DRAFT INITIAL STUDY AND MITIGATED NEGATIVE DECLARATION

AMARGOSA LLC NAVAJO RD. & JOHNSON RD. WAREHOUSE PROJECT
TOWN OF APPLE VALLEY, CALIFORNIA
APN 0463-203-26, 0463-203-27, 0463-203-28

LEAD AGENCY:

TOWN OF APPLE VALLEY, PLANNING DIVISION
14955 DALE EVANS PARKWAY
APPLE VALLEY, CALIFORNIA 92307

REPORT PREPARED BY:

BLODGETT BAYLOSIS ENVIRONMENTAL PLANNING
2211 S. HACIENDA BOULEVARD, SUITE 107
HACIENDA HEIGHTS, CALIFORNIA 91745

JANUARY 8, 2025

APPL 004

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MITIGATED NEGATIVE DECLARATION

PROJECT NAME: Amargosa LLC Navajo Rd. & Johnson Rd. Warehouse Project.

PROJECT APPLICANT: The Applicant for the proposed project is Simon Bouzaglou, 55555 Amargosa LLC , Attention Steeno Design Studio, Inc. 11774 Hesperia Road, Suite B-1. Hesperia, California.

PROJECT LOCATION: The project site is located in the north-central portion of the Town of Apple Valley. The site's Accessor Parcel Numbers (APNs) are 0463-203-26, 0463-203-27, and 0463-203-28. There is currently no address, but it is located at Navajo Road and Johnson Road. Johnson Road extends along the project site's south side and Navajo Road extends along the site's east side.

TOWN AND COUNTY: Town of Apple Valley, San Bernardino County.

PROJECT: The proposed project would be a 404,057 square foot industrial warehouse. The total net land area of the site is 871,200 square feet which is approximately 18.71 acres. As indicated previously, the new building would have a total floor area of 404,057 square feet. Two potential separate office areas would be provided at the southeast and southwest corners of the new building. Of the new building's total floor area, 391,638 square feet would be devoted to warehouse uses and 12,419 square feet would be office space. The new building could potentially be divided into two separate tenant spaces. The individual tenants have not yet been identified. The future occupants would have to comply with the Town's Zoning Ordinance with respect to the permitted uses. A total of 64 truck loading docks would be located along the building's north elevation. Truck and trailer parking, consisting of 48 spaces, would be provided along the northern side of the side. A total of 6 EV spaces for trucks would be located along the building's north side. A total of 222 vehicle parking spaces for employees and patrons would be located along the building's east, south, and west elevations and along the east perimeter of the site. Of this total, 203 spaces would be standard spaces, 7 spaces would be ADA spaces, and 12 spaces would be reserved for EV vehicles. The loading and receiving area is located to the north of the building and would be secured by a gate and a security guard house. Drainage and retention basins would be located along the Johnson Road frontage in the southern portion of the site. Landscaping totaling 90,969 square feet, would be provided throughout the site and along the roadway's frontages. This landscaping would consist of both drought tolerant ground cover, shrubs, and trees. An outside break area would be located near the building's northeast corner. Access to the project site would be provided by three driveway connections with the north side of Johnson Road and Navajo Road. The project would also be required to make improvements to Johnson Road and Navajo Road. No signals at the project driveways were required. The zoning designation of the site is *Specific Plan (North Apple Valley Specific Plan)*.

EVALUATION FORMAT: The attached initial study is prepared in accordance with the California Environmental Quality Act (CEQA) pursuant to Public Resources Code Section 21000, et seq. and the State CEQA Guidelines (California Code of Regulations Section 15000, et seq.). Specifically, the preparation of the attached Initial Study was guided by Section 15063 of the State CEQA Guidelines. The project was evaluated based on its effect on 21 major categories of environmental factors. Each factor is reviewed by responding to a series of questions regarding the impact of the project on each element of the overall factor. The Initial Study checklist includes a formatted analysis that provides a determination of the effect of the project on the factor and its elements. The effect of the project is categorized into one of the following four categories of possible determinations:

Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant	No Impact

Substantiation is then provided to justify each determination. One of the four following conclusions is then provided as a summary of the analysis for each of the major environmental factors.

No Impact: No impacts are identified or anticipated, and no mitigation measures are required.

Less than Significant Impact: No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

Less than Significant Impact with Mitigation: Possible significant adverse impacts have been identified or anticipated and mitigation measures are required as a condition of the project's approval to reduce these impacts to a level below significance.

Potentially Significant Impact: Significant adverse impacts have been identified or anticipated. An Environmental Impact Report (EIR) is required to evaluate these impacts.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below will be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist in the attached Initial Study.

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

DETERMINATION: (To be completed by the Lead Agency) On the basis of this initial evaluation, the following finding is made:

☐	The proposed project *COULD NOT* have a significant effect on the environment, and a *NEGATIVE DECLARATION* shall be prepared.
✖	Although the proposed project could have a significant effect on the environment, there shall not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A *MITIGATED NEGATIVE DECLARATION* shall be prepared.
☐	The proposed project *MAY* have a significant effect on the environment, and an *ENVIRONMENTAL IMPACT REPORT* is required.
☐	The proposed project *MAY* have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An *ENVIRONMENTAL IMPACT REPORT* is required, but it must analyze only the effects that remain to be addressed.
☐	Although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an *earlier EIR or NEGATIVE DECLARATION* pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that *earlier EIR or NEGATIVE DECLARATION,* including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

Date

Town of Apple Valley California

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APPENDICES (PROVIDED UNDER A SEPARATE COVER)

SECTION 1. INTRODUCTION

1.1 OVERVIEW OF THE PROPOSED PROJECT

The proposed project would be a 404,057 square foot industrial warehouse. The total net land area of the site is 871,200 square feet which is approximately 18.71 acres. As indicated previously, the new building would have a total floor area of 404,057 square feet. Two separate office areas would be located at the southeast and southwest corners of the new building. The new building could potentially be divided into two separate tenant spaces. The individual tenants have not yet been identified. Future occupants would have to comply with the Town's Zoning Ordinance with respect to the permitted uses. Of the new building's total floor area, 391,638 square feet would be warehouse uses and 12,419 square feet would be office space. A total of 64 truck loading docks would be located along the building's north elevation. The maximum height of the new building would be 42-feet. Truck and trailer parking, consisting of 48 spaces, would be provided along the northern side of the site. A total of 6 EV spaces for trucks would be located along the building's north side. A total of 222vehicle parking spaces for employees and patrons would be located along the building's east, south, and west elevations and along the east perimeter of the site. Of this total, 203 spaces would be standard spaces, 7 spaces would be ADA spaces, and 12 spaces would be reserved for EV vehicles. The loading and receiving area is located to the north of the building and would be secured by a gate and a security guard house. Drainage and retention basins would be located along the Johnson Road frontage in the southern portion of the site. Landscaping, totaling 90,969 square feet, would be provided throughout the site and along the roadway's frontages. This landscaping would consist of drought tolerant ground cover, shrubs, and trees. An outside break area would be located near the building's northeast corner. Access to the project site would be provided by three driveway connections with the north side of Johnson Road and two driveway connections with the west side of Navajo Road. The project would also be required to make improvements to Johnson Road and Navajo Road. No signals at the project driveways are required. The zoning designation of the site is *Specific Plan (North Apple Valley Specific Plan)*.[1]

1.2 PURPOSE OF THIS INITIAL STUDY

The Town of Apple Valley is the designated *Lead Agency,* and as such, the Town of Apple Valley will be responsible for the project's environmental review. Section 21067 of California Environmental Quality Act (CEQA) defines a Lead Agency as the public agency that has the principal responsibility for carrying out or approving a project that may have a significant effect on the environment.[2] As part of the proposed project's environmental review, the Town of Apple Valley has authorized the preparation of this Initial Study.[3] The primary purpose of CEQA is to ensure that decision-makers and the public understand the environmental implications of a specific action or project. An additional purpose of this Initial Study is to ascertain whether the proposed project will have the potential for significant adverse impacts on the environment once it is implemented. Pursuant to the CEQA Guidelines, additional purposes of this Initial Study include the following:

- To provide the Town of Apple Valley with information to use as the basis for deciding whether to prepare an environmental impact report (EIR), mitigated negative declaration, or negative declaration for a project;

[1] Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

[2] California, State of. *California Public Resources Code. Division 13, Chapter 2.5. Definitions.* as Amended 2001. §21067.

[3] Ibid. (CEQA Guidelines) §15050.

- To facilitate the project's environmental assessment early in the design and development of the proposed project;
- To eliminate unnecessary EIRs; and,
- To determine the nature and extent of any impacts associated the proposed project.

Although this Initial Study was prepared with consultant support, the analysis, conclusions, and findings made as part of its preparation fully represent the independent judgment and position of the Town of Apple Valley, in its capacity as the Lead Agency. The Town of Apple Valley determined, as part of this Initial Study's preparation, that a Mitigated Negative Declaration is the appropriate environmental document for the proposed project's CEQA review.

Certain projects or actions may also require oversight approvals or permits from other public agencies. These other agencies are referred to as *Responsible Agencies* and *Trustee Agencies*, pursuant to Sections 15381 and 15386 of the State CEQA Guidelines.[4] This Initial Study and the *Notice of Intent (NOI) to Adopt a Mitigated Negative Declaration* will be forwarded to the State Clearinghouse, responsible agencies, trustee agencies, and the public for review and comment. The NOI would also be posted at the San Bernardino County Clerk's Office. This Initial Study and Mitigated Negative Declaration will also be forwarded to the State of California Office of Planning Research (the State Clearinghouse). A 30-day public review period will be provided to allow these entities and other interested parties to comment on the proposed project and the findings of this Initial Study.[5] Questions and/or comments should be submitted to the following contact person:

Town of Apple Valley Development Department, Planning Division
14338 Civic Drive
Town of Apple Valley, California 92323

1.3 INITIAL STUDY'S ORGANIZATION

The following annotated outline summarizes the contents of this Initial Study:

- *Section 1 Introduction* provides the procedural context surrounding this Initial Study's preparation and insight into its composition.
- *Section 2 Project Description* provides an overview of the existing environment as it relates to the project area and describes the proposed project's physical and operational characteristics.
- *Section 3 Environmental Analysis* includes an analysis of potential impacts associated with the construction and the subsequent operation of the proposed project.
- *Section 4 Conclusions* summarizes the findings of the analysis.
- *Section 5 References* identifies the sources used in the preparation of this Initial Study.

[4] California, State of. Public Resources Code Division 13. *The California Environmental Quality Act. Chapter 2.5, Section 21067 and Section 21069.* 2000.

[5] California, State of. Public Resources Code Division 13. *The California Environmental Quality Act. Chapter 2.6, Section 2109(b).* 2000.

SECTION 2. PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The proposed project site is located in the north-central portion of the Town of Apple Valley. The Town of Apple Valley is located in the southwestern portion of San Bernardino County in the southwestern Mojave Desert physiographic subregion. This physiographic subregion is commonly referred to as either the “Victor Valley” or the "High Desert" region due to its approximate elevation of 2,900 feet above sea level. The Victor Valley is separated from the more populated areas of coastal Southern California by the San Bernardino and San Gabriel mountains. The Town of Apple Valley is bounded on the north by unincorporated San Bernardino County; on the east by unincorporated San Bernardino County; the south by the City of Hesperia and unincorporated San Bernardino County; and on the west by the City of Adelanto. Regional access to the Town of Apple Valley is provided by three area highways: the Mojave Freeway (Interstate 15), extending in a southwest to northeast orientation west of the Town and State Route 18 traverses the southern portion of the Town in an east to west orientation.[6] The location of the Town of Apple Valley, in a regional context, is shown in Exhibit 1. An areawide map is provided in Exhibit 2.

Johnson Road extends along the project site’s south side and Navajo Road along the project’s east side. No street address has been assigned to the project site at this time. The corresponding Assessor Parcel Numbers (APN) are 0463-203-26, 0463-203-27, and 0463-203-28. The site’s latitude and longitude include 34°36'6.34"N; -117°11'29.18"W. The project site is located in Section 16, Township 6 North, and Range 3 West as shown on the United States Geological Survey (USGS) *Apple Valley North, California*. 7 ½ Minute Quadrangle. A local vicinity map is provided in Exhibit 3. An aerial photograph of the site and the surrounding area is provided in Exhibit 4.

2.2 ENVIRONMENTAL SETTING

The proposed project site is located on a total net land area of 18.72-acre across 3 parcels that are vacant though the site has been disturbed due to offroad activity and the illegal dumping of trash. Other than this disturbance, the site is undeveloped. The project site is located at the northwest corner of the intersection of Johnson Road and Navajo Road in the Town of Apple Valley, California. The property consists of vacant, desert land with sparse desert vegetation. Topographically, the site slopes gently to the southwest. Abundant trash and debris is present, primarily along the southern site boundary. Navajo Road, a dirt road, extends along the site’s east side with vacant, desert land continuing easterly. The adjacent properties to the west and north are vacant desert land, similar to the site. Mesa Linda Avenue, a dirt road, bounds the site further east with vacant, desert land beyond. Johnson Road, a paved roadway extends along the site’s south side. Sensitive receptors are generally considered to be those lands uses where the elderly and children congregate. The nearest sensitive receptors to the project site include scattered residential developments located more than two miles to the south of the site. Land uses and development located in the vicinity of the proposed project are outlined below:

- *North of the project site:* Vacant, though disturbed land is located to the north of the site. This area’s General Plan and Zoning designation is *Specific Plan (North Apple Valley Specific Plan)*.[7]

[6] Google Earth. Website accessed February 2, 2024.

[7] Google Maps and Town of Apple Valley Zoning Map. Website accessed February 2, 2024.

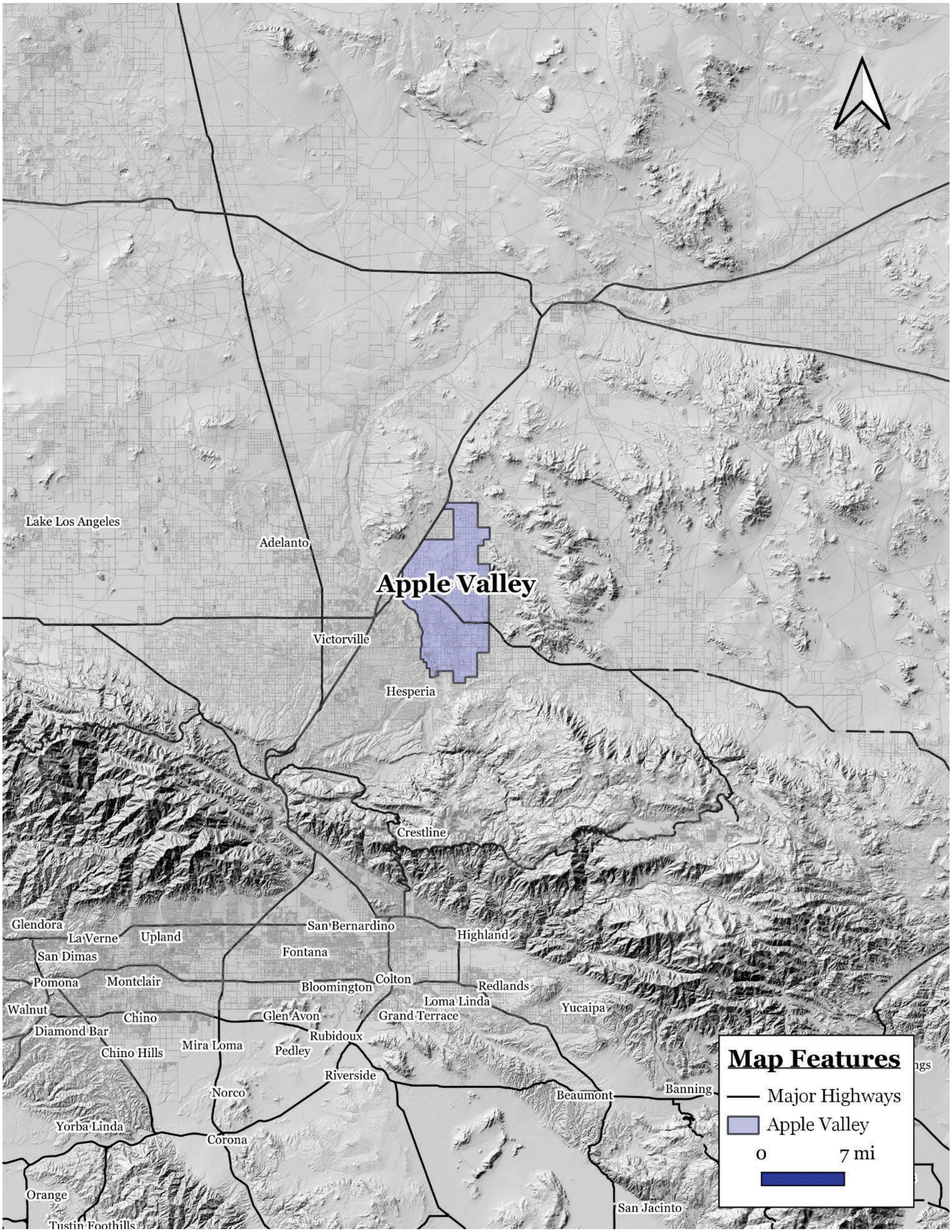

EXHIBIT 1 REGIONAL MAP

SOURCE: BLODGETT BAYLOSIS ENVIRONMENTAL PLANNING

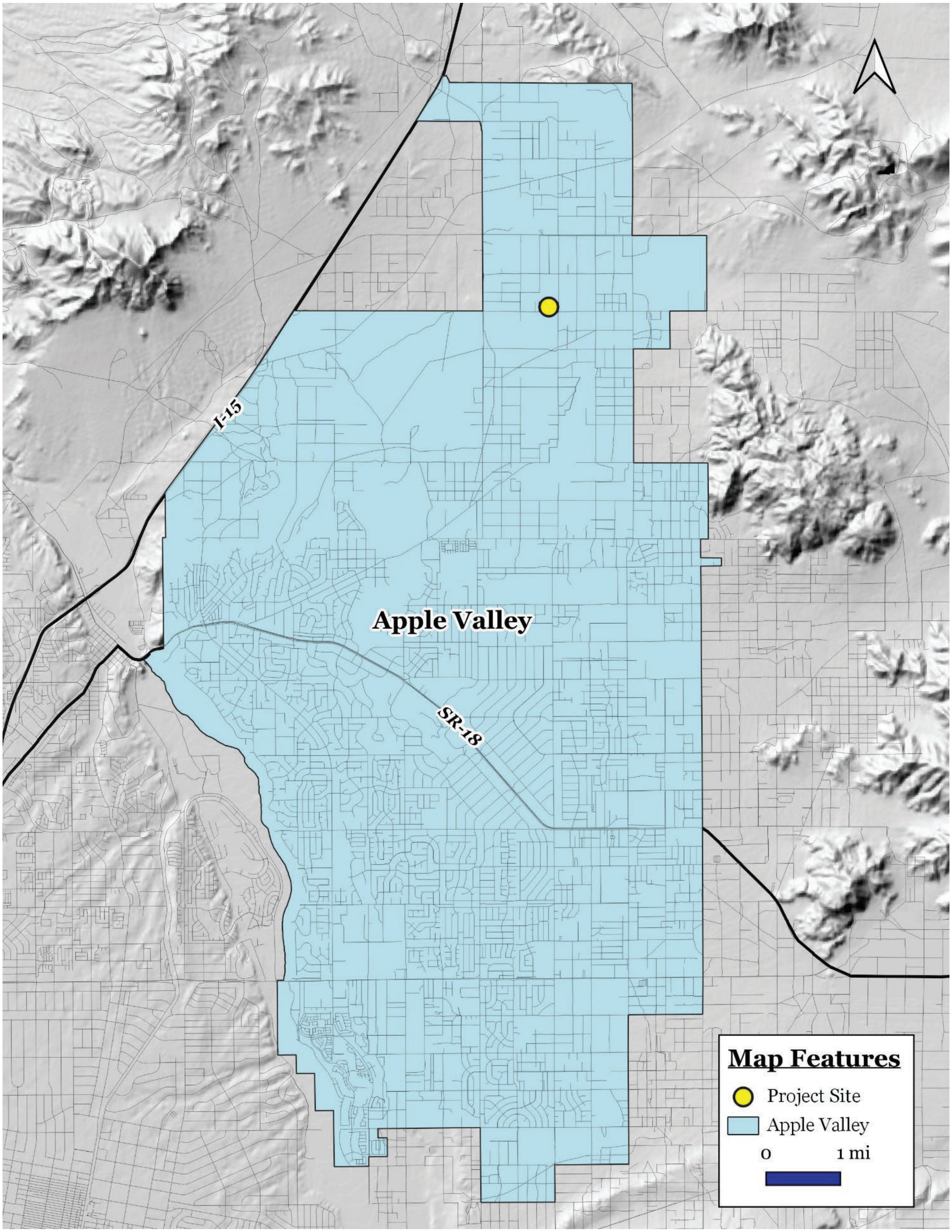

EXHIBIT 2 TOWN OF APPLE VALLEY MAP

SOURCE: BLODGETT BAYLOSIS ENVIRONMENTAL PLANNING

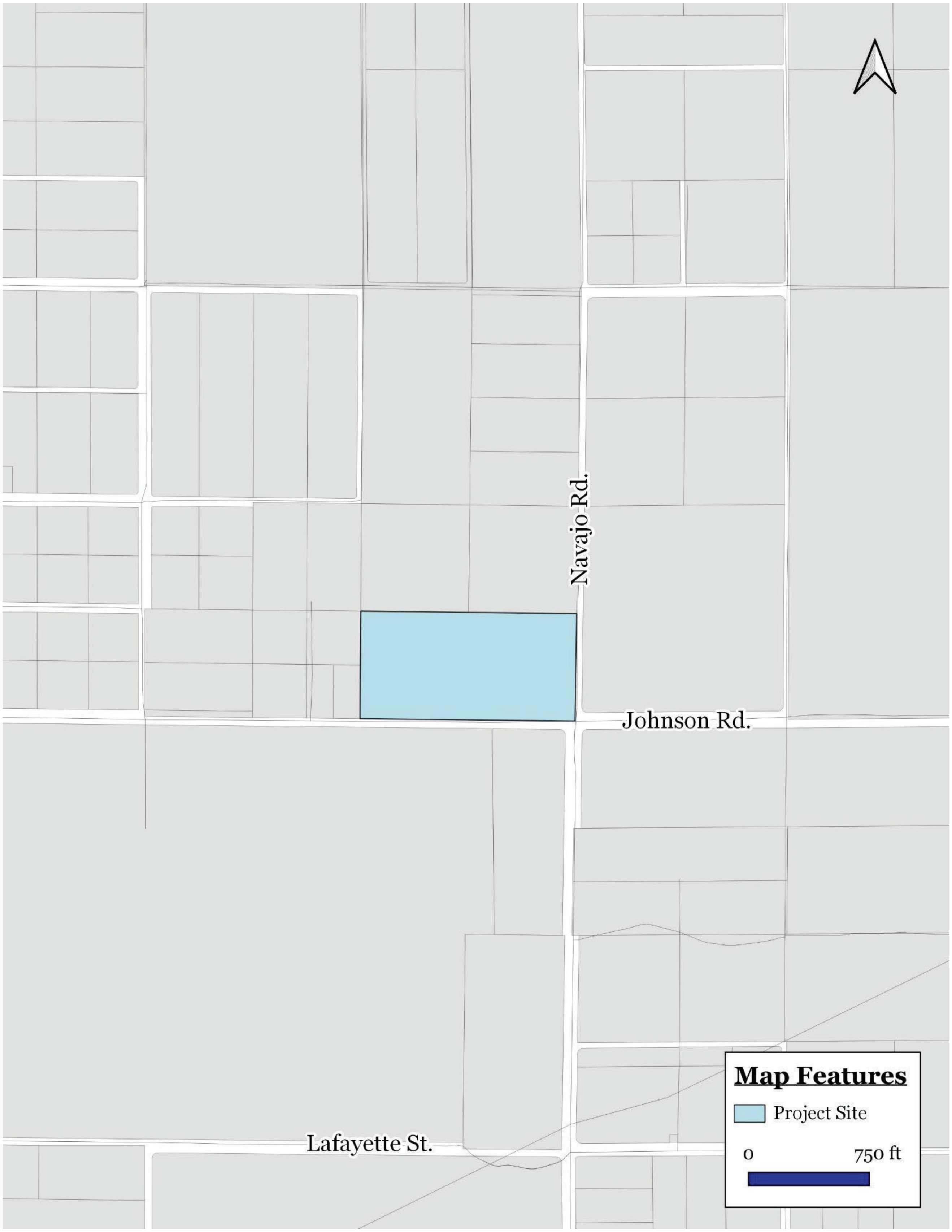

EXHIBIT 3 LOCAL MAP
SOURCE: BLODGETT BAYLOSIS ENVIRONMENTAL PLANNING

EXHIBIT 4 AERIAL IMAGE

SOURCE: BLODGETT BAYLOSIS ENVIRONMENTAL PLANNING

- *East of the project site:* Navajo Road extends along the project site's east side. Vacant, though disturbed land is located to the north of the site. This area's General Plan and Zoning designation is *Specific Plan (North Apple Valley Specific Plan).*[8]

- *South of the project site:* Johnson Road extends along the project site's southerly side. Further south, on the south side of this roadway, is the Victorville Collège of Public Safety (19190 Navajo Road) and the Walmart Distribution Center (21101 Johnson Road). This area's General Plan and Zoning designation is *Specific Plan (North Apple Valley Specific Plan).*[9]

- *West of the project site:* Vacant, undeveloped land is located to the west of the site. This area's General Plan and Zoning designation is *Specific Plan (North Apple Valley Specific Plan).*[10]

The land uses for the site and the surrounding area are summarized in Table 1.

TABLE 1 EXISTING LAND USE AND LAND USE ZONING DISTRICTS

Location	Existing Land Use	Land Use Zoning District
Project Site	Vacant land	This area is zoned as *Specific Plan*
North	Vacant land	This area is zoned as *Specific Plan*
South	Johnson Rd. and Industrial Use	This area is zoned as *Specific Plan*
East	Navajo Rd. and Vacant land	This area is zoned as *Specific Plan*
West	Vacant land	This area is zoned as *Specific Plan*

2.3 PHYSICAL CHARACTERISTICS OF THE PROPOSED PROJECT

This Initial Study analyzes the environmental impacts associated with the development of a 404,057 square foot industrial warehouse. The total net land area of the projects site is 871,200 square feet, which is approximately 18.71 acres. The proposed project would consist of the following elements:

- *Project Site*. The proposed project would be a 404,057 square foot industrial warehouse. The total net land area of the site is 871,200 square feet which is approximately 18.71 acres. Hardscape and paved surfaces would total 701,963 square feet or 88.5% of the total site area. The loading and receiving area is located to the north of the building and would be secured by a gate and a security guard house. Drainage and retention basins would be located along the Johnson Road frontage in the southern portion of the site.[11]

- *Proposed Building*. As indicated previously, the new building would have a total floor area of 404,057 square feet. Two separate office areas would be located at the southeast and southwest corners of the new building. Of the new building's total floor area, 391,638 square feet would be warehouse uses and 12,419 square feet would be office space. Each of the two office areas would include a ground level and a second level mezzanine. The warehouse would consist of a single level. A total of 64 truck loading docks would be located along the building's north elevation. The new building would have a maximum height of 42-feet. The new building could potentially be divided into two separate tenant spaces. The individual tenants have not yet been identified. Future

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[8] Google Maps and Town of Apple Valley Zoning Map. Website accessed February 2, 2024.

[9] Ibid.

[10] Ibid.

[11] Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

occupants would have to comply with the Town's Zoning Ordinance with respect to the permitted uses. [12]

- *Landscaping*. Landscaping totaling 90,969 square feet, would be provided throughout the site and along the roadway's frontages. An outside break area would be located near the building's northeast corner. The stormwater detention basins would also be landscaped. All of the landscaped areas would consist of drought tolerant species.[13]
- *Access and Internal Circulation*. Access to the project site would be provided by three driveway connections with the north side of Johnson Road and two driveway connections with the west side of Navajo Road. The project would also be required to make improvements to Johnson Road and Navajo Road. The project Applicant would be required to construct and improve the project's frontage with Johnson Road from the western project limit to Navajo Road. The project will be required to dedicate land and construct the 71-foot half-width of a major divided parkway road section including the project's driveway accessing Johnson Road. This may include land dedication to accommodate additional lanes at the intersection of Johnson Road and Navajo Road if required by the town. The Applicant would also be required to construct access and site frontage improvements on Navajo Road including improvements to the project's frontage with Navajo Road. The project would also be required to dedicate land and construct the 44-foot half-width of Navajo Road's secondary road designation including the proposed driveway accessing Navajo Road. Improvements to Navajo Road may include land dedication to accommodate additional lanes at the intersection of Johnson Road and Navajo Road if required by the town. No signals at the project driveways are required. The three driveways on the north side of Johnson Road would have a curb-to-curb width of 36-feet and would provide ingress and egress for vehicles. The southernmost driveway on Navajo Road would have a curb-to-curb width of 36-feet and would provide ingress and egress for vehicles while the northernmost driveway would have a curb-to-curb with of 50-feet and would provide ingress and egress for trucks to enter the loading and receiving area in the northern portion of the site. The internal drive aisles in the southerly portion of the site have a width of 36-feet.
- *Parking*. A total of 222 vehicle parking spaces for employees and patrons would be located along the building's east, south, and west elevations and along the east perimeter of the site. Of this total, 203 spaces would be standard spaces, 7 spaces would be ADA spaces, and 12 spaces would be reserved for EV vehicles. A total of 64 truck loading docks would be located along the building's north elevation. The maximum height of the new building would be 42-feet. Truck and trailer parking, consisting of 48 spaces, would be provided along the northern side of the side. A total of 6 EV spaces for trucks would be located along the building's north side.
- *Utilities*. The proposed project would be required to connect with local sanitary 12-inch sewer line in Johnson Road and a 16-inch water line located in Navajo Road north of the project site. This water line is owned by Liberty Utilities. The eastern, western, and southern sides of the new building will be at grade to channelize storm flows around the building along with the street sections. Off-site grading is proposed on the east side of Navajo Road to direct the storm flows south to a culvert crossing and local road tilt section that will convey the off-site flows to the north side of Johnson Road where these flows will be convey west and released into the historic natural drainage conveyance west of the project site. Tributary flows along the northern property line will be collected in a channel system between the truck parking and the northern property line. Electrical service would be provided by Southern California Edison lines located along Johnson Road.

[12] Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

[13] Ibid.

The proposed project's site plan is shown in Exhibit 5. The proposed project is summarized in Table 2.

2.4 OCCUPANCY CHARACTERISTICS OF THE PROPOSED PROJECT

The proposed project would be a 404,057 square foot industrial warehouse. The proposed building is anticipated to employ about 338 employees. This is based on an employment ratio of one employee for every 1,195 square feet of floor area.[14] The new building could potentially be divided into two separate tenant spaces. The individual tenants have not yet been identified. Future occupants would have to comply with the Town's Zoning Ordinance with respect to the permitted uses. The hours of operation for the proposed warehouse building is undetermined at this time though for purposes of analysis the tenants were assumed to occupy the building 24-hours a day, seven days a week.

TABLE 2 PROJECT SUMMARY

Project Element	Description
Total Site Area	18.71-acres (871,200 sq. ft.)
Total Building Floor Area	404,057 sq. ft.
Total Office Floor Area	12,419 sq. ft.
Total Warehouse Floor Area	391,638 sq. ft.
Building Footprint	400,893 sq. ft.
Loading Docks	64 loading docks
Total Parking - Vehicle	222 spaces
Standard Spaces	203 spaces
ADA Spaces	7 spaces
EV Spaces	12 spaces
Truck/Trailer Parking	48 spaces
EV Truck Parking	6 Spaces
Landscaping	90,969 sq. ft.

Source: Steeno Design Studio, Inc.

[14] Natelson Company, Inc. *Employment Density Study, Summary Report*. October 31, 2001.

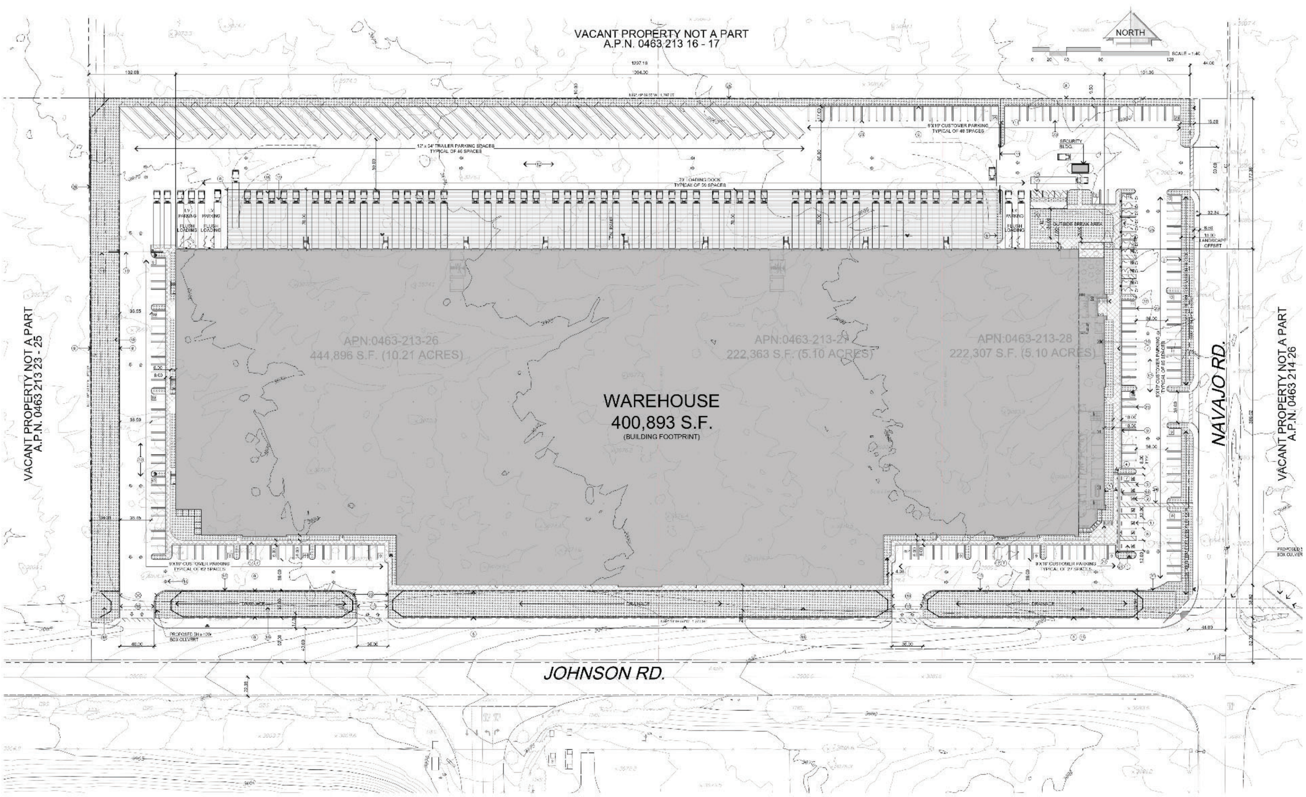

EXHIBIT 5 SITE PLAN

SOURCE: STEENO DESIGN STUDIO, INC

2.5 CONSTRUCTION CHARACTERISTICS

The new warehouse development would be developed in four major phases. The proposed project would involve the development of a 404,057 square foot industrial warehouse. The site's development is assumed to commence in June 2025 and would take approximately twelve months to complete. During each individual construction phase of development, the following construction activities will occur:

- *Grading (Phase 1)*. The project site would be graded and readied for the construction. This phase would require one month to complete. The typical heavy equipment used during this construction phase would include graders, bulldozers, offroad trucks, back-hoes, and trenching equipment.

- *Site Preparation (Phase 2)*. During this phase, the building footings, utility lines, and other underground infrastructure would be installed. This phase would require one month to complete. The typical heavy equipment used during this construction phase would include bulldozers, offroad trucks, back-hoes, front-end loaders, cranes, and forklifts.

- *Building (Phase 3)*. The new building would be constructed during this phase. This phase will take approximately eight months to complete. The typical heavy equipment used during this construction phase would include offroad trucks, cranes, and fork-lifts.

- *Paving, Landscaping, and Finishing (Phase 4)*. The development site would be paved during this phase. This phase will take approximately two months to complete. The typical heavy equipment used during this construction phase would include trucks, backhoes, rollers, pavers, and trenching equipment.

2.6 DISCRETIONARY ACTIONS

A Discretionary Action is an action taken by a government agency (for this project, the government agency is the Town of Apple Valley) that calls for an exercise of judgment in deciding whether to approve a project. The following discretionary approvals are required:

- Site Plan Review;
- Approval of the Mitigated Negative Declaration (MND); and,
- Adoption of the Mitigation Monitoring and Reporting Program (MMRP).

Other permits issued by the Town of Apple Valley would include grading permits, building permits, and occupancy permits.

Town of Apple Valley California

SECTION 3 ENVIRONMENTAL ANALYSIS

This section of the Initial Study analyzes the potential environmental impacts that may result from the proposed project's implementation. The issue areas evaluated in this Initial Study include the following:

Aesthetics (Section 3.1);
Agricultural &Forestry Resources (Section 3.2);
Air Quality (Section 3.3);
Biological Resources (Section 3.4);
Cultural Resources (Section 3.5);
Energy (Section 3.6)
Geology & Soils (Section 3.7);
Greenhouse Gas Emissions; (Section 3.8);
Hazards & Hazardous Materials (Section 3.9);
Hydrology & Water Quality (Section 3.10);
Land Use & Planning (Section 3.11);
Mineral Resources (Section 3.12);
Noise (Section 3.13);
Population & Housing (Section 3.14).
Public Services (Section 3.15);
Recreation (Section 3.16);
Transportation (Section 3.17);
Tribal Cultural Resources (Section 3.18);
Utilities (Section 3.19);
Wildfire (Section 3.20); and,
Mandatory Findings of Significance (Section 3.21).

3.1 AESTHETICS

Environmental Issue Areas Examined	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
A. Would the project have a substantial adverse effect on a scenic vista?			✕	
B. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.				✕
C. Would the project in nonurbanized areas, substantially degraded 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). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?				✕
D. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?				✕

SOURCES

California Department of Transportation. *Official Designated Scenic Highways*.

Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023*.

Town of Apple Valley, City of. *Town of Apple Valley General Plan 2030 , Land Use Element*. October 21, 2008

THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY

According to Appendix G of the CEQA Guidelines, a project may be deemed to have a significant adverse impact on aesthetics if it results in any of the following:

- The proposed project would have an adverse effect on a scenic vista, except as provided in PRC Sec. 21099.
- The proposed project would have an adverse effect on scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.
- The proposed project would 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). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality. or,
- The proposed project would, except as provided in Public Resources Code Section 21099, create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

The evaluation of aesthetics and aesthetic impacts is generally subjective, and it typically requires the identification of key visual features in the area and their importance. The characterization of aesthetic impacts involves establishing the existing visual characteristics including visual resources and scenic vistas that are unique to the area. Visual resources are determined by identifying existing landforms (e.g., topography and grading), views (e.g., scenic resources such as natural features or urban characteristics), and existing light and glare characteristics (e.g., nighttime illumination). Changes to the existing aesthetic environment associated with the proposed project's implementation are identified and *qualitatively* evaluated based on the proposed modifications to the existing setting and the viewers' sensitivity. The project-related impacts are then compared to the context of the existing setting, using the threshold criteria discussed above.

ANALYSIS OF ENVIRONMENTAL IMPACTS

A. *Would the project have a substantial adverse effect on a scenic vista? ● Less than Significant Impact*

The proposed project would be a 404,057 square foot industrial warehouse. The total net land area of the site is 871,200 square feet which is approximately 18.71 acres. As indicated previously, the new building would have a total floor area of 404,057 square feet. Two separate office areas would be located at the southeast and southwest corners of the new building. Of the new building's total floor area, 391,638 square feet would be warehouse uses and 12,419 square feet would be office space. A total of 64 truck loading docks would be located along the building's north elevation. The maximum height of the new building would be 42-feet. The dominant scenic views from the project site include the views of the San Bernardino and San Gabriel Mountains, located 20 miles south, southwest, and southeast of the site. In addition, local views are already dominated by neighboring development and telecommunication poles and lines. The construction of the proposed warehouse may alter views of the mountains from nearby developments located to the south of Johnson Road. However, the proposed project is of similar size and scale to the existing development that is present in the area. Construction equipment would be removed once the construction phases have been completed and any graded areas will be covered over in landscaping and new development.

The proposed project, once constructed, would be required to conform to all pertinent development and design standards of the Town of Apple Valley Municipal Code and the North Apple Valley Specific Plan. Views from the mountains would not be obstructed. Once operational, views of the aforementioned mountains would continue to be visible from the public right-of-way. *As a result, the impacts would be less than significant.*

B. *Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway ● No Impact.*

According to the California Department of Transportation, none of the streets located adjacent to the proposed project site (Johnson Road or Navajo Road) are designated scenic highways and there are no state or county designated scenic highways in the vicinity of the project site. The nearest roadway eligible for Scenic Highway status is the State Route 247 located approximately 12.2 miles to the east of the site. The nearest other highways that are eligible for designation as a scenic highways include SR-2 (from SR-210 to SR-138), located 11 miles southwest of the Town ; SR-58 (from SR-14 to I-15), located 20 miles north of the Town; SR-138 (from SR-2 to SR-18), located 13 miles south of the Town; SR-173 (from SR-138 to SR-18), located 15 miles southeast of the Town; and, SR-247 (from SR-62 to I-15), located 23 miles east of the Town. The project site is located within an undeveloped property that does not include any rock outcroppings. According to Appendix B – Biological Resources Report, there is one (1) Joshua Tree located on the project site. As a result, the impacts would be less than significant with the implementation of Biological Resources Mitigation Measure No. 1, discussed in Section 3.4 Biological Resources.

The site is zoned as *Specific Plan* (North Apple Valley Specific Plan) and will be subject to all pertinent development requirements. Lastly, the project site does not contain any buildings listed in the State or National registry. The future warehouse development would not result in the degradation of the existing visual character of the proposed project site given the nature and extent of existing development is the vicinity. *As a result, no impacts would occur.*

C. *Would the project in nonurbanized areas, substantially degraded 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). If the project is in an urbanized area, would the project conflict with applicable zinging and other regulations governing scenic quality? ● No Impact*

There are no protected views in the vicinity of the project site and the Town does not contain any designated or protected scenic vistas. The construction of the proposed warehouse may alter views of the mountains from nearby developments located to the south of Johnson Road. However, the proposed project is of similar size and scale to the existing development that is present in the area. Construction equipment would be removed once the construction phases have been completed and any graded areas will be covered over in landscaping and new development. Views of the surrounding vacant properties would be altered following the development though these properties are also designated for future development zoned *Specific Plan* (North Apple Valley Specific Plan). Any visual impacts related to the site's development (grading and building construction) would be short-term and would end following the site's development. Once development commences, the project would be required to conform to all pertinent development and design standards of the Town of Apple Valley Municipal Code and the North Apple Valley Specific Plan. Key design provisions in the North Apple Valley Specific Plan include the following:

- The size and placement of windows and doors should relate to the overall form of the building.
- Awnings shall be compatible with the architectural design of the structure and shall not dominate the building facade.
- Windows, doors, wall vents, stairways, and other architectural features shall be highlighted and treated in a decorative manner to break up flat surfaces that otherwise appear massive and bulky. Exceptions may be made for pueblo and adobe architecture. Techniques such as building cut-outs, overhangs, and staggered buildings shall be utilized to reduce the appearance of mass and bulk.
- Building materials shall provide architectural aesthetic quality, durability and ease of maintenance and shall be compatible with the architectural style of the building.
- New development shall be encouraged to utilize adobe, stucco, smooth plasters, earthen color block, natural stone, wood and terra cotta tile as the dominant building materials in response to the Town's desert environment. The use of some decorative metal features on the exterior of any portion of a structure is allowed.
- The use of wood siding should consider factors such as fading, staining and prematurely breaking down in the extreme climate of the high desert; and shall be maintained.
- Exterior building materials shall be composed of colors that will be consistent with the environment.
- The use of metal panels or metal sheathing, highly reflective or mirror-like materials, and/or standard gray concrete block on the exterior walls of any building or structure shall be prohibited with the exception that such materials may be used if finished with a masonry veneer including, but not limited to brick or stucco.

- Exposed plywood or particle board shall be prohibited on any building or structure.
- Piecemeal embellishment and frequent changes in material or color shall be avoided. 4. High-intensity colors, metallic colors, black, or fluorescent colors shall not be used. Building trim and accent areas may feature brighter colors, including primary colors, provided that the width of the trim shall not exceed two (2) feet.
- A broad range of roofing materials can be permitted in the Specific Plan area. However, corrugated metal, unpainted materials and/or reflective materials are not permitted.
- Landscape developments shall be designed, installed and maintained in accordance with the seven basic principles of Xeriscape landscaping.
- Areas which serve to focus vehicular traffic should be accented by the use of colorful shrubs and ground covers for enhanced visual interest. Project entries should utilize vertical accents such as Incense Cedar and Arizona Cypress to provide a sense of arrival to the project. In addition, plant materials at major project entries should be located to avoid interference with motorists. There are two types of entry statements, major and secondary. Major entry statements will include a wide variety of plant materials with medium to high densities, whereas secondary entry statements should have a more limited variety of plant materials with low to medium densities.

The proposed new development would be required to conform to the aforementioned design requirements. The architectural style, scale, and mass of the new building along with the other project elements would enhance the Johnson Road streetscape. *As a result, no impacts would occur.*

D. *Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? ● No Impact.*

There are a number of major sources of light and glare located to the south of the project site (south of Johnson Road) including a large distribution facility and a community college, both of which are sources of both mobile and stationary sources of light and glare. In addition, vehicle traffic on Johnson Road is an additional source of light. Light sensitive land uses (typically residential development, hospitals, senior living facilities, etc.) are not found in the vicinity of the project site.

During construction, temporary lighting would be used to provide safety and security at the site. This temporary lighting would be removed once the project's construction phases have been completed. The proposed project would not expose any sensitive receptors to nighttime light trespass. Project-related sources of nighttime light would include those regularly seen within residential developments. The project will be required to comply with Section 16-3.11.060-Design Guidelines (E) Lighting (1. Light Design). In addition, the North Apple Valley Specific Plan includes the following provisions with respect to lighting:

- Lighting shall be used only for the functional requirements of safety, security, and identification. Unnecessary lighting is prohibited in the interest of energy efficiency and maintenance of the Town's Dark Sky Policy.
- All light and glare shall be directed onto the site and away from adjacent properties.
- Light standards shall blend architecturally with buildings, pedestrian areas, and other hardscape elements.
- Lighting fixtures in the vicinity of the airport shall be compatible with airport operations.

- All lighting used in parking lots for security purposes or safety-related uses shall be scheduled so light rays emitted by the fixture are projected below the imaginary horizontal plane passing through the lowest point of the fixture and in such a manner that the light is directed away from streets and adjoining properties.
- If lighting is used or is necessary for color rendition, the primary lighting system shall be supplemented with a secondary lighting system which shall serve as security-level lighting and shall be the sole source of lighting during the non-operating hours of each business.
- Lighting standards and fixtures shall be of a design compatible with the architecture of onsite buildings.
- Flashing lights are prohibited.
- The intensity of light at the boundary of any development onsite shall not exceed seventy-five (75) foot lamberts from a source of reflected light.
- Light standards should be limited to eighteen (18) to twenty-five (25) feet.

There are no light sensitive and uses located adjacent to the project site. The construction lighting and operational lighting would not impact adjacent views in the area. In addition, the proposed development would be required adhere to the above requirements outlined in the North Apple Valley Specific Plan. *As a result, no impacts would occur.*

MITIGATION MEASURES

The analysis of aesthetics indicated that no impact on these resources would occur as part of the proposed project's implementation. As a result, no mitigation is required.

3.2 AGRICULTURE & FORESTRY RESOURCES

Environmental Issue Areas Examined	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
A. Would the project 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 uses?				✖
B. Would the project conflict with existing zoning for agricultural uses, or a Williamson Act Contract?				✖
C. Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?				✖
D. Would the project result in the loss of forest land or conversion of forest land to a non-forest use?				✖
E. Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to a non-forest use?				✖

SOURCES

California Department of Conservation. *State of California Williamson Act Contract Land.* ftp://ftp.consrv.ca.gov/pub/dlrp/WA/2012%20Statewide%20Map/WA_2012_8x11.pdf.

Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY

According to Appendix G of the CEQA Guidelines, a project may be deemed to have a significant adverse impact on agriculture and forestry resources if it results in any of the following:

- The proposed project would 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.
- The proposed project would conflict with existing zoning for agricultural use, or a Williamson Act contract.
- The proposed project would conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)).

- The proposed project would result in the loss of forest land or conversion of forest land to non-forest use.
- The proposed project would involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.

The California Department of Conservation Farmland Mapping and Monitoring Program (FMMP) was established in 1982 to track changes in agricultural land use and to help preserve areas of Important Farmland. It divides the state's land into eight categories of land use designation based on soil quality and existing agriculture uses to produce maps and statistical data. These maps and data are used to help preserve productive farmland and to analyze impacts on farmland. Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance are all Important Farmland and are collectively referred to as Important Farmland in this analysis. The highest rated Important Farmland is Prime Farmland. The California Land Conservation Act of 1965, or the Williamson Act, allows a city or county governments to preserve agricultural land or open space through contracts with landowners. The County has areas that are currently agriculture preserves under contract with San Bernardino County through the Williamson Act of 1965. Contracts last 10 years and are automatically renewed unless a notice of nonrenewal is issued.

ANALYSIS OF ENVIRONMENTAL IMPACTS

A. *Would the project 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 uses? ● No Impact.*

The proposed project would be a 404,057 square foot industrial warehouse. The total net land area of the site is 871,200 square feet which is approximately 18.71 acres. As indicated previously, the new building would have a total floor area of 404,057 square feet. The zoning designation of the site is *Specific Plan (North Apple Valley Specific Plan)*. The proposed project site is largely vacant and undeveloped. According to the California Department of Conservation, the project site does not contain any areas of Farmland of Statewide Importance, and no agricultural uses are located onsite or adjacent to the property as shown in Exhibit 6. The implementation of the proposed project would not involve the conversion of any prime farmland, unique farmland, or farmland of statewide importance to urban uses. *As a result, no impacts would occur.*

B. *Would the project conflict with existing zoning for agricultural uses, or a Williamson Act Contract? ● No Impact.*

The property is vacant and undeveloped. According to the California Department of Conservation Division of Land Resource Protection, the project site is not subject to a Williamson Act Contract. *As a result, no impacts would occur.*

C. *Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))? ● No Impact.*

The proposed project involves the construction of a 404,057 square feet industrial warehouse. The total area of the site is 871,200 square feet (18.71 acres). There are no forest lands or timberlands located within or adjacent to the site. Furthermore, the site's existing zoning designation does not contemplate forest land or timberland uses. *As a result, no impacts would occur.*

D. *Would the project result in the loss of forest land or conversion of forest land to a non-forest use? ● No Impact.*

No forest lands are located within the project site. The proposed use will be restricted to the site and will not affect any land under the jurisdiction of the Bureau of Land Management (BLM). No loss or conversion of forest lands to urban uses will result from the proposed project's implementation. *As a result, no impacts would occur.*

E. *Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to a non-forest use? ● No Impact.*

The project would not involve loss of farmland to a nonagricultural use or conversion of forest land to non-forest use because the project site is currently vacant and does not contain any significant vegetation. No farmland conversion impacts will occur with the implementation of the proposed project. *As a result, no impacts would occur.*

MITIGATION MEASURES

The analysis of agricultural and forestry resources indicated that no impact on these resources would occur as part of the proposed project's implementation. As a result, no mitigation is required.

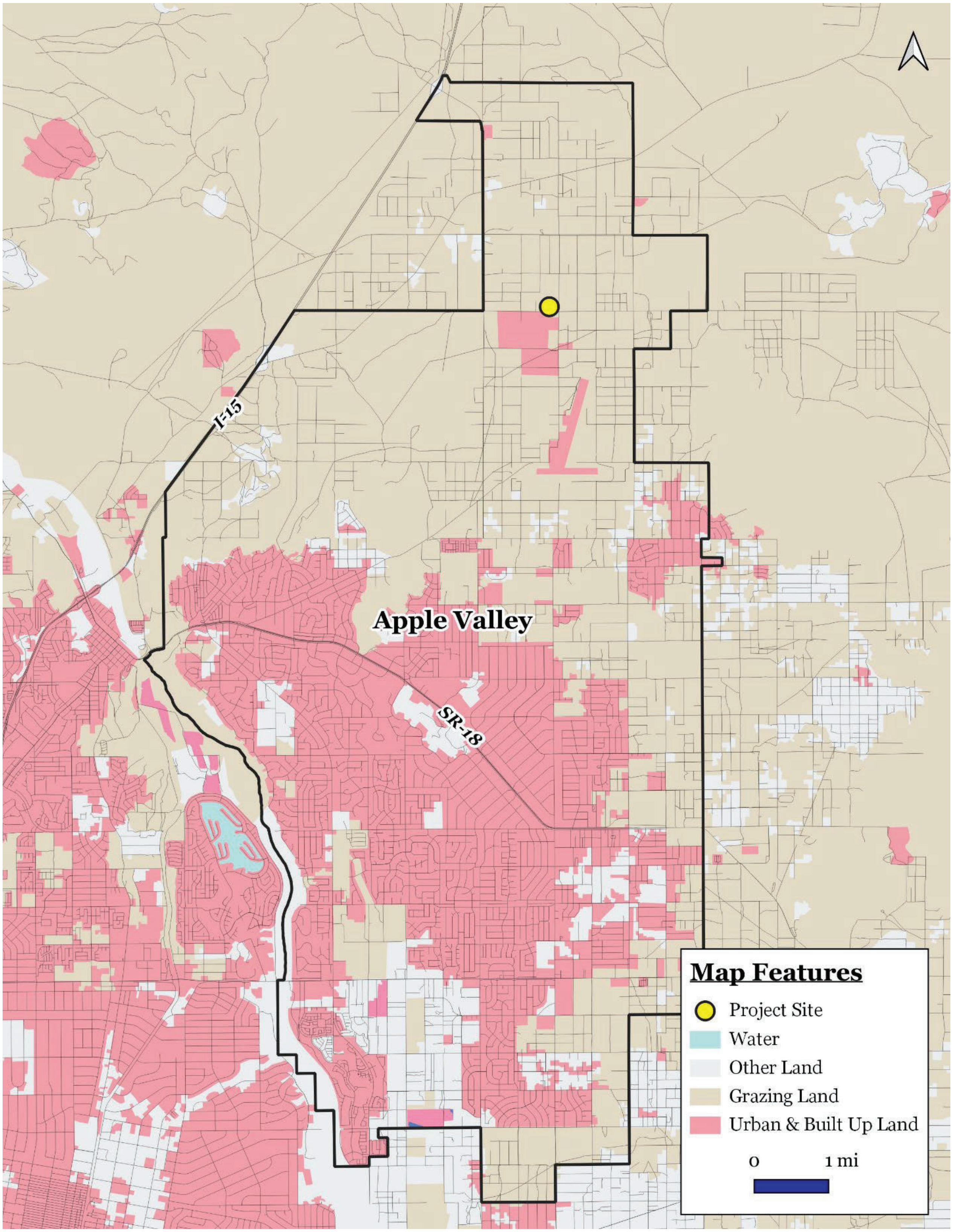

EXHIBIT 6 AGRICULTURAL MAP
SOURCE: CALIFORNIA DEPARTMENT OF CONSERVATION

3.3 AIR QUALITY

Environmental Issue Areas Examined	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
A. Would the project conflict with or obstruct implementation of the applicable air quality plan?			✖	
B. Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard?			✖	
C. Would the project expose sensitive receptors to substantial pollutant concentrations?			✖	
D. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			✖	

SOURCES

Appendix A – Air Quality Report (Worksheets)

Mojave Desert Air Quality Management District (MDAQMD). *California Environmental Quality Act (CEQA) and Federal Conformity Guidelines*. Report dated August 2016.

Natelson Company, Inc. *Employment Density Study, Summary Report*. October 31, 2001.

Southern California Association of Governments. *Regional Transportation Plan/Sustainable Communities Strategy 2016-2040. Demographics & Growth Forecast*. April 2016.

Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY

According to Appendix G of the CEQA Guidelines, a project may be deemed to have a significant adverse impact on air quality if it results in any of the following:

- The proposed project would conflict with or obstruct implementation of the applicable air quality plan.
- The proposed project would result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.
- The proposed project would expose sensitive receptors to substantial pollutant concentrations.
- The proposed project would result in other emissions (such as those leading to odors adversely affecting a substantial number of people.

The Mojave Desert Air Quality Management District (MDAQMD) has established quantitative thresholds for short-term (construction) emissions and long-term (operational) emissions for the criteria pollutants listed below. Projects in the Mojave Desert Air Basin (MDAB) generating construction and operational-related emissions that exceed any of the following emissions thresholds are considered to be significant under CEQA.

- *Ozone (O_3)* is a nearly colorless gas that irritates the lungs, and damages materials and vegetation. Ozone is formed a by photochemical reaction (when nitrogen dioxide is broken down by sunlight).

- *Carbon Monoxide (CO)* is a colorless, odorless toxic gas that interferes with the transfer of oxygen to the brain and is produced by the incomplete combustion of carbon-containing fuels emitted as vehicle exhaust. The threshold is 548 pounds per day of carbon monoxide (CO).

- *Nitrogen Oxide (NO_x)* is a yellowish-brown gas, which at high levels can cause breathing difficulties. NO_x is formed when nitric oxide (a pollutant from burning processes) combines with oxygen. The daily threshold is 137 pounds per day of nitrogen oxide (NO_x).

- *Sulfur Dioxide* (SO_2) is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. Health effects include acute respiratory symptoms. The daily threshold is 137 pounds per day of sulfur oxides (SO_x).

- *PM_{10} and $PM_{2.5}$* refers to particulate matter less than ten microns and two and one-half microns in diameter, respectively. Particulates of this size cause a greater health risk than larger-sized particles since fine particles can more easily cause irritation. The daily threshold is 82 pounds per day of PM_{10} and 65 pounds per day of $PM_{2.5.}$

- *Reactive Organic Gasses (ROG)* refers to organic chemicals that, with the interaction of sunlight photochemical reactions may lead to the creation of "smog." The daily threshold is 137 pounds per day of ROG.

ANALYSIS OF ENVIRONMENTAL IMPACTS

A. *Would the project conflict with or obstruct implementation of the applicable air quality plan? ● Less than significant Impact.*

The proposed project would be a 404,057 square foot industrial warehouse. The total net land area of the site is 871,200 square feet which is approximately 18.71 acres. As indicated previously, the new building would have a total floor area of 404,057 square feet. Two separate office areas would be located at the southeast and southwest corners of the new building. Of the new building's total floor area, 391,638 square feet would be warehouse uses and 12,419 square feet would be office space. A total of 64 truck loading docks would be located along the building's north elevation. Truck and trailer parking, consisting of 48 spaces, would be provided along the northern side of the side. A total of 6 EV spaces for trucks would be located along the building's north side. A total of 222vehicle parking spaces for employees and patrons would be located along the building's east, south, and west elevations and along the east perimeter of the site. Of this total, 203 spaces would be standard spaces, 8 spaces would be ADA spaces, and 12 spaces would be reserved for EV vehicles.

Air quality impacts may occur during the construction or operation of a project, and may come from stationary (e.g., industrial processes, generators), mobile (e.g., automobiles, trucks), or area (e.g., residential water heaters) sources. Town of Apple Valley is located within the Mojave Desert Air Basin (MDAB) and is under the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD). The district covers the majority of the MDAB. The MDAB is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. The MDAB is separated from the southern California coastal and central California valley regions by mountains (highest elevation approximately 10,000 feet). The Antelope Valley is bordered in the northwest by the Tehachapi Mountains and in the south by the San Gabriel Mountains. The adjacent Mojave Desert is bordered in the southwest by the San Bernardino Mountains.

Projects that are consistent with the projections of employment and population forecasts identified in the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) prepared by SCAG are considered consistent with the MDAQMP growth projections since the RTP/SCS forms the basis of the land use and transportation control portions of the MDAQMP. The RTP/SCS uses the Town's land use policy as outlined in the General Plan to develop the population, housing, and employment projections. These land use policies will establish the location and extent of future housing development and commercial and industrial development. This potential development would, in turn, would translate into future population and employment growth in the town. According to the Growth Forecast Appendix prepared by SCAG for the 2016-2045 RTP/SCS, the Town of Apple Valley employment will increase from 41,200 in 2016 to 61,200 in 2045, an increase of 20,000 new employees through the year 2045. The proposed project would be a 404,057 square foot industrial warehouse. The proposed building is anticipated to employ about 338 employees. This is based on an employment ratio of one employee for every 1,195 square feet of floor area.

The project's construction emissions are discussed under Subsection B and the emissions are shown in Table 3. As indicated in Table 3, the construction emissions would be below the thresholds of significance established by the MDAQMD. The proposed project's long-term (operational) airborne emissions would also be below levels that the MDAQMD considers to be a significant impact (refer to Table 4). Given that the proposed project is consistent with the site's zoning and general plan designation (i.e., no General Plan Amendment or Zone Change is required), the proposed project is not in conflict with the growth projections established for the Town by SCAG. *As a result, the impacts would be less than significant.*

B. *Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard? ● Less than Significant Impact.*

According to the MDAQMD, any project is significant if it triggers or exceeds the daily emissions threshold identified previously and noted at the bottom of Tables 3 and 4. In general, a project will have the potential for a significant air quality impact if any of the following are met:

- Generates total emissions (direct and indirect) that exceeds the MDAQMD thresholds (the proposed project emissions are less than the thresholds as indicated in Tables 3 and 4);
- Results in a violation of any ambient air quality standard when added to the local background (the proposed project will not result, in any violation of these standards);
- Does not conform with the applicable attainment or maintenance plan(s) (the proposed project is in conformance with the Town's Zoning and General Plan); and,

- Exposes sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a Hazard Index (HI) (non-cancerous) greater than or equal to 1 (the proposed project will not expose sensitive receptors to substantial pollutant concentrations nor is the site located near any sensitive receptors).

The new warehouse development would be constructed in four phases and would take approximately twelve months to complete. During each individual construction phase of development, the following construction activities will occur:

- *Grading (Phase 1)*. The project site would be graded and readied for the construction. This phase would require one month to complete. The typical heavy equipment used during this construction phase would include graders, bulldozers, offroad trucks, back-hoes, and trenching equipment.

- *Site Preparation (Phase 2)*. During this phase, the building footings, utility lines, and other underground infrastructure would be installed. This phase would require one month to complete. The typical heavy equipment used during this construction phase would include bulldozers, offroad trucks, back-hoes, front-end loaders, cranes, and forklifts.

- *Building (Phase 3)*. The new buildings would be constructed during this phase. This phase will take approximately eight months to complete. The typical heavy equipment used during this construction phase would include offroad trucks, cranes, and fork-lifts.

- *Paving, Landscaping, and Finishing (Phase 4)*. The individual development sites will be paved during this phase. This phase will take approximately two months to complete. The typical heavy equipment used during this construction phase would include trucks, backhoes, rollers, pavers, and trenching equipment.

As shown in Table 3, the project's daily construction emissions will not exceed the MDAQMD significance thresholds.

TABLE 3 ESTIMATED DAILY CONSTRUCTION EMISSIONS

Construction Phase	ROG	NOx	CO	SO2	PM10	PM2.5
Maximum Daily Emissions	97.0	31.7	31.6	0.06	9.26	5.25
Daily Thresholds	137	137	548	137	82	65
Significant Impact?	No	No	No	No	No	No

Source: CalEEMod V.2022.1.1.21

Long-term emissions refer to those air quality impacts that will occur once the proposed project has been constructed and is operational. These impacts will continue over the operational life of the project. The two main sources of operational emissions include mobile emissions and area emissions related to off-site electrical generation. The analysis of long-term operational impacts summarized in Table 4 also used the CalEEMod V.2022.1.1.21 computer model and was provided by York Engineering's Air Quality and GHG Report. CalEEMod defaults were used for the weekday and weekend daily trip rates for the operational phase; and the average vehicle trip distances. The analysis summarized in Table 4 indicates that the operational (long-term) emissions will be below the MDAQMD daily emissions thresholds.

TABLE 4 ESTIMATED OPERATIONAL EMISSIONS IN LBS./DAY

Emission Source	ROG	NOx	CO	SO2	PM10	PM2.5
Total (lbs./day)	16.5	7.57	67.9	0.13	10.3	2.80
Daily Thresholds	137	137	548	137	82	65
Significant Impact?	No	No	No	No	No	No

Source: CalEEMod V.2022.1.1.21

The analysis presented in Tables 3 and 4 reflect projected emissions that are typically higher during the summer months and represent a worse-case scenario. As indicated in Tables 3 and 4, the impacts are considered to be less than significant. In addition, the MDAQMD Rule Book contains numerous regulations governing various activities undertaken within the district. Among these regulations is Rule 403.2 – Fugitive Dust Control which was adopted in 1996 for the purpose of controlling fugitive dust. Adherence to Rule 403.2 regulations is required for all projects undertaken within the district. All internal roadways and parking areas will be paved. Future construction truck drivers must also adhere to Title 13 - §2485 of the California Code of Regulations, which limits the idling of diesel-powered vehicles to less than five minutes.[3] The following MDAQMD rules would be adhered to and they would be effective in further reducing the construction emissions:

- The Applicant shall prepare and submit to the MDAQMD, prior to commencing earth-moving activity, a dust control plan that describes all applicable dust control measures that will be implemented at the project.

