0.02

Intersection Summary



Lane Group	EBT	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	1	395	380	341	30	567
v/c Ratio	0.00	0.76	0.51	0.41	0.14	0.65
Control Delay (s/veh)	0.0	24.0	15.1	3.5	25.6	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	0.0	24.0	15.1	3.5	25.6	13.5
Queue Length 50th (ft)	0	60	67	0	8	115
Queue Length 95th (ft)	0	#234	152	29	30	179
Internal Link Dist (ft)	108	445	337			355
Turn Bay Length (ft)				200	200	
Base Capacity (vph)	872	646	973	989	216	1097
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.61	0.39	0.34	0.14	0.52

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	1	323	0	36	0	304	273	25	471	0
Future Volume (veh/h)	0	0	1	323	0	36	0	304	273	25	471	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	1	355	0	40	0	380	341	30	567	0
Peak Hour Factor	0.70	0.70	0.70	0.91	0.91	0.91	0.80	0.80	0.80	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	0	522	588	0	48	4	579	491	63	848	0
Arrive On Green	0.00	0.00	0.33	0.33	0.00	0.33	0.00	0.31	0.31	0.04	0.45	0.00
Sat Flow, veh/h	0	0	1585	1285	0	145	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	0	0	1	395	0	0	0	380	341	30	567	0
Grp Sat Flow(s),veh/h/ln	0	0	1585	1430	0	0	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	0.0	0.0	0.0	10.6	0.0	0.0	0.0	7.3	7.9	0.7	9.9	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	10.6	0.0	0.0	0.0	7.3	7.9	0.7	9.9	0.0
Prop In Lane	0.00		1.00	0.90		0.10	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	522	636	0	0	4	579	491	63	848	0
V/C Ratio(X)	0.00	0.00	0.00	0.62	0.00	0.00	0.00	0.66	0.69	0.48	0.67	0.00
Avail Cap(c_a), veh/h	0	0	707	802	0	0	215	1023	867	228	1037	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	9.3	12.9	0.0	0.0	0.0	12.4	12.6	19.6	8.9	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.3	1.8	5.5	1.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	2.8	0.0	0.0	0.0	2.6	2.4	0.3	3.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	9.3	13.9	0.0	0.0	0.0	13.7	14.4	25.2	10.1	0.0
LnGrp LOS			A	B				B	B	C	B	
Approach Vol, veh/h		1			395			721			597	
Approach Delay, s/veh		9.3			13.9			14.0			10.9	
Approach LOS		A			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.0	17.4		18.2	0.0	23.3		18.2				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.3	22.7		18.5	5.0	23.0		18.5				
Max Q Clear Time (g_c+I1), s	2.7	9.9		2.0	0.0	11.9		12.6				
Green Ext Time (p_c), s	0.0	3.0		0.0	0.0	2.8		1.2				

Intersection Summary												
HCM 7th Control Delay, s/veh			12.9									
HCM 7th LOS			B									



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	458	1267	343	1082	402	88	816	231	293	792	309
v/c Ratio	1.26	0.93	0.97	0.80	0.54	0.69	0.89	0.41	1.50	0.75	0.48
Control Delay (s/veh)	187.1	55.8	104.5	45.1	18.2	92.0	64.3	10.8	292.9	51.7	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	187.1	55.8	104.5	45.1	18.2	92.0	64.3	10.8	292.9	51.7	11.5
Queue Length 50th (ft)	~287	608	172	482	135	83	397	23	~389	365	41
Queue Length 95th (ft)	#402	#757	#280	574	241	145	#504	98	#582	450	131
Internal Link Dist (ft)		484		306			1367			1181	
Turn Bay Length (ft)	270		240		240	250		250	250		350
Base Capacity (vph)	364	1356	354	1357	740	150	927	561	195	1052	647
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.26	0.93	0.97	0.80	0.54	0.59	0.88	0.41	1.50	0.75	0.48

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	1543	72	28	1684	19	0	0	75	0	0	83
Future Vol, veh/h	45	1543	72	28	1684	19	0	0	75	0	0	83
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	89	89	89	86	86	86	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	1677	78	31	1892	21	0	0	87	0	0	104

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1913	0	0	1755	0	0	-	-	1677	-	-	957
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.13	-	-	4.13	-	-	-	-	6.23	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	-	-	3.319	-	-	3.319
Pot Cap-1 Maneuver	308	-	-	354	-	-	0	0	117	0	0	259
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	308	-	-	354	-	-	-	-	117	-	-	259
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.51	0.26	95.14	27.92
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	117	308	-	-	354	-	-	259
HCM Lane V/C Ratio	0.746	0.159	-	-	0.089	-	-	0.401
HCM Ctrl Dly (s/v)	95.1	18.9	-	-	16.1	-	-	27.9
HCM Lane LOS	F	C	-	-	C	-	-	D
HCM 95th %tile Q(veh)	4.2	0.6	-	-	0.3	-	-	1.8



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	183	1471	1603	75	44	197
v/c Ratio	0.63	0.95	0.62	0.06	0.34	0.33
Control Delay (s/veh)	16.2	21.2	8.8	1.2	62.5	23.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	16.2	21.2	8.8	1.2	62.5	23.6
Queue Length 50th (ft)	14	595	251	0	35	39
Queue Length 95th (ft)	76	#1412	365	13	76	76
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	348	1696	2895	1308	129	691
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.87	0.55	0.06	0.34	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	47	0	0	9	25	1063	6	7	1119	45
Future Vol, veh/h	0	0	47	0	0	9	25	1063	6	7	1119	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	55	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	310	-	-	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	75	75	75	97	97	97	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	67	0	0	12	26	1096	6	8	1203	48

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	602	-	-	606	1252	0	0	1157	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	0	0	443	0	0	440	552	-	-	600	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	443	-	-	417	552	-	-	568	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	14.57	13.89	0.27	0.07
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	552	-	-	443	417	568	-	-
HCM Lane V/C Ratio	0.047	-	-	0.152	0.029	0.013	-	-
HCM Ctrl Dly (s/v)	11.8	-	-	14.6	13.9	11.4	-	-
HCM Lane LOS	B	-	-	B	B	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.1	0	-	-



Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Group Flow (vph)	43	60	27	1027	42	1090	36
v/c Ratio	0.10	0.25	0.14	0.38	0.12	0.44	0.03
Control Delay (s/veh)	25.1	11.4	27.9	3.4	6.9	6.6	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.1	11.4	27.9	3.4	6.9	6.6	2.6
Queue Length 50th (ft)	6	0	8	52	3	57	0
Queue Length 95th (ft)	17	19	33	86	22	184	10
Internal Link Dist (ft)	1039			711		656	
Turn Bay Length (ft)	240	240	260		240		415
Base Capacity (vph)	2675	1247	725	3539	506	3448	1543
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.05	0.04	0.29	0.08	0.32	0.02

Intersection Summary



Lane Group	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	389	467	217	55	415
v/c Ratio	0.76	0.67	0.30	0.26	0.47
Control Delay (s/veh)	24.4	19.6	3.5	28.5	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.4	19.6	3.5	28.5	10.3
Queue Length 50th (ft)	85	137	0	19	81
Queue Length 95th (ft)	#196	229	36	50	137
Internal Link Dist (ft)	445	337			198
Turn Bay Length (ft)			200	200	
Base Capacity (vph)	660	998	949	211	1167
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.59	0.47	0.23	0.26	0.36

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	276	0	50	0	462	215	52	394	0
Future Volume (veh/h)	0	0	0	276	0	50	0	462	215	52	394	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	329	0	60	0	467	217	55	415	0
Peak Hour Factor	0.92	0.92	0.92	0.84	0.84	0.84	0.99	0.99	0.99	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	594	0	533	0	71	4	617	523	98	905	0
Arrive On Green	0.00	0.00	0.00	0.32	0.00	0.32	0.00	0.33	0.33	0.06	0.48	0.00
Sat Flow, veh/h	0	1870	0	1219	0	222	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	0	0	0	389	0	0	0	467	217	55	415	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1441	0	0	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	0.0	0.0	0.0	11.4	0.0	0.0	0.0	10.1	4.8	1.4	6.7	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	11.4	0.0	0.0	0.0	10.1	4.8	1.4	6.7	0.0
Prop In Lane	0.00		0.00	0.85		0.15	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	594	0	604	0	0	4	617	523	98	905	0
V/C Ratio(X)	0.00	0.00	0.00	0.64	0.00	0.00	0.00	0.76	0.42	0.56	0.46	0.00
Avail Cap(c_a), veh/h	0	763	0	735	0	0	196	945	801	200	949	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	14.5	0.0	0.0	0.0	13.6	11.8	20.9	7.8	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.4	0.0	0.0	0.0	1.9	0.5	4.9	0.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	3.3	0.0	0.0	0.0	3.8	1.5	0.6	2.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	15.9	0.0	0.0	0.0	15.5	12.3	25.8	8.1	0.0
LnGrp LOS				B				B	B	C	A	
Approach Vol, veh/h		0			389			684			470	
Approach Delay, s/veh		0.0			15.9			14.5			10.2	
Approach LOS					B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	19.4		18.9	0.0	26.4		18.9				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	22.9		18.5	5.0	23.0		18.5				
Max Q Clear Time (g_c+I1), s	3.4	12.1		0.0	0.0	8.7		13.4				
Green Ext Time (p_c), s	0.0	2.8		0.0	0.0	2.2		1.1				

Intersection Summary	
HCM 7th Control Delay, s/veh	13.5
HCM 7th LOS	B



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	279	1088	457	429	1124	329	308	1363	505	414	1732	464
v/c Ratio	1.02	0.67	0.72	0.94	0.86	0.45	1.04	0.94	0.82	0.99	1.06	0.73
Control Delay (s/veh)	123.0	45.3	31.3	90.8	49.6	12.5	126.0	63.3	37.2	105.3	87.1	33.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	123.0	45.3	31.3	90.8	49.6	12.5	126.0	63.3	37.2	105.3	87.1	33.5
Queue Length 50th (ft)	~145	332	228	213	520	67	~164	469	261	207	~668	247
Queue Length 95th (ft)	#242	386	368	#315	616	156	#265	#563	#425	#322	#765	391
Internal Link Dist (ft)		484			306			1367			1181	
Turn Bay Length (ft)	270		420	240		240	250		250	250		350
Base Capacity (vph)	274	1619	638	462	1319	731	296	1453	619	417	1633	633
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.67	0.72	0.93	0.85	0.45	1.04	0.94	0.82	0.99	1.06	0.73

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	1664	149	18	1627	60	0	0	129	0	0	110
Future Vol, veh/h	75	1664	149	18	1627	60	0	0	129	0	0	110
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	82	1809	162	20	1768	65	0	0	140	0	0	120

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1834	0	0	1971	0	0	-	-	904	-	-	917
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	329	-	-	291	-	-	0	0	280	0	0	274
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	329	-	-	291	-	-	-	-	280	-	-	274
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.78	0.19	30.15	27.88
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	280	329	-	-	291	-	-	274
HCM Lane V/C Ratio	0.501	0.248	-	-	0.067	-	-	0.436
HCM Ctrl Dly (s/v)	30.1	19.5	-	-	18.3	-	-	27.9
HCM Lane LOS	D	C	-	-	C	-	-	D
HCM 95th %tile Q(veh)	2.6	1	-	-	0.2	-	-	2.1



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	414	1391	1440	92	87	329
v/c Ratio	0.89	0.51	0.75	0.10	0.36	0.40
Control Delay (s/veh)	52.5	4.4	14.1	2.3	31.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	52.5	4.4	14.1	2.3	31.1	16.3
Queue Length 50th (ft)	87	102	216	0	33	48
Queue Length 95th (ft)	#171	140	297	17	72	82
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	467	2754	2107	979	240	827
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.51	0.68	0.09	0.36	0.40

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	69	0	0	10	11	2008	15	15	2364	13
Future Vol, veh/h	0	0	69	0	0	10	11	2008	15	15	2364	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	310	-	150	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	75	0	0	11	12	2183	16	16	2570	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	1285	-	-	1091	2584	0	0	2199	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	0	0	133	0	0	180	63	-	-	99	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	133	-	-	180	63	-	-	99	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	62.02	26.25	0.41	0.3
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	63	-	-	133	180	99	-	-
HCM Lane V/C Ratio	0.191	-	-	0.562	0.06	0.165	-	-
HCM Ctrl Dly (s/v)	75.6	-	-	62	26.3	48.4	-	-
HCM Lane LOS	F	-	-	F	D	E	-	-
HCM 95th %tile Q(veh)	0.6	-	-	2.8	0.2	0.6	-	-



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	24	25	71	11	24	38	2037	3	72	2530	27
v/c Ratio	0.22	0.23	0.39	0.10	0.14	0.44	0.57	0.00	0.83	0.68	0.02
Control Delay (s/veh)	52.5	52.8	14.6	50.3	1.6	65.7	9.7	0.0	108.8	11.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	52.5	52.8	14.6	50.3	1.6	65.7	9.7	0.0	108.8	11.7	0.0
Queue Length 50th (ft)	16	17	0	7	0	26	267	0	51	402	0
Queue Length 95th (ft)	46	48	35	27	0	#69	344	0	#145	512	0
Internal Link Dist (ft)		1039		375			711			546	
Turn Bay Length (ft)	240		240			260		150	240		415
Base Capacity (vph)	547	547	573	314	351	87	3576	1137	87	3728	1182
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.05	0.12	0.04	0.07	0.44	0.57	0.00	0.83	0.68	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	466	1541	393	537	1423	426	476	1757	386	351	1485	323
v/c Ratio	1.31	0.92	0.62	1.08	1.08	0.61	1.55	1.12	0.59	1.35	0.99	0.52
Control Delay (s/veh)	208.0	56.0	26.8	120.6	92.6	25.0	304.4	110.1	19.9	228.9	72.7	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	208.0	56.0	26.8	120.6	92.6	25.0	304.4	110.1	19.9	228.9	72.7	16.6
Queue Length 50th (ft)	~295	519	179	~295	~800	195	~330	~710	119	~226	523	77
Queue Length 95th (ft)	#411	588	297	#415	#942	315	#447	#808	233	#332	#637	177
Internal Link Dist (ft)		484			306			1367			1181	
Turn Bay Length (ft)	270		420	240		240	250		250	250		350
Base Capacity (vph)	355	1683	639	497	1317	699	307	1564	650	260	1493	619
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.31	0.92	0.62	1.08	1.08	0.61	1.55	1.12	0.59	1.35	0.99	0.52

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	2006	105	34	2029	30	0	0	166	0	0	95
Future Vol, veh/h	50	2006	105	34	2029	30	0	0	166	0	0	95
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	54	2180	114	37	2205	33	0	0	180	0	0	103

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2238	0	0	2295	0	0	-	-	1090	-	-	1119
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	228	-	-	217	-	-	0	0	210	0	0	201
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	228	-	-	217	-	-	-	-	210	-	-	201
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.59	0.41	77.64	40.42
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	210	228	-	-	217	-	-	201
HCM Lane V/C Ratio	0.858	0.238	-	-	0.171	-	-	0.514
HCM Ctrl Dly (s/v)	77.6	25.7	-	-	25	-	-	40.4
HCM Lane LOS	F	D	-	-	D	-	-	E
HCM 95th %tile Q(veh)	6.6	0.9	-	-	0.6	-	-	2.6



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	591	1637	1578	76	54	512
v/c Ratio	0.81	0.54	0.81	0.08	0.26	0.59
Control Delay (s/veh)	37.7	3.6	19.4	3.1	35.7	22.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	37.7	3.6	19.4	3.1	35.7	22.2
Queue Length 50th (ft)	145	135	348	0	26	104
Queue Length 95th (ft)	#225	193	#495	20	60	153
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	835	3015	2026	939	228	955
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.54	0.78	0.08	0.24	0.54

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	53	0	0	10	25	2391	10	10	2181	37
Future Vol, veh/h	0	0	53	0	0	10	25	2391	10	10	2181	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	310	-	150	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	58	0	0	11	27	2599	11	11	2371	40

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	1185	-	-	1299	2411	0	0	2610	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	0	0	156	0	0	130	77	-	-	61	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	156	-	-	130	77	-	-	61	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	41.07	35.1	0.78	0.34
HCM LOS	E	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	77	-	-	156	130	61	-	-
HCM Lane V/C Ratio	0.353	-	-	0.37	0.083	0.179	-	-
HCM Ctrl Dly (s/v)	75.3	-	-	41.1	35.1	76.8	-	-
HCM Lane LOS	F	-	-	E	E	F	-	-
HCM 95th %tile Q(veh)	1.3	-	-	1.6	0.3	0.6	-	-



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	16	17	49	7	16	33	2529	12	75	2275	38
v/c Ratio	0.16	0.17	0.28	0.07	0.09	0.38	0.68	0.01	0.87	0.58	0.03
Control Delay (s/veh)	50.3	50.6	7.0	48.5	1.1	61.4	10.3	0.0	116.3	8.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	50.3	50.6	7.0	48.5	1.1	61.4	10.3	0.0	116.3	8.2	0.2
Queue Length 50th (ft)	10	10	0	4	0	20	252	0	47	210	0
Queue Length 95th (ft)	35	36	13	20	0	56	485	0	#148	403	1
Internal Link Dist (ft)		1039		375			711			546	
Turn Bay Length (ft)	240		240			260		150	240		415
Base Capacity (vph)	544	544	570	312	350	86	3699	1173	86	3935	1243
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.09	0.02	0.05	0.38	0.68	0.01	0.87	0.58	0.03

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	279	1088	459	432	1124	329	314	1365	514	414	1733	464
v/c Ratio	1.02	0.67	0.72	0.94	0.86	0.45	1.06	0.94	0.83	0.99	1.06	0.73
Control Delay (s/veh)	123.0	45.4	31.5	91.4	49.6	12.5	130.9	63.5	38.6	105.3	87.3	33.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	123.0	45.4	31.5	91.4	49.6	12.5	130.9	63.5	38.6	105.3	87.3	33.5
Queue Length 50th (ft)	~145	332	230	214	520	67	~170	470	272	207	~669	247
Queue Length 95th (ft)	#242	386	372	#319	616	156	#272	#565	#469	#322	#766	391
Internal Link Dist (ft)		484			306			1367			1181	
Turn Bay Length (ft)	270		420	240		240	250		250	250		350
Base Capacity (vph)	274	1619	638	462	1319	731	296	1453	619	417	1633	633
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.67	0.72	0.94	0.85	0.45	1.06	0.94	0.83	0.99	1.06	0.73