- The Applicant shall ensure that signage, compliant with Rule 403 Attachment B, is erected at each project site entrance no later than the commencement of construction.

- The Applicant shall ensure the use of a water truck to maintain moist disturbed surfaces and actively spread water during visible dusting episodes to minimize visible fugitive dust emissions. For projects with exposed sand or fines deposits (and for projects that expose such soils through earthmoving), chemical stabilization or covering with a stabilizing layer of gravel will be required to eliminate visible dust/sand from sand/fines deposits.

- All maintenance and access vehicular roads and parking areas shall be stabilized with chemical, gravel or asphaltic pavement sufficient to eliminate visible fugitive dust from vehicular travel and wind erosion. Take actions to prevent project-related track out onto paved surfaces and clean any project-related track out within 24 hours. All other earthen surfaces within the project area shall be stabilized by natural or irrigated vegetation, compaction, chemical or other means sufficient to prohibit visible fugitive dust from wind erosion.

As a result, the impacts would be less than significant.

C. *Would the project expose sensitive receptors to substantial pollutant concentrations? ● Less than Significant Impact.*

According to the MDAQMD, residences, schools, daycare centers, playgrounds, and medical facilities are considered sensitive receptor land uses. Sensitive receptors are generally considered to be those lands uses where the elderly and children congregate. The nearest sensitive receptors to the project site include scattered residential developments located more than two miles to the south of the site. The following project types proposed for sites within the specified distance to an existing or planned (zoned) sensitive receptor land use must be evaluated: any industrial project within 1,000 feet; a distribution center (40 or more trucks per day) within 1,000 feet; a major transportation project within 1,000 feet; a dry cleaner using perchloroethylene within 500 feet; and a gasoline dispensing facility within 300 feet. As indicated previously, the proposed project's projected short-term and long-term emissions would be below the MDAQMD's thresholds of significance. The proposed project would not impact any sensitive receptors. There are no homes, medical centers, or parks located within 1,000 feet of the project site. *As a result, the impacts would be less than significant*.

D. *Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people? ● Less than Significant Impact.*

The project's construction would require the use of diesel fuel to power the construction equipment. The diesel fuel would be properly sealed in tanks and would be transported to the site by truck. Other hazardous materials that would be used on-site during the project's construction phase include, but are not limited to, gasoline, solvents, architectural coatings, and equipment lubricants. These products are strictly controlled and regulated and in the event of any spill, cleanup activities would be required to adhere to all pertinent protocols. In addition, construction truck drivers must adhere to Title 13 - §2485 of the California Code of Regulations, which limits the idling of diesel-powered vehicles to less than five minutes, which helps to reduce exhaust-related odors. Furthermore, the project's contractors must adhere to all pertinent MDAQMD and CARB rules and regulations that govern odors. Due to the protocols, the project's construction would not significantly impact a substantial number of people.

Once occupied, the proposed project would be a warehouse use. The transport and storage of materials within the building would be governed by the State of California Department of Transportation (Caltrans) and California Environmental Protection Agency (CalEPA). The proposed use of the project site will be enclosed within a concrete tilt-up building and will not present other emissions (such as those leading to odors) adversely affecting a substantial number of people. In addition, the development would be periodically inspected by both the Town and County to ensure that all pertinent codes are adhered to. *As a result, the impacts would be less than significant.*

MITIGATION MEASURES

As indicated under Subsection B, the proposed project's construction would be required to adhere to a number of MDAQMD requirements that govern construction emissions. In addition, the proposed development would be required to comply with other control measures including those that control nuisance odors. As a result, no mitigation would be required.

3.4 BIOLOGICAL RESOURCES

Environmental Issue Areas Examined	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
A. Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?		✖		
B. Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?		✖		
C. Would the project 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?		✖		
D. Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			✖	
E. Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			✖	
F. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				✖
F. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan?				✖

SOURCES

Appendix B – Biological Study

ELMT Consulting, Inc. *Biological Resources Assessment*. October 2024

ELMT Consulting, Inc. *Delineation of State and Federal Jurisdictional Waters*. October 2024.

Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY

According to Appendix G of the CEQA Guidelines, a project may be deemed to have a significant adverse impact on biological resources if it results in any of the following:

- The proposed project would have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

- The proposed project would have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service.

- The proposed project would 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.

- The proposed project would 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.

- The proposed project would conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

- The proposed project would conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Sensitive biological resources include a variety of plant and animal species that are specialized and endemic to a particular habitat type. Due to loss of habitat, some of these species have been designated by either, or both, the federal and state government resource agencies as threatened or endangered. Species listed as threatened include those whose numbers have dropped to such low levels and/or whose populations are so isolated that the continuation of the species could be jeopardized. Endangered species are those with such limited numbers or subject to such extreme circumstances that they are considered in imminent danger of extinction. Other government agencies and resource organizations also identify sensitive species, those that are naturally rare and that have been locally depleted and put at risk by human activities. While not in imminent danger of jeopardy or extinction, sensitive species are considered vulnerable and can become candidates for future listing as threatened or endangered.

ANALYSIS OF ENVIRONMENTAL IMPACTS

A. *Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? ● Less than Significant Impact with Mitigation.*

The proposed project would be a 404,057 square foot industrial warehouse. The total net land area of the site is 871,200 square feet which is approximately 18.71 acres. As indicated previously, the new building would have a total floor area of 404,057 square feet. Landscaping totaling 90,969 square feet, would be provided throughout the site and along the roadway's frontages. An outside break area would be located near the building's northeast corner. Access to the project site would be provided by three driveway connections with the north side of Johnson Road and two driveway connections with the west side of Navajo Road. The zoning designation of the site is *Specific Plan*.

On-site elevation ranges from approximately 3,076 to 3,096 feet above mean sea level and generally slopes from northeast to southwest. According to the topographic map, the project site occurs within the Apple Valley North 7.5-minute quadrangle. The site consists almost entirely of vacant/undeveloped land with disturbance along the southern boundary of the project site associated with vehicle use as a shoulder and turnaround area along Johnson Road.

ELMT Consulting (ELMT) biologist Andrew N. Mestas conducted a field survey and evaluated the condition of the habitat within the project site on and surrounding area (survey area) on September 24, 2024. During the field investigation one (1) plant community was observed within the boundary of the project site: creosote bush scrub (refer to Appendix B – Biological Resources Report Exhibit 5, Vegetation). In addition, one (1) land cover type that would be classified as disturbed was observed onsite. This area is not a vegetation classification, but rather a land cover type. Disturbed areas occur along the western, eastern, and southern boundaries of the project site due to adjacent dirt access roads and Johnson Road. The disturbed areas support both barren and sparsely vegetated land with some non-native species present. Some plant species observed in the disturbed areas include red bromes, western tansymustard, and bristly fiddleneck. According to the CNDDB and CNPS, four (4) special-status plant species have been recorded in the Turtle Valley and Apple Valley North quadrangles (refer to see Appendix C in Appendix B – Biological Resources Report). Western Joshua tree was the only special-status plant species observed onsite during the field investigation. Further, based on habitat requirements for the identified special-status species and known distributions, it was determined that the undeveloped portions of the project site that support the creosote bush scrub plant community do not have the potential to support any of the other special-status species documented as occurring within the vicinity of the project site are presumed absent. With the exception of Joshua tree, no impacts to special-status species are expected to occur. There are one (1) Joshua tree located on the project site. The following mitigation measures are applicable to the Joshua Tree that is present on the project site:

- *Biological Resources Mitigation Measure No. 1.* The western Joshua tree is a candidate threatened species under the California Endangered Species Act. Prior to the initiation of western Joshua tree removal, relocation, replanting, trimming, or pruning or any activity that may result in take of WJT on site, the Project Proponent shall obtain California Endangered Species Act Incidental Take Permit under Section 2081b of the CESA, or under the Western Joshua Tree Conservation Act (WJTCA) of Fish and Game Code (§§ 1927- 1927.12). California Fish and Game Code section 86 defines “take” as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill”. Mitigation for CESA will occur at a minimum 1:1 or per the stem count per the WJTCA census in lieu fee. The Project site falls within an area of the WJTCA which qualifies for reduced Mitigation Fees for impacts to western Joshua trees (Fish and Wildlife Code, Section 1927). The reduced Mitigation Fees are as follows [Fish and Wildlife Code, Section 1927.3 (d)]: 1. Trees 5 meters of greater in height - $1,000; 2. Trees 1 meter or greater but less than 5 meters in height - $200; 3. Trees less than 1 meter in height - $150. Each western Joshua tree stem or trunk arising from the ground shall be considered an individual tree requiring mitigation, regardless of proximity to any other western Joshua tree stem of trunk. Mitigation is required of all trees, regardless of whether they are dead or alive. Additionally, California Department of Fish and Wildlife (CDFW) may require relocation of WJT based on the final WJT census. A Relocation Plan must be approved by CDFW prior to the issuance of a WJTCA ITP.

No fish or hydrogeomorphic features (e.g., perennial creeks, ponds, lakes, reservoirs) with frequent sources of water that would provide suitable habitat for fish were observed on or immediately adjacent to the project site. Therefore, no fish are expected to occur and are presumed absent from the project site.

No amphibians or hydrogeomorphic features (e.g., perennial creeks, ponds, lakes, reservoirs) that would provide suitable habitat for amphibian species were observed on or immediately adjacent to the project site.

Therefore, no amphibians are expected to occur on the project site and are presumed absent.

The project site provides suitable foraging and nesting habitat for a variety of reptilian species adapted to conditions within the Mojave Desert. The only reptilian species observed during the field investigation included western whiptail (Aspidoscelis tigris). Common reptilian species that have the potential to occur on-site include northern Mohave rattlesnake (Crotalus scutulatus scutulatus), common side-blotched lizard (Uta stansburiana elegans), desert horned lizard (Phrynosoma platyrhinos calidiarum), desert spiny lizard (Sceloporus magister), and Great Basin gopher snake (Pituophis catenifer deserticola).

The project site provides suitable foraging and nesting habitat for a variety of resident and migrant bird species adapted to conditions within the Mojave Desert. Avian species detected during the survey included California horned lark (Eremophila alpestris actia), rock pigeon (Columba livia), and American crow (Corvus brachyrhynchos). Common avian species expected to occur on-site include cactus wren (Campylorhynchus brunneicapillus), house finch (Haemorhous mexicanus), black-throated sparrow (Amphispiza bilineata), rock wren (Salpinctes obsoletus), mourning dove (Zenaida macroura), common raven (Corvus corax), California quail (Callipepla californica), and red-tailed hawk (Buteo jamaicensis). Nesting birds are protected pursuant to the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (Sections 3503, 3503.5, 3511, and 3513 prohibit the take, possession, or destruction of birds, their nests or eggs). The following mitigation measure would be required in order to protect migratory bird species:

- *Biological Resources Mitigation Measure No. 2*. If construction occurs between February 1st and August 31st, a pre-construction clearance survey for nesting birds shall be conducted within three (3) days of the start of any vegetation removal or ground disturbing activities to ensure that no nesting birds will be disturbed during construction. The biologist conducting the clearance survey shall document a negative survey with a brief letter report indicating that no impacts to active avian nests will occur. If an active avian nest is discovered during the pre-construction clearance survey, construction activities shall stay outside of a no-disturbance buffer. The size of the no-disturbance buffer will be determined by the wildlife biologist and will depend on the level of noise and/or surrounding anthropogenic disturbances, line of sight between the nest and the construction activity, type and duration of construction activity, ambient noise, species habituation, and topographical barriers. These factors will be evaluated on a case-by-case basis when developing buffer distances. Limits of construction to avoid an active nest will be established in the field with flagging, fencing, or other appropriate barriers; and construction personnel will be instructed on the sensitivity of nest areas. A biological monitor shall be present to delineate the boundaries of the buffer area and to monitor the active nest to ensure that nesting behavior is not adversely affected by the construction activity. Once the young have fledged and left the nest, or the nest otherwise becomes inactive under natural conditions, construction activities within the buffer area can occur.

The project site provides suitable foraging and denning habitat for a variety of mammalian species adapted to conditions within the Mojave Desert. Most mammal species are nocturnal and are difficult to observe during a diurnal field visit. The only mammalian species observed during the field investigation were white-tailed antelope squirrel (Ammospermophilus leucurus) and black-tailed jackrabbit (Lepus californicus). Common mammalian species that have potential to occur on-site include desert woodrat (Neotoma lepida), coyote (Canis latrans), and desert cottontail (Sylvilagus audubonii). No bat species are expected to occur due to a lack of suitable roosting habitat (i.e., trees, crevices, abandoned structures) within and surrounding the project site.

According to the CNDDB, thirteen (13) special-status wildlife species have been reported in the Turtle Valley and Apple Valley North quadrangles (refer to Appendix C of Appendix B – Biological Resources Report). California horned lark (Eremophila alpestric actia) was the only special-status wildlife species observed on-site. Based on habitat requirements for specific species and the availability and quality of on-site habitats, it was determined that the project site has a moderate potential to provide suitable habitat for Costa's hummingbird (Calypte costae) and loggerhead shrike (Lanius ludovicianus); and low potential to provide suitable habitat for Cooper's hawk (Accipiter cooperii), golden eagle (Aquila chysaetos), burrowing owl, desert tortoise and prairie falcon (Falco mexicanus). Further it was determined that the project site does not provide suitable habitat for any of the other special-status wildlife species known to occur in the area. The following mitigation measure would be required in order to ensure the absence of burrowing owls and desert tortoise from the project site:

- *Biological Resources Mitigation Measure No. 3.* A burrowing owl focused survey is recommended to be conducted to ensure the absence of burrowing owl from the project site. The focused survey will conform to the protocol detailed in the 2012 CDFW Staff Report on Burrowing Owl Mitigation. The survey will consist of four (4) visits, with at least one (1) survey between February 15 and April 15 and a minimum of three (3) surveys at least three weeks apart between April 15 and July 15, with at least one survey after June 15. Although not anticipated, if burrowing owl are found onsite during the survey, coordination will need to occur with CDFW to determine if avoidance and minimization measures can be implemented to avoid any direct or indirect impacts to burrowing owl, or if a "Take" permit will need to be prepared and approved by CDFW.

- *Biological Resources Mitigation Measure No. 4.* A desert tortoise presence/absence survey is recommended to be conducted to ensure desert tortoise are absence from the project stie and will not be impacted by project implementation. Survey transects shall be spaced at 10-meter (33-foot) intervals throughout the undeveloped portions of the project area to provide 100 percent visual coverage and increase the likelihood of locating desert tortoise and/or sign. All burrows, if present, will be thoroughly inspected for the presence of desert tortoise or evidence of recent use using non-intrusive methods (i.e., mirror, digital camera). Burrow characteristics including class, shape, orientation, size, and evidence of deterioration will be recorded on field data sheets. Although not anticipated, if desert tortoise are found onsite during the survey, coordination will need to occur with the USFWS and CDFW to determine if avoidance and minimization measures can be implemented to avoid any direct or indirect impacts to desert tortoise, or if "Take" permits will need to be prepared and approved by the USFWS and CDFW.

As a result, the impacts would be less than significant with the incorporated mitigation measures.

B. *Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? ● Less than Significant Impact with Mitigation.*

Two ephemeral drainages, named Drainage 1 and Drainage 2, were observed passing from the eastern boundary through the site and out through the western boundary of the project site during the field delineation. The drainages onsite flow into a storm drain that extends under Johnson Road and into detention basins associated with the Distribution Cetner south of the project site.

The onsite ephemeral drainage features are not relatively permanent, standing, or continuously flowing bodies of water and, therefore, will not qualify as waters of the United States under the regulatory authority of the Corps (Sackett v. EPA (2022) 143 S. Ct. 1322, 1336). However, the onsite drainage features will qualify as waters of the State and fall under the regulatory authority of the Regional Board and California Department of Fish and Wildlife (CDFW). Approximately 0.60 acres (3,910 linear feet) of non-wetland waters of the State occur on-site under the jurisdictional authority of the Regional Board. Likewise, the on-site drainage features exhibit characteristics consistent with CDFW's methodology and would be considered CDFW streambed totaling 0.60 acres (3,910 linear feet).

The delineation of State and Federal Jurisdictional Waters is attached as Appendix H – Jurisdictional Delineation of the Biological Study.. Under the Federal Wetland Definition, an area must exhibit all three wetland parameters described in the Corps Arid West Regional Supplement to be considered a jurisdictional wetland. Based on the results of the field delineation, it was determined that no areas within the project site met all three wetland parameters. Therefore, no jurisdictional wetland features exist within the project site.

Under the State Water Resources Control Board State Wetland Definition, an area is a wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation. Based on the results of the field delineation, it was determined that no areas within the Project site meet the State Wetland Definition. Therefore, no state wetland features exist within the Project site. Pursuant to Section 1602 of the California Fish and Game Code, the CDFW regulates any activity that will divert or obstruct the natural flow or alter the bed, channel, or bank (which may include associated biological resources) of a river or stream. CDFW jurisdictional areas were observed within the project site at the time of the investigation. Therefore, the following mitigation measure would be required:

- *Biological Resources Mitigation Measure No. 5.* Pursuant to Section 1602 of the California Fish and Game Code, the CDFW regulates any activity that will divert or obstruct the natural flow or alter the bed, channel, or bank (which may include associated biological resources) of a river or stream. CDFW jurisdictional areas were observed within the project site at the time of the investigation. Therefore, a Section 1602 Streambed Alteration Agreement from the CDFW will be required prior to project implementation.

As a result, the impacts would be less than significant with mitigation.

C. *Would the project 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? ● Less than Significant Impact with Mitigation.*

ELMT Consulting (ELMT) has prepared the Delineation of State and Federal Jurisdictional Waters Report for the Johnson Road Warehouse Project located in the Town of Apple Valley, San Bernardino County, California (attached as Appendix H – Jurisdictional Delineation). Under the United States Army Corps of Engineers, the Corps regulates discharges of dredged or fill materials into waters of the United States and wetlands pursuant to Section 404 of the CWA. No Corps jurisdictional areas were identified within the project site and a CWA Section 404 permit would not be required for the proposed project. The Regional Water Quality Control Board regulates discharges to surface waters pursuant to Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act. Regional Board jurisdictional areas were identified within the project site and the following mitigation measure would be required:

- *Biological Resources Mitigation Measure No. 6.* The Regional Water Quality Control Board regulates discharges to surface waters pursuant to Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act. Regional Board jurisdictional areas were identified within the project site and a Report of Waste Discharge will be required for the proposed project for impacts to the onsite drainage features.

As a result, less than significant impacts would occur with mitigation.

D. *Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? ● Less than Significant Impact.*

The project site does not function as a major wildlife movement corridor or linkage. As such, implementation of the proposed project is not expected to have a significant impact to wildlife movement opportunities or prevent local wildlife movement through the area since there is ample habitat adjacent to the project site to support wildlife movement opportunities. The developed roads, Johnson Road and Navajo Road, and the industrial development south of the project creates a barrier that deters wildlife and disrupts their movement patters, making the site unsuitable as a wildlife corridor. Due to the lack of any identified impacts to wildlife movement, migratory corridors or linkages or native wildlife nurseries, *impacts will be less than significant*.

E. *Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? ● Less than Significant Impact.*

As of July 10, 2023, California legislature passed and signed the Western Joshua Tree Conservation Act (WJTCA, Senate Bill 122) into effect listing the western Joshua tree (*Yucca brevifolia*) as an endangered species. The WJTCA authorizes CDFW to oversee the various permitting processes dealing with mitigation and/or removal of western Joshua trees. Therefore, any attempt to remove a Joshua tree from its current position will require a California Endangered Species Act Incidental Take Permit (CESA, ITP) or a Western Joshua Tree Conservation Act Incidental Take Permit (WJTCA, ITP). The Joshua Tree is also a protected plant in the County of San Bernardino under the Native Desert Plant Protection Plan (Ordinance Chapter 88.01.060). Western Joshua tree and diamond cholla are regulated species pursuant to Section 9.76.02, Desert Native Plant Protection, of the Town's ordinance. In the event that avoidance is not feasible, the project applicant will be required to obtain a Tree or Plant Removal Permit from the Town in addition to an ITP for Joshua tree, prior to removal of any regulated tree or plant. According to Appendix B – Biological Resources Report, there is one (1) Joshua Tree located on the project site. As a result, the impacts would be less than significant with the implementation of Biological Resources Mitigation Measure No. 1.

F. *Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? ● No Impact.*

The Town of Apple Valley Multi-Species Conservation Plan is in planning phase. The Town and County are working in coordination with the Bureau of Land Management (BLM), USFWS, and CDFW to achieve consistent and complimentary conservation planning goals between the MSHCP/NCCP and state and federal land use plans to achieve conservation benefits at a landscape level. The Plan will safeguard features and areas that warrant protection; plus ensure that future development within the Town and surrounding County lands is compliant with Federal and State Endangered Species Acts. The proposed project's implementation would be required to be in compliance with County of San Bernardino's Native Desert Plant Protection Plan, the California Department of Fish and Wildlife State Wildlife Action Plan and other approved local, regional, and state habitat conservation plan. *As a result, no impacts are anticipated.*

MITIGATION MEASURES

The analysis of biological impacts determined that the following mitigation measures would be required to reduce the project's impacts to levels that would be less than significant.

Biological Resources Mitigation Measure No. 1. The western Joshua tree is a candidate threatened species under the California Endangered Species Act. Prior to the initiation of western Joshua tree removal, relocation, replanting, trimming, or pruning or any activity that may result in take of WJT on site, the Project Proponent shall obtain California Endangered Species Act Incidental Take Permit under Section 2081b of the CESA, or under the Western Joshua Tree Conservation Act (WJTCA) of Fish and Game Code (§§ 1927- 1927.12). California Fish and Game Code section 86 defines "take" as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill". Mitigation for CESA will occur at a minimum 1:1 or per the stem count per the WJTCA census in lieu fee. The Project site falls within an area of the WJTCA which qualifies for reduced Mitigation Fees for impacts to western Joshua trees (Fish and Wildlife Code, Section 1927). The reduced Mitigation Fees are as follows [Fish and Wildlife Code, Section 1927.3 (d)]: 1. Trees 5 meters of greater in height - $1,000; 2. Trees 1 meter or greater but less than 5 meters in height - $200; 3. Trees less than 1 meter in height - $150. Each western Joshua tree stem or trunk arising from the ground shall be considered an individual tree requiring mitigation, regardless of proximity to any other western Joshua tree stem of trunk. Mitigation is required of all trees, regardless of whether they are dead or alive. Additionally, California Department of Fish and Wildlife (CDFW) may require relocation of WJT based on the final WJT census. A Relocation Plan must be approved by CDFW prior to the issuance of a WJTCA ITP.

Biological Resources Mitigation Measure No. 2. If construction occurs between February 1st and August 31st, a pre-construction clearance survey for nesting birds shall be conducted within three (3) days of the start of any vegetation removal or ground disturbing activities to ensure that no nesting birds will be disturbed during construction. The biologist conducting the clearance survey shall document a negative survey with a brief letter report indicating that no impacts to active avian nests will occur. If an active avian nest is discovered during the pre-construction clearance survey, construction activities shall stay outside of a no-disturbance buffer. The size of the no-disturbance buffer will be determined by the wildlife biologist and will depend on the level of noise and/or surrounding anthropogenic disturbances, line of sight between the nest and the construction activity, type and duration of construction activity, ambient noise, species habituation, and topographical barriers. These factors will be evaluated on a case-by-case basis when developing buffer distances. Limits of construction to avoid an active nest will be established in the field with flagging, fencing, or other appropriate barriers; and construction personnel will be instructed on the sensitivity of nest areas. A biological monitor shall be present to delineate the boundaries of the buffer area and to monitor the active nest to ensure that nesting behavior is not adversely affected by the construction activity. Once the young have fledged and left the nest, or the nest otherwise becomes inactive under natural conditions, construction activities within the buffer area can occur.

Biological Resources Mitigation Measure No. 3. A burrowing owl focused survey is recommended to be conducted to ensure the absence of burrowing owl from the project site. The focused survey will conform to the protocol detailed in the 2012 CDFW Staff Report on Burrowing Owl Mitigation. The survey will consist of four (4) visits, with at least one (1) survey between February 15 and April 15 and a minimum of three (3) surveys at least three weeks apart between April 15 and July 15, with at least one survey after June 15. Although not anticipated, if burrowing owl are found onsite during the survey, coordination will need to occur with CDFW to determine if avoidance and minimization measures can be implemented to avoid any direct or indirect impacts to burrowing owl, or if a "Take" permit will need to be prepared and approved by CDFW.

Biological Resources Mitigation Measure No. 4. A desert tortoise presence/absence survey is recommended to be conducted to ensure desert tortoise are absence from the project stie and will not be impacted by project implementation. Survey transects shall be spaced at 10-meter (33-foot) intervals throughout the undeveloped portions of the project area to provide 100 percent visual coverage and increase the likelihood of locating desert tortoise and/or sign. All burrows, if present, will be thoroughly inspected for the presence of desert tortoise or evidence of recent use using non-intrusive methods (i.e., mirror, digital camera). Burrow characteristics including class, shape, orientation, size, and evidence of deterioration will be recorded on field data sheets. Although not anticipated, if desert tortoise are found onsite during the survey, coordination will need to occur with the USFWS and CDFW to determine if avoidance and minimization measures can be implemented to avoid any direct or indirect impacts to desert tortoise, or if "Take" permits will need to be prepared and approved by the USFWS and CDFW.

Biological Resources Mitigation Measure No. 5. Pursuant to Section 1602 of the California Fish and Game Code, the CDFW regulates any activity that will divert or obstruct the natural flow or alter the bed, channel, or bank (which may include associated biological resources) of a river or stream. CDFW jurisdictional areas were observed within the project site at the time of the investigation. Therefore, a Section 1602 Streambed Alteration Agreement from the CDFW will be required prior to project implementation.

Biological Resources Mitigation Measure No. 6. The Regional Water Quality Control Board regulates discharges to surface waters pursuant to Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act. Regional Board jurisdictional areas were identified within the project site and a Report of Waste Discharge will be required for the proposed project for impacts to the onsite drainage features.

3.5 CULTURAL RESOURCES

Environmental Issue Areas Examined	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
A. Would the project cause substantial adverse change in the significance of a historical resource pursuant to §15064.5?				✖
B. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?		✖		
C. Would the project disturb any human remains, including those interred outside of dedicated cemeteries?			✖	

SOURCES

Appendix C – Cultural Resources Study

California State Parks, Office of Historic Preservation. *Listed California Historical Resources*. Website accessed November 24, 2022.

California Department of Parks and Recreation. *California Historical Resources*. Website accessed on November 24, 2022.

Duke CRM. Cultural and *Paleontological Resources Assessment for the Navajo Road and Johnson Road Project, Town of Apple Valley, County of San Bernardino, California*. January 26, 2023.

Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

U. S. Department of the Interior, National Park Service. National Register of Historic Places. http://nrhp.focus.nps.gov. 2010.

THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY

According to Appendix G of the CEQA Guidelines, a project may be deemed to have a significant adverse impact on cultural resources if it results in any of the following:

- The proposed project would cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5.
- The proposed project would cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5.
- The proposed project would disturb any human remains, including those interred outside of formal cemeteries.

Historic structures and sites are defined by local, State, and Federal criteria. A site or structure may be historically significant if it is locally protected through a General Plan or historic preservation ordinance. In addition, a site or structure may be historically significant according to State or Federal criteria even if the locality does not recognize such significance. To be considered eligible for the National Register, a property's significance may be determined if the property is associated with events, activities, or developments that were important in the past, with the lives of people who were important in the past, or represents significant architectural, landscape, or engineering elements. Specific criteria include the following:

- Districts, sites, buildings, structures, and objects that are associated with the lives of significant persons in or past;

- Districts, sites, buildings, structures, and objects that 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,

- Districts, sites, buildings, structures, and objects that have yielded or may be likely to yield, information important in history or prehistory.

Ordinarily, properties that have achieved significance within the past 50 years are not considered eligible for the National Register. However, such properties *will qualify* if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

- A religious property deriving primary significance from architectural or artistic distinction or historical importance;

- Districts, sites, buildings, structures, and objects that are associated with events that have made a significant contribution to the broad patterns of our history;

- A building or structure removed from its original location that is significant for architectural value, or which is the surviving structure is associated with a historic person or event;

- A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building associated with his or her productive life;

- A cemetery that derives its primary importance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events;

- A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived;

- A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or,

- A property achieving significance within the past 50 years if it is of exceptional importance.

ANALYSIS OF ENVIRONMENTAL IMPACTS

A. *Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5? ● No Impact.*

The proposed project would be a 404,057 square foot industrial warehouse. The total net land area of the site is 871,200 square feet which is approximately 18.71 acres. As indicated previously, the new building would have a total floor area of 404,057 square feet. Access to the project site would be provided by three driveway connections with the north side of Johnson Road and two driveway connections with the west side of Navajo Road. The zoning designation of the site is *Specific Plan*.

The State has established *California Historical Landmarks* that include sites, buildings, features, or events that are of statewide significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. *California Points of Historical Interest* has a similar definition, except they are deemed of local significance. A search of the National Register of Historic Places and the list of California Historical Resources was conducted, and it was determined that no historic resources were listed within the Town of Apple Valley.

The proposed project will not affect any structures or historical resources listed on the National or State Register or those identified as being eligible for listing on the National or State Register. Furthermore, the project site is not present on the list of historic resources identified by the State Office of Historic Preservation (SHPO). The proposed project will be limited to the project site and will not affect any structures or historical resources listed on the National or State Register or those identified as being eligible for listing on the National or State Register. Furthermore, the project site is not present on the list of historic resources identified by the State Office of Historic Preservation (SHPO). The project site is vacant and disturbed though the developments in surrounding areas do not have any historical or cultural significance. A Cultural Resources Study was also conducted by Duke CRM, attached as Appendix C, has not identified any paleontological resources and is considered to have a low sensitivity for paleontological resources. The project's implementation will not impact any Federal, State, or locally designated historic resources. *As a result, no impacts will result.*

B. *Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5? ● Less than Significant Impact with Mitigation.*

No signs of human habitation nor any cemeteries are apparent within or near the project, and no signs of development on the parcel appear on any historic aerial map reviewed, nor on later USGS maps. On January 18, 2023, DUKE CRM conducted a records search at the South-Central Coastal Information Center (SCCIC). The SCCIC is part of the California Historical Resources Information System (CHRIS) and is located at California State University, Fullerton. The records search included a review of all recorded cultural resources and reports within a ½-mile radius of the Project. The records search did not identify any cultural resources within ½-mile of the Project. Additionally, the SCCIC identified two (2) cultural resources studies within ½-mile of the Project, none of which covered the Project Area. The two studies are Report number SB-00874 and SB-03677, from the year 1979 and 2001, respectively.

DUKE CRM conducted a review of online historical aerial photographs and historic USGS quad maps utilizing UCSB FrameFinder, HistoricAerials.com, and USGS Historical Topographic Map Explorer. The 1932 Barstow 1:125,000 map shows a road grid that includes Johnson Road and Navajo Rd. The Project area shows no development. The 1957 Apple Valley 15' map and the 1968 aerial illustrates Johnson Road as dirt without reference to Navajo Road. The surrounding area remains undeveloped until the Midfield Aviation runway was constructed, which is graded circa 1969 and establish prior to the 1984 aerial. Subsequent years shows the increase in buildings to the south and west of the Project. The Project area has remained vacant with no evidence of trails or structures going through the site (HistoricAerials.com;accessed January 18, 2023).

DUKE CRM requested that the Western Science Center perform a paleontological records search for known fossil localities, within, and in the vicinity of, the Project. On January 12, 2023, the Western Science Center reported they did not find any paleontological resources within one (1) mile of the project. While the presence of any fossil material is unlikely in the near-surface excavations, if excavation activity disturbed deeper sediment dating to the earliest parts of the Holocene or late Pleistocene periods it would impact soils that may contain scientifically significant fossil resources. It is the recommendation of the Wester Science Center that excavation activity associated with the development of the project area is unlikely to be paleontologically sensitive, but caution during development should be observed.

DUKE CRM assessed the proposed project for potentially significant impacts to paleontological and cultural resources under CEQA. Research and field survey did not identify any paleontological resources within the Project, and research suggests that the project area can be considered to have a low sensitivity for paleontological resources. Based on this assessment, no further paleontological investigation is warranted. No cultural resources are recorded within the project area, and the pedestrian survey did not identify any significant prehistoric or historical cultural resources. Also, groups that inhabited this area includes the Serrano (Vanyume or Desert Serrano), the Kitanemuk, the Kawaiisu, and the Tataviam, all of Takic or Numic descent. They were mobile hunter gatherer groups with seasonal camps located based on local or regional resources. In addition, the Town of Apple Valley was historically a heavily visited location as it was a migratory stop along the Mojave Indian Trail but the first permanent residents weren’t established until 1867. Based on these factors, the project area is assessed as having a moderate sensitivity for cultural resources, and archaeological monitoring of ground disturbing activities is recommended. Since it is possible that previously unrecognized resources could exist at the site, the proposed project would be required to the following mitigation measures:

- *Cultural Resources Mitigation Measure No. 1.* In the event that cultural resources are discovered during project activities, all work in the immediate vicinity of the find (within a 60-foot buffer) shall cease and a qualified archaeologist meeting Secretary of Interior standards shall be hired to assess the find. Work on the other portions of the project outside of the buffered area may continue during this assessment period. Additionally, the Yuhaaviatam of San Manuel Nation Cultural Resources Department (YSMN) shall be contacted, as detailed within TCR-1, regarding any pre-contact finds and be provided information after the archaeologist makes his/her initial assessment of the nature of the find, so as to provide Tribal input with regards to significance and treatment.

- *Cultural Resources Mitigation Measure No. 2.* If significant pre-contact cultural resources, as defined by CEQA (as amended, 2015), are discovered and avoidance cannot be ensured, the archaeologist shall develop a Monitoring and Treatment Plan, the drafts of which shall be provided to YSMN for review and comment, as detailed within TCR-1. The archaeologist shall monitor the remainder of the project and implement the Plan accordingly.

- *Cultural Resources Mitigation Measure No. 3.* If human remains or funerary objects are encountered during any activities associated with the project, work in the immediate vicinity (within a 100-foot buffer of the find) shall cease and the County Coroner shall be contacted pursuant to State Health and Safety Code §7050.5 and that code enforced for the duration of the project.

- *Cultural Resources Mitigation Measure No. 4.* A final monitoring and mitigation report of findings and significance shall be prepared, including lists of all fossils recovered, if any, and necessary maps and graphics to accurately record the original location of the specimens. The report shall be submitted to the Town of Apple Valley prior to building final.

- *Cultural Resources Mitigation Measure No. 5.* Prior to the initiation of ground-disturbing activities, field personnel shall be alerted to the possibility of buried prehistoric or historic cultural deposits and paleontological resources. In the event that field personnel encounter buried cultural materials and/or paleontological resources, work in the immediate vicinity of the find shall cease and a qualified archaeologist/paleontologists must be retrained to assess the significance of the find. The qualified archaeologist/paleontologist shall have the authority to stop or divert construction excavation as necessary. If the qualified archaeologist/paleontologist finds that any cultural resources present meet eligibility requirements for listing on the California register or the national register of historic places (national register), plans for the treatments, evaluation, and mitigation of impacts to the find will need to be developed. Prehistoric or historic cultural materials that may be encountered during ground-disturbing activities include:

    - Historic-period artifacts such as glass bottles and fragments, cans, nails, ceramic and pottery fragments, and other metal objects;
    - Historic-period structural or building foundations, walkways, cisterns, pipes, privies, and other structural elements;
    - Pre-historic flaked-stone artifacts and debitage (waste material), consisting of obsidian, basalt, and/or cryptocrystalline silicates;
    - Dark, greasy soil that may be associated with charcoal, ash, bone, shell, flaked stone, ground stone and fire affected rocks; and Human remains.
    - Since it is possible that previously unrecognized resources could exist at the site, the proposed project would be required to the following mitigation measures:

The above mitigation measures would mitigate the potential impacts in the event that previously unrecognized resources could exist at the site. These measures would prevent these resources from being damaged during earth disturbance activities. *Adherence to the aforementioned mitigation measures would reduce the impacts to levels that are less than significant.*

C. *Would the project disturb any human remains, including those interred outside of dedicated cemeteries? ● Less than Significant Impact.*

There are no dedicated cemeteries located in the vicinity of the project site. The proposed project will be restricted to the project site and therefore will not affect any dedicated cemeteries in the vicinity. Notwithstanding, the following mitigation is mandated by the California Code of Regulations (CCR) Section 15064.5(b)(4):

> "A lead agency shall identify potentially feasible measures to mitigate significant adverse changes in the significance of a historical resource. The lead agency shall ensure that any adopted measures to mitigate or avoid significant adverse changes are fully enforceable through permit conditions, agreements, or other measures."

Additionally, Section 5097.98 of the Public Resources Code states:

> "In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with (b) Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27491 of the Government Code or any other related provisions of law concerning the investigation of the circumstances, manner and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative. The coroner shall make his or her determination within two working days from the time the person responsible for the excavation, or his or her authorized representative, notifies the coroner of the discovery or recognition of the human remains. If the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the human remains to be those of a Native American or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission."

Adherence to the aforementioned standard condition will be required in the event human burials are encountered during grading. *As a result, the impacts would be less than significant*.

MITIGATION MEASURES

The following mitigation measures would be required to address potential cultural resources impacts:

Cultural Resources Mitigation Measure No. 1. In the event that cultural resources are discovered during project activities, all work in the immediate vicinity of the find (within a 60-foot buffer) shall cease and a qualified archaeologist meeting Secretary of Interior standards shall be hired to assess the find. Work on the other portions of the project outside of the buffered area may continue during this assessment period. Additionally, the Yuhaaviatam of San Manuel Nation Cultural Resources Department (YSMN) shall be contacted, as detailed within TCR-1, regarding any pre-contact finds and be provided information after the archaeologist makes his/her initial assessment of the nature of the find, so as to provide Tribal input with regards to significance and treatment.

Cultural Resources Mitigation Measure No. 2. If significant pre-contact cultural resources, as defined by CEQA (as amended, 2015), are discovered and avoidance cannot be ensured, the archaeologist shall develop a Monitoring and Treatment Plan, the drafts of which shall be provided to YSMN for review and comment, as detailed within TCR-1. The archaeologist shall monitor the remainder of the project and implement the Plan accordingly.

Cultural Resources Mitigation Measure No. 3. If human remains or funerary objects are encountered during any activities associated with the project, work in the immediate vicinity (within a 100-foot buffer of the find) shall cease and the County Coroner shall be contacted pursuant to State Health and Safety Code §7050.5 and that code enforced for the duration of the project.

Cultural Resources Mitigation Measure No. 4. A final monitoring and mitigation report of findings and significance shall be prepared, including lists of all fossils recovered, if any, and necessary maps and graphics to accurately record the original location of the specimens. The report shall be submitted to the Town of Apple Valley prior to building final.

Cultural Resources Mitigation Measure No. 5. Prior to the initiation of ground-disturbing activities, field personnel shall be alerted to the possibility of buried prehistoric or historic cultural deposits and paleontological resources. In the event that field personnel encounter buried cultural materials and/or paleontological resources, work in the immediate vicinity of the find shall cease and a qualified archaeologist/paleontologists must be retrained to assess the significance of the find. The qualified archaeologist/paleontologist shall have the authority to stop or divert construction excavation as necessary. If the qualified archaeologist/paleontologist finds that any cultural resources present meet eligibility requirements for listing on the California register or the national register of historic places (national register), plans for the treatments, evaluation, and mitigation of impacts to the find will need to be developed. Prehistoric or historic cultural materials that may be encountered during ground-disturbing activities include:

- Historic-period artifacts such as glass bottles and fragments, cans, nails, ceramic and pottery fragments, and other metal objects;
- Historic-period structural or building foundations, walkways, cisterns, pipes, privies, and other structural elements;
- Pre-historic flaked-stone artifacts and debitage (waste material), consisting of obsidian, basalt, and/or cryptocrystalline silicates;
- Dark, greasy soil that may be associated with charcoal, ash, bone, shell, flaked stone, ground stone and fire affected rocks; and Human remains.

3.6 ENERGY

Environmental Issue Areas Examined	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
A. Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?			✖	
B. Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?			✖	

SOURCES

Appendix E – Utilities Calculations

Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY

According to Appendix G of the CEQA Guidelines, a project may be deemed to have a significant adverse impact on energy resources if it results in any of the following:

- The proposed project would result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during the proposed project's construction or operation.

- The proposed project would conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

Energy and natural gas consumption were estimated using default energy intensities by building type in CalEEMod. In addition, it was assumed the new buildings would be constructed pursuant to the 2022 CALGreen standards, which was considered in the CalEEMod inputs.

ANALYSIS OF ENVIRONMENTAL IMPACTS

A. *Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation? ● Less than Significant Impact.*

The proposed project would be a 404,057 square foot industrial warehouse. The total net land area of the site is 871,200 square feet which is approximately 18.71 acres. As indicated previously, the new building would have a total floor area of 404,057 square feet. Two separate office areas would be located at the southeast and southwest corners of the new building. Of the new building's total floor area, 391,638 square feet would be warehouse uses and 12,419 square feet would be office space. A total of 64 truck loading docks would be located along the building's north elevation. The maximum height of the new building would be 42-feet. Truck and trailer parking, consisting of 48 spaces, would be provided along the northern side of the side. A total of 6 EV spaces for trucks would be located along the building's north side. A total of 222vehicle parking spaces for employees and patrons would be located along the building's east, south, and west elevations and along the east perimeter of the site. Of this total, 203 spaces would be standard spaces, 8 spaces would be ADA spaces, and 12 spaces would be reserved for EV vehicles. The proposed project is located within the service area of the Southern California Edison (SCE) Company and the Southwest Gas Company. The project site is currently vacant and has no demand for electricity and natural gas. Therefore, the development of the proposed project will create a permanent increase in the demand for electricity and natural gas.

Construction of the proposed project would result in short-term consumption of energy from the use of construction equipment and processes. Energy use during construction would be primarily from fuel consumption to operate heavy equipment, light-duty vehicles, machinery, and generators. Temporary grid power may also be needed for construction trailers or electric construction equipment. Energy use during construction would be temporary in nature, and construction equipment used would be typical of construction projects in the region. It is reasonable to assume contractors would avoid wasteful, inefficient, and unnecessary fuel consumption during construction to reduce construction costs. Given the physical characteristics of the site and the type of development proposed, there are no unusual project characteristics or construction processes that would require the use of equipment that would use more fuel or electricity than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). In addition, as required by state law, idling times of construction vehicles are limited to no more than 5 minutes, thereby minimizing or eliminating unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. Equipment employed in the construction of the project would therefore not result in inefficient, wasteful, or unnecessary consumption of fuel or electricity.

The proposed project's construction would also involve the implementation of Best Available Control Measures (BACM) which are standard requirements for any construction or ground disturbance activity occurring within the jurisdiction of the MDAQMD. BACMs include, but are not limited to, requirements that the project proponent utilize only low-sulfur fuel having a sulfur content of 15 parts per million by weight or less; ensure off-road vehicles (i.e., self-propelled diesel-fueled vehicles 25 horsepower and above that were not designed to be driven on road) limit vehicle idling to five minutes or less; register and label vehicles in accordance with the California Air Resources Board (CARB) Diesel Off-Road Online Reporting System; restrict the inclusion of older vehicles into fleets; and retire, replace, or repower older engines or install Verified Diesel Emission Control Strategies (i.e., exhaust retrofits). Furthermore, the proposed development would be constructed pursuant to the 2022 energy standards of Title 24.

Construction equipment greater than 150 horsepower (hp), is also required to comply with the Environmental Protection Agency (EPA)/California Air Resources Board (CARB) Tier 3 emissions standards and shall ensure that all construction equipment is tuned and maintained in accordance with the manufacturer's specifications. For engines from 175 to less than 750 hp, the Tier 4 Final regulations took effect on January 1, 2014. For engines from 49 to less than 75 hp, it took effect on January 1, 2013. Finally, for engines from 75 to less than 175 hp, Tier 4 the Tier 4 regulations took effect on January 1, 2015. In addition, the project would be required to comply with the California Code of Regulations, Title 13, Sections 2449(d)(3) and 2485, which minimizes the idling time of construction equipment either by shutting it off when not in use or by reducing the time of idling to no more than five minutes. These emissions standards require highly efficient combustion systems that maximize fuel efficiency and reduce unnecessary fuel consumption.

Once operational, electricity would be the primary source energy consumed on the site. Electricity would be used for building heating, cooling, and lighting, and natural gas would be used for building and water heating. Table 5 presents the estimated annual energy use from operation of the proposed project. According to the CalEEMod provided in Appendix B, the proposed project is anticipated to consume 1,996,779 kWh per year or 5,470 kWh of electricity on a daily basis (refer to Table 5). The proposed project's natural gas consumption would be 7,798,960 kBTU per year or 21,367 kBTU of natural gas on a daily basis.

TABLE 5 PROPOSED PROJECT'S ENERGY CONSUMPTION

Type	Consumption Rate	Total Project Consumption
Electrical Consumption	5,470 kWh/day	1,996,779 kWh/year
Natural Gas Consumption	21,376 kBTU/day	7,798,960 kBTU

Source: CalEEMod V.2022.1.1.21

Increasingly stringent electricity, natural gas, and fuel efficiency standards combined with compliance with the most recent California Building Code (CBC) and CALGreen Code as part of Title 8 (Buildings and Construction) and Title 9 (Development Code) of the Town's Code of Ordinances with respect to energy conservation standards would ensure operation of the project would consume only the energy required, and impacts from wasteful, inefficient, or unnecessary energy consumption would be less than significant. Construction and operation of the proposed project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources. *As a result, the impacts would be less than significant.*

B. *Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency? ● Less Than Significant Impact.*

The 2022 California Green Building Standards Code (CGBSC) is also referred to as CALGreen, includes regulations for energy efficiency, water efficiency and conservation, material conservation and resource efficiency, environmental quality, and more. The California Code of Regulations (CCR) Title 24, Part 11: California Green Building Standards (Title 24) became effective to aid efforts to reduce GHG emissions associated with energy consumption. Title 24 now requires that new buildings reduce water consumption, employ building commissioning to increase building system efficiencies, divert construction waste from landfills, and install low pollutant-emitting finish materials. The proposed project as well as any future development within the remainder of the project site will be required to conform to all pertinent energy conservation requirements. While the proposed project is a privately owned commercial use, the implementation of similar programs would prove effective in reducing potential energy consumption. The proposed project will be required to comply with all pertinent Title 24 requirements along with other Low Impact Development (LID) requirements. In addition, the proposed project would be in conformance with Town of Apple Valley's Climate Action Plan (CAP). The CAP contains the following energy efficiency measures:

(Policy) MO-20. Reduce energy use at all Town facilities by 15% by 2030.

(Policy) MO-21. Replace all failing or failed fixtures and appliances in Town facilities with energy efficient fixtures and appliances. Light bulbs shall be replaced with CFL or LED bulbs. Appliances shall be Energy Star rated.

(Policy) MO-22. Encourage Liberty Utilities Apple Valley, Golden State, and other water purveyors to replace water systems with energy efficient motors, pumps and other equipment.

(Policy) MO-23. Encourage VVWRA to replace wastewater systems with energy efficient motors, pumps and other equipment.

(Policy) MO-24. Encourage the County of San Bernardino to capture and utilize landfill gas for use as an energy source including fuel for vehicles, operating equipment, and heating buildings.

(Policy) MO-25. Consider the installation of green roofs on Town facilities.

(Policy) MO-26. Consider the installation of cool roofs on Town facilities.

(Policy) MO-27. Reduce turf areas at Town facilities by 20% overall. MO-28. Modernize facilities and equipment at the golf course when financially feasible, including the well pumps.

(Policy) MO-29. Install semi-pervious surfaces which allow water to percolate at Town facilities to the extent economically feasible.

(Policy) MO-30. Install timers for all ball field lighting on Town facilities.

(Policy) MO-31. Consider a home weatherization and energy efficient appliance replacement grant program for existing residents including extremely low, very low and low-income households.

(Policy) MO-32. Continue to require that improvements made under the Residential Rehabilitation Loan Program be energy efficient. MO-33. Promote third-party energy efficiency programs, including the Energy Upgrade California program.

(Policy) MO-33. Promote third-party energy efficiency programs, including the Energy Upgrade California program.

The proposed project would not adversely impact or otherwise preclude the implementation of the above CAP policies. The Town's Energy and Mineral Resources Element includes the following programs:

Program 1.A.1 While considering the future development of more stringent local energy performance standards, the Town shall continue to rigorously enforce all state mandated energy-conserving development and building codes/regulations.

Program 1.A.2 The Town shall make available information to developers on energy efficient building design and conservation technologies addressing enhanced wall and ceiling insulation, efficient heating and cooling equipment, thermally efficient glazing, and efficient household appliances.

Program 1.A.3 The Town shall periodically assess the local transportation system with a view to gaining greater efficiency in the movement of people and goods through the community. Opportunities to expand the public transport system, using buses equipped with bicycle racks and fueled by compressed natural gas or hydrogen, will be maximized. Widespread use of pedestrian pathways and alternative means of transport, such as bicycles and electric or hybrid vehicles, will be facilitated and encouraged.

Program 1.A.4 The Town shall strive for efficient community land use and transportation planning and design, and shall assure the provision of convenient neighborhood shopping, medical and other professional services appropriately located to minimize travel and facilitate the use of alternative means of transportation.

Program 1.B.1 Building regulations and guidelines will facilitate the safe and efficient installation of alternative energy systems in new and existing buildings. The Town will promote the use of such systems to residents, businesses, and the building industry by disseminating information on commercially available conservation technologies, solar, thermal and photovoltaic energy systems, fuel cell and other alternative energy resources.

Program 1.B.2 The Town shall proactively promote alternative energy workshops and the local development of associated industries.

Program 1.C.1 In coordination with state and federal legislators and regulators, the Town shall draw up a mutually agreed legislative and regulatory agenda to address its near and long-term energy and associated economic needs.

Program 1.E.1 To the extent practical, the Town shall monitor and regulate the safe and environmentally responsible extraction and recycling of significant local mineral resources.

Program 1.E.2 The Town shall maintain a formal relationship with the County Geologist or other qualified agency to monitor mineral resource operations under SMARA.

Program 1.E.3 The Town shall require the recycling of mineral-based construction materials, including asphalt, concrete, gypsum and similar materials, and the use of recycled materials in new construction.

The proposed project would not adversely impact or otherwise preclude the implementation of the above Energy and Mineral Resources Element programs. *As a result, the impacts would be less than significant.*

MITIGATION MEASURES

The analysis determined that the proposed project would not result in any significant impacts on energy. As a result, no mitigation would be required.

3.7 GEOLOGY & SOILS

Environmental Issue Areas Examined	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
A. Would the project directly or indirectly, cause potential substantial adverse effects, including the risk of loss, injury, or death involving:			✖	
i). Would the project, directly or indirectly, cause rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault; Refer to Division of Mines and Geology Special Publication 42.				✖
ii). Would the project, directly or indirectly cause strong seismic ground shaking?			✖	
iii). Would the project, directly or indirectly cause seismic-related ground failure, including liquefaction.				✖
iv). Would the project, directly or indirectly cause landslides?				✖
B. Would the project result in substantial soil erosion or the loss of topsoil?			✖	
C. Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			✖	
D. Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?			✖	
E. Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				✖
F. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		✖		

SOURCES

Appendix D – Geotechnical Report

California Department of Conservation. *Table 4, Cities and Counties Affected by Alquist Priolo Earthquake Fault Zones as of January 2010.*

California Department of Conservation. *State of California Williamson Act Contract Land.* ftp://ftp.consrv.ca.gov/pub/dlrp/WA/2012%20Statewide%20Map/WA_2012_8x11.pdf.

San Bernardino County. *Multi-Jurisdictional Hazard Mitigation Plan* - July 13, 2017.

Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

United States Department of Agriculture. Natural Resources Conservation Service. Website accessed February 3, 2024.

THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY

According to Appendix G of the CEQA Guidelines, a project may be deemed to have a significant adverse impact on geology and soils if it results in any of the following:

- The proposed project would, 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 or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42); strong seismic ground shaking; seismic-related ground failure, including liquefaction; and, landslides?

- The proposed project would result in substantial soil erosion or the loss of topsoil.

- The proposed project would be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.

- The proposed project would be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.

- The proposed project would have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

- The proposed project would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

The proposed project's potential seismic and soils risk was evaluated in terms of the site's proximity to earthquake faults and unstable soils.

ANALYSIS OF ENVIRONMENTAL IMPACTS

A. *Would the project, directly or indirectly, cause potential substantial adverse effects, including the risk of loss, injury, or death involving:*

i. *Would the project, directly or indirectly, cause rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault; Refer to Division of Mines and Geology Special Publication 42. ● No Impact.*

The Town of Apple Valley is located in a seismically active region. Earthquakes from several active and potentially active faults in the Southern California region could affect the proposed project site. In 1972, the Alquist-Priolo Earthquake Zoning Act was passed in response to the damage sustained in the 1971 San Fernando Earthquake. The Alquist-Priolo Earthquake Fault Zoning Act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. A list of cities and counties subject to the Alquist-Priolo Earthquake Fault Zones is available on the State's Department of

Conservation website. The Town of Apple Valley is not on the list. The nearest fault to the project site is the Helendale Fault, which is located approximately 3.5 miles northeast of the project site as shown in Exhibit 7. The Town of Apple Valley is located in a seismically active region. Earthquakes from several active and potentially active faults in the Southern California region could affect the proposed project site. In 1972, the Alquist-Priolo Earthquake Zoning Act was passed in response to the damage sustained in the 1971 San Fernando Earthquake. Surface ruptures are visible instances of horizontal or vertical displacement, or a combination of the two. The amount of ground shaking depends on the intensity of the earthquake, the duration of shaking, soil conditions, type of building, and distance from the epicenter or fault. The potential impacts from fault rupture and ground shaking are considered no greater for the project site than for the surrounding areas given the distance between the site and the fault trace. This fault would not lead to any fault rupture impacts. *As a result, no impacts will occur.*

ii. *Would the project, directly or indirectly cause strong seismic ground shaking? ● Less than Significant Impact*

Significant ground shaking will likely impact the site within the design life of the proposed project, due to the project being located in a seismically active region. The project site is not located within an Alquist-Priolo Fault Rupture Hazard Study Zone, established by the State of California to restrict the construction of habitable structures across identifiable traces of known active faults. No active faults are known to project through the proposed project. As defined by the State of California, an active fault has undergone surface displacement within the past 11,700 years or during the Holocene epoch. From a geotechnical point of view, the subject property is considered suitable for the proposed improvements, provided the design information and conclusions and recommendations herein are incorporated into the plans and are implemented during construction. *As a result, the impacts will be less than significant.*

iii. *Would the project, directly or indirectly cause seismic-related ground failure, including liquefaction ●No Impact*

According to the United States Geological Survey, liquefaction is the process by which water-saturated sediment temporarily loses strength and acts as a fluid. The risk for liquefaction is no greater on-site than it is for the region. The potential for liquefaction generally occurs during strong ground shaking within granular loose sediments where the groundwater is usually less than 50 feet below the ground surface. As groundwater is anticipated to lie greater than 50 feet beneath the site and the site is underlain by hard, igneous bedrock at relatively shallow depths, the possibility of liquefaction at the site is considered negligible. *As a result, no impacts would occur.*

iv. *Would the project, directly or indirectly cause landslides? ●No Impact*

According to the United States Geological Survey, a landslide is defined as the movement of a mass of rock, debris, or earth down a slope. The project site is level with little to no sloping in the surrounding area. *As a result, no impacts would occur.*

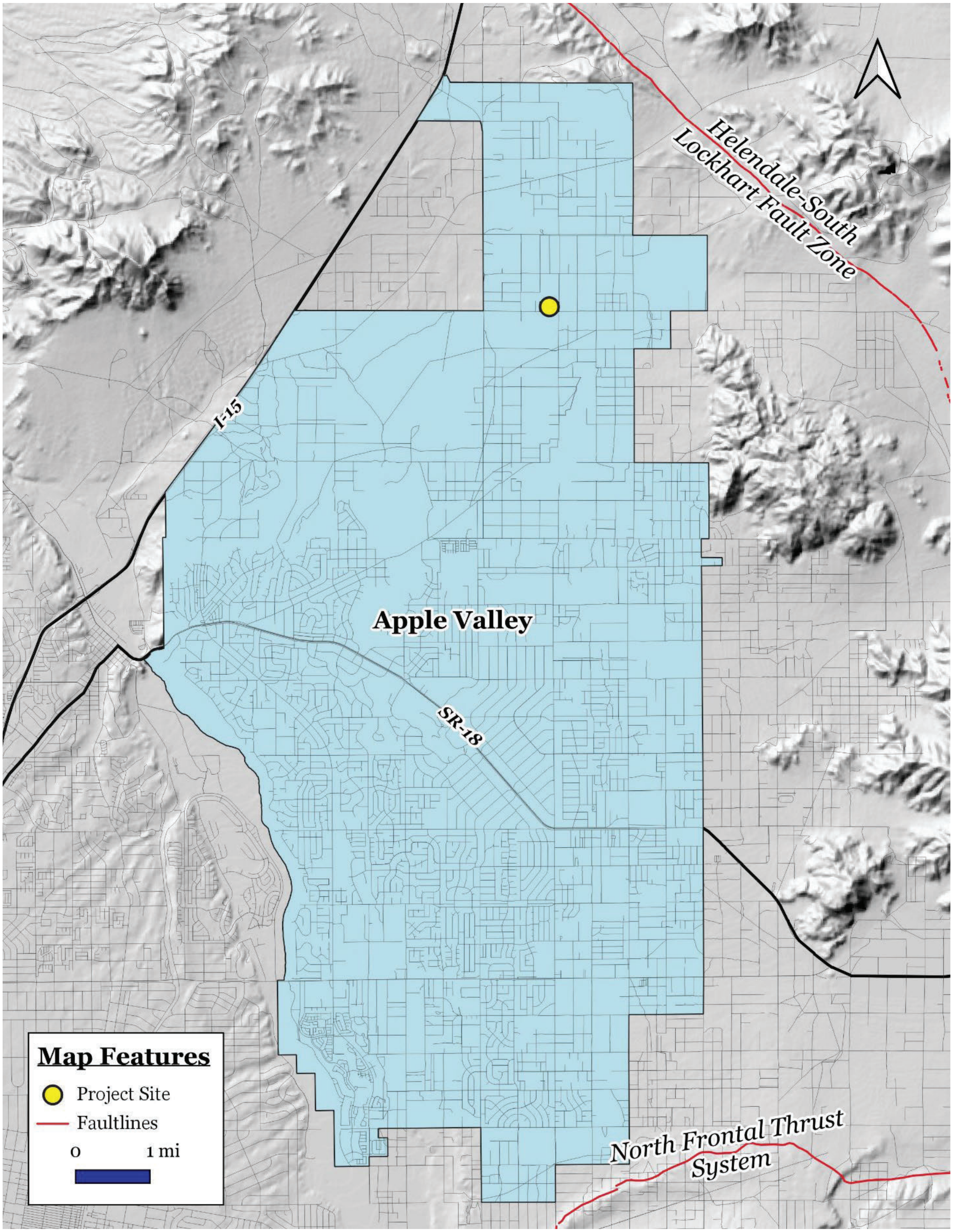

EXHIBIT 7 GEOLOGY MAP

SOURCE: CALIFORNIA DEPARTMENT OF CONSERVATION

B. *Would the project result in substantial soil erosion or the loss of topsoil? ● Less than Significant Impact.*

Alluvial materials were encountered within all the exploratory borings to the maximum depths explored. These units were noted to mainly consist of silty sand with minor well graded sand with silt. These materials were typically tan to red brown in color and were noted to contain some secondary calcite. The alluvial materials were in a relatively loose state at the surface becoming medium dense to very dense state at a depth of approximately 2 feet and generally becoming increasingly dense with increasing depth based on our equivalent Standard Penetration Test (SPT) data and in-place density testing. Igneous bedrock was encountered within all of the exploratory borings underlying the alluvial materials above to the maximum depths explored. These units were encountered at depths of approximately 10 to 20 feet and were noted to mainly consist of dry, gray, coarse to medium grained granitic rock. The bedrock was in a relatively hard state based on our equivalent Standard Penetration Test (SPT) data and in-place density testing.

Specific requirements that govern wind and water erosion during site preparation and construction activities would be effective in reducing both wind and water erosion. The project's construction will not result in soil erosion with adherence to those development requirements that restrict stormwater runoff (and the resulting erosion) and require soil stabilization. In addition, stormwater discharges from construction activities that disturb one or more acres, or smaller sites disturbing less than one acre that are part of a common plan of development or sale, are regulated under the National Pollutant Discharge Elimination System (NPDES) stormwater permitting program. Prior to initiating construction, contractors must obtain coverage under an NPDES permit, which is administered by the State. In order to obtain an NPDES permit, the project Applicant must prepare a Stormwater Pollution Prevention Plan (SWPPP). Both of these requirements are identified as mitigation measures. The Town has identified sample construction Best Management Practices (BMPs) that may be included in the mandatory SWPPP. The use of these construction BMPs identified in the mandatory SWPPP will prevent soil erosion and the discharge of sediment into the local storm drains during the project's construction phase. Following development, a large portion of the project site would be paved over and landscaped. *As a result, the impacts would be less than significant.*

C. *Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse? ● Less than Significant Impact.*

The proposed project's construction will not result in soil erosion since the project's contractors must implement the construction BMPs identified in the mandatory SWPPP. The BMPs will minimize soil erosion and the discharge of sediment off-site. Additionally, the project site is not located within an area that could be subject to landslides or liquefaction. The soils that underlie the project site possess a low potential for shrinking and swelling. Soils that exhibit certain shrink-swell characteristics become sticky when wet and expand according to the moisture content present at the time. Since the soils have a low shrink-swell potential, lateral spreading resulting from an influx of groundwater is slim. The likelihood of lateral spreading will be further reduced since the project's implementation will not require grading and excavation that would extend to depths required to encounter groundwater. Moreover, the project will not result in the direct extraction of groundwater. The proposed project site is located on an 18.72-acre parcel that is currently vacant and undisturbed. *As a result, the impacts would be less than significant.*

D. *Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property? ● Less than Significant Impact.*

Expansive soils are those that contain significant amounts of clay minerals resulting in the ability to expel water (shrink) or absorb water (swell), which allows these soils to expand (or shrink) as a result of changes in moisture content. The pressure differential induced by the shrinking or swelling of expansive soils can have significant harmful effects upon structures and other structural improvements.

In the Town of Apple Valley, expansive soils are primarily associated with areas underlain by older fan deposits containing clay-rich soil profiles, which are in the moderately expansive range. In addition, the Apple Valley Dry Lake contains very fine-grained silts and clays that are potentially expansive. Alluvial fan sediments, composed primarily of granular soils, underlie the low-lying areas of the Town and the expansion potential ranges from very low to moderately low. The project site is underlain by the Arizo-Cajon complex and Helendale-Bryman loamy sands Association that are considered to have a very low expansion potential. For very low expansive soils and specialized construction procedures to resist expansive soil activity are not considered necessary. *As a result, the impacts will be less than significant.*

E. *Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water? ● No Impact.*

The proposed project will connect to the Town's sanitary sewer system. As a result, no impacts associated with the use of septic tanks will occur as part of the proposed project's implementation.

F. *Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? ● Less than Significant Impact with Mitigation.*

The surface deposits in the proposed project area are composed entirely of younger Quaternary Alluvium. This younger Quaternary Alluvium is unlikely to contain significant vertebrate fossils, at least in the uppermost layers. Two mitigation measures (Mitigation Measure 1 and Mitigation Measure 2) included in Section 3.5 Cultural Resources would also address the potential for the discovery of paleontological resources that may be encountered during ground disturbance. These measures are listed below:

- *Cultural Resources Mitigation Measure No. 1.* In the event that cultural resources are discovered during project activities, all work in the immediate vicinity of the find (within a 60-foot buffer) shall cease and a qualified archaeologist meeting Secretary of Interior standards shall be hired to assess the find. Work on the other portions of the project outside of the buffered area may continue during this assessment period. Additionally, the Yuhaaviatam of San Manuel Nation Cultural Resources Department (YSMN) shall be contacted, as detailed within TCR-1, regarding any pre-contact finds and be provided information after the archaeologist makes his/her initial assessment of the nature of the find, so as to provide Tribal input with regards to significance and treatment.

- *Cultural Resources Mitigation Measure No. 2*. If significant pre-contact cultural resources, as defined by CEQA (as amended, 2015), are discovered and avoidance cannot be ensured, the archaeologist shall develop a Monitoring and Treatment Plan, the drafts of which shall be provided to YSMN for review and comment, as detailed within TCR-1. The archaeologist shall monitor the remainder of the project and implement the Plan accordingly.

As a result, the impacts would be less than significant with mitigation.

MITIGATION MEASURES

The analysis determined that the proposed project would require the following mitigation measures to ensure the appropriate NPDES and SWPPP protocols are adhered to :

Cultural Resources Mitigation Measure No. 1. In the event that cultural resources are discovered during project activities, all work in the immediate vicinity of the find (within a 60-foot buffer) shall cease and a qualified archaeologist meeting Secretary of Interior standards shall be hired to assess the find. Work on the other portions of the project outside of the buffered area may continue during this assessment period. Additionally, the Yuhaaviatam of San Manuel Nation Cultural Resources Department (YSMN) shall be contacted, as detailed within TCR-1, regarding any pre-contact finds and be provided information after the archaeologist makes his/her initial assessment of the nature of the find, so as to provide Tribal input with regards to significance and treatment.

Cultural Resources Mitigation Measure No. 2. If significant pre-contact cultural resources, as defined by CEQA (as amended, 2015), are discovered and avoidance cannot be ensured, the archaeologist shall develop a Monitoring and Treatment Plan, the drafts of which shall be provided to YSMN for review and comment, as detailed within TCR-1. The archaeologist shall monitor the remainder of the project and implement the Plan accordingly.

3.8 GREENHOUSE GAS EMISSIONS

Environmental Issue Areas Examined	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
A. Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			✖	
B. Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			✖	

SOURCES

Appendix A – Air Quality Analysis

California Department of Conservation. *Table 4, Cities and Counties Affected by Alquist Priolo Earthquake Fault Zones as of January 2010.*

California Department of Conservation. *State of California Williamson Act Contract Land.* ftp://ftp.consrv.ca.gov/pub/dlrp/WA/2012%20Statewide%20Map/WA_2012_8x11.pdf.

San Bernardino County. *Multi-Jurisdictional Hazard Mitigation Plan* - July 13, 2017.

Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

United States Department of Agriculture. Natural Resources Conservation Service. Website accessed February 3, 2024.

THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY

According to Appendix G of the CEQA Guidelines, a project may be deemed to have a significant adverse impact on greenhouse gas emissions if it results in any of the following:

- The proposed project would generate greenhouse gas (GHG) emissions, either directly or indirectly, that may have a significant impact on the environment.
- The proposed project would conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Examples of GHG that are produced both by natural and industrial processes include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). The accumulation of GHG in the atmosphere regulates the earth's temperature. Without these natural GHG, the Earth's surface would be about 61°F cooler. However, emissions from fossil fuel combustion have elevated the concentrations of GHG in the atmosphere to above natural levels. These man-made GHG will have the effect of warming atmospheric temperatures with the attendant impacts of changes in the global climate, increased sea levels, and changes to the worldwide biome. They major GHG that influence global warming are described below.

- *Water Vapor*. Water vapor is the most abundant GHG present in the atmosphere. While water vapor is not considered a pollutant, while it remains in the atmosphere it maintains a climate necessary for life. Changes in the atmospheric concentration of water vapor is directly related to the warming of the atmosphere rather than a direct result of industrialization. As the temperature of the atmosphere rises, more water is evaporated from ground storage (rivers, oceans, reservoirs, soil). Because the air is warmer, the relative humidity can be higher (in essence, the air is able to "hold" more water when it is warmer), leading to more water vapor in the atmosphere. As a GHG, the higher concentration of water vapor is then able to absorb more thermal indirect energy radiated from the Earth, thus further warming the atmosphere. When water vapor increases in the atmosphere, more of it will eventually also condense into clouds, which are more able to reflect incoming solar radiation. This will allow less energy to reach the Earth's surface thereby affecting surface temperatures.

- *Carbon Dioxide (CO_2).* The natural production and absorption of CO_2 is achieved through the terrestrial biosphere and the ocean. Manmade sources of CO_2 include the burning coal, oil, natural gas, and wood. Since the industrial revolution began in the mid-1700's, these activities have increased the atmospheric concentrations of CO_2. Prior to the industrial revolution, concentrations were fairly stable at 280 parts per million (ppm). The International Panel on Climate Change (IPCC Fifth Assessment Report, 2014) Emissions of CO_2 from fossil fuel combustion and industrial processes contributed about 78% of the total GHG emissions increase from 1970 to 2010, with a similar percentage contribution for the increase during the period 2000 to 2010.
- *Methane (CH_4).* CH_4 is an extremely effective absorber of radiation, although its atmospheric concentration is less than that of CO_2. Methane's lifetime in the atmosphere is brief (10 to 12 years), compared to some other GHGs (such as CO_2, N_2O, and Chlorofluorocarbons (CFCs). CH_4 has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of methane. Other human-related sources of methane production include fossil-fuel combustion and biomass burning.
- *Nitrous Oxide (N_2O).* Concentrations of N_2O also began to increase at the beginning of the industrial revolution. In 1998, the global concentration of this GHG was documented at 314 parts per billion (ppb). N_2O is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is also commonly used as an aerosol spray propellant.
- *Chlorofluorocarbons (CFC).* CFCs are gases formed synthetically by replacing all hydrogen atoms in methane or ethane (C_2H_6) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the Earth's surface). CFCs have no natural source but were first synthesized in 1928. It was used for refrigerants, aerosol propellants, and cleaning solvents. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and in 1989 the European Community agreed to ban CFCs by 2000 and subsequent treaties banned CFCs worldwide by 2010. This effort was extremely successful, and the levels of the major CFCs are now remaining level or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years.
- *Hydrofluorocarbons (HFC).* HFCs are synthetic man-made chemicals that are used as a substitute for CFCs. Out of all the GHGs, they are one of three groups with the highest global warming potential. The HFCs with the largest measured atmospheric abundances are (in order), HFC-23 (CHF_3), HFC-134a (CF_3CH_2F), and HFC-152a (CH_3CHF_2). Prior to 1990, the only significant

emissions were HFC-23. HFC-134a use is increasing due to its use as a refrigerant. Concentrations of HFC-23 and HFC-134a in the atmosphere are now about 10 parts per trillion (ppt) each. Concentrations of HFC-152a are about 1 ppt. HFCs are manmade and used for applications such as automobile air conditioners and refrigerants.

- *Perfluorocarbons (PFC).* PFCs have stable molecular structures and do not break down through the chemical processes in the lower atmosphere. High-energy ultraviolet rays about 60 kilometers above Earth's surface are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane (CF_4) and hexafluoroethane (C_2F_6). Concentrations of CF_4 in the atmosphere are over 70 ppt. The two main sources of PFCs are primary aluminum production and semiconductor manufacturing.
- *Sulfur Hexafluoride (SF_6).* SF_6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas. SF_6 has the highest global warming potential of any gas evaluated; 23,900 times that of CO_2. Concentrations in the 1990s where about 4 ppt. Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

The MDAQMD mass emissions threshold is 10,000 tons (9,702 metric tons (MT)) CO2e per year.

ANALYSIS OF ENVIRONMENTAL IMPACTS

A. *Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? ● Less than Significant Impact.*

The proposed project would be a 404,057 square foot industrial warehouse (non-rail and non-cold storage). The total net land area of the site is 871,200 square feet which is approximately 18.71 acres. As indicated previously, the new building would have a total floor area of 404,057 square feet. Two separate office areas would be located at the southeast and southwest corners of the new building. Of the new building's total floor area, 391,638 square feet would be warehouse uses and 12,419 square feet would be office space. A total of 64 truck loading docks would be located along the building's north elevation. A total of 6 EV spaces for trucks would be located along the building's north side. A total of 222vehicle parking spaces for employees and patrons would be located along the building's east, south, and west elevations and along the east perimeter of the site. Of this total, 203 spaces would be standard spaces, 8 spaces would be ADA spaces, and 12 spaces would be reserved for EV vehicles.

The State of California requires CEQA documents to do an evaluation of greenhouse gas (GHG) emissions or gases that trap heat in the atmosphere. GHG are emitted by both natural processes and human activities. Examples of GHG that are produced both by natural and industrial processes include carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O). Carbon dioxide equivalent, or CO2E, is a term that is used for describing different greenhouses gases in a common and collective unit. The MDAQMD established the 10,000 MTCO2 threshold for industrial land uses.

Greenhouse gases, primarily carbon dioxide (CO2), methane (CH4), and nitrous (N2O) oxide, collectively reported as carbon dioxide equivalents (CO2e) – are directly emitted from stationary source combustion of natural gas in equipment such as water heaters, boilers, process heaters, and furnaces. GHGs are also emitted from mobile sources such as on-road vehicles and off-road construction equipment burning fuels such as gasoline, diesel, biodiesel, propane, or natural gas (compressed or liquefied). Indirect GHG emissions result from electric power generated elsewhere (i.e., power plants) used to operate process equipment, lighting, and utilities at a facility. Also, included in GHG quantification is electric power used to pump the water supply (e.g., aqueducts, wells, pipelines) and disposal and decomposition of municipal waste in landfills. California's Building Energy Efficiency Standards are updated on an approximately three-year cycle. The 2019 standards improved upon the 2016 standards for new construction of, and additions and alterations to, residential, commercial, and industrial buildings. The 2019 standards went into effect on January 1, 2020. Since the Title 24 standards require energy conservation features in new construction (e.g., high efficiency lighting, high-efficiency heating, ventilating, and air-conditioning (HVAC) systems, thermal insulation, double-glazed windows, water conserving plumbing fixtures, etc.), they indirectly regulate and reduce GHG emissions. Using CalEEMod, direct onsite and offsite GHG emissions were estimated for construction and operation, and indirect offsite GHG emissions were estimated to account for electric power used by the proposed project, water conveyance, and solid waste disposal. Table 6 shows unmitigated and mitigated GHG emissions and evaluates mitigated emissions against MDAQMD significance thresholds. Operational measures incorporate typical code-required energy and water conservation features. Off-site traffic impacts are included in these emissions estimates, along with construction emissions amortized over 30 years.

TABLE 6 GREENHOUSE GAS EMISSIONS INVENTORY

Source	GHG Emissions (MT/year)			
	CO2	CH4	N2O	CO2E
Short-Term (Construction) - Total Emissions	663	0.01	0.04	675
Construction Amortized over 30 years				22.5
Long-Term (Operational) - Total Emissions	2,938	6.66	0.16	3,156
Total Emissions				3,178.5
Significance Threshold				**10,000 MTCO2E**

Source: CalEEMod V.2022.1.1.21

The MDAQMD interim GHG significance threshold is set as 10,000 metric tons of carbon dioxide equivalents per year (MT CO2E/year) for industrial project with a project's construction emissions amortized over 30 years or the project life and added to operational emissions. As indicated in Table 6 the construction emissions amortized over 30 years is 22.5 metric tons CO2E per year. The operational emission is 3,156 metric tons MTCO2E per year for a combined total of 3,178.5 MTCO2E per year, which is well below the threshold of 10,000 MTCO2E per year. Operational measures incorporate typical code required energy and water conservation features. Off-site traffic impacts are included in these emissions estimates, along with construction emissions amortized over 30 years. *As a result, the impacts would be less than significant.*

B. *Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of greenhouse gases? ● Less than Significant Impact.*

The Town of Apple Valley's Climate Action Plan (CAP) describes general programs, policies, and specific actions that … "will move the Town in the direction of realizing GHG emission reductions." Section IV.ii of the CAP provides policies that may contribute to GHG reductions. These measures are intended as a menu for existing and future development, any combination of which can be implemented to reach reduction targets on a project-by-project basis.

CO-2. Establish and enforce idling time limits for delivery vehicles. Idling shall not be permitted for more than 5 minutes. *The proposed project would comply with this policy.*

CO-3. Encourage the replacement of gasoline or diesel fleet vehicles with hybrid or alternative fuel vehicles, if available for intended use. *The proposed project would not preclude the implementation of this policy.*

CO-4. Establish an employee carpooling program, including incentives (preferred parking, flex time incentives, etc.) for participating employees. *The proposed project would comply with this policy.*

CO-5. (Encourage) Provide employees with free or discounted public transit passes. *The proposed project would not preclude the implementation of this policy.*

CO-6. Replace failing or failed fixtures and appliances with energy efficient fixtures and appliances. *The proposed project would comply with this policy.*

CO-7. Light bulbs shall be replaced with CFL or LED bulbs. *The proposed project would comply with this policy.*

CO-8. Appliances shall be Energy Star rated. Replace traditional water heater with an instant water heating system. *The proposed project would comply with this policy.*

CO-9. Replace traditional roofing with a cool roof. Increase insulation in walls and roof to a minimum R-30. *The proposed project would not preclude the implementation of this policy.*

CO-10. Install weather-stripping on all doors and windows. *The proposed project would not preclude the implementation of this policy.*

CO-11. Replace grass/turf areas with drought tolerant or native plants, or with decorative rock or gravel. CO-12. Replace water fixtures (faucets, toilets, etc.) with high efficiency fixtures. *The proposed project would not preclude the implementation of this policy.*

CO-11. Replace grass/turf areas with drought tolerant or native plants, or with decorative rock or gravel. *The proposed project would not preclude the implementation of this policy.*

CO-12. Replace water fixtures (faucets, toilets, etc.) with high efficiency fixtures. *The proposed project would comply with this policy.*

CO-13. Replace water heater and/or pool heater with a solar water heating system. *The proposed project would comply with this policy.*

CO-14. Install solar panels or photovoltaic system. *The proposed project would not preclude the implementation of this policy.*

CO-17. Increase recycling by 20%. Currently, recycling is mandatory for businesses that generate four cubic yards or more of commercial solid waste per week and for multifamily residential dwellings of five units or more (Senate Bill 1018). *The proposed project would comply with this policy.*

CO-18. For businesses, encourage two-sided printing and electronic document submittals to reduce paper waste. *The proposed project would not preclude the implementation of this policy.*

ND-10. Install bus stop(s) and secure scheduled transit service from Victor Valley Transit Authority. *The proposed project would not preclude the implementation of this policy.*

ND-16. Install Energy Star appliances and energy efficient fixtures. *The proposed project would comply with this policy.*

ND-17. Install all CFL or LED light bulbs. *The proposed project would comply with this policy.*

ND-18. Install common area electric vehicle charging station(s) and secure bicycle racks. *The proposed project would comply with this policy.*

ND-24. Recycle and/or salvage non-hazardous construction and demolition waste, and develop and implement a construction waste management plan quantifying the reduction in the waste stream. *The proposed project would comply with this policy.*

ND-25. Reuse construction waste in project features (e.g. shattered concrete or asphalt can be ground and used in walkways and parking lots). *The proposed project would comply with this policy.*

The San Bernardino County Transit Authority (SBCTA) authorized the preparation of a county-wide Regional Greenhouse Gas Reduction Plan. This plan was completed and finalized in March of 2014. The plan contains multiple reduction measures that would be effective in reducing GHG emissions throughout the SBCTA region.

- Integrate state, regional, and local sustainable community/smart growth principles into the development and entitlement process;
- Develop a system of trails and corridors that facilitates and encourages bicycling and walking;
- Require new development to provide transit facilities, such as bus shelters, transit bay and turnouts, as necessary;
- Require the future development of community-wide servicing facilities to be sites in transit-ready areas that can be served and made accessible by public transit;
- Provide development-related incentives for projects that promote transit use;
- Designate and maintain a network of truck routes that provide for the effective transport of goods while minimizing negative impacts on local circulation and noise sensitive land uses;
- Transition the Town's Fleet to low emission/fuel efficient vehicles while minimizing negative impacts on local circulation and noise sensitive land uses;
- Encourage Carpooling; and,
- Work with the regional transit provider to provide shade, weather protection, seating and lighting at all stops

The project's construction and operation will not adversely preclude or directly affect the implementation of those policies. As indicated in Table 6, the construction emissions amortized over 30 years is 22.5 metric tons CO2E per year. The operational emission is 3,156 metric tons MTCO2E per year for a combined total of 3,178.5 MTCO2E per year, which is well below the threshold of 10,000 MTCO2E per year. The project will comply with the Town of Apple Valley's Climate Action Plan which would contribute to GHG reductions. As a result, the project will not involve or require any variance from an adopted plan, policy, or regulation governing GHG emissions. The GHG Screening Table was used to evaluate this project pursuant to the GHG Reduction Plan to identify relevant mitigation. *As a result, the impacts would be less than significant.*

MITIGATION MEASURES

The analysis of potential impacts related to greenhouse gas emissions indicated that no significant adverse impacts would result from the proposed project's approval and subsequent implementation. As a result, no mitigation measures are required.

3.9 HAZARDS & HAZARDOUS MATERIALS

Environmental Issue Areas Examined	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
A. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			✖	
B. Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?		✖		
C. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				✖
D. Would the project 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?				✖
E. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?				✖
F. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				✖
G. Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?				✖
E. Would the project 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?				✖
F. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			✖	
G. Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?			✖	

SOURCES

CalEPA. *DTSC's Hazardous Waste and Substances Site List - Site Cleanup (Cortese List).* *http://www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm*.

Toll-Free Airline. R*iverside Public and Private Airports, California*. http://www.tollfreeairline.com/california/riverside.htm.

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San Bernardino County. *Multi-Jurisdictional Hazard Mitigation Plan* - July 13, 2017.

Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY

According to Appendix G of the CEQA Guidelines, a project may be deemed to have a significant adverse impact on hazards and hazardous materials if it results in any of the following:

- The proposed project would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- The proposed project would create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- The proposed project would emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- The proposed project would 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.
- The proposed project would result in a safety hazard or excessive noise for people residing or working in the project area 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.
- The proposed project would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- The proposed project would expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

Hazardous materials refer generally to hazardous substances that exhibit corrosive, poisonous, flammable, and/or reactive properties and have the potential to harm human health and/or the environment. Hazardous materials are used in a wide variety of products (household cleaners, industrial solvents, paint, pesticides, etc.) and in the manufacturing of products (e.g., electronics, newspapers, plastic products). Hazardous materials can include petroleum, natural gas, synthetic gas, acutely toxic chemicals, and other toxic chemicals that are used in agriculture, commercial, and industrial uses; businesses; hospitals; and households. Accidental releases of hazardous materials can occur from a variety of causes, including highway incidents, warehouse fires, train derailments, shipping accidents, and industrial incidents.

ANALYSIS OF ENVIRONMENTAL IMPACTS

A. *Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? ● Less than Significant Impact.*

The proposed project would be a 404,057 square foot industrial warehouse. The total net land area of the site is 871,200 square feet which is approximately 18.71 acres. As indicated previously, the new building would have a total floor area of 404,057 square feet. Two separate office areas would be located at the southeast and southwest corners of the new building. Of the new building's total floor area, 391,638 square feet would be warehouse uses and 12,419 square feet would be office space.

The project's construction would require the use of diesel fuel to power the construction equipment. The diesel fuel would be properly sealed in tanks and would be transported to the site by truck. Other hazardous materials that would be used on-site during the project's construction phase include, but are not limited to, gasoline, solvents, architectural coatings, and equipment lubricants. These products are strictly controlled and regulated and in the event of any spill, cleanup activities would be required to adhere to all pertinent protocols. Once occupied, the proposed project would be a warehouse use. The transport and storage of materials within the building would be governed by the State of California Department of Transportation (Caltrans) and California Environmental Protection Agency (CalEPA). The proposed use of the project site will be enclosed within a concrete tilt-up building and will not present a noise, sight, odor, light, or other environmental impact to the surrounding area. In addition, the development would be periodically inspected by both the Town and County to ensure that all pertinent codes are adhered to. *As a result, the impacts would be less than significant*.

B. *Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? ● Less than Significant Impact with Mitigation.*

As indicated previously, the project's construction would require the use of diesel fuel to power the construction equipment. The diesel fuel would be properly sealed in tanks and would be transported to the site by truck. Other hazardous materials that would be used on-site during the project's construction phase include, but are not limited to, gasoline, solvents, architectural coatings, and equipment lubricants. These products are strictly controlled and regulated and in the event of any spill, cleanup activities would be required to adhere to all pertinent protocols. The following mitigation would be required to address the potential risk of upset during project operation:

- *Hazards & Hazardous Materials Mitigation Measure No.1* The Applicant will be required to prepare a safety and hazard mitigation plan that indicates those protocols that must be adhered to in the event of an accident. This plan will be reviewed and approved by the Town of Apple Valley prior to the issuance of the Occupancy Permit.

As indicated in Subsection D, the project site is not listed in either the CalEPA's Cortese List or the Envirostor database. As a result, the likelihood of encountering contamination or other environmental concerns during the project's construction phase is remote. The proposed use of the project site will be enclosed within a concrete tilt-up building and will not present a noise, sight, odor, light, or other environmental impact to the surrounding area. In addition, the development would be periodically inspected by both the Town and County to ensure that all pertinent codes are adhered to. *As a result, the impacts would be less than significant with Mitigation.*

C. *Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? ● No Impact.*

The nearest school to the project site is Victor Valley Community College, located approximately 450 feet of the project site to the south. The project's construction would require the use of diesel fuel to power the construction equipment. The diesel fuel would be properly sealed in tanks and would be transported to the site by truck. Other hazardous materials that would be used on-site during the project's construction phase include, but are not limited to, gasoline, solvents, architectural coatings, and equipment lubricants. These products are strictly controlled and regulated and in the event of any spill, cleanup activities would be required to adhere to all pertinent protocols. Any handling, transport, use, or disposal must comply with all applicable federal, state, and local agencies and regulations, including the Environmental Protection Agency (EPA), Department of Toxic Substances Control (DTSC), California Division of Occupational Safety and Health (CAL/OSHA), Resource Conservation and Recovery Act (RCRA), and the Apple Valley Fire Protection District. Once operational, all of the products transported to and from the project site would be located inside the enclosed building. The new building could potentially be divided into two separate tenant spaces. The individual tenants have not yet been identified. Future occupants would have to comply with the Town's Zoning Ordinance with respect to the permitted uses of light industrial zoning. The proposed warehouse project would be reviewed by the Town of Apple Valley and the San Bernardino County Fire Department prior to occupancy. This review and the ongoing compliance with the County's building and fire codes would reduce any potential impacts. In addition, the new warehouse building would have sprinklers. *As a result, no impacts would occur.*

D. *Would the project 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? ● No Impact.*

Government Code Section 65962.5 refers to the Hazardous Waste and Substances Site List, commonly known as the Cortese List. The Cortese List is a planning document used by the State and other local agencies to comply with CEQA requirements that require the provision of information regarding the location of hazardous materials release sites. A search was conducted through the California Department of Toxic Substances Control Envirostor website to identify whether the project site is listed in the database as a Cortese site. The project site is not identified as a Cortese site. *As a result, no impacts will occur.*

E. *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or a public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area? ● No Impact.*

The project site is not located within an airport land use plan and is not located within two miles of a public airport or public use airport. The nearest airport to the site is the Apple Valley Airport, located approximately 0.92 miles south of the project site. The current Apple Valley Airport was established as a CSA general aviation airport. The San Bernardino County Sheriff and California Highway Patrol helicopter operations are also based at this airport. The project will not introduce a structure that will interfere with the approach and take off aircraft utilizing any regional airports. The project site is located well outside of any takeoff and landing overlay zones (refer to Figure a-1 of the Apple Valley Comprehensive Airport Master Plan). *As a result, no impacts would occur.*

F. *Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? ● Less than Significant Impact.*

At no time will any adjacent street (Johnson Avenue or Navajo Avenue) be completely closed to traffic during the proposed project's construction. The construction staging area would be located onsite. In addition, all construction staging must occur on-site. Typical Town of Apple Valley requirements include prior notification of any lane or road closures with sufficient signage prior to and during any closures, flag crews with radio communication when necessary to coordinate traffic. The contractors would be required to comply with these requirements, which would maintain emergency access and allow for evacuation if needed during construction activities. Compliance with these requirements would ensure that short-term impacts related to this issue are less than significant.

As indicated herein in Section 2, access to the project site would be provided by three driveway connections with the north side of Johnson Road and two driveway connections with the west side of Navajo Road. The three driveways on the north side of Johnson Road would have a curb-to-curb width of 36-feet and would provide ingress and egress for vehicles. The southernmost driveway on Navajo Road would have a curb-to-curb width of 36-feet and would provide ingress and egress for vehicles while the northernmost driveway would have a curb-to-curb with of 50-feet and would provide ingress and egress for trucks to enter the loading and receiving area in the northern portion of the site. The internal drive aisles in the southerly portion of the site have a width of 36-feet. These improvements would be subject to compliance with the Apple Valley Development Code and would be reviewed by the Apple Valley Fire Protection District and San Bernardino County Sheriff's Department through the Apple Valley general development review process. Proper site design and compliance with standard and emergency access requirements would allow for evacuation if necessary during ongoing commercial operations. This would ensure that long-term impacts related to this issue are less than significant. *As a result, the impacts would be less than significant.*

G. *Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires? ● Less than Significant Impact.*

The project site is located in an urbanizing area and the adjacent properties directly south of Johnson Avenue are developed. The project site along with the entire Town is located within a "moderate fire hazard severity zone" and Local Responsibility Area (LRA).[15] During construction, especially during land clearance activities, contractors will be required to ensure that construction equipment and activities do not initiate any wildfires. A construction staging would be required to be located onsite and not on adjacent undeveloped properties. Once developed, the project is required to comply with 2019 California Building Code requirements for ignition-resistant construction building materials. *As a result, the impacts would be less than significant.*

MITIGATION MEASURES

The analysis of potential impacts related to hazards and hazardous materials indicated that following mitigation measures would be required to reduce the project's impacts to levels that would be less than significant.

> *Hazards & Hazardous Materials Mitigation Measure No.1* The Applicant will be required to prepare a safety and hazard mitigation plan that indicates those protocols that must be adhered to in the event of an accident. This plan will be reviewed and approved by the Town of Apple Valley prior to the issuance of the Occupancy Permit.

[15] CalFire. *Very High Fire Hazard Severity Zone Map for SW San Bernardino County*. http://frap.fire.ca.gov/webdata/maps/san_bernardino_sw/

3.10 HYDROLOGY & WATER QUALITY

Environmental Issue Areas Examined	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
A. Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?			✖	
B. Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			✖	
C. Would the project 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 or,			✖	
i) Would the project result in substantial erosion or siltation on- or off-site;			✖	
ii) Would the project substantially increase the rate or amount of surface runoff in a manner in which would result in flooding on- or off-site.			✖	
iii) Would the project 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; or			✖	
iv) Would the project impede or redirect flood flows?			✖	
D. In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation?				✖
E. Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?				✖

SOURCES

Appendix F – Hydrology Report.

ELMT Consulting, Inc. *Biological Resources Assessment*. October 2024.

Google Maps. Website accessed February 1, 2023.

San Bernardino County. *Multi-Jurisdictional Hazard Mitigation Plan* - July 13, 2017.

Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

United States. Federal Emergency Management Agency. *Flood Insurance Rate Mapping Program*. 2022.

THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY

According to Appendix G of the CEQA Guidelines, a project may be deemed to have a significant adverse impact on hydrology and water quality if it results in any of the following:

- The proposed project would violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.
- The proposed project would substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
- The proposed project would 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; 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; or, impede or redirect flood flows.
- The proposed project would risk release of pollutants due to project inundation in flood hazard, tsunami, or seiche zones.
- The proposed project would conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

ANALYSIS OF ENVIRONMENTAL IMPACTS

A. *Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality? ● Less than Significant Impact.*

The proposed project would be a 404,057 square foot industrial warehouse. The total net land area of the site is 871,200 square feet which is approximately 18.71 acres. As indicated previously, the new building would have a total floor area of 404,057 square feet. Two separate office areas would be located at the southeast and southwest corners of the new building. Of the new building's total floor area, 391,638 square feet would be warehouse uses and 12,419 square feet would be office space. The proposed development site will be located in the north-central portion of the Town of Apple Valley.

The proposed project will be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for the discharge of storm water. This NPDES permit ensures that Best Management Practices (BMPs) such as vegetated swales, buffers, and/or infiltration areas are incorporated into new development projects to maintain water quality. The project site is located within the jurisdiction of the Lahontan Regional Water Quality Control Board (RWQCB), which is part of the Upper Mojave Hydrologic Area. The Lahontan RWQCB designates beneficial uses for waters in the Mojave Watershed, which are identified in the Water Quality Control Plan for the Lahontan Region (Basin Plan). Coverage under an NPDES permit includes the submittal of a Notice of Intent (NOI) application to the SWRCB, the receipt of a Waste Discharge Identification Number, and the preparation of a Storm Water Pollution Prevention Plan (SWPPP) for construction discharges. To protect water quality over the short term (i.e., during construction), the project-specific SWPPP will describe the construction contractor's activities to comply with the requirements in the NPDES permit. The SWPPP is intended to facilitate a process whereby the operator evaluates potential pollutant sources at the site and implements BMPs designed to prevent or control the discharge of pollutants in storm water runoff.

The project Applicant will be required to adhere to Chapter 10.30.210 - Erosion and Sediment Control, of the municipal code regulates erosion and sediment control. In addition, stormwater discharges from construction activities that disturb one or more acres, or smaller sites disturbing less than one acre that are part of a common plan of development or sale, are regulated under the National Pollutant Discharge Elimination System (NPDES) stormwater permitting program. *As a result, the impacts would be less than significant*.

The proposed project is located within the Mojave River Groundwater Basin, which is the primary source of domestic groundwater in Apple Valley through several subsurface aquifers or subareas. The Alto Subarea has the largest water supply in the Mojave River Groundwater Basin. The Mojave River Groundwater Basin, including the Alto Subarea, is in a state of overdraft and therefore subject to adjudication via the Mojave Basin Area and the Warren Valley Adjudications. The Adjudication limits the amount of groundwater that may be withdrawn without replenishment via imported groundwater. Although current reliance on groundwater recharge is primarily from precipitation and runoff from the San Bernardino and San Gabriel Mountains to the south, the Mojave Water Agency (MWA) has established a groundwater replenishment program to reduce annual and cumulative groundwater overdraft through artificial recharge into the Mojave River Groundwater Basin, including the Alto Subarea.

According to the Apple Valley Ranchos Water Company (AVRWC), which provides domestic water services to most of the Town of Apple Valley, water quality within the Town is very high, and in many instances exceeds U.S. EPA and California Department of Health Services standards.68 Nevertheless, total dissolved solids (TDS) and nitrates affect groundwater in the Alto Subarea of the Mojave River Groundwater Basin.69 The State Maximum Contaminant Level (MCL) of TDS is 1,000 milligrams per liter (mg/L), and concentrations of TDL measured in water wells in Apple Valley range from 120 to 960 mg/L, with an average of 248 mg/L.70 The primary source of TDS in Apple Valley groundwater is from runoff and leaching of natural deposits. The State MCL and Public Health Goal (PHG) or Maximum Contaminant Level Goal (MCLG) of nitrates is 45 parts per million (ppm), and concentrations of nitrates measured in water wells in Apple Valley range from 2.5 and 17 ppm of nitrates as NO3, with an average of 6.4 ppm.71 The primary source of nitrates in Apple Valley groundwater is from long-term discharge from on-lot septic systems.

Groundwater was not encountered within any of exploratory borings as advanced to a maximum depth of approximately 30 feet below the existing ground surface. In order to estimate the approximate depth to groundwater in the site area, a search was conducted for local groundwater (well) level measurements within the State of California Department of Water Resources online database (CDWR, 2023). The closest well found is State Well Number 06N03W15Q001S, located approximately 1.2 (0.75 miles) east of the site. In this well, groundwater records were available from 1933 to 2015. The depth of water in this well fluctuated from approximately 76 feet in 2015 to approximately 114 feet in 1933. Maximum depths during site development are expected to occur during construction of the subterranean infiltration chamber system, but which would not extend below existing site grades to depths that would reach the water table or impair or alter the direction or rate of flow of groundwater or introduce TDS, nitrates, or other contaminants into the groundwater table. Additionally, the proposed project would connect to Apple Valley's municipal sewer system. No septic systems are proposed, and no groundwater extraction would occur as part of the proposed project's implementation. *As a result, the impacts would be less than significant*.

B. *Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin? ● Less than Significant Impact.*

Groundwater was not encountered within any of exploratory borings as advanced to a maximum depth of approximately 30 feet below the existing ground surface. In order to estimate the approximate depth to groundwater in the site area, a search was conducted for local groundwater (well) level measurements within the State of California Department of Water Resources online database (CDWR, 2023). The closest well found is State Well Number 06N03W15Q001S, located approximately 1.2 (0.75 miles) east of the site. In this well, groundwater records were available from 1933 to 2015. The depth of water in this well fluctuated from approximately 76 feet in 2015 to approximately 114 feet in 1933. A ground surface elevation of approximately 3,132 feet above mean sea level was listed. Based on this information, groundwater at the site appears to be greater than 50 feet below the lowest ground surface elevation at the site. No new direct construction-related impacts to groundwater supplies, or groundwater recharge activities would occur as part of the proposed project's implementation. Water used to control fugitive dust will be transported to the site via truck. No direct groundwater extraction will occur. Furthermore, the construction and post-construction BMPs will address contaminants of concern from excess runoff, thereby preventing the contamination of local groundwater. As a result, there would be no direct groundwater withdrawals associated with the proposed project's implementation. *As a result, the impacts would be less than significant.*

C. *Would the project 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? ● Less than Significant Impact.*

Two ephemeral drainages, named Drainage 1 and Drainage 2, were observed passing from the eastern boundary through the site and out through the western boundary of the project site during the field delineation.[16] The drainages onsite flow into a storm drain that extends under Johnson Road and into detention basins associated with the Distribution Cetner south of the project site (refer to Exhibit 8). Under the United States Army Corps of Engineers, the Corps regulates discharges of dredged or fill materials into waters of the United States and wetlands pursuant to Section 404 of the CWA. No Corps jurisdictional areas were identified within the project site and a CWA Section 404 permit would not be required for the proposed project.

The Regional Water Quality Control Board regulates discharges to surface waters pursuant to Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act. Regional Board jurisdictional areas were identified within the project site and Biological Resources Mitigation Measure No. 6 would be incorporated. Pursuant to Section 1602 of the California Fish and Game Code, the CDFW regulates any activity that will divert or obstruct the natural flow or alter the bed, channel, or bank (which may include associated biological resources) of a river or stream. CDFW jurisdictional areas were observed within the project site at the time of the investigation and Biological Resources Mitigation Measure No. 5 would be incorporated. The eastern, western, and southern sides of the new building will be at grade to channelize storm flows around the building along with the street sections. Off-site grading is proposed on the east side of Navajo Road to direct the storm flows south to a culvert crossing and local road tilt section that will convey the off-site flows to the north side of Johnson Road where these flows will be convey west and released into the historic natural drainage conveyance west of the project site. Tributary flows along the northern property line will be collected in a channel system between the truck parking and the northern property line. The site would be designed so the proposed hardscape surfaces (the building and paved areas) will percolate into the landscape parkway areas. *As a result, the impacts would be less than significant.*

i. *Would the project result in a substantial erosion or siltation on- or off-site; ● Less than Significant Impact*

The proposed project will be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for the discharge of storm water. This NPDES permit ensures that Best Management Practices (BMPs) such as vegetated swales, buffers, and/or infiltration areas are incorporated into new development projects to maintain water quality. The project site is located within the jurisdiction of the Lahontan Regional Water Quality Control Board (RWQCB), which is part of the Upper Mojave Hydrologic Area. The Lahontan RWQCB designates beneficial uses for waters in the Mojave Watershed, which are identified in the Water Quality Control Plan for the Lahontan Region (Basin Plan). Coverage under an NPDES permit includes the submittal of a Notice of Intent (NOI) application to the SWRCB, the receipt of a Waste Discharge Identification Number, and the preparation of a Storm Water Pollution Prevention Plan (SWPPP) for construction discharges. The project Applicant will be required to adhere to Chapter 10.30.210 - Erosion and Sediment Control, of the municipal code regulates erosion and sediment control. In addition, stormwater discharges from construction activities that disturb one or more acres, or smaller sites disturbing less than one acre that are part of a common plan of development or sale, are regulated under the National Pollutant Discharge Elimination System (NPDES) stormwater permitting program. Due to project requiring to follow the NPDES, the project would not result in a substantial erosion or siltation on or off-site. *As a result, the impacts would be less than significant.*

ii. *Would the project substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; ● Less than Significant Impact*

The project's construction and operation will be restricted to the designated project site and the project will not increase the amount of any stream or river that would lead to on- or off-site siltation or erosion. Predevelopment, the entire site is covered over in earth and pervious surfaces. The total building area would be 400,888 square feet or 50.56% of the total site area. Hardscape and paved surfaces would total 301,075 square feet or 37.97% of the total site area. Drainage and retention basins would be located along the Johnson Road frontage in the southern portion of the site. Landscaping totaling 90,969 square feet, would be provided throughout the site and along the roadway's frontages. Based on the San Bernardino County Hydrology Manual and CivilDesign Unit Hydrograph Software, the 1956-acre tributary area, soils areas, CN values, and lengths as well as the Lag Calculation. it was determined that the Watershed would produce 1,681 cubic feet per second (cfs) with an associated volume of 433 acre-feet of storm water. In order to protect off-site flows from on-site contaminated flows, two Contech CDS System clarifiers CDS2020-5 will be installed to treat on-site flows prior to exiting the site into the off-site drainage conveyance channels. The CDS System separates and traps trash, debris, sediment, and hydrocarbons from storm water runoff. *As a result, the impacts would be less than significant.*

iii. *Would the project 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; ● Less than Significant Impact*

The project's construction would be restricted to the site and would not alter the course of any stream or channel or river that would lead to on- or off-site siltation or erosion. Based on the San Bernardino County Hydrology Manual and CivilDesign Unit Hydrograph Software, Exhibit F of the Hydrology Study shows the 1956-acre tributary area, soils areas, CN values, and lengths as well as the Lag Calculation. Once entered into the software with the 100-year 24-hour rainfall data, it was determined that the Watershed would produce 1681 cfs with an associated volume of 433 acre-feet of storm water. Based on the limitations associated with Section A-A above, only 521 cfs is passing through of 1681 cfs tributary to the site. At this point it was determined that an additional 158.25 cfs would add on as the flows travel west to the site for a total of 679.25 cfs as these flows leave the site on the west. The volume associated with this flow can be deduced as (679.25/1956*433=) 139 acre-feet. The 18.20 acre development site will support a building that is approximately 350,000 square feet, truck docks, employee and truck parking with limited landscaping. There will also be outside seating areas, trash facilities and other appurtenances. The pavement at the northern side of the building will be depressed 4-feet below the building to provide docking space for semi-trucks. A portion of this area will be used as retention for the excess stormwater that is generated by the development of the site. The eastern, western, and southern sides of the building will be at grade to channelize storm flows around the building along with the street sections. Off-site grading is proposed on the east side of Navajo Road to direct the storm flows south to a culvert crossing and local road tilt section that will convey the off-site flows to the north side of Johnson Road where these flows will be convey west and released into the historic natural drainage conveyance west of the project site. Tributary flows along the northern property line will be collected in a channel system between the truck parking and the northern property line. *As a result, the potential impacts would be less than significant.*

iv. *Would the project impede or redirect flood flows? ● Less than Significant Impact*

The proposed project is partially situated in a Zone X and Zone D flood zone, an area of minimal flood hazard. The nearest flood zone is situated approximately 1 mile to the southwest and the project's construction and operation will be designed to accommodate this inundation characteristic. The pavement at the northern side of the building will be depressed 4-feet below the building to provide docking space for semi-trucks. A portion of this area will be used as retention for the excess stormwater that is generated by the development of the site. The eastern, western, and southern sides of the building will be at grade to channelize storm flows around the building along with the street sections. Off-site grading is proposed on the east side of Navajo Road to direct the storm flows south to a culvert crossing and local road tilt section that will convey the off-site flows to the north side of Johnson Road where these flows will be convey west and released into the historic natural drainage conveyance west of the project site. Tributary flows along the northern property line will be collected in a channel system between the truck parking and the northern property line. *As a result, the impacts would be less than significant.*

D. *In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation? ● No Impact.*

As mentioned previously, the proposed project site is not located within a Flood Hazard zone. The proposed project site is not located in an area that is subject to inundation by seiche or tsunami. In addition, the project site is located inland approximately 70 miles from the Pacific Ocean and the project site would not be exposed to the effects of a tsunami. *As a result, no impacts would occur.*

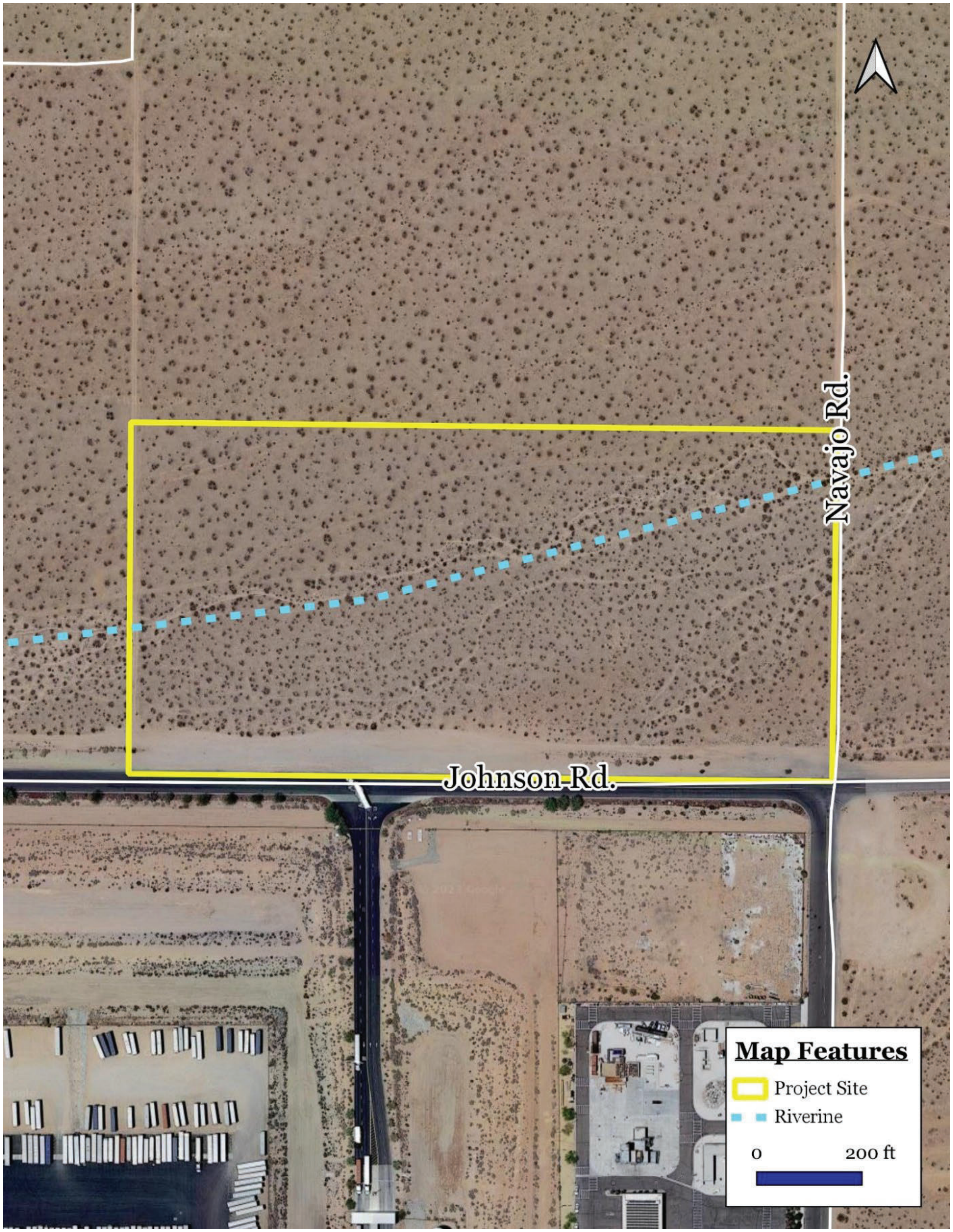

EXHIBIT 8 WATER RESOURCES MAP

SOURCE: CALIFORNIA DEPARTMENT OF CONSERVATION

E. *Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan? ● No Impact.*

The proposed project is required to be in compliance with Chapter 10.30.210 of the Town of Apple Valley Municipal Code. In addition, the project's operation will not interfere with any groundwater management or recharge plan because there are no active groundwater management recharge activities on-site or in the vicinity. To ensure the project would not substantially degrade surface or groundwater quality, inhibit groundwater recharge potential, or substantially deplete groundwater supplies, and the project would not conflict with any applicable water quality control plan or sustainable groundwater management plan, the proposed project will be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for the discharge of storm water. This NPDES permit ensures that Best Management Practices (BMPs) such as vegetated swales, buffers, and/or infiltration areas are incorporated into new development projects to maintain water quality. *As a result, no impacts would occur*.

MITIGATION MEASURES

As indicated previously, hydrological characteristics will not substantially change as a result of the proposed project. As a result, no mitigation is required.

3.11 LAND USE & PLANNING

Environmental Issue Areas Examined	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
A. Would the project physically divide an established community?				✖
B. Would the project 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?				✖

SOURCES

Google Maps. Website accessed February 1, 2023.

Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

Town of Apple Valley Zoning Map. Website accessed February 2, 2024.

THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY

According to Appendix G of the CEQA Guidelines, acting as Lead Agency, a project may be deemed to have a significant adverse impact on mineral resources if it results in any of the following:

- The proposed project would physically divide an established community.
- The proposed 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.

ANALYSIS OF ENVIRONMENTAL IMPACTS

A. *Would the project physically divide an established community? ● No Impact.*

The proposed project would be a 404,057 square foot industrial warehouse. The total net land area of the site is 871,200 square feet which is approximately 18.71 acres. As indicated previously, the new building would have a total floor area of 404,057 square feet. Two separate office areas would be located at the southeast and southwest corners of the new building. Of the new building's total floor area, 391,638 square feet would be warehouse uses and 12,419 square feet would be office space. A total of 64 truck loading docks would be located along the building's north elevation. The maximum height of the new building would be 42-feet. The zoning designation of the site is *Specific Plan*. The proposed project site is located on a total net land area of 18.72-acre across 3 parcels that are vacant though the site has been disturbed. Land uses and development located in the vicinity of the proposed project are outlined below:

- *North of the project site:* Vacant, though disturbed land is located to the north of the site. This area's General Plan and Zoning designation is *Specific Plan (North Apple Valley Specific Plan).*
- *East of the project site:* Navajo Road extends along the project site's east side. Vacant, though disturbed land is located to the north of the site. This area's General Plan and Zoning designation is *Specific Plan (North Apple Valley Specific Plan).*

- *South of the project site:* Johnson Road extends along the project site's southerly side. Further south, on the south side of this roadway, is the Victorville Collège of Public Safety (19190 Navajo Road) and the Walmart Distribution Center (21101 Johnson Road). This area's General Plan and Zoning designation is *Specific Plan (North Apple Valley Specific Plan)*.
- *West of the project site:* Vacant, undeveloped land is located to the west of the site. This area's General Plan and Zoning designation is *Specific Plan (North Apple Valley Specific Plan)*.

The granting of the requested entitlements and subsequent construction of the proposed project will not result in any expansion of the use beyond the current boundaries. As a result, the project will not lead to any division of an existing established neighborhood. *As a result, no impacts would result*.

B. *Would the project 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? ● No Impact.*

The project site is located within an area designated as *Specific Plan (North Apple Valley Specific Plan)* within the Town of Apple Valley General Plan Land Use Element (refer to Exhibit 19). This category of land use is characterized by the surrounding warehousing and industrial land uses. The proposed development would be consistent with the Town of Apple Valley General Plan and Zoning Ordinance requirements. According to the North Apple Valley Specific Plan, warehouse uses are a permitted use. The Town of Apple Valley seeks "to facilitate the development of high quality industrial development to provide for the Town's economic future. To that end, this Specific Plan establishes development standards and guidelines intended to guide land owners and developers in their project designs. These standards and guidelines assure the long-term development of a quality industrial park which will include distinctive, highly identifiable complements, such as entry monumentation and landscaping, which give the North Apple Valley Industrial Specific Plan area a sense of place and identity in the community." The Specific Plan includes four land use designations, and one overlay. The land use designations are: General Commercial – Specific Plan; Industrial – Airport; Industrial – Specific Plan; and Industrial – General. The project site is within the *Specific Plan – Industria*l zone. This designation allows for a broad range of clean manufacturing and warehousing uses, ranging from furniture manufacture to warehouse distribution facilities. Key features of this designation include:

1. Outdoor storage must be completely screened from view.
2. All uses must be conducted within enclosed buildings.
3. Perimeter landscaping must be complementary with that of surrounding projects to provide a unified, cohesive streetscape.

Appropriate land uses in this designation include manufacturing facilities with showrooms and offices, regional warehousing facilities, and support services for manufacturing and warehousing. The proposed project would conform to these requirements. *As a result, no impacts would result.*

MITIGATION MEASURES

The analysis determined that no impacts on land use and planning would result upon the implementation of the proposed project. As a result, no mitigation measures are required.

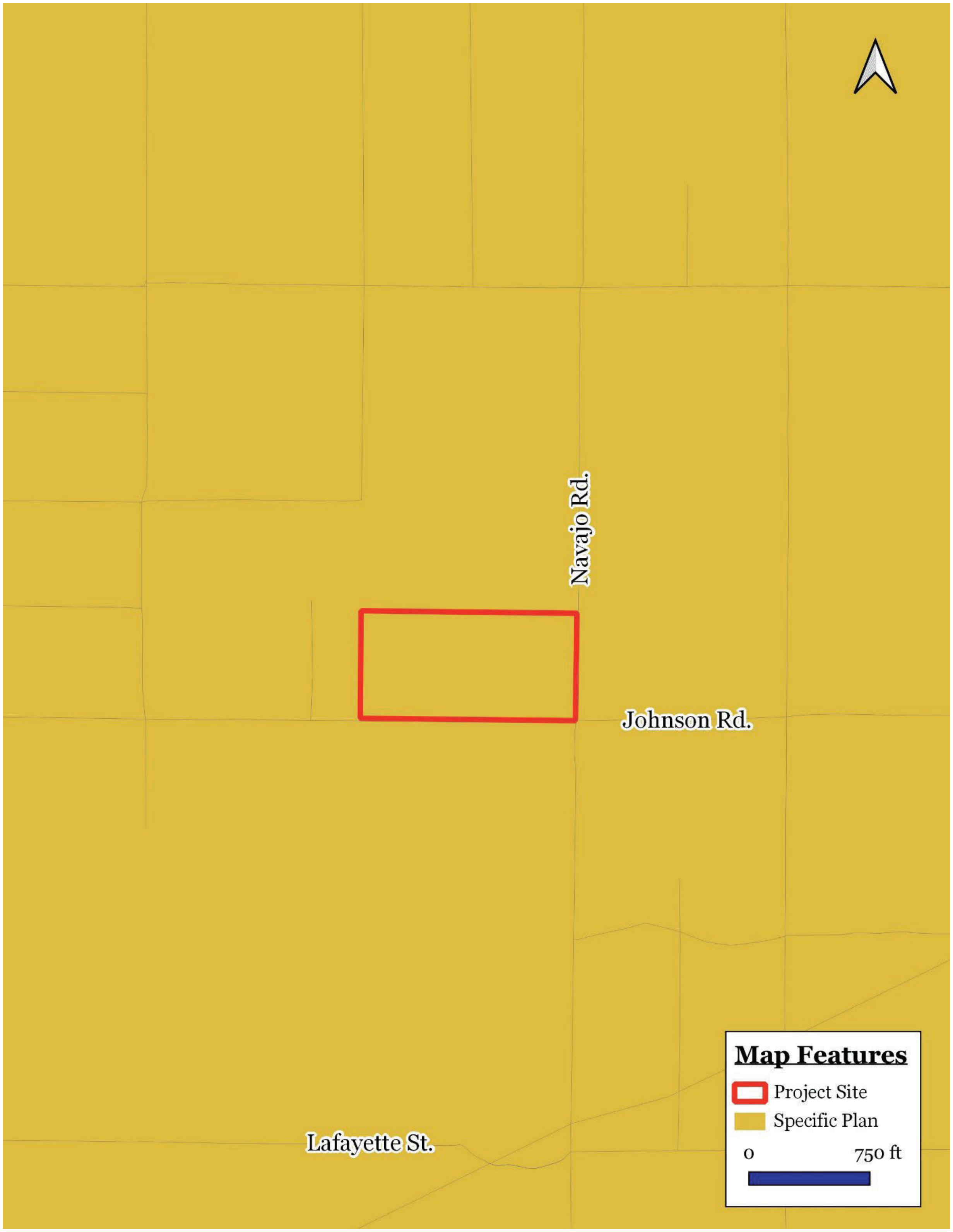

EXHIBIT 9 LAND USE AND ZONING MAP

SOURCE: TOWN OF APPLE VALLEY

3.12 MINERAL RESOURCES

Environmental Issue Areas Examined	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
A. Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				✕
B. Would the project 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?				✕

SOURCES

Google Maps. Website accessed February 1, 2023.

California, State of. Department of Conservation. California *Oil, Gas, and Geothermal Resources Well Finder. https://maps.conservation.ca.gov/doggr/wellfinder/#openModal/-117.41448/34.56284/14.*

California Department of Conservation. *Mineral Land Classification Map for the Town of Apple Valley Quadrangle*. Map accessed January 31, 2023.

Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

Town of Apple Valley Zoning Map. Website accessed February 2, 2024.

THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY

According to Appendix G of the CEQA Guidelines, a project may be deemed to have a significant adverse impact on mineral resources if it results in any of the following:

- The proposed project would 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.
- The proposed project would 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.

ANALYSIS OF ENVIRONMENTAL IMPACTS

A. *Would the project 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? ● No Impact.*

The proposed project would be a 404,057 square foot industrial warehouse. The total net land area of the site is 871,200 square feet which is approximately 18.71 acres. As indicated previously, the new building would have a total floor area of 404,057 square feet. Two separate office areas would be located at the southeast and southwest corners of the new building. Of the new building's total floor area, 391,638 square feet would be warehouse uses and 12,419 square feet would be office space. A total of 64 truck loading docks would be located along the building's north elevation. The maximum. The zoning designation of the site is *Specific Plan*. A review of California Division of Oil, Gas, and Geothermal Resources well finder indicates that there are no wells located in the vicinity of the project site. The Surface Mining and Reclamation Act of 1975 (SMARA) has developed mineral land classification maps and reports to assist in the protection and development of mineral resources. According to the SMARA, the following four mineral land use classifications are identified:

- *Mineral Resource Zone 1 (MRZ-1):* This land use classification refers to areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
- *Mineral Resource Zone 2 (MRZ-2):* This land use classification refers to areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood for their presence exists.
- *Mineral Resource Zone 3 (MRZ-3):* This land use classification refers to areas where the significance of mineral deposits cannot be evaluated from the available data. Hilly or mountainous areas underlain by sedimentary, metamorphic, or igneous rock types and lowland areas underlain by alluvial wash or fan material are often included in this category. Additional information about the quality of material in these areas could either upgrade the classification to MRZ-2 or downgraded it to MRZ-1.
- *Mineral Resource Zone 4 (MRZ-4):* This land use classification refers to areas where available information is inadequate for assignment to any other mineral resource zone.

The project site itself is not located in a Significant Mineral Aggregate Resource Area (SMARA) nor is it located in an area with active mineral extraction activities. A review of California Division of Oil, Gas, and Geothermal Resources well finder indicates that there are no wells located in the vicinity of the project site. The project site is located within Mineral Resource Zone (MRZ-3A), which means there may be significant mineral resources present. As indicated previously, the site is undeveloped and there are no active mineral extraction activities occurring on-site or in the adjacent properties. As a result, no impacts to mineral resources will occur.

B. *Would the project 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? ● No Impact.*

As previously mentioned, no mineral, oil, or energy extraction and/or generation activities are located within the project site. Moreover, the proposed project will not interfere with any resource extraction activity. Therefore, no impacts will result from the implementation of the proposed project.

MITIGATION MEASURES

The analysis of potential impacts related to mineral resources indicated that no significant adverse impacts would result from the approval of the proposed project and its subsequent implementation. As a result, no mitigation measures are required.

3.13 NOISE

Environmental Issue Areas Examined	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
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?			✖	
B. Would the project result in generation of excessive ground borne vibration or ground borne noise levels?			✖	
C. For a project located within the vicinity of a private airstrip or- an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				✖

SOURCES

Google Maps. Website accessed February 1, 2023.

Bugliarello, et. al. *The Impact of Noise Pollution,* Chapter 127, 1975.

Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

Town of Apple Valley Zoning Map. Website accessed February 2, 2024.

THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY

According to Appendix G of the CEQA Guidelines, a project may be deemed to have a significant adverse impact on noise if it results in any of the following:

- The proposed project would 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.
- The proposed project would result in the generation of excessive ground borne vibration or ground borne noise levels.
- For a proposed 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?

Noise levels may be described using a number of methods designed to evaluate the "loudness" of a particular noise. The most commonly used unit for measuring the level of sound is the decibel (dB). Zero on the decibel scale represents the lowest limit of sound that can be heard by humans. The eardrum may rupture at 140 dB In general, an increase of between 3.0 dB and 5.0 dB in the ambient noise level is considered to represent the threshold for human sensitivity. Noise level increases of 3.0 dB or less are not generally perceptible to persons with average hearing abilities. The most commonly used unit for measuring the level of sound is the decibel (dB). Zero on the decibel scale represents the lowest limit of sound that can be heard by humans. Noise levels associated with common everyday activities are illustrated in Exhibit 10.

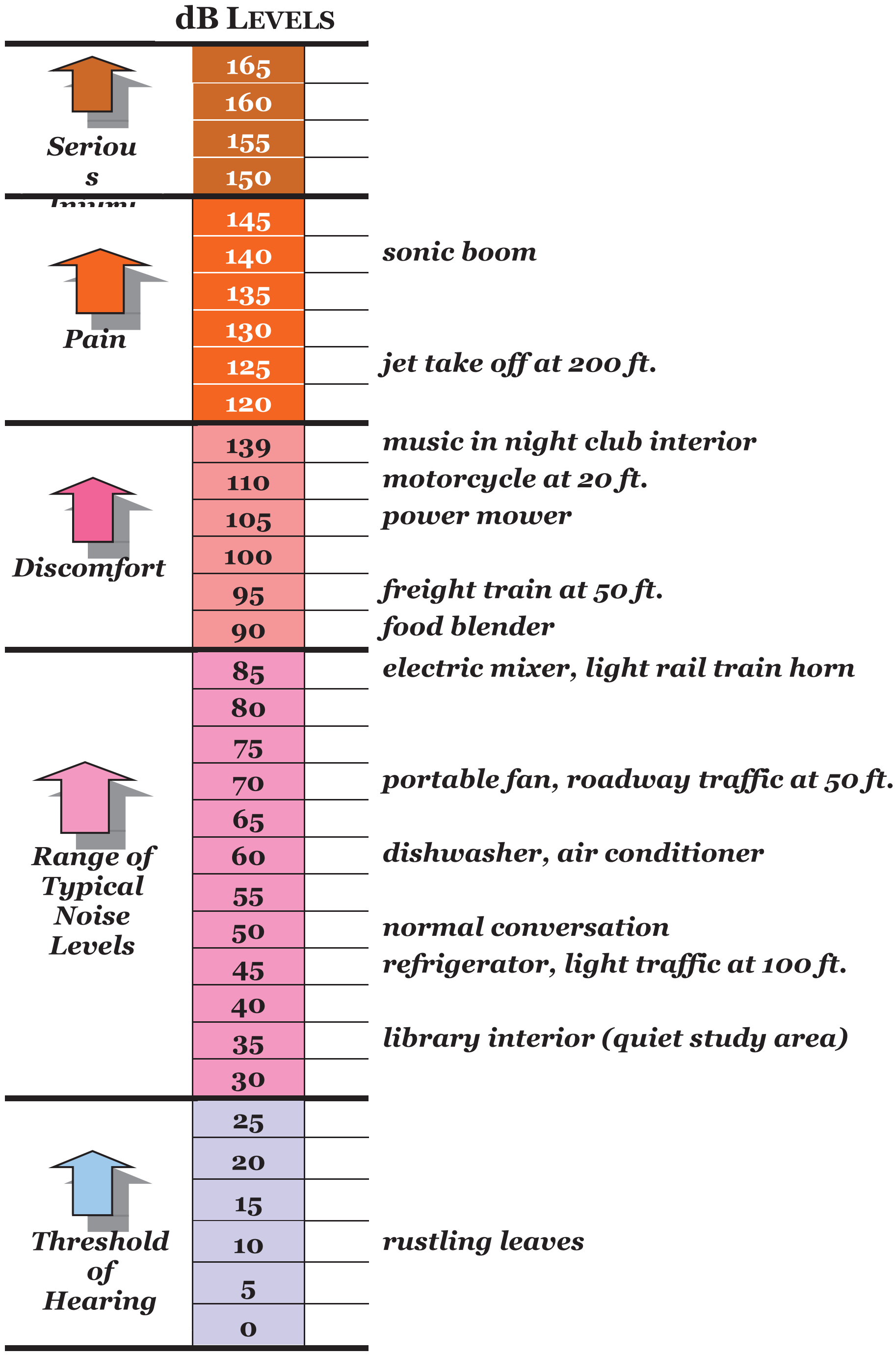

EXHIBIT 10 TYPICAL NOISE SOURCES AND LOUDNESS SCALE

SOURCE: BLODGETT BAYLOSIS ENVIRONMENTAL PLANNING

ANALYSIS OF ENVIRONMENTAL IMPACTS

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? ● Less than Significant Impact.*

The proposed project would be a 404,057 square foot industrial warehouse. The total net land area of the site is 871,200 square feet which is approximately 18.71 acres. As indicated previously, the new building would have a total floor area of 404,057 square feet. Two separate office areas would be located at the southeast and southwest corners of the new building. Of the new building's total floor area, 391,638 square feet would be warehouse uses and 12,419 square feet would be office space. The zoning designation of the site is *Specific Plan*. The primary sources of noise in the Town of Apple Valley Planning Area are freeways and roadways, railroad traffic, SCLA aircraft operations, and stationary sources, Future sources of noise generated on-site will include noise from vehicles traveling to and from the project and noise emanating from back-up alarms, building equipment noise (air conditioning units, and other equipment), and other noises typically associated with commercial development. The eardrum may rupture at 140 dB. In general, an increase of between 3.0 dB and 5.0 dB in the ambient noise level is considered to represent the threshold for human sensitivity. In other words, increases in ambient noise levels of 3.0 dB or less are not generally perceptible to persons with average hearing abilities. The Town of Apple Valley Noise Control Ordinance includes the following requirements with respect to noise exposure and control:

- *13.01.050 - Noise levels prohibited.* Noise levels shall not exceed the ambient noise levels in Section 13.01.040 by the following dB(A) levels for the cumulative period of time specified: Less than 5dB(A) for a cumulative period of more than thirty minutes in any hour; Less than 10 dB(A) for a cumulative period of more than fifteen minutes in any hour; Less than 15 dB(A) for a cumulative period of more than five minutes in any hour; Less than 20 dB(A) for a cumulative period of more than one minute in any hour; 20 dB(A) or more for any period of time.

- *13.01.060 - Noise source exemptions.* The following activities shall be exempted from the provisions of this chapter: All mechanical devices, apparatus or equipment used, related to or connected with emergency machinery, vehicle or work. The provisions of this regulation shall not preclude the construction, operation, maintenance and repairs of equipment, apparatus or facilities of park and recreation projects, public works projects or essential public works services and facilities, including those utilities subject to the regulatory jurisdiction of the California Public Utilities Commission. Activities conducted on the grounds of any elementary, intermediate, or secondary school or college. Outdoor gatherings, public dances and shows, provided said events are conducted pursuant to a permit as required by this code. Activities conducted in public parks and public playgrounds, provided said events are conducted pursuant to a permit as required by this code. Any activity to the extent regulation thereof has been preempted by state or federal law. Trac on any roadway or railroad right-of-way. The operation of the Southern California Logistics Airport. Construction activity on private properties that are determined by the director of building and safety to be essential to the completion of a project

- *13.01.070 - Notice and penalties.* Any person violating any of the provisions or failing to comply with the requirements of this chapter, is guilty of a civil penalty, punishable in accordance with Chapter 1.05. In addition, in the discretion of the Town attorney and based upon the specific facts and circumstances presented to him or her, any such violation may be charged as an infraction subject to the penalties contained in Section 1.04.010.

None of the land uses located adjacent to the project site are considered "noise sensitive" where people reside or where the presence of unwanted sound could adversely affect the use of the land. Although there would be a relatively high single-event noise exposure potential causing intermittent noise nuisance during equipment operation, the overall effect on ambient noise levels would be negligible because the daily construction-related vehicle operations are minor when compared to existing truck traffic on Johnson Road, and freight truck loading and unloading activities at the distribution facility located to the south of the project site. Compliance with Section 9.73.060(F) of the Town of Apple Valley Development Code to ensure construction-related noise impacts remain less than significant.