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	1671	150	18	1629	60	0	0	129	0	0	110
Future Vol, veh/h	75	1671	150	18	1629	60	0	0	129	0	0	110
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	82	1816	163	20	1771	65	0	0	140	0	0	120

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1836	0	0	1979	0	0	-	-	908	-	-	918
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	328	-	-	288	-	-	0	0	278	0	0	274
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	328	-	-	288	-	-	-	-	278	-	-	274
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.77	0.19	30.43	27.95
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	278	328	-	-	288	-	-	274
HCM Lane V/C Ratio	0.504	0.249	-	-	0.068	-	-	0.437
HCM Ctrl Dly (s/v)	30.4	19.6	-	-	18.4	-	-	27.9
HCM Lane LOS	D	C	-	-	C	-	-	D
HCM 95th %tile Q(veh)	2.6	1	-	-	0.2	-	-	2.1



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	415	1398	1442	92	87	329
v/c Ratio	0.89	0.51	0.75	0.10	0.36	0.40
Control Delay (s/veh)	52.9	4.4	14.1	2.3	31.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	52.9	4.4	14.1	2.3	31.1	16.3
Queue Length 50th (ft)	87	103	217	0	33	48
Queue Length 95th (ft)	#171	141	297	17	72	82
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	466	2754	2105	979	240	826
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.51	0.69	0.09	0.36	0.40

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	80	0	0	10	12	2024	15	15	2366	15
Future Vol, veh/h	0	0	80	0	0	10	12	2024	15	15	2366	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	310	-	150	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	87	0	0	11	13	2200	16	16	2572	16

Major/Minor	Minor2		Minor1			Major1				Major2		
Conflicting Flow All	-	-	1286	-	-	1100	2588	0	0	2216	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	0	0	133	0	0	178	62	-	-	97	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	133	-	-	178	62	-	-	97	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	72.39	26.56	0.45	0.31
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	62	-	-	133	178	97	-	-
HCM Lane V/C Ratio	0.209	-	-	0.653	0.061	0.168	-	-
HCM Ctrl Dly (s/v)	77.5	-	-	72.4	26.6	49.5	-	-
HCM Lane LOS	F	-	-	F	D	E	-	-
HCM 95th %tile Q(veh)	0.7	-	-	3.5	0.2	0.6	-	-



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	24	25	71	14	33	38	2038	4	83	2534	27
v/c Ratio	0.22	0.23	0.39	0.13	0.18	0.44	0.57	0.00	0.95	0.68	0.02
Control Delay (s/veh)	52.7	53.0	14.6	50.5	2.2	66.1	9.8	0.0	138.3	11.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	52.7	53.0	14.6	50.5	2.2	66.1	9.8	0.0	138.3	11.9	0.0
Queue Length 50th (ft)	16	17	0	9	0	26	269	0	~59	406	0
Queue Length 95th (ft)	46	48	35	31	0	#69	348	0	#168	518	0
Internal Link Dist (ft)		1039		375			711			546	
Turn Bay Length (ft)	240		240			260		150	240		415
Base Capacity (vph)	546	546	572	314	351	87	3570	1135	87	3722	1180
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.05	0.12	0.04	0.09	0.44	0.57	0.00	0.95	0.68	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	466	1541	399	545	1423	426	479	1758	390	351	1487	323
v/c Ratio	1.31	0.92	0.62	1.10	1.08	0.61	1.56	1.12	0.60	1.35	1.00	0.52
Control Delay (s/veh)	208.0	56.0	27.3	125.2	92.6	25.0	308.4	110.3	19.9	228.9	73.1	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	208.0	56.0	27.3	125.2	92.6	25.0	308.4	110.3	19.9	228.9	73.1	16.6
Queue Length 50th (ft)	~295	519	185	~304	~800	195	~333	~711	120	~226	524	77
Queue Length 95th (ft)	#411	588	306	#424	#942	315	#449	#809	236	#332	#638	177
Internal Link Dist (ft)		484			306			1367			1181	
Turn Bay Length (ft)	270		420	240		240	250		250	250		350
Base Capacity (vph)	355	1683	639	497	1317	699	307	1564	652	260	1493	619
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.31	0.92	0.62	1.10	1.08	0.61	1.56	1.12	0.60	1.35	1.00	0.52

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	2009	106	34	2036	30	0	0	167	0	0	95
Future Vol, veh/h	50	2009	106	34	2036	30	0	0	167	0	0	95
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	125	205	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	54	2184	115	37	2213	33	0	0	182	0	0	103

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2246	0	0	2299	0	0	-	-	1092	-	-	1123
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	226	-	-	216	-	-	0	0	210	0	0	200
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	226	-	-	216	-	-	-	-	210	-	-	200
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.6	0.41	79.17	40.81
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	210	226	-	-	216	-	-	200
HCM Lane V/C Ratio	0.866	0.24	-	-	0.171	-	-	0.517
HCM Ctrl Dly (s/v)	79.2	25.8	-	-	25.1	-	-	40.8
HCM Lane LOS	F	D	-	-	D	-	-	E
HCM 95th %tile Q(veh)	6.7	0.9	-	-	0.6	-	-	2.6



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	592	1640	1584	76	54	513
v/c Ratio	0.86	0.55	0.83	0.09	0.24	0.60
Control Delay (s/veh)	41.8	4.0	18.9	2.9	31.0	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	41.8	4.0	18.9	2.9	31.0	20.9
Queue Length 50th (ft)	132	136	308	0	22	93
Queue Length 95th (ft)	#226	185	#473	18	54	140
Internal Link Dist (ft)		898	615		734	
Turn Bay Length (ft)	385			245	200	
Base Capacity (vph)	696	2946	1934	899	221	869
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.56	0.82	0.08	0.24	0.59

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	59	0	0	10	28	2424	10	10	2188	44
Future Vol, veh/h	0	0	59	0	0	10	28	2424	10	10	2188	44
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	310	-	150	305	-	160
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	64	0	0	11	30	2635	11	11	2378	48

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	1189	-	-	1317	2426	0	0	2646	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	0	0	155	0	0	127	76	-	-	58	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	155	-	-	127	76	-	-	58	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	43.76	36.03	0.93	0.36
HCM LOS	E	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	76	-	-	155	127	58	-	-
HCM Lane V/C Ratio	0.403	-	-	0.414	0.086	0.187	-	-
HCM Ctrl Dly (s/v)	81.6	-	-	43.8	36	80.7	-	-
HCM Lane LOS	F	-	-	E	E	F	-	-
HCM 95th %tile Q(veh)	1.6	-	-	1.8	0.3	0.6	-	-



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	16	17	49	9	21	33	2533	15	87	2277	38
v/c Ratio	0.16	0.17	0.28	0.09	0.12	0.39	0.70	0.01	1.02	0.59	0.03
Control Delay (s/veh)	51.3	51.7	7.2	49.8	1.4	62.9	11.6	0.0	155.4	9.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	51.3	51.7	7.2	49.8	1.4	62.9	11.6	0.0	155.4	9.3	0.1
Queue Length 50th (ft)	11	11	0	6	0	23	390	0	~65	323	0
Queue Length 95th (ft)	35	36	13	23	0	56	489	0	#174	407	1
Internal Link Dist (ft)		1039		375			711			546	
Turn Bay Length (ft)	240		240			260		150	240		415
Base Capacity (vph)	535	535	562	307	346	85	3617	1149	85	3856	1219
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.09	0.03	0.06	0.39	0.70	0.01	1.02	0.59	0.03

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	21	10	5	2103	16	2522	5
v/c Ratio	0.14	0.05	0.04	0.47	0.14	0.56	0.00
Control Delay (s/veh)	32.7	0.6	39.0	4.3	40.8	5.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.7	0.6	39.0	4.3	40.8	5.2	0.0
Queue Length 50th (ft)	7	0	2	0	7	0	0
Queue Length 95th (ft)	31	0	14	334	30	464	0
Internal Link Dist (ft)	296	425		443		1367	
Turn Bay Length (ft)			310		305		160
Base Capacity (vph)	841	848	114	4476	114	4480	1404
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.04	0.47	0.14	0.56	0.00

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	5	5	0	5	5	1925	10	15	2320	5
Future Volume (veh/h)	10	5	5	5	0	5	5	1925	10	15	2320	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	5	5	5	0	5	5	2092	11	16	2522	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	22	10	10	11	0	11	12	3576	19	34	3547	1101
Arrive On Green	0.02	0.02	0.02	0.01	0.00	0.01	0.01	0.68	0.68	0.02	0.69	0.69
Sat Flow, veh/h	916	417	417	839	0	839	1781	5242	28	1781	5106	1585
Grp Volume(v), veh/h	21	0	0	10	0	0	5	1358	745	16	2522	5
Grp Sat Flow(s),veh/h/ln	1750	0	0	1677	0	0	1781	1702	1865	1781	1702	1585
Q Serve(g_s), s	0.8	0.0	0.0	0.4	0.0	0.0	0.2	14.5	14.5	0.6	20.5	0.1
Cycle Q Clear(g_c), s	0.8	0.0	0.0	0.4	0.0	0.0	0.2	14.5	14.5	0.6	20.5	0.1
Prop In Lane	0.52		0.24	0.50		0.50	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	42	0	0	21	0	0	12	2322	1272	34	3547	1101
V/C Ratio(X)	0.50	0.00	0.00	0.47	0.00	0.00	0.42	0.58	0.59	0.47	0.71	0.00
Avail Cap(c_a), veh/h	942	0	0	903	0	0	130	2626	1439	130	3939	1223
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.1	0.0	0.0	33.7	0.0	0.0	34.0	5.8	5.8	33.3	6.3	3.2
Incr Delay (d2), s/veh	8.9	0.0	0.0	15.4	0.0	0.0	22.3	0.3	0.5	9.7	0.5	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	0.3	0.0	0.0	0.2	3.7	4.1	0.3	5.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	42.0	0.0	0.0	49.1	0.0	0.0	56.3	6.0	6.3	43.0	6.9	3.2
LnGrp LOS	D			D			E	A	A	D	A	A
Approach Vol, veh/h		21			10			2108			2543	
Approach Delay, s/veh		42.0			49.1			6.2			7.1	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	51.4		6.2	5.0	52.2		5.4				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	53.0		37.0	5.0	53.0		37.0				
Max Q Clear Time (g_c+I1), s	2.6	16.5		2.8	2.2	22.5		2.4				
Green Ext Time (p_c), s	0.0	22.9		0.1	0.0	25.3		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	7.0
HCM 7th LOS	A



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	21	10	5	2543	11	2299	11
v/c Ratio	0.14	0.05	0.04	0.57	0.10	0.51	0.01
Control Delay (s/veh)	32.7	0.6	39.0	5.3	39.9	4.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.7	0.6	39.0	5.3	39.9	4.7	0.0
Queue Length 50th (ft)	7	0	2	0	5	0	0
Queue Length 95th (ft)	31	0	14	473	23	389	0
Internal Link Dist (ft)	296	425		443		1367	
Turn Bay Length (ft)			310		305		160
Base Capacity (vph)	840	848	114	4479	114	4479	1403
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.01	0.04	0.57	0.10	0.51	0.01

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	5	5	0	5	5	2335	5	10	2115	10
Future Volume (veh/h)	10	5	5	5	0	5	5	2335	5	10	2115	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	5	5	5	0	5	5	2538	5	11	2299	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	22	10	10	11	0	11	12	3613	7	25	3542	1100
Arrive On Green	0.02	0.02	0.02	0.01	0.00	0.01	0.01	0.69	0.69	0.01	0.69	0.69
Sat Flow, veh/h	916	417	417	839	0	839	1781	5262	10	1781	5106	1585
Grp Volume(v), veh/h	21	0	0	10	0	0	5	1641	902	11	2299	11
Grp Sat Flow(s),veh/h/ln	1750	0	0	1677	0	0	1781	1702	1868	1781	1702	1585
Q Serve(g_s), s	0.8	0.0	0.0	0.4	0.0	0.0	0.2	20.0	20.0	0.4	17.2	0.1
Cycle Q Clear(g_c), s	0.8	0.0	0.0	0.4	0.0	0.0	0.2	20.0	20.0	0.4	17.2	0.1
Prop In Lane	0.52		0.24	0.50		0.50	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	42	0	0	21	0	0	12	2337	1283	25	3542	1100
V/C Ratio(X)	0.50	0.00	0.00	0.47	0.00	0.00	0.42	0.70	0.70	0.45	0.65	0.01
Avail Cap(c_a), veh/h	946	0	0	907	0	0	130	2636	1447	130	3954	1227
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.0	0.0	0.0	33.6	0.0	0.0	33.9	6.5	6.5	33.5	5.8	3.2
Incr Delay (d2), s/veh	8.9	0.0	0.0	15.4	0.0	0.0	22.3	0.7	1.3	12.2	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	0.3	0.0	0.0	0.2	5.1	5.8	0.3	4.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.9	0.0	0.0	48.9	0.0	0.0	56.2	7.2	7.8	45.7	6.2	3.2
LnGrp LOS	D			D			E	A	A	D	A	A
Approach Vol, veh/h		21			10			2548			2321	
Approach Delay, s/veh		41.9			48.9			7.5			6.3	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.4	51.5		6.1	5.0	52.0		5.4				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	53.0		37.0	5.0	53.0		37.0				
Max Q Clear Time (g_c+I1), s	2.4	22.0		2.8	2.2	19.2		2.4				
Green Ext Time (p_c), s	0.0	25.0		0.1	0.0	25.2		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	7.2
HCM 7th LOS	A



Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	75	10	12	2125	11	16	2564	14
v/c Ratio	0.40	0.05	0.11	0.53	0.01	0.15	0.64	0.01
Control Delay (s/veh)	39.2	0.6	41.2	6.5	0.0	42.0	8.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	39.2	0.6	41.2	6.5	0.0	42.0	8.1	0.0
Queue Length 50th (ft)	35	0	6	110	0	8	155	0
Queue Length 95th (ft)	82	0	25	383	0	31	541	0
Internal Link Dist (ft)	296	425		752			1367	
Turn Bay Length (ft)			310		150	305		160
Base Capacity (vph)	799	810	108	3986	1257	108	3986	1257
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.01	0.11	0.53	0.01	0.15	0.64	0.01

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	5	11	5	0	5	11	1955	10	15	2359	13
Future Volume (veh/h)	53	5	11	5	0	5	11	1955	10	15	2359	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	58	5	12	5	0	5	12	2125	11	16	2564	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	79	7	16	11	0	11	26	3396	1054	34	3417	1061
Arrive On Green	0.06	0.06	0.06	0.01	0.00	0.01	0.01	0.67	0.67	0.02	0.67	0.67
Sat Flow, veh/h	1355	117	280	839	0	839	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	75	0	0	10	0	0	12	2125	11	16	2564	14
Grp Sat Flow(s),veh/h/ln	1752	0	0	1677	0	0	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	3.1	0.0	0.0	0.4	0.0	0.0	0.5	17.5	0.2	0.7	24.5	0.2
Cycle Q Clear(g_c), s	3.1	0.0	0.0	0.4	0.0	0.0	0.5	17.5	0.2	0.7	24.5	0.2
Prop In Lane	0.77		0.16	0.50		0.50	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	102	0	0	21	0	0	26	3396	1054	34	3417	1061
V/C Ratio(X)	0.73	0.00	0.00	0.47	0.00	0.00	0.46	0.63	0.01	0.47	0.75	0.01
Avail Cap(c_a), veh/h	882	0	0	845	0	0	121	3683	1143	121	3683	1143
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.0	0.0	0.0	36.0	0.0	0.0	35.9	7.1	4.1	35.7	8.1	4.1
Incr Delay (d2), s/veh	9.7	0.0	0.0	15.6	0.0	0.0	11.8	0.3	0.0	10.0	0.8	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.0	0.3	0.0	0.0	0.3	4.9	0.0	0.4	6.9	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.7	0.0	0.0	51.7	0.0	0.0	47.7	7.4	4.2	45.6	8.9	4.1
LnGrp LOS	D			D			D	A	A	D	A	A
Approach Vol, veh/h		75			10			2148			2594	
Approach Delay, s/veh		43.7			51.7			7.6			9.1	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	53.4		8.8	5.6	53.7		5.4				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	53.0		37.0	5.0	53.0		37.0				
Max Q Clear Time (g_c+I1), s	2.7	19.5		5.1	2.5	26.5		2.4				
Green Ext Time (p_c), s	0.0	23.0		0.4	0.0	22.7		0.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			9.0									
HCM 7th LOS			A									



Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	57	10	27	2584	5	11	2365	40
v/c Ratio	0.33	0.05	0.25	0.64	0.00	0.10	0.60	0.03
Control Delay (s/veh)	37.9	0.6	45.1	7.6	0.0	41.1	8.0	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	37.9	0.6	45.1	7.6	0.0	41.1	8.0	0.6
Queue Length 50th (ft)	26	0	14	147	0	6	123	0
Queue Length 95th (ft)	66	0	43	529	0	24	445	4
Internal Link Dist (ft)	296	425		752			1367	
Turn Bay Length (ft)			310		150	305		160
Base Capacity (vph)	794	805	107	4036	1272	107	3915	1236
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.01	0.25	0.64	0.00	0.10	0.60	0.03