As indicated previously, none of the land uses adjacent to the project site are considered "noise sensitive" where people reside or where the presence of unwanted sound could adversely affect the use of the land. The properties adjacent to the north and east are vacant, unoccupied lands. The properties adjacent to the south consist of warehousing similar to the proposed project. A total of 64 truck loading docks would be located along the building's north elevation. A reference noise level measurement for loading dock activities was collected to represent the truck idling/reefer activity at a neighboring receiving dock next to the offices of Blodgett Baylosis Environmental Planning. The truck idling activity reference noise level measurement was taken adjacent to the parking position with a direct line of site. During the measurement period, the recorded noise levels were 65.2 dBA at a uniform distance of 50 feet. This represents a worst case since the line of sight between the proposed project's loading docks and the existing uses located to the south of Johnson Road will be obstructed by the new building. In addition, the distance between the receiving area and the existing uses will be at least 200 feet with no direct line of sight. The new building will be located between the new receiving areas (loading docks and truck maneuvering area) and the aforementioned uses. As a result, the new building will attenuate the loading dock noise impacts on the neighboring uses. Operational noise-related impacts would be less than significant. Mitigation is not required. *Adherence to the Town's noise control requirements would reduce the project's construction and operational noise levels to impacts that are less than significant.*

B. *Would the project result in generation of excessive ground borne vibration or ground borne noise levels? ● Less than Significant Impact.*

The construction of the proposed project will result in the generation of vibration and noise, though the vibrations and noise generated during the project's construction will not adversely impact an sensitive receptors. The background vibration velocity level in residential areas is usually around 50 vibration velocity level (VdB). The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity of 75 VdB is the approximately dividing line between barely perceptible and distinctly perceptible levels for many people. Sources within buildings such as operation of mechanical equipment, movement of people, or the slamming of doors causes most perceptible indoor vibration. Construction activities may result in varying degrees of ground vibration, depending on the types of equipment, the characteristics of the soil, and the age and construction of nearby buildings. The operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Ground vibrations associated with construction activities using modern construction methods and equipment rarely reach the levels that result in damage to nearby buildings though vibration related to construction activities may be discernible in areas located near the construction site. A possible exception is in older buildings where special care must be taken to avoid damage. Table 7 summarizes the levels of vibration and the usual effect on people and buildings. The U.S. Department of Transportation (U.S. DOT) has guidelines for vibration levels from construction related to their activities and recommends that the maximum peak-particle-velocity (PPV) levels remain below 0.05 inches per second at the nearest structures. PPV refers to the movement within the ground of molecular particles and not surface movement. Vibration levels above 0.5 inches per second have the potential to cause architectural damage to normal dwellings. The U.S. DOT also states that vibration levels above 0.015 inches per second (in/sec) are sometimes perceptible to people, and the level at which vibration becomes an irritation to people is 0.64 inches per second.

TABLE 7 COMMON EFFECTS OF CONSTRUCTION VIBRATION

Peak Particle Velocity (in/sec)	Effects on Humans	Effects on Buildings
<0.005	Imperceptible	No effect on buildings
0.005 to 0.015	Barely perceptible	No effect on buildings
0.02 to 0.05	Level at which continuous vibrations begin to annoy occupants of nearby buildings	No effect on buildings
0.1 to 0.5	Vibrations considered unacceptable for persons exposed to continuous or long-term vibration.	Minimal potential for damage to weak or sensitive structures
0.5 to 1.0	Vibrations considered bothersome by most people, tolerable if short-term in length	Threshold at which there is a risk of architectural damage to buildings with plastered ceilings and walls. Some risk to ancient monuments and ruins.
>3.0	Vibration is unpleasant	Potential for architectural damage and possible minor structural damage

Source: U.S. Department of Transportation

Typical levels from vibration generally do not have the potential for any structural damage. Some construction activities, such as pile driving and blasting, can produce vibration levels that may have the potential to damage some vibration sensitive structures if performed within 50 to 100 feet of the structure. The reason that normal construction vibration does not result in structural damage has to do with several issues, including the frequency vibration and magnitude of construction related vibration. Unlike earthquakes, which produce vibration at very low frequencies and have a high potential for structural damage, most construction vibration is in the mid- to upper- frequency range, and therefore has a lower potential for structural damage.

The project's implementation will not require deep foundations since the underlying fill soils will be removed and the height of the proposed buildings will be limited (a single level). The new building would be constructed over a shallow foundation that will extend no more than three to four feet bgs. The use of shallow foundations precludes the use of pile drivers or any auger type equipment. However, other vibration generating equipment may be used on-site during construction. As stated above, the project will require the use of excavators, loaders, bulldozers, and haul trucks. Various types of construction equipment have been measured under a wide variety of construction activities with an average of source levels reported in terms of velocity levels as shown in Table 7. Although the table gives one level for each piece of equipment, it should be noted that there is a considerable variation in reported ground vibration levels from construction activities. The data in Table 8 does provide a reasonable estimate for a wide range of soil conditions. Based on Transit Noise and Vibration Impact Assessment, a vibration level of 102 VdB (vibration decibels, or 0.5 inches per second [in/sec]) is considered safe and would not result in any construction vibration damage.

TABLE 8 VIBRATION SOURCE LEVELS FOR TYPICAL CONSTRUCTION EQUIPMENT

Construction Equipment		PPV @25 ft. (inches/sec.)	Vibration (VdB) @ 25 ft.
Pile Driver (impact)	Upper range	1.58	112
	Typical	0.644	104
Pile Driver (Sonic)	Upper range	0.734	105
	Typical	0.170	93
Clam Shovel Drop		0.202	94
Large Bulldozer		0.089	87
Caisson Drilling		0.089	87
Loaded Trucks		0.076	86
Small Bulldozer		0.035	79

Source: Noise and Vibration During Construction

As stated above, the use of shallow foundations precludes the use of pile drivers or any auger type equipment. The resulting vibrations from construction equipment are less than 102 VdB, thus the construction of the project would not result in excessive ground borne vibration or ground borne noise levels. Slight increases in ground-borne noise levels could occur during the construction phase. The limited duration of construction activities and the Town's construction-related noise control requirements will reduce the potential impacts. The project will be required to adhere to all pertinent Town noise control regulations. In addition, the cumulative traffic associated with the proposed project will not be great enough to result in a measurable or perceptible increase in traffic noise (it typically requires a doubling of traffic volumes to increase the ambient noise levels to 3.0 dBA or greater). Once in operation, the new building could potentially be divided into two separate tenant spaces. The individual tenants have not yet been identified. Future occupants would have to comply with the Town's Zoning Ordinance with respect to the permitted light industrial uses and ground borne noise levels. *As a result, the impacts will be less than significant.*

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? ● No Impact.*

The project site is not located within an airport land use plan. The project site is located approximately 0.92 miles north of Apple Valley Airport. The proposed use is not considered to be a sensitive receptor. The project site is located well outside of any takeoff and landing overlay zones (refer to Figure a-1 of the Apple Valley Comprehensive Airport Master Plan). In addition, the project site would be located well outside any 65 CNEL noise contour (refer to Exhibit 5-2 of the Apple Valley Comprehensive Airport Master Plan). As a result, the proposed project will not expose people residing or working in the project area to excessive noise levels related to airport uses. *As a result, no impacts would occur.*

MITIGATION MEASURES

The analysis determined that no impacts on noise would result upon the implementation of the proposed project. As a result, no mitigation measures are required.

3.14 POPULATION & HOUSING

Environmental Issue Areas Examined	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
A. Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				✖
B. Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				✖

SOURCES

Google Maps. Website accessed February 1, 2023.

Natelson Company, Inc. *Employment Density Study, Summary Report*. October 31, 2001.

Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

Town of Apple Valley Zoning Map. Website accessed February 2, 2024.

THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY

According to Appendix G of the CEQA Guidelines, a project may be deemed to have a significant adverse impact on population and housing if it results in any of the following:

- The proposed project would induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).
- The proposed project would displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

ANALYSIS OF ENVIRONMENTAL IMPACTS

A. *Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? ● No Impact.*

The proposed project would be a 404,057 square foot industrial warehouse. The total net land area of the site is 871,200 square feet which is approximately 18.71 acres. As indicated previously, the new building would have a total floor area of 404,057 square feet. Two separate office areas would be located at the southeast and southwest corners of the new building. Of the new building's total floor area, 391,638 square feet would be warehouse uses and 12,419 square feet would be office space. A total of 64 truck loading docks would be located along the building's north elevation. The zoning designation of the site is *Specific Plan*. The zoning designation of the site is Specific Plan. There is currently no address, but it is located at Navajo Road and Johnson Road. Growth-inducing impacts are generally associated with the provision of urban services to an undeveloped or rural area. Growth-inducing impacts include the following:

- *New development in an area presently undeveloped and economic factors which may influence* *development*. The site is currently undeveloped and undisturbed. Land uses surrounding the property are designated as *Specific Plan (North Apple Valley Specific Plan)*. This designation would not permit residential development.

- *Extension of roadways and other transportation facilities*. Future roadway and other infrastructure connections will serve the proposed project site only.
- *Extension of infrastructure and other improvements*. The installation of any new utility lines will not lead to subsequent offsite development since these utility connections will serve the site only. At present, existing water sewer connections will need to be extended to serve the project site. The project's potential utility impacts are analyzed in Section 3.19.
- *Major off-site public projects (treatment plants, etc.)*. The project's increase in demand for utility services can be accommodated without the construction or expansion of landfills, water treatment plants, or wastewater treatment plants. The project's potential utility impacts are further analyzed in Section 3.19.
- *The removal of housing requiring replacement housing elsewhere*. The site would not add any new housing units on the vacant parcel. No existing housing units would be removed. As a result, no replacement housing will be required.
- *Additional population growth leading to increased demand for goods and services*. Although the potential exists for the proposed project to result in population growth through employment opportunities, the project is consistent with the General Plan land use designation and Zoning and Development Code for the site.
- *Short-term growth-inducing impacts related to the project's construction*. The project will result in temporary employment during the construction phase.

The proposed project will utilize existing roadways and infrastructure. The newly established roads and existing utility lines will serve the project site only and will not extend into undeveloped areas beyond the project site. The proposed project will not result in any unplanned growth. Although the potential exists for the proposed project to result in population growth through employment opportunities, the project is consistent with the General Plan land use designation and Zoning and Development Code for the site. Therefore, population increase as a result of the proposed project is not considered substantial or unplanned. The proposed project would have a less than significant impact to the environment from population growth. *Therefore, no impacts will result.*

B. *Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere? ● No Impact.*

The project site is vacant and disturbed with dirt roads going through the project. This property has a General Plan and zoning designation of Specific Plan. No housing units will be displaced as a result of the proposed project's implementation. The proposed project would be a 404,057 square foot industrial warehouse. The proposed building is anticipated to employ about 338 employees. This is based on an employment ratio of one employee for every 1,195 square feet of floor area. Therefore, no impacts will result.

MITIGATION MEASURES

The analysis of potential population and housing impacts indicated that no significant adverse impacts would result from the proposed project's approval and subsequent implementation. As a result, no mitigation measures are required.

3.15 PUBLIC SERVICES

Environmental Issue Areas Examined	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
A. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which would cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:			✖	
i). Would the project result in substantial adverse physical impacts associated with Fire protection?			✖	
ii). Would the project result in substantial adverse physical impacts associated with Police protection?			✖	
iii). Would the project result in substantial adverse physical impacts associated with Schools?			✖	
iv). Would the project result in substantial adverse physical impacts associated with Parks?			✖	
v). Would the project result in substantial adverse physical impacts associated with Other public facilities?			✖	

SOURCES

Google Maps. Website accessed February 1, 2023.

Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

Town of Apple Valley Zoning Map. Website accessed February 2, 2024.

THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY

According to Appendix G of the CEQA Guidelines, a project may be deemed to have a significant adverse impact on public services if it results in any of the following:

- The proposed project would 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, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: fire protection, police protection, schools, parks or other public facilities.

ANALYSIS OF ENVIRONMENTAL IMPACTS

A. *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which would cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:*

The proposed project would be a 404,057 square foot industrial warehouse. As indicated previously, the new building would have a total floor area of 404,057 square feet. Two separate office areas would be located at the southeast and southwest corners of the new building. Of the new building's total floor area, 391,638 square feet would be warehouse uses and 12,419 square feet would be office space. A total of 64 truck loading docks would be located along the building's north elevation. The zoning designation of the site is *Specific Plan*. The site's Accessor Parcel Numbers (APNs) are 0463-203-26, 0463-203-27 and 0463-203-28. The zoning designation of the site is Specific Plan. There is currently no address, but it is located at Navajo Road and Johnson Road.

i). *Would the project have fire protection? Less than Significant Impact.*

The Town of Apple Valley receives fire protection services from the Apple Valley Fire Protection District (AVFPD). AVFPD is an independent District that serves the Town and unincorporated areas of San Bernardino County. The District's approximately 206 square mile service area extends easterly from the Mojave River as far as the dry lakes toward Lucerne Valley. The following stations are found in the area:

- *Station No. 331* at 22400 Headquarters Drive has 12 staff, and is equipped with a Type-1 engine, a Type-2 water tender, and a medium-level rescue vehicle.
- *Station No. 33*2 at 18857 Highway 18 has 9 staff. Equipment includes a Type-1 engine and a Type-3 engine.
- *Station No. 333* at 20604 Highway 18 is staffed with private ambulance company personnel.
- *Station 334* at 12143 Kiowa Road has 9 staff, a Type-1 engine, and a Type-3 engine. • Station No. 335 at 21860 Tussing Ranch Road is staffed by paid-call staff only. This means that staff members are alerted via pager to calls within the response area. The station is equipped with a Type-1 engine and a Type-3 water tender.
- *Station No. 336* at 19235 Yucca Loma Road has 6 career and 10 paid-call staff, and is equipped with a rescue squad vehicle, a Type-1 engine, a Type-4 engine, an Incident Command bus, an Incident Support unit and a Type-2 truck.
- *Station No. 337* at 19305 Jess Ranch Parkway was added in October 2007. Staffing has been expanded, as of April 2008, from 2 to 4 staff members. The station is equipped with a Type-4 Medic Patrol, a Hazmat Trailer, and a Reserve Squad.

The Department operates a fleet of four Medic Engines, one medic truck, and one Medic squad. The staffing consists of 51 firefighting personnel. Apple Valley Fire Center is the closest fire department to the project site, located 1.32 miles southeast of the project site. The proposed project will be required to conform to all fire protection and prevention requirements, including, but not limited to, building setbacks, emergency access, and fire flow (or the flow rate of water that is available for extinguishing fires). The proposed project would only place an incremental demand on fire services and the project will be constructed with strict adherence to all pertinent building and fire codes. Project design features incorporated into the structural design and layout of the proposed development would keep service demand increases to a minimum. For example, the Town and AVFPD will coordinate closely to enforce fire codes and other applicable standards and regulations as part of building plan review and conduct building inspections. The AVFPD will continue to review the development process to identify and mitigate any fire hazards and ensure adequate emergency water flow to the proposed development. The project would also be required to pay Development Impact Fees to fund capital costs associated with constructing new public safety structures such as fire stations and purchasing equipment for new public safety structures. Furthermore, the project will be reviewed by Town Fire officials to ensure adequate fire service and safety as a result of project implementation. *As a result, the impacts would be less than significant.*

ii). *Would the project have police protection? Less than Significant Impact.*

Law enforcement services within the Town are provided by the San Bernardino County Sheriff's Department which serves the community from one police station located at 14931 Dale Evans Parkway. The proposed project will also be required to comply with the County and Town security requirements. The proposed project would only place an incremental demand on police protection services. The proposed project would be secured at all times. The proposed development would be reviewed by the Department to ensure provision of adequate police protection and compliance with established Sheriff's Department standards. The Town would also continue to monitor population levels and Sheriff's Department staffing levels to ensure that sufficient levels of police protection are provided. The continual monitoring of police staffing levels by the Town would ensure the proposed project would not result in a significant reduction in police response times. *As a result, the impacts would be less than significant.*

iii). *Would the project be near schools? Less than Significant Impact.*

The nearest educational facility to the project site is Victor Valley Community College, located to the south of the project site. Due to the nature of the proposed project, no direct enrollment impacts regarding school services will occur. The project site is industrial in nature and will not result in any direct school enrollment impacts (as opposed to a residential uses). Pursuant to SB-50, payment of fees to the applicable school district is considered full mitigation for project-related impacts. The proposed project's school enrollment impacts will be off-set by the school fees that will be paid by the developer. As *a result, the impacts would be less than significant.*

iv). *Would the project be near parks? Less than Significant Impact.*

The nearest park to the project site is Sycamore Rocks Park located approximately located 4.18 miles to the southeast. The proposed project will not result in any local increase in residential development (directly or indirectly) that could potentially impact the local recreational facilities. The proposed project's construction would be short-term in nature and the construction employment would end once the construction phases are complete. Given the park's distance from the development site (4.18 miles) the use of this park on a regular basis by construction employees would likely be limited. Once operational, future employees may visit the park from time to time the number and duration of visits would likely be limited due to the park's distance from the site. It is important to note that an outside break area would be located near the building's northeast corner. The project Applicant will be required to pay in-lieu park fees required by the Town . *As a result, the impacts would be less than significant.*

v). *Would the project have other public facilities? Less than Significant Impact.*

The proposed project will not create direct local population growth that could potentially create demand for other governmental service. *As a result, the impacts would be less than significant.*

MITIGATION MEASURES

The analysis of public service impacts indicated that no significant adverse impacts are anticipated, and no mitigation is required with the implementation of the proposed project.

3.16 RECREATION

Environmental Issue Areas Examined	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
A. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				✖
B. Would the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				✖

SOURCES

Google Maps. Website accessed February 1, 2023.

Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

Town of Apple Valley Zoning Map. Website accessed February 2, 2024.

THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY

According to Appendix G of the CEQA Guidelines, a project may be deemed to have a significant adverse impact on recreation if it results in any of the following:

- The proposed project would 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.
- The proposed project would include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

ANALYSIS OF ENVIRONMENTAL IMPACTS

A. *Would the project 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? ● No Impact.*

The proposed project would be a 404,057 square foot industrial warehouse. The total net land area of the site is 871,200 square feet which is approximately 18.71 acres. As indicated previously, the new building would have a total floor area of 404,057 square feet. Two separate office areas would be located at the southeast and southwest corners of the new building. An outside break area would be located near the building's northeast corner. Access to the project site would be provided by three driveway connections with the north side of Johnson Road and two driveway connections with the west side of Navajo Road. The zoning designation of the site is *Specific Plan*. No parks are located adjacent to the site. The nearest park to the project site is Sycamore Rocks Park located approximately located 4.18 miles to the southeast. The proposed project would not result in any improvements that would potentially significantly physically alter any public park facilities and services. *As a result, no impacts would occur*.

B. *Would the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment? ● No Impact.*

As previously indicated, the implementation of the proposed project would not affect any existing parks and recreational facilities in the Town. No such facilities are located adjacent to the project site. *As a result, no impacts would occur.*

MITIGATION MEASURES

The analysis of potential impacts related to parks and recreation indicated that no significant adverse impacts would result from the proposed project's approval and subsequent implementation. As a result, no mitigation measures are required.

3.17 TRANSPORTATION

Environmental Issue Areas Examined	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
A. Would the project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?			✖	
B. Would the project conflict or be inconsistent with CEQA Guidelines §15064.3 subdivision (b)?			✖	
C. Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?			✖	
D. Would the project result in inadequate emergency access?				✖

SOURCES

Appendix G Traffic Impact Analysis

David Evans and Associates Inc. *Draft Focused Traffic Impact Analysis Report Proposed Johnson Road Industrial Building (Warehouse) November 27, 2023*.

Google Maps. Website accessed February 1, 2023.

Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023*.

Town of Apple Valley Zoning Map. Website accessed February 2, 2024.

THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY

According to Appendix G of the CEQA Guidelines, a project may be deemed to have a significant adverse impact on transportation and circulation if it results in any of the following:

- The proposed project would conflict with a plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.
- The proposed project would conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b).
- The proposed project would substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- The proposed project would result in inadequate emergency access.

ANALYSIS OF ENVIRONMENTAL IMPACTS

A. *Would the project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities? ● Less than Significant Impact.*

The proposed project would be a 404,057 square foot industrial warehouse. The total net land area of the site is 871,200 square feet which is approximately 18.71 acres. As indicated previously, the new building would have a total floor area of 404,057 square feet. Two separate office areas would be located at the southeast and southwest corners of the new building. Of the new building's total floor area, 391,638 square feet would be warehouse uses and 12,419 square feet would be office space.

A total of 64 truck loading docks would be located along the building's north elevation. The maximum height of the new building would be 42-feet. Truck and trailer parking, consisting of 48 spaces, would be provided along the northern side of the side. A total of 6 EV spaces for trucks would be located along the building's north side. A total of 222vehicle parking spaces for employees and patrons would be located along the building's east, south, and west elevations and along the east perimeter of the site. Of this total, 203 spaces would be standard spaces, 8 spaces would be ADA spaces, and 12 spaces would be reserved for EV vehicles. Landscaping totaling 90,969 square feet, would be provided throughout the site and along the roadway's frontages. An outside break area would be located near the building's northeast corner. Access to the project site would be provided by three driveway connections with the north side of Johnson Road and two driveway connections with the west side of Navajo Road. The zoning designation of the site is *Specific Plan*.

All the study intersections are currently side-street stop controlled, or all-way stop-controlled. The trip generation rates for the site were obtained from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition. Table 9 summarizes the estimated trip generation of the Proposed Johnson Road Industrial Project for an average weekday, and weekday AM (7-9 AM) and PM (4-6 PM) peak hours, based on the secondary average rates identified in Table 9.

The proposed project would generate about 896 vehicle trips per day and 91 vehicle trips in both the AM and PM peak hours. It is standard practice to convert vehicle trips to passenger car equivalents (PCEs) for intersection capacity analysis. This conversion reflects the effects of large vehicles on intersection operations both from the physical space a truck occupies but also from their effect on the intersection's saturation flow rate due to the slower acceleration of trucks. When converted to PCEs, the Proposed Johnson Road Industrial Project generates approximately 1,259 daily PCEs, and 128 PCEs in both the AM and PM peak hours.

TABLE 9: JOHNSON ROAD INDUSTRIAL BUILDING (WAREHOUSE) PROJECT TRIP GENERATION

Land Use	Gross Floor Area (KSF)	Daily	AM Peak Hour of Adjacent Street Traffic			PM Peak Hour of Adjacent Street Traffic		
			In	Out	Total	In	Out	Total
Warehouse (Rates are the Average of ITE Land Use Categories 150, 154, 156, and 157)	379.66	Vehicle Trip Generation Rates (Trips Per 1,000 Square Feet of Gross Floor Area)						
		2.36	0.18	0.06	0.24	0.07	0.17	0.24
		Total Vehicle Trip Generation						
		896	70	21	91	26	66	91
	Mode Share	Project Trip Generation by Vehicle Type						
Passenger Cars (Percent of Total)	74.21%	665	52	16	68	19	49	68
2-Axle Trucks (Percent of Total)	4.55%	41	3	1	4	1	3	4
3-Axle Trucks (Percent of Total)	4.18%	37	3	1	4	1	3	4
4-Axle Trucks (Percent of Total)	17.04%	153	12	4	16	4	11	16
	PCE Factor	Project Trip Generation in Passenger Car Equivalents (PCE)						
Passenger Cars)	1.0	665	52	16	68	19	49	68
2-Axle Trucks	1.5	61	5	1	6	2	4	6
3-Axle Trucks	2.0	75	6	2	8	2	5	8
4 + Axle Trucks	3.0	458	36	11	47	13	34	47
Total Passenger Car Equivalents (PCE)		**1,259**	**99**	**29**	**128**	**36**	**92**	**128**

Notes:
KSF = Thousands of Square Feet.
AM / PM Peak Hour of Adjacent Street Traffic = Trip generation coinciding with the highest hourly volumes of traffic on the adjacent streets during the AM (7:00 AM and 9:00 AM) and PM (4:00 PM and 6:00 PM) commuter peak periods.
Source of trip generation rates: Institute of Transportation Engineers (ITE) Trip Generation (11th Edition). Average rates for land use category 150 (Warehouse).
Source of passenger car / truck mode share (percentage of total): South Coast Air Quality Management District High Cube Warehouse Trip Generation Study (2016). Based on data from eight high cube warehouses in the Inland Empire over 1,000,000 square feet in size. The average warehouse building size is 1,364,496 square feet.
Passenger Car Equivalents (PCE) factors: Industry standard values utilized in neighboring jurisdictions

The proposed project is consistent with the land use designation that is assigned to the project site. Furthermore, the proposed development would not be inconsistent with the policies included in the Town's North Apple Valley Industrial Specific Plan Chapter IV. Infrastructure Section A. Circulation, Roads and Alternative Transportation. Navajo Road would be a major component of the area's circulation system due to its location midway between Dale Evans Parkway and Central Road. Navajo Road, a Divided Major Arterial from Corwin Road to Johnson Road, and a Secondary Road from Johnson Road to Quarry Road. Johnson Road is depicted in the Town's General Plan as a Major Road. At no time during construction will Johnson Road or Navajo Road be completely closed to traffic. All construction staging must occur on-site. During project operations, the project would have adequate emergency access to allow emergency vehicles to access the project site. Johnon Road or Navajo Road would not be closed due to the project's operations. The project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. *As a result, the impacts would be less than significant.*

B. *Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3 subdivision (b)? ● Less than Significant Impact.*

A VMT analysis was prepared in accordance with the Town's adopted Resolution No. 2021-08 (Adopting Thresholds of Significance for Vehicle Miles Traveled (VMT). Under the California Environmental Quality Act (CEQA)) which states that a development project would result in a significant project-generated VMT impact if either of the following conditions are satisfied:

1. The baseline project generated VMT per service population (population plus employees) exceeds the Town of Apple Valley General Plan Buildout VMT per service population, or

2. The cumulative (2040) project generated VMT per service population exceeds the Town of Apple Valley General Plan Buildout VMT per service population. In addition to project-generated VMT, the town adopted significance thresholds for a project's effect on VMT in Apple Valley. The resolution states that a project's effect on VMT would be considered significant if it resulted in either of the following conditions to be satisfied:

3. The baseline link-level boundary Town-wide VMT per service population increases under the plus project condition compared to the no project condition, or

4. The cumulative link-level boundary Town-wide VMT per service population increases under the plus project condition compared to the no project condition. The term "link-level boundary Town-wide" refers to all vehicle miles of travel on all roadways within the town limits of Apple Valley. The following describes the key findings and the conclusions of the VMT analysis.

The proposed project parcels are not in a low VMT-generating Traffic Analysis Zone (which are indicated in green) in baseline year 2023 and in future year 2040 conditions. The TAZ containing the project exceeds the county's VMT / Service population threshold by more than 385% in baseline conditions and a little over 100% in future 2040 conditions. Because the project does not satisfy any of the county's screening criteria it is required to prepare a VMT analysis.

The SBTAM model was used to estimate project-generated VMT for a baseline (2016) and a horizon year (2040) scenario. The SBTAM socioeconomic database for each scenario was updated with the project land use to calculate project VMT. The databases were also used to obtain the town's population and employment to estimate service population. In both the baseline and horizon year scenarios, the VMT/service population metric for the Johnson Road Industrial Building (Warehouse) project is less than the Town of Apple Valley's general plan buildout significance threshold. The second analysis, the project's effect on town-wide VMT, used the SBTAM model to estimate the VMT on all roadways within the town's limits for the baseline and 2040 scenarios with and without the project. The metric indicating a significant impact (VMT/Service population) at a town-wide scale under the "with project" conditions compared to the metric under the "without project" conditions does not increase and does not satisfy the town's significance threshold.

Table 10 Project-Generated VMT Analysis

Metric	2016 Baseline Conditions		2040 Conditions	
	Johnson Road Warehouse (project)	Town of Apple Valley General Plan Buildout (Threshold) [a]	Johnson Road Warehouse (project)	Town of Apple Valley General Plan Buildout (Threshold) [a]
Population	0		0	
Employment [b]	180		180	
Service Population	180		180	
OD VMT [c]	5,950		5,694	
OD VMT per service population	33.1	33.2	31.6	33.2

Notes:
[a] Source: SBCTA VMT Screening Tool: https://www.gosbcta.com/vmtscreening
[b] Source: SCAG Employment Density Study Summary Report, October 31, 2001 (using 2,111 square feet per employee).
[c] The project's Origin/Destination (OD) VMT derived from the San Bernardino Traffic Analysis Model (SBTAM) Source of analysis: General Technologies and Solutions (GTS)

As shown in Table 10, the project-generated VMT concludes that the project-generated VMT metric of VMT / Service population is less than the VMT / Service population representing buildout of Apple Valley's general plan and, therefore, the project does not cause a significant impact based on the town's adopted significance thresholds for project-generated VMT. This study also concludes that the metric for the project's "effects on town-wide VMT" –VMT / service population—for the baseline and horizon year scenarios "with the project" do not increase the metric over the "without project" scenarios. Therefore, the proposed Johnson Road Industrial Building (Warehouse) project does not have a significant impact based on the town's adopted significance thresholds for the project's effect on town-wide VMT. *As the result, the impacts would be less than significant*.

C. *Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? ● Less than Significant Impact.*

Access to the project site would be provided by three driveway connections with the north side of Johnson Road and two driveway connections with the west side of Navajo Road. The three driveways on the north side of Johnson Road would have a curb-to-curb width of 36-feet and would provide ingress and egress for vehicles. The southernmost driveway on Navajo Road would have a curb-to-curb width of 36-feet and would provide ingress and egress for vehicles while the northernmost driveway would have a curb-to-curb with of 50-feet and would provide ingress and egress for trucks to enter the loading and receiving area in the northern portion of the site. The internal drive aisles in the southerly portion of the site have a width of 36-feet. A total of 222vehicle parking spaces for employees and patrons would be located along the building's east, south, and west elevations and along the east perimeter of the site. Of this total, 203 spaces would be standard spaces, 8 spaces would be ADA spaces, and 12 spaces would be reserved for EV vehicles. A total of 64 truck loading docks would be located along the building's north elevation. The maximum height of the new building would be 42-feet.Truck and trailer parking, consisting of 48 spaces, would be provided along the northern side of the side. A total of 6 EV spaces for trucks would be located along the building's north side. The proposed project will not expose future drivers to dangerous intersections or sharp curves and the proposed project will not introduce incompatible equipment or vehicles to the adjacent roads.

The project Applicant would be required to construct and improve the project's frontage with Johnson Road from the western project limit to Navajo Road. The project will be required to dedicate land and construct the 71-foot half-width of a major divided parkway road section including the project's driveway accessing Johnson Road. This may include land dedication to accommodate additional lanes at the intersection of Johnson Road and Navajo Road if required by the town. The Applicant would also be required to construct access and site frontage improvements on Navajo Road including improvements to the project's frontage with Navajo Road. The project would also be required to dedicate land and construct the 44-foot half-width of Navajo Road's secondary road designation including the proposed driveway accessing Navajo Road. Improvements to Navajo Road may include land dedication to accommodate additional lanes at the intersection of Johnson Road and Navajo Road if required by the town. *With these required design measures, the impacts would be less than significant.*

D. *Would the project result in inadequate emergency access? ● No Impact.*

The proposed project would not affect emergency access to the project itself or any adjacent parcels. At no time during construction will Johnon Road or Navajo Road be completely closed to traffic. All construction staging must occur on-site. During project operations, the project would have adequate emergency access to allow emergency vehicles to access the project site. Johnon Road or Navajo Road would not be closed due to the project's operations. As a result, no impacts are associated with the proposed project's implementation.

MITIGATION MEASURES

The analysis of potential transportation impacts indicated that no significant adverse impacts would result from the proposed project's approval and subsequent implementation. As a result, no mitigation measures are required.

3.18 TRIBAL CULTURAL RESOURCES

Environmental Issue Areas Examined	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
A. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code 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:		✖		
i) Would the project have listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or				✖
ii). Would the project have 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 Public Resource Code Section 5024.1 In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American.		✖		

SOURCES

Appendix C - Cultural Resources Report

Google Maps. Website accessed February 1, 2023.

Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

Town of Apple Valley Zoning Map. Website accessed February 2, 2024.

THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY

According to Appendix G of the CEQA Guidelines, a project may be deemed to have a significant adverse impact on tribal cultural resources if it results in any of the following:

- The proposed project would cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code 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 Public Resources Code section 5020.1(k).

- The proposed project would cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code 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 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 Public Resources Code Section

5024.1? In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

ANALYSIS OF ENVIRONMENTAL IMPACTS

A. *Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code 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 ● Less than Significant Impact with Mitigation.*

The proposed project involves the construction of a 404,057 square feet industrial warehouse. The total area of the site is 871,200 square feet which is approximately 18.71 acres. There will be 148 standard parking spaces, 12 EV parking spaces, and 6 accessible parking spaces with a total of 166 parking spaces. There will be 6 truck EV parking spaces and 86 trailer parking spaces with a total of 92 parking spaces. The site's Accessor Parcel Numbers (APNs) are 0463-203-26, 0463-203-27 and 0463-203-28. The zoning designation of the site is Specific Plan. A Tribal Resource is defined in Public Resources Code section 21074 and includes the following:

- Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following: 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 Section 5020.1.

- 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.

- A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.

- A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "non-unique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms to the criteria of subdivision (a).

DUKE CRM conducted a records search conducted by the South Central Coastal Information Center (SCCIC). The SCCIC located at the California State University, Fullerton is part of the California Historical Resources Information System (CHRIS). The records search included a review of all recorded cultural resources within a 1/2-mile radius of the Project, as well as a review of known cultural resource reports. In addition, the California Built Environment Resources Directory (BERD) was examined, which includes the National Register of Historic Places, California Register of Historical Resources, California Historical Landmarks, and California Points of Historical Interest. The BERD did not identify cultural resources within the Project.[17]

[17] Duke CRM. Cultural and Paleontological Resources Assessment for the Johnson/Navajo Road Project. January 26, 2023.

The records search from the SCCIC was conducted on January 18, 2023. The records search did not identify any cultural resources within ½ of the Project. Additionally, the SCCIC identified two (2) cultural resource studies within ½ mile of the Project, none of which covered the Project area (See Table 1 in Appendix C – Cultural Resources Report). Additionally, an inquiry to the Native American Heritage Commission (NAHC) was submitted to ascertain the presence of known sacred sites, Native American cultural resources, and/or human remains within the boundaries of the proposed Project. On January 15, 2023, the NAHC indicated that there have been no Native American cultural resources identified within the Sacred Lands File for the Project location (see Attachment 2 in Appendix C – Cultural Resources Report).

All potentially interested tribes identified by the NAHC were also contacted pursuant to AB-52 for information regarding their knowledge of cultural resources that were within or near the project area. The Yuhaaviatam of San Manuel Nation (YSMN) and the Morongo Band of Mission Indians responded with several mitigation measures, which are included below. Adherence to the mitigation measures presented in Subsection Mitigation Measures will minimize potential impacts to levels that are less than significant.

i. *Would the listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), ● No Impact*

Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following: 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 Section 5020.1. The project site is not listed in the California Register of Historical Resources or Apple Valley's Historical Resources Register. *As a result, no impacts would occur.*

ii. *Would the project have 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 Public Resource Code Section 5024.1 In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe? ● Less than Significant Impact with Mitigation.*

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.

A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "non-unique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms to the criteria of subdivision (a).

The NAHC search of their Sacred Lands File to identify any spiritually significant and/or sacred sites or traditional use areas in the project vicinity were negative. Additionally, all potentially interested tribes identified by the NAHC were also contacted pursuant to AB-52 for information regarding their knowledge of cultural resources that were within or near the project area and no resources were identified within the project site. In case previously unearthed resources are found on the project site, the Yuhaaviatam of San Manuel Nation and the Morongo Band of Mission Indians have responded with the following mitigation measures:

Tribal Cultural Resources Mitigation Measure No. 1. The Yuhaaviatam of San Manuel Nation Cultural Resources Management Department (YSMN) shall be contacted, as detailed in CUL-1, of any pre-contact cultural resources discovered during project implementation, and be provided information regarding the nature of the find, so as to provide Tribal input with regards to significance and treatment. Should the find be deemed significant, as defined by CEQA (as amended, 2015), a Cultural Resources Monitoring and Treatment Plan shall be created by the archaeologist, in coordination with YSMN, and all subsequent finds shall be subject to this Plan. This Plan shall allow for a monitor to be present that represents YSMN for the remainder of the project, should YSMN elect to place a monitor on-site.

Tribal Cultural Resources Mitigation Measure No. 2. Any and all archaeological/cultural documents created as a part of the project (isolate records, site records, survey reports, testing reports, etc.) shall be supplied to the applicant and Lead Agency for dissemination to YSMN. The Lead Agency and/or applicant shall, in good faith, consult with YSMN throughout the life of the project.

Tribal Cultural Resources Mitigation Measure No. 3. **Tribal Monitoring Services Agreement** Prior to the issuance of grading permits, the applicant shall enter into a Tribal Monitoring Services Agreement with the Morongo Band of Mission Indians (MBMI) for the Project. The Tribal Monitor shall be on-site during all ground-disturbing activities (including, but not limited to, clearing, grubbing, tree and bush removal, grading, trenching, fence post placement and removal, construction excavation, excavation for all utility and irrigation lines, and landscaping phases of any kind). The Tribal Monitor shall have the authority to temporarily divert, redirect, or halt the ground-disturbing activities to allow identification, evaluation, and potential recovery of cultural resources.

Tribal Cultural Resources Mitigation Measure No. 4. **Retention of Archaeologist** Prior to any ground-disturbing activities (including, but not limited to, clearing, grubbing, tree and bush removal, grading, trenching, fence post replacement and removal, construction excavation, excavation for all utility and irrigation lines, and landscaping phases of any kind), and prior to the issuance of grading permits, the Applicant shall retain a Qualified Archaeologist who meets the U.S. Secretary of the Interior Standards (SOI). The Archaeologist shall be present during all ground- disturbing activities to identify any known or suspected archaeological and/or cultural resources. The Archaeologist will conduct a Cultural Resource Sensitivity Training, in conjunction with the Tribe[s] Tribal Historic Preservation Officer (THPO), and/or designated Tribal Representative. The training session will focus on the archaeological and tribal cultural resources that may be encountered during ground-disturbing activities as well as the procedures to be followed in such an event.

Tribal Cultural Resources Mitigation Measure No. 5. **Cultural Resource Management Plan** Prior to any ground-disturbing activities the project Archaeologist shall develop a Cultural Resource Management Plan (CRMP) and/or Archaeological Monitoring and Treatment Plan (AMTP) to address the details, timing, and responsibilities of all archaeological and cultural resource activities that occur on the project site. This Plan shall be written in consultation with the consulting Tribe[s] and shall include the following: approved Mitigation Measures (MM)/Conditions of Approval (COA), contact information for all pertinent parties, parties' responsibilities, procedures for each MM or COA, and an overview of the project schedule.

Tribal Cultural Resources Mitigation Measure No. 6. **Pre-Grade Meeting** The retained Qualified archeologist and Consulting Tribe[s] representative shall attend the pre-grade meeting with the grading contractors to explain and coordinate the requirements of the monitoring plan.

Tribal Cultural Resources Mitigation Measure No. 7. **On-site Monitoring** During all ground-disturbing activities the Qualified Archaeologist and the Tribal Monitor shall be on-site full-time. The frequency of inspections shall depend on the rate of excavation, the materials excavated, and any discoveries of Tribal Cultural Resources as defined in California Public Resources Code Section 21074. Archaeological and Tribal Monitoring will be discontinued when the depth of grading and the soil conditions no longer retain the potential to contain cultural deposits. The Qualified Archaeologist, in consultation with the Tribal Monitor, shall be responsible for determining the duration and frequency of monitoring.

Tribal Cultural Resources Mitigation Measure No. 8. **Inadvertent Discovery of Cultural Resources** In the event that previously unidentified cultural resources are unearthed during construction, the Qualified Archaeologist and the Tribal Monitor shall have the authority to temporarily divert and/or temporarily halt ground-disturbance operations in the area of discovery to allow for the evaluation of potentially significant cultural resources. Isolates and clearly non-significant deposits shall be minimally documented in the field and collected so the monitored grading can proceed.

If a potentially significant cultural resource(s) is discovered, work shall stop within a 60-foot perimeter of the discovery and an Environmentally Sensitive Area (ESA) physical demarcation/barrier constructed. All work shall be diverted away from the vicinity of the find, so that the find can be evaluated by the Qualified Archaeologist and Tribal Monitor[s]. The Archaeologist shall notify the Lead Agency and consulting Tribe[s] of said discovery. The Qualified Archaeologist, in consultation with the Lead Agency, the consulting Tribe[s], and the Tribal Monitor, shall determine the significance of the discovered resource. A recommendation for the treatment and disposition of the Tribal Cultural Resource shall be made by the Qualified Archaeologist in consultation with the Tribe[s] and the Tribal Monitor[s] and be submitted to the Lead Agency for review and approval. Below are the possible treatments and dispositions of significant cultural resources in order of CEQA preference:

A. Full avoidance.

B. If avoidance is not feasible, Preservation in place.

C. If Preservation in place is not feasible, all items shall be reburied in an area away from any future impacts and reside in a permanent conservation easement or Deed Restriction.

D. If all other options are proven to be infeasible, data recovery through excavation and then curation in a Curation Facility that meets the Federal Curation Standards (CFR 79.1)

Tribal Cultural Resources Mitigation Measure No. 9. **Inadvertent Discovery of Human Remains** The Morongo Band of Mission Indians requests the following specific conditions to be imposed in order to protect Native American human remains and/or cremations. No photographs are to be taken except by the coroner, with written approval by the consulting Tribe[s].

A. Should human remains and/or cremations be encountered on the surface or during any and all ground-disturbing activities (i.e., clearing, grubbing, tree and bush removal, grading, trenching, fence post placement and removal, construction excavation, excavation for all water supply, electrical, and irrigation lines, and landscaping phases of any kind), work in the immediate vicinity of the discovery shall immediately stop within a 100-foot perimeter of the discovery. The area shall be protected;

project personnel/observers will be restricted. The County Coroner is to be contacted within 24 hours of discovery. The County Coroner has 48 hours to make his/her determination pursuant to State and Safety Code §7050.5. and Public Resources Code (PRC) § 5097.98.

B. In the event that the human remains and/or cremations are identified as Native American, the Coroner shall notify the Native American Heritage Commission within 24 hours of determination pursuant to subdivision (c) of HSC §7050.5.

C. The Native American Heritage Commission shall immediately notify the person or persons it believes to be the Most Likely Descendant (MLD). The MLD has 48 hours, upon being granted access to the Project site, to inspect the site of discovery and make his/her recommendation for final treatment and disposition, with appropriate dignity, of the remains and all associated grave goods pursuant to PRC §5097.98

D. If the Morongo Band of Mission Indians has been named the Most Likely Descendant (MLD), the Tribe may wish to rebury the human remains and/or cremation and sacred items in their place of discovery with no further disturbance where they will reside in perpetuity. The place(s) of reburial will not be disclosed by any party and is exempt from the California Public Records Act (California Government Code § 6254[r]). Reburial location of human remains and/or cremations will be determined by the Tribe's Most Likely Descendant (MLD), the landowner, and the City Planning Department.

Tribal Cultural Resources Mitigation Measure No. 10. **FINAL REPORT:** The final report[s] created as a part of the project (AMTP, isolate records, site records, survey reports, testing reports, etc.) shall be submitted to the Lead Agency and Consulting Tribe[s] for review and comment. After approval of all parties, the final reports are to be submitted to the Eastern Information Center, and the Consulting Tribe[s]

Adherence to the above mitigations *would reduce impacts to less than significant impact*.

MITIGATION MEASURES

The following mitigation measures are required as a means to reduce potential tribal cultural resources impacts to levels that are less than significant:

The following mitigation measures will be required to address potential cultural resources impacts:

Tribal Cultural Resources Mitigation Measure No. 1. The Yuhaaviatam of San Manuel Nation Cultural Resources Management Department (YSMN) shall be contacted, as detailed in CUL-1, of any pre-contact cultural resources discovered during project implementation, and be provided information regarding the nature of the find, so as to provide Tribal input with regards to significance and treatment. Should the find be deemed significant, as defined by CEQA (as amended, 2015), a Cultural Resources Monitoring and Treatment Plan shall be created by the archaeologist, in coordination with YSMN, and all subsequent finds shall be subject to this Plan. This Plan shall allow for a monitor to be present that represents YSMN for the remainder of the project, should YSMN elect to place a monitor on-site.

Tribal Cultural Resources Mitigation Measure No. 2. Any and all archaeological/cultural documents created as a part of the project (isolate records, site records, survey reports, testing reports, etc.) shall be supplied to the applicant and Lead Agency for dissemination to YSMN. The Lead Agency and/or applicant shall, in good faith, consult with YSMN throughout the life of the project.

Tribal Cultural Resources Mitigation Measure No. 3. **Tribal Monitoring Services Agreement** Prior to the issuance of grading permits, the applicant shall enter into a Tribal Monitoring Services Agreement with the Morongo Band of Mission Indians (MBMI) for the Project. The Tribal Monitor shall be on-site during all ground-disturbing activities (including, but not limited to, clearing, grubbing, tree and bush removal, grading, trenching, fence post placement and removal, construction excavation, excavation for all utility and irrigation lines, and landscaping phases of any kind). The Tribal Monitor shall have the authority to temporarily divert, redirect, or halt the ground-disturbing activities to allow identification, evaluation, and potential recovery of cultural resources.

Tribal Cultural Resources Mitigation Measure No. 4. **Retention of Archaeologist** Prior to any ground-disturbing activities (including, but not limited to, clearing, grubbing, tree and bush removal, grading, trenching, fence post replacement and removal, construction excavation, excavation for all utility and irrigation lines, and landscaping phases of any kind), and prior to the issuance of grading permits, the Applicant shall retain a Qualified Archaeologist who meets the U.S. Secretary of the Interior Standards (SOI). The Archaeologist shall be present during all ground- disturbing activities to identify any known or suspected archaeological and/or cultural resources. The Archaeologist will conduct a Cultural Resource Sensitivity Training, in conjunction with the Tribe[s] Tribal Historic Preservation Officer (THPO), and/or designated Tribal Representative. The training session will focus on the archaeological and tribal cultural resources that may be encountered during ground-disturbing activities as well as the procedures to be followed in such an event.

Tribal Cultural Resources Mitigation Measure No. 5. **Cultural Resource Management Plan** Prior to any ground-disturbing activities the project Archaeologist shall develop a Cultural Resource Management Plan (CRMP) and/or Archaeological Monitoring and Treatment Plan (AMTP) to address the details, timing, and responsibilities of all archaeological and cultural resource activities that occur on the project site. This Plan shall be written in consultation with the consulting Tribe[s] and shall include the following: approved Mitigation Measures (MM)/Conditions of Approval (COA), contact information for all pertinent parties, parties' responsibilities, procedures for each MM or COA, and an overview of the project schedule.

Tribal Cultural Resources Mitigation Measure No. 6. **Pre-Grade Meeting** The retained Qualified archeologist and Consulting Tribe[s] representative shall attend the pre-grade meeting with the grading contractors to explain and coordinate the requirements of the monitoring plan.

Tribal Cultural Resources Mitigation Measure No. 7. **On-site Monitoring** During all ground-disturbing activities the Qualified Archaeologist and the Tribal Monitor shall be on-site full-time. The frequency of inspections shall depend on the rate of excavation, the materials excavated, and any discoveries of Tribal Cultural Resources as defined in California Public Resources Code Section 21074. Archaeological and Tribal Monitoring will be discontinued when the depth of grading and the soil conditions no longer retain the potential to contain cultural deposits. The Qualified Archaeologist, in consultation with the Tribal Monitor, shall be responsible for determining the duration and frequency of monitoring.

Tribal Cultural Resources Mitigation Measure No. 8. **Inadvertent Discovery of Cultural Resources** In the event that previously unidentified cultural resources are unearthed during construction, the Qualified Archaeologist and the Tribal Monitor shall have the authority to temporarily divert and/or temporarily halt ground-disturbance operations in the area of discovery to allow for the evaluation of potentially significant cultural resources. Isolates and clearly non- significant deposits shall be minimally documented in the field and collected so the monitored grading can proceed.

If a potentially significant cultural resource(s) is discovered, work shall stop within a 60-foot perimeter of the discovery and an Environmentally Sensitive Area (ESA) physical demarcation/barrier constructed. All work shall be diverted away from the vicinity of the find, so that the find can be evaluated by the Qualified Archaeologist and Tribal Monitor[s]. The Archaeologist shall notify the Lead Agency and consulting Tribe[s] of said discovery. The Qualified Archaeologist, in consultation with the Lead Agency, the consulting Tribe[s], and the Tribal Monitor, shall determine the significance of the discovered resource. A recommendation for the treatment and disposition of the Tribal Cultural Resource shall be made by the Qualified Archaeologist in consultation with the Tribe[s] and the Tribal Monitor[s] and be submitted to the Lead Agency for review and approval. Below are the possible treatments and dispositions of significant cultural resources in order of CEQA preference:

A. Full avoidance.

B. If avoidance is not feasible, Preservation in place.

C. If Preservation in place is not feasible, all items shall be reburied in an area away from any future impacts and reside in a permanent conservation easement or Deed Restriction.

D. If all other options are proven to be infeasible, data recovery through excavation and then curation in a Curation Facility that meets the Federal Curation Standards (CFR 79.1)

Tribal Cultural Resources Mitigation Measure No. 9. **Inadvertent Discovery of Human Remains** The Morongo Band of Mission Indians requests the following specific conditions to be imposed in order to protect Native American human remains and/or cremations. No photographs are to be taken except by the coroner, with written approval by the consulting Tribe[s].

A. Should human remains and/or cremations be encountered on the surface or during any and all ground-disturbing activities (i.e., clearing, grubbing, tree and bush removal, grading, trenching, fence post placement and removal, construction excavation, excavation for all water supply, electrical, and irrigation lines, and landscaping phases of any kind), work in the immediate vicinity of the discovery shall immediately stop within a 100-foot perimeter of the discovery. The area shall be protected; project personnel/observers will be restricted. The County Coroner is to be contacted within 24 hours of discovery. The County Coroner has 48 hours to make his/her determination pursuant to State and Safety Code §7050.5. and Public Resources Code (PRC) § 5097.98.

B. In the event that the human remains and/or cremations are identified as Native American, the Coroner shall notify the Native American Heritage Commission within 24 hours of determination pursuant to subdivision (c) of HSC §7050.5.

C. The Native American Heritage Commission shall immediately notify the person or persons it believes to be the Most Likely Descendant (MLD). The MLD has 48 hours, upon being granted access to the Project site, to inspect the site of discovery and make his/her recommendation for final treatment and disposition, with appropriate dignity, of the remains and all associated grave goods pursuant to PRC §5097.98

D. If the Morongo Band of Mission Indians has been named the Most Likely Descendant (MLD), the Tribe may wish to rebury the human remains and/or cremation and sacred items in their place of discovery with no further disturbance where they will reside in perpetuity. The place(s) of reburial will not be disclosed by any party and is exempt from the California Public Records Act (California Government Code § 6254[r]). Reburial location of human remains and/or cremations will be determined by the Tribe's Most Likely Descendant (MLD), the landowner, and the City Planning Department.

Tribal Cultural Resources Mitigation Measure No. 10. **FINAL REPORT:** The final report[s] created as a part of the project (AMTP, isolate records, site records, survey reports, testing reports, etc.) shall be submitted to the Lead Agency and Consulting Tribe[s] for review and comment. After approval of all parties, the final reports are to be submitted to the Eastern Information Center, and the Consulting Tribe[s].

3.19 UTILITIES AND SERVICE SYSTEMS

Environmental Issue Areas Examined	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
A. Would the project 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?			✖	
B. Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?			✖	
C. Would the project result in a determination by the waste water treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?			✖	
D. Would the project 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?			✖	
E. Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?				✖

SOURCES

Appendix E – Utilities Calculations.

Google Maps. Website accessed February 1, 2023.

Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

Town of Apple Valley Zoning Map. Website accessed February 2, 2024.

THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY

According to Appendix G of the CEQA Guidelines, a project may be deemed to have a significant adverse impact on utilities if it results in any of the following:

- The proposed project would 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.

- The proposed project would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.

- The proposed project would result in a determination by the wastewater treatment provider which serves or may serve the proposed project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

- The proposed project would 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.

- The proposed project would negatively impact the provision of solid waste services or impair the attainment of solid waste reduction goals.

- The proposed project would comply with Federal, State, and local management and reduction statutes and regulations related to solid waste.

ANALYSIS OF ENVIRONMENTAL IMPACTS

A. *Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects? ● Less than Significant Impact.*

The proposed project would be a 404,057 square foot industrial warehouse. The total net land area of the site is 871,200 square feet which is approximately 18.71 acres. As indicated previously, the new building would have a total floor area of 404,057 square feet. Two separate office areas would be located at the southeast and southwest corners of the new building. Of the new building's total floor area, 391,638 square feet would be warehouse uses and 12,419 square feet would be office space. A total of 64 truck loading docks would be located along the building's north elevation. The zoning designation of the site is *Specific Plan*.

There are no existing water or wastewater treatment plants, electric power plants, telecommunications facilities, natural gas facilities, or stormwater drainage infrastructure located on-site. The project site is currently undeveloped and has existing sewer and water connections adjacent to the project site. The proposed project's connection can be adequately handled by the existing infrastructure. *As a result, the impacts will be less than significant*.

B. *Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years? ● Less than Significant Impact.*

The project site and the surrounding area is under the jurisdiction of the Mojave Water Agency (MWA). The MWA has four-(4) contracts and is entitled to 85,800 acre-feet cumulative per year of supplemental water from the California Water Project (CWP or California Aqueduct) along with another 4,000 acre-feet in January 2020. The original 50,800 acre-feet entitlement of the CWP has been available for 50+ years and the MWA has purchased additional water transfers (first of several from Dudley Ranch) on March 26, 1996, which increased the entitlement by 25,000 acre-feet yearly. Only 7,257 acre-feet per year has been committed to the Morongo Basin, leaving 82,543 acre-feet available to provide "Supplement/Make Up Water" under MWA's jurisdiction in 2020. The proposed project would be required to connect with local sanitary 12-inch sewer line in Johnson Road and a 16-inch water line located in Navajo Road north of the project site. This water line is owned by Liberty Utilities. The anticipated water demand for the proposed project is summarized in Table 11. The applicant will need a letter from the Town of Apple Valley Water Department (VWD) in order to ensure water can be served to the site.

Table 11 Projected Water Consumption

Project Element	Consumption Rate	Project Consumption
Warehouse (404,057 sq. ft.)	0.045 /day/sq. ft.	18,460.8 gals./day
Total		18,460.8 gals./day

Source: Blodgett Baylosis Environmental Planning

The proposed project will be required to implement all Town water conservation regulations. *As a result, the impacts will be less than significant.*

C. *Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments? ● Less than Significant Impact.*

The Town of Apple Valley owns, operates, and maintains the local wastewater collection system. Wastewater facilities needed to serve the Town are identified in the Town's Sewer Master Plan (2013). This document is slated for an update within the next few years to ensure the system's adequacy to meet future needs of the Town's build out. Currently the Town has force main lines and gravity sewer lines of from 6 inches to 24 inches in diameter that connect to regional intercept lines that convey wastewater to a wastewater treatment plant operated by the Victor Valley Wastewater Treatment Authority (VVWRA) in Victorville. Currently the Town has force main lines and gravity sewer lines of from 6 inches to 24 inches in diameter that connect to regional intercept lines that convey wastewater to a wastewater treatment plant operated by the Victor Valley Wastewater Treatment Authority (VVWRA) in Victorville.

Table 12 indicates the proposed projects anticipated effluent generation rate. The proposed project would be required to connect with local sanitary 12-inch sewer line in Johnson Road and a 16-inch water line located in Navajo Road north of the project site. This water line is owned by Liberty Utilities. The VVWRA was formed by the Mojave Water Agency to help meet the requirements of the Clean Water Act and to provide wastewater treatment for the growing area. The Authority's first treatment plant began operating in 1981, providing treatment for up to 4.5 million gallons of wastewater per day. Since that time, VVWRA has had several plant upgrades and several capacity increases. Current sewer treatment capacity of the VVWRA facility is 14 million gallons per day, and plans are currently being developed to process as many as 22 million gallons per day of wastewater. The local infrastructure would have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments in conjunction with associated fees and existing plans, as applicable and as needed. *As a result, the impacts will be less than significant.*

Table 12 Projected Effluent Generation

Project Element	Generation Rate	Project Generation
Warehouse (404,057 sq. ft.)	0.025 gals./day/sq. ft.	10,256 gals./day
Total		10,256 gals./day

Source: Blodgett Baylosis Environmental Planning

D. *Would the project 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? ● Less than Significant Impact.*

The Town of Apple Valley contracts with Burrtec Waste Industries of Fontana, California for the collection and disposal of solid waste. Burrtec provides weekly curbside pick-up of recyclable materials for residential, commercial and industrial development. Solid waste collected in the planning area by Burrtec is hauled to the Victorville landfill, approximately 12 miles to the northwest and is a part of the San Bernardino County landfill system. The operating permit for the Victorville landfill allows for a maximum of 3,000 tons a day. Currently, it receives an average of 900 tons per day. Table 13 indicates the proposed projects anticipated solid waste generation rate which would be 3,663.5 pounds per day.

Table 13 Projected Solid Waste Generation

Project Element	Generation Rate	Project Generation
Warehouse (404,057 sq. ft.)	8.93 lbs./day/Unit	3,663.5 lbs./day
Total		3,663.5 lbs./day

Source: Blodgett Baylosis Environmental Planning

The Town of Apple Valley utilizes the Town of Apple Valley Landfill for solid waste disposal. This landfill is operated by the Solid Waste Management Division of the San Bernardino County Public Works Department in accordance with a Waste Disposal Agreement between the Town and the County. The Town of Apple Valley landfill currently operates on 67-acres of a total 491-acre property with a capacity of 1,180 tons per day. The operating permit for the Victorville landfill allows for a maximum of 3,000 tons a day. Currently, it receives an average of 900 tons per day. *The impacts will be less than significant.*

E. *Would the project comply with Federal, State, and local management and reduction statutes and regulations related to solid waste? ● No Impact.*

The proposed project, like all other development in Town of Apple Valley and San Bernardino County, will be required to adhere to Town and County ordinances with respect to waste reduction and recycling. As a result, no impacts related to State and local statutes governing solid waste are anticipated.

MITIGATION MEASURES

The analysis of utilities impacts indicated that no significant adverse impacts would result from the proposed project's approval and subsequent implementation. As a result, no mitigation is required.

3.20 WILDFIRE

Environmental Issue Areas Examined	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
A. Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?				✖
B. Would the project 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?				✖
C. Would the project 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?				✖
D. Would the project 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?				✖

SOURCES

Google Maps. Website accessed February 1, 2023.

Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

Town of Apple Valley Zoning Map. Website accessed February 2, 2024.

THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY

According to Appendix G of the CEQA Guidelines, a project may be deemed to have a significant adverse impact on wildfire risk and hazards if it results in any of the following:

- The proposed project would, if located in or near state responsibility areas or lands classified as very high fire hazard severity zones, substantially impair an adopted emergency response plan or emergency evacuation plan.

- The proposed project would, if located in or near state responsibility areas or lands classified as very high fire hazard severity zones, 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.

- The proposed project would, if located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project 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.

- The proposed project would, if located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project 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.

ANALYSIS OF ENVIRONMENTAL IMPACTS

A. *Would the project substantially impair an adopted emergency response plan or emergency evacuation plan? ● No Impact.*

The proposed project would be a 404,057 square foot industrial warehouse. The total net land area of the site is 871,200 square feet which is approximately 18.71 acres. As indicated previously, the new building would have a total floor area of 404,057 square feet. Two separate office areas would be located at the southeast and southwest corners of the new building. Of the new building's total floor area, 391,638 square feet would be warehouse uses and 12,419 square feet would be office space. The zoning designation of the site is *Specific Plan*.[18] Surface streets will be improved by pavement at construction and will serve the project site and adjacent area. Furthermore, the proposed project would not involve the closure or alteration of any existing evacuation routes that would be important in the event of a wildfire. At no time during construction will any of the adjacent streets be completely closed to traffic. All construction staging must occur on-site. *As a result, no impacts will occur.*

B. *Would the project 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? ● No Impact.*

The project site is not located within any fire hazard severity zones. The proposed project may be exposed to particulate emissions generated by wildland fires in the mountains (the site is located approximately 20 miles northeast and north of the San Gabriel and San Bernardino Mountains). However, the potential impacts would not be exclusive to the project site since criteria pollutant emissions from wildland fires may affect the entire Town as well as the surrounding cities and unincorporated county areas. *As a result, no impacts will occur.*

C. *Would the project 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? ● No Impact.*

The project site is not located in an area that is classified as a moderate fire risk severity within a Local Responsibility Area (LRA), and therefore will not require the installation of specialized infrastructure such as fire roads, fuel breaks, or emergency water sources. *As a result, no impacts will occur.*

[18] Steeno Design Studio, Inc. *Project: Industrial Development Amargosa, LLC. Site Plan, Sheet A-0. September 2023.*

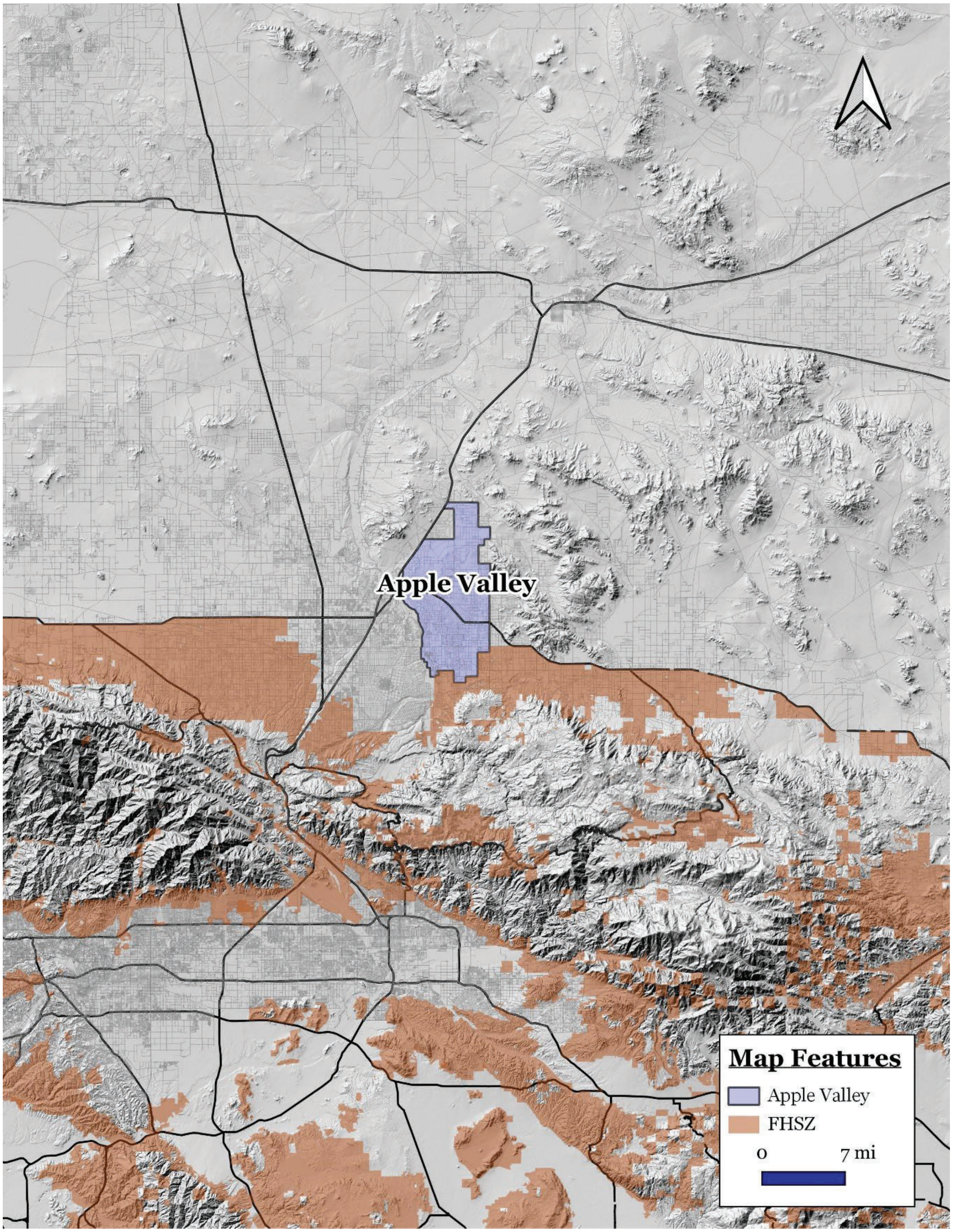

EXHIBIT 11 FHSZ MAP
SOURCE: CALFIRE

D. *Would the project 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? ● No Impact.*

There is no risk from wildfire within the project site or the surrounding area given the project site's distance from any area that may be subject to a wildfire event. The proposed project site is not located within an area classified as very high fire hazard severity zones and is not within a flood zone. Therefore, the project will not expose future employees to flooding or landslides facilitated by runoff flowing down barren and charred slopes. *As a result, no impacts will occur*.

MITIGATION MEASURES

The analysis of wildfire impacts indicated that less than significant impacts would result from the proposed project's approval and subsequent implementation. As a result, no mitigation is required.

3.21 MANDATORY FINDINGS OF SIGNIFICANCE

Environmental Issue Areas Examined	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
A. Does the project have the potential to substantially degrade the quality of the environment, 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 or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		✖		
B. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?				✖
C. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?				✖

The following findings can be made regarding the Mandatory Findings of Significance set forth in Section 15065 of the CEQA Guidelines based on the results of this environmental assessment:

A. The proposed project *will not* have the potential to substantially degrade the quality of the environment, 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 or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory. As indicated in Section 3.1 through 3.20, the proposed project will not result in any significant unmitigable environmental impacts. Mitigation measures include *Biological Resources Mitigation Measures No. 1 through 6, Cultural Resources Mitigation Measures No. 1 through 5, Geological Resources Mitigation Measure No. 1, Hazards & Hazardous Materials Mitigation Measure No.1, and Tribal Cultural Resources Mitigation Measures No. 1through 10.*

B. The proposed project *will not* have impacts that are individually limited, but cumulatively considerable. The environmental impacts will not lead to a cumulatively significant impact on any of the issues analyzed herein.

C. The proposed project *will not* have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly. As indicated in Section 3.1 through 3.20, the proposed project will not result in any significant unmitigable environmental impacts.

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SECTION 4 CONCLUSIONS

4.1 FINDINGS

The Initial Study determined that the proposed project is not expected to have significant adverse environmental impacts. The following findings can be made regarding the Mandatory Findings of Significance set forth in Section 15065 of the CEQA Guidelines based on the results of this Initial Study:

- The proposed project *will not* have the potential to substantially degrade the quality of the environment, 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 or restrict the range of an endangered, rare or threatened species or eliminate important examples of the major periods of California history or prehistory.
- The proposed project *will not* have impacts that are individually limited, but cumulatively considerable.
- The proposed project *will not* have environmental effects which will cause substantially adverse effects on human beings, either directly or indirectly.

4.2 MITIGATION MONITORING

In addition, pursuant to Section 21081(a) of the Public Resources Code, findings must be adopted by the decision-maker coincidental to the approval of a Negative Declaration. These findings shall be incorporated as part of the decision-maker's findings of fact, in response to AB-3180 and in compliance with the requirements of the Public Resources Code. In accordance with the requirements of Section 21081(a) and 21081.6 of the Public Resources Code, the Town of Apple Valley can make the following additional findings: a mitigation monitoring and reporting program will be required.

Town of Apple Valley California

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SECTION 5 REFERENCES

5.1 PREPARERS

Blodgett Baylosis Environmental Planning
2211 S Hacienda Boulevard, Suite 107
Hacienda Heights, CA 91745
(626) 336-0033

Karla Nayakarathne, Project Manager
Marc Blodgett, Project Principal
Alice Ye, Business Developer
Genesis Loyda, Administrator

5.2 REFERENCES

The references that were consulted have been identified using footnotes.

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APPL 004 Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	APPL 004
Construction Start Date	6/1/2025
Operational Year	2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	5.00
Precipitation (days)	12.4
Location	34.60195996138315, -117.19142226595334
County	San Bernardino-Mojave Desert
City	Apple Valley
Air District	Mojave Desert AQMD
Air Basin	Mojave Desert
TAZ	5160
EDFZ	10
Electric Utility	Southern California Edison
Gas Utility	Southwest Gas Corp.
App Version	2022.1.1.21

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

Unrefrigerated Warehouse-No Rail	410	1000sqft	9.42	410,241	—	—	—	—
Parking Lot	297	Space	2.67	0.00	—	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-10-A	Water Exposed Surfaces

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.	4.04	3.41	31.7	31.6	0.06	1.37	19.9	21.3	1.26	10.2	11.4	—	7,053	7,053	0.28	0.39	15.0	7,190
Mit.	4.04	3.41	31.7	31.6	0.06	1.37	7.89	9.26	1.26	3.99	5.25	—	7,053	7,053	0.28	0.39	15.0	7,190
% Reduced	—	—	—	—	—	—	60%	56%	—	61%	54%	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.29	97.0	13.7	23.6	0.04	0.46	2.83	3.29	0.43	0.69	1.11	—	6,766	6,766	0.21	0.39	0.39	6,889
Mit.	2.29	97.0	13.7	23.6	0.04	0.46	2.83	3.29	0.43	0.69	1.11	—	6,766	6,766	0.21	0.39	0.39	6,889
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	1.33	6.47	7.95	14.5	0.02	0.30	2.03	2.33	0.28	0.76	1.04	—	4,005	4,005	0.09	0.23	3.45	4,079
Mit.	1.33	6.47	7.95	14.5	0.02	0.30	1.65	1.90	0.28	0.40	0.68	—	4,005	4,005	0.09	0.23	3.45	4,079
% Reduced	—	—	—	—	—	—	19%	18%	—	47%	34%	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.24	1.18	1.45	2.64	< 0.005	0.06	0.37	0.43	0.05	0.14	0.19	—	663	663	0.01	0.04	0.57	675
Mit.	0.24	1.18	1.45	2.64	< 0.005	0.06	0.30	0.35	0.05	0.07	0.12	—	663	663	0.01	0.04	0.57	675
% Reduced	—	—	—	—	—	—	19%	18%	—	47%	34%	—	—	—	—	—	—	—

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	4.04	3.41	31.7	31.6	0.06	1.37	19.9	21.3	1.26	10.2	11.4	—	7,053	7,053	0.28	0.39	15.0	7,190
2026	2.28	1.98	12.7	27.1	0.04	0.41	2.83	3.24	0.38	0.69	1.07	—	6,961	6,961	0.20	0.39	13.6	7,096
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	2.29	1.97	13.7	23.6	0.04	0.46	2.83	3.29	0.43	0.69	1.11	—	6,766	6,766	0.21	0.39	0.39	6,889
2026	2.18	97.0	12.9	22.7	0.04	0.41	2.83	3.24	0.38	0.69	1.07	—	6,681	6,681	0.14	0.39	0.35	6,801
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.16	0.99	7.95	10.6	0.02	0.30	2.03	2.33	0.28	0.76	1.04	—	2,612	2,612	0.09	0.11	1.68	2,647
2026	1.33	6.47	7.91	14.5	0.02	0.25	1.65	1.90	0.24	0.40	0.64	—	4,005	4,005	0.08	0.23	3.45	4,079
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.21	0.18	1.45	1.93	< 0.005	0.06	0.37	0.43	0.05	0.14	0.19	—	432	432	0.01	0.02	0.28	438

2026	0.24	1.18	1.44	2.64	< 0.005	0.05	0.30	0.35	0.04	0.07	0.12	—	663	663	0.01	0.04	0.57	675

2.3. Construction Emissions by Year, Mitigated

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	4.04	3.41	31.7	31.6	0.06	1.37	7.89	9.26	1.26	3.99	5.25	—	7,053	7,053	0.28	0.39	15.0	7,190
2026	2.28	1.98	12.7	27.1	0.04	0.41	2.83	3.24	0.38	0.69	1.07	—	6,961	6,961	0.20	0.39	13.6	7,096
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	2.29	1.97	13.7	23.6	0.04	0.46	2.83	3.29	0.43	0.69	1.11	—	6,766	6,766	0.21	0.39	0.39	6,889
2026	2.18	97.0	12.9	22.7	0.04	0.41	2.83	3.24	0.38	0.69	1.07	—	6,681	6,681	0.14	0.39	0.35	6,801
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.16	0.99	7.95	10.6	0.02	0.30	1.24	1.54	0.28	0.40	0.68	—	2,612	2,612	0.09	0.11	1.68	2,647
2026	1.33	6.47	7.91	14.5	0.02	0.25	1.65	1.90	0.24	0.40	0.64	—	4,005	4,005	0.08	0.23	3.45	4,079
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.21	0.18	1.45	1.93	< 0.005	0.06	0.23	0.28	0.05	0.07	0.12	—	432	432	0.01	0.02	0.28	438
2026	0.24	1.18	1.44	2.64	< 0.005	0.05	0.30	0.35	0.04	0.07	0.12	—	663	663	0.01	0.04	0.57	675

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.	7.92	16.5	7.31	67.9	0.13	0.28	9.97	10.3	0.27	2.53	2.80	390	18,213	18,603	40.2	0.95	41.3	19,931
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.30	13.1	7.57	38.0	0.12	0.25	9.97	10.2	0.24	2.53	2.77	390	17,082	17,471	40.2	0.96	1.07	18,765
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.91	14.6	7.80	50.0	0.12	0.27	9.89	10.2	0.26	2.51	2.76	390	17,359	17,748	40.2	0.97	17.8	19,061
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.08	2.66	1.42	9.12	0.02	0.05	1.81	1.85	0.05	0.46	0.50	64.5	2,874	2,938	6.66	0.16	2.95	3,156

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	4.51	4.10	5.07	48.3	0.12	0.09	9.97	10.1	0.09	2.53	2.61	—	11,934	11,934	0.34	0.47	41.3	12,124
Area	3.17	12.2	0.15	17.8	< 0.005	0.03	—	0.03	0.02	—	0.02	—	73.4	73.4	< 0.005	< 0.005	—	73.6
Energy	0.23	0.12	2.09	1.76	0.01	0.16	—	0.16	0.16	—	0.16	—	5,410	5,410	0.40	0.03	—	5,428
Water	—	—	—	—	—	—	—	—	—	—	—	182	796	978	18.7	0.45	—	1,579
Waste	—	—	—	—	—	—	—	—	—	—	—	208	0.00	208	20.8	0.00	—	727
Total	7.92	16.5	7.31	67.9	0.13	0.28	9.97	10.3	0.27	2.53	2.80	390	18,213	18,603	40.2	0.95	41.3	19,931
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	4.07	3.67	5.48	36.2	0.11	0.09	9.97	10.1	0.09	2.53	2.61	—	10,876	10,876	0.35	0.49	1.07	11,031
Area	—	9.32	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Energy	0.23	0.12	2.09	1.76	0.01	0.16	—	0.16	0.16	—	0.16	—	5,410	5,410	0.40	0.03	—	5,428
Water	—	—	—	—	—	—	—	—	—	—	—	182	796	978	18.7	0.45	—	1,579
Waste	—	—	—	—	—	—	—	—	—	—	—	208	0.00	208	20.8	0.00	—	727
Total	4.30	13.1	7.57	38.0	0.12	0.25	9.97	10.2	0.24	2.53	2.77	390	17,082	17,471	40.2	0.96	1.07	18,765
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	4.11	3.70	5.63	39.4	0.11	0.09	9.89	9.99	0.09	2.51	2.59	—	11,117	11,117	0.35	0.50	17.8	11,291
Area	1.57	10.8	0.07	8.80	< 0.005	0.02	—	0.02	0.01	—	0.01	—	36.2	36.2	< 0.005	< 0.005	—	36.3
Energy	0.23	0.12	2.09	1.76	0.01	0.16	—	0.16	0.16	—	0.16	—	5,410	5,410	0.40	0.03	—	5,428
Water	—	—	—	—	—	—	—	—	—	—	—	182	796	978	18.7	0.45	—	1,579
Waste	—	—	—	—	—	—	—	—	—	—	—	208	0.00	208	20.8	0.00	—	727
Total	5.91	14.6	7.80	50.0	0.12	0.27	9.89	10.2	0.26	2.51	2.76	390	17,359	17,748	40.2	0.97	17.8	19,061
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.75	0.68	1.03	7.19	0.02	0.02	1.81	1.82	0.02	0.46	0.47	—	1,840	1,840	0.06	0.08	2.95	1,869
Area	0.29	1.96	0.01	1.61	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.99	5.99	< 0.005	< 0.005	—	6.01
Energy	0.04	0.02	0.38	0.32	< 0.005	0.03	—	0.03	0.03	—	0.03	—	896	896	0.07	< 0.005	—	899
Water	—	—	—	—	—	—	—	—	—	—	—	30.1	132	162	3.09	0.07	—	261
Waste	—	—	—	—	—	—	—	—	—	—	—	34.4	0.00	34.4	3.44	0.00	—	120
Total	1.08	2.66	1.42	9.12	0.02	0.05	1.81	1.85	0.05	0.46	0.50	64.5	2,874	2,938	6.66	0.16	2.95	3,156

2.6. Operations Emissions by Sector, Mitigated

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	4.51	4.10	5.07	48.3	0.12	0.09	9.97	10.1	0.09	2.53	2.61	—	11,934	11,934	0.34	0.47	41.3	12,124
Area	3.17	12.2	0.15	17.8	< 0.005	0.03	—	0.03	0.02	—	0.02	—	73.4	73.4	< 0.005	< 0.005	—	73.6

Energy	0.23	0.12	2.09	1.76	0.01	0.16	—	0.16	0.16	—	0.16	—	5,410	5,410	0.40	0.03	—	5,428
Water	—	—	—	—	—	—	—	—	—	—	—	182	796	978	18.7	0.45	—	1,579
Waste	—	—	—	—	—	—	—	—	—	—	—	208	0.00	208	20.8	0.00	—	727
Total	7.92	16.5	7.31	67.9	0.13	0.28	9.97	10.3	0.27	2.53	2.80	390	18,213	18,603	40.2	0.95	41.3	19,931
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	4.07	3.67	5.48	36.2	0.11	0.09	9.97	10.1	0.09	2.53	2.61	—	10,876	10,876	0.35	0.49	1.07	11,031
Area	—	9.32	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.23	0.12	2.09	1.76	0.01	0.16	—	0.16	0.16	—	0.16	—	5,410	5,410	0.40	0.03	—	5,428
Water	—	—	—	—	—	—	—	—	—	—	—	182	796	978	18.7	0.45	—	1,579
Waste	—	—	—	—	—	—	—	—	—	—	—	208	0.00	208	20.8	0.00	—	727
Total	4.30	13.1	7.57	38.0	0.12	0.25	9.97	10.2	0.24	2.53	2.77	390	17,082	17,471	40.2	0.96	1.07	18,765
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	4.11	3.70	5.63	39.4	0.11	0.09	9.89	9.99	0.09	2.51	2.59	—	11,117	11,117	0.35	0.50	17.8	11,291
Area	1.57	10.8	0.07	8.80	< 0.005	0.02	—	0.02	0.01	—	0.01	—	36.2	36.2	< 0.005	< 0.005	—	36.3
Energy	0.23	0.12	2.09	1.76	0.01	0.16	—	0.16	0.16	—	0.16	—	5,410	5,410	0.40	0.03	—	5,428
Water	—	—	—	—	—	—	—	—	—	—	—	182	796	978	18.7	0.45	—	1,579
Waste	—	—	—	—	—	—	—	—	—	—	—	208	0.00	208	20.8	0.00	—	727
Total	5.91	14.6	7.80	50.0	0.12	0.27	9.89	10.2	0.26	2.51	2.76	390	17,359	17,748	40.2	0.97	17.8	19,061
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.75	0.68	1.03	7.19	0.02	0.02	1.81	1.82	0.02	0.46	0.47	—	1,840	1,840	0.06	0.08	2.95	1,869
Area	0.29	1.96	0.01	1.61	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.99	5.99	< 0.005	< 0.005	—	6.01
Energy	0.04	0.02	0.38	0.32	< 0.005	0.03	—	0.03	0.03	—	0.03	—	896	896	0.07	< 0.005	—	899
Water	—	—	—	—	—	—	—	—	—	—	—	30.1	132	162	3.09	0.07	—	261
Waste	—	—	—	—	—	—	—	—	—	—	—	34.4	0.00	34.4	3.44	0.00	—	120
Total	1.08	2.66	1.42	9.12	0.02	0.05	1.81	1.85	0.05	0.46	0.50	64.5	2,874	2,938	6.66	0.16	2.95	3,156

3. Construction Emissions Details

3.1. Demolition (2025) - 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	2.86	2.40	22.2	19.9	0.03	0.92	—	0.92	0.84	—	0.84	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	0.00	0.00	—	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	0.16	0.13	1.22	1.09	< 0.005	0.05	—	0.05	0.05	—	0.05	—	188	188	0.01	< 0.005	—	188
Demolition	—	—	—	—	—	—	0.00	0.00	—	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	0.03	0.02	0.22	0.20	< 0.005	0.01	—	0.01	0.01	—	0.01	—	31.1	31.1	< 0.005	< 0.005	—	31.2
Demolition	—	—	—	—	—	—	0.00	0.00	—	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	0.09	0.08	0.07	1.25	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	219	219	0.01	0.01	0.80	222
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	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.9	10.9	< 0.005	< 0.005	0.02	11.1
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	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.81	1.81	< 0.005	< 0.005	< 0.005	1.83
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

3.2. Demolition (2025) - Mitigated

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	2.86	2.40	22.2	19.9	0.03	0.92	—	0.92	0.84	—	0.84	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	0.00	0.00	—	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	0.16	0.13	1.22	1.09	< 0.005	0.05	—	0.05	0.05	—	0.05	—	188	188	0.01	< 0.005	—	188
Demolition	—	—	—	—	—	—	0.00	0.00	—	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	0.03	0.02	0.22	0.20	< 0.005	0.01	—	0.01	0.01	—	0.01	—	31.1	31.1	< 0.005	< 0.005	—	31.2
Demolition	—	—	—	—	—	—	0.00	0.00	—	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	0.09	0.08	0.07	1.25	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	219	219	0.01	0.01	0.80	222
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	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.9	10.9	< 0.005	< 0.005	0.02	11.1
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	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.81	1.81	< 0.005	< 0.005	< 0.005	1.83
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. Site Preparation (2025) - 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	3.94	3.31	31.6	30.2	0.05	1.37	—	1.37	1.26	—	1.26	—	5,295	5,295	0.21	0.04	—	5,314
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	0.11	0.09	0.87	0.83	< 0.005	0.04	—	0.04	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-Road Equipment	0.02	0.02	0.16	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	24.0	24.0	< 0.005	< 0.005	—	24.1
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	0.10	0.10	0.08	1.45	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	255	255	0.01	0.01	0.93	259
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	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.37	6.37	< 0.005	< 0.005	0.01	6.46
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	—	1.06	1.06	< 0.005	< 0.005	< 0.005	1.07
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

3.4. Site Preparation (2025) - Mitigated

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	3.94	3.31	31.6	30.2	0.05	1.37	—	1.37	1.26	—	1.26	—	5,295	5,295	0.21	0.04	—	5,314
Dust From Material Movement	—	—	—	—	—	—	7.67	7.67	—	3.94	3.94	—	—	—	—	—	—	—
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	0.11	0.09	0.87	0.83	< 0.005	0.04	—	0.04	0.03	—	0.03	—	145	145	0.01	< 0.005	—	146
Dust From Material Movement	—	—	—	—	—	—	0.21	0.21	—	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.16	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	24.0	24.0	< 0.005	< 0.005	—	24.1
Dust From Material Movement	—	—	—	—	—	—	0.04	0.04	—	0.02	0.02	—	—	—	—	—	—	—
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	0.10	0.08	1.45	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	255	255	0.01	0.01	0.93	259
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	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.37	6.37	< 0.005	< 0.005	0.01	6.46
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	—	1.06	1.06	< 0.005	< 0.005	< 0.005	1.07
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. Grading (2025) - 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	3.80	3.20	29.7	28.3	0.06	1.23	—	1.23	1.14	—	1.14	—	6,599	6,599	0.27	0.05	—	6,622
Dust From Material Movement	—	—	—	—	—	—	9.20	9.20	—	3.65	3.65	—	—	—	—	—	—	—
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	0.31	0.26	2.44	2.33	0.01	0.10	—	0.10	0.09	—	0.09	—	542	542	0.02	< 0.005	—	544
Dust From Material Movement	—	—	—	—	—	—	0.76	0.76	—	0.30	0.30	—	—	—	—	—	—	—
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	0.45	0.42	< 0.005	0.02	—	0.02	0.02	—	0.02	—	89.8	89.8	< 0.005	< 0.005	—	90.1

Dust From Material Movement	—	—	—	—	—	—	0.14	0.14	—	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	0.12	0.11	0.10	1.66	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	292	292	0.01	0.01	1.07	296
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	0.10	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	21.9	21.9	< 0.005	< 0.005	0.04	22.2
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	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.62	3.62	< 0.005	< 0.005	0.01	3.67
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

3.6. Grading (2025) - Mitigated

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	3.80	3.20	29.7	28.3	0.06	1.23	—	1.23	1.14	—	1.14	—	6,599	6,599	0.27	0.05	—	6,622
Dust From Material Movement	—	—	—	—	—	—	3.59	3.59	—	1.42	1.42	—	—	—	—	—	—	—
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	0.31	0.26	2.44	2.33	0.01	0.10	—	0.10	0.09	—	0.09	—	542	542	0.02	< 0.005	—	544
Dust From Material Movement	—	—	—	—	—	—	0.30	0.30	—	0.12	0.12	—	—	—	—	—	—	—
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	0.45	0.42	< 0.005	0.02	—	0.02	0.02	—	0.02	—	89.8	89.8	< 0.005	< 0.005	—	90.1
Dust From Material Movement	—	—	—	—	—	—	0.05	0.05	—	0.02	0.02	—	—	—	—	—	—	—
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	0.12	0.11	0.10	1.66	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	292	292	0.01	0.01	1.07	296
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	0.10	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	21.9	21.9	< 0.005	< 0.005	0.04	22.2
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	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.62	3.62	< 0.005	< 0.005	0.01	3.67
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

3.7. Building Construction (2025) - 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	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	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	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	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	0.33	0.28	2.60	3.24	0.01	0.11	—	0.11	0.10	—	0.10	—	596	596	0.02	< 0.005	—	598
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	0.59	< 0.005	0.02	—	0.02	0.02	—	0.02	—	98.7	98.7	< 0.005	< 0.005	—	99.0
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	1.03	0.94	0.84	14.3	0.00	0.00	2.25	2.25	0.00	0.53	0.53	—	2,513	2,513	0.10	0.09	9.18	2,551
Vendor	0.09	0.08	2.18	0.95	0.02	0.03	0.58	0.61	0.03	0.16	0.19	—	2,142	2,142	< 0.005	0.29	5.86	2,233
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	0.86	0.77	0.91	9.60	0.00	0.00	2.25	2.25	0.00	0.53	0.53	—	2,225	2,225	0.11	0.09	0.24	2,253
Vendor	0.08	0.08	2.30	0.97	0.02	0.03	0.58	0.61	0.03	0.16	0.19	—	2,144	2,144	< 0.005	0.29	0.15	2,230
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	0.22	0.19	0.25	2.67	0.00	0.00	0.56	0.56	0.00	0.13	0.13	—	569	569	0.03	0.02	0.99	577
Vendor	0.02	0.02	0.57	0.24	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	—	533	533	< 0.005	0.07	0.63	554
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	0.04	0.04	0.49	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	94.2	94.2	< 0.005	< 0.005	0.16	95.6
Vendor	< 0.005	< 0.005	0.10	0.04	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	88.2	88.2	< 0.005	0.01	0.10	91.8
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

3.8. Building Construction (2025) - Mitigated

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	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	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	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	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	0.33	0.28	2.60	3.24	0.01	0.11	—	0.11	0.10	—	0.10	—	596	596	0.02	< 0.005	—	598

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	0.59	< 0.005	0.02	—	0.02	0.02	—	0.02	—	98.7	98.7	< 0.005	< 0.005	—	99.0
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	1.03	0.94	0.84	14.3	0.00	0.00	2.25	2.25	0.00	0.53	0.53	—	2,513	2,513	0.10	0.09	9.18	2,551
Vendor	0.09	0.08	2.18	0.95	0.02	0.03	0.58	0.61	0.03	0.16	0.19	—	2,142	2,142	< 0.005	0.29	5.86	2,233
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	0.86	0.77	0.91	9.60	0.00	0.00	2.25	2.25	0.00	0.53	0.53	—	2,225	2,225	0.11	0.09	0.24	2,253
Vendor	0.08	0.08	2.30	0.97	0.02	0.03	0.58	0.61	0.03	0.16	0.19	—	2,144	2,144	< 0.005	0.29	0.15	2,230
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	0.22	0.19	0.25	2.67	0.00	0.00	0.56	0.56	0.00	0.13	0.13	—	569	569	0.03	0.02	0.99	577
Vendor	0.02	0.02	0.57	0.24	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	—	533	533	< 0.005	0.07	0.63	554
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	0.04	0.04	0.49	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	94.2	94.2	< 0.005	< 0.005	0.16	95.6
Vendor	< 0.005	< 0.005	0.10	0.04	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	88.2	88.2	< 0.005	0.01	0.10	91.8
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

3.9. 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	0.74	0.62	5.67	7.46	0.01	0.22	—	0.22	0.20	—	0.20	—	1,379	1,379	0.06	0.01	—	1,384
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	0.13	0.11	1.03	1.36	< 0.005	0.04	—	0.04	0.04	—	0.04	—	228	228	0.01	< 0.005	—	229
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	0.91	0.82	0.76	13.3	0.00	0.00	2.25	2.25	0.00	0.53	0.53	—	2,463	2,463	0.10	0.09	8.34	2,500
Vendor	0.09	0.08	2.10	0.88	0.02	0.03	0.58	0.61	0.03	0.16	0.19	—	2,100	2,100	< 0.005	0.29	5.30	2,191
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	0.82	0.73	0.84	8.85	0.00	0.00	2.25	2.25	0.00	0.53	0.53	—	2,181	2,181	0.03	0.09	0.22	2,208
Vendor	0.08	0.08	2.22	0.91	0.02	0.03	0.58	0.61	0.03	0.16	0.19	—	2,102	2,102	< 0.005	0.29	0.14	2,188
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	0.43	0.52	5.74	0.00	0.00	1.29	1.29	0.00	0.30	0.30	—	1,292	1,292	0.02	0.05	2.07	1,309
Vendor	0.05	0.04	1.27	0.52	0.01	0.02	0.33	0.35	0.02	0.09	0.11	—	1,209	1,209	< 0.005	0.17	1.32	1,259
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	0.08	0.10	1.05	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	214	214	< 0.005	0.01	0.34	217
Vendor	0.01	0.01	0.23	0.09	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	200	200	< 0.005	0.03	0.22	209
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

3.10. Building Construction (2026) - Mitigated

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	0.74	0.62	5.67	7.46	0.01	0.22	—	0.22	0.20	—	0.20	—	1,379	1,379	0.06	0.01	—	1,384
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	0.13	0.11	1.03	1.36	< 0.005	0.04	—	0.04	0.04	—	0.04	—	228	228	0.01	< 0.005	—	229
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	0.91	0.82	0.76	13.3	0.00	0.00	2.25	2.25	0.00	0.53	0.53	—	2,463	2,463	0.10	0.09	8.34	2,500
Vendor	0.09	0.08	2.10	0.88	0.02	0.03	0.58	0.61	0.03	0.16	0.19	—	2,100	2,100	< 0.005	0.29	5.30	2,191
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	0.82	0.73	0.84	8.85	0.00	0.00	2.25	2.25	0.00	0.53	0.53	—	2,181	2,181	0.03	0.09	0.22	2,208

Vendor	0.08	0.08	2.22	0.91	0.02	0.03	0.58	0.61	0.03	0.16	0.19	—	2,102	2,102	< 0.005	0.29	0.14	2,188
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	0.43	0.52	5.74	0.00	0.00	1.29	1.29	0.00	0.30	0.30	—	1,292	1,292	0.02	0.05	2.07	1,309
Vendor	0.05	0.04	1.27	0.52	0.01	0.02	0.33	0.35	0.02	0.09	0.11	—	1,209	1,209	< 0.005	0.17	1.32	1,259
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	0.08	0.10	1.05	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	214	214	< 0.005	0.01	0.34	217
Vendor	0.01	0.01	0.23	0.09	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	200	200	< 0.005	0.03	0.22	209
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. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.91	0.76	7.12	9.94	0.01	0.32	—	0.32	0.29	—	0.29	—	1,511	1,511	0.06	0.01	—	1,516
Paving	—	0.35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.39	0.54	< 0.005	0.02	—	0.02	0.02	—	0.02	—	82.8	82.8	< 0.005	< 0.005	—	83.1
Paving	—	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	13.7	13.7	< 0.005	< 0.005	—	13.8
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.07	0.77	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	190	190	< 0.005	0.01	0.02	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.7	10.7	< 0.005	< 0.005	0.02	10.9
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	—	1.77	1.77	< 0.005	< 0.005	< 0.005	1.80
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

3.12. Paving (2026) - Mitigated

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.91	0.76	7.12	9.94	0.01	0.32	—	0.32	0.29	—	0.29	—	1,511	1,511	0.06	0.01	—	1,516
Paving	—	0.35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.39	0.54	< 0.005	0.02	—	0.02	0.02	—	0.02	—	82.8	82.8	< 0.005	< 0.005	—	83.1
Paving	—	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	13.7	13.7	< 0.005	< 0.005	—	13.8
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.07	0.77	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	190	190	< 0.005	0.01	0.02	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.7	10.7	< 0.005	< 0.005	0.02	10.9
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	—	1.77	1.77	< 0.005	< 0.005	< 0.005	1.80
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

3.13. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	—	96.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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	0.01	0.01	0.05	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.32	7.32	< 0.005	< 0.005	—	7.34
Architectural Coatings	—	5.30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.21	1.21	< 0.005	< 0.005	—	1.22
Architectural Coatings	—	0.97	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.15	0.17	1.77	0.00	0.00	0.45	0.45	0.00	0.11	0.11	—	436	436	0.01	0.02	0.04	442
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	0.11	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	24.6	24.6	< 0.005	< 0.005	0.04	24.9
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	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.07	4.07	< 0.005	< 0.005	0.01	4.13
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

3.14. Architectural Coating (2026) - Mitigated

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	—	96.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.01	0.01	0.05	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.32	7.32	< 0.005	< 0.005	—	7.34
Architectural Coatings	—	5.30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.21	1.21	< 0.005	< 0.005	—	1.22
Architectural Coatings	—	0.97	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.15	0.17	1.77	0.00	0.00	0.45	0.45	0.00	0.11	0.11	—	436	436	0.01	0.02	0.04	442
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	0.11	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	24.6	24.6	< 0.005	< 0.005	0.04	24.9
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	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.07	4.07	< 0.005	< 0.005	0.01	4.13
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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	4.51	4.10	5.07	48.3	0.12	0.09	9.97	10.1	0.09	2.53	2.61	—	11,934	11,934	0.34	0.47	41.3	12,124
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
Total	4.51	4.10	5.07	48.3	0.12	0.09	9.97	10.1	0.09	2.53	2.61	—	11,934	11,934	0.34	0.47	41.3	12,124
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	4.07	3.67	5.48	36.2	0.11	0.09	9.97	10.1	0.09	2.53	2.61	—	10,876	10,876	0.35	0.49	1.07	11,031
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
Total	4.07	3.67	5.48	36.2	0.11	0.09	9.97	10.1	0.09	2.53	2.61	—	10,876	10,876	0.35	0.49	1.07	11,031
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	0.75	0.68	1.03	7.19	0.02	0.02	1.81	1.82	0.02	0.46	0.47	—	1,840	1,840	0.06	0.08	2.95	1,869

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
Total	0.75	0.68	1.03	7.19	0.02	0.02	1.81	1.82	0.02	0.46	0.47	—	1,840	1,840	0.06	0.08	2.95	1,869

4.1.2. Mitigated

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	4.51	4.10	5.07	48.3	0.12	0.09	9.97	10.1	0.09	2.53	2.61	—	11,934	11,934	0.34	0.47	41.3	12,124
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
Total	4.51	4.10	5.07	48.3	0.12	0.09	9.97	10.1	0.09	2.53	2.61	—	11,934	11,934	0.34	0.47	41.3	12,124
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	4.07	3.67	5.48	36.2	0.11	0.09	9.97	10.1	0.09	2.53	2.61	—	10,876	10,876	0.35	0.49	1.07	11,031
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
Total	4.07	3.67	5.48	36.2	0.11	0.09	9.97	10.1	0.09	2.53	2.61	—	10,876	10,876	0.35	0.49	1.07	11,031
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unrefrigerated Warehouse-No	0.75	0.68	1.03	7.19	0.02	0.02	1.81	1.82	0.02	0.46	0.47	—	1,840	1,840	0.06	0.08	2.95	1,869
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
Total	0.75	0.68	1.03	7.19	0.02	0.02	1.81	1.82	0.02	0.46	0.47	—	1,840	1,840	0.06	0.08	2.95	1,869

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	—	2,762	2,762	0.17	0.02	—	2,772
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	149	149	0.01	< 0.005	—	149
Total	—	—	—	—	—	—	—	—	—	—	—	—	2,910	2,910	0.18	0.02	—	2,921
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	—	2,762	2,762	0.17	0.02	—	2,772
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	149	149	0.01	< 0.005	—	149

Total	—	—	—	—	—	—	—	—	—	—	—	—	2,910	2,910	0.18	0.02	—	2,921
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	—	457	457	0.03	< 0.005	—	459
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	24.6	24.6	< 0.005	< 0.005	—	24.7
Total	—	—	—	—	—	—	—	—	—	—	—	—	482	482	0.03	< 0.005	—	484

4.2.2. Electricity Emissions By Land Use - Mitigated

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	—	2,762	2,762	0.17	0.02	—	2,772
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	149	149	0.01	< 0.005	—	149
Total	—	—	—	—	—	—	—	—	—	—	—	—	2,910	2,910	0.18	0.02	—	2,921
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	—	2,762	2,762	0.17	0.02	—	2,772

Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	149	149	0.01	< 0.005	—	149
Total	—	—	—	—	—	—	—	—	—	—	—	—	2,910	2,910	0.18	0.02	—	2,921
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	—	457	457	0.03	< 0.005	—	459
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	24.6	24.6	< 0.005	< 0.005	—	24.7
Total	—	—	—	—	—	—	—	—	—	—	—	—	482	482	0.03	< 0.005	—	484

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	0.23	0.12	2.09	1.76	0.01	0.16	—	0.16	0.16	—	0.16	—	2,499	2,499	0.22	< 0.005	—	2,506
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
Total	0.23	0.12	2.09	1.76	0.01	0.16	—	0.16	0.16	—	0.16	—	2,499	2,499	0.22	< 0.005	—	2,506
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unrefrigerated Warehouse-No	0.23	0.12	2.09	1.76	0.01	0.16	—	0.16	0.16	—	0.16	—	2,499	2,499	0.22	< 0.005	—	2,506
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
Total	0.23	0.12	2.09	1.76	0.01	0.16	—	0.16	0.16	—	0.16	—	2,499	2,499	0.22	< 0.005	—	2,506
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	0.04	0.02	0.38	0.32	< 0.005	0.03	—	0.03	0.03	—	0.03	—	414	414	0.04	< 0.005	—	415
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
Total	0.04	0.02	0.38	0.32	< 0.005	0.03	—	0.03	0.03	—	0.03	—	414	414	0.04	< 0.005	—	415

4.2.4. Natural Gas Emissions By Land Use - Mitigated

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	0.23	0.12	2.09	1.76	0.01	0.16	—	0.16	0.16	—	0.16	—	2,499	2,499	0.22	< 0.005	—	2,506
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
Total	0.23	0.12	2.09	1.76	0.01	0.16	—	0.16	0.16	—	0.16	—	2,499	2,499	0.22	< 0.005	—	2,506

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	0.23	0.12	2.09	1.76	0.01	0.16	—	0.16	0.16	—	0.16	—	2,499	2,499	0.22	< 0.005	—	2,506
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
Total	0.23	0.12	2.09	1.76	0.01	0.16	—	0.16	0.16	—	0.16	—	2,499	2,499	0.22	< 0.005	—	2,506
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	0.04	0.02	0.38	0.32	< 0.005	0.03	—	0.03	0.03	—	0.03	—	414	414	0.04	< 0.005	—	415
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
Total	0.04	0.02	0.38	0.32	< 0.005	0.03	—	0.03	0.03	—	0.03	—	414	414	0.04	< 0.005	—	415

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	8.79	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectural Coatings	—	0.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	3.17	2.93	0.15	17.8	< 0.005	0.03	—	0.03	0.02	—	0.02	—	73.4	73.4	< 0.005	< 0.005	—	73.6
Total	3.17	12.2	0.15	17.8	< 0.005	0.03	—	0.03	0.02	—	0.02	—	73.4	73.4	< 0.005	< 0.005	—	73.6
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	8.79	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	9.32	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	1.60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.29	0.26	0.01	1.61	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.99	5.99	< 0.005	< 0.005	—	6.01
Total	0.29	1.96	0.01	1.61	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.99	5.99	< 0.005	< 0.005	—	6.01

4.3.2. Mitigated

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	8.79	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	3.17	2.93	0.15	17.8	< 0.005	0.03	—	0.03	0.02	—	0.02	—	73.4	73.4	< 0.005	< 0.005	—	73.6
Total	3.17	12.2	0.15	17.8	< 0.005	0.03	—	0.03	0.02	—	0.02	—	73.4	73.4	< 0.005	< 0.005	—	73.6
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	8.79	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	9.32	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	1.60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.29	0.26	0.01	1.61	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.99	5.99	< 0.005	< 0.005	—	6.01
Total	0.29	1.96	0.01	1.61	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.99	5.99	< 0.005	< 0.005	—	6.01

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	182	796	978	18.7	0.45	—	1,579
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	182	796	978	18.7	0.45	—	1,579
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	182	796	978	18.7	0.45	—	1,579
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	182	796	978	18.7	0.45	—	1,579
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	30.1	132	162	3.09	0.07	—	261

Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	30.1	132	162	3.09	0.07	—	261

4.4.2. Mitigated

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	182	796	978	18.7	0.45	—	1,579
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	182	796	978	18.7	0.45	—	1,579
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	182	796	978	18.7	0.45	—	1,579
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	182	796	978	18.7	0.45	—	1,579
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unrefrigerated Warehouse-No	—	—	—	—	—	—	—	—	—	—	—	30.1	132	162	3.09	0.07	—	261
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	30.1	132	162	3.09	0.07	—	261

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	208	0.00	208	20.8	0.00	—	727
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	208	0.00	208	20.8	0.00	—	727
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	208	0.00	208	20.8	0.00	—	727
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Total	—	—	—	—	—	—	—	—	—	—	—	208	0.00	208	20.8	0.00	—	727
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	34.4	0.00	34.4	3.44	0.00	—	120
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	34.4	0.00	34.4	3.44	0.00	—	120

4.5.2. Mitigated

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	208	0.00	208	20.8	0.00	—	727
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	208	0.00	208	20.8	0.00	—	727
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	208	0.00	208	20.8	0.00	—	727

Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	208	0.00	208	20.8	0.00	—	727
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	34.4	0.00	34.4	3.44	0.00	—	120
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	34.4	0.00	34.4	3.44	0.00	—	120

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.6.2. Mitigated

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7. 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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8.2. Mitigated

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

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
Demolition	Demolition	6/1/2025	6/29/2025	5.00	20.0	—
Site Preparation	Site Preparation	6/30/2025	7/14/2025	5.00	10.0	—
Grading	Grading	7/15/2025	8/26/2025	5.00	30.0	—
Building Construction	Building Construction	8/27/2025	10/21/2026	5.00	300	—
Paving	Paving	10/22/2026	11/19/2026	5.00	20.0	—
Architectural Coating	Architectural Coating	11/20/2026	12/18/2026	5.00	20.0	—

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

Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
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	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
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	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38

Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
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	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
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	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	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
Demolition	—	—	—	—
Demolition	Worker	15.0	18.5	LDA,LDT1,LDT2
Demolition	Vendor	—	10.2	HHDT,MHDT

Demolition	Hauling	0.00	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	20.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	172	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	67.2	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	34.5	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	18.5	LDA,LDT1,LDT2
Demolition	Vendor	—	10.2	HHDT,MHDT
Demolition	Hauling	0.00	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	20.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	172	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	67.2	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT

Architectural Coating	—	—	—	—
Architectural Coating	Worker	34.5	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	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	0.00	0.00	615,362	205,121	6,986

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)
Demolition	0.00	0.00	0.00	—	—
Site Preparation	—	—	15.0	0.00	—
Grading	—	—	90.0	0.00	—
Paving	0.00	0.00	0.00	0.00	2.67

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
Unrefrigerated Warehouse-No Rail	0.00	0%
Parking Lot	2.67	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	532	0.03	< 0.005
2026	0.00	532	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
Unrefrigerated Warehouse-No Rail	714	714	714	260,544	14,133	14,133	14,133	5,158,602
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Unrefrigerated Warehouse-No Rail	714	714	714	260,544	14,133	14,133	14,133	5,158,602
Parking Lot	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

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

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)
0	0.00	615,362	205,121	6,986

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.10.4. Landscape Equipment - Mitigated

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)
Unrefrigerated Warehouse-No Rail	1,894,781	532	0.0330	0.0040	7,798,960

Parking Lot	101,998	532	0.0330	0.0040	0.00

5.11.2. Mitigated

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)
Unrefrigerated Warehouse-No Rail	1,894,781	532	0.0330	0.0040	7,798,960
Parking Lot	101,998	532	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)
Unrefrigerated Warehouse-No Rail	94,868,231	0.00
Parking Lot	0.00	0.00

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Unrefrigerated Warehouse-No Rail	94,868,231	0.00
Parking Lot	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Unrefrigerated Warehouse-No Rail	386	—
Parking Lot	0.00	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Unrefrigerated Warehouse-No Rail	386	—
Parking Lot	0.00	—

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

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced

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

5.15.2. Mitigated

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

5.18.1.2. Mitigated

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

5.18.1.2. Mitigated

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)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	34.1	annual days of extreme heat
Extreme Precipitation	0.90	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.80	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score

Temperature and Extreme Heat	5	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	5	1	1	4
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	1	1	1	2
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	80.0
AQ-PM	7.52
AQ-DPM	21.9
Drinking Water	34.9
Lead Risk Housing	27.7
Pesticides	0.00
Toxic Releases	37.1
Traffic	59.7
Effect Indicators	—
CleanUp Sites	52.1
Groundwater	44.8
Haz Waste Facilities/Generators	16.6
Impaired Water Bodies	51.2
Solid Waste	84.7
Sensitive Population	—
Asthma	88.0
Cardio-vascular	89.5
Low Birth Weights	91.9
Socioeconomic Factor Indicators	—

Education	26.9
Housing	11.6
Linguistic	—
Poverty	52.5
Unemployment	90.6

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	44.97626075
Employed	30.46323624
Median HI	35.0442705
Education	—
Bachelor's or higher	42.93596818
High school enrollment	100
Preschool enrollment	39.79212113
Transportation	—
Auto Access	85.40998332
Active commuting	24.00872578
Social	—
2-parent households	51.18696266
Voting	75.34967278
Neighborhood	—
Alcohol availability	88.37418196
Park access	16.65597331
Retail density	8.469138971

Supermarket access	2.399589375
Tree canopy	0.71859361
Housing	—
Homeownership	62.60746824
Housing habitability	64.39112024
Low-inc homeowner severe housing cost burden	17.8108559
Low-inc renter severe housing cost burden	77.19748492
Uncrowded housing	68.66418581
Health Outcomes	—
Insured adults	64.22430386
Arthritis	4.4
Asthma ER Admissions	7.6
High Blood Pressure	8.9
Cancer (excluding skin)	9.1
Asthma	30.0
Coronary Heart Disease	6.8
Chronic Obstructive Pulmonary Disease	13.3
Diagnosed Diabetes	35.6
Life Expectancy at Birth	34.2
Cognitively Disabled	41.3
Physically Disabled	11.3
Heart Attack ER Admissions	2.7
Mental Health Not Good	48.5
Chronic Kidney Disease	20.1
Obesity	46.5
Pedestrian Injuries	48.3
Physical Health Not Good	39.9

Stroke	15.1
Health Risk Behaviors	—
Binge Drinking	57.0
Current Smoker	46.7
No Leisure Time for Physical Activity	58.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	58.1
Elderly	16.8
English Speaking	81.5
Foreign-born	11.0
Outdoor Workers	47.0
Climate Change Adaptive Capacity	—
Impervious Surface Cover	90.2
Traffic Density	37.9
Traffic Access	23.0
Other Indices	—
Hardship	32.7
Other Decision Support	—
2016 Voting	75.3

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	65.0
Healthy Places Index Score for Project Location (b)	46.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No

Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

JOHNSON ROAD WAREHOUSE PROJECT

TOWN OF APPLE VALLEY, SAN BERNARDINO COUNTY, CALIFORNIA

Biological Resources Assessment

Prepared For:
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October 2024

Johnson Road Warehouse Project

Town of Apple Valley, San Bernardino County, California

Biological Resources Assessment

The undersigned certify that the statements furnished in this report and exhibits present data and information required for this biological evaluation, and the facts, statements, and information presented is a complete and accurate account of the findings and conclusions to the best of our knowledge and beliefs.

Travis J. McGill
Director/Biologist

Thomas J. McGill, Ph.D.
Managing Director

October 2024

Table of Contents

EXHIBITS

APPENDIX

Section 1 Introduction

This report contains the findings of ELMT Consulting (ELMT) biological resources assessment for the Johnson Road Warehouse Project (Project) located in the Town of Apple Valley in San Bernardino County, California. ELMT biologist Andrew N. Mestas conducted a field survey and evaluated the condition of the habitat within the project site on and surrounding area (survey area) on September 24, 2024.

The habitat assessment was conducted to document existing site conditions and to assess the probability of occurrence of special-status[1] plant and wildlife species that could pose a constraint to project implementation. Special attention was given to the suitability of the habitat on the project site to support special-status plant and wildlife species identified by the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB), and other electronic databases as potentially occurring in the general vicinity of the project site.

The site was also evaluated for its potential to support natural drainage features, ponded areas, and/or water bodies that have the potential to fall under the regulatory authority of the of the United States Army Corps of Engineers (Corps), Regional Water Quality Control Board (Regional Board), or California Department of Fish and Wildlife (CDFW) pursuant to Sections 401 and 404 of the Federal Clean Water Act (CWA), the California Porter-Cologne Water Quality Control Act, and Section 1600 *et seq.* of the Fish and Game Code. A Delineation of State and Federal Jurisdictional Waters Report was prepared under separate cover.

1.1 PROJECT LOCATION

The project site is generally located south and east of Interstate 15, west of State Route 247, and north of State Route 18 in the Town of Apple Valley, San Bernardino County, California (Exhibit 1, *Regional Vicinity*). The site is depicted on the Apple Valley North quadrangle of the United States Geological Survey's (USGS) 7.5-minute map series within Section 16 of Township 6 North, Range 3 West (Exhibit 2, *Site Vicinity*). Specifically, the approximately 20 acre site is located south of Quarry Road, east of Dachshund Avenue, bound to the south by Johnson Road, and bound to the east by Navajo Road; and is located within Assessor Parcel Numbers (APNs) 0463-213-26, -27, and -28 (Exhibit 3, *Project Site*).

1.2 PROJECT DESCRIPTION

The project proposes to construct a single industrial warehouse building that encompass approximately 410,241 square feet on approximately 20 acres. The development will consist of structures to accommodate the proposed use in addition to accessory structures, loading docks, truck trailer parking, automobile parking, and associated infrastructure improvements. Refer to Appendix A, *Site Plan.*

[1] As used in this report, "special-status" refers to plant and wildlife species that are federally or State listed, proposed, or candidates; plant species that have been designated a California Native Plant Society (CNPS) Rare Plant Rank; and wildlife species that are designated by the California Department of Fish and Wildlife (CDFW) as fully protected, species of special concern, or watch list species.

N

0 12.5 25 50 Miles

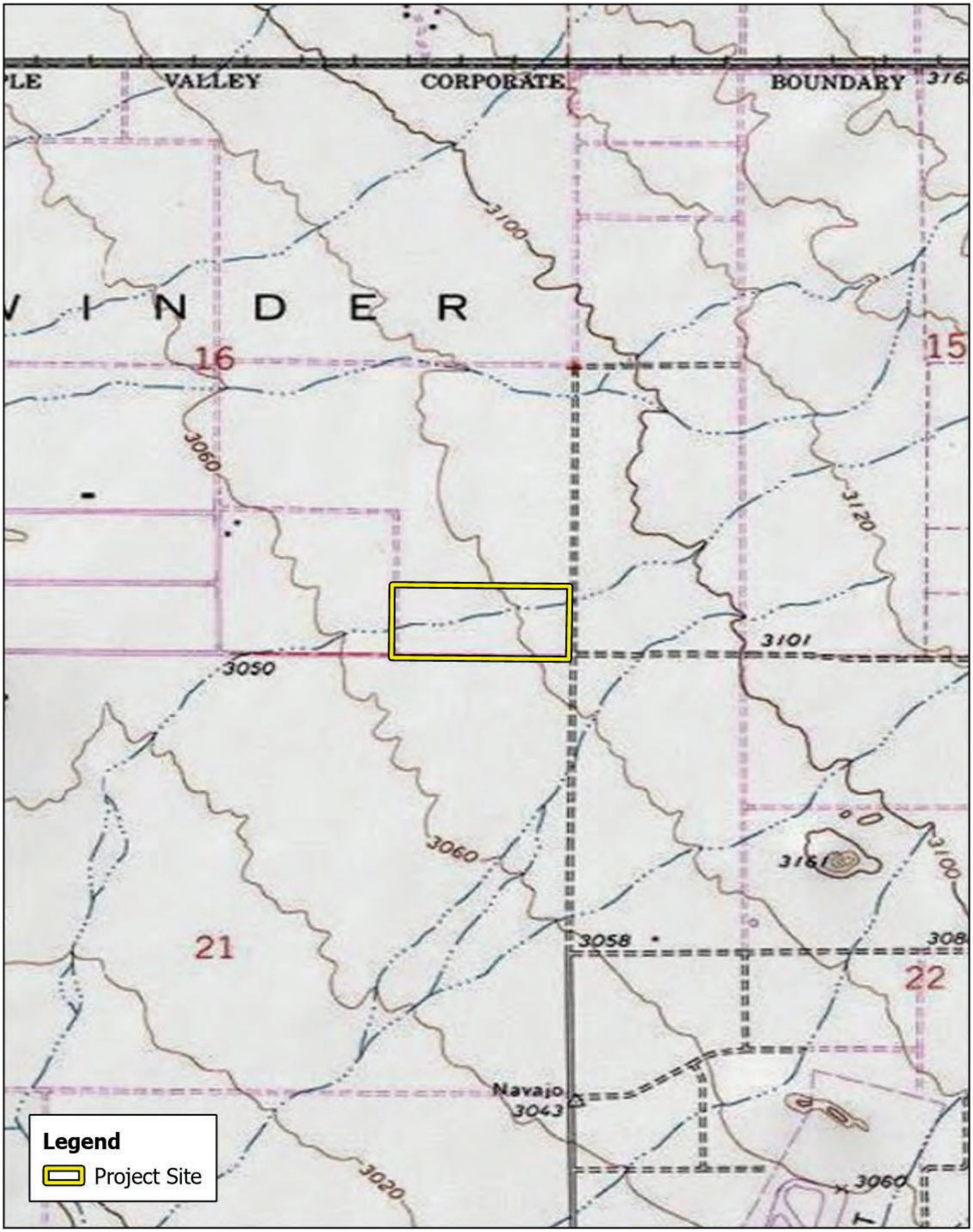
ELMT CONSULTING

JOHNSON ROAD WAREHOUSE PROJECT

Regional Vicinity

Exhibit 1

Source: ESRI World Street Map



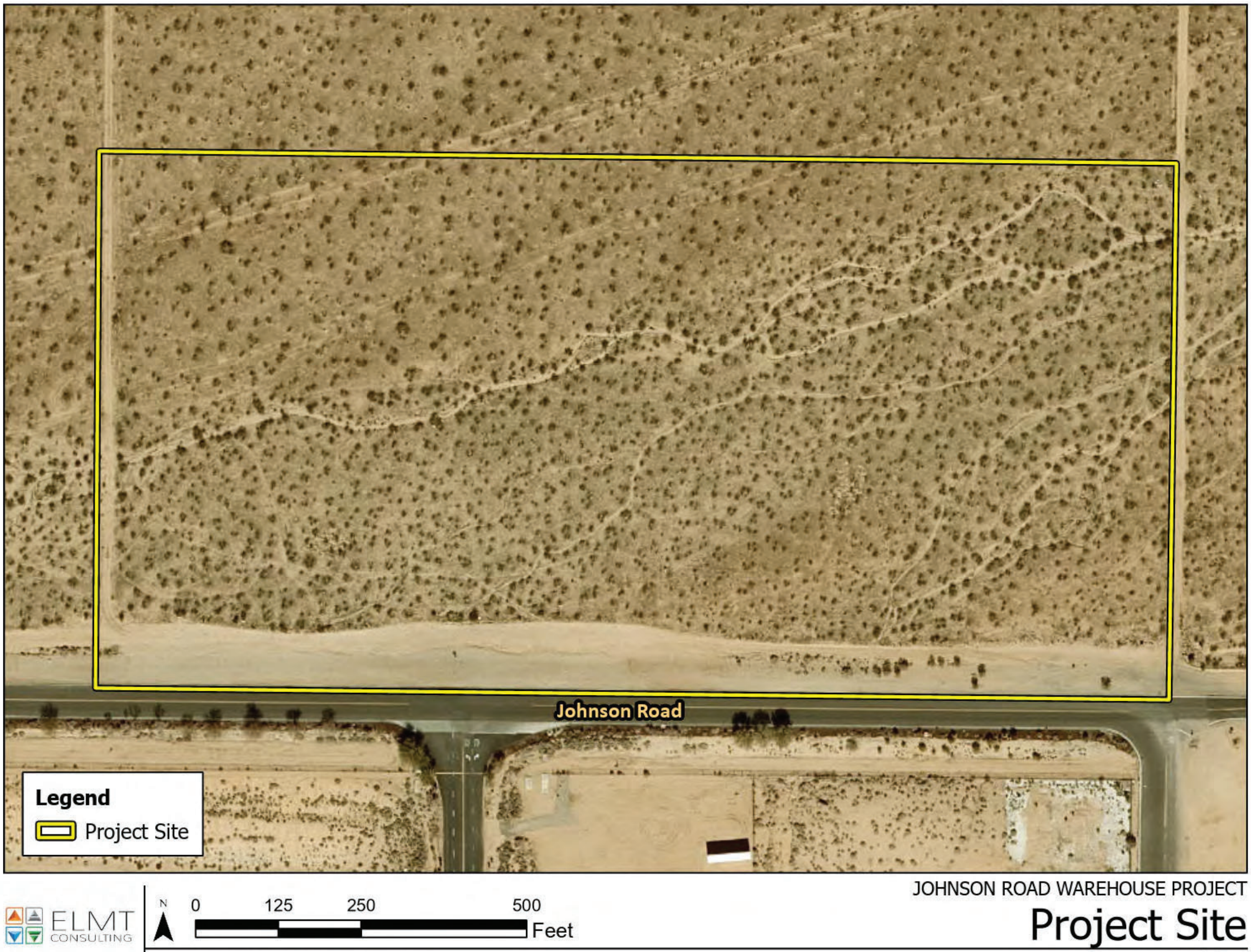
N
0 500 1,000 2,000
Feet

Source: USA Topo Maps, San Bernardino County

JOHNSON ROAD WAREHOUSE PROJECT

Site Vicinity

Exhibit 2



ELMT CONSULTING

Source: ESRI Aerial Imagery, San Bernardino County

JOHNSON ROAD WAREHOUSE PROJECT

Project Site

Exhibit 3

Section 2 Methodology

A literature review and records search were conducted to determine which special-status biological resources have the potential to occur on or within the general vicinity of the project site. In addition to the literature review, a general habitat assessment or field investigation of the project site was conducted. The field investigation was conducted to document existing conditions within the survey area and assess the potential for special-status biological resources to occur.

2.1 LITERATURE REVIEW

Prior to conducting the field investigation, a literature review and records search was conducted for special-status biological resources potentially occurring on or within the vicinity of the project site. Previously recorded occurrences of special-status plant and wildlife species and their proximity to the project site were determined through a query of the CDFW QuickView Tool in the Biogeographic Information and Observation System (BIOS), CNDDB Rarefind 5, the California Native Plant Society's (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants of California, Calflora Database, compendia of special-status species published by CDFW, and the United States Fish and Wildlife Service (USFWS) species listings.

All available reports, survey results, and literature detailing the biological resources previously observed on or within the vicinity of the project site were reviewed to understand existing site conditions and note the extent of any disturbances that have occurred on the project site that would otherwise limit the distribution of special-status biological resources. Standard field guides and texts were reviewed for specific habitat requirements of special-status and non-special-status biological resources, as well as the following resources:

- Google Earth Pro historic aerial imagery (1985-2024);
- San Bernardino County General Plan;
- United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS), Soil Survey[2];
- USFWS Critical Habitat designations for Threatened and Endangered Species; and
- USFWS National Wetlands Inventory (NWI).

The literature review provided a baseline from which to inventory the biological resources potentially occurring on the subject property. The CNDDB database was used, in conjunction with ArcGIS software, to locate the nearest recorded occurrences of special-status species and determine the distance from the project site.

[2] A soil series is defined as a group of soils with similar profiles developed from similar parent materials under comparable climatic and vegetation conditions. These profiles include major horizons with similar thickness, arrangement, and other important characteristics, which may promote favorable conditions for certain biological resources.

2.2 FIELD INVESTIGATION

ELMT biologist Andrew N. Mestas evaluated the extent and conditions of the plant communities found within the boundaries of the project site on September 24, 2024. Plant communities identified on aerial photographs during the literature review were verified in the field by walking meandering transects through the on-site plant communities and along boundaries between plant communities. The plant communities were evaluated for their potential to support special-status plant and wildlife species. In addition, field staff identified any natural corridors and linkages that may support the movement of wildlife through the area. Special attention was given to special-status habitats and/or undeveloped areas, which have higher potential to support special-status plant and wildlife species.

All plant and wildlife species observed, as well as dominant plant species within each plant community, were recorded. Wildlife detections were made through observation of scat, trails, tracks, burrows, nests, and/or visual and aural observation. In addition, site characteristics such as soil condition, topography, hydrology, anthropogenic disturbances, indicator species, condition of on-site plant communities, and presence of potential jurisdictional drainage and/or wetland features were noted.

2.3 SOIL SERIES ASSESSMENT

On-site and adjoining soils were researched prior to the field survey using the USDA NRCS Soil Survey for San Bernardino County Mojave River Area. In addition, a review of the local geological conditions and historical aerial photographs was conducted to assess the ecological changes that the project site has undergone.

2.4 PLANT COMMUNITIES

Plant communities were mapped using 7.5-minute USGS topographic base maps and aerial photography. The plant communities were classified in accordance with Sawyer, Keeler-Wolf and Evens (2009), CDFW (2010) and Holland (1986), delineated on an aerial photograph, and then digitized into ArcGIS. The ArcGIS application was used to compute the area of each plant community in acres.

2.5 PLANTS

Common plant species observed during the field survey were identified by visual characteristics and morphology in the field and recorded in a field notebook. Unusual and less familiar plants were photographed in the field and identified in the laboratory using taxonomic guides. Taxonomic nomenclature used in this study follows the 2012 Jepson Manual (Hickman 2012). In this report, scientific names are provided immediately following common names of plant species (first reference only).

2.6 WILDLIFE

Wildlife species detected during field surveys by sight, calls, tracks, scat, or other sign were recorded during surveys in a field notebook. Field guides were used to assist with identification of wildlife species during the survey included The Sibley Field Guide to the Birds of Western North America (Sibley 2003), A Field Guide to Western Reptiles and Amphibians (Stebbins 2003), and A Field Guide to Mammals of North America (Reid 2006). Although common names of wildlife species are fairly well standardized, scientific names are provided immediately following common names in this report (first reference only).

2.7 JURISDICTIONAL DRAINAGES AND WETLANDS

Aerial photography was reviewed prior to conducting a field investigation in order to locate and inspect any potential natural drainage features, ponded areas, or water bodies that may fall under the jurisdiction of the Corps, Regional Board, and/or CDFW. In general, surface drainage features indicated as blue-line streams on USGS maps that are observed or expected to exhibit evidence of flow are considered potential riparian/riverine habitat and are also subject to state and federal regulatory jurisdiction. In addition, ELMT reviewed jurisdictional waters information through examining historical aerial photographs to gain an understanding of the impact of land-use on natural drainage patterns in the area. The USFWS NWI and Environmental Protection Agency (EPA) Water Program "My Waters" data layers were also reviewed to determine whether any hydrologic features and wetland areas have been documented on or within the vicinity of the Project site.

Section 3 Existing Conditions

3.1 LOCAL CLIMATE

The Mojave Desert is found at elevations of 2,000 to 5,000 feet above mean sea level and is characterized by cool winter temperatures and warm summer temperatures, with its rainfall occurring almost entirely in the winter. Climatological data obtained for the area indicates the annual precipitation averages 6.18 inches per year. Almost all of the precipitation in the form of rain occurs in the months between October and April, with hardly any occurring between the months of May and September. The wettest month is February, with a monthly average total precipitation of 1.22 inches. The average minimum and maximum temperatures for the region are 45.7- and 78.9-degrees Fahrenheit (°F) respectively with December and January (monthly average 41° F) being the coldest months and July being the hottest (monthly average 100° F). Temperatures during the site visit were in the high-70s to mid-80s (° F).

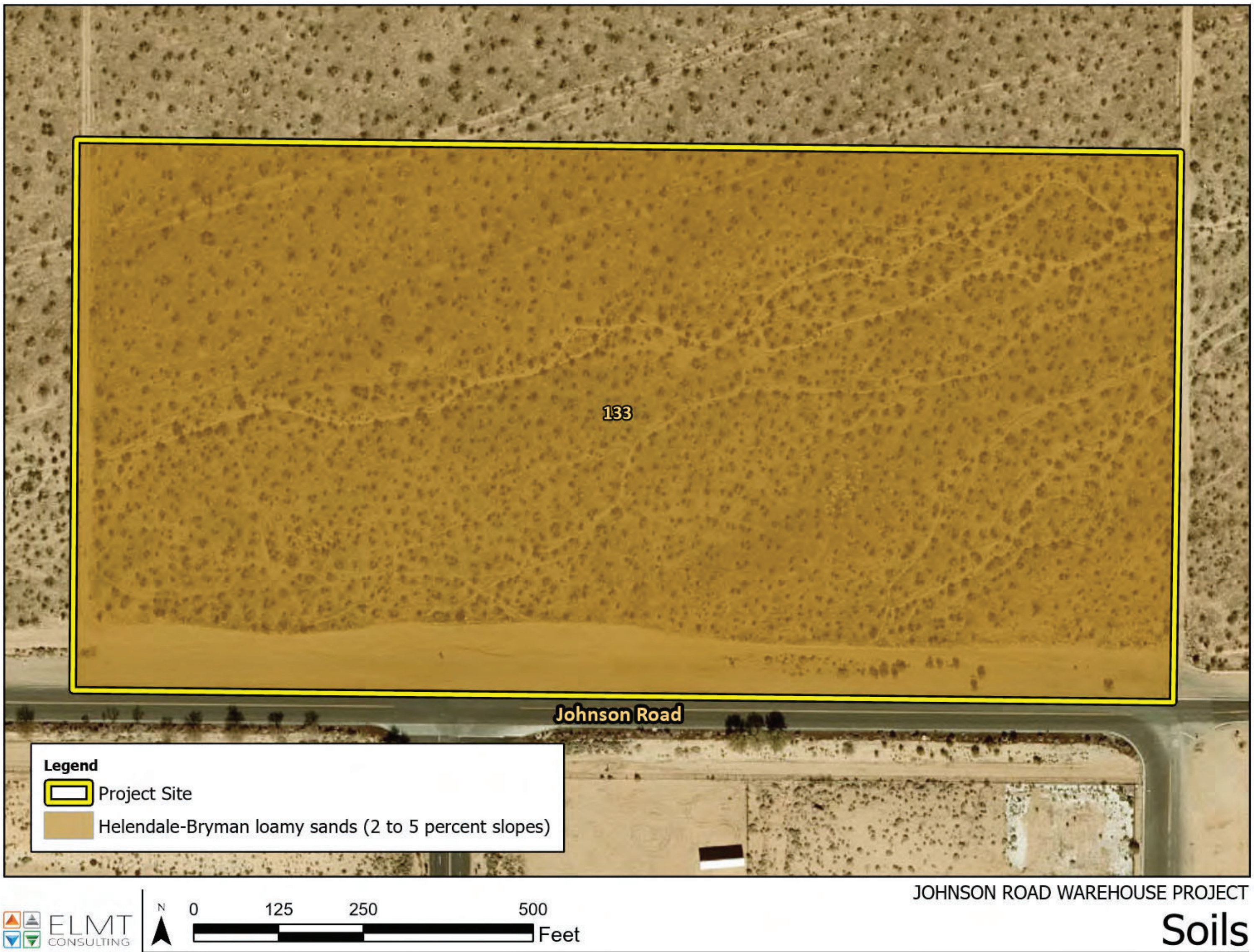
3.2 TOPOGRAPHY AND SOILS

On-site elevation ranges from approximately 3,076 to 3,096 feet above mean sea level and generally slopes from northeast to southwest. According to the topographic map, the project site occurs within the Apple Valley North 7.5-minute quadrangle. The site consists almost entirely of vacant/undeveloped land with disturbance along the southern boundary of the project site associated with vehicle use as a shoulder and turnaround area along Johnson Road.