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	5	9	5	0	5	25	2377	5	10	2176	37
Future Volume (veh/h)	39	5	9	5	0	5	25	2377	5	10	2176	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	42	5	10	5	0	5	27	2584	5	11	2365	40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	61	7	14	11	0	11	52	3462	1075	24	3385	1051
Arrive On Green	0.05	0.05	0.05	0.01	0.00	0.01	0.03	0.68	0.68	0.01	0.66	0.66
Sat Flow, veh/h	1290	154	307	839	0	839	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	57	0	0	10	0	0	27	2584	5	11	2365	40
Grp Sat Flow(s),veh/h/ln	1751	0	0	1677	0	0	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	2.3	0.0	0.0	0.4	0.0	0.0	1.1	23.9	0.1	0.4	21.1	0.6
Cycle Q Clear(g_c), s	2.3	0.0	0.0	0.4	0.0	0.0	1.1	23.9	0.1	0.4	21.1	0.6
Prop In Lane	0.74		0.18	0.50		0.50	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	82	0	0	21	0	0	52	3462	1075	24	3385	1051
V/C Ratio(X)	0.69	0.00	0.00	0.47	0.00	0.00	0.52	0.75	0.00	0.45	0.70	0.04
Avail Cap(c_a), veh/h	894	0	0	857	0	0	123	3736	1160	123	3736	1160
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.0	0.0	0.0	35.5	0.0	0.0	34.7	7.6	3.8	35.4	7.7	4.2
Incr Delay (d2), s/veh	9.9	0.0	0.0	15.6	0.0	0.0	8.0	0.8	0.0	12.4	0.5	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.0	0.3	0.0	0.0	0.6	6.5	0.0	0.3	5.9	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.9	0.0	0.0	51.1	0.0	0.0	42.7	8.4	3.8	47.9	8.2	4.2
LnGrp LOS	D			D			D	A	A	D	A	A
Approach Vol, veh/h		57			10			2616			2416	
Approach Delay, s/veh		43.9			51.1			8.7			8.3	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	53.6		7.9	6.6	52.5		5.4				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	53.0		37.0	5.0	53.0		37.0				
Max Q Clear Time (g_c+I1), s	2.4	25.9		4.3	3.1	23.1		2.4				
Green Ext Time (p_c), s	0.0	23.2		0.3	0.0	23.6		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	9.0
HCM 7th LOS	A



Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	86	10	13	2134	11	16	2566	16
v/c Ratio	0.43	0.05	0.12	0.54	0.01	0.15	0.65	0.01
Control Delay (s/veh)	39.0	0.6	41.3	6.8	0.0	41.9	8.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	39.0	0.6	41.3	6.8	0.0	41.9	8.4	0.0
Queue Length 50th (ft)	38	0	6	114	0	8	160	0
Queue Length 95th (ft)	91	0	27	394	0	31	553	0
Internal Link Dist (ft)	296	425		752			1367	
Turn Bay Length (ft)			310		150	305		160
Base Capacity (vph)	802	813	109	3957	1248	109	3957	1248
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.01	0.12	0.54	0.01	0.15	0.65	0.01

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	5	14	5	0	5	12	1963	10	15	2361	15
Future Volume (veh/h)	61	5	14	5	0	5	12	1963	10	15	2361	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	66	5	15	5	0	5	13	2134	11	16	2566	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	91	7	21	11	0	11	28	3368	1046	34	3384	1050
Arrive On Green	0.07	0.07	0.07	0.01	0.00	0.01	0.02	0.66	0.66	0.02	0.66	0.66
Sat Flow, veh/h	1342	102	305	839	0	839	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	86	0	0	10	0	0	13	2134	11	16	2566	16
Grp Sat Flow(s),veh/h/ln	1748	0	0	1677	0	0	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	3.6	0.0	0.0	0.4	0.0	0.0	0.5	18.2	0.2	0.7	25.4	0.3
Cycle Q Clear(g_c), s	3.6	0.0	0.0	0.4	0.0	0.0	0.5	18.2	0.2	0.7	25.4	0.3
Prop In Lane	0.77		0.17	0.50		0.50	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	118	0	0	21	0	0	28	3368	1046	34	3384	1050
V/C Ratio(X)	0.73	0.00	0.00	0.48	0.00	0.00	0.46	0.63	0.01	0.47	0.76	0.02
Avail Cap(c_a), veh/h	868	0	0	832	0	0	119	3630	1127	119	3630	1127
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.1	0.0	0.0	36.6	0.0	0.0	36.4	7.4	4.3	36.2	8.5	4.3
Incr Delay (d2), s/veh	8.3	0.0	0.0	15.7	0.0	0.0	11.3	0.3	0.0	10.0	0.9	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	0.0	0.3	0.0	0.0	0.3	5.2	0.0	0.4	7.3	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	42.4	0.0	0.0	52.3	0.0	0.0	47.7	7.7	4.4	46.2	9.4	4.3
LnGrp LOS	D			D			D	A	A	D	A	A
Approach Vol, veh/h		86			10			2158			2598	
Approach Delay, s/veh		42.4			52.3			8.0			9.6	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	53.7		9.5	5.7	53.9		5.4				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	53.0		37.0	5.0	53.0		37.0				
Max Q Clear Time (g_c+I1), s	2.7	20.2		5.6	2.5	27.4		2.4				
Green Ext Time (p_c), s	0.0	22.8		0.5	0.0	22.0		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	9.6
HCM 7th LOS	A



Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	64	10	30	2588	5	11	2373	48
v/c Ratio	0.31	0.05	0.23	0.68	0.00	0.08	0.65	0.04
Control Delay (s/veh)	29.7	0.4	35.5	9.7	0.0	32.6	10.2	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	29.7	0.4	35.5	9.7	0.0	32.6	10.2	1.2
Queue Length 50th (ft)	22	0	12	144	0	4	121	0
Queue Length 95th (ft)	60	0	40	#593	0	20	#513	8
Internal Link Dist (ft)	296	425		752			1367	
Turn Bay Length (ft)			310		150	305		160
Base Capacity (vph)	1113	1101	133	3818	1208	133	3669	1164
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.01	0.23	0.68	0.00	0.08	0.65	0.04

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	5	11	5	0	5	28	2381	5	10	2183	44
Future Volume (veh/h)	43	5	11	5	0	5	28	2381	5	10	2183	44
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	47	5	12	5	0	5	30	2588	5	11	2373	48
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	70	7	18	11	0	11	58	3162	982	25	3066	952
Arrive On Green	0.05	0.05	0.05	0.01	0.00	0.01	0.03	0.62	0.62	0.01	0.60	0.60
Sat Flow, veh/h	1283	137	328	839	0	839	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	64	0	0	10	0	0	30	2588	5	11	2373	48
Grp Sat Flow(s),veh/h/ln	1747	0	0	1677	0	0	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	2.2	0.0	0.0	0.4	0.0	0.0	1.0	23.5	0.1	0.4	20.9	0.8
Cycle Q Clear(g_c), s	2.2	0.0	0.0	0.4	0.0	0.0	1.0	23.5	0.1	0.4	20.9	0.8
Prop In Lane	0.73		0.19	0.50		0.50	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	95	0	0	21	0	0	58	3162	982	25	3066	952
V/C Ratio(X)	0.67	0.00	0.00	0.47	0.00	0.00	0.51	0.82	0.01	0.44	0.77	0.05
Avail Cap(c_a), veh/h	1221	0	0	1172	0	0	148	3227	1002	148	3227	1002
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.9	0.0	0.0	29.5	0.0	0.0	28.6	8.8	4.4	29.4	9.0	4.9
Incr Delay (d2), s/veh	7.9	0.0	0.0	14.9	0.0	0.0	6.8	1.7	0.0	11.9	1.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	0.2	0.0	0.0	0.5	6.6	0.0	0.2	5.9	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	35.8	0.0	0.0	44.4	0.0	0.0	35.4	10.6	4.4	41.3	10.1	5.0
LnGrp LOS	D			D			D	B	A	D	B	A
Approach Vol, veh/h		64			10			2623			2432	
Approach Delay, s/veh		35.8			44.4			10.8			10.2	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	41.7		7.8	6.5	40.6		5.3				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	38.0		42.0	5.0	38.0		42.0				
Max Q Clear Time (g_c+I1), s	2.4	25.5		4.2	3.0	22.9		2.4				
Green Ext Time (p_c), s	0.0	11.5		0.3	0.0	13.2		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	10.9
HCM 7th LOS	B

Appendix H

Peak-Hour Signal Warrants Worksheets

Kimley»Horn

PEAK HOUR SIGNAL WARRANT ANALYSIS (Warrant #3, California MUTCD 2014 Edition)

INT #6

PROJECT NAME: *Estia Dry Creek - LTA*

SCENARIO: *Existing (2024)*

COMMENTS:

MAJOR STREET: *Baseline Rd* ☐ NB/SB ☑ EB/WB # OF APPROACH LANES: 2

MINOR STREET: *Crowder Ln* ☑ NB/SB ☐ EB/WB # OF APPROACH LANES: 1

THE STUDY INTERSECTION HAS MORE THAN THREE APPROACHES (Y OR N): Y

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

WORST CASE DELAY FOR MINOR STREET APPROACH:	AM		PM	
	51.9	sec/veh	115.3	sec/veh
	1.01	veh-hr	2.66	veh-hr

			MAJOR STREET			MINOR STREET				
			EB Approach	WB Approach	Total	NB Approach	SB Approach	Heavy Leg	Total	Intersection Total
06:00 AM	TO	07:00 AM			0			0	0	0
07:00 AM	TO	08:00 AM	1337	1017	2354	60	70	70	130	2484
08:00 AM	TO	09:00 AM			0			0	0	0
09:00 AM	TO	10:00 AM			0			0	0	0
10:00 AM	TO	11:00 AM			0			0	0	0
11:00 AM	TO	12:00 PM			0			0	0	0
12:00 PM	TO	01:00 PM			0			0	0	0
01:00 PM	TO	02:00 PM			0			0	0	0
02:00 PM	TO	03:00 PM			0			0	0	0
03:00 PM	TO	04:00 PM			0			0	0	0
04:00 PM	TO	05:00 PM			0			0	0	0
05:00 PM	TO	06:00 PM	1581	1610	3191	48	83	83	131	3322
06:00 PM	TO	07:00 PM			0			0	0	0
07:00 PM	TO	08:00 PM			0			0	0	0
08:00 PM	TO	09:00 PM			0			0	0	0
09:00 PM	TO	10:00 PM			0			0	0	0

	MAJOR STREET	MINOR STREET		INTERSECTION
	Total	Heavy Leg	Total	Total
AM MAX	2354	70	130	2484
PM MAX	3191	83	131	3322

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) AM
Intersection: Baseline Rd AND Crowder Ln
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

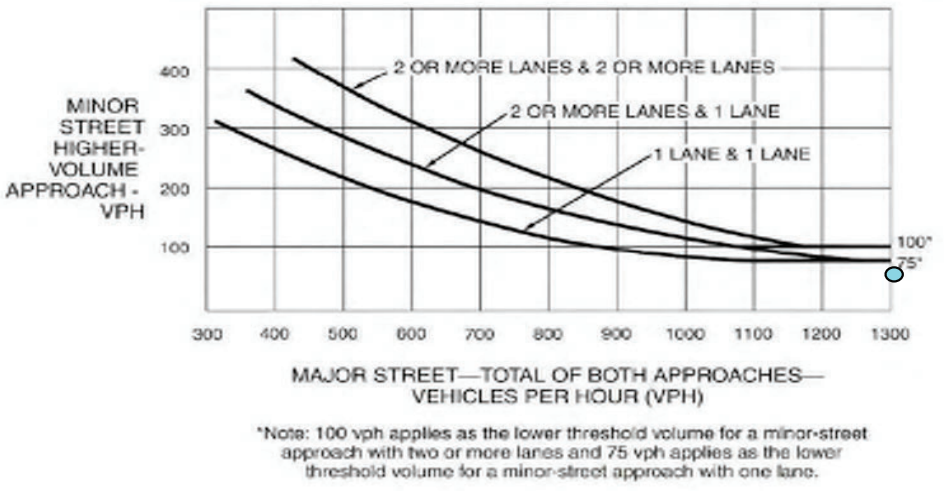
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	No
2.	The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	No
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	Yes

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		2354
Highest Approach - Minor Street	70	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) PM
Intersection: Baseline Rd AND Crowder Ln
Comments:

	PART A or PART B	SATISFIED	**YES**

PART A
(All parts 1, 2, and 3 below must be satisfied) — SATISFIED **NO**

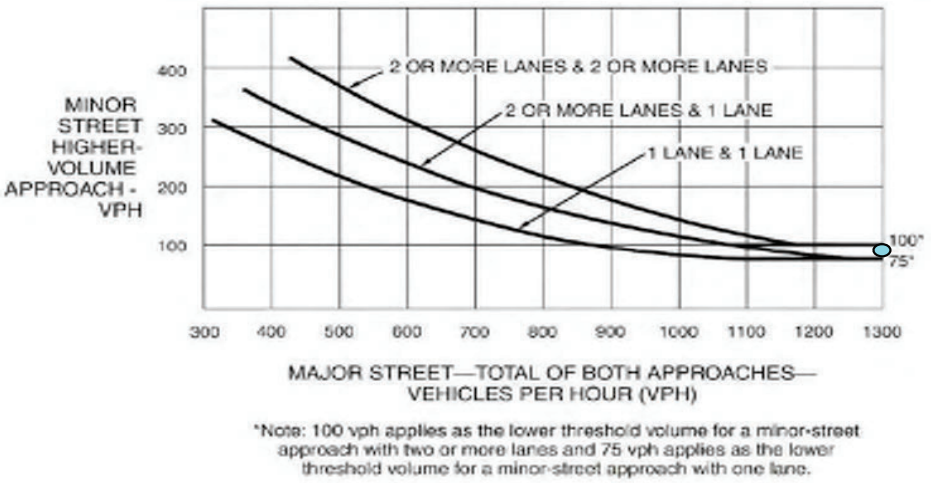
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	No
2.	The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	No
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	Yes

PART B — SATISFIED **Yes**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		3191
Highest Approach - Minor Street	83	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



* Figure not OCR Compatible

Kimley»Horn

PEAK HOUR SIGNAL WARRANT ANALYSIS (Warrant #3, California MUTCD 2014 Edition)

INT #8

PROJECT NAME: *Estia Dry Creek - LTA*

SCENARIO: *Existing (2024)*

COMMENTS:

MAJOR STREET: *Vineyard Ln* ☐ NB/SB ☑ EB/WB # OF APPROACH LANES: 1

MINOR STREET: *Crowder Ln* ☑ NB/SB ☐ EB/WB # OF APPROACH LANES: 1

THE STUDY INTERSECTION HAS MORE THAN THREE APPROACHES (Y OR N): N

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

	AM		PM	
WORST CASE DELAY FOR MINOR STREET APPROACH:	8.0	sec/veh	7.3	sec/veh
	0.26	veh-hr	0.11	veh-hr

			MAJOR STREET			MINOR STREET				
			EB Approach	WB Approach	Total	NB Approach	SB Approach	Heavy Leg	Total	Intersection Total
06:00 AM	TO	07:00 AM			0			0	0	0
07:00 AM	TO	08:00 AM	8	48	56	0	118	118	118	174
08:00 AM	TO	09:00 AM			0			0	0	0
09:00 AM	TO	10:00 AM			0			0	0	0
10:00 AM	TO	11:00 AM			0			0	0	0
11:00 AM	TO	12:00 PM			0			0	0	0
12:00 PM	TO	01:00 PM			0			0	0	0
01:00 PM	TO	02:00 PM			0			0	0	0
02:00 PM	TO	03:00 PM			0			0	0	0
03:00 PM	TO	04:00 PM			0			0	0	0
04:00 PM	TO	05:00 PM			0			0	0	0
05:00 PM	TO	06:00 PM	3	54	57	0	52	52	52	109
06:00 PM	TO	07:00 PM			0			0	0	0
07:00 PM	TO	08:00 PM			0			0	0	0
08:00 PM	TO	09:00 PM			0			0	0	0
09:00 PM	TO	10:00 PM			0			0	0	0

MAJOR STREET		MINOR STREET			INTERSECTION	
	Total		Heavy Leg	Total		Total
AM MAX	56	AM MAX	118	118	AM MAX	174
PM MAX	57	PM MAX	52	52	PM MAX	109

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) AM
Intersection: Vineyard Ln AND Crowder Ln
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) — SATISFIED — **NO**

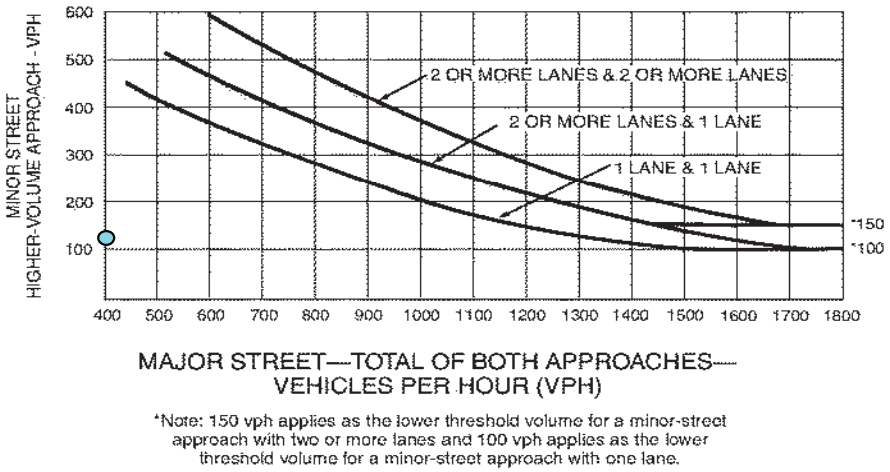
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	No
2.	The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	No

PART B — SATISFIED — **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	56	
Highest Approach - Minor Street	118	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) PM
Intersection: Vineyard Ln AND Crowder Ln
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