According to the NRCS Custom Soil Resource Report, the project site is underlain by Helendale-Bryman loamy sands (2 to 5 percent slopes). Refer to Exhibit 4, *Soils*. Generally, soils within the project are undisturbed.

3.3 SURROUNDING LAND USES

The project site is located in a predominantly undeveloped area near the northeastern limits of the Town of Apple Valley. Limited rural residential and industrial parcels are scattered throughout the area, including adjacent to the southern portion of the site. Notable developments in the vicinity include Quarry Road and an associated railroad located adjacent to the northern boundary of the site, Apple Valley Speedway located approximately 1.67 miles to the northeast, Apple Valley Airport located approximately 0.8 miles to the southeast, and a Walmart distribution center located south and across Johnson Road.



ELMT CONSULTING

Source: ESRI Aerial Imagery, San Bernardino County

JOHNSON ROAD WAREHOUSE PROJECT

Soils

Exhibit 4

Section 4 Discussion

4.1 SITE CONDITIONS

The survey area supports a mix of undeveloped and disturbed land. The areas on the western, eastern, and southern boundaries of the project site range from mildly to heavily disturbed while the middle portion of the project site supports undeveloped, vacant land and native habitat. Disturbances on-site are primarily due to adjacent access roads and development associated with Johnson Road.

4.2 VEGETATION

During the field investigation one (1) plant community was observed within the boundary of the project site: creosote bush scrub (Exhibit 5, *Vegetation*). In addition, one (1) land cover type that would be classified as disturbed was observed onsite. This area is not a vegetation classification, but rather a land cover type. The vegetation community and land cover type are described in further detail below.

4.2.1 Larrea Tridentata Shrubland Alliance (Creosote Bush Scrub)

Creosote bush scrub typically occurs in well-drained soils on alluvial fans, bajadas, upland slopes and in minor, intermittent washes at an elevational range of below sea level to 1,000 m (Sawyer et al. 2009). Other shrubs were sparse, and included turpentine broom (*Thamnosa montana*), Mojave cottonthorn (*Tetradymia stenolepis*), cheesebush (*Ambrosia salsola*), Cooper's goldenbush (*Ericameria cooperi*), California broomsage (*Lepidospartum squamatum*), Nevada ephedra (*Ephedra nevadensis*), and turpentine broom (*Thamnosma montana*). In the understory, a dominance of nonnative grasses such as red brome (*Bromus madritensis*) and mediterranean grass (*Schismus sp.*) was evident. Other species present in the understory included bristly fiddleneck (*Amsinckia tessellata*) and western tansymustard (*Descurainia pinnata*). Western Joshua trees were scattered in the area. This alliance and the shrub associations that occurred in the Project Area are not sensitive natural communities (CDFW 2023).

4.2.2 Disturbed

Disturbed areas occur along the western, eastern, and southern boundaries of the project site due to adjacent dirt access roads and Johnson Road. The disturbed areas support both barren and sparsely vegetated land with some non-native species present. Some plant species observed in the disturbed areas include red bromes, western tansymustard, and bristly fiddleneck.

4.3 WILDLIFE

Plant communities provide foraging habitat, nesting and denning sites, and shelter from adverse weather or predation. This section provides a discussion of those wildlife species that were observed during the field survey or that are expected to occur within the project site. The discussion is to be used as a general reference and is limited by the season, time of day, and weather condition in which the field survey was conducted. Wildlife detections were based on calls, songs, scat, tracks, burrows, and direct observation.

4.3.1 Fish

No fish or hydrogeomorphic features (e.g., perennial creeks, ponds, lakes, reservoirs) with frequent sources of water that would provide suitable habitat for fish were observed on or immediately adjacent to the project site. Therefore, no fish are expected to occur and are presumed absent from the project site.

4.3.2 Amphibians

No amphibians or hydrogeomorphic features (e.g., perennial creeks, ponds, lakes, reservoirs) that would provide suitable habitat for amphibian species were observed on or immediately adjacent to the project site. Therefore, no amphibians are expected to occur on the project site and are presumed absent.

4.3.3 Reptiles

The project site provides suitable foraging and nesting habitat for a variety of reptilian species adapted to conditions within the Mojave Desert. The only reptilian species observed during the field investigation included western whiptail (*Aspidoscelis tigris*). Common reptilian species that have the potential to occur on-site include northern Mohave rattlesnake (*Crotalus scutulatus scutulatus*), common side-blotched lizard (*Uta stansburiana elegans*), desert horned lizard (*Phrynosoma platyrhinos calidiarum*), desert spiny lizard (*Sceloporus magister*), and Great Basin gopher snake (*Pituophis catenifer deserticola*).

4.3.4 Birds

The project site provides suitable foraging and nesting habitat for a variety of resident and migrant bird species adapted to conditions within the Mojave Desert. Avian species detected during the survey included California horned lark (*Eremophila alpestris actia*), rock pigeon (*Columba livia*), and American crow (*Corvus brachyrhynchos*). Common avian species expected to occur on-site include cactus wren (*Campylorhynchus brunneicapillus*), house finch (*Haemorhous mexicanus*), black-throated sparrow (*Amphispiza bilineata*), rock wren (*Salpinctes obsoletus*), mourning dove (*Zenaida macroura*), common raven (*Corvus corax*), California quail (*Callipepla californica*), and red-tailed hawk (*Buteo jamaicensis*).

4.3.5 Mammals

The project site provides suitable foraging and denning habitat for a variety of mammalian species adapted to conditions within the Mojave Desert. Most mammal species are nocturnal and are difficult to observe during a diurnal field visit. The only mammalian species observed during the field investigation were white-tailed antelope squirrel (*Ammospermophilus leucurus*) and black-tailed jackrabbit (*Lepus californicus*). Common mammalian species that have potential to occur on-site include desert woodrat (*Neotoma lepida*), coyote (*Canis latrans*), and desert cottontail (*Sylvilagus audubonii*). No bat species are expected to occur due to a lack of suitable roosting habitat (i.e., trees, crevices, abandoned structures) within and surrounding the project site.

4.4 NESTING BIRDS

The osnite plant community provides suitable foraging and nesting habitat for year-round and seasonal avian residents, as well as migrating songbirds that have adapted to conditions in the Mojave Desert.

Nesting birds are protected pursuant to the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (Sections 3503, 3503.5, 3511, and 3513 prohibit the take, possession, or destruction of birds, their nests or eggs). If construction occurs between February 1st and August 31st, a pre-construction clearance survey for nesting birds should be conducted within three (3) days of the start of any vegetation removal or ground disturbing activities to ensure that no nesting birds will be disturbed during construction.

4.5 WILDLIFE CORRIDORS AND LINKAGES

Habitat linkages provide links between larger undeveloped habitat areas that are separated by development. Wildlife corridors are similar to linkages but provide specific opportunities for animals to disperse or migrate between areas. A corridor can be defined as a linear landscape feature of sufficient width to allow animal movement between two comparatively undisturbed habitat fragments. Adequate cover is essential for a corridor to function as a wildlife movement area. It is possible for a habitat corridor to be adequate for one species yet inadequate for others. Wildlife corridors are significant features for dispersal, seasonal migration, breeding, and foraging. Additionally, open space can provide a buffer against both human disturbance and natural fluctuations in resources.

According to the San Bernardino County General Plan, the project site has not been identified as occurring within a Wildlife Corridor or Linkage. The open and natural habitats on and surrounding the project site allow for local wildlife to move from the project site into the undeveloped areas surrounding the project site in search of food, shelter, or nesting habitat. As designated by the San Bernardino County General Plan Open Space Element, the nearest major open space areas documented in the vicinity of the project site is the Oro Grande located approximately 6.6 miles southwest of the project site.

The project site is separated from these identified regional wildlife corridors and linkages by existing development, roadways, and undeveloped land; however, there are no riparian corridors or creeks connecting the project site to these areas. The undeveloped land in the immediate vicinity of the project site provides local wildlife movement opportunities for wildlife species moving through the immediate area. The project site does not function as a major wildlife movement corridor or linkage. As such, implementation of the proposed project is not expected to have a significant impact to wildlife movement opportunities or prevent local wildlife movement through the area since there is ample habitat adjacent to the project site to support wildlife movement opportunities.

4.6 STATE AND FEDERAL JURISDICTIONAL AREAS

There are three key agencies that regulate activities within inland streams, wetlands, and riparian areas in California. The Corps Regulatory Branch regulates discharge of dredge and/or fill materials into “waters of the United States” pursuant to Section 404 of the Federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Of the State agencies, the Regional Board regulates discharges into surface waters pursuant to Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act and the

CDFW regulates alterations to streambed and associated plant communities pursuant to Section 1602 of the California Fish and Game Code.

Two ephemeral drainages, named Drainage 1 and Drainage 2, were observed passing from the eastern boundary through the site and out through the western boundary of the project site during the field delineation. The drainages onsite flow into a storm drain that extends under Johnson Road and into detention basins associated with the Distribution Cetner south of the project site.

The onsite ephemeral drainage features are not relatively permanent, standing, or continuously flowing bodies of water and, therefore, will not qualify as waters of the United States under the regulatory authority of the Corps (*Sackett v. EPA* (2022) 143 S. Ct. 1322, 1336). However, the onsite drainage features will qualify was waters of the State and fall under the regulatory authority of the Regional Board and CDFW. Approximately 0.60 acres (3,910 linear feet) of non-wetland waters of the State occur on-site under the jurisdictional authority of the Regional Board. Likewise, the on-site drainage features exhibit characteristics consistent with CDFW's methodology and would be considered CDFW streambed totaling 0.60 acres (3,910 linear feet).

Impacts to the on-site jurisdictional areas will require a Corps Approved Jurisdictional Determination or Waiver, Regional Board CWA Section Report of Waste Discharge, and a CDFW Section 1602 Lake and Streambed Alteration Agreement prior to Project implementation.

4.7 SPECIAL-STATUS BIOLOGICAL RESOURCES

The CNDDB Rarefind 5, CNDDB Quickview Tool in BIOS and the CNPS Electronic Inventory of Rare and Endangered Vascular Plants of California were queried for reported locations of special-status plant and wildlife species as well as special-status natural plant communities in the Turtle Valley and Apple Valley North USGS 7.5-minute quadrangles. The habitat assessment evaluated the conditions of the habitat(s) within the boundaries of the project site to determine if the existing plant communities, at the time of the survey, have the potential to provide suitable habitat(s) for special-status plant and wildlife species.

The literature search identified four (4) special-status plant species and thirteen (13) special-status wildlife species as having the potential to occur within the Turtle Valley and Apple Valley North quadrangles. No special-status plant communities were identified within these quadrangles. Special-status plant and wildlife species were evaluated for their potential to occur within the project boundaries based on habitat requirements, availability and quality of suitable habitat, and known distributions. Species determined to have the potential to occur within the general vicinity are presented in *Table B-1: Potentially Occurring Special-Status Biological Resources* in Appendix C. Refer to Table C-1 for a determination regarding the potential occurrence of special-status plant and wildlife species within the project site.

4.7.1 Special-Status Plants

According to the CNDDB and CNPS, four (4) special-status plant species have been recorded in the Turtle Valley and Apple Valley North quadrangles (refer to Appendix C). Western Joshua tree was the only special-status plant species observed onsite during the field investigation. Further, based on habitat requirements for the identified special-status species and known distributions, it was determined that the undeveloped portions of the project site that support the creosote bush scrub plant community do not have the potential to support any of the other special-status species documented as occurring within the vicinity of the project site are presumed absent. With the exception of Joshua tree, no impacts to special-status species are expected to occur.

The presence of western Joshua Tree is described in further detail below.

Joshua Tree

The California Fish and Game Commission (Commission) designated the western Joshua tree as a candidate for listing under the California Endangered Species Act (CESA) in October 2020. This action afforded the western Joshua tree the same CESA protections as listed species, which means that removal of the desert trees was subject to fines and criminal penalties unless authorized by a "take" permit issued by the CDFW. Such permits were difficult to obtain, and when issued would authorize removal only in limited circumstances. The new law, which became effective July 1, 2023, streamlines the western Joshua Tree take permit process and broadens the purposes for which a permit may be issued. A western Joshua tree may now be removed for any purpose, so long as a permit is obtained and the removal is fully mitigated, or alternatively, an in-lieu mitigation fee is paid. The table below summarizes the new rules for the area in which the project site is located.

Location	Project Type	Requirements
Project is located within the reduce fee area.	All project types.	Full mitigation, or in-lieu fee as follows: • $1,000 per tree > 5 meters tall • $200 per tree 1 to 5 meters tall • $150 per tree < 1 meter tall

One (1) western Joshua tree was observed during the field investigation. If implementation of the proposed project should result in impacts to, or removal of any of the western Joshua trees occurring onsite, payment for mitigation will be needed into the western Joshua tree mitigation fund. A formal western Joshua tree census will be needed to catalog the trees onsite. Further, an Incidental Take Permit will need to be prepared and processed with CDFW for impacts to western Joshua tree.

4.7.2 Special-Status Wildlife

According to the CNDDB, thirteen (13) special-status wildlife species have been reported in the Turtle Valley and Apple Valley North quadrangles (refer to Appendix C). California horned lark (*Eremophila alpestric actia*) was the only special-status wildlife species observed on-site. Based on habitat requirements for specific species and the availability and quality of on-site habitats, it was determined that the project site has a moderate potential to provide suitable habitat for Costa's hummingbird (*Calypte costae*) and loggerhead shrike (*Lanius ludovicianus*); and low potential to provide suitable habitat for Cooper's hawk (*Accipiter cooperii*), golden eagle (*Aquila chysaetos*), burrowing owl, desert tortoise and prairie falcon (*Falco mexicanus*). Further it was determined that the project site does not provide suitable habitat for any of the other special-status wildlife species known to occur in the area.

Based on reginal significance, a more detailed discussion of desert tortoise, burrowing owl, and Mohave ground squirrel are discussed in further detail below.

Desert Tortoise

Desert tortoise is both federally and state listed as threatened. The Mojave population of the desert tortoise inhabits areas north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, and southwestern Utah, and in the Sonoran Desert in California. Throughout the majority of the Mojave Desert, desert tortoises occur most commonly on gentle sloping soils characterized by an even mix of sand and gravel and sparsely vegetated low-growing vegetation where there is abundant inter-shrub space. Typical habitat for the Mojave desert tortoise has been characterized as Mojavean desert scrub below 5,500 feet in elevation with a high diversity of perennial and ephemeral plants. The dominant shrub commonly associated with desert tortoise habitat is creosote bush; however, other shrubs including burrobush (*Ambrosia dumosa*), Mojave yucca, cheesebush (*Ambrosia salsola*), and Mojave prickly pear (*Opuntia mojavensis*) also provide suitable habitat. The desert tortoise spends 95 percent of its life underground and will opportunistically utilize burrows of various lengths, deep caves, rock and caliche crevices, or overhangs for cover. Therefore, a moderately friable soil is required to allow for burrow construction and ensure that burrows do not collapse.

Desert tortoise was determined to have a low potential to occur on the project site. However, since the project site supports a creosote bush scrub plant community, and desert tortoise are known to occur in the immediate area, a presence/absence survey is recommended to be conducted to ensure desert tortoise are absent from the project site.

Burrowing Owl

The burrowing owl is currently listed as Candidate Endangered species by CDFW. It is a grassland specialist distributed throughout western North America where it occupies open areas with short vegetation and bare ground within shrub, desert, and grassland environments. Burrowing owls use a wide variety of arid and semi-arid environments with well-drained, level to gently-sloping areas characterized by sparse vegetation and bare ground (Haug and Didiuk 1993; Dechant et al. 1999). Burrowing owls are dependent upon the presence of burrowing mammals (such as ground squirrels) whose burrows are used for roosting and nesting (Haug and Didiuk 1993). The presence or absence of colonial mammal burrows is often a major factor that limits the presence or absence of burrowing owls. Where mammal burrows are scarce, burrowing owls have been found occupying man-made cavities, such as buried and non-functioning drain pipes, stand-pipes, and dry culverts. Burrowing mammals may burrow beneath rocks and debris or large, heavy objects such as abandoned cars, concrete blocks, or concrete pads. They also require open vegetation allowing line-of-sight observation of the surrounding habitat to forage as well as watch for predators.

Burrowing owl was determined to have a low potential to occur on the project site. The project site provides line-of-site opportunities favored by burrowing owls, however minimal suitable burrows were observed onsite. Since burrowing owls are now a Candidate Endangered Species, and burrowing owl are known to occur in the immediate area, a focused survey is recommended to be conducted to ensure burrowing owl are absent from the project site.

Mohave Ground Squirrel

The Mohave ground squirrel is endemic to the western Mojave Desert, California. It occupies portions of Inyo, Kern, Los Angeles, and San Bernardino counties in the western Mojave Desert. In general, the species ranges from near Palmdale on the southwest to Lucerne Valley on the southeast, Olancha on the northwest and the Avawatz Mountains on the northeast (Gustafson 1993). The historical range of suitable habitat for this species as decreased by 10 to 16% due to urbanization and range-wide declines in trapping success over the last few decades suggesting that their populations are declining. This species was listed as threatened under the California Endangered Species Act in 1985.

The Mohave ground squirrel is a medium-sized ground squirrel that measures 8.3 to 9.1 inches (in; 21 to 23 centimeters; cm) in total length, 2.2 to 2.8 in (5.7 to 7.2 cm) in tail length, and 1.3 to 1.5 in (3.2 to 3.8 cm) in hind foot length (Hall 1981). The Mohave ground squirrel occupies all major desert scrub habitats in the western Mojave Desert. It has been observed in the following habitats described by Holland (1986) as:

- Mojave creosote scrub, dominated by creosote bush and burrobush,
- Desert saltbush scrub, dominated by various species of saltbush (*Atriplex*),
- Desert sink scrub, which is similar in composition to saltbush scrub, but is sparser and grows on poorly drained soils with high alkalinity,
- Desert greasewood scrub, with very sparse vegetation generally located on valley bottoms and dry lake beds,
- Shadscale scrub, which is dominated by *Atriplex confertifolia* and/or *A. spinescens,* and
- Joshua tree woodland, which includes Joshua trees widely scattered over a variety of shrub species (Gutafson 1993).

Mohave ground squirrel was not observed during the field investigation. Although a focused trapping survey was not performed, the field investigation and review of available information provided, allowed ELMT to offer its professional opinion as to the presence or absence of this species within the proposed project footprint.

Three criteria are typically used in assessing potential impacts to the Mohave ground squirrel:

Criteria 1: Is the site within the range of the species?

Per the *Current Status of the Mohave Ground Squirrel: an update covering the period 2013-2020* (Leitner 2021) the project site is located just outside the southeast portion of the historic range of Mohave ground squirrel. Further, the site is not located within any core areas, nor is it located within or immediately adjacent to any corridors or other known populations identified by Leitner.

The project supports plant communities suitable for Mohave ground squirrel habitat. Based on the data provided in *Current Status of the Mohave Ground Squirrel: an update covering the period 2013-2020* MGS have not been detected in the immediate vicinity of the project site during protocol grid and regional surveys. Several areas in the northern portion of Lucerne Valley, and west of the stie near Victorville have been surveyed to protocol level and regionally on several occasions, yet all of the surveys have been negative for Mohave ground squirrel in the immediate vicinity of the project site.

Criteria 2: Is there native habitat with a relatively diverse shrub component?

The majority of the project site supports a Mojavean desert scrub plant community. However, hoary saltbush, spiny hopsage, and winterfat were not observed during the investigation. These plant species are considered important forage for Mohave ground squirrel. Dr. Leitner postulated, based on trapping surveys in the southern portion of the Mohave ground squirrel range, that densities of < 24/ha for spiny hopsage and < 100/ha of winterfat on a site was considered poor forage and may be related to the absence of Mohave ground squirrel. Further, no wildlife corridors are expected to exist between the closest core MGS population and the project site since the project site is located near the southeastern portion of the species range. The maximum documented movement of MGS is 3.9 miles (Harris and Leitner 2005). Therefore, Mohave ground squirrel is presumed absent from the project site.

Criteria 3: Is the site surrounded by development and therefore isolated from potentially occupied habitat?

The project site is located in a predominantly undeveloped area in the southern limits of Lucerne Valley, at the base of the San Bernardino Mountains foothills. Predominant development in the vicinity of the site consists of commercial aggregate mining, stockpiling, and processing facilities to the north and east of the site and sparse residential development to the south. The project site is bounded to the west by Crystal Creek Road with undeveloped, vacant land beyond; to the south by Crescent Road with scattered residential developments and undeveloped, vacant land; to the east by Ladera Road, with undeveloped, vacant land beyond; and to the north by undeveloped, vacant land and the existing OMYA quarries and materials plant. In addition, the site is transected by Furnace Creek Road which enters the northern boundary and leads southeast through the site before exiting the site at the eastern boundary.

Based on habitat requirements for Mohave ground squirrel, known distributions, site conditions, and regional trapping studies, it was determined this species is presumed absent from the project site. No further focused surveys are recommended.

4.8 CRITICAL HABITAT

Under the federal Endangered Species Act, "Critical Habitat" is designated at the time of listing of a species or within one year of listing. Critical Habitat refers to specific areas within the geographical range of a species at the time it is listed that include the physical or biological features that are essential to the survival and eventual recovery of that species. Maintenance of these physical and biological features requires special management considerations or protection, regardless of whether individuals or the species are present or not. All federal agencies are required to consult with the United States Fish and Wildlife Service (USFWS) regarding activities they authorize, fund, or permit which may affect a federally listed species or its designated Critical Habitat. The purpose of the consultation is to ensure that projects will not jeopardize the continued existence of the listed species or adversely modify or destroy its designated Critical Habitat. The designation of Critical Habitat does not affect private landowners, unless a project they are proposing is on federal lands, uses federal funds, or requires federal authorization or permits (e.g., funding from the Federal Highways Administration or a CWA Permit from the Corps). If there is a federal nexus, then the federal agency that is responsible for providing the funding or permit would consult with the USFWS.

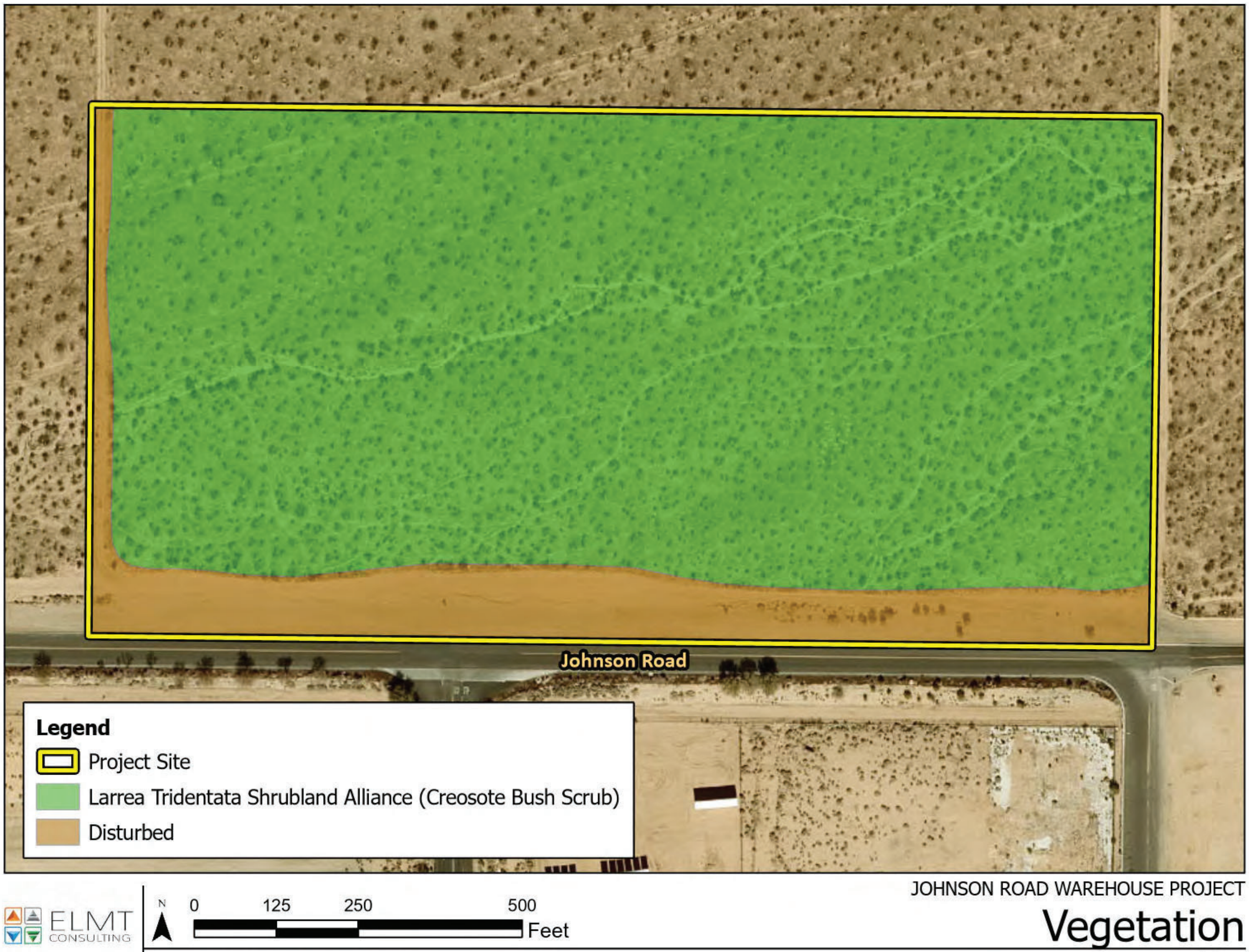
The project site is not located within federally designated Critical Habitat. Further, the closest Critical Habitat designation is located approximately 18 miles northeast of the project site for Mojave desert tortoise and 6.7 miles southwest of the project site for southwestern willow flycatcher (*Empidonax traillii extimus*) (Exhibit 6, *Critical Habitat*). Therefore, no impacts to federally designated Critical Habitat will occur from implementation of the proposed project.

4.9 DESERT NATIVE PLANT PROTECTION

In accordance with the Town of Apple Valley's Municipal Code, desert native plants are regulated under Section 9.76.020, *Desert Native Plant Protection*, of the Town's ordinance. The following desert native plants with stems two inches or greater in diameter or six feet or greater in height:

1) Dalea spinosa (smoketree).
2) All species of the family Agavaceae (century plants, nolinas, yuccas, cacti). Including the following:
    a. Mohave Yucca (*Yucca schidigera*)
    b. Lords candle (*Yucca whipplei*)
    c. Barrel cactus (*Ferocactus acanthodes*)
3) As species of the genus Prosopis (mesquites).
4) Creosote Rings, ten feet or greater in diameter.
5) All Joshua trees (mature and immature)
6) All plants protected or regulated by the State Desert Native Plant Act (i.e., Food and Agricultural Code 80001, et. seq.) shall be required to comply with the provisions of those statutes prior to the issuance of any county development permit or land use application approval. The Town Manager, or designee, is responsible for the issuance of any required wood tags, seals or permits.

In addition to the one western Johsua tree observed onsite one cactus/yucca species was observed onsite: diamond cholla (*Cylindropuntia ramosissima*).



ELMT CONSULTING

Source: ESRI Aerial Imagery, San Bernardino County

JOHNSON ROAD WAREHOUSE PROJECT

Vegetation

Exhibit 5

Section 5 Conclusion and Recommendations

The discussion below provides a summary of survey results; avoidance and minimization efforts; direct, indirect, and cumulative project impacts; and compensatory mitigation measures for each biological resource area required to be analyzed:

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

Special-Status Plant Species

Joshua tree was the only special-status plant species observed onsite during the field investigation. Based on habitat requirements for the identified special-status species and known distributions, it was determined that the undeveloped portions of the project site that support the creosote bush scrub plant community do not have the potential to support any of the other special-status species documented as occurring within the vicinity of the project site are presumed absent.

Recommended avoidance, minimization, and mitigation measures:

1. Wester Joshua Tree ITP

   Impacts to Joshua trees will be avoided to the maximum extent possible. However, if any Joshua trees will be impacted, compliance with CESA will be required and an ITP with CDFW will need to be prepared and processed. With payment into the western Joshua tree mitigation fund, and processing of an ITP, impacts to western Joshua tree will be less than significant.

Special-Status Wildlife Species

California horned lark was the only special-status wildlife species observed on-site. Based on habitat requirements for specific species and the availability and quality of on-site habitats, it was determined that the project site has a moderate potential to provide suitable habitat for Costa's hummingbird and loggerhead shrike; and low potential to provide suitable habitat for Cooper's hawk, golden eagle, burrowing owl, desert tortoise and prairie falcon. Further it was determined that the project site does not provide suitable habitat for any of the other special-status wildlife species known to occur in the area.

In order to ensure no impacts to the aforementioned species occur, the following avoidance, minimization, and mitigation measures are recommended:

2. Nesting Bird Mitigation

   Nesting birds are protected pursuant to the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (Sections 3503, 3503.5, 3511, and 3513 prohibit the take, possession, or destruction of birds, their nests or eggs). In order to protect migratory bird species, a nesting bird clearance survey should be conducted prior to any ground disturbance or vegetation removal activities that may disrupt the birds during the nesting season.

If construction occurs between February 1st and August 31st, a pre-construction clearance survey for nesting birds should be conducted within three (3) days of the start of any vegetation removal or ground disturbing activities to ensure that no nesting birds will be disturbed during construction. The biologist conducting the clearance survey should document a negative survey with a brief letter report indicating that no impacts to active avian nests will occur. If an active avian nest is discovered during the pre-construction clearance survey, construction activities should stay outside of a no-disturbance buffer. The size of the no-disturbance buffer will be determined by the wildlife biologist and will depend on the level of noise and/or surrounding anthropogenic disturbances, line of sight between the nest and the construction activity, type and duration of construction activity, ambient noise, species habituation, and topographical barriers. These factors will be evaluated on a case-by-case basis when developing buffer distances. Limits of construction to avoid an active nest will be established in the field with flagging, fencing, or other appropriate barriers; and construction personnel will be instructed on the sensitivity of nest areas. A biological monitor should be present to delineate the boundaries of the buffer area and to monitor the active nest to ensure that nesting behavior is not adversely affected by the construction activity. Once the young have fledged and left the nest, or the nest otherwise becomes inactive under natural conditions, construction activities within the buffer area can occur.

3. Burrowing Owl Focused Survey

   A burrowing owl focused survey is recommended to be conducted to ensure the absence of burrowing owl from the project site. The focused survey will conform to the protocol detailed in the 2012 CDFW *Staff Report on Burrowing Owl Mitigation*. The survey will consist of four (4) visits, with at least one (1) survey between February 15 and April 15 and a minimum of three (3) surveys at least three weeks apart between April 15 and July 15, with at least one survey after June 15.

   Although not anticipated, if burrowing owl are found onsite during the survey, coordination will need to occur with CDFW to determine if avoidance and minimization measures can be implemented to avoid any direct or indirect impacts to burrowing owl, or if a “Take” permit will need to be prepared and approved by CDFW.

4. Desert Tortoise Presence/Absence Survey

   A desert tortoise presence/absence survey is recommended to be conducted to ensure desert tortoise are absence from the project stie and will not be impacted by project implementation. Survey transects should be spaced at 10-meter (33-foot) intervals throughout the undeveloped portions of the project area to provide 100 percent visual coverage and increase the likelihood of locating desert tortoise and/or sign. All burrows, if present, will be thoroughly inspected for the presence of desert tortoise or evidence of recent use using non-intrusive methods (i.e., mirror, digital camera). Burrow characteristics including class, shape, orientation, size, and evidence of deterioration will be recorded on field data sheets.

Although not anticipated, if desert tortoise are found onsite during the survey, coordination will need to occur with the USFWS and CDFW to determine if avoidance and minimization measures can be implemented to avoid any direct or indirect impacts to desert tortoise, or if "Take" permits will need to be prepared and approved by the USFWS and CDFW.

Would the proposed Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?

Riparian Habitat and Special-Status Natural Communities

Two unnamed ephemeral drainage features were observed within the project site during the field delineation. No riparian habitat or special-status natural communities occur onsite.

5. Regulatory Approvals

   Impacts to the on-site jurisdictional areas will require a Corps Approved Jurisdictional Determination or Waiver, Regional Board CWA Section Report of Waste Discharge, and a CDFW Section 1602 Lake and Streambed Alteration Agreement prior to Project implementation.

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

Federally Protected Wetlands

No inundated areas, wetland features, or wetland plant species that would be considered wetlands as defined by Section 404 of the Clean Water Act occur within the proposed project footprint. As a result, implementation of the proposed project would not result in any impacts or have substantial adverse effect on federally protected wetlands.

Would the proposed Project 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?

Wildlife Corridors

The project site does not function as a major wildlife movement corridor or linkage. As such, implementation of the proposed project is not expected to have a significant impact to wildlife movement opportunities or prevent local wildlife movement through the area since there is ample habitat adjacent to the project site to support wildlife movement opportunities. Due to the lack of any identified impacts to wildlife movement, migratory corridors or linkages or native wildlife nurseries, no mitigation is required.

Would the proposed Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

<u>*Local Policies or Ordinances*</u>

Western Joshua tree and diamond cholla are regulated species pursuant to Section 9.76.02, *Desert Native Plant Protection*, of the Town's ordinance. In the event that avoidance is not feasible, the project applicant will be required to obtain a Tree or Plant Removal Permit from the Town in addition to an ITP for Joshua tree, prior to removal of any regulated tree or plant.

Would the proposed Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state Habitat Conservation Plan?

<u>*Local, Regional, and State Plans*</u>

The project site is not located within an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state Habitat Conservation Plan. Therefore, impacts to any local, regional, or state habitat conservation plans are not expected to occur from development of the proposed project, and mitigation is not required.

Section 6 References

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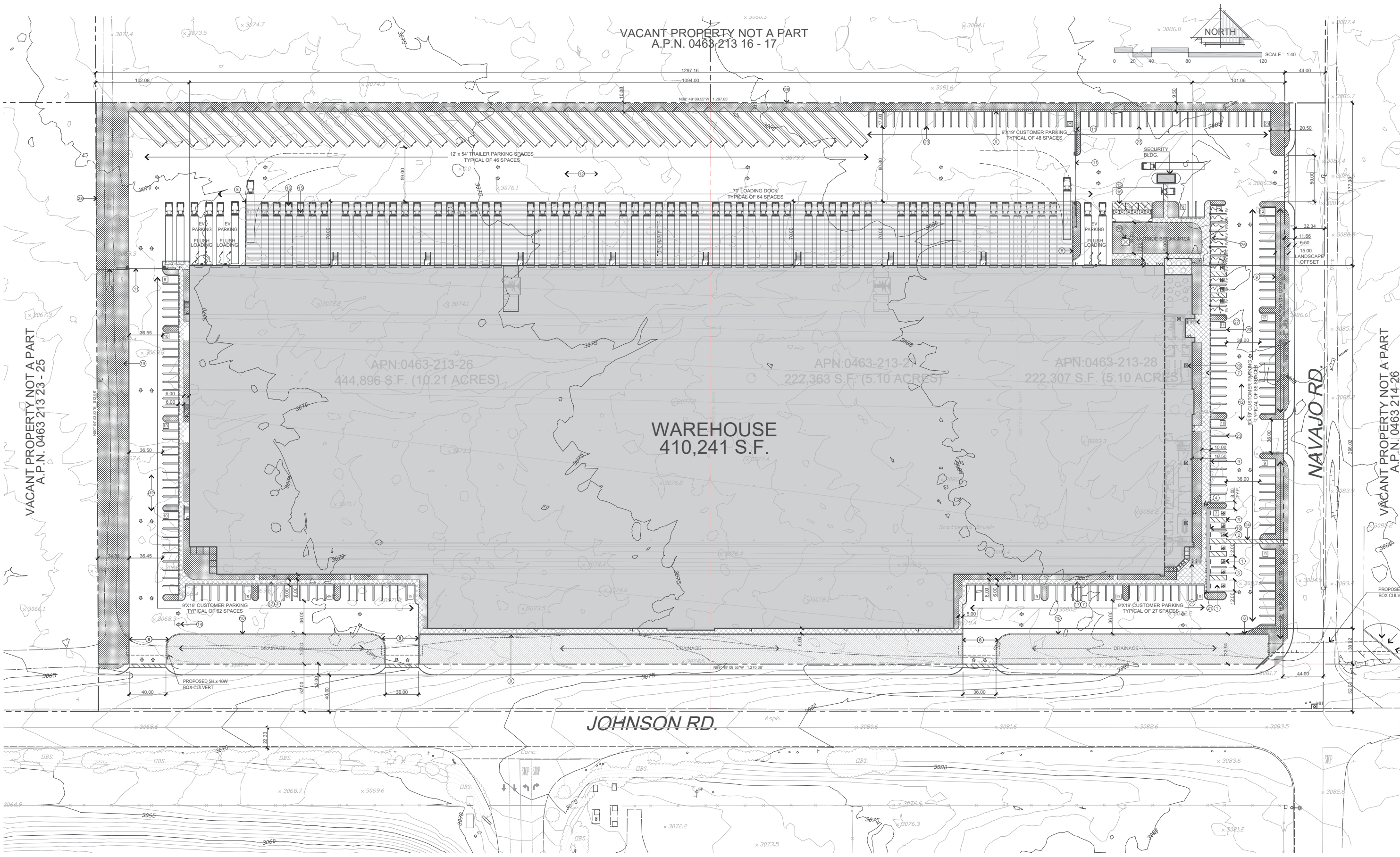
Appendix A Site Plan



SITE PLAN
SCALE = 1:40

KEYED NOTES

1. VAN ACCESSIBLE PARKING SPACE
2. ACCESSIBILITY STALL EMBLEM PAINTED AS SHOWN
3. 5' WIDE ACCESSIBILITY ACCESS W/ BLUE STRIPES
4. A.D.A. RAMP NOT TO EXCEED 8.33% MAX. SLOPE IN DIRECTION OF RUN.
5. WARNING SIGNAGE REGARDING UNAUTHORIZED USE OF DISABLED PARKING SPACES
6. TRUNCATED DOMES, 36" DEPTH MIN. x 60" WIDE
7. 4" NOMINAL THICK CONCRETE WALKWAYS
8. RETAINING WALL, SEE CIVIL PLANS
9. 6" WIDE CONCRETE CURB. W/ 2.5' PARKING NOSE OVER
10. 6" WIDE CONCRETE 'A' CURB.
11. 8' HIGH WROUGHT IRON FENCE AND WROUGHT IRON ROLLING GATE COLOR BLACK W/ VISION BLOCK - FACING NAVAJO RD. & JOHNSON RD.
12. PROPOSED A.C. PAVING - 4" OVER 4" CLASS II BASE OVER 12" OF COMPACTED SOIL.
13. 23' SITE LIGHT POLE STANDARD W/ 24" HIGH CONC. BASE W/ SHOE BOX STYLE FIXTURES & LIGHT SHIELD TO MEET 0.5 FOOTCANDLE LEVELS AT ALL PROPERTY LINE.
14. TRAFFIC FLOW DIRECTIONAL ARROWS PAINTED ON PAVING AS SHOWN ON PLAN
15. 6'-0" HIGH TRASH ENCLOSURE w/ 49' x 40' LOADING ZONE IN FRONT PER CITY STANDARDS. SEE SHEET TE-1 FOR DETAILS
16. 8" THK. REINFORCED CONCRETE PAD W/ 2% MAXIMUM SLOPE AWAY FROM T/E
17. CONCRETE SCREED LINES IN A 5' SQUARE GRID PATTERN
18. CONCRETE WHEEL STOP PER CITY STANDARD
19. LANDSCAPED AREA, SEE LANDSCAPING PLANS.
20. ELECTRICAL TRANSFORMER BY EDISON.
21. 12" Ø CONCRETE FILLED BOLLARDS
22. 12" WIDE STEPPING STRIP COMBINE W/ 6" CURB (18" WD. MONO POUR)
23. PAINTED PARKING HAIRPIN STRIPE.
24. 4' WIDE A.D.A. PATH OF TRAVEL
25. EV CHARGING STATION EQUIPMENT (TYP. 8)
26. "CLEAN AIR / VANPOOL / EV" PARKING IDENTIFICATION. CGBSC 5.105.5.2, TYP. OF 3
27. SHORT TERM PARKING BIKE RACKS TO ACCOMODATE 5% OF TOTAL VISITOR PARKING SPACES
28. 8' METAL CHAINLINK FENCE
29. A/C UNITS, SEE MECHANICAL PLANS

PARKING SUMMARY

REQUIRED PARKING PER G.F.A.:

AREA	RATIO	S.F.	# SPACES
WAREHOUSE (FIRST 40,000)	1:1000	40,000	40.0
(REMAINDER)	1:4000	349,823	87.4
OFFICE	3:1000	20,418	68.0
TOTAL REQUIRED PARKING SPACES			= 195 SPACES

PROVIDED PARKING:

STANDARD 9'X20' PARKING SPACES	= 203 SPACES
CAR EV PARKING SPACES (4 ADA EV. SPACES)	= 12 SPACES
ADA 9'X20' PARKING SPACES	= 7 SPACES
TOTAL PROVIDED VEHICLE PARKING SPACES	= 222 SPACES

TRUCK PARKING:

TRUCK EV PARKING SPACES (3 ARE ALSO LOADING DOCK SPACES)	= 6 SPACES
TRAILER PARKING SPACES	= 48 SPACES
LOADING DOCK SPACES	= 64 SPACES
TOTAL PROVIDED TRUCK PARKING	= 115 SPACES

SITE DATA

SITE AREA

AREA	SQ. FOOTAGE
NET LAND AREA (18.71 ACRES)	792,932 S.F.
GROSS LAND AREA (20 ACRES)	871,200 S.F.

PROPOSED LAND AREA & COVERAGE

AREA	SQ. FOOTAGE	% COVERAGE
BUILDING AREA	400,888	50.56%
A/C PAVING	280,320	35.35%
CONCRETE HARDSCAPE	20,755	2.62%
LANDSCAPED AREA	90,969	11.47%
TOTAL NET LAND AREA COVERAGE	792,932 S.F.	100%

SCOPE OF WORK

TO CONSTRUCT A 410,241 SQ.FT. INDUSTRIAL WAREHOUSE BUILDING WITH 13,195 SQ.FT. OFFICE SPACE (2 LEVELS), AND A 200 SQ.FT. SECURITY BUILDING ON A VACANT PARCEL.

PROJECT DATA

SITE ADDRESS:
T.B.D.

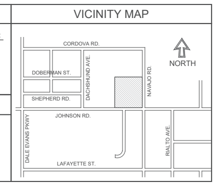
APPLICANT
55555 AMARGOSA LLC
CONTACT: SIMON BOUZAGLOU
PH: 323.721-2221
EMAIL: SIMON@PIXIOR.COM

ARCHITECT / REPRESENTATIVE:
STEENO DESIGN STUDIO, INC.
ARCHITECT: TOM STEENO
11774 HESPERIA RD. SUITE B-1
PH: 760.244.5001 FX: 760.244.1948

PARCEL DATA

A.P.N:	LEGAL DESCRIPTION:
A.P.N.# 0463-213-26	PARCEL MAP 14418, P.M. 181/84-85
A.P.N.# 0463-213-27	PARCEL MAP 14418, P.M. 181/84-85
A.P.N.# 0463-213-28	PARCEL MAP 14418, P.M. 181/84-85

VICINITY MAP



STEENO DESIGN STUDIO INC.
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DATE FINISHED: SEPTEMBER 2023

REVISIONS: PLANNING_JANUARY 2024

THESE PLANS SHALL COMPLY WITH THE 2022 CALIFORNIA BUILDING CODE WHICH ADOPTS THE 2022 CMC, 2022 CPC, 2022 CEC, 2022 CGC, 2022 CRC AND THE 2022 ENERGY STANDARDS

LICENSED ARCHITECT THOMAS R. STEENO C-26448 REN. 2/28/25 STATE OF CALIFORNIA

PROJECT: INDUSTRIAL DEVELOPMENT
AMARGOSA LLC

PROJECT LOCATION:
JOHNSON RD.
APPLE VALLEY CA, 92307
A.P.N. 0463-213-26, 27 & 28

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JOB NO.: C22-A14

SHEET NAME: SITE PLAN

PAGE: A-0

Appendix B Site Photographs

Photograph 1: From the southeastern corner of the project site, looking west.

Photograph 2: From the southeastern corner of the project site, looking northwest.

Photograph 3: From the northeastern corner of the project site, looking south.

Photograph 4: From the northeastern corner of the project site, looking west.

Photograph 5: From the southwestern corner of the project site, looking north.

Photograph 6: From the southwestern corner of the project site, looking east.

Photograph 7: From the northwestern corner of the project site, looking east.

Photograph 8: From the northwestern corner of the project site, looking south.

Appendix C Potentially Occurring Special-Status Biological Resources

a 1: Pot t a rr g p a tat o og a o r

Scientific Name ommon ame	**tat**	**a tat r pt o**	**r t**	**Pot t a to r**
P P				
Accipiter Cooperii oopers hawk	Fe : :	Foun in mi e an eci uous forests, open an riparian woo lan s, small, woo e lots, an foreste mountain regions.	o	**o** lthough there is marginal foraging ha itat on site, there is no suita le nesting ha itat on or within the icinit of the sur e area.
Aquila chyrsaetos gol en eagle	Fe : one : F	unts o er marshes an along ri ers. enerall foun in open mountain areas, foothills, plains, an open countr like tun ra, prairie, rangelan , an esert.	o	**o** lthough there is marginal foraging ha itat on site, there is no suita le nesting ha itat on or within the icinit of the sur e area.
Athene cunicularia urrowing owl	Fe : one :	refers ha itat with short, sparse egetation with few shru s an well raine soils in grasslan , shru steppe, an esert ha itats. rimaril a grasslan species, ut it persists an e en thri es in some lan scapes highl altere human acti it . ccurs in open, annual or perennial grasslan s, eserts, an scru lan s characteri e low growing egetation. he o erri ing characteristics of suita le ha itat appear to e urrows for roosting an nesting an relati el short egetation with onl sparse shru s an taller egetation.	o	**o** he project site pro i es line of site opportunities. owe er, no suita le urrows were o ser e onsite. urrowing owl are known to occur in the area.
Bombus crotchii rotch um le ee	Fe : one :	olonial species that li es almost e clusi el from coastal alifornia east towar s the ierra asca e rest an can e foun uncommonl in western e a a an south through aja alifornia. nha its grasslan an scru ha itats in hotter an rier climates than most other um le ee species an is onl capa le of tolerating a narrow range of climatic con itions. his species usuall nests un ergroun , often in a an one ro ent ens.	o	**Pr t** here is no suita le ha itat present within or a jacent to the project site.
Buteo swainsoni wainson s hawk	Fe : one :	pical ha itat is open esert, grasslan , or croplan containing scattere , large trees or small gro es. ree s in stan s with few trees in juniper sage flats, riparian areas, an in oak sa annah in the entral alle . Forages in a jacent grasslan or suita le grain or alfalfa fiel s or li estock pastures.	o	**Pr t** here is no suita le ha itat present within or a jacent to the project site.
Calypte costae osta s humming ir	Fe : one : one	esert an semi esert, ari rush foothills an chaparral. esert humming ir that ree s in the onoran an oja e eserts. eparts esert heat mo ing into chaparral, scru , an woo lan ha itats.	o	**o rat** uita le ha itat present within an a jacent to the project site.

Scientific Name ommon ame	tat	a tat r pt o	r t	Pot t a to r
Eremophila alpestris actia alifornia horne lark	Fe : one :	enerall foun in shortgrass prairies, grasslan s, istur e fiel s, or similar ha itat t pes along the coast or in eserts. rees are shru s are usuall scarce or a sent. enerall rare in montane, coniferous, or chaparral ha itats. Forms large flocks outsi e of the ree ing season.	es	**Pr t** his species was o ser e foraging onsite.
Falco mexicanus prairie falcon	Fe : one :	ommonl occur in ari an semiari shru lan an grasslan communit t pes. lso occasionall foun in open parklan s within coniferous forests. uring the ree ing season, the are foun commonl in foothills an mountains which pro i e cliffs an escarpments suita le for nest sites.	o	**o** lthough there is marginal foraging ha itat on site, there is no suita le nesting ha itat on or within the icinit of the sur e area.
Gopherus agassizii oja e esert tortoise	Fe : :	ccurs in esert scru , esert wash, an oshua tree ha itats with fria le, san , well raine soils for nest an urrow construction. ighest ensities occur in creosote ush scru with e tensi e annual wil flower looms an succulents with little to no non nati e plant species.	o	**o** o suita le urrows were o ser e onsite, howe er this species is known to occur in the area.
Lanius ludovicianus loggerhea shrike	Fe : one :	refers open ha itats with are groun , scattere shru s, an areas with low or sparse her aceous co er inclu ing open canopie alle foothill har woo , riparian, pin on juniper, esert riparian, creosote ush scru , an oshua tree woo lan . e uires suita le perches inclu ing trees, posts, fences, utilit lines, or other perches.	o	**o rat** uita le ha itat present within an a jacent to the project site.
Siphateles bicolor mohavensis oha e tui chu	Fe : one :	he onl fish nati e to the oja e i er. estricte from the ase of the an erna ino ountains to o a r ake. e uires slow mo ing alkali waters with an a un ance of a uatic egetation. an e foun in eep pools or shallower out flow streams.	o	**Pr t** o suita le ha itat is present within or a jacent to the project site.
Taxidea taxus merican a ger	Fe : one :	rimaril occup grasslan s, parklan s, farms, tallgrass an shortgrass prairies, mea ows, shru steppe communities an other treeless areas with san loam soils where it can ig more easil for its pre . ccasionall foun in open chaparral with less than plant co er an riparian ones.	o	**Pr t** o suita le ha itat is present within or a jacent to the project site.
Toxostoma lecontei e onte s thrasher	Fe : one :	n uncommon to rare, local resi ent in southern alifornia eserts from southern ono o. south to the e ican or er, an in western an southern an oa uin alle . ccurs primaril in open esert wash, esert scru , alkali esert scru , an esert succulent shru ha itats also occurs in oshua tree ha itat with scattere shru s.	o	**Pr t** o suita le ha itat is present within or a jacent to the project site.

P P P				
Cymopterus deserticola esert c mopterus	Fe : one : one : .	rows in eep, loose, well raine , an fine to coarse san soils of allu ial fans an asins. Foun in oja e creosote ush scru , esert salt ush scru , an oshua tree woo lan ha itats.	o	**Pr t** o suita le ha itat is present within or a jacent to the project site.
Diplacus mohavensis oja e monke flower	Fe : one : one : .	Foun onl in the oja e esert, growing in san or gra ell ha itat along hillsi es an slopes, limestone, granite, an fine gra el in wash ottoms an e ges. rows at ele ations of , to , feet. looms from pril to a .	o	**Pr t** o suita le ha itat is present within or a jacent to the project site.
Monardella exilis oja e monar ella	Fe : one : one : .	Foun onl in the oja e esert an southern ierra e a a. rows at ele ations of , to , feet. Foun in esert scru an oshua tree woo lan ha itats, as well as pin on pine woo lan s. looms from pril to eptem er.	o	**Pr t** o suita le ha itat is present within or a jacent to the project site.
Yucca brevifolia western oshua tree	Fe : : one :	ccurs in a ariet of ari ha itats within the oja e esert. Foun at ele ations ranging from , to , feet. looming perio is from arch to une.	es	**Pr t** ne tree was o ser e onsite.

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Fe eral hreatene
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alifornia n angere
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alifornia an i ate hreatene
eliste
F alifornia Full rotecte
alifornia pecies of pecial oncern
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an i ate n angere

a or a at P a t o t P
California Rare Plant Rank
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lants are, hreatene , or n angere in alifornia, ut ore ommon lsewhere
lants of imite istri ution atch ist

Threat Ranks
. o eratel threatene in alifornia
. ot er threatene in alifornia

Appendix D Regulations

Spe ia stat s spe ies are nati e spe ies that ha e een a orded spe ia ega or anage ent prote tion e a se o on ern or their ontin ed existen e here are se era ategories o prote tion at oth edera and state e e s depending on the agnit de o threat to ontin ed existen e and existing no edge o pop ation e e s

ra g at o

Endangered Species Act of

Fe erall liste threatene an en angere species an their ha itats are protecte un er pro isions of the Fe eral n angere pecies ct . ection of the prohi its take of threatene or en angere species. ake un er the is efine as to harass, harm, pursue, hunt, shoot, woun , kill, trap, capture, or collect, or to attempt to engage in an of the specificall enumerate con uct. he presence of an fe erall threatene or en angere species that are in a project area generall imposes se ere constraints on e elopment, particularl if e elopment woul result in take of the species or its ha itat. n er the regulations of the , the nite tates Fish an il life er ice F ma authori e take when it is inci ental to, ut not the purpose of, an otherwise lawful act.

ritical a itat is esignate for the sur i al an reco er of species liste as threatene or en angere un er the . ritical a itat inclu es those areas occupie the species, in which are foun ph sical an iological features that are essential to the conser ation of an liste species an which ma re uire special management consi erations or protection. ritical a itat ma also inclu e unoccupie ha itat if it is etermine that the unoccupie ha itat is essential for the conser ation of the species.

hene er fe eral agencies authori e, fun , or carr out actions that ma a ersel mo if or estro ritical a itat, the must consult with F un er ection of the . he esignation of ritical a itat oes not affect pri ate lan owners, unless a project the are proposing uses fe eral fun s, or re uires fe eral authori ation or permits e.g., fun ing from the Fe eral ighwa ministration or a permit from the . . rm orps of ngineers orps .

f F etermines that ritical a itat will e a ersel mo ifie or estro e from a propose action, the F will e elop reasona le an pru ent alternati es in cooperation with the fe eral institution to ensure the purpose of the propose action can e achie e without loss of ritical a itat. f the action is not likel to a ersel mo if or estro ritical a itat, F will inclu e a statement in its iological opinion concerning an inci ental take that ma e authori e an specif terms an con itions to ensure the agenc is in compliance with the opinion.

Migratory Bird Treaty Act

he igrator ir reat ct . . o ernment o e makes it unlawful to pursue, capture, kill, possess, or attempt to o the same to an migrator ir or part, nest, or egg of an such ir liste in wil life protection treaties etween the nite tates, reat ritain, e ico, apan, an the countries of the former o iet nion, an authori es the . . ecretar of the nterior to protect an regulate the taking of migrator ir s. t esta lishes seasons an ag limits for hunte species an protects migrator ir s, their occupie nests, an their eggs F , .

he co ers the taking of an nests or eggs of migrator ir s, e cept as allowe permit pursuant to F , art . istur ances causing nest a an onment an or loss of repro ucti e effort i.e., killing or a an onment of eggs or oung ma also e consi ere take. his regulation seeks to protect migrator ir s an acti e nests.

n , the was amen e to inclu e protection for migrator ir s of pre e.g., raptors . i families of raptors occurring in orth merica were inclu e in the amen ment: ccipitri ae kites, hawks, an eagles athart i ae ew orl ultures Falconi ae falcons an caracaras an ioni ae ospre s trigi ae t pical owls an toni ae arn owls . he pro isions of the amen ment to the protects all species an su species of the families liste a o e. he protects o er species inclu ing geese, ucks, shore ir s, raptors, song ir s an man relati el common species.

tat g at o

California Environmental uality Act CE A

he alifornia n ironmental ualit ct pro i es for the protection of the en ironment within the tate of alifornia esta lishing tate polic to pre ent significant, a oi a le amage to the en ironment through the use of alternati es or mitigation measures for projects. t applies to actions irectl un ertaken, finance , or permitte tate lea agencies. f a project is etermine to e su ject to , the lea agenc will e re uire to con uct an nitial tu if the etermines that the project ma ha e significant impacts on the en ironment, the lea agenc will su se uentl e re uire to write an n ironmental mpact eport . fin ing of non significant effects will re uire either a egati e eclaration or a itigate egati e eclaration instea of an . ection of the ui elines in epen entl efines en angere an rare species separatel from the efinitions of the alifornia n angere pecies ct . n er , en angere species of plants or animals are efine as those whose sur i al an repro uction in the wil are in imme iate jeopar , while rare species are efine as those who are in such low num ers that the coul ecome en angere if their en ironment worsens.

California Endangered Species Act CESA

n a ition to fe eral laws, the state of alifornia implements the which is enforce F . he program maintains a separate listing of species e on the F , although the pro isions of each act are similar.

tate liste threatene an en angere species are protecte un er pro isions of the . cti ities that ma result in take of in i uals efine in as hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill are regulate F . a itat egra ation or mo ification is not inclu e in the efinition of take un er . onetheless, F has interprete take to inclu e the estruction of nesting, enning, or foraging ha itat necessar to maintain a ia le ree ing population of protecte species.

he tate of alifornia consi ers an en angere species as one whose prospects of sur i al an repro uction are in imme iate jeopar . threatene species is consi ere as one present in such small num ers throughout its range that it is likel to ecome an en angere species in the near future in the a sence of special protection or management. rare species is one that is consi ere present in such small num ers throughout its range that it ma ecome en angere if its present en ironment worsens. tate threatene an en angere species are full protecte against take, as efine a o e.

he F has also pro uce a species of special concern list to ser e as a species watch list. pecies on this list are either of limite istri ution or their ha itats ha e een re uce su stantiall , such that a threat to their populations ma e imminent. pecies of special concern ma recei e special attention uring en ironmental re iew, ut the o not ha e formal statutor protection. t the fe eral le el, F also uses the la el species of concern, as an informal term that refers to species which might e in nee of concentrate conser ation actions. s the pecies of oncern esignate F o not recei e formal legal protection, the use of the term oes not necessaril ensure that the species will e propose for listing as a threatene or en angere species.

Fish and Game Code

Fish an ame o e ections , . , , an are applica le to natural resource management. For e ample, ection of the o e makes it unlawful to estro an ir s nest or an ir s eggs that are protecte un er the . Further, an ir s in the or ers Falconiformes or trigiformes ir s of re , such as hawks, eagles, an owls are protecte un er ection . of the Fish an ame o e which makes it unlawful to take, possess, or estro their nest or eggs. consultation with F ma e re uire prior to the remo al of an ir of pre nest that ma occur on a project site. ection of the Fish an ame o e lists full protecte ir species, where the F is una le to authori e the issuance of permits or licenses to take these species. ertinent species that are tate full protecte the tate inclu e gol en eagle *A i a hr saetos* an white taile kite *an s e r s .* ection of the Fish an ame o e makes it unlawful to take or possess an migrator nongame ir as esignate in the or an part of such migrator nongame ir e cept as pro i e rules an regulations a opte the ecretar of the nterior un er pro isions of the .

Native Plant Protection Act

ections of the Fish an ame o e were e elope to preser e, protect, an enhance are an n angere plants in the state of alifornia. he act re uires all state agencies to use their authorit to carr out programs to conser e n angere an are nati e plants. ro isions of the ati e lant rotection ct prohi it the taking of liste plants from the wil an re uire notification of the F at least ten a s in a ance of an change in lan use which woul a ersel impact liste plants. his allows the F to sal age liste plant species that woul otherwise e estro e .

California Native Plant Society Rare and Endangered Plant Species

ascular plants liste as rare or en angere the , ut which ha e no esignate status un er F or are efine as follows:

alifornia are lant ank

lants resume tirpate in alifornia an either are or tinct lsewhere

lants are, hreatene , or n angere in alifornia an lsewhere lants resume tirpate in alifornia, ut ore ommon lsewhere

lants are, hreatene , or n angere in alifornia, ut ore ommon lsewhere

lants a out hich ore nformation is ee e e iew ist

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hreat anks

. eriousl threatene in alifornia o er of occurrences threatene high egree an imme iac of threat

. o eratel threatene in alifornia occurrences threatene mo erate egree an imme iac of threat

. ot er threatene in alifornia of occurrences threatene low egree an imme iac of threat or no current threats known .

here are three e agen ies that reg ate a ti ities ithin in and strea s et ands and riparian areas in a i ornia he orps eg ator Bran h reg ates a ti ities p rs ant to Se tion o the edera ean ater A t A and Se tion o the i ers and ar ors A t the State agen ies the reg ates a ti ities nder the ish and a e ode Se tion and the egiona Board reg ates a ti ities p rs ant to Se tion o the A and the a i ornia Porter o ogne ater a it ontro A t

ra g at o

Section of the Clean ater Act

n accor ance with the e ise efinition of aters of the nite tates onforming eptem er , , waters of the nite ates are efine as follows:

a ***aters of the nited States*** means:

aters which are:

i urrentl use , or were use in the past, or ma e suscepti le to use in interstate or foreign commerce, inclu ing all waters which are su ject to the e an flow of the ti e

ii he territorial seas or

iii nterstate waters

mpoun ments of waters otherwise efine as waters of the nite tates un er this efinition, other than impoun ments of waters i entifie un er paragraph a of this section

ri utaries of waters i entifie in paragraph a or of this section that are relati el permanent, stan ing or continuousl flowing o ies of water

etlan s a jacent to the following waters:

i aters i entifie in paragraph a of this section or

ii elati el permanent, stan ing or continuousl flowing o ies of water i entifie in paragraph a or a of this section an with a continuous surface connection to those waters

ntrastate lakes an pon s not i entifie in paragraphs a through of this section that are relati el permanent, stan ing or continuousl flowing o ies of water with a continuous surface connection to the waters i entifie in paragraph a or a of this section

he following are not waters of the nite tates e en where the otherwise meet the terms of paragraphs a through of this section:

aste treatment s stems, inclu ing treatment pon s or lagoons, esigne to meet the re uirements of the lean ater ct

rior con erte croplan esignate the ecretar of griculture. he e clusion woul cease upon a change of use, which means that the area is no longer a aila le for the pro uction of agricultural commo ities. otwithstan ing the etermination of an area s status as prior con erte croplan an other Fe eral agenc , for the purposes of the lean ater ct, the final authorit regar ing lean ater ct juris iction remains with

itches inclu ing roa si e itches e ca ate wholl in an raining onl r lan an that o not carr a relati el permanent flow of water

rtificiall irrigate areas that woul re ert to r lan if the irrigation cease

rtificial lakes or pon s create e ca ating or iking r lan to collect an retain water an which are use e clusi el for such purposes as stock watering, irrigation, settling asins, or rice growing

rtificial reflecting or swimming pools or other small ornamental o ies of water create e ca ating or iking r lan to retain water for primaril aesthetic reasons

aterfille epressions create in r lan inci ental to construction acti it an pits e ca ate in r lan for the purpose of o taining fill, san , or gra el unless an until the construction or e ca ation operation is a an one an the resulting o of water meets the efinition of waters of the nite tates an

wales an erosional features *e g* gullies, small washes characteri e low olume, infre uent, or short uration flow.

c n this section, the following efinitions appl :

etlands means those areas that are inun ate or saturate surface or groun water at a fre uenc an uration sufficient to support, an that un er normal circumstances o support, a pre alence of egetation t picall a apte for life in saturate soil con itions. etlan s generall inclu e swamps, marshes, ogs, an similar areas.

Ad acent means ha ing a continuous surface connection

igh tide line means the line of intersection of the lan with the water s surface at the ma imum height reache a rising ti e. he high ti e line ma e etermine , in the a sence of actual ata, a line of oil or scum along shore o jects, a more or less continuous eposit of fine shell or e ris on the foreshore or erm, other ph sical markings or characteristics, egetation lines, ti al gages, or other suita le means that elineate the general height reache a rising ti e. he line encompasses spring high ti es an other high ti es that occur with perio ic fre uenc ut oes not inclu e storm surges in which there is a eparture from the normal or pre icte reach of the ti e ue to the piling up of water against a coast strong win s such as those accompan ing a hurricane or other intense storm.

rdinary high water mark means that line on the shore esta lishe the fluctuations of water an in icate ph sical characteristics such as clear, natural line impresse on the ank, shel ing, changes in the character of soil, estruction of terrestrial egetation, the presence of litter an e ris, or other appropriate means that consi er the characteristics of the surroun ing areas.

Tidal waters means those waters that rise an fall in a pre icta le an measura le rh thm or c cle ue to the gra itational pulls of the moon an sun. i al waters en where the rise an fall of the water surface can no longer e practicall measure in a pre icta le rh thm ue to masking h rologic, win , or other effects.

Section of the Clean ater Act

ursuant to ection of the , an applicant for a fe eral license or permit to con uct an acti it which ma result in an ischarge to waters of the nite tates must pro i e certification from the tate or n ian tri e in which the ischarge originates. his certification pro i es for the protection of the ph sical, chemical, an iological integrit of waters, a resses impacts to water ualit that ma result from issuance of fe eral permits, an helps insure that fe eral actions will not iolate water ualit stan ar s of the tate or n ian tri e. n alifornia, there are nine egional ater ualit ontrol oar s egional oar that issue or en certification for ischarges to waters of the nite tates an waters of the tate, inclu ing wetlan s, within their geographical juris iction. he tate ater esources ontrol oar assume this responsi ilit when a project has the potential to result in the ischarge to waters within multiple egional oar s.

tat g at o

Fish and Game Code

Fish an ame o e ections et. se . esta lishes a fee ase process to ensure that projects con ucte in an aroun lakes, ri ers, or streams o not a ersel impact fish an wil life resources, or, when a erse impacts cannot e a oi e , ensures that a e uate mitigation an or compensation is pro i e .