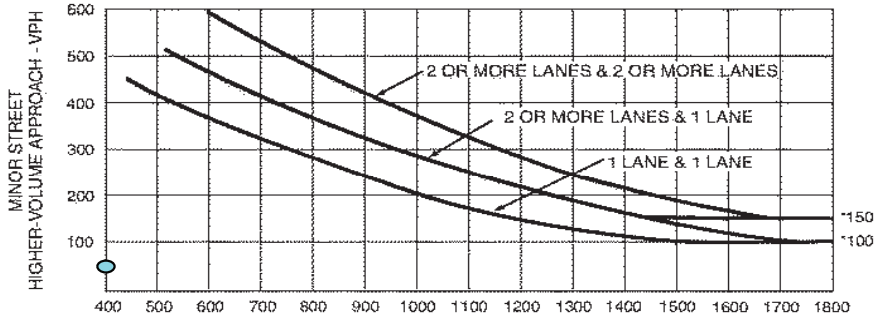
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — No
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — No
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — No

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	57	
Highest Approach - Minor Street	52	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Kimley»Horn

PEAK HOUR SIGNAL WARRANT ANALYSIS (Warrant #3, California MUTCD 2014 Edition)

INT #9

PROJECT NAME: *Estia Dry Creek - LTA*

SCENARIO: *Existing (2024)*

COMMENTS:

MAJOR STREET: *Walerga Rd* ☑ NB/SB ☐ EB/WB # OF APPROACH LANES: 2

MINOR STREET: *Project Access/Springhill Dr* ☐ NB/SB ☑ EB/WB # OF APPROACH LANES: 1

THE STUDY INTERSECTION HAS MORE THAN THREE APPROACHES (Y OR N): Y

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	AM		PM	
WORST CASE DELAY FOR MINOR STREET APPROACH:	35.0	sec/veh	27.4	sec/veh
	0.08	veh-hr	0.07	veh-hr

			MAJOR STREET			MINOR STREET				
			NB Approach	SB Approach	Total	EB Approach	WB Approach	Heavy Leg	Total	Intersection Total
06:00 AM	TO	07:00 AM			0			0	0	0
07:00 AM	TO	08:00 AM	983	1108	2091	8	5	8	13	2104
08:00 AM	TO	09:00 AM			0			0	0	0
09:00 AM	TO	10:00 AM			0			0	0	0
10:00 AM	TO	11:00 AM			0			0	0	0
11:00 AM	TO	12:00 PM			0			0	0	0
12:00 PM	TO	01:00 PM			0			0	0	0
01:00 PM	TO	02:00 PM			0			0	0	0
02:00 PM	TO	03:00 PM			0			0	0	0
03:00 PM	TO	04:00 PM			0			0	0	0
04:00 PM	TO	05:00 PM			0			0	0	0
05:00 PM	TO	06:00 PM	985	1059	2044	8	9	9	17	2061
06:00 PM	TO	07:00 PM			0			0	0	0
07:00 PM	TO	08:00 PM			0			0	0	0
08:00 PM	TO	09:00 PM			0			0	0	0
09:00 PM	TO	10:00 PM			0			0	0	0

	MAJOR STREET	MINOR STREET		INTERSECTION
	Total	Heavy Leg	Total	Total
AM MAX	2091	8	13	2104
PM MAX	2044	9	17	2061

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) AM
Intersection: Walerga Rd AND Project Access/Springhill Dr
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

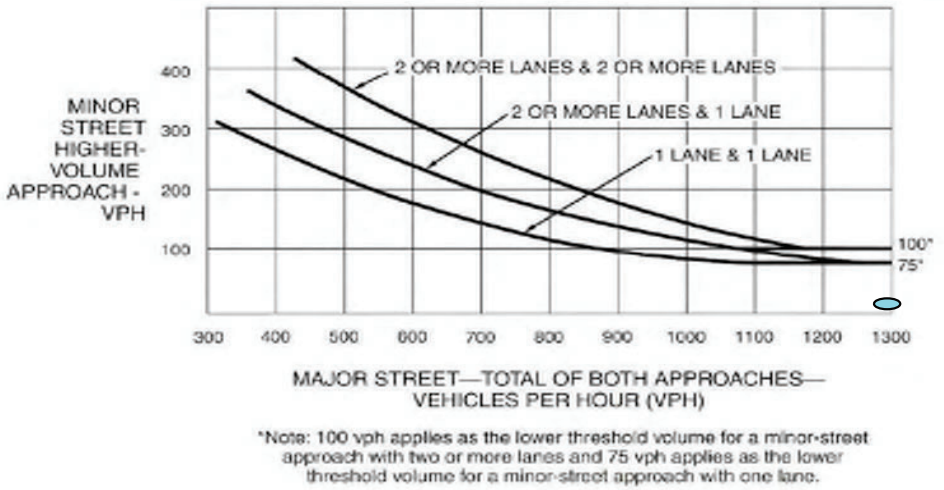
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	No
2.	The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	No
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	Yes

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		2091
Highest Approach - Minor Street	8	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) PM
Intersection: Walerga Rd AND Project Access/Springhill Dr
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

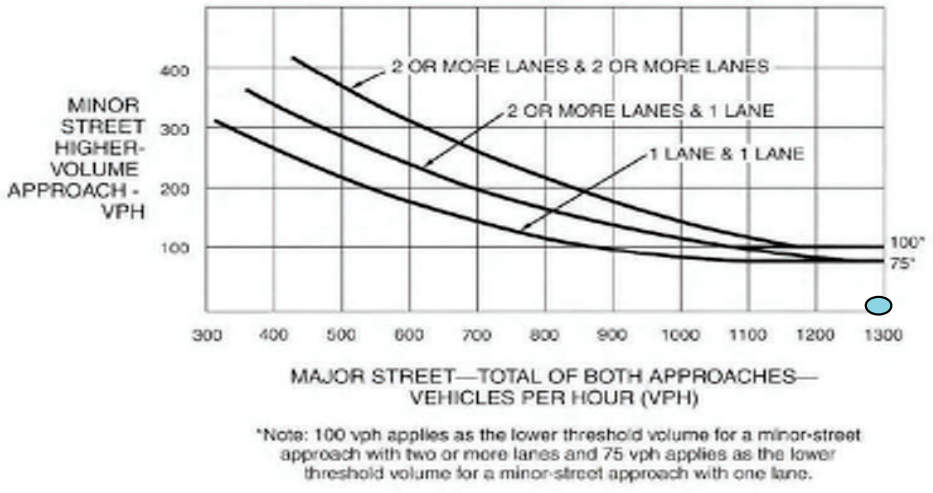
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	No
2.	The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	No
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	Yes

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		2044
Highest Approach - Minor Street	9	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Kimley»Horn

PEAK HOUR SIGNAL WARRANT ANALYSIS (Warrant #3, California MUTCD 2014 Edition)

INT #13

PROJECT NAME: *Estia Dry Creek - LTA*

SCENARIO: *Existing (2024)*

COMMENTS:

MAJOR STREET: *Watt Ave* ☑ NB/SB ☐ EB/WB # OF APPROACH LANES: 1

MINOR STREET: *PFE Rd* ☐ NB/SB ☑ EB/WB # OF APPROACH LANES: 1

THE STUDY INTERSECTION HAS MORE THAN THREE APPROACHES (Y OR N): N

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	AM		PM	
WORST CASE DELAY FOR MINOR STREET APPROACH:	84.5	sec/veh	49.8	sec/veh
	7.44	veh-hr	4.15	veh-hr

			MAJOR STREET			MINOR STREET				
			NB Approach	SB Approach	Total	EB Approach	WB Approach	Heavy Leg	Total	Intersection Total
06:00 AM	TO	07:00 AM			0			0	0	0
07:00 AM	TO	08:00 AM	567	489	1056	1	317	317	318	1374
08:00 AM	TO	09:00 AM			0			0	0	0
09:00 AM	TO	10:00 AM			0			0	0	0
10:00 AM	TO	11:00 AM			0			0	0	0
11:00 AM	TO	12:00 PM			0			0	0	0
12:00 PM	TO	01:00 PM			0			0	0	0
01:00 PM	TO	02:00 PM			0			0	0	0
02:00 PM	TO	03:00 PM			0			0	0	0
03:00 PM	TO	04:00 PM			0			0	0	0
04:00 PM	TO	05:00 PM			0			0	0	0
05:00 PM	TO	06:00 PM	642	433	1075	0	300	300	300	1375
06:00 PM	TO	07:00 PM			0			0	0	0
07:00 PM	TO	08:00 PM			0			0	0	0
08:00 PM	TO	09:00 PM			0			0	0	0
09:00 PM	TO	10:00 PM			0			0	0	0

MAJOR STREET		MINOR STREET			INTERSECTION	
	Total		Heavy Leg	Total		Total
AM MAX	1056	AM MAX	317	318	AM MAX	1374
PM MAX	1075	PM MAX	300	300	PM MAX	1375

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) AM
Intersection: Watt Ave AND PFE Rd
Comments:

	PART A or PART B	SATISFIED	**YES**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **YES**

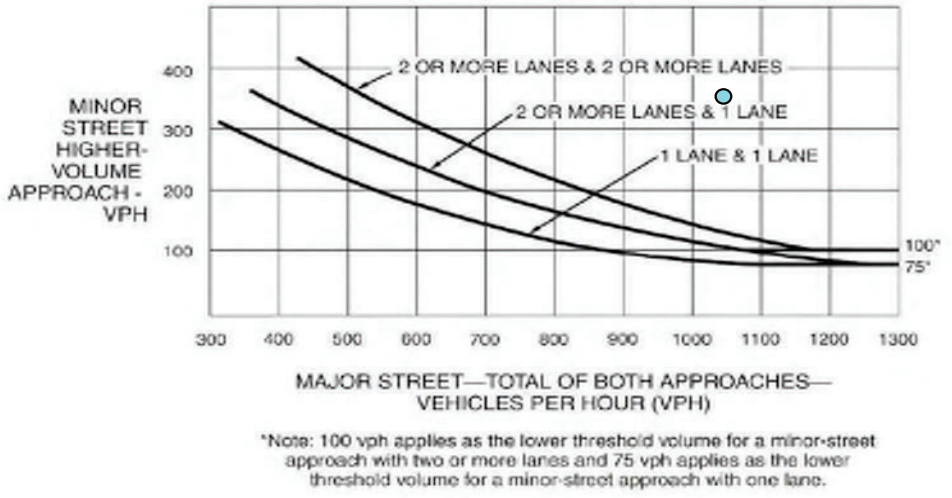
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — Yes
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — Yes

PART B SATISFIED **Yes**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	1056	
Highest Approach - Minor Street	317	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



* Figure not OCR Compatible

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) PM
Intersection: Watt Ave AND PFE Rd
Comments:

	PART A or PART B	SATISFIED	**YES**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **YES**

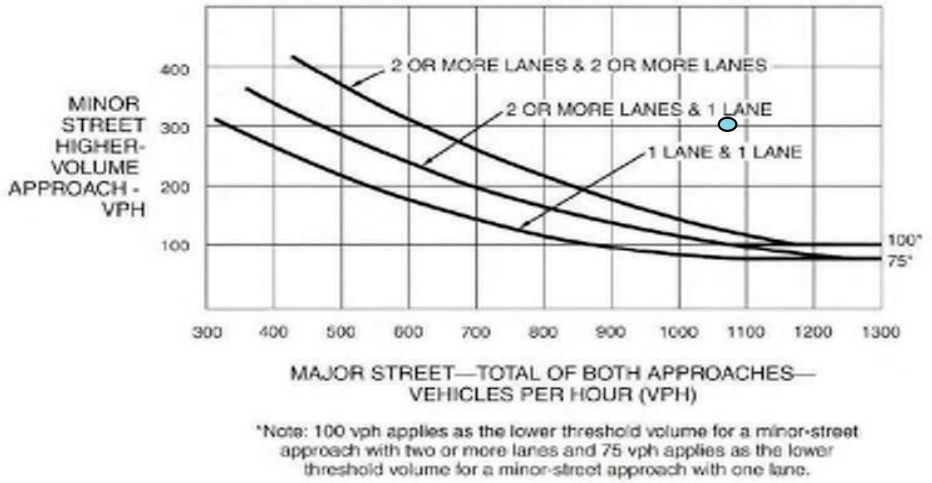
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	Yes
2.	The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	Yes

PART B SATISFIED **Yes**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	1075	
Highest Approach - Minor Street	300	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Kimley»Horn

PEAK HOUR SIGNAL WARRANT ANALYSIS (Warrant #3, California MUTCD 2014 Edition)

INT #6

PROJECT NAME: *Estia Dry Creek - LTA*

SCENARIO: *Existing (2024) plus Project Ph 1*

COMMENTS:

MAJOR STREET: *Baseline Rd* ☐ NB/SB ☑ EB/WB # OF APPROACH LANES: 2

MINOR STREET: *Crowder Ln* ☑ NB/SB ☐ EB/WB # OF APPROACH LANES: 1

THE STUDY INTERSECTION HAS MORE THAN THREE APPROACHES (Y OR N): Y

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

WORST CASE DELAY FOR MINOR STREET APPROACH:	AM		PM	
	55.6	sec/veh	136.0	sec/veh
	1.08	veh-hr	3.14	veh-hr

			MAJOR STREET			MINOR STREET				
			EB Approach	WB Approach	Total	NB Approach	SB Approach	Heavy Leg	Total	Intersection Total
06:00 AM	TO	07:00 AM			0			0	0	0
07:00 AM	TO	08:00 AM	1361	1024	2385	61	70	70	131	2516
08:00 AM	TO	09:00 AM			0			0	0	0
09:00 AM	TO	10:00 AM			0			0	0	0
10:00 AM	TO	11:00 AM			0			0	0	0
11:00 AM	TO	12:00 PM			0			0	0	0
12:00 PM	TO	01:00 PM			0			0	0	0
01:00 PM	TO	02:00 PM			0			0	0	0
02:00 PM	TO	03:00 PM			0			0	0	0
03:00 PM	TO	04:00 PM			0			0	0	0
04:00 PM	TO	05:00 PM			0			0	0	0
05:00 PM	TO	06:00 PM	1596	1632	3228	52	83	83	135	3363
06:00 PM	TO	07:00 PM			0			0	0	0
07:00 PM	TO	08:00 PM			0			0	0	0
08:00 PM	TO	09:00 PM			0			0	0	0
09:00 PM	TO	10:00 PM			0			0	0	0

	MAJOR STREET	MINOR STREET		INTERSECTION
	Total	Heavy Leg	Total	Total
AM MAX	2385	70	131	2516
PM MAX	3228	83	135	3363

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) plus Project Ph 1 AM
Intersection: Baseline Rd AND Crowder Ln
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

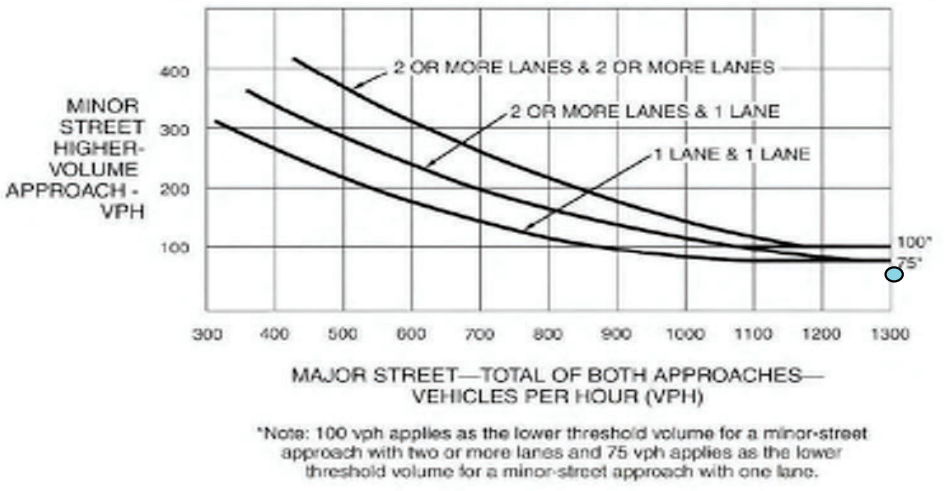
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — No
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — No
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — Yes

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		2385
Highest Approach - Minor Street	70	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



* Figure not OCR Compatible

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) plus Project Ph 1 PM
Intersection: Baseline Rd AND Crowder Ln
Comments:

	PART A or PART B	SATISFIED	**YES**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

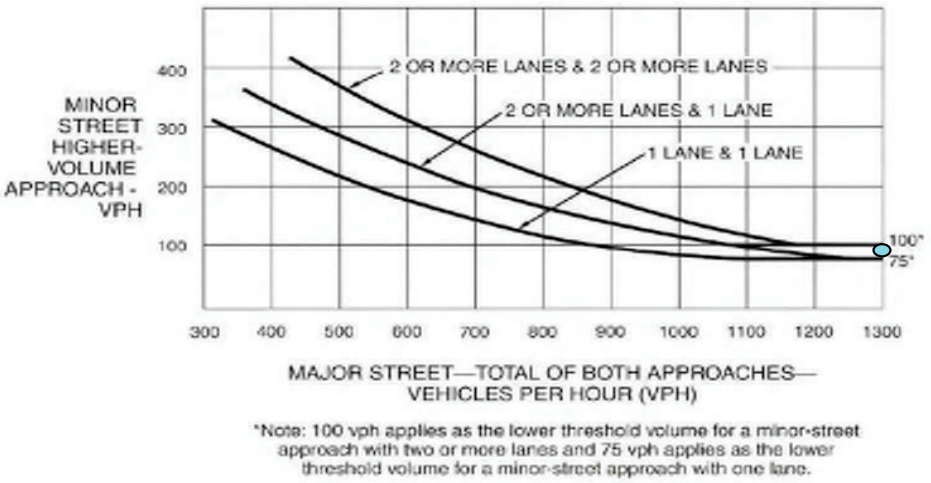
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	No
2.	The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	No
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	Yes

PART B SATISFIED **Yes**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		3228
Highest Approach - Minor Street	83	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Kimley»Horn

PEAK HOUR SIGNAL WARRANT ANALYSIS (Warrant #3, California MUTCD 2014 Edition)

INT #8

PROJECT NAME: *Estia Dry Creek - LTA*

SCENARIO: *Existing (2024) plus Project Ph 1*

COMMENTS:

MAJOR STREET: *Vineyard Ln* ☐ NB/SB ☑ EB/WB # OF APPROACH LANES: 1

MINOR STREET: *Crowder Ln* ☑ NB/SB ☐ EB/WB # OF APPROACH LANES: 1

THE STUDY INTERSECTION HAS MORE THAN THREE APPROACHES (Y OR N): N

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

	AM		PM	
WORST CASE DELAY FOR MINOR STREET APPROACH:	8.0	sec/veh	7.3	sec/veh
	0.27	veh-hr	0.11	veh-hr

			MAJOR STREET			MINOR STREET				
			EB Approach	WB Approach	Total	NB Approach	SB Approach	Heavy Leg	Total	Intersection Total
06:00 AM	TO	07:00 AM			0			0	0	0
07:00 AM	TO	08:00 AM	8	49	57	0	121	121	121	178
08:00 AM	TO	09:00 AM			0			0	0	0
09:00 AM	TO	10:00 AM			0			0	0	0
10:00 AM	TO	11:00 AM			0			0	0	0
11:00 AM	TO	12:00 PM			0			0	0	0
12:00 PM	TO	01:00 PM			0			0	0	0
01:00 PM	TO	02:00 PM			0			0	0	0
02:00 PM	TO	03:00 PM			0			0	0	0
03:00 PM	TO	04:00 PM			0			0	0	0
04:00 PM	TO	05:00 PM			0			0	0	0
05:00 PM	TO	06:00 PM	3	58	61	0	54	54	54	115
06:00 PM	TO	07:00 PM			0			0	0	0
07:00 PM	TO	08:00 PM			0			0	0	0
08:00 PM	TO	09:00 PM			0			0	0	0
09:00 PM	TO	10:00 PM			0			0	0	0

MAJOR STREET	Total
AM MAX	57
PM MAX	61

MINOR STREET	Heavy Leg	Total
AM MAX	121	121
PM MAX	54	54

INTERSECTION	Total
AM MAX	178
PM MAX	115

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) plus Project Ph 1 AM
Intersection: Vineyard Ln AND Crowder Ln
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) — SATISFIED — **NO**

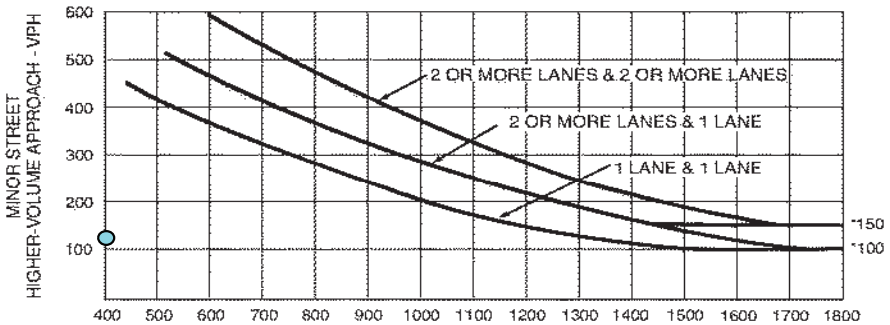
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — No
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — No

PART B — SATISFIED — **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	57	
Highest Approach - Minor Street	121	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) plus Project Ph 1 PM
Intersection: Vineyard Ln AND Crowder Ln
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

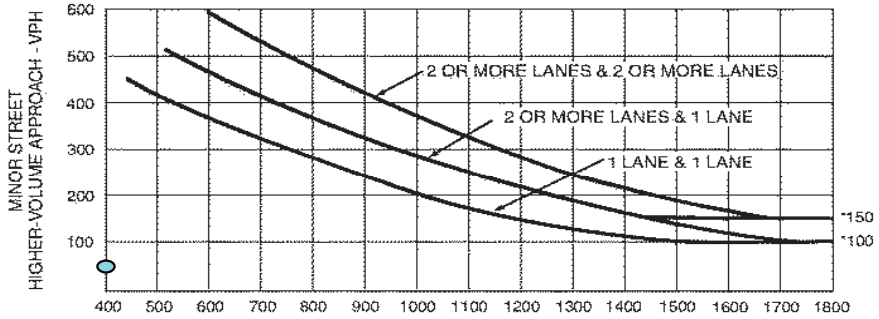
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — No
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — No
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — No

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	61	
Highest Approach - Minor Street	54	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Kimley»Horn

PEAK HOUR SIGNAL WARRANT ANALYSIS (Warrant #3, California MUTCD 2014 Edition)

INT #9

PROJECT NAME: *Estia Dry Creek - LTA*

SCENARIO: *Existing (2024) plus Project Ph 1*

COMMENTS:

MAJOR STREET: *Walerga Rd* ☑ NB/SB ☐ EB/WB # OF APPROACH LANES: 2

MINOR STREET: *Project Access/Springhill Dr* ☐ NB/SB ☑ EB/WB # OF APPROACH LANES: 1

THE STUDY INTERSECTION HAS MORE THAN THREE APPROACHES (Y OR N): Y

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	AM		PM	
WORST CASE DELAY FOR MINOR STREET APPROACH:	35.8	sec/veh	27.8	sec/veh
	0.08	veh-hr	0.07	veh-hr

			MAJOR STREET			MINOR STREET				
			NB Approach	SB Approach	Total	EB Approach	WB Approach	Heavy Leg	Total	Intersection Total
06:00 AM	TO	07:00 AM			0			0	0	0
07:00 AM	TO	08:00 AM	988	1125	2113	8	5	8	13	2126
08:00 AM	TO	09:00 AM			0			0	0	0
09:00 AM	TO	10:00 AM			0			0	0	0
10:00 AM	TO	11:00 AM			0			0	0	0
11:00 AM	TO	12:00 PM			0			0	0	0
12:00 PM	TO	01:00 PM			0			0	0	0
01:00 PM	TO	02:00 PM			0			0	0	0
02:00 PM	TO	03:00 PM			0			0	0	0
03:00 PM	TO	04:00 PM			0			0	0	0
04:00 PM	TO	05:00 PM			0			0	0	0
05:00 PM	TO	06:00 PM	1003	1070	2073	8	9	9	17	2090
06:00 PM	TO	07:00 PM			0			0	0	0
07:00 PM	TO	08:00 PM			0			0	0	0
08:00 PM	TO	09:00 PM			0			0	0	0
09:00 PM	TO	10:00 PM			0			0	0	0

	MAJOR STREET	MINOR STREET		INTERSECTION
	Total	Heavy Leg	Total	Total
AM MAX	2113	8	13	2126
PM MAX	2073	9	17	2090

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) plus Project Ph 1 AM
Intersection: Walerga Rd AND Project Access/Springhill Dr
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

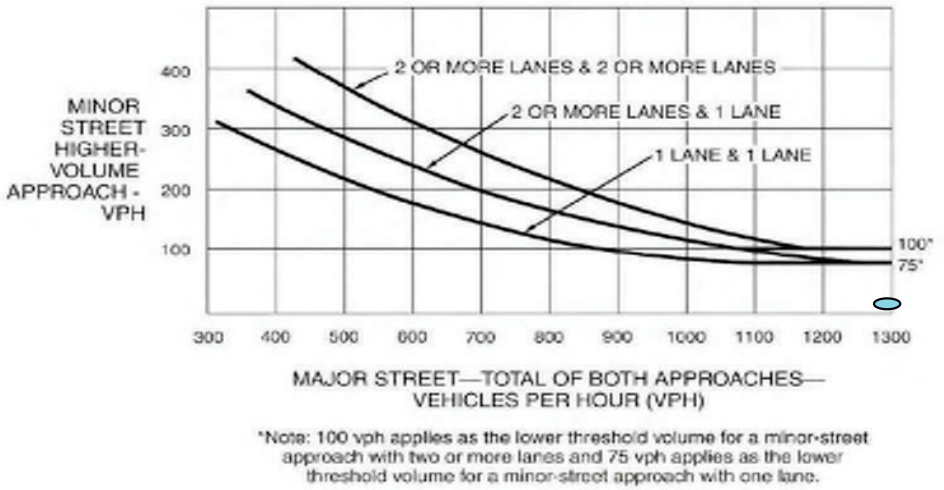
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — No
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — No
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — Yes

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		2113
Highest Approach - Minor Street	8	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) plus Project Ph 1 PM
Intersection: Walerga Rd AND Project Access/Springhill Dr
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

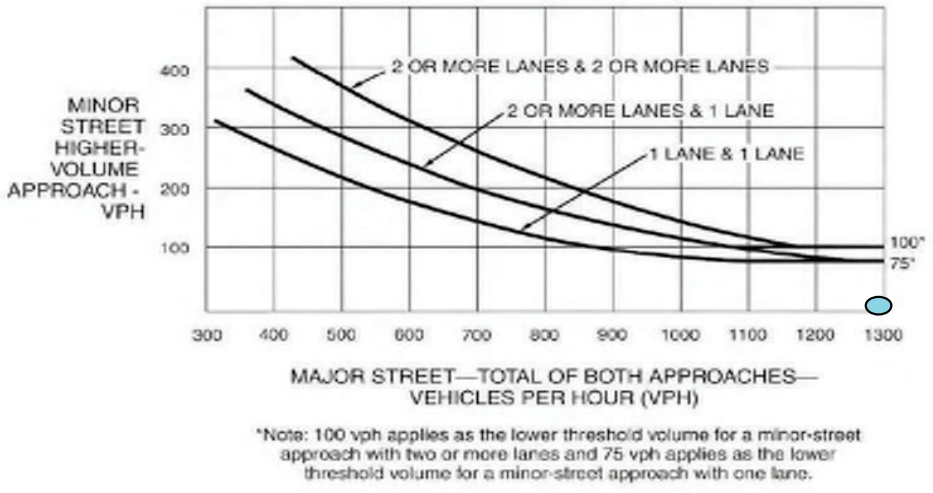
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	No
2.	The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	No
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	Yes

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		2073
Highest Approach - Minor Street	9	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Kimley»Horn

PEAK HOUR SIGNAL WARRANT ANALYSIS (Warrant #3, California MUTCD 2014 Edition)

INT #13

PROJECT NAME: *Estia Dry Creek - LTA*

SCENARIO: *Existing (2024) plus Project Ph 1*

COMMENTS:

MAJOR STREET: *Watt Ave* ☑ NB/SB ☐ EB/WB # OF APPROACH LANES: 1

MINOR STREET: *PFE Rd* ☐ NB/SB ☑ EB/WB # OF APPROACH LANES: 1

THE STUDY INTERSECTION HAS MORE THAN THREE APPROACHES (Y OR N): N

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	AM		PM	
WORST CASE DELAY FOR MINOR STREET APPROACH:	98.8	sec/veh	63.5	sec/veh
	9.66	veh-hr	5.57	veh-hr

			MAJOR STREET			MINOR STREET				
			NB Approach	SB Approach	Total	EB Approach	WB Approach	Heavy Leg	Total	Intersection Total
06:00 AM	TO	07:00 AM			0			0	0	0
07:00 AM	TO	08:00 AM	575	496	1071	1	352	352	353	1424
08:00 AM	TO	09:00 AM			0			0	0	0
09:00 AM	TO	10:00 AM			0			0	0	0
10:00 AM	TO	11:00 AM			0			0	0	0
11:00 AM	TO	12:00 PM			0			0	0	0
12:00 PM	TO	01:00 PM			0			0	0	0
01:00 PM	TO	02:00 PM			0			0	0	0
02:00 PM	TO	03:00 PM			0			0	0	0
03:00 PM	TO	04:00 PM			0			0	0	0
04:00 PM	TO	05:00 PM			0			0	0	0
05:00 PM	TO	06:00 PM	662	446	1108	0	316	316	316	1424
06:00 PM	TO	07:00 PM			0			0	0	0
07:00 PM	TO	08:00 PM			0			0	0	0
08:00 PM	TO	09:00 PM			0			0	0	0
09:00 PM	TO	10:00 PM			0			0	0	0

	MAJOR STREET	MINOR STREET		INTERSECTION
	Total	Heavy Leg	Total	Total
AM MAX	1071	352	353	1424
PM MAX	1108	316	316	1424

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) plus Project Ph 1 AM
Intersection: Watt Ave AND PFE Rd
Comments:

	PART A or PART B	SATISFIED	**YES**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **YES**

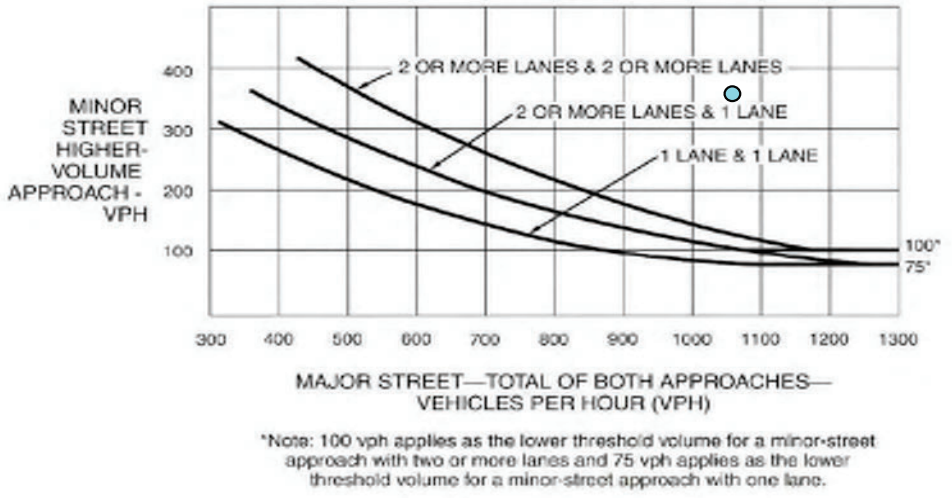
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — Yes
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — Yes

PART B SATISFIED **Yes**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	1071	
Highest Approach - Minor Street	352	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) plus Project Ph 1 PM
Intersection: Watt Ave AND PFE Rd
Comments:

	PART A or PART B	SATISFIED	**YES**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **YES**

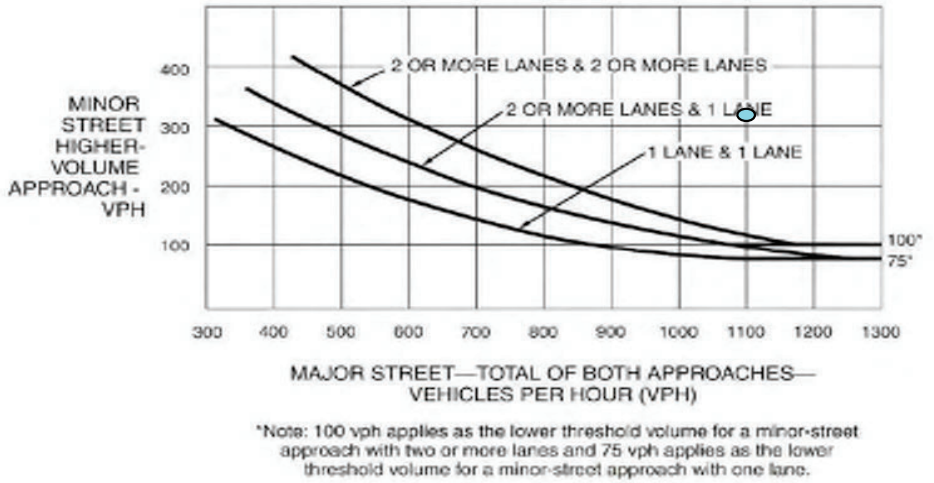
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	Yes
2.	The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	Yes

PART B SATISFIED **Yes**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	1108	
Highest Approach - Minor Street	316	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Kimley»Horn

PEAK HOUR SIGNAL WARRANT ANALYSIS (Warrant #3, California MUTCD 2014 Edition)

INT #6

PROJECT NAME: *Estia Dry Creek - LTA*

SCENARIO: *Existing (2024) plus Project Buildout*

COMMENTS:

MAJOR STREET: *Baseline Rd* ☐ NB/SB ☑ EB/WB # OF APPROACH LANES: 2

MINOR STREET: *Crowder Ln* ☑ NB/SB ☐ EB/WB # OF APPROACH LANES: 1

THE STUDY INTERSECTION HAS MORE THAN THREE APPROACHES (Y OR N): Y

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

WORST CASE DELAY FOR MINOR STREET APPROACH:	AM		PM	
	104.4	sec/veh	262.7	sec/veh
	2.58	veh-hr	6.06	veh-hr

			MAJOR STREET			MINOR STREET				
			EB Approach	WB Approach	Total	NB Approach	SB Approach	Heavy Leg	Total	Intersection Total
06:00 AM	TO	07:00 AM			0			0	0	0
07:00 AM	TO	08:00 AM	1400	1036	2436	89	70	89	159	2595
08:00 AM	TO	09:00 AM			0			0	0	0
09:00 AM	TO	10:00 AM			0			0	0	0
10:00 AM	TO	11:00 AM			0			0	0	0
11:00 AM	TO	12:00 PM			0			0	0	0
12:00 PM	TO	01:00 PM			0			0	0	0
01:00 PM	TO	02:00 PM			0			0	0	0
02:00 PM	TO	03:00 PM			0			0	0	0
03:00 PM	TO	04:00 PM			0			0	0	0
04:00 PM	TO	05:00 PM			0			0	0	0
05:00 PM	TO	06:00 PM	1637	1672	3309	74	83	83	157	3466
06:00 PM	TO	07:00 PM			0			0	0	0
07:00 PM	TO	08:00 PM			0			0	0	0
08:00 PM	TO	09:00 PM			0			0	0	0
09:00 PM	TO	10:00 PM			0			0	0	0

	MAJOR STREET	MINOR STREET		INTERSECTION
	Total	Heavy Leg	Total	Total
AM MAX	2436	89	159	2595
PM MAX	3309	83	157	3466

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) plus Project Buildout AM
Intersection: Baseline Rd AND Crowder Ln
Comments:

PART A or PART B	SATISFIED	**YES**

PART A
(All parts 1, 2, and 3 below must be satisfied) — SATISFIED: **NO**

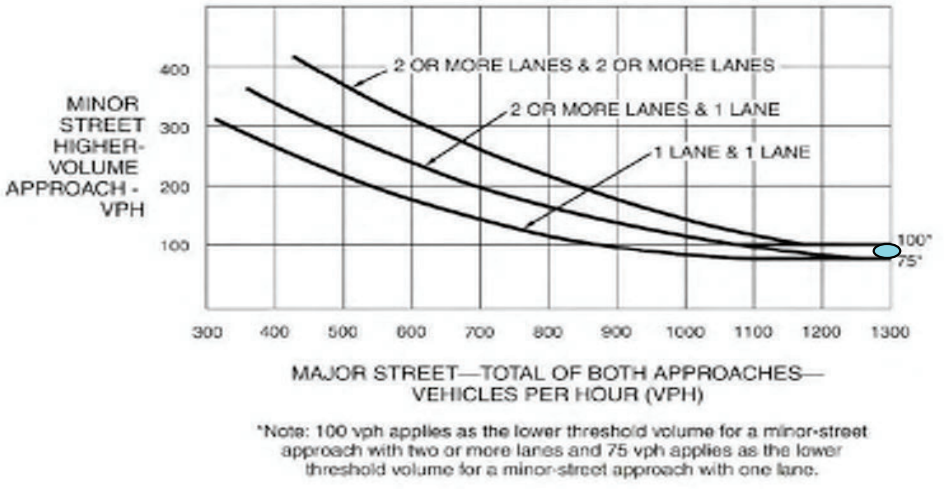
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	No
2.	The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	No
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	Yes

PART B — SATISFIED: **Yes**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		2436
Highest Approach - Minor Street	89	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



* Figure not OCR Compatible

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) plus Project Buildout PM
Intersection: Baseline Rd AND Crowder Ln
Comments:

	PART A or PART B	SATISFIED	**YES**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

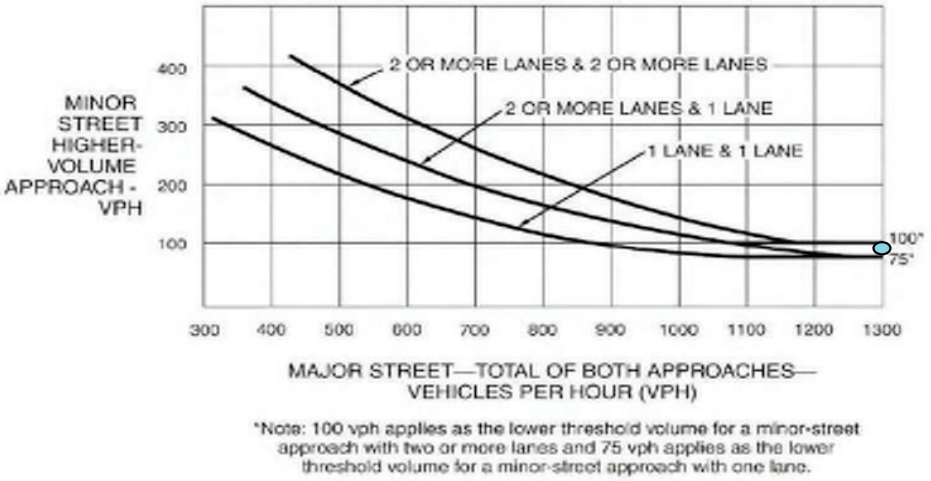
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	Yes
2.	The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	No
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	Yes

PART B SATISFIED **Yes**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		3309
Highest Approach - Minor Street	83	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Kimley»Horn

PEAK HOUR SIGNAL WARRANT ANALYSIS (Warrant #3, California MUTCD 2014 Edition)

INT #8

PROJECT NAME: *Estia Dry Creek - LTA*

SCENARIO: *Existing (2024) plus Project Buildout*

COMMENTS:

MAJOR STREET: *Vineyard Ln* ☐ NB/SB ☑ EB/WB # OF APPROACH LANES: 1

MINOR STREET: *Crowder Ln* ☑ NB/SB ☐ EB/WB # OF APPROACH LANES: 1

THE STUDY INTERSECTION HAS MORE THAN THREE APPROACHES (Y OR N): N

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

WORST CASE DELAY FOR MINOR STREET APPROACH:	AM		PM	
	8.2	sec/veh	7.4	sec/veh
	0.31	veh-hr	0.18	veh-hr

			MAJOR STREET			MINOR STREET				
			EB Approach	WB Approach	Total	NB Approach	SB Approach	Heavy Leg	Total	Intersection Total
06:00 AM	TO	07:00 AM			0			0	0	0
07:00 AM	TO	08:00 AM	36	51	87	0	135	135	135	222
08:00 AM	TO	09:00 AM			0			0	0	0
09:00 AM	TO	10:00 AM			0			0	0	0
10:00 AM	TO	11:00 AM			0			0	0	0
11:00 AM	TO	12:00 PM			0			0	0	0
12:00 PM	TO	01:00 PM			0			0	0	0
01:00 PM	TO	02:00 PM			0			0	0	0
02:00 PM	TO	03:00 PM			0			0	0	0
03:00 PM	TO	04:00 PM			0			0	0	0
04:00 PM	TO	05:00 PM			0			0	0	0
05:00 PM	TO	06:00 PM	21	65	86	0	86	86	86	172
06:00 PM	TO	07:00 PM			0			0	0	0
07:00 PM	TO	08:00 PM			0			0	0	0
08:00 PM	TO	09:00 PM			0			0	0	0
09:00 PM	TO	10:00 PM			0			0	0	0

MAJOR STREET	Total
AM MAX	87
PM MAX	86

MINOR STREET	Heavy Leg	Total
AM MAX	135	135
PM MAX	86	86

INTERSECTION	Total
AM MAX	222
PM MAX	172

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) plus Project Buildout AM
Intersection: Vineyard Ln AND Crowder Ln
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) — SATISFIED — **NO**

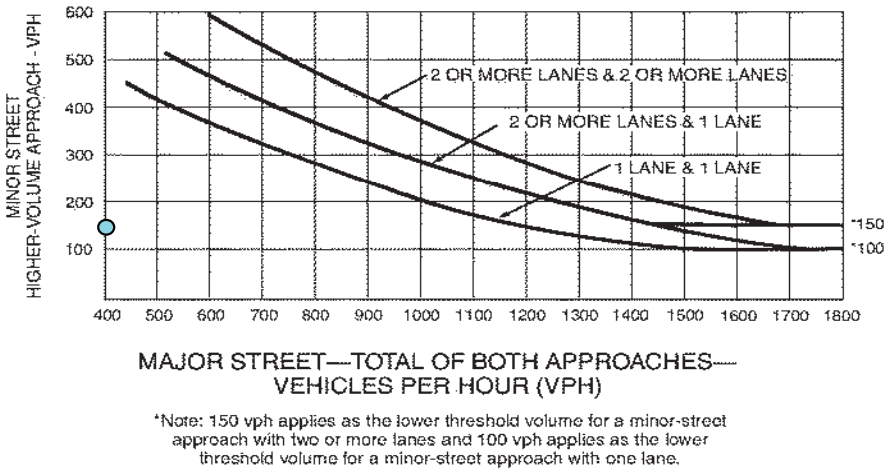
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	No
2.	The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	No

PART B — SATISFIED — **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	87	
Highest Approach - Minor Street	135	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) plus Project Buildout PM
Intersection: Vineyard Ln AND Crowder Ln
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) — SATISFIED — **NO**

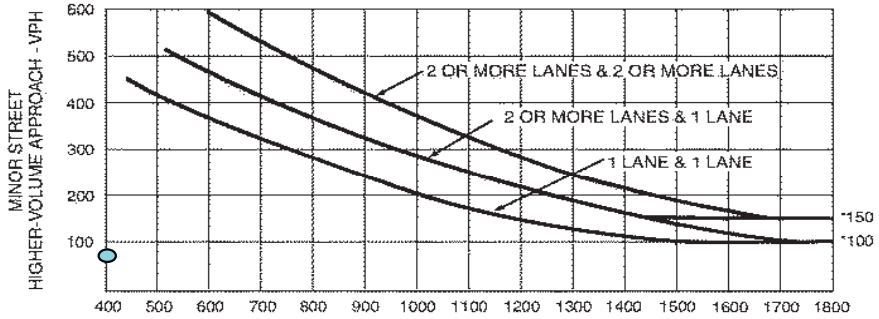
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — No
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — No
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — No

PART B — SATISFIED — **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	86	
Highest Approach - Minor Street	86	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Kimley»Horn

PEAK HOUR SIGNAL WARRANT ANALYSIS (Warrant #3, California MUTCD 2014 Edition)

INT #9

PROJECT NAME: *Estia Dry Creek - LTA*

SCENARIO: *Existing (2024) plus Project Buildout*

COMMENTS:

MAJOR STREET: *Walerga Rd* ☑ NB/SB ☐ EB/WB # OF APPROACH LANES: 2

MINOR STREET: *Project Access/Springhill Dr* ☐ NB/SB ☑ EB/WB # OF APPROACH LANES: 1

THE STUDY INTERSECTION HAS MORE THAN THREE APPROACHES (Y OR N): Y

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

WORST CASE DELAY FOR MINOR STREET APPROACH:	AM		PM	
	60.4	sec/veh	42.3	sec/veh
	0.96	veh-hr	0.48	veh-hr

			MAJOR STREET			MINOR STREET				
			NB Approach	SB Approach	Total	EB Approach	WB Approach	Heavy Leg	Total	Intersection Total
06:00 AM	TO	07:00 AM			0			0	0	0
07:00 AM	TO	08:00 AM	1019	1155	2174	57	5	57	62	2236
08:00 AM	TO	09:00 AM			0			0	0	0
09:00 AM	TO	10:00 AM			0			0	0	0
10:00 AM	TO	11:00 AM			0			0	0	0
11:00 AM	TO	12:00 PM			0			0	0	0
12:00 PM	TO	01:00 PM			0			0	0	0
01:00 PM	TO	02:00 PM			0			0	0	0
02:00 PM	TO	03:00 PM			0			0	0	0
03:00 PM	TO	04:00 PM			0			0	0	0
04:00 PM	TO	05:00 PM			0			0	0	0
05:00 PM	TO	06:00 PM	1047	1147	2194	41	9	41	50	2244
06:00 PM	TO	07:00 PM			0			0	0	0
07:00 PM	TO	08:00 PM			0			0	0	0
08:00 PM	TO	09:00 PM			0			0	0	0
09:00 PM	TO	10:00 PM			0			0	0	0

	MAJOR STREET	MINOR STREET		INTERSECTION
	Total	Heavy Leg	Total	Total
AM MAX	2174	57	62	2236
PM MAX	2194	41	50	2244

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

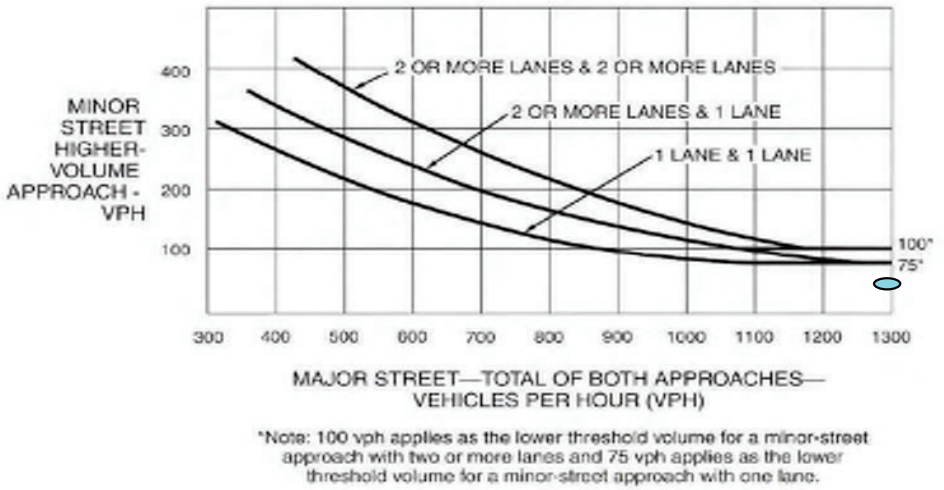
Scenario: Existing (2024) plus Project Buildout AM
Intersection: Walerga Rd AND Project Access/Springhill Dr
Comments:

	PART A or PART B	SATISFIED	NO
PART A			
(All parts 1, 2, and 3 below must be satisfied)		SATISFIED	**NO**
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND		No
2.	The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND		No
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.		Yes
PART B		SATISFIED	**No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		2174
Highest Approach - Minor Street	57	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) plus Project Buildout PM
Intersection: Walerga Rd AND Project Access/Springhill Dr
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

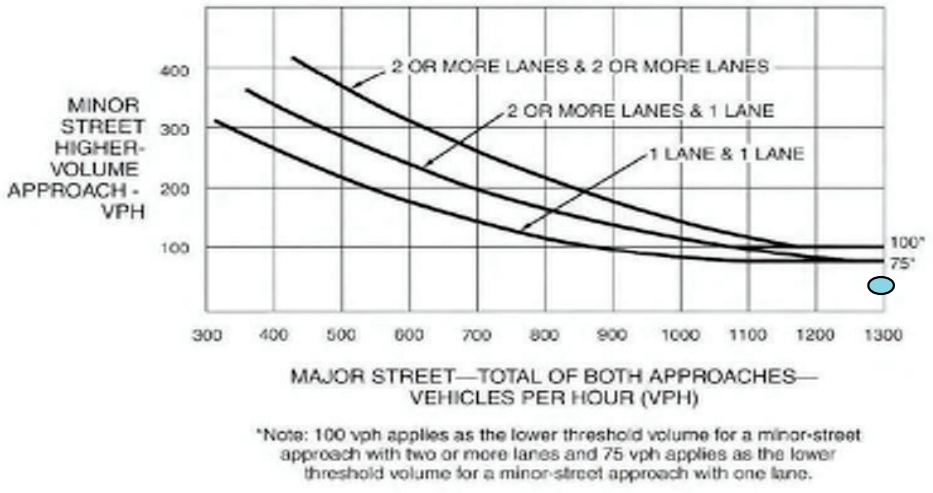
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	No
2.	The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	No
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	Yes

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		2194
Highest Approach - Minor Street	41	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Kimley»Horn

PEAK HOUR SIGNAL WARRANT ANALYSIS (Warrant #3, California MUTCD 2014 Edition)

INT #13

PROJECT NAME: *Estia Dry Creek - LTA*

SCENARIO: *Existing (2024) plus Project Buildout*

COMMENTS:

MAJOR STREET: *Watt Ave* ☑ NB/SB ☐ EB/WB # OF APPROACH LANES: 1

MINOR STREET: *PFE Rd* ☐ NB/SB ☑ EB/WB # OF APPROACH LANES: 1

THE STUDY INTERSECTION HAS MORE THAN THREE APPROACHES (Y OR N): N

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	AM		PM	
WORST CASE DELAY FOR MINOR STREET APPROACH:	101.8	sec/veh	66.7	sec/veh
	10.12	veh-hr	5.93	veh-hr

			MAJOR STREET			MINOR STREET				
			NB Approach	SB Approach	Total	EB Approach	WB Approach	Heavy Leg	Total	Intersection Total
06:00 AM	TO	07:00 AM			0			0	0	0
07:00 AM	TO	08:00 AM	577	496	1073	1	358	358	359	1432
08:00 AM	TO	09:00 AM			0			0	0	0
09:00 AM	TO	10:00 AM			0			0	0	0
10:00 AM	TO	11:00 AM			0			0	0	0
11:00 AM	TO	12:00 PM			0			0	0	0
12:00 PM	TO	01:00 PM			0			0	0	0
01:00 PM	TO	02:00 PM			0			0	0	0
02:00 PM	TO	03:00 PM			0			0	0	0
03:00 PM	TO	04:00 PM			0			0	0	0
04:00 PM	TO	05:00 PM			0			0	0	0
05:00 PM	TO	06:00 PM	669	446	1115	0	320	320	320	1435
06:00 PM	TO	07:00 PM			0			0	0	0
07:00 PM	TO	08:00 PM			0			0	0	0
08:00 PM	TO	09:00 PM			0			0	0	0
09:00 PM	TO	10:00 PM			0			0	0	0

	MAJOR STREET	MINOR STREET		INTERSECTION
	Total	Heavy Leg	Total	Total
AM MAX	1073	358	359	1432
PM MAX	1115	320	320	1435

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) plus Project Buildout AM
Intersection: Watt Ave AND PFE Rd
Comments:

	PART A or PART B	SATISFIED	**YES**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **YES**

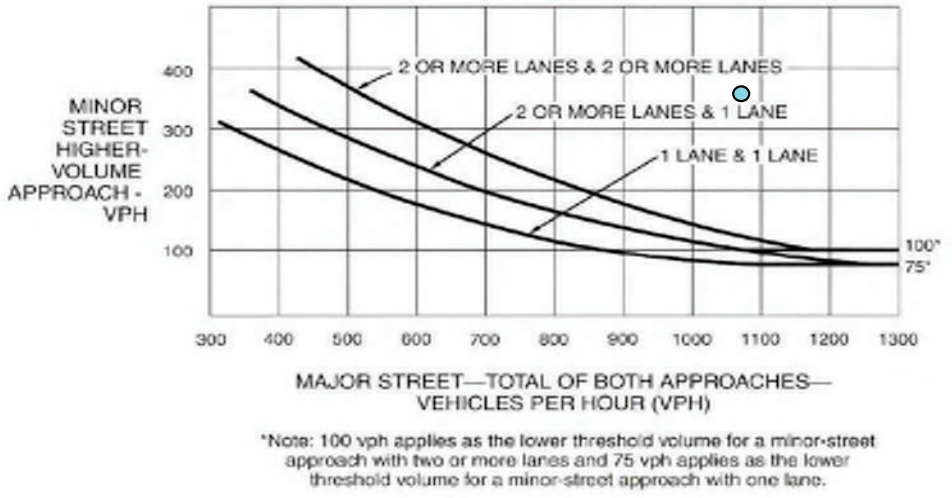
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — Yes
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — Yes

PART B SATISFIED **Yes**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	1073	
Highest Approach - Minor Street	358	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



* Figure not OCR Compatible

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing (2024) plus Project Buildout PM
Intersection: Watt Ave AND PFE Rd
Comments:

	PART A or PART B	SATISFIED	**YES**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **YES**

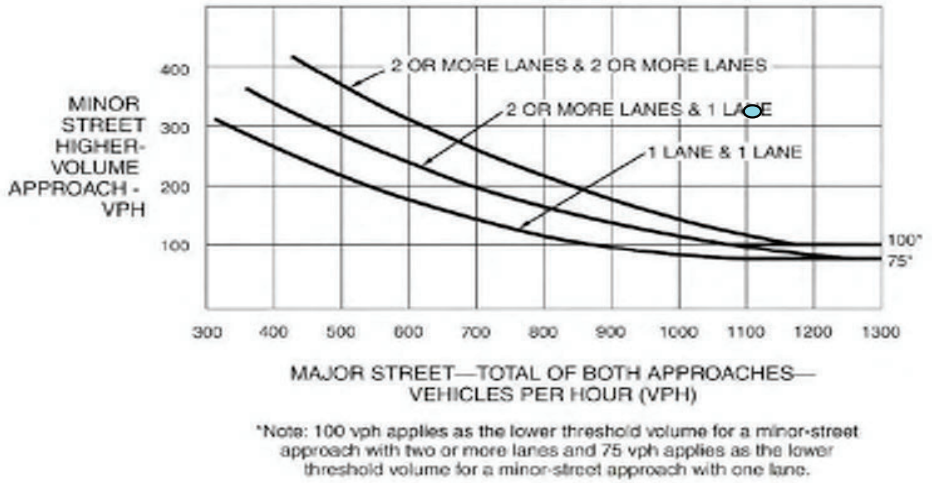
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — Yes
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — Yes

PART B SATISFIED **Yes**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	1115	
Highest Approach - Minor Street	320	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Kimley»Horn

PEAK HOUR SIGNAL WARRANT ANALYSIS (Warrant #3, California MUTCD 2014 Edition)

INT #6

PROJECT NAME: ***Estia Dry Creek - LTA***

SCENARIO: ***Cumulative (2044)***

COMMENTS:

MAJOR STREET: ***Baseline Rd*** ☐ NB/SB ☑ EB/WB # OF APPROACH LANES: 2

MINOR STREET: ***Crowder Ln*** ☑ NB/SB ☐ EB/WB # OF APPROACH LANES: 1

THE STUDY INTERSECTION HAS MORE THAN THREE APPROACHES (Y OR N): Y

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

WORST CASE DELAY FOR MINOR STREET APPROACH:	AM		PM	
	436.9	sec/veh	1943.6	sec/veh
	13.35	veh-hr	75.58	veh-hr

			MAJOR STREET			MINOR STREET				
			EB Approach	WB Approach	Total	NB Approach	SB Approach	Heavy Leg	Total	Intersection Total
06:00 AM	TO	07:00 AM			0			0	0	0
07:00 AM	TO	08:00 AM	1780	1600	3380	100	110	110	210	3590
08:00 AM	TO	09:00 AM			0			0	0	0
09:00 AM	TO	10:00 AM			0			0	0	0
10:00 AM	TO	11:00 AM			0			0	0	0
11:00 AM	TO	12:00 PM			0			0	0	0
12:00 PM	TO	01:00 PM			0			0	0	0
01:00 PM	TO	02:00 PM			0			0	0	0
02:00 PM	TO	03:00 PM			0			0	0	0
03:00 PM	TO	04:00 PM			0			0	0	0
04:00 PM	TO	05:00 PM			0			0	0	0
05:00 PM	TO	06:00 PM	2075	1885	3960	140	95	140	235	4195
06:00 PM	TO	07:00 PM			0			0	0	0
07:00 PM	TO	08:00 PM			0			0	0	0
08:00 PM	TO	09:00 PM			0			0	0	0
09:00 PM	TO	10:00 PM			0			0	0	0

	MAJOR STREET	MINOR STREET		INTERSECTION
	Total	Heavy Leg	Total	Total
AM MAX	3380	110	210	3590
PM MAX	3960	140	235	4195

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Cumulative (2044) AM
Intersection: Baseline Rd AND Crowder Ln
Comments:

	PART A or PART B	SATISFIED	**YES**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **YES**

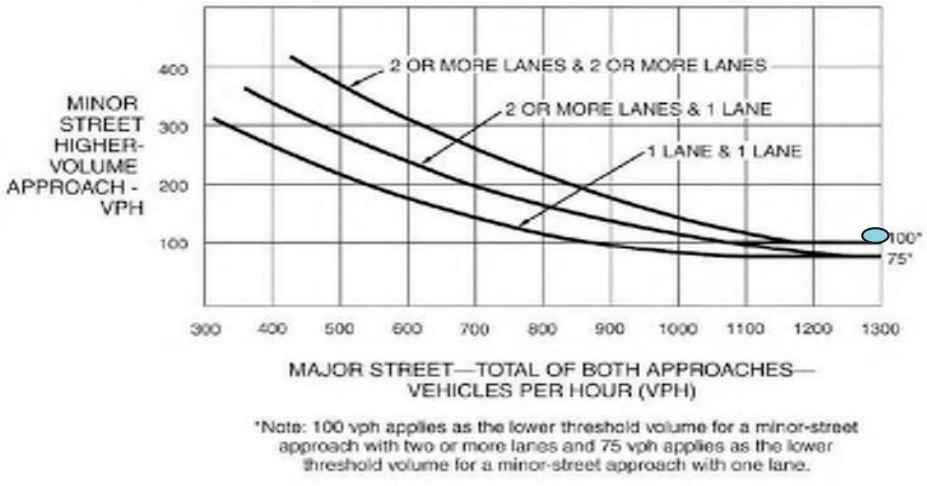
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — Yes
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — Yes

PART B SATISFIED **Yes**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		3380
Highest Approach - Minor Street	110	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Cumulative (2044) PM
Intersection: Baseline Rd AND Crowder Ln
Comments:

	PART A or PART B	SATISFIED	**YES**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **YES**

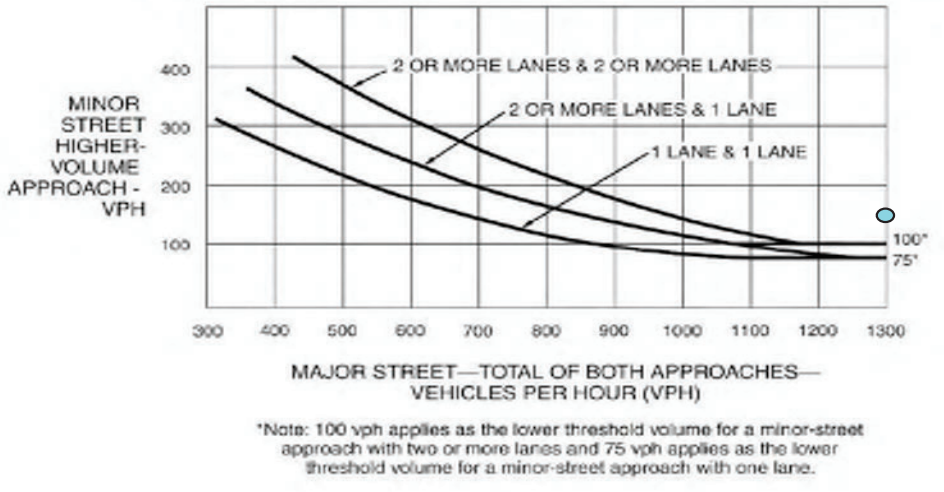
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — Yes
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — Yes

PART B SATISFIED **Yes**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		3960
Highest Approach - Minor Street	140	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Kimley»Horn

PEAK HOUR SIGNAL WARRANT ANALYSIS (Warrant #3, California MUTCD 2014 Edition)

INT #8

PROJECT NAME: ***Estia Dry Creek - LTA***

SCENARIO: ***Cumulative (2044)***

COMMENTS:

MAJOR STREET: ***Vineyard Ln*** ☐ NB/SB ☑ EB/WB # OF APPROACH LANES: 1

MINOR STREET: ***Crowder Ln*** ☑ NB/SB ☐ EB/WB # OF APPROACH LANES: 1

THE STUDY INTERSECTION HAS MORE THAN THREE APPROACHES (Y OR N): N

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

	AM		PM	
WORST CASE DELAY FOR MINOR STREET APPROACH:	8.2	sec/veh	7.4	sec/veh
	0.39	veh-hr	0.19	veh-hr

			MAJOR STREET			MINOR STREET				
			EB Approach	WB Approach	Total	NB Approach	SB Approach	Heavy Leg	Total	Intersection Total
06:00 AM	TO	07:00 AM			0			0	0	0
07:00 AM	TO	08:00 AM	30	65	95	0	170	170	170	265
08:00 AM	TO	09:00 AM			0			0	0	0
09:00 AM	TO	10:00 AM			0			0	0	0
10:00 AM	TO	11:00 AM			0			0	0	0
11:00 AM	TO	12:00 PM			0			0	0	0
12:00 PM	TO	01:00 PM			0			0	0	0
01:00 PM	TO	02:00 PM			0			0	0	0
02:00 PM	TO	03:00 PM			0			0	0	0
03:00 PM	TO	04:00 PM			0			0	0	0
04:00 PM	TO	05:00 PM			0			0	0	0
05:00 PM	TO	06:00 PM	10	140	150	0	90	90	90	240
06:00 PM	TO	07:00 PM			0			0	0	0
07:00 PM	TO	08:00 PM			0			0	0	0
08:00 PM	TO	09:00 PM			0			0	0	0
09:00 PM	TO	10:00 PM			0			0	0	0

	MAJOR STREET	MINOR STREET		INTERSECTION
	Total	Heavy Leg	Total	Total
AM MAX	95	170	170	265
PM MAX	150	90	90	240

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Cumulative (2044) AM
Intersection: Vineyard Ln AND Crowder Ln
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

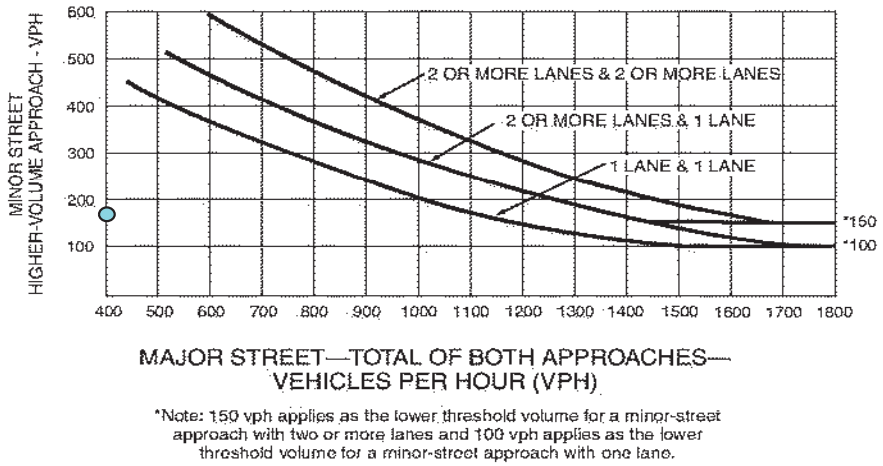
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	No
2.	The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	No

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	95	
Highest Approach - Minor Street	170	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-3. Warrant 3, Peak Hour



* Figure not OCR Compatible

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Cumulative (2044) PM
Intersection: Vineyard Ln AND Crowder Ln
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

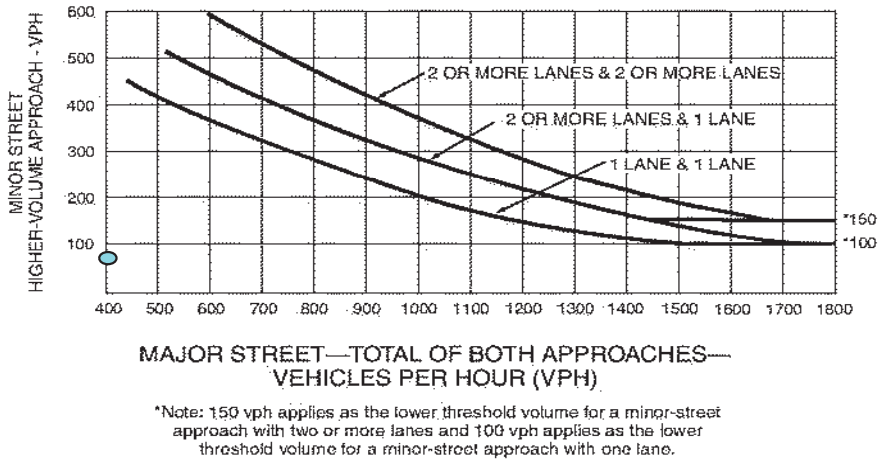
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — No
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — No
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — No

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	150	
Highest Approach - Minor Street	90	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-3. Warrant 3, Peak Hour



* Figure not OCR Compatible

Kimley»Horn

PEAK HOUR SIGNAL WARRANT ANALYSIS (Warrant #3, California MUTCD 2014 Edition)

INT #9

PROJECT NAME: ***Estia Dry Creek - LTA***

SCENARIO: ***Cumulative (2044)***

COMMENTS:

MAJOR STREET: ***Walerga Rd*** ☑ NB/SB ☐ EB/WB # OF APPROACH LANES: 3

MINOR STREET: ***Project Access/Springhill Dr*** ☐ NB/SB ☑ EB/WB # OF APPROACH LANES: 1

THE STUDY INTERSECTION HAS MORE THAN THREE APPROACHES (Y OR N): Y

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

WORST CASE DELAY FOR MINOR STREET APPROACH:	AM		PM	
	581.4	sec/veh	409.8	sec/veh
	3.23	veh-hr	2.28	veh-hr

			MAJOR STREET			MINOR STREET				
			NB Approach	SB Approach	Total	EB Approach	WB Approach	Heavy Leg	Total	Intersection Total
06:00 AM	TO	07:00 AM			0			0	0	0
07:00 AM	TO	08:00 AM	1940	2340	4280	20	10	20	30	4310
08:00 AM	TO	09:00 AM			0			0	0	0
09:00 AM	TO	10:00 AM			0			0	0	0
10:00 AM	TO	11:00 AM			0			0	0	0
11:00 AM	TO	12:00 PM			0			0	0	0
12:00 PM	TO	01:00 PM			0			0	0	0
01:00 PM	TO	02:00 PM			0			0	0	0
02:00 PM	TO	03:00 PM			0			0	0	0
03:00 PM	TO	04:00 PM			0			0	0	0
04:00 PM	TO	05:00 PM			0			0	0	0
05:00 PM	TO	06:00 PM	2345	2135	4480	20	10	20	30	4510
06:00 PM	TO	07:00 PM			0			0	0	0
07:00 PM	TO	08:00 PM			0			0	0	0
08:00 PM	TO	09:00 PM			0			0	0	0
09:00 PM	TO	10:00 PM			0			0	0	0

	MAJOR STREET	MINOR STREET		INTERSECTION
	Total	Heavy Leg	Total	Total
AM MAX	4280	20	30	4310
PM MAX	4480	20	30	4510

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Cumulative (2044) AM
Intersection: Walerga Rd AND Project Access/Springhill Dr
Comments:

	PART A or PART B	SATISFIED	**NO**

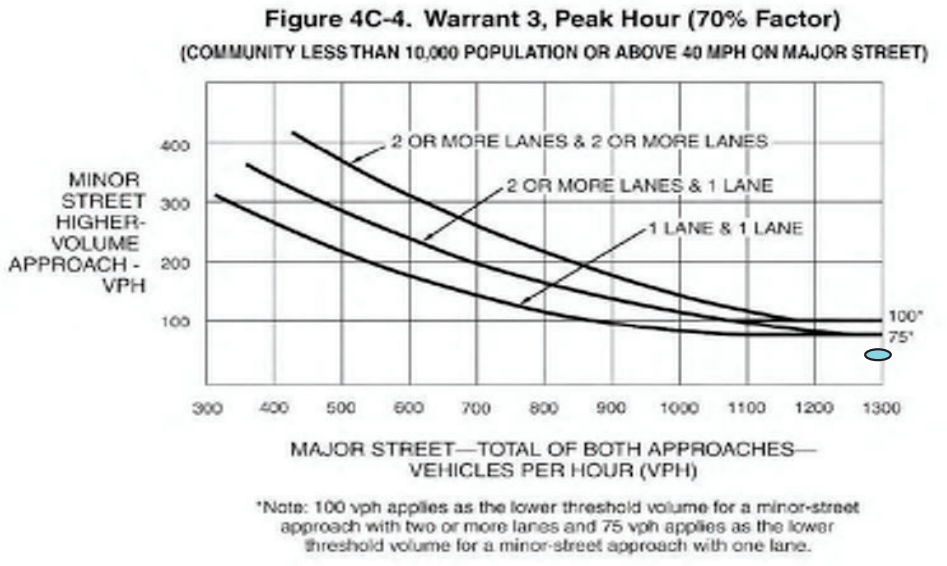
PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — No
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — No
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — Yes

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		4280
Highest Approach - Minor Street	20	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.