Fish an ame o e ection re uires an person, state, or local go ernmental agenc or pu lic utilit to notif the F efore eginning an acti it that will o one or more of the following:

su stantiall o struct or i ert the natural flow of a ri er, stream, or lake
su stantiall change or use an material from the e , channel, or ank of a ri er, stream, or lake or
eposit or ispose of e ris, waste, or other material containing crum le , flake , or groun pa ement where it can pass into a ri er, stream, or lake.

Fish an ame o e ection applies to all perennial, intermittent, an ephemeral ri ers, streams, an lakes in the tate. F s regulator authorit e ten s to inclu e riparian ha itat inclu ing wetlan s supporte a ri er, stream, or lake regar less of the presence or a sence of h ric soils an saturate soil con itions. enerall , the F takes juris iction to the top of ank of the stream or to the outer limit of the a jacent riparian egetation outer rip line , whiche er is greater. otification is generall re uire for an project that will take place in or in the icinit of a ri er, stream, lake, or their tri utaries. his inclu es ri ers or streams that flow at least perio icall or permanentl through a e or channel with anks that support fish or other a uatic life an watercourses ha ing a surface or su surface flow that support or ha e supporte riparian egetation. ection tream e lteration greement woul e re uire if impacts to i entifie F juris ictional areas occur.

Porter Cologne Act

he alifornia *Porter o ogne ater a it ontro A t* gi es the tate er roa authorit to regulate waters of the tate, which are efine as an surface water or groun water, inclu ing saline waters. he orter ologne ct has ecome an important tool in the post an apanos regulator en ironment, with respect to the state s authorit o er isolate an insignificant waters. enerall , an person proposing to ischarge waste into a water o that coul affect its water ualit must file a eport of aste ischarge in the e ent that there is no ection ne us. lthough waste is partiall efine as an waste su stance associate with human ha itation, the egional oar also interprets this to inclu e fill ischarge into water o ies.

18 Technology Dr., Ste. 103
Irvine, CA 92618
949-356-6660
www.dukecrm.com

January 26, 2023

Simon Bouzaglou
55555 Amargosa, LLC
5901 South Eastern Avenue
Commerce, CA 90040

Subject: Cultural and Paleontological Resources Assessment for the Johnson/Navajo Road Project, Town of Apple Valley, San Bernardino County, California (Project Number C-0464)

Dear Mr. Bouzaglou:

At the request of the 55555 Amargosa, LLC (CLIENT), Duke Cultural Resources Management, LLC (DUKE CRM) has prepared a cultural and paleontological resources assessment for the proposed construction of an industrial warehouse building at the Johnson/Navajo Road project (Project), located in the Town of Apple Valley, San Bernardino County, California. The Project is 18.71 acres in size. The Town of Apple Valley (Town) is the lead agency for California Environmental Quality Act (CEQA).

The Project is located in the High Desert within APNs 0463-213-26, -27, and -28 in Section 16, Township 6 North, Range 3 West, as shown on the USGS *Apple Valley North, Calif.* 7.5' quadrangle map (see Attachment 1 for Project Maps). The Project will construct an industrial warehouse building with a maximum depth of excavation of 30 feet (ft.).

This report includes the results of background research and field survey for cultural and paleontological resources.

Research

DUKE CRM conducted a records search conducted by the South Central Coastal Information Center (SCCIC). The SCCIC located at the California State University, Fullerton is part of the California Historical Resources Information System (CHRIS). The records search included a review of all recorded cultural resources within a ½-mile radius of the Project, as well as a review of known cultural resource reports. In addition, the California Built Environment Resources Directory (BERD) was examined, which includes the National Register of Historic Places, California Register of Historical Resources, California Historical Landmarks, and California Points of Historical Interest. The BERD did not identify cultural resources within the Project.

The records search from the SCCIC was conducted on January 18, 2023. The records search did not identify any cultural resources within ½ mile of the Project. Additionally, the SCCIC identified two (2) cultural resource studies within ½ mile of the Project, none of which covered the Project area (see Table 1 below).

Table 1: Cultural Resource Reports within ½ mile of the Project

Report No.	Year	Report Title	Authors
SB-00874	1979	An Archaeological Sampling of the Proposed Allen-Warner Valley Energy System, Western Transmission Line Corridors, Mojave Desert, Los Angeles, and San Bernardino Counties, California and Clark County, Nevada	James P. Baker, Carol H. Rector, and Philip J. Wilke
SB-03677	2001	A Cultural Resources Assessment of the 300 Acre Pluto Development, Inc Property, SE Corner of Johnson Road and Dale Evans Parkway, Town of Apple Valley, San Bernardino County, CA 15PP	Robert White and Laurie White

Additionally, an inquiry to the Native American Heritage Commission (NAHC) was submitted to ascertain the presence of known sacred sites, Native American cultural resources, and/or human remains within the boundaries of the proposed Project. On January 15, 2023, the NAHC indicated that there have been no Native American cultural resources identified within the Sacred Lands File for the Project location (see Attachment 2).

DUKE CRM conducted a review of online historical aerial photographs and historic USGS quad maps utilizing UCSB FrameFinder, HistoricAerials.com, and USGS Historical Topographic Map Explorer. The 1932 Barstow 1:125,000 map shows a road grid that includes Johnson Road and Navajo Rd. The Project area shows no development. The 1957 Apple Valley 15' map and the 1968 aerial illustrates Johnson Road as dirt without reference to Navajo Road. The surrounding area remains undeveloped until the Midfield Aviation runway was constructed, which is graded circa 1969 and established prior to the 1984 aerial. Subsequent years shows the increase in buildings to the south and west of the Project. The Project area has remained vacant with no evidence of trails or structures going through the site (HistoricAerials.com; accessed January 18, 2023).

The geology in the vicinity of the Project has been mapped by Dibblee and Minch (2008). A review of this map indicates the proposed Project is located within alluvial silt, sand, and clay from the Holocene epoch (*Qa*). Holocene alluvial units are considered to be of high preservation value, but material found is unlikely to be fossil material due to the relatively modern associated dates of the deposits. However, as planned the development requires disturbance to a depth of 30 ft, thus the likelihood of reaching Pleistocene alluvial sediments is increased.

DUKE CRM requested that the Western Science Center perform a paleontological records search for known fossil localities within, and in the vicinity of, the Project. On January 12, 2023, the Western Science Center reported they did not find any paleontological resources within one (1) mile of the Project. While the presence of any fossil material is unlikely in the near-surface excavations, if excavation activity disturbs deeper sediment dating to the earliest parts of the Holocene or Late Pleistocene periods it would impact soils that may contain scientifically significant fossil resources. It is the recommendation of the Wester Science Center that excavation activity associated with the development of the project area is unlikely to be paleontologically sensitive, but caution during development should be observed.

Field Survey

Morgan Bender, M.A., Registered Professional Archaeologist (RPA) and Lauren Biltonen, B.A, Archaeologist, conducted an intensive pedestrian survey on January 20, 2023. The survey area included the entirety of the 18.71 acres of the proposed Project. Transects began in the southeast corner of the Project boundary and were spaced no more than 15 meters apart. Ground visibility was moderate, ranging from 50-70 percent. Ground cover consists of desert clover with scattered creosote bushes throughout site with a mean elevation of approximately 3080 feet above sea level. Topography is relatively flat with a small wash running east to west in center of site. Disturbances within the Project include rodent burrows, vehicle tracks, and modern refuse. Additionally, one historic tin can isolate was observed and recorded during the survey (see Attachment 3). No other cultural or paleontological resources were observed. See photographs in Attachment 4.

Conclusions

DUKE CRM assessed the proposed Project area for the presence of cultural and paleontological resources according to CEQA. One historic isolate was observed during the field survey. However, due to the resource being an isolate and negative finding from the SCCIC, our assessment is that the Project has a low potential to impact cultural resources. Therefore, monitoring is not recommended for cultural resources.

Research that included a paleontological records search with the Western Science Center indicates that there is a high sensitivity for paleontological resources in the alluvial sand and gravel from the Holocene epoch (*Qa*) that underlies the Project. Although it is unlikely that fossil material is present, if excavation activities disturb deeper sediment dating to the earliest parts of the Holocene or Late Pleistocene periods, fossil material recovered may be scientifically significant and caution during development should be observed.

If previously unidentified cultural and/or paleontological materials are unearthed later construction, work shall be halted in that area until a qualified archaeologist/paleontologist can assess the significance of the find. If human remains are encountered, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur in the area of the find until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner will notify the NAHC, which will determine and notify a Most Likely Descendant (MLD). With the permission of the landowner or their authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 48 hours of notification by the NAHC. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

Thank you for contacting DUKE CRM on this interesting project. If you have any questions or comments, you can contact me at (949) 356-6660, or by e-mail at morganbender@dukecrm.com.

Sincerely,

DUKE CULTURAL RESOURCES MANAGEMENT, LLC

Morgan Bender

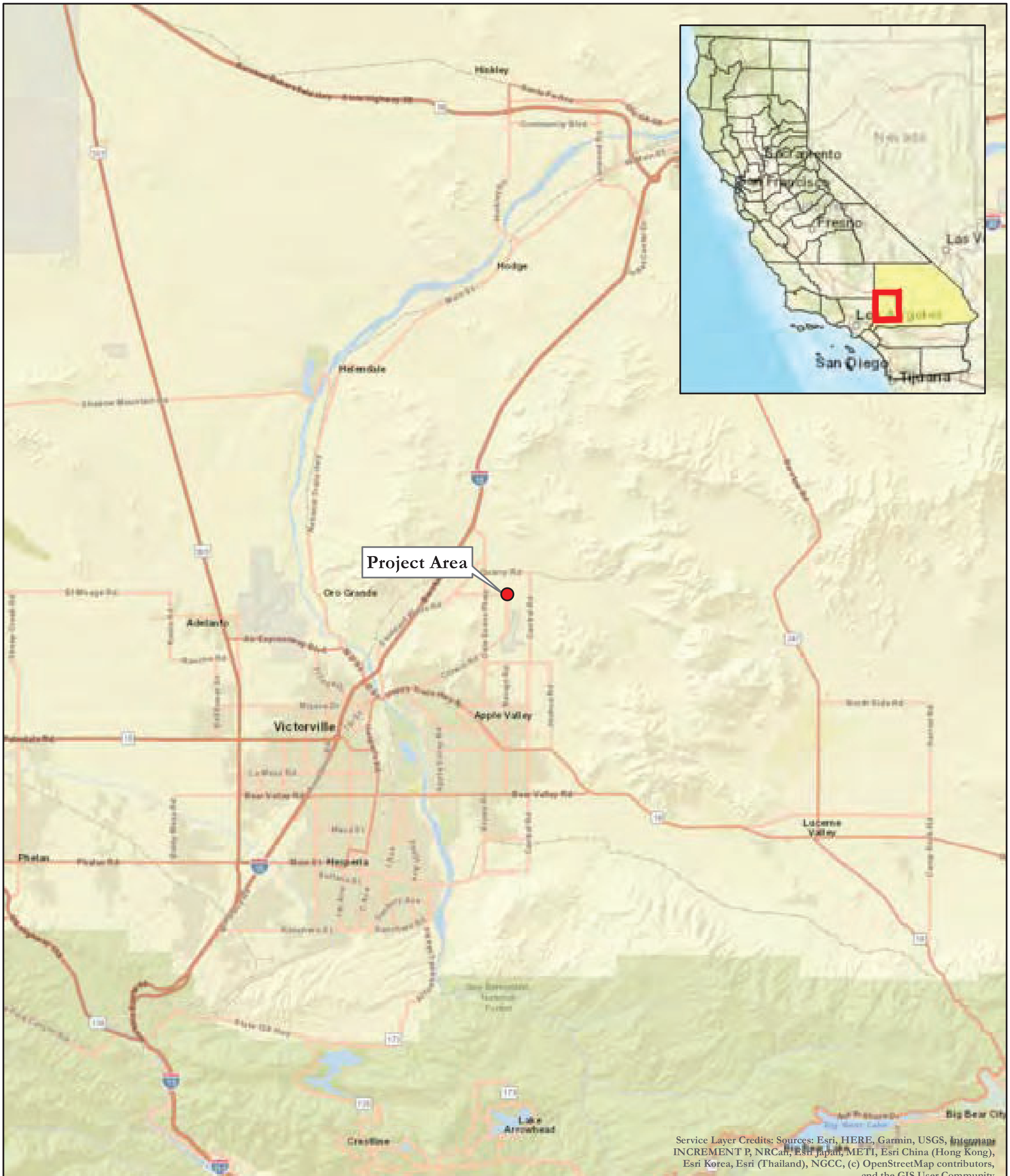
Morgan Bender, M.A., RPA
Archaeologist

Attachments

1: Project Maps
2: Native American Heritage Commission Letter
3: Department of Parks and Recreation Primary Record 523 Form
4: Project Photographs

ATTACHMENT 1

PROJECT MAPS



Map 1. Project Vicinity

Johnson Navajo Road, Apple Valley, C-0464

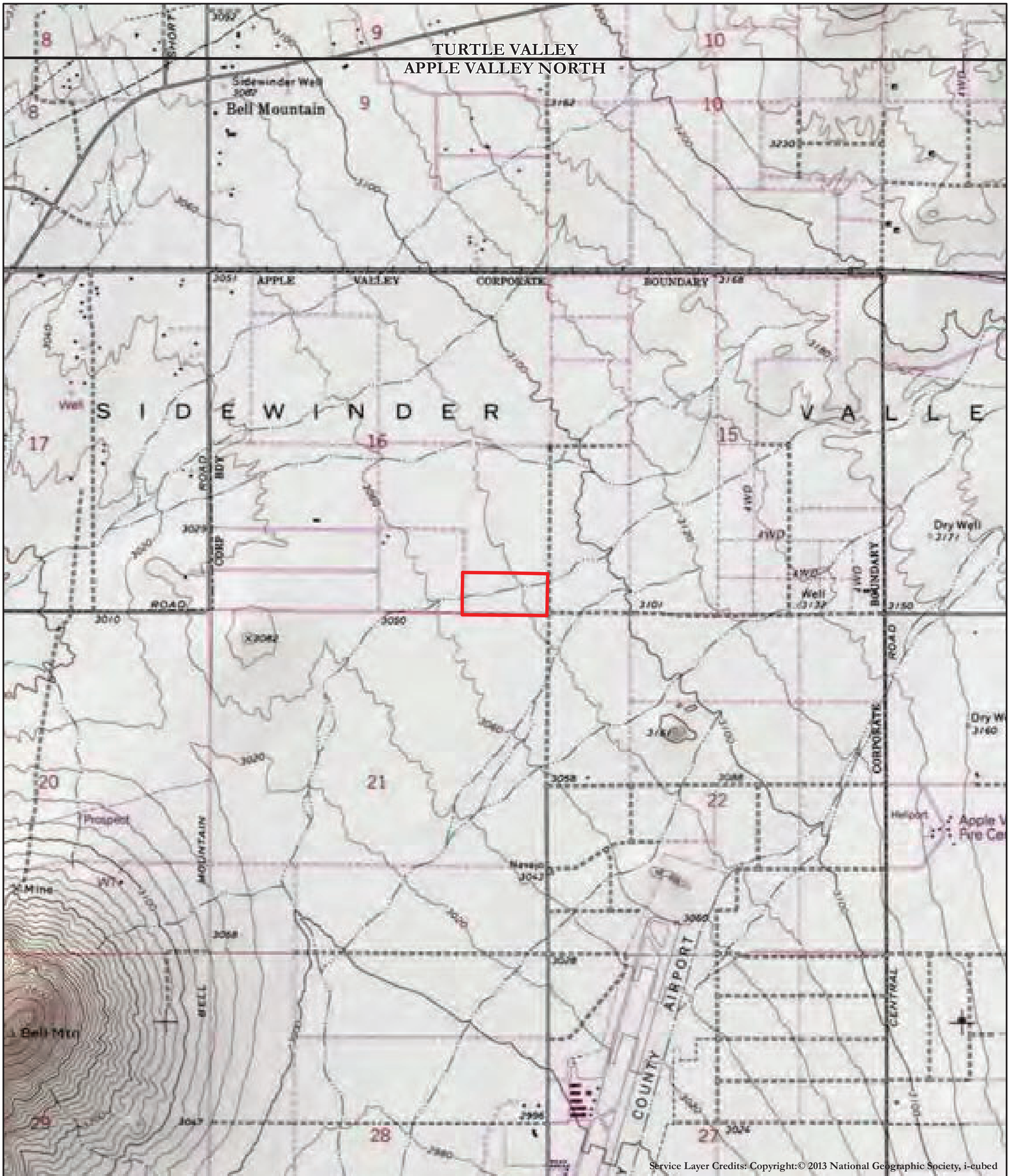
DUKE CRM

Project Area

0 6 12 Miles

N

1 inch = 6 miles 1:360,000



Map 2. Project Location

Johnson Navajo Road, Apple Valley, C-0464

DUKE CRM

Apple Valley North, Calif USGS 7.5-minute quadrangle

T6N, R3W, Section 16

Date of Map: 1970 / Photorevised: 1993

Project Area

USGS 7.5' Quads

0 0.25 0.5 Miles

0 0.25 0.5 Kilometers

1 inch = 2,000 feet 1:24,000

N

Map 3. Project Aerial Photo

Johnson Navajo Road, Apple Valley, C-0464

DUKE CRM

Project Area

0 300 600 Feet

N

1 inch =600 feet 1:7,200

ATTACHMENT 2

NATIVE AMERICAN HERITAGE COMMISSION LETTER

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

January 15, 2023

Morgan Bender
DUKE CRM

Via Email to: morganbender@dukecrm.com

Re: C-0464 Johnson Navajo, Apple Valley Project, San Bernardino County

Dear Mr. Bender:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Cameron.vela@nahc.ca.gov.

Sincerely,

Cameron Vela

Cameron Vela
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
San Bernardino County
1/15/2023

Kern Valley Indian Community
Julie Turner, Secretary
P.O. Box 1010
Lake Isabella, CA, 93240
Phone: (661) 340 - 0032
Kawaiisu
Tubatulabal
Koso

Kern Valley Indian Community
Brandy Kendricks,
30741 Foxridge Court
Tehachapi, CA, 93561
Phone: (661) 821 - 1733
krazykendricks@hotmail.com
Kawaiisu
Tubatulabal
Koso

Kern Valley Indian Community
Robert Robinson, Chairperson
P.O. Box 1010
Lake Isabella, CA, 93240
Phone: (760) 378 - 2915
bbutterbredt@gmail.com
Kawaiisu
Tubatulabal
Koso

Morongo Band of Mission Indians
Ann Brierty, THPO
12700 Pumarra Road
Banning, CA, 92220
Phone: (951) 755 - 5259
Fax: (951) 572-6004
abrierty@morongo-nsn.gov
Cahuilla
Serrano

Morongo Band of Mission Indians
Robert Martin, Chairperson
12700 Pumarra Road
Banning, CA, 92220
Phone: (951) 755 - 5110
Fax: (951) 755-5177
abrierty@morongo-nsn.gov
Cahuilla
Serrano

Quechan Tribe of the Fort Yuma Reservation
Manfred Scott, Acting Chairman
Kw'ts'an Cultural Committee
P.O. Box 1899
Yuma, AZ, 85366
Phone: (928) 750 - 2516
scottmanfred@yahoo.com
Quechan

Quechan Tribe of the Fort Yuma Reservation
Jill McCormick, Historic Preservation Officer
P.O. Box 1899
Yuma, AZ, 85366
Phone: (760) 572 - 2423
historicpreservation@quechantribe.com
Quechan

San Fernando Band of Mission Indians
Donna Yocum, Chairperson
P.O. Box 221838
Newhall, CA, 91322
Phone: (503) 539 - 0933
Fax: (503) 574-3308
ddyocum@comcast.net
Kitanemuk
Vanyume
Tataviam

San Manuel Band of Mission Indians
Jessica Mauck, Director of Cultural Resources
26569 Community Center Drive
Highland, CA, 92346
Phone: (909) 864 - 8933
Jessica.Mauck@sanmanuel-nsn.gov
Serrano

Serrano Nation of Mission Indians
Wayne Walker, Co-Chairperson
P. O. Box 343
Patton, CA, 92369
Phone: (253) 370 - 0167
serranonation1@gmail.com
Serrano

Serrano Nation of Mission Indians
Mark Cochrane, Co-Chairperson
P. O. Box 343
Patton, CA, 92369
Phone: (909) 528 - 9032
serranonation1@gmail.com
Serrano

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed C-0464 Johnson Navajo, Apple Valley Project, San Bernardino County.

Twenty-Nine Palms Band of Mission Indians Anthony Madrigal, Tribal Historic Preservation Officer 46-200 Harrison Place Coachella, CA, 92236 Phone: (760) 775 - 3259 amadrigal@29palmsbomi-nsn.gov	Chemehuevi
Twenty-Nine Palms Band of Mission Indians Darrell Mike, Chairperson 46-200 Harrison Place Coachella, CA, 92236 Phone: (760) 863 - 2444 Fax: (760) 863-2449 29chairman@29palmsbomi-nsn.gov	Chemehuevi

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed C-0464 Johnson Navajo, Apple Valley Project, San Bernardino County.

ATTACHMENT 3

DEPARTMENT OF PARKS AND RECREATION PRIMARY RECORD 523 FORM

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code | Reviewer | Date: 1/24/2023

***Resource Name or #:** (Assigned by recorder)

Page 1 **of** 1

P1. Other Identifier: One Gilmore Oil Can

***P2. Location:** ☐ Not for Publication ☐ Unrestricted

***a. County** San Bernardino

***b. USGS 7.5′ Quad** **Date 02/4/2022 T** 1S**; R** 13W **;** **¼ of ¼ of Sec** 27 **;** **B.M.**

c. Address: Johnson Rd./Navajo Rd. **City** Apple Valley **Zip** 90012

d. Zone 11N 482596**mE/** 3828991 **mN** NAD 83

e. Other Locational Data (e.g., parcel #, legal description, directions to resource, additional UTMs, etc., when appropriate): Can found approximately 360 feet north/northwest of Johnson Rd./Navajo Rd. Intersection.

***P3a. Description** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries):
The Gilmore Oil Can measured approximately 5 ½ in. (13 ½ cm) tall by 4 in. (10 cm) in diameter. The Gilmore Oil can was in good condition, with approximately 3-4 other cans in the surrounding area, however the cans did not have any visible diagnostic features. Gilmore Oil was founded in 1905 and became the largest independent oil company on the West Coast. Mobile Oil bought Gilmore Oil Company in 1943 and Gilmore Oil Company services ceased in 1945.

***P3b. Resource Attributes** (List all attributes and codes):

***P4. Resources Present:** ☐ Building ☐ Structure ■ Object ☐ Site ☐ District ☐ Element of District ☐ Other:

P5a Photograph or Drawing (Photograph required for buildings, structures, and objects.)

P5b. Description of Photo: (view, date, accession #) 1/19/2023

***P6. Date Constructed/Age and Source:** ☐ Prehistoric ■ Historic ☐ Both

***P7. Owner and Address:**

***P8. Recorded by** (Name, affiliation, address): Duke CRM, 18 Technology Drive, Suite 103, Irvine, 92618

***P9. Date Recorded:** January 24, 2023

***P10. Type of Survey: X** Intensive ☐ Reconnaissance ☐ Other
Describe:

***P11. Report Citation** (Provide full citation or enter "none"):
Cultural and Paleontological Resources Assessment for the Johnson/Navajo Road Project, Town of Apple Valley, San Bernardino County, California (Project Number C-0464) Bender, Morgan 2023

***Attachments:** ■ None ☐ Location Map ☐ Site Map ☐ Continuation Sheet ☐ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record Other:

ATTACHMENT 4

PROJECT PHOTOGRAPHS

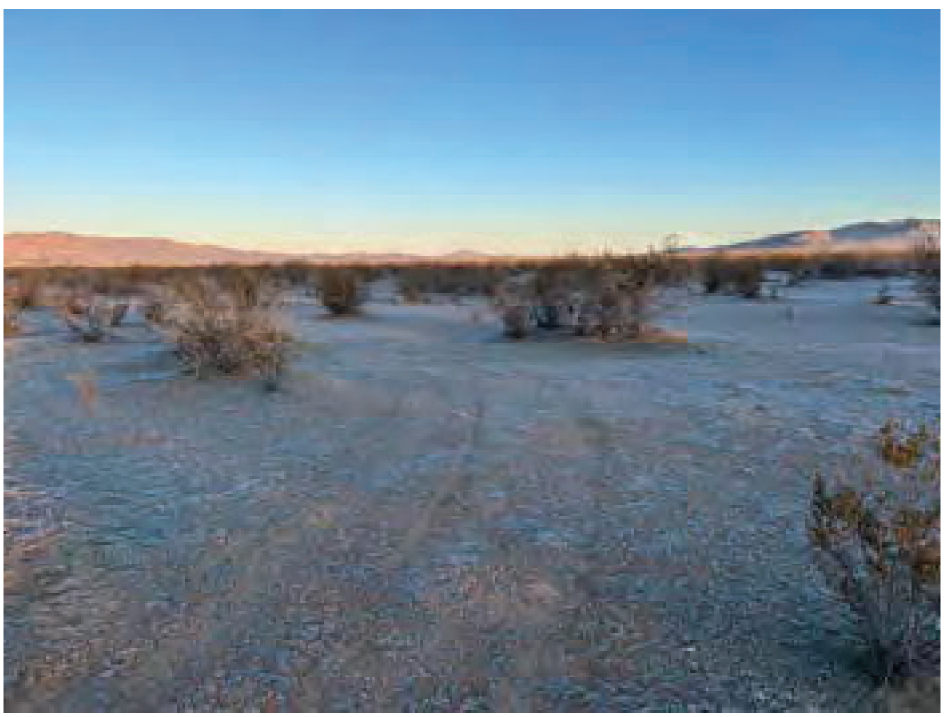
Site overview. View to north.

Site overview. View to south.

Site overview. View to east.

Site overview. View to west.


Site overview. View to northeast.


Tire marks running through site. View to northwest.

Modern debris. View to south.

Small wash running east to west through site. View to southwest.

Closeup of ground cover. Plan view.

Overview of vegetation. View to southwest.

Historic Gilmore Oil can. Plan view.

Histoic Gilmore Oil can. Plan view.

LOR GEOTECHNICAL GROUP, INC.
Soil Engineering ▲ Geology ▲ Environmental

PRELIMINARY GEOTECHNICAL AND
INFILTRATION FEASIBILITY INVESTIGATION
PROPOSED WAREHOUSE DEVELOPMENT
APNs 0463-213-26, -27, AND -28
TOWN OF APPLE VALLEY, CALIFORNIA

PROJECT NO. 23885.1
MARCH 3, 2023

Prepared For:

55555 Amargosa, LLC
5901 S. Eastern Avenue
Commerce, California 90040

Attention: Mr. Simon Bouzaglou

LOR GEOTECHNICAL GROUP, INC.
Soil Engineering ▲ Geology ▲ Environmental

March 3, 2023

55555 Amargosa, LLC
5901 S. Eastern Avenue
Commerce, California 90040

Project No. 23885.1

Attention: Mr. Simon Bouzaglou

Subject: Preliminary Geotechnical and Infiltration Feasibility Investigation, Proposed Warehouse Development, APNs 0463-213-26, -27, and -28, Town of Apple Valley, California.

LOR Geotechnical Group, Inc., is pleased to present this report of our geotechnical investigation for the subject project. In summary, it is our opinion that the proposed development is feasible from a geotechnical perspective, provided the recommendations presented in the attached report are incorporated into design and construction. However, the contents of this summary should not be solely relied upon.

To provide adequate support for the proposed structure, and structural improvements, we recommend that a compacted fill mat be constructed beneath footings and slabs. The compacted fill mat will provide a dense, high-strength soil layer to uniformly distribute the anticipated foundation loads over the underlying soils. Any undocumented fill material and any loose, compressible alluvial materials should be removed from structural areas and areas to receive engineered compacted fills. The data developed during this investigation indicates that removals ranging from approximately 2 to 5 feet will be required from currently planned development areas. The given removal depths are preliminary and the actual depths of the removals should be determined during the grading operation by observation and/or in-place density testing.

Very low expansion potential and poor R-value quality content generally characterize the upper onsite materials tested. Near completion and/or at the completion of site grading, additional foundation and subgrade soils should be tested, as necessary, to verify their expansion potential, soluble sulfate content, and R-value quality.

Good infiltration rates were obtained for the soils tested.

LOR Geotechnical Group, Inc.

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INTRODUCTION

During February and March of 2023, a Preliminary Geotechnical and Infiltration Feasibility Investigation was performed by LOR Geotechnical Group, Inc., for the proposed warehouse project, Assessor's Parcel Numbers (APNs) 0463-213-26, -27, and -28, in the Town of Apple Valley, California. The purpose of this investigation was to provide a technical evaluation of the geologic setting of the site and to provide geotechnical design recommendations for the proposed development. The scope of our services included:

- Review of available geotechnical literature, reports, maps, and agency information pertinent to the study area;
- Interpretation of aerial photographs of the site and surrounding regions dated 1952 through 2022;
- Geologic field reconnaissance mapping to verify the areal distribution of earth units and significance of surficial features as compiled from documents, literature, and reports reviewed;
- A subsurface field investigation to determine the physical soil conditions pertinent to the proposed development;
- Percolation testing via the borehole test method to determine Infiltration characteristics;
- Laboratory testing of selected soil samples obtained during the field investigation;
- Development of geotechnical recommendations for site grading and foundation design; and
- Preparation of this report summarizing our findings, and providing conclusions and recommendations for site development.

The approximate location of the site is shown on the attached Index Map, Enclosure A-1, within Appendix A.

PROJECT CONSIDERATIONS

To orient our investigation at the site, a Site Plan prepared by Steeno Design Studio, dated November 2022, was furnished for our use. The current site conditions, proposed building configuration, and associated driveway, parking, and landscape areas were indicated on this plan. The Site Plan was utilized as a base map for our field investigation and is presented as Enclosure A-2, within Appendix A.

As noted on the site plan, development of the site will include a 379,657 square foot warehouse as well as new driveway, parking, and landscape areas. The building is anticipated to be of concrete tilt-up or similar type construction and light to moderate foundation loads are anticipated with this type of structure.

Grading plans have not yet been developed. However, based on the current topography of the site and adjacent areas, minor cuts and fills are anticipated to create level surfaces for the proposed improvements.

AERIAL PHOTO ANALYSIS

The aerial photographs reviewed consisted of vertical aerial photograph images of varying scales. We reviewed imagery available from Google Earth Pro (2023) computer software and from online Historic Aerials (2023).

To summarize briefly, the site remained vacant, natural land from prior to 1952 through today. No evidence for the presence of faults traversing the site area or mass movement features was noted during our review of the photographs covering the site and nearby vicinity.

EXISTING SITE CONDITIONS

The approximately 20-acre site is located at the northwest corner of the intersection of Johnson Road and Navajo Road in the Town of Apple Valley, California. The property consists of vacant, desert land with sparse desert vegetation. Topographically, the site slopes gently to the southwest. Abundant trash and debris is present locally, primarily along the southern site boundary. Navajo Road, a dirt road, bounds the site on the east with vacant, desert land similar to the site beyond. The adjacent properties to the west and north are vacant desert land, similar to the site. Mesa Linda Avenue, a dirt road, bounds the site on the east with vacant, desert land beyond. Johnson Road, a paved roadway, bounds the site on the south with a large distribution (warehouse) facility beyond.

SUBSURFACE FIELD INVESTIGATION

Our subsurface field exploration program was conducted on December 20, 2022 and February 7, 2023. The work consisted of advancing a total of 10 exploratory borings using a truck-mounted drill rig equipped with 8-inch diameter hollow stem augers. In addition, three borehole percolation tests were conducted in general accordance with the Shallow

Percolation Test procedure as outlined in the Technical Guidance Document for Water Quality Management Plans (CDM Smith, 2013). The approximate locations of our exploratory borings and percolation tests are presented on Enclosure A-2, within Appendix A.

The subsurface conditions encountered in the exploratory borings were logged by a geologist from this firm. The borings were drilled to depths ranging from approximately 20 to 30 feet below the existing ground surface. Relatively undisturbed and bulk samples were obtained at a maximum depth interval of 5 feet, and returned to our geotechnical laboratory in sealed containers for further testing and evaluation.

Percolation test borings were drilled to the requested depth of approximately 6 feet below the existing ground surface at the requested locations on February 7, 2023.

A detailed description of the subsurface field exploration program and the boring logs is presented in Appendix B.

A detailed description of our borehole percolation testing program and the test results are presented in Appendix C.

LABORATORY TESTING PROGRAM

Selected soil samples obtained during the field investigation were subjected to geotechnical laboratory testing to evaluate their physical and engineering properties. Laboratory testing included in-place moisture content and dry density, laboratory compaction characteristics, direct shear, sieve analysis, sand equivalent, R-value, and corrosion. Physical testing was conducted in our geotechnical laboratory and chemical testing was conducted by our subconsultant, Project X Corrosion Engineering. A detailed description of the geotechnical laboratory testing program and the test results are presented in Appendix D.

GEOLOGIC CONDITIONS

Regional Geologic Setting

The site is situated along the southern edge of the Mojave Desert on a series of coalescing alluvial fans and terraces collectively referred to as the Cajon Fan. These fans and terraces have formed from sediment eroded from the San Gabriel and San Bernardino Mountains in Pleistocene and Recent times. The subject site is generally located on a large, wide fan region within the Cajon Fan series, referred to as the Baldy Mesa Fan. The Baldy Mesa Fan slopes to the northeast and is composed predominantly of silty sand and poorly graded to well graded sand, with lesser amounts of clayey sand and sandy clay. These fans lie on a very thick sequence of terrestrial sedimentary rocks, which in turn overlie crystalline bedrock (Dibblee, 1960).

This area north of the San Gabriel Mountains lies along the southeastern portion of a larger geomorphic province in southern California known as the Mojave Desert. The Mojave Desert geomorphic province is essentially a very large, wedge shaped, alluviated plain of comparatively low relief, containing irregularly trending bedrock hills and low mountains.

The Mojave Desert province is bounded on the southwest by the San Andreas fault zone and on the north by the Garlock fault zone. The eastern boundary of the Mojave Desert geomorphic province is not distinct, but gradually converges with the Basin and Range geomorphic province east of Death Valley and into Arizona and Nevada. The province is broken by many internal, major but discontinuous faults, predominately trending to the northwest showing rough parallelism with the trend of the San Andreas. Most of these faults have been active within the last 1.6 million years and many are still considered to be active or potentially active.

The closest known active fault to the subject site noted in the documents reviewed during our study is the Helendale fault located approximately 4.8 kilometers (3.0 miles) northwest of the site. A complete listing of the distances to known active faults in relation to the site is given in the Faulting section of this report.

The site and the regional geologic setting are shown on Enclosure A-3 within Appendix A.

Site Geologic Conditions

Alluvium: Alluvial materials were encountered within all of our exploratory borings to the maximum depths explored. These units were noted to mainly consist of silty sand with minor well graded sand with silt. These materials were typically tan to red brown in color and were noted to contain some secondary calcite. The alluvial materials were in a relatively loose state at the surface becoming medium dense to very dense state at a depth of approximately 2 feet and generally becoming increasingly dense with increasing depth based on our equivalent Standard Penetration Test (SPT) data and in-place density testing.

Bedrock: Igneous bedrock was encountered within all of our exploratory borings underlying the alluvial materials above to the maximum depths explored. These units were encountered at depths of approximately 10 to 20 feet and were noted to mainly consist of dry, gray, coarse to medium grained granitic rock. The bedrock was in a relatively hard state based on our equivalent Standard Penetration Test (SPT) data and in-place density testing.

A detailed description of the subsurface soil and bedrock conditions as encountered within our exploratory borings is presented on the Boring Logs within Appendix B.

Groundwater Hydrology

Groundwater was not encountered within any of exploratory borings as advanced to a maximum depth of approximately 30 feet below the existing ground surface.

In order to estimate the approximate depth to groundwater in the site area, a search was conducted for local groundwater (well) level measurements within the State of California Department of Water Resources online database (CDWR, 2023).

The closest well found is State Well Number 06N03W15Q001S, located approximately 1.2 (0.75 miles) east of the site. In this well, groundwater records were available from 2015 back to 1933. The depth of water in this well fluctuated from approximately 76 feet in 2015 to approximately 114 feet in 1933. A ground surface elevation of approximately 3,132 feet above mean sea level was listed.

Based on this information, groundwater at the site appears to be greater than 50 feet below the lowest ground surface elevation at the site.

Mass Movement

The site lies on a relatively flat surface. The occurrence of mass movement failures such as landslides, rockfalls, or debris flows within such areas is generally not considered common, and no evidence of mass movement was observed on the site.

Faulting

No active or potentially active faults are known to exist at the subject site. In addition, the subject site does not lie within a current State of California Earthquake Fault Zone (Hart and Bryant, 2003) nor does the site lie within a County of San Bernardino fault zone.

No evidence of faulting projecting into or crossing the site was noted during our aerial photograph review or our review of published geologic maps.

As previously mentioned, the closest known active fault is the Helendale fault, located approximately 4.8 kilometers (3.0 miles) to the northeast. In addition, other relatively close active faults include the North Frontal fault located approximately 18.6 kilometers (11.5 miles) to the south, the Cleghorn fault located approximately 34.3 kilometers (21.3 miles) to the south, and the San Andreas fault located about 44.2 kilometers (27.5 miles) to the southwest.

The Helendale fault is a right-lateral strike slip fault. This fault has been active very recently. It is believed that the Helendale fault is capable of producing an earthquake magnitude on the order of 6.5 to 7.3.

The North Frontal fault zone of the San Bernardino Mountains is a zone consisting of numerous fault segments, many of which have their own names. The primary sense of slip is south dipping thrust. This fault seems to be offset (right-laterally) by the Helendale fault. It is believed that the North Frontal fault zone is capable of producing an earthquake magnitude on the order of 6.0 to 7.1.

The Cleghorn fault of the San Bernardino Mountains is a left-lateral strike-slip fault. The exact nature of the activity of this fault is questionable. The local landscape does not seem to express the reported slip rate (0.3 mm/yr) and some have dismissed Holocene displacement and rupture surfaces as caused by landsliding, not faulting. However, it is believed that the Cleghorn fault is capable of producing an earthquake magnitude on the order of 6.5.

The San Andreas fault is considered to be the major tectonic feature of California, separating the Pacific Plate and the North American Plate. While estimates vary, the San Andreas fault is generally thought to have an average slip rate on the order of 24mm/yr and capable of generating large magnitude events on the order of 7.5.

Current standards of practice included a discussion of all potential earthquake sources within a 100 kilometer (62 mile) radius. However, while there are other large earthquake faults within a 100 kilometer (62-mile) radius of the site, none of these are considered as relevant to the site as the faults described above, due to their greater distance and/or smaller anticipated magnitudes.

Historical Seismicity

In order to obtain a general perspective of the historical seismicity of the site and surrounding region a search was conducted for seismic events at and around the area within various radii. This search was conducted utilizing the historical seismic search website of the U.S.G.S. (2022). This website conducts a search of a user selected cataloged seismic events database, within a specified radius and selected magnitudes, and then plots the events onto a map. At the time of our search, the database contained data from January 1, 1932 through February 28, 2023.

In our first search, the general seismicity of the region was analyzed by selecting an epicenter map listing all events of magnitude 4.0 and greater, recorded since 1932, within a 100 kilometer (62 mile) radius of the site, in accordance with guidelines of the California Division of Mines and Geology. This map illustrates the regional seismic history of moderate to large events. As depicted on Enclosure A-4, within Appendix A, the site lies within a relatively active region associated with the San Andreas fault and various Mojave Desert faults to the east.

In the second search, the micro seismicity of the area lying within a 15 kilometer (9.2 mile) radius of the site was examined by selecting an epicenter map listing events on the order of 1.0 and greater since 1978. The results of this search is a map that presents the seismic history around the area of the site with much greater detail, not permitted on the larger map. The reason for limiting the time period for the events on the detail map is to enhance the accuracy of the map. Events recorded prior to the mid to late1970's are generally considered to be less accurate due to advancements in technology. As depicted on this map, Enclosure A-5, a few events are present in the area to the northeast associated with the Helendale fault.

In summary, the historical seismicity of the site entails numerous small to medium magnitude earthquake events occurring in the region around the subject site. Any future developments at the subject site should anticipate that moderate to large seismic events could occur very near the site.

Secondary Seismic Hazards

Other secondary seismic hazards generally associated with severe ground shaking during an earthquake include liquefaction, seismic-induced settlement, seiches and tsunamis, earthquake induced flooding, landsliding, and rockfalls.

Liquefaction: The potential for liquefaction generally occurs during strong ground shaking within granular loose sediments where the groundwater is usually less than 50 feet below the ground surface. As groundwater is anticipated to lie greater than 50 feet beneath the site and the site is underlain by hard, igneous bedrock at relatively shallow depths, the possibility of liquefaction at the site is considered nil.

Seiches/Tsunamis: The potential for the site to be affected by a seiche or tsunami (earthquake generated wave) is considered nil due to absence of any large bodies of water near the site.

Flooding (Water Storage Facility Failure): There are no large water storage facilities located on or near the site which could possibly rupture during in earthquake and affect the site by flooding.

Seismically-Induced Landsliding: Due to the low relief of the site and surrounding region, the potential for landslides to occur at the site is considered nil.

Rockfalls: No large, exposed, loose or unrooted boulders are present above the site that could affect the integrity of the site.

Seismically-Induced Settlement: Settlement generally occurs within areas of loose, granular soils with relatively low density. Since the site is underlain by relatively dense to alluvial materials, the potential for settlement is considered very low. In addition, the recommended earthwork operations to be conducted during the development of the site should mitigate any near surface loose soil conditions.

SOILS AND SEISMIC DESIGN CRITERIA (California Building Code 2022)

Design requirements for structures can be found within Chapter 16 of the 2022 California Building Code (CBC) based on building type, use, and/or occupancy. The classification of use and occupancy of all proposed structures at the site, shall be the responsibility of the building official.

Site Classification

Chapter 20 of the ASCE 7-16 defines six possible site classes for earth materials that underlie any given site. Bedrock is assigned one of three of these six site classes and these are: A, B, or C. Soil is assigned as C, D, E, or F. Per ASCE 7-16, Site Class A and Site Class B shall be measured on-site or estimated by a geotechnical engineer, engineering geologist or seismologist for competent rock with moderate fracturing and weathering. Site Class A and Site Class B shall not be used if more than 10 feet of soil is between the rock surface and bottom of the spread footing or mat foundation. Site Class C can be used for very dense soil and soft rock with Ñ values greater than 50 blows per foot. Site Class D can be used for stiff soil with Ñ values ranging from 15 to 50 blows per foot. Site Class E is for soft clay soils with Ñ values less than 15 blows per foot. Our investigation, mapping by others, and our experience in the site region indicates that the materials beneath the site are considered Site Class C, very dense soil and soft rock.

CBC Earthquake Design Summary

Earthquake design criteria have been formulated in accordance with the 2019 CBC and ASCE 7-16 for the site based on the results of our investigation to determine the Site Class and an assumed Risk Category II. However, these values should be reviewed and the final design should be performed by a qualified structural engineer familiar with the region. In addition, the building official should confirm the Risk Category utilized in our design (Risk Category II). Our design values are provided below:

CBC 2019 SEISMIC DESIGN SUMMARY* Site Location (USGS WGS84) 34.6019, -117.1914, Risk Category II	
Site Class Definition Chapter 20 ASCE 7	C
S_s Mapped Spectral Response Acceleration at 0.2s Period	1.021
S_1 Mapped Spectral Response Acceleration at 1s Period	0.392
S_{MS} Adjusted Spectral Response Acceleration at 0.2s Period	1.225
S_{M1} Adjusted Spectral Response Acceleration at 1s Period	0.588
S_{DS} Design Spectral Response Acceleration at 0.2s Period	0.816
S_{D1} Design Spectral Response Acceleration at 1s Period	0.392
F_a Short Period Site Coefficient at 0.2s Period	1.2
F_v Long Period Site Coefficient at 1s Period	1.5
PGA_M	0.527
Seismic Design Category	D
*Values obtained from OSHPD Seismic Design Maps tool	

CONCLUSIONS

This investigation provides a broad overview of the geotechnical and geologic factors which are expected to influence future site planning and development. On the basis of our field investigation and testing program, it is the opinion of LOR Geotechnical Group, Inc., that the proposed development of the site for the proposed use is feasible from a geotechnical standpoint, provided the recommendations presented in this report are incorporated into design and implemented during grading and construction.

It should be noted that the subsurface conditions encountered in our exploratory borings are indicative of the locations explored and the subsurface conditions may vary. If conditions are encountered during the construction of the project that differ significantly from those presented in this report, this firm should be notified immediately so we may assess the impact to the recommendations provided.

Foundation Support

To provide adequate support for the proposed structure, we recommend that a compacted fill mat be constructed beneath footings and slabs. The compacted fill mat will provide a dense, high-strength soil layer to uniformly distribute the anticipated foundation loads over the underlying soils. The construction of this compacted fill mat will allow for the removal of the existing loose alluvial materials.

Conventional foundation systems utilizing either individual spread footings and/or continuous wall footings will provide adequate support for the anticipated downward and lateral loads when utilized in conjunction with the recommended fill mat.

Soil Expansiveness

Our observations and testing of the on-site soils indicate they are comprised of relatively granular materials considered to have a very low expansion potential. For very low expansive soils, specialized construction procedures to resist expansive soil activity are not considered necessary.

Careful evaluation of onsite soils and any import fill for their expansion potential should be conducted during the grading operation.

Corrosion Screening

Select representative samples from our borings were taken to Project X Corrosion Engineering for full corrosion series testing. Results from soil corrosivity testing completed by Project X Corrosion Engineering are presented within Appendix D.

The corrosivity test results indicate that soluble sulfate concentrations in the samples were less than 0.10 percent by weight. These concentrations indicate an exposure class S0 for sulfate (ACI 318). No special mitigation methods are considered necessary.

The corrosivity test results indicate that chloride concentrations were below 500 ppm. This concentration indicates an exposure class C1 for chloride (ACI 318). Special mitigation measures are not considered necessary.

Soil pH for the samples was 7.9 to 8.1, neutral to slightly basic. Therefore, the need for specialized design is not anticipated.

Concentrations of ammonium and nitrate indicate the soil may be aggressive towards copper.

Resistivity results for the samples indicate a moderate corrosion potential to ferrous metals.

LOR Geotechnical does not practice corrosion engineering. If further information concerning the corrosion characteristics, or interpretation of the results submitted herein, is required, then a competent corrosion engineer could be consulted.

Infiltration

The results of our field investigation and test data indicate marginal infiltration characteristics for the soils tested, with the results ranging from 1.6 to 3.1 inches per hour.

Geologic Mitigations

No special mitigation methods are deemed necessary at this time, other than the geotechnical recommendations provided in the following sections.

Seismicity

Seismic ground rupture is generally considered most likely to occur along pre-existing active faults. Since no known faults are known to exist at, or project into the site, the probability of ground surface rupture occurring at the site is considered nil.

Due to the site's close proximity to the faults described above, it is reasonable to expect a relatively strong ground motion seismic event to occur during the lifetime of the proposed development on the site. Large earthquakes could occur on other faults in the general area, but because of their lesser anticipated magnitude and/or greater distance, they are considered less significant than the faults described above from a ground motion standpoint.

The effects of ground shaking anticipated at the subject site should be mitigated by the seismic design requirements and procedures outlined in Chapter 16 of the California Building Code. However, it should be noted that the current building code requires the minimum design to allow a structure to remain standing after a seismic event, in order to allow for safe evacuation. A structure built to code may still sustain damage which might ultimately result in the demolishing of the structure (Larson and Slosson, 1992).

No secondary seismic hazards are anticipated to impact the proposed development.

RECOMMENDATIONS

Geologic Recommendations

No special geologic recommendations are deemed necessary at this time, other than the geotechnical recommendations provided in the following sections.

General Site Grading

It is imperative that no clearing and/or grading operations be performed without the presence of a qualified geotechnical engineer. An onsite, pre-job meeting with the developer, the contractor, the jurisdictional agency, and the geotechnical engineer should occur prior to all grading related operations. Operations undertaken at the site without the geotechnical engineer present may result in exclusions of affected areas from the final compaction report for the project.

Grading of the subject site should be performed in accordance with the following recommendations as well as applicable portions of the California Building Code, and/or applicable local ordinances.

All areas to be graded should be stripped of significant vegetation and other deleterious materials.

Any undocumented fill encountered during grading should be completely removed, cleaned of significant deleterious materials, and may be reused as compacted fill. It is our recommendation that any existing fills under any proposed flatwork and paved areas be removed and replaced with engineered compacted fill. If this is not done, premature structural distress (settlement) of the flatwork and pavement may occur.

Cavities created by removal of subsurface obstructions, which are anticipated in areas of the site which were previously developed, should be thoroughly cleaned of loose soil, organic matter and other deleterious materials, shaped to provide access for construction equipment, and backfilled as recommended in the following Engineered Compacted Fill section of this report.

Initial Site Preparation

The existing fill material and any loose, compressible alluvial soils should be removed from all proposed structural and/or fill areas. The data developed during this investigation indicates that removals on the order of 2 to 5 feet deep will be required from proposed development areas in order to encounter competent alluvium upon which engineered compacted fill can be placed. The given removal depths are preliminary. Deeper fills may be present locally. Removals should expose alluvial materials with an in-situ relative compaction of at least 85 percent (ASTM D 1557). The actual depths of the removals should be determined during the grading operation by observation and/or in-place density testing.

Preparation of Fill Areas

Prior to placing fill, the surfaces of all areas to receive fill should be scarified to a minimum depth of 12 inches. The scarified soil should be brought to near optimum moisture content and compacted to a relative compaction of at least 90 percent (ASTM D 1557).

Engineered Compacted Fill

The onsite soils should provide adequate quality fill material, provided they are free from oversized and/or organic matter and other deleterious materials. Unless approved by the geotechnical engineer, rock or similar irreducible material with a maximum dimension greater than 6 inches should not be buried or placed in fills.

If required, import fill should be inorganic, non-expansive granular soils free from rocks or lumps greater than 6 inches in maximum dimension. Sources for import fill should be approved by the geotechnical engineer prior to their use. Fill should be spread in maximum 8-inch uniform, loose lifts, each lift brought to near optimum moisture content, and compacted to a relative compaction of at least 90 percent in accordance with ASTM D 1557.

Preparation of Foundation Areas

All footings should rest upon at least 24 inches of properly compacted fill material placed over competent alluvium. In areas where the required fill thickness is not accomplished by the recommended removals or by site rough grading, the footing areas should be further subexcavated to a depth of at least 24 inches below the proposed footing base grade, with the subexcavation extending at least 5 feet beyond the footing lines. The bottom of all excavations should be scarified to a depth of 12 inches, brought to near optimum moisture content, and recompacted to at least 90 percent relative compaction (ASTM D 1557) prior to the placement of compacted fill.

Concrete floor slabs should bear on a minimum of 24 inches of compacted soil. This should be accomplished by the recommendations provided above. The final pad surfaces should be rolled to provide smooth, dense surfaces upon which to place the concrete.

Short-Term Excavations

Following the California Occupational and Safety Health Act (CAL-OSHA) requirements, excavations 5 feet deep and greater should be sloped or shored. All excavations and shoring should conform to CAL-OSHA requirements. Short-term excavations of 5 feet deep and greater shall conform to Title 8 of the California Code of Regulations, Construction Safety Orders, Section 1504 and 1539 through 1547. Based on our exploratory borings, it appears that Type C soils are the predominant type of soil on the project and all short-term excavations should be based on this type of soil.

Deviation from the standard short-term slopes are permitted using option 4, Design by a Registered Professional Engineer (Section 1541.1).

Short-term excavation construction and maintenance are the responsibility of the contractor and should be a consideration of his methods of operation and the actual soil conditions encountered.

Slope Construction

Preliminary data indicates that cut and fill slopes should be constructed no steeper than two horizontal to one vertical. Fill slopes should be overfilled during construction and then cut back to expose fully compacted soil. A suitable alternative would be to compact the slopes during construction, then roll the final slopes to provide dense, erosion-resistant surfaces.

Slope Protection

Since the site soil materials are susceptible to erosion by running water, measures should be provided to prevent surface water from flowing over slope faces. Slopes at the project should be planted with a deep rooted ground cover as soon as possible after completion. The use of succulent ground covers such as iceplant or sedum is not recommended. If watering is necessary to sustain plant growth on slopes, then the watering operation should be monitored to assure proper operation of the irrigation system and to prevent over watering.

Soil Expansiveness

The upper materials encountered during this investigation were tested and found to have a low expansion potential. Therefore, specialized construction procedures to specifically resist expansive soil activity are anticipated at this time and are provided within the following sections of this report.

Additional evaluation of on-site and any imported soils for their expansion potential should be conducted following completion of the grading operation.

Foundation Design

If the site is prepared as recommended, the proposed building may be safely supported on conventional shallow foundations, either individual spread footings and/or continuous wall footings, bearing entirely on a minimum of 24 inches of engineered compacted fill placed over competent alluvial materials. All foundations should have a minimum width of 12 inches. Footings placed upon very low and low expansive soils should be established a minimum of 12 inches below lowest adjacent grade.

For the minimum width and depth, spread foundations may be designed using an allowable bearing pressure of 2,000 psf. This bearing pressure may be increased by 200 psf for each additional foot of width, and by 500 psf for each additional foot of depth, up to a maximum of 4,000 psf. For example, a footing 2 feet wide and embedded 2 feet will have an allowable bearing pressure of 2,700 psf.

The above values are net pressures; therefore, the weight of the foundations and the backfill over the foundations may be neglected when computing dead loads. The values apply to the maximum edge pressure for foundations subjected to eccentric loads or overturning. The recommended pressures apply for the total of dead plus frequently applied live loads, and incorporate a factor of safety of at least 3.0. The allowable bearing pressures may be increased by one-third for temporary wind or seismic loading.

The resultant of the combined vertical and lateral seismic loads should act within the middle one-third of the footing width. The maximum calculated edge pressure under the toe of foundations subjected to eccentric loads or overturning should not exceed the increased allowable pressure.

Resistance to lateral loads will be provided by passive earth pressure and base friction. For footings bearing against compacted fill, passive earth pressure may be considered to be developed at a rate of 500 pounds per square foot per foot of depth. Base friction may be computed at 0.30 times the normal load. Base friction and passive earth pressure may be combined without reduction. These values are for dead load plus live load and may be increased by one-third for wind or seismic loading.

Settlement

Total settlement of individual foundations will vary depending on the width of the foundation and the actual load supported. Maximum settlement of shallow foundations designed and constructed in accordance with the preceding recommendations are estimated to be on the order of 0.5 inch. Differential settlements between adjacent footings should be about one-half of the total settlement. Settlement of all foundations is expected to occur rapidly, primarily as a result of elastic compression of supporting soils as the loads are applied, and should be essentially completed shortly after initial application of the loads.

Building Area Slab-on-Grade

To provide adequate support, concrete floor slabs-on-grade should bear on a minimum of 24 inches of engineered fill compacted soil. The final pad surfaces should be rolled to provide smooth, dense surfaces.

Slabs to receive moisture-sensitive coverings should be provided with a moisture vapor retarder/barrier. We recommend that a vapor retarder/barrier be designed and constructed according to the American Concrete Institute 302.1R, Concrete Floor and Slab Construction, which addresses moisture vapor retarder/barrier construction. At a minimum, the vapor retarder/barrier should comply with ASTM E1745 and have a nominal thickness of at least 10 mils. The vapor retarder/barrier should be properly sealed, per the manufacturer's recommendations, and protected from punctures and other damage. Per the Portland Cement Association, for slabs with vapor-sensitive coverings, a layer of dry, granular material (sand) should be placed under the vapor retarder/barrier.

For slabs in humidity-controlled areas, a layer of dry, granular material (sand) should be placed above the vapor retarder/barrier.

The slabs should be protected from rapid and excessive moisture loss which could result in slab curling. Careful attention should be given to slab curing procedures, as the site area is subject to large temperature extremes, humidity, and strong winds.

Exterior Flatwork

To provide adequate support, exterior flatwork improvements should rest on a minimum of 12 inches of soil compacted to at least 90 percent (ASTM D 1557).

Flatwork surface should be sloped a minimum of 1 percent away from buildings and slopes, to approved drainage structures.

Wall Pressures

The design of footings for retaining walls should be performed in accordance with the recommendations described earlier under Preparation of Foundation Areas and Foundation Design. For design of retaining wall footings, the resultant of the applied loads should act in the middle one-third of the footing, and the maximum edge pressure should not exceed the basic allowable value without increase.

For design of retaining walls unrestrained against movement at the top, we recommend an active pressure of 30 pounds per square foot (psf) per foot of depth be used. This assumes level backfill consisting of compacted, non-expansive, on-site soils placed against the structures and within the back cut slope extending upward from the base of the stem at 35 degrees from the vertical or flatter.

Retaining structures subject to uniform surcharge loads within a horizontal distance behind the structures equal to the structural height should be designed to resist additional lateral loads equal to 0.40 times the surcharge load. Any isolated or line loads from adjacent foundations or vehicular loading will impose additional wall loads and should be considered individually.

To avoid over stressing or excessive tilting during placement of backfill behind walls, heavy compaction equipment should not be allowed within the zone delineated by a 45 degree line extending from the base of the wall to the fill surface. The backfill directly behind the walls should be compacted using light equipment such as hand operated vibrating plates and rollers. No material larger than three inches in diameter should be placed in direct contact with the wall.

Wall pressures should be verified prior to construction, when the actual backfill materials and conditions have been determined. Recommended pressures are applicable only to level, non-expansive, properly drained backfill with no additional surcharge loadings. If inclined backfills are proposed, this firm should be contacted to develop appropriate active earth pressure parameters.

Preliminary Pavement Design

Testing and design for preliminary onsite pavement was conducted in accordance with the California Highway Design Manual and the Guild for the Design and Construction of Concrete Parking Lot (ACI33OR).

Based upon our preliminary sampling and testing, and upon an assumed Traffic Index generally used for similar projects, it appears that the structural sections tabulated below should provide satisfactory pavements for the subject on-site pavement improvements:

AREA	T.I.	DESIGN R-VALUE	PRELIMINARY SECTION
On site vehicular parking with occasional truck traffic (ADTT=10)	6.0	15	0.25' AC / 0.95' AB or 5" JPCP / 4" AB
Light to moderate truck traffic (ADTT=25)	7.0	15	0.30'AC / 1.15'AB or 6" JPCP / 4" AB
Moderate to Heavy Truck Traffic (ADTT=100)	--	15	6.5"JPCP/4"AB
AC - Asphalt Concrete AB - Class 2 Aggregate Base JPCP - Jointed Plain Concrete Pavement with MR $\geq$ 550 psi			

The above structural sections are predicated upon 90 percent relative compaction (ASTM D 1557) of all utility trench backfills and 95 percent relative compaction (ASTM D 1557) of the upper 12 inches of pavement subgrade soils and of any aggregate base utilized. In addition, the aggregate base should meet Caltrans specifications for Class 2 Aggregate Base.

The recommended concrete pavement sections should have a minimum modulus of rupture (MR) of 550 pounds per square inch (psi). Transverse joints should be sawcut in the pavement at approximately 12 to 15-foot intervals within 4 to 6 hours of concrete placement, or preferably sooner. Sawcut depth should be equal to approximately one quarter of slab thickness. Construction joints should be constructed such that adjacent sections butt directly against each other and are keyed into each other. Parallel pavement sections should also be keyed into each other.

It should be noted that all of the above pavement design was based upon the results of preliminary sampling and testing, and should be verified by additional sampling and testing during construction when the actual subgrade soils are exposed.

Infiltration

Based upon our field investigation and infiltration test data, a clear water absorption rate of approximately 1.6 to 3.1 inches per hour was obtained. It is our opinion that a design clear water rate of 2.1 inches per hour is appropriate for the planned infiltration in the area and depth tested.

A factor of safety should be applied as indicated by the Technical Guidance Document for Water Quality Management Plans (CDM Smith, 2013). The design infiltration rate should be adjusted using Worksheet H, using the following factor values in determination of the suitability assessment, S_A:

Factor Category		**Factor Description**	**Assigned Weight (w)**	**Factor Value (v)**	**Product (p) p = w x v**
A	Suitability Assessment	Soil assessment method	0.25	1	0.25
		Predominant soil texture	0.25	1	0.25
		Site soil variability	0.25	2	0.5
		Depth to groundwater/impervious layer	0.25	1	0.25
		Suitability Assessment Safety Factor, $S_A = \sum p$			1.25

To ensure continued infiltration capability of the infiltration area, a program to maintain the facility should be considered. This program should include periodic removal of accumulated materials, which can slow the infiltration considerably and decrease the water quality. Materials to be removed from the catch basin areas typically consist of litter, dead plant matter, and soil fines (silts and clays). Proper maintenance of the system is critical. A maintenance program should be prepared and properly executed. At a minimum, the program should be as outlined in the Technical Guidance Document for Water Quality Management Plans (CDM Smith, 2013).

The program should also incorporate the recommendations contained within this report and any other jurisdictional agency requirements.

- Systems should be set back at least 10 feet from foundations or as required by the design engineer.

- Any geotextile filter fabric utilized should consist of such that it prevents soil piping but has greater permeability than the existing soil.

- During site development, care should be taken to not disturb the area(s) proposed for infiltration as changes in the soil structure could occur resulting in a change of the soil infiltration characteristics.

Corrosion Protection

Based on the test results, this soil is classified as moderately corrosive to ferrous metals and potentially aggressive towards copper. The laboratory data above should be reviewed and corrosion design should be completed by a qualified corrosion engineer.

In lieu of corrosion design for metal piping, ABS/PVC may be used. Soil corrosion is not considered a factor with ABS/PVC materials. ABS/PVC is considered suitable for use due to the corrosion potential of the on-site soils with respect to metals.

LOR Geotechnical does not practice corrosion engineering. If further information concerning the corrosion characteristics, or interpretation of the results submitted herein, is required, then a competent corrosion engineer could be consulted.

Construction Monitoring

Post investigative services are an important and necessary continuation of this investigation. Project plans and specifications should be reviewed by the project geotechnical consultant prior to construction to confirm that the intent of the recommendations presented in this report have been incorporated into the design.

Additional R-value, expansion, and soluble sulfate content testing may be needed after/during site rough grading.

During construction, sufficient and timely geotechnical observation and testing should be provided to correlate the findings of this investigation with the actual subsurface conditions exposed during construction. Items requiring observation and testing include, but are not necessarily limited to, the following:

1. Site preparation-stripping and removals.

2. Excavations, including approval of the bottom of excavations prior to the processing and preparation of the bottom areas for fill placement.

3. Scarifying and compacting prior to fill placement.

4. Foundation excavations.

5. Subgrade preparation for pavements and slabs-on-grade.

6. Placement of engineered compacted fill and backfill, including approval of fill materials and the performance of sufficient density tests to evaluate the degree of compaction being achieved.

LIMITATIONS

This report contains geotechnical conclusions and recommendations developed solely for use by 55555 Amargosa, LLC, and their design consultants for the purposes described earlier. It may not contain sufficient information for other uses or the purposes of other parties. The contents should not be extrapolated to other areas or used for other facilities without consulting LOR Geotechnical Group, Inc.

The recommendations are based on interpretations of the subsurface conditions concluded from information gained from subsurface explorations and a surficial site reconnaissance.

The interpretations may differ from actual subsurface conditions, which can vary horizontally and vertically across the site. If conditions are encountered during the construction of the project, which differ significantly from those presented in this report, this firm should be notified immediately so we may assess the impact to the recommendations provided. Due to possible subsurface variations, all aspects of field construction addressed in this report should be observed and tested by the project geotechnical consultant.

If parties other than LOR Geotechnical Group, Inc., provide construction monitoring services, they must be notified that they will be required to assume responsibility for the geotechnical phase of the project being completed by concurring with the recommendations provided in this report or by providing alternative recommendations.

The report was prepared using generally accepted geotechnical engineering practices under the direction of a state licensed geotechnical engineer. No warranty, expressed or implied, is made as to conclusions and professional advice included in this report. Any persons using this report for bidding or construction purposes should perform such independent investigations as deemed necessary to satisfy themselves as to the surface and subsurface conditions to be encountered and the procedures to be used in the performance of work on this project.

TIME LIMITATIONS

The findings of this report are valid as of this date. Changes in the condition of a property can, however, occur with the passage of time, whether they be due to natural processes or the work of man on this or adjacent properties. In addition, changes in the Standards-of-Practice and/or Governmental Codes may occur. Due to such changes, the findings of this report may be invalidated wholly or in part by changes beyond our control. Therefore, this report should not be relied upon after a significant amount of time without a review by LOR Geotechnical Group, Inc., verifying the suitability of the conclusions and recommendations.

CLOSURE

It has been a pleasure to assist you with this project. We look forward to being of further assistance to you as construction begins. Should conditions be encountered during construction that appear to be different than indicated by this report, please contact this office immediately in order that we might evaluate their effect.

Should you have any questions regarding this report, please do not hesitate to contact our office at your convenience.