* Figure not OCR Compatible

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Cumulative (2044) PM
Intersection: Walerga Rd AND Project Access/Springhill Dr
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

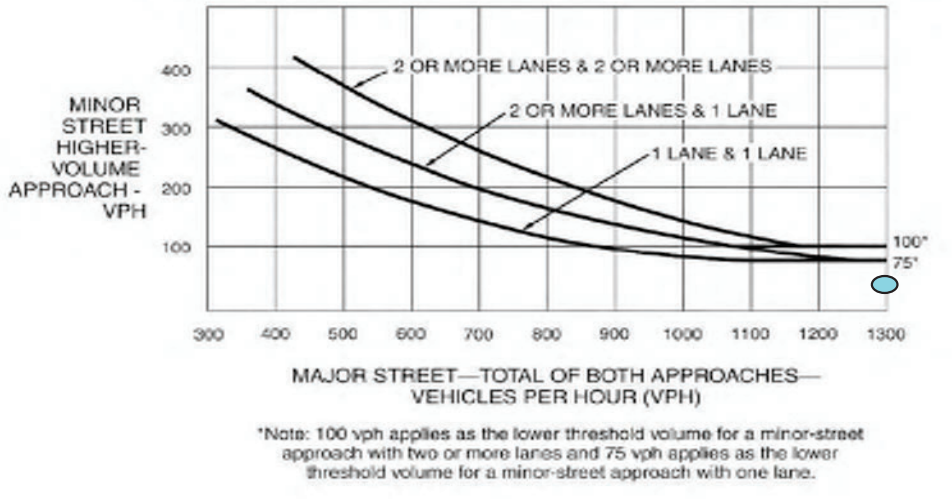
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — No
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — No
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — Yes

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		4480
Highest Approach - Minor Street	20	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Kimley»Horn

PEAK HOUR SIGNAL WARRANT ANALYSIS (Warrant #3, California MUTCD 2014 Edition)

INT #6

Source: MUTCD 2014 California Supplement

PROJECT NAME: ***Estia Dry Creek - LTA***

SCENARIO: ***Cumulative (2044) plus Project Buildout***

COMMENTS:

MAJOR STREET: ***Baseline Rd*** ☐ NB/SB ☑ EB/WB # OF APPROACH LANES: 2

MINOR STREET: ***Crowder Ln*** ☑ NB/SB ☐ EB/WB # OF APPROACH LANES: 1

THE STUDY INTERSECTION HAS MORE THAN THREE APPROACHES (Y OR N): Y

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

WORST CASE DELAY FOR MINOR STREET APPROACH:	AM		PM	
	736.6	sec/veh	2722.2	sec/veh
	26.39	veh-hr	125.52	veh-hr

			MAJOR STREET			MINOR STREET				
			EB Approach	WB Approach	Total	NB Approach	SB Approach	Heavy Leg	Total	Intersection Total
06:00 AM	TO	07:00 AM			0			0	0	0
07:00 AM	TO	08:00 AM	1843	1619	3462	129	110	129	239	3701
08:00 AM	TO	09:00 AM			0			0	0	0
09:00 AM	TO	10:00 AM			0			0	0	0
10:00 AM	TO	11:00 AM			0			0	0	0
11:00 AM	TO	12:00 PM			0			0	0	0
12:00 PM	TO	01:00 PM			0			0	0	0
01:00 PM	TO	02:00 PM			0			0	0	0
02:00 PM	TO	03:00 PM			0			0	0	0
03:00 PM	TO	04:00 PM			0			0	0	0
04:00 PM	TO	05:00 PM			0			0	0	0
05:00 PM	TO	06:00 PM	2131	1947	4078	166	95	166	261	4339
06:00 PM	TO	07:00 PM			0			0	0	0
07:00 PM	TO	08:00 PM			0			0	0	0
08:00 PM	TO	09:00 PM			0			0	0	0
09:00 PM	TO	10:00 PM			0			0	0	0

	MAJOR STREET	MINOR STREET		INTERSECTION
	Total	Heavy Leg	Total	Total
AM MAX	3462	129	239	3701
PM MAX	4078	166	261	4339

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Cumulative (2044) plus Project Buildout AM
Intersection: Baseline Rd AND Crowder Ln
Comments:

	PART A or PART B	SATISFIED	**YES**

PART A
(All parts 1, 2, and 3 below must be satisfied) — SATISFIED **YES**

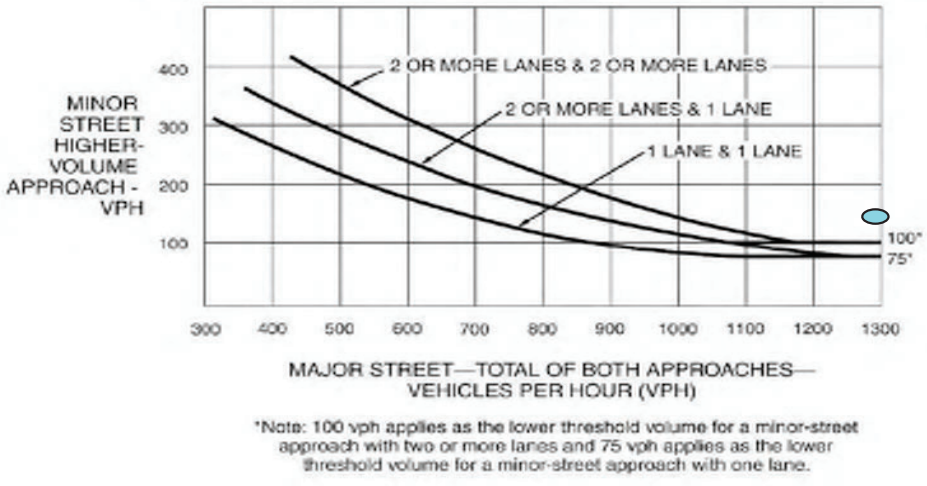
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — Yes
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — Yes

PART B — SATISFIED **Yes**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		3462
Highest Approach - Minor Street	129	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



* Figure not OCR Compatible

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Cumulative (2044) plus Project Buildout PM
Intersection: Baseline Rd AND Crowder Ln
Comments:

	PART A or PART B	SATISFIED	**YES**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **YES**

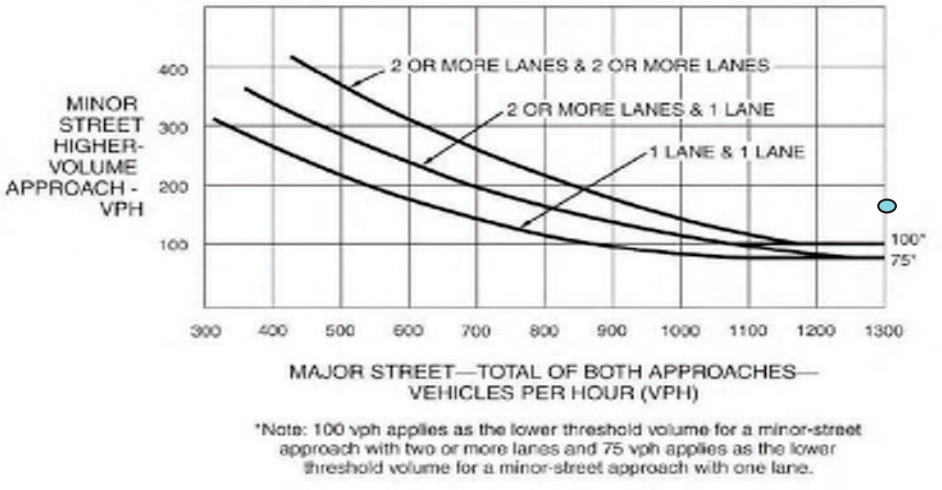
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — Yes
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — Yes

PART B SATISFIED **Yes**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		4078
Highest Approach - Minor Street	166	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Kimley»Horn

PEAK HOUR SIGNAL WARRANT ANALYSIS (Warrant #3, California MUTCD 2014 Edition)

INT #8

Source: MUTCD 2014 California Supplement

PROJECT NAME: ***Estia Dry Creek - LTA***

SCENARIO: ***Cumulative (2044) plus Project Buildout***

COMMENTS:

MAJOR STREET: ***Vineyard Ln*** ☐ NB/SB ☑ EB/WB # OF APPROACH LANES: 1

MINOR STREET: ***Crowder Ln*** ☑ NB/SB ☐ EB/WB # OF APPROACH LANES: 1

THE STUDY INTERSECTION HAS MORE THAN THREE APPROACHES (Y OR N): N

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

	AM		PM	
WORST CASE DELAY FOR MINOR STREET APPROACH:	8.3	sec/veh	7.7	sec/veh
	0.43	veh-hr	0.27	veh-hr

			MAJOR STREET			MINOR STREET				
			EB Approach	WB Approach	Total	NB Approach	SB Approach	Heavy Leg	Total	Intersection Total
06:00 AM	TO	07:00 AM			0			0	0	0
07:00 AM	TO	08:00 AM	58	68	126	0	187	187	187	313
08:00 AM	TO	09:00 AM			0			0	0	0
09:00 AM	TO	10:00 AM			0			0	0	0
10:00 AM	TO	11:00 AM			0			0	0	0
11:00 AM	TO	12:00 PM			0			0	0	0
12:00 PM	TO	01:00 PM			0			0	0	0
01:00 PM	TO	02:00 PM			0			0	0	0
02:00 PM	TO	03:00 PM			0			0	0	0
03:00 PM	TO	04:00 PM			0			0	0	0
04:00 PM	TO	05:00 PM			0			0	0	0
05:00 PM	TO	06:00 PM	28	151	179	0	124	124	124	303
06:00 PM	TO	07:00 PM			0			0	0	0
07:00 PM	TO	08:00 PM			0			0	0	0
08:00 PM	TO	09:00 PM			0			0	0	0
09:00 PM	TO	10:00 PM			0			0	0	0

	MAJOR STREET	MINOR STREET		INTERSECTION
	Total	Heavy Leg	Total	Total
AM MAX	126	187	187	313
PM MAX	179	124	124	303

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Cumulative (2044) plus Project Buildout AM
Intersection: Vineyard Ln AND Crowder Ln
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

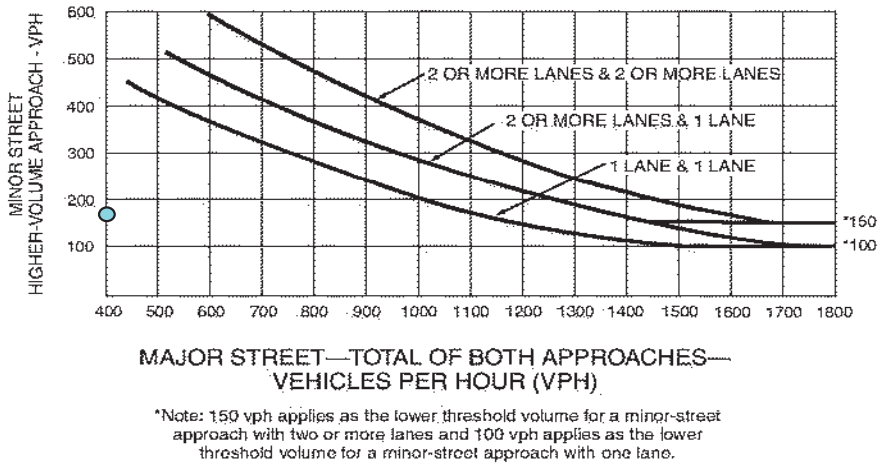
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	No
2.	The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	No

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	126	
Highest Approach - Minor Street	187	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Cumulative (2044) plus Project Buildout PM
Intersection: Vineyard Ln AND Crowder Ln
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

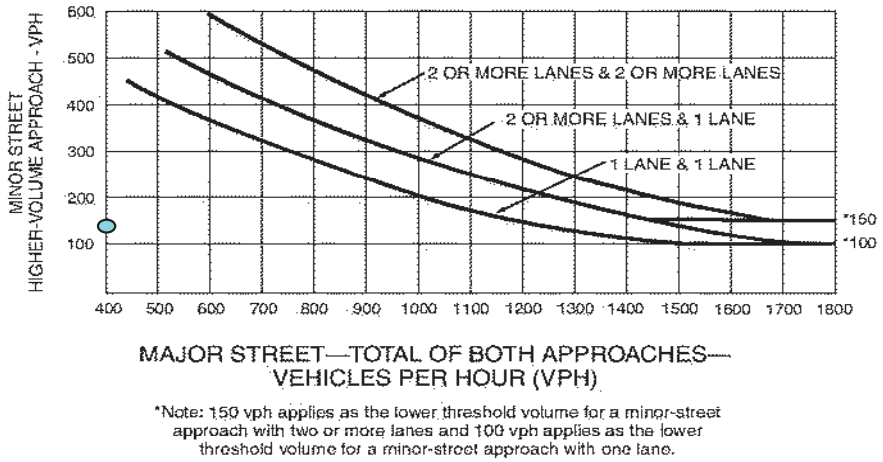
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	No
2.	The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	No

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	179	
Highest Approach - Minor Street	124	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-3. Warrant 3, Peak Hour



* Figure not OCR Compatible

Kimley»Horn

PEAK HOUR SIGNAL WARRANT ANALYSIS (Warrant #3, California MUTCD 2014 Edition)

INT #9

Source: MUTCD 2014 California Supplement

PROJECT NAME: ***Estia Dry Creek - LTA***

SCENARIO: ***Cumulative (2044) plus Project Buildout***

COMMENTS:

MAJOR STREET: ***Walerga Rd*** ☑ NB/SB ☐ EB/WB # OF APPROACH LANES: 3

MINOR STREET: ***Project Access/Springhill Dr*** ☐ NB/SB ☑ EB/WB # OF APPROACH LANES: 1

THE STUDY INTERSECTION HAS MORE THAN THREE APPROACHES (Y OR N): Y

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

WORST CASE DELAY FOR MINOR STREET APPROACH:	AM		PM	
	2739.6	sec/veh	1613.0	sec/veh
	52.51	veh-hr	23.75	veh-hr

			MAJOR STREET			MINOR STREET				
			NB Approach	SB Approach	Total	EB Approach	WB Approach	Heavy Leg	Total	Intersection Total
06:00 AM	TO	07:00 AM			0			0	0	0
07:00 AM	TO	08:00 AM	1976	2387	4363	69	10	69	79	4442
08:00 AM	TO	09:00 AM			0			0	0	0
09:00 AM	TO	10:00 AM			0			0	0	0
10:00 AM	TO	11:00 AM			0			0	0	0
11:00 AM	TO	12:00 PM			0			0	0	0
12:00 PM	TO	01:00 PM			0			0	0	0
01:00 PM	TO	02:00 PM			0			0	0	0
02:00 PM	TO	03:00 PM			0			0	0	0
03:00 PM	TO	04:00 PM			0			0	0	0
04:00 PM	TO	05:00 PM			0			0	0	0
05:00 PM	TO	06:00 PM	2407	2223	4630	53	10	53	63	4693
06:00 PM	TO	07:00 PM			0			0	0	0
07:00 PM	TO	08:00 PM			0			0	0	0
08:00 PM	TO	09:00 PM			0			0	0	0
09:00 PM	TO	10:00 PM			0			0	0	0

	MAJOR STREET	MINOR STREET		INTERSECTION
	Total	Heavy Leg	Total	Total
AM MAX	4363	69	79	4442
PM MAX	4630	53	63	4693

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Cumulative (2044) plus Project Buildout AM
Intersection: Walerga Rd AND Project Access/Springhill Dr
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

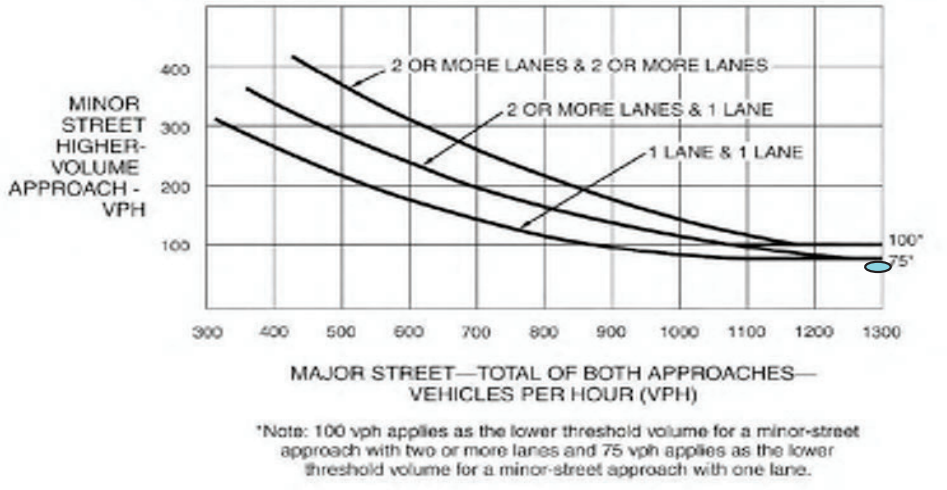
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	Yes
2.	The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	No
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	Yes

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		4363
Highest Approach - Minor Street	69	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Cumulative (2044) plus Project Buildout PM
Intersection: Walerga Rd AND Project Access/Springhill Dr
Comments:

	PART A or PART B	SATISFIED	**NO**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

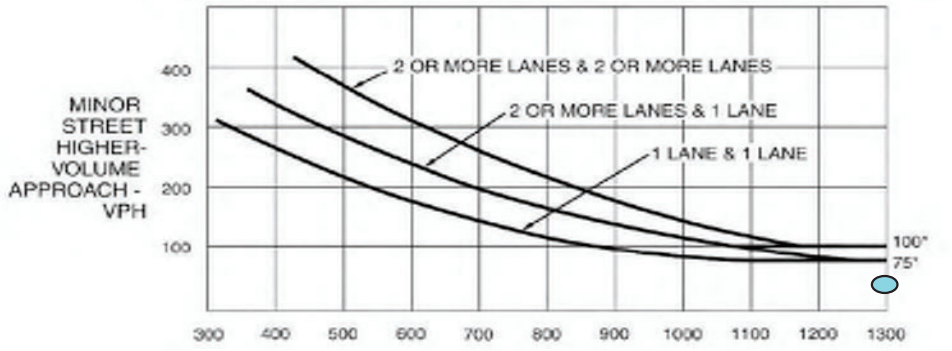
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	Yes
2.	The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	No
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	Yes

PART B SATISFIED **No**

APPROACH LANES	One	2 or More
Both Approaches - Major Street		4630
Highest Approach - Minor Street	53	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

* Figure not OCR Compatible