Respectfully submitted,
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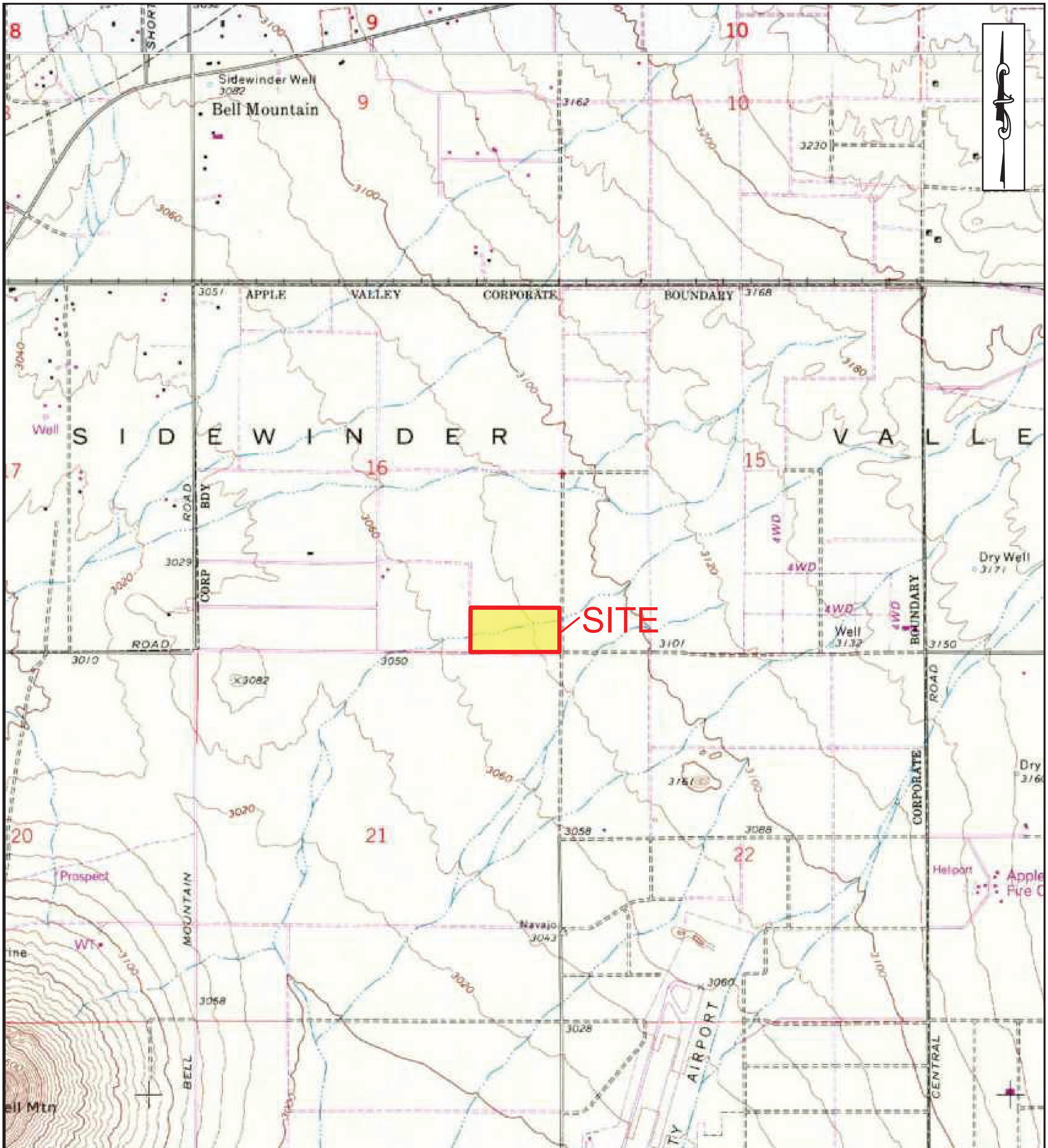
USGS, 2023, https://earthquake.usgs.gov/earthquakes/map/.

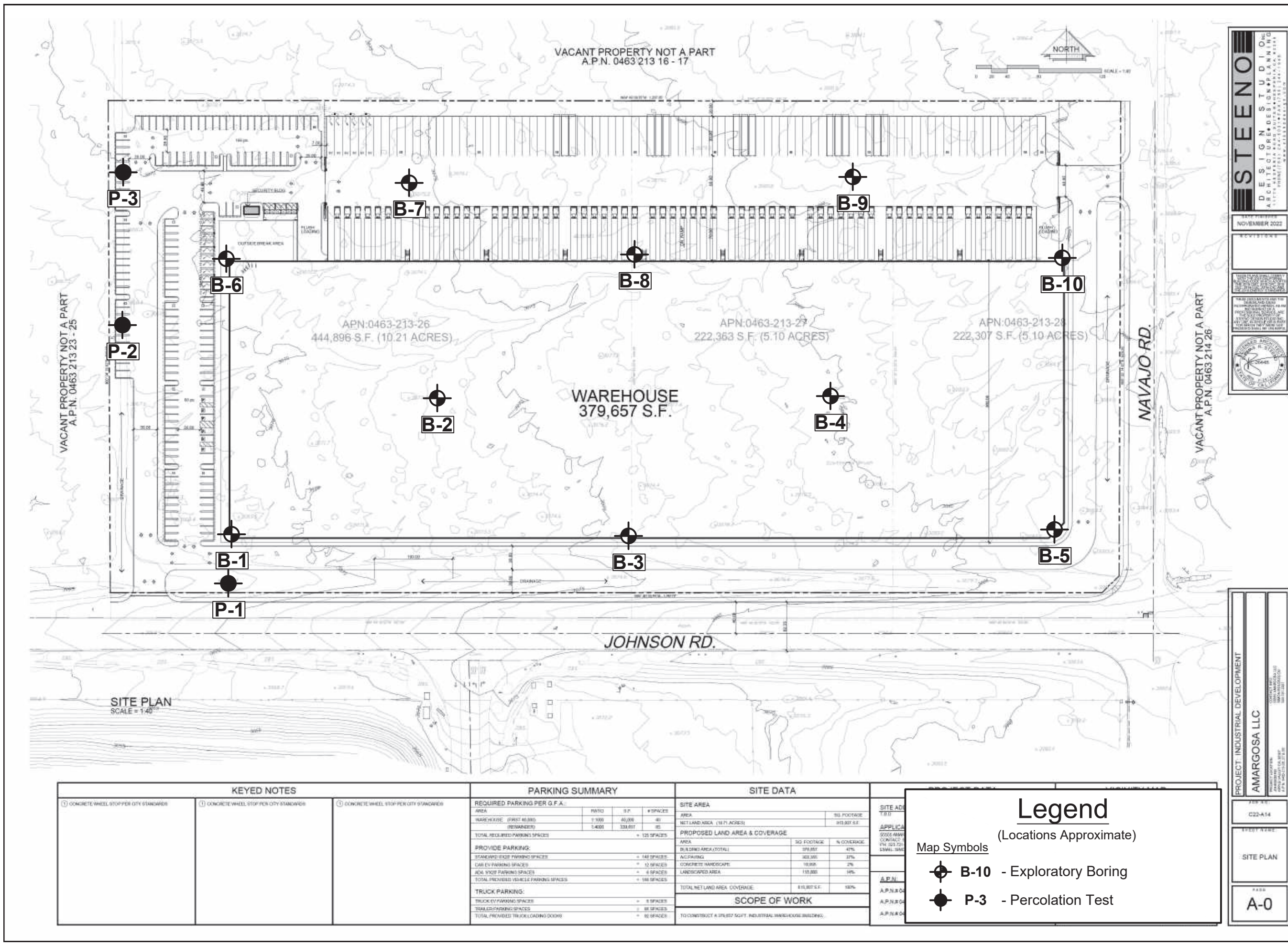
APPENDIX A

Index Map, Site Plan, Regional Geologic Map, and Historical Seismicity Maps



INDEX MAP

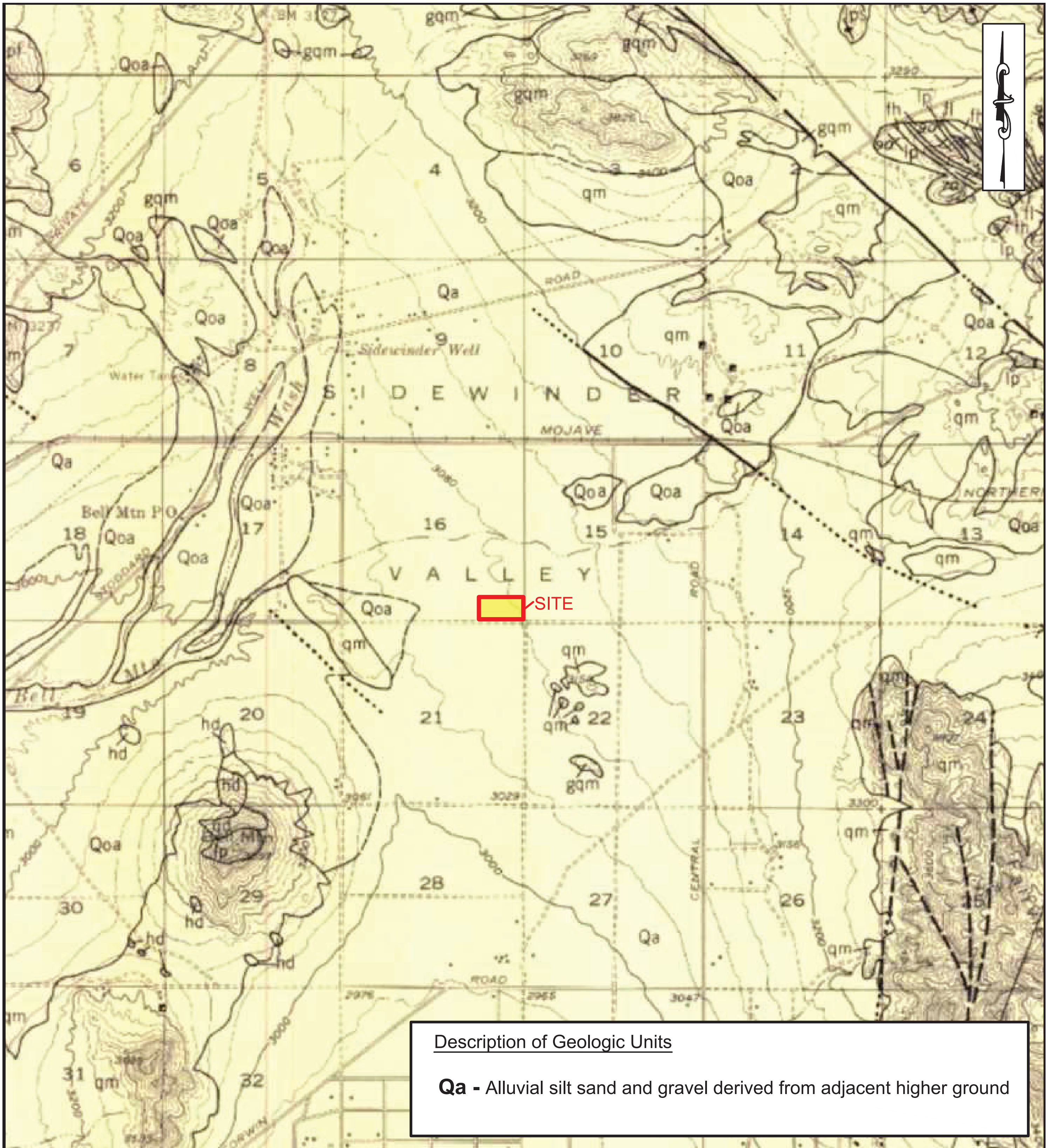
PROJECT:	Proposed Warehouse Development, Town of Apple Valley, California	**PROJECT NO.:**	23885.1
CLIENT:	55555 Amargosa LLC	**ENCLOSURE:**	A-1
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	March 2023
		SCALE:	1" ≈ 2,000'



SITE PLAN

PROJECT:	Proposed Warehouse Development, Town of Apple Valley, California
CLIENT:	55555 Amargosa LLC
PROJECT NO.:	23885.1
ENCLOSURE:	A-2
DATE:	March 2023
SCALE:	1" ≈ 115'

LOR GEOTECHNICAL GROUP, INC.



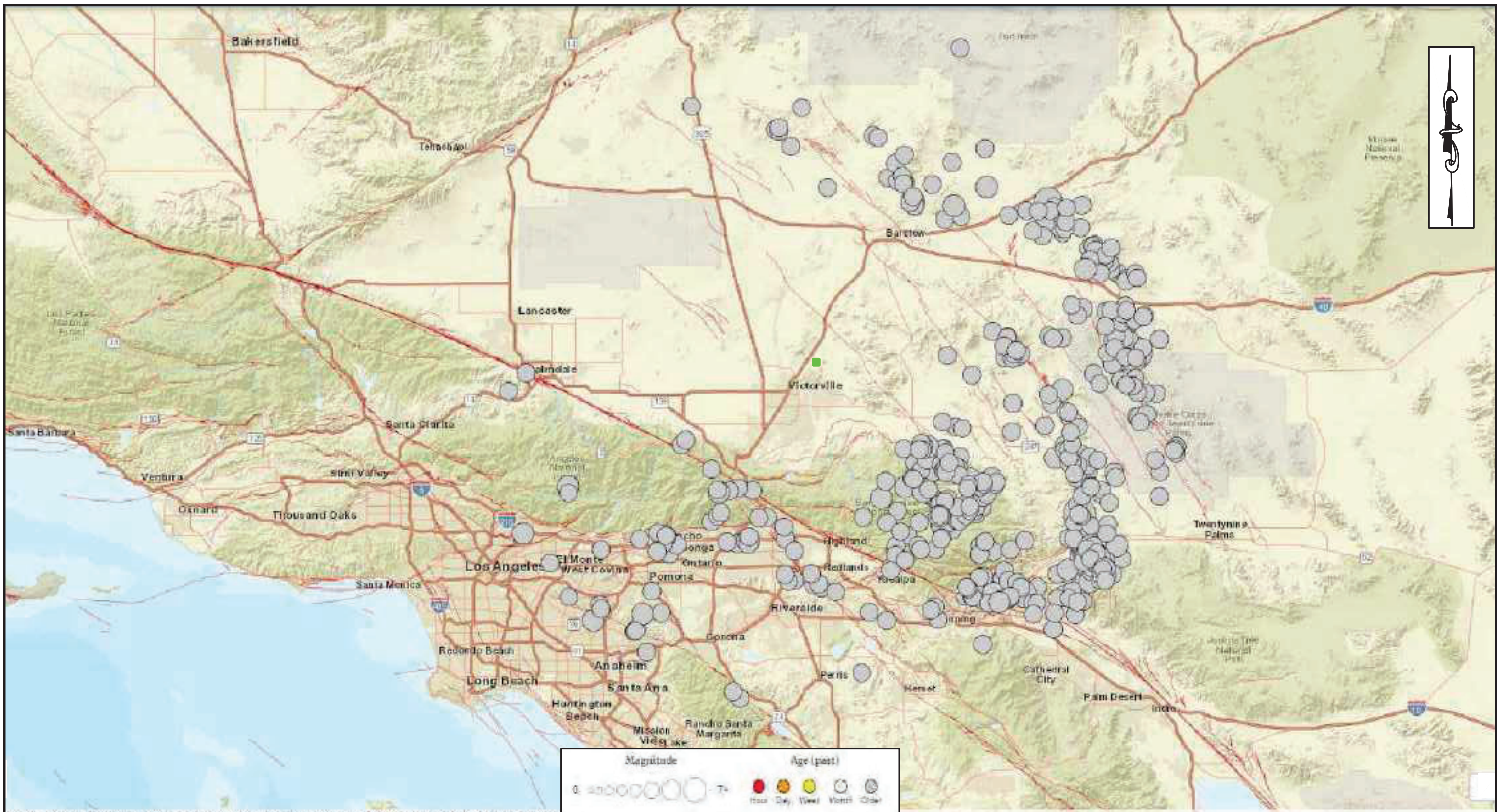
Description of Geologic Units

Qa - Alluvial silt sand and gravel derived from adjacent higher ground

REGIONAL GEOLOGIC MAP

(Dibblee, 1960)

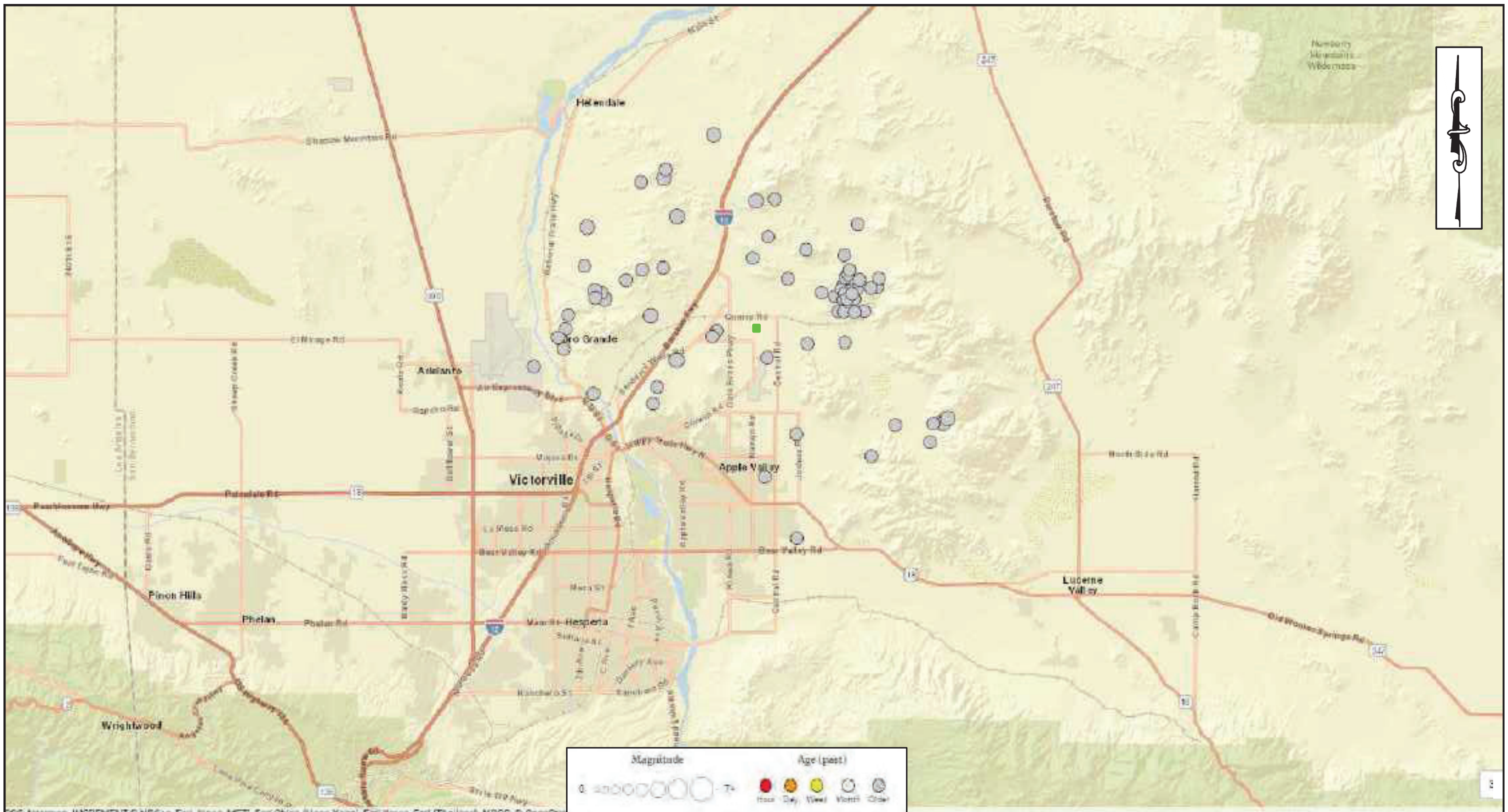
PROJECT:	Proposed Warehouse Development, Town of Apple Valley, California	**PROJECT NO.:**	23885.1
CLIENT:	55555 Amargosa LLC	**ENCLOSURE:**	A-3
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	March 2023
		SCALE:	1" ≈ 4,000'



U.S. Geologic Survey (2023) real-time earthquake epicenter map. Plotted are 463 epicenters of instrument-recorded events from 01/01/32 to present (02/28/23) of local magnitude 4+ within a radius of ~62 miles (100 kilometers) of the site. Location accuracy varies. The site is indicated by the green square (■). The selected magnitude corresponds to a threshold intensity value where very light damage potential begins. These events are also generally widely felt by persons. Red lines mark the surface traces of known Quaternary-age faults.

HISTORICAL SEISMICITY MAP - 100km Radius

PROJECT:	Proposed Warehouse Development, Town of Apple Valley, California	**PROJECT NO.:**	23885.1
CLIENT:	55555 Amargosa LLC	**ENCLOSURE:**	A-4
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	March 2023
		SCALE:	1" ≈ 40km



U.S. Geologic Survey (2023) real-time earthquake epicenter map. Plotted are 75 epicenters of instrument-recorded events from 01/01/78 to present (02/28/23) of local magnitude 1+ within a radius of ~9.2 miles (15 kilometers) of the site. Location accuracy varies. The site is indicated by the green square (■). The selected magnitude corresponds to a threshold intensity value where very light damage potential begins. These events are also generally widely felt by persons. Red lines mark the surface traces of known Quaternary-age faults.

HISTORICAL SEISMICITY MAP - 15km Radius

PROJECT:	Proposed Warehouse Development, Town of Apple Valley, California	**PROJECT NO.:**	23885.1
CLIENT:	55555 Amargosa LLC	**ENCLOSURE:**	A-5
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	March 2023
		SCALE:	1" ≈ 15km

APPENDIX B

Field Investigation Program and Boring Logs

APPENDIX B
FIELD INVESTIGATION

Subsurface Exploration

Our subsurface exploration of the site consisted of drilling 10 exploratory borings to depths of approximately 20 and 30 feet below the existing ground surface using a Mobile B-61 drill rig on December 20, 2022 and February 7, 2023. The approximate locations of the borings are shown on Enclosure A-2 within Appendix A.

The drilling exploration was conducted using a Mobile B-61 drill rig equipped with 8-inch diameter hollow stem augers. The soils were continuously logged by a geologist from this firm who inspected the site, created detailed logs of the borings, obtained undisturbed, as well as disturbed, soil samples for evaluation and testing, and classified the soils by visual examination in accordance with the Unified Soil Classification System.

Relatively undisturbed samples of the subsoils were obtained at a maximum interval of 5 feet. The samples were recovered by using a California split barrel sampler of 2.50 inch inside diameter and 3.25 inch outside diameter or a Standard Penetration Sampler (SPT) from the ground surface to the total depth explored. The samplers were driven by a 140 pound automatic trip hammer dropped from a height of 30 inches. The number of hammer blows required to drive the sampler into the ground the final 12 inches were recorded and further converted to an equivalent SPT N-value. Factors such as efficiency of the automatic trip hammer used during this investigation (80%), borehole diameter (8"), and rod length at the test depth were considered for further computing of equivalent SPT N-values corrected for field procedures (N60) which are included in the boring logs, Enclosures B-1 through B-10.

The undisturbed soil samples were retained in brass sample rings of 2.42 inches in diameter and 1.00 inch in height, and placed in sealed plastic containers. Disturbed soil samples were obtained at selected levels within the borings and placed in sealed containers for transport to our geotechnical laboratory.

All samples obtained were taken to our geotechnical laboratory for storage and testing. Detailed logs of the borings are presented on the enclosed Boring Logs, Enclosures B-1 through B-10. A Boring Log Legend is presented on Enclosure B-i. A Soil Classification Chart is presented as Enclosure B-ii.

CONSISTENCY OF SOIL

SANDS

SPT BLOWS	CONSISTENCY
0-4	Very Loose
4-10	Loose
10-30	Medium Dense
30-50	Dense
Over 50	Very Dense

COHESIVE SOILS

SPT BLOWS	CONSISTENCY
0-2	Very Soft
2-4	Soft
4-8	Medium
8-15	Stiff
15-30	Very Stiff
30-60	Hard
Over 60	Very Hard

SAMPLE KEY

Symbol **Description**

INDICATES CALIFORNIA SPLIT SPOON SOIL SAMPLE

INDICATES BULK SAMPLE

INDICATES SAND CONE OR NUCLEAR DENSITY TEST

INDICATES STANDARD PENETRATION TEST (SPT) SOIL SAMPLE

TYPES OF LABORATORY TESTS

1	Atterberg Limits
2	Consolidation
3	Direct Shear (undisturbed or remolded)
4	Expansion Index
5	Hydrometer
6	Organic Content
7	Proctor (4", 6", or Cal216)
8	R-value
9	Sand Equivalent
10	Sieve Analysis
11	Soluble Sulfate Content
12	Swell
13	Wash 200 Sieve

BORING LOG LEGEND

PROJECT:	Proposed Industrial Development, Apple Valley, California	**PROJECT NO.:**	23885.1
CLIENT:	55555 Amargosa, LLC	**ENCLOSURE:**	B-i
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	February 2023

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

PARTICLE SIZE LIMITS

BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

12" 3" 3/4" No . 4 No. 10 No. 40 200

(U.S. STANDARD SIEVE SIZE)

SOIL CLASSIFICATION CHART

PROJECT:	Proposed Industrial Development, Apple Valley, California	**PROJECT NO.:**	23882.1
CLIENT:	55555 Amargosa, LLC	**ENCLOSURE:**	B-ii
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	February 2023

LOG OF BORING B-1

DEPTH IN FEET	TEST DATA: SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0		3, 7, 9, 10						SW SM	@ 0 feet, <u>ALLUVIUM:</u> **WELL GRADED SAND with SILT, approximately 5% gravel to 1/2", 20% coarse grained sand, 35% medium grained sand, 30% fine grained sand, 10% silty fines, tan, dry, loose.**
	31		3.4		108.6				
								SM	**@ 5 feet, SILTY SAND, approximately 5% gravel to 1/2", 25% coarse grained sand, 25% medium grained sand, 25% fine grained sand, 20% silty fines with trace clay, some thin calcite stringers, red brown, dry.** **@ 5 feet, no secondary calcite.**
5	71		4.5		118.1				
10	69 for 10"		6.0						**@ 10 feet, contains some calcite stringers, rings disturbed.**
15	46 for 5"		7.3						**@ 15 feet, rings disturbed.**
20	51 for 5"		1.1						@ 20 feet, <u>IGNEOUS BEDROCK:</u> **GRANITIC, coarse to medium grained, gray, dry, rings disturbed.**
25	73 for 2"		1.2						
30	77 for 3"								**END OF BORING @ 30.33'** **No fill** **No groundwater** **Bedrock @ 20'**

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23885.1
CLIENT:	55555 Amargosa, LLC	**ELEVATION:**	3,069
LOR GEOTECHNICAL GROUP, INC.		**DATE DRILLED:**	December 20, 2022
		EQUIPMENT:	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-1

LOG OF BORING B-2

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0								SM	@ 0 feet, ALLUVIUM: **SILTY SAND, approximately 5% gravel to 1/2", 25% coarse grained sand, 25% medium grained sand, 25% fine grained sand, 20% silty fines, tan, dry, loose.** @ 1 foot, **becomes red brown with trace clay.** @ 2 feet, **damp, rings disturbed.**
	61 for 11"		4.5						
5	74		2.9		105.8				@ 5 feet, **SILTY SAND, approximately 25% coarse grained sand, 30% medium grained sand, 30% fine grained sand, 15% silty fines, red brown, dry, some calcite stringers.**
10	69		7.5		113.5				@ 10 feet, **slight increase in silty fines, trace clay, damp.**
15	46 for 4"								@ 15 feet, IGNEOUS BEDROCK: **GRANITIC, coarse to medium grained, gray, dry, no recovery.**
20	73 for 5"		1.3						
25	73 for 3"								@ 25 feet, **no recovery.** **END OF BORING @ 25.33'** **No fill** **No groundwater** **Bedrock @ 15'**

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23885.1
CLIENT:	55555 Amargosa, LLC	**ELEVATION:**	3,074
		DATE DRILLED:	December 20, 2022
LOR GEOTECHNICAL GROUP, INC.		**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-2

LOG OF BORING B-3

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0								SM	@ 0 feet, FILL: **SILTY SAND, approximately 5% gravel to 3/4", 20% coarse grained sand, 25% medium grained sand, 30% fine grained sand, 20% silty fines, tan, dry, loose.**
	10		4.3		104.4				
								SW SM	**@ 3 feet, WELL GRADED SAND with SILT, approximately 30% coarse grained sand, 30% medium grained sand, 30% fine grained sand, 10% silty fines, red brown, dry.**
5	62		1.3					SM	**@ 5 feet, SILTY SAND, approximately 25% coarse grained sand, 25% medium grained sand, 30% fine grained sand, 20% silty fines, red brown, dry, some secondary calcite, rings disturbed.**
10	36		2.1		110.8				
15	89		4.3						**@ 15 feet, becomes yellowish-brown, slightly finer grained.**
20	73 for 6"		1.2						**@ 20 feet,** IGNEOUS BEDROCK: **GRANITIC, coarse to medium grained, gray, dry.**
25	73 for 4"		1.1						**END OF BORING @ 25.25'** **No fill** **No groundwater** **Bedrock @ 20'**

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23885.1
CLIENT:	55555 Amargosa, LLC	**ELEVATION:**	3,076
		DATE DRILLED:	December 20, 2022
LOR GEOTECHNICAL GROUP, INC.		**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-3

LOG OF BORING B-4

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0		9, 10						SM	**@ 0 feet,** ALLUVIUM: **SILTY SAND, approximately 5% gravel to 1/2", 25% coarse grained sand, 25% medium grained sand, 25% fine grained sand, 20% silty fines, tan, dry, loose.**
	20		5.2		103.5				**@ 1 foot, SILTY SAND, approximately 25% coarse grained sand, 25% medium grained sand, 25% fine grained sand, 25% silty fines with trace clay, red brown, damp, some thin calcite stringers.**
5	64		4.7						**@ 5 feet, becomes slightly coarser grained, rings disturbed.**
10	46 for 6"		3.5		112.7				
15	65 for 6"		6.6						**@ 15 feet, increase in secondary calcite.**
20	73 for 4"		1.9						**@ 20 feet,** IGNEOUS BEDROCK: **GRANITIC, coarse to medium grained, dark gray, dry.**
25	73 for 6"		2.4						**END OF BORING @ 25.5'** **No fill** **No groundwater** **Bedrock @ 20'**

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23885.1
CLIENT:	55555 Amargosa, LLC	**ELEVATION:**	3,081
		DATE DRILLED:	December 20, 2022
LOR GEOTECHNICAL GROUP, INC.		**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-4

LOG OF BORING B-5

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0		8, 9, 10						SM	@ 0 feet, ALLUVIUM: **SILTY SAND, approximately 5% gravel to 3/4", 15% coarse grained sand, 25% medium grained sand, 25% fine grained sand, 30% silty fines, tan, dry, loose.**
									@ 1 foot, becomes red brown, trace clay, some thin calcite stringers.
	66		2.8		115.1				
5	40 for 6"								**@ 5 feet, no recovery.**
10	67								@ 10 feet, IGNEOUS BEDROCK: **GRANITIC, coarse to medium grained, red brown, dry, no recovery.**
15	115		3.8						**@ 15 feet, slightly coarser grained.**
20	14		3.1						
									END OF OF BORING @ 21.5' **No fill** **No groundwater** **Bedrock @ 10'**

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23885.1
CLIENT:	55555 Amargosa, LLC	**ELEVATION:**	3,082
		DATE DRILLED:	December 20, 2022
LOR GEOTECHNICAL GROUP, INC.		**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-5

LOG OF BORING B-6

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0		9, 10						SM	@ 0 feet, ALLUVIUM: **SILTY SAND with GRAVEL, approximately 15% gravel to 1", 5% coarse grained sand, 15% medium grained sand, 45% fine grained sand, 20% silty fines, tan, dry, loose.**
	63 for 7"		6.3		117.4			SW SM	**@ 2 feet, WELL GRADED SAND with SILT, approximately 30% coarse grained sand, 30% medium grained sand, 30% fine grained sand, 5% silty fines, red brown, damp.**
5	70 for 11"		1.2		117.8				**@ 5 feet, approximately 5% gravel to 1/2", dry.**
10	75 for 11"		3.3		116.0			SM	**@ 10 feet, SILTY SAND, approximately 25% coarse grained sand, 25% medium grained sand, 35% fine grained sand, 15% silty fines with trace clay, red brown, dry.**
15	46 for 6"								**@ 15 feet,** IGNEOUS BEDROCK: **GRANITIC, coarse to medium grained, gray, dry, no recovery.**
20	73 for 5"		1.4						
25	73 for 3"		0.5						**END OF BORING @ 25.25'** **No fill** **No groundwater** **Bedrock @ 15'**

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23885.1
CLIENT:	55555 Amargosa, LLC	**ELEVATION:**	3,071
		DATE DRILLED:	February 7, 2023
		EQUIPMENT:	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-6

LOR GEOTECHNICAL GROUP, INC.

LOG OF BORING B-7

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0								SW SM	@ 0 feet, ALLUVIUM: **WELL GRADED SAND with SILT, approximately 5% gravel to 1/2", 25% coarse grained sand, 30% medium grained sand, 30% fine grained sand, 10% silty fines, tan, dry, loose.**
	22		1.0		111.3				**@ 2 feet, becomes red brown.**
5	40 for 6"		3.0						**@ 5 feet, rings disturbed.**
10	46 for 6"		3.9						**@ 10 feet, rings disturbed.**
15	116 for 10"		1.0						**@ 15 feet,** IGNEOUS BEDROCK: **GRANITIC, coarse to medium grained, gray, dry.**
20	73 for 6"		0.7						
									END OF BORING @ 20.5'
									No fill
									No groundwater
									Bedrock @ 15'

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23885.1
CLIENT:	55555 Amargosa, LLC	**ELEVATION:**	3,075
LOR GEOTECHNICAL GROUP, INC.		**DATE DRILLED:**	February 7, 2023
		EQUIPMENT:	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-7

LOG OF BORING B-8

TEST DATA

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0		9, 10						SM	@ 0 feet, ALLUVIUM: **SILTY SAND, approximately 10% gravel to 1/2", 15% coarse grained sand, 30% medium grained sand, 30% fine grained sand, 15% silty fines, tan, dry, loose.** **@ 1 foot, becomes red brown.**
	55		2.5		122.7				
5	60		2.4		120.1				**@ 5 feet, SILTY SAND, approximately 5% gravel to 1/2", 25% coarse grained sand, 25% medium grained sand, 30% fine grained sand, 15% silty fines, red brown, dry.**
10	46 for 6"		3.6						**@ 10 feet, slightly coarser grained, some secondary calcite, rings disturbed.**
15	104		3.8						**@ 15 feet,** IGNEOUS BEDROCK: **GRANITIC, coarse to medium grained, red brown, dry.**
20	73 fo r6"		0.4						**@ 20 feet, becomes gray.**

END OF BORING @ 20.5'

No fill
No groundwater
Bedrock @ 15'

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23885.1
CLIENT:	55555 Amargosa, LLC	**ELEVATION:**	3,077
		DATE DRILLED:	February 7, 2023
LOR GEOTECHNICAL GROUP, INC.		**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-8

LOG OF BORING B-9

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0								SM	**@ 0 feet,** ALLUVIUM: **SILTY SAND, approximately 5% gravel to 1/2", 25% coarse grained sand, 25% medium grained sand, 30% fine grained sand, 15% silty fines, tan, dry, loose.**
	68 for 8"		3.0		103.7				**@ 2 feet, becomes red brown, trace clay.**
5	42		1.9		122.6				**@ 5 feet, contains some secondary calcite.**
10	79 for 11"		1.9		109.0				**@ 10 feet,** IGNEOUS BEDROCK:**GRANITIC, coarse to medium grained, red brown, dry.**
15	103 fo r11"		2.3						**@ 15 feet, becomes grayish brown.**
20	73 for 5"		0.5						**END OF BORING @ 20.42'** **No fill** **No groundwater** **Bedrock @ 10'**

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23885.1
CLIENT:	55555 Amargosa, LLC	**ELEVATION:**	3,081
		DATE DRILLED:	February 7, 2023
LOR GEOTECHNICAL GROUP, INC.		**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-9

LOG OF BORING B-10

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0		9, 10						SM	@ 0 feet, ALLUVIUM: **SILTY SAND, approximately 5% gravel to 1/2", 25% coarse grained sand, 25% medium grained sand, 25% fine grained sand, 20% silty fines, tan, dry, loose.**
	34		2.6		111.5				**@ 2 feet, becomes red brown, abundant thin calcite stringers.**
5	27		1.6		113.8				**@ 5 feet, slight increase in secondary calcite, slighter coarser grained.**
10	46 for 6"								**@ 10 feet, no recovery.**
15	65 for 4"		2.7						**@ 15 feet,** IGNEOUS BEDROCK: **GRANITIC, coarse to medium grained, red brown, dry.**
20	73 for 6"		0.3						**@ 20 feet, becomes gray.**

END OF BORING @ 20.42'

No fill
No groundwater
Bedrock @ 15'

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23885.1
CLIENT:	55555 Amargosa, LLC	**ELEVATION:**	3,085
		DATE DRILLED:	February 7, 2023
LOR GEOTECHNICAL GROUP, INC.		**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-10

APPENDIX C

Borehole Percolation Testing Program and Infiltration Rate Test Results

APPENDIX C
BOREHOLE PERCOLATION TESTING PROGRAM AND INFILTRATION RATE TEST RESULTS

Two borehole percolation tests were conducted in general accordance with the Shallow Percolation Test procedure as outlined in the Technical Guidance Document for Water Quality Management Plans (CDM Smith, 2013). The general locations of our tests are illustrated on Enclosure A-2 and were conducted at the requested locations and depths. Subsequent to drilling, a 3-inch diameter, perforated PVC pipe wrapped in filter fabric was placed within each test hole and 3/4-inch gravel was placed between the outside of the pipe and the hole wall. Test holes were pre-soaked the same day as drilling. Testing took place the next day, February 8, 2023, within 26 hours but not before 15 hours, of the pre-soak. The holes were filled using water from a 200 gallon water tank. Test periods consisted of allowing the water to drop in 10-minute intervals. After each reading, the hole was refilled. Testing was terminated after a total of 10 readings were recorded. The percolation test data was converted to an infiltration rate using the Porchet Method as outlined by the Technical Guidance Document (CDM Smith, 2013).

Infiltration test results are summarized in the following table:

Test No.	Depth* (ft)	Infiltration Rate** (in/hr)
P-1	6.0	1.72
P-2	6.0	3.11
P-3	6.0	1.63

* depth measured below existing ground surface
** Porchet Method determined clear water rate

The results of this testing are presented as Enclosures C-1 through C-3.

BOREHOLE METHOD PERCOLATION TEST RESULTS

Project:	Proposed Industrial Development	Test Date:	February 8, 2023
Project No.:	23885.1	Test Hole No.:	P-1
Soil Classificaiton:	(SM) Silty sand	Effective Hole Dia.*:	4.8 in.
Depth of Test Hole:	6.0 ft.	Date Excavated:	February 7, 2023
Tested By:	A.L.		

READING	TIME START	TIME STOP	TIME INTERVAL		TOTAL TIME	INITIAL WATER LEVEL	FINAL WATER LEVEL	INITIAL HOLE DEPTH	FINAL HOLE DEPTH	CHANGE IN WATER LEVEL	AVERAGE WETTED DEPTH	PERCOLATION RATE
			min	hr.	hr.	in.	in.	in.	in.	in.	in.	(min/in)
1	8:46 AM	9:11 AM	25	0.42	0.42	24.00	61.00	72.00	72.00	37.00	29.50	0.7
2	9:11 AM	9:36 AM	25	0.42	0.83	24.00	58.00	72.00	72.00	34.00	31.00	0.7
3	9:36 AM	9:46 AM	10	0.17	1.00	24.00	40.00	72.00	72.00	16.00	40.00	0.6
4	9:46 AM	9:56 AM	10	0.17	1.17	24.00	38.00	72.00	72.00	14.00	41.00	0.7
5	9:56 AM	10:06 AM	10	0.17	1.33	24.00	37.00	72.00	72.00	13.00	41.50	0.8
6	10:06 AM	10:16 AM	10	0.17	1.50	24.00	36.00	72.00	72.00	12.00	42.00	0.8
7	10:16 AM	10:26 AM	10	0.17	1.67	24.00	35.00	72.00	72.00	11.00	42.50	0.9
8	10:26 AM	10:36 AM	10	0.17	1.83	24.00	35.00	72.00	72.00	11.00	42.50	0.9
9	10:36 AM	10:46 AM	10	0.17	2.00	24.00	34.50	72.00	72.00	10.50	42.75	1.0
10	10:46 AM	10:56 AM	10	0.17	2.17	24.00	34.50	72.00	72.00	10.50	42.75	1.0

PERCOLATION RATE CONVERSION (Porchet Method):

H_O	48.00	
H_f	37.50	
ΔH	10.50	
H_{avg}	42.75	
I_t	**1.72**	in/hr (clear water rate)

* diameter adjusted to an effective diameter due to the loss in volume of water because of gravel packing

BOREHOLE METHOD PERCOLATION TEST RESULTS

Project:	Proposed Industrial Development	Test Date:	February 8, 2023
Project No.:	23885.1	Test Hole No.:	P-2
Soil Classificaiton:	(SW-SM) Well graded sand w/ silt	Effective Hole Dia.*:	4.8 in.
Depth of Test Hole:	6.0 ft.	Date Excavated:	February 7, 2023
Tested By:	A.L.		

READING	TIME START	TIME STOP	TIME INTERVAL		TOTAL TIME	INITIAL WATER LEVEL	FINAL WATER LEVEL	INITIAL HOLE DEPTH	FINAL HOLE DEPTH	CHANGE IN WATER LEVEL	AVERAGE WETTED DEPTH	PERCOLATION RATE
			min	hr.	hr.	in.	in.	in.	in.	in.	in.	(min/in)
1	8:49 AM	9:14 AM	25	0.42	0.42	24.00	72.00	72.00	72.00	48.00	24.00	0.5
2	9:14 AM	9:39 AM	25	0.42	0.83	24.00	66.00	72.00	72.00	42.00	27.00	0.6
3	10:59 AM	11:09 AM	10	0.17	1.00	24.00	48.00	72.00	72.00	24.00	36.00	0.4
4	11:09 AM	11:19 AM	10	0.17	1.17	24.00	44.00	72.00	72.00	20.00	38.00	0.5
5	11:19 AM	11:29 AM	10	0.17	1.33	24.00	43.00	72.00	72.00	19.00	38.50	0.5
6	11:29 AM	11:39 AM	10	0.17	1.50	24.00	42.00	72.00	72.00	18.00	39.00	0.6
7	11:39 AM	11:49 AM	10	0.17	1.67	24.00	42.00	72.00	72.00	18.00	39.00	0.6
8	11:49 AM	11:59 AM	10	0.17	1.83	24.00	41.50	72.00	72.00	17.50	39.25	0.6
9	11:59 AM	12:09 PM	10	0.17	2.00	24.00	41.50	72.00	72.00	17.50	39.25	0.6
10	12:09 PM	12:19 PM	10	0.17	2.17	24.00	41.50	72.00	72.00	17.50	39.25	0.6

PERCOLATION RATE CONVERSION (Porchet Method):

H_O	48.00	
H_f	30.50	
ΔH	17.50	
H_{avg}	39.25	
I_t	**3.11**	in/hr (clear water rate)

* diameter adjusted to an effective diameter due to the loss in volume of water because of gravel packing

BOREHOLE METHOD PERCOLATION TEST RESULTS

Project:	Proposed Industrial Development	Test Date:	February 8, 2023
Project No.:	23885.1	Test Hole No.:	P-3
Soil Classificaiton:	(SM) Silty sand	Effective Hole Dia.*:	4.8 in.
Depth of Test Hole:	6.0 ft.	Date Excavated:	February 7, 2023
Tested By:	A.L.		

READING	TIME START	TIME STOP	TIME INTERVAL		TOTAL TIME	INITIAL WATER LEVEL	FINAL WATER LEVEL	INITIAL HOLE DEPTH	FINAL HOLE DEPTH	CHANGE IN WATER LEVEL	AVERAGE WETTED DEPTH	PERCOLATION RATE
			min	hr.	hr.	in.	in.	in.	in.	in.	in.	(min/in)
1	8:53 AM	9:18 AM	25	0.42	0.42	24.00	65.00	72.00	72.00	41.00	27.50	0.6
2	9:18 AM	9:43 AM	25	0.42	0.83	24.00	60.00	72.00	72.00	36.00	30.00	0.7
3	12:22 PM	12:32 PM	10	0.17	1.00	24.00	39.00	72.00	72.00	15.00	40.50	0.7
4	12:32 PM	12:42 PM	10	0.17	1.17	24.00	36.00	72.00	72.00	12.00	42.00	0.8
5	12:42 PM	12:52 PM	10	0.17	1.33	24.00	35.00	72.00	72.00	11.00	42.50	0.9
6	12:52 PM	1:02 PM	10	0.17	1.50	24.00	35.00	72.00	72.00	11.00	42.50	0.9
7	1:02 PM	1:12 PM	10	0.17	1.67	24.00	34.50	72.00	72.00	10.50	42.75	1.0
8	1:12 PM	1:22 PM	10	0.17	1.83	24.00	34.50	72.00	72.00	10.50	42.75	1.0
9	1:22 PM	1:32 PM	10	0.17	2.00	24.00	34.00	72.00	72.00	10.00	43.00	1.0
10	1:32 PM	1:42 PM	10	0.17	2.17	24.00	34.00	72.00	72.00	10.00	43.00	1.0

PERCOLATION RATE CONVERSION (Porchet Method):

H_O	48.00	
H_f	38.00	
ΔH	10.00	
H_{avg}	43.00	
I_t	**1.63**	in/hr (clear water rate)

* diameter adjusted to an effective diameter due to the loss in volume of water because of gravel packing

APPENDIX D

Laboratory Testing Program and Test Results

APPENDIX D
LABORATORY TESTING

General

Selected soil samples obtained from the borings were tested in our geotechnical laboratory to evaluate the physical properties of the soils affecting foundation design and construction procedures. The laboratory testing program performed in conjunction with our investigation included in-place moisture content and dry density, laboratory compaction characteristics, direct shear, sieve analysis, sand equivalent, R-value, and corrosion. Descriptions of the laboratory tests are presented in the following paragraphs:

Moisture Density Tests

The moisture content and dry density information provides an indirect measure of soil consistency for each stratum, and can also provide a correlation between soils on this site. The dry unit weight and field moisture content were determined for selected undisturbed samples, in accordance with ASTM D 2921 and ASTM D 2216, respectively, and the results are shown on the boring logs, Enclosures B-1 through B-10 for convenient correlation with the soil profile.

Laboratory Compaction

A selected soil sample was tested in the laboratory to determine compaction characteristics using the ASTM D 1557 compaction test method. The results are presented in the following table:

LABORATORY COMPACTION				
Boring Number	**Sample Depth (feet)**	**Soil Description (U.S.C.S.)**	**Maximum Dry Density (pcf)**	**Optimum Moisture Content (percent)**
B-1	0-3	(SW-SM) Well Graded Sand with Silt	130.	6.5

Direct Shear Test

Shear tests are performed in general accordance with ASTM D 3080 with a direct shear machine at a constant rate-of-strain (0.04 inches/minute). The machine is designed to test a sample partially extruded from a sample ring in single shear. Samples are tested at varying normal loads in order to evaluate the shear strength parameters, angle of internal friction and cohesion. Samples are tested in remolded condition (90 percent relative compaction per ASTM D 1557) and soaked, to represent the worse case conditions expected in the field.

The results of the shear test on a selected soil sample is presented in the following table:

DIRECT SHEAR TEST				
Boring Number	**Sample Depth (feet)**	**Soil Description (U.S.C.S.)**	**Apparent Cohesion (psf)**	**Angle of Internal Friction (degrees)**
B-1	0-3	(SW-SM) Well Graded Sand with Silt	100	39

<u>Sieve Analysis</u>

A quantitative determination of the grain size distribution was performed for selected samples in accordance with the ASTM D 422 laboratory test procedure. The determination is performed by passing the soil through a series of sieves, and recording the weights of retained particles on each screen. The results of the grain size distribution analyses are presented graphically on Enclosure D-1.

<u>Sand Equivalent</u>

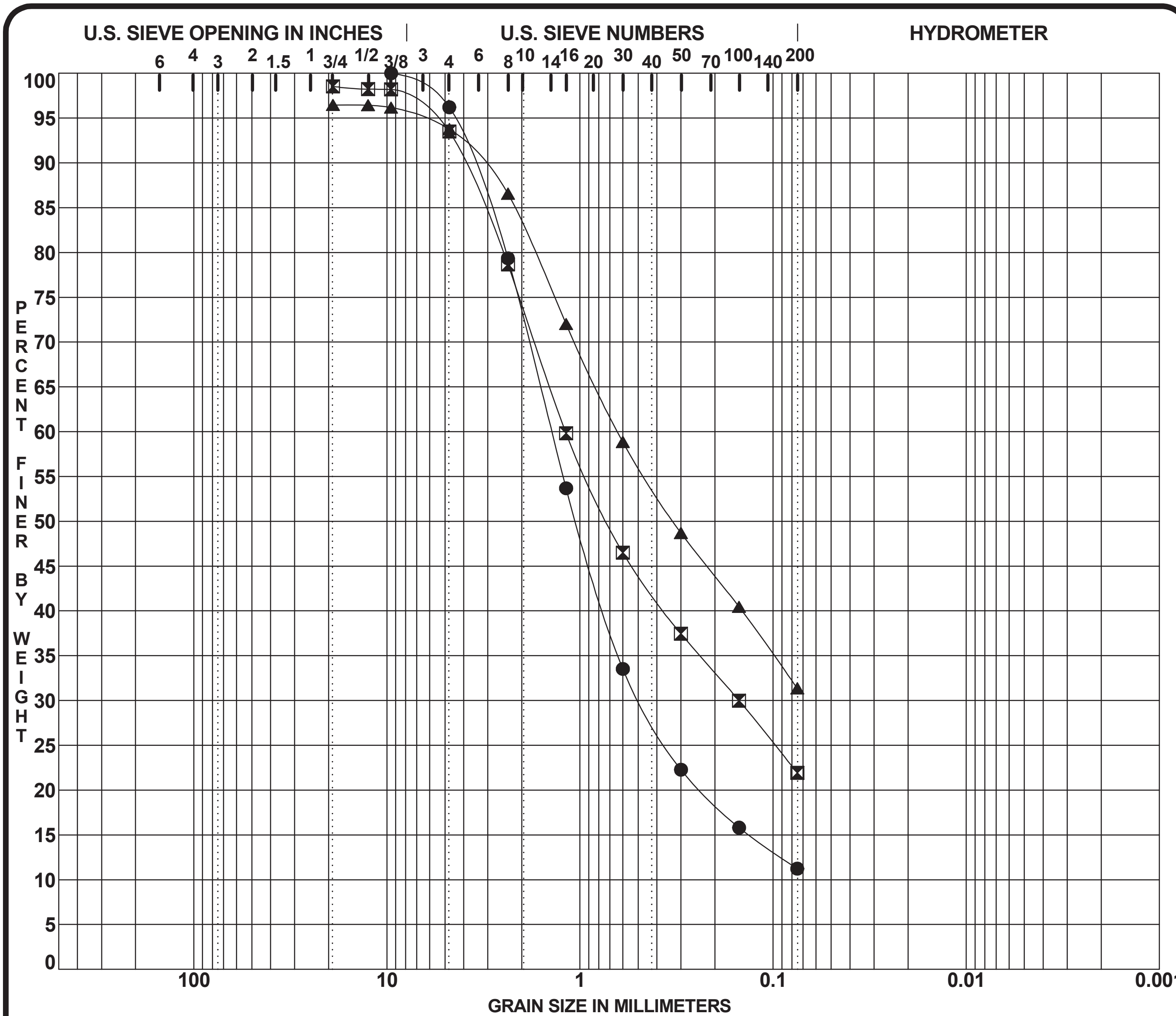
The sand equivalent of selected soils were evaluated using the California Sand Equivalent Test Method, Caltrans Number 217. The results of the sand equivalent tests are presented with the grain size distribution analyses on Enclosure D-1.

<u>R-Value Test</u>

Based on the indicator testing above, a soil sample was selected and tested to determine its R-value using the California R-Value Test Method, Caltrans Number 301. The results of the R-value test is presented on Enclosure D-1.

<u>Corrosion</u>

Corrosion testing was conducted by our subconsultant, Project X Corrosion Engineering. Test results are enclosed.



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Soil Classification	SE	RV	PL	PI	Cc	Cu
●	*B-01*	*@ 0-3'*	*(SW-SM) Well Graded Sand w/ Silt*	*46*	*--*			*2.68*	*22.5*
⊠	*B-04*	*@ 0-3'*	*(SM) Silty Sand*	*29*	*--*				
▲	*B-05*	*@ 0-3'*	*(SM) Silty Sand*	*20*	*17*				

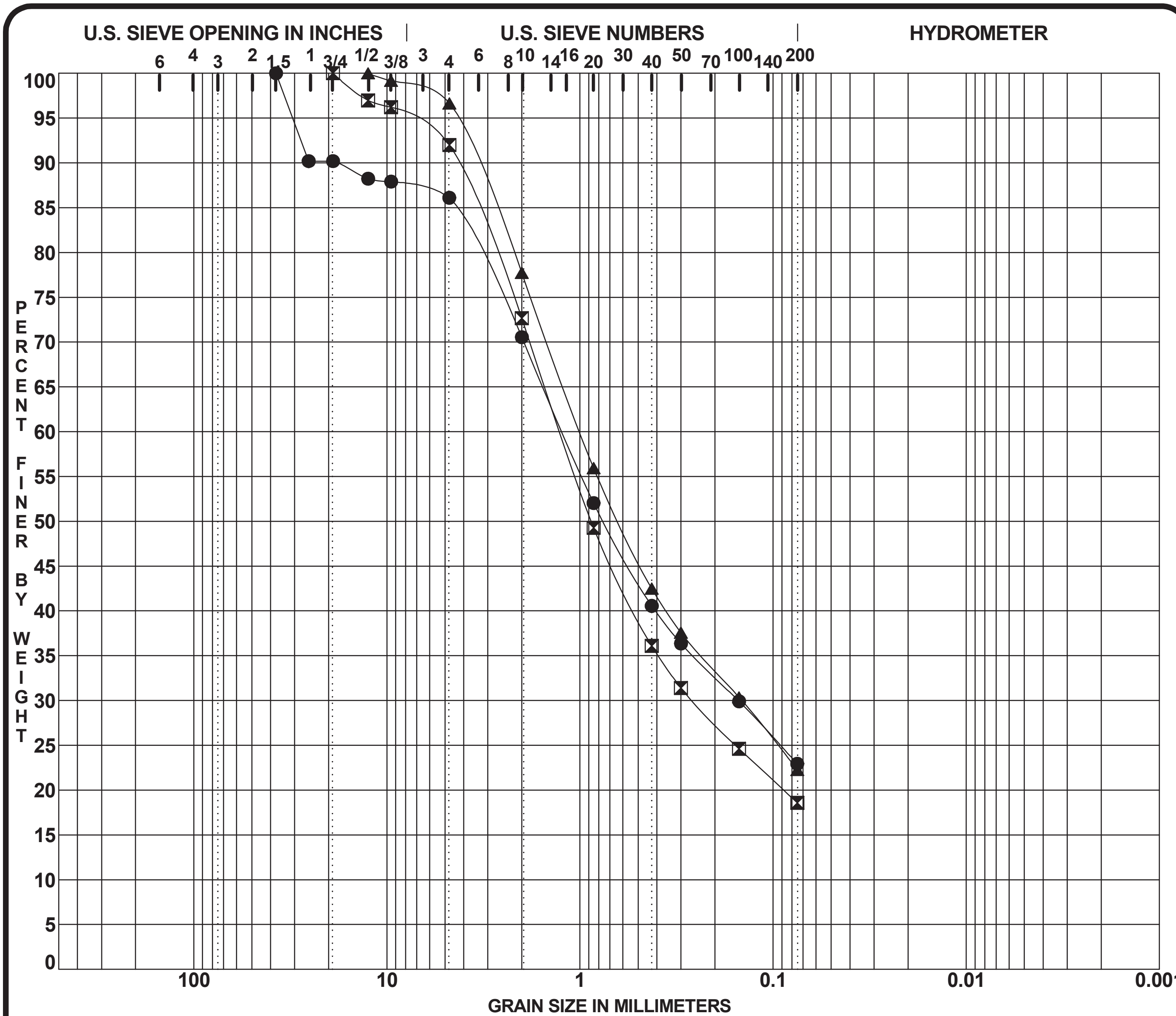
	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	*B-01*	*@ 0-3'*	*9.50*	*1.40*	*0.483*		*3.8*	*85.0*	*11.2*	
⊠	*B-04*	*@ 0-3'*	*19.00*	*1.19*	*0.150*		*5.0*	*71.6*	*21.9*	
▲	*B-05*	*@ 0-3'*	*19.00*	*0.64*			*2.7*	*62.4*	*31.4*	

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23885.1
CLIENT:	55555 Amargosa, LLC	**DATE:**	February 2023

GRADATION CURVES

LOR GEOTECHNICAL GROUP, INC.

ENCLOSURE: D-1



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Soil Classification	SE	RV	PL	PI	Cc	Cu
●	B-06	@ 0-3'	(SM) Silty Sand w/ Gravel	21	--				
⧗	B-08	@ 0-3'	(SM) Silty Sand	25	--				
▲	B-10	@ 0-3'	(SM) Silty Sand	28	--				

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-06	@ 0-3'	37.50	1.23	0.151		13.9	63.2	22.9	
⧗	B-08	@ 0-3'	19.00	1.26	0.260		8.0	73.4	18.6	
▲	B-10	@ 0-3'	12.50	1.00	0.145		3.4	74.4	22.3	

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23885.1
CLIENT:	55555 Amargosa, LLC	**DATE:**	February 2023

GRADATION CURVES

LOR GEOTECHNICAL GROUP, INC.

ENCLOSURE: D-2

Results Only Soil Testing for Apple Valley

February 10, 2023

Prepared for:

Andrew Tardie
LOR Geotechnical
6121 Quail Valley Ct
Riverside, CA
atardie@lorgeo.com

Project X Job#: S230209C
Client Job or PO#: 23885.1

Respectfully Submitted,

Eduardo Hernandez, M.Sc., P.E.
Sr. Corrosion Consultant
NACE Corrosion Technologist #16592
Professional Engineer
California No. M37102
ehernandez@projectxcorrosion.com

REGISTERED PROFESSIONAL ENGINEER
EDUARDO HERNANDEZ
No. M37102
MECHANICAL
STATE OF CALIFORNIA

Soil Analysis Lab Results

Client: LOR Geotechnical
Job Name: Apple Valley
Client Job Number: 23885.1
Project X Job Number: S230209C
February 10, 2023

	Method	ASTM D4327		ASTM D4327		ASTM G187		ASTM G51	ASTM G200	SM 4500-D	ASTM D4327	ASTM D6919	ASTM D6919	ASTM D6919	ASTM D6919	ASTM D6919	ASTM D6919	ASTM D4327	ASTM D4327
Bore# / Description	**Depth**	**Sulfates** SO_4^{2-}		**Chlorides** Cl^-		**Resistivity** As Rec'd	Minimum	**pH**	**Redox**	**Sulfide** S^{2-}	**Nitrate** NO_3^-	**Ammonium** NH_4^+	**Lithium** Li^+	**Sodium** Na^+	**Potassium** K^+	**Magnesium** Mg^{2+}	**Calcium** Ca^{2+}	**Fluoride** F_2^-	**Phosphate** PO_4^{3-}
	(ft)	(mg/kg)	(wt%)	(mg/kg)	(wt%)	(Ohm-cm)	(Ohm-cm)		(mV)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
RV-3 - B-5 - (SM) Silty Sand	0-3	72.1	0.0072	73.1	0.0073	46,900	6,700	8.1	150	1.1	21.6	0.8	0.0	92.3	15.8	36.5	190.9	1.9	2.2
RV-4 - B-6 - (SM) Silty Sand	0-3	20.5	0.0021	18.2	0.0018	28,810	5,695	7.9	148	0.8	5.6	4.3	ND	35.6	11.1	26.9	153.8	2.1	7.5
RV-5 - B-8 - (SW/SM) Well Graded Sand w/ Silt	0-3	75.8	0.0076	79.8	0.0080	34,170	6,633	8.1	159	0.8	1.2	1.3	0.0	82.2	11.8	30.2	187.4	2.8	3.5

Cations and Anions, except Sulfide and Bicarbonate, tested with Ion Chromatography
mg/kg = milligrams per kilogram (parts per million) of dry soil weight
ND = 0 = Not Detected | NT = Not Tested | Unk = Unknown
Chemical Analysis performed on 1:3 Soil-To-Water extract
PPM = mg/kg (soil) = mg/L (Liquid)

Project X Corrosion Engineering

Lab Request Sheet Chain of Custody
Phone (213) 928-7213 Fax (951) 226-1720 www.projectxcorrosion.com
Ship Samples To: 29990 Technology Dr, Suite 13, Murrieta, CA 92563

Project X Job Number: S230209C LOR 23885.1 Apple Valley 3 Full

IMPORTANT: Please complete Project and Sample Identification Data as you would like it to appear in report & include this form with samples.

Company Name:	LOR Geotechnical Group, Inc.	Contact Name:	Andrew Tardie
Phone No:	951-653-1760		
Mailing Address:	6121 Quail Valley	Contact Email:	atardie@lorgeo.com
Accounting Contact:	John Leuer	Invoice Email:	atardie@lorgeo.com
Client Project No:	23885.1	Project Name:	Apple Valley
P.O. #:	--		

	3-5 Day Standard	3 Day Guarantee 50% mark-up	24 Hour RUSH 100% mark-up
(Business Days) Turn Around Time:	●		

METHOD ANALYSIS REQUESTED (Please circle)

For Corrosion Control Recommendations (350g soil sample):
NEED (1) Groundwater depth and
(2) Soil Sample Locations Map

Default Method

FOR THERMAL RESISTIVITY PROVIDE (1,500g soil sample):
(1) Optimal Moisture %
(2) Dry Density(PCF)
(3) Desired Compaction
Date & Received By:

350g Sample — Geo Quad; Full Corrosion Series
*Req: Min. 3 Samples, site map, and groundwater info. — Reports
1,500g Sample

	#	SAMPLE ID - BORE # - Description	DEPTH (ft)	DATE COLLECTED	Soil Resistivity	pH	Sulfate	Chloride	Redox Potential	Sulfide	Ammonia	Nitrate	Flouride	Phosphate	Lithium	Sodium	Potassium	Magnesium	Calcium	Full Corrosion Series	Soil Corrosivity Evaluation Report	Water Corrosivity Mini Report	Moisture Content	Total Alkalinity	Soil Remolding	Thermal Resistivity	(ANC) Alk Neutr Cap	(SRB) Sulfate Reducing	Puckorius Index	XRF Elemental Analysis	Water Hardness
96	1	RV-3 - B-5 - (SM) Silty Sand	0-3	12/20/23																●											
97	2	RV-4 - B-6 - (SM) Silty Sand	0-3	02/07/23																●											
98	3	RV-5 - B-8 - (SW/SM) Well Graded Sand w/ Silt	0-3	02/07/23																●											
	4																														
	5																														
	6																														
	7																														
	8																														
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	15																														

INTRODUCTION TO UTILITY SCREENING TABLES

The following worksheets are used to evaluated the potential impacts of a project.

Table 1 Definition of Project

This Table is used to establish the proposed development parameters that are used the calculation of utilities usage. The independent variable to be entered is identified by shading. For residential development, the number of housing units should be entered in the shaded area. For non-residential development, the total floor area of development should be entered in the shaded area.

Tables 2 Summary of Project Impacts

Consumption/Generation Rates. This table indicates the development's projected electrical consumption, natural gas consumption, water consumption, effluent generation, and solid waste generation. No modifications should be made to this table.

Tables 3 through 5 Calculation of Project Impacts

Tables 3 through 7 indicate the results of the analysis.
Table 3 Water Consumption - This Table calculates the projected water consumption ratesfor new development. Default generation rates provided in the shaded areas may be changed.
Table 4 Sewage Generation - This Table calculates the projected effluent generation rates for new development. Default generation rates provided in the shaded areas may be changed.
Table 5 Solid Waste Generation - This Table calculates the projected waste generation for new development. Default generation rates provided in the shaded areas may be changed.

Table 1 Project Name: APPL 004 - Navajo & Johnson Road - Projected Utilities Use

Definition of Project Parameters - Enter independent variable (no. of units or floor area) in the shaded area. The independent variable to be entered is the number of units (for residential development) or the gross floor area (for non-residential development).

Land Use	Independent	Factor
Residential Uses	**Variable**	**Total Units**
Single-Family Residential	No. of Units	0
Medium Density Residential	No. of Units	0
Multiple-Family Residential	No. of Units	0
Mobile Home	No. of Units	0
Office Uses	**Variable**	**Total Floor Area**
Office	Sq. Ft.	0
Medical Office Building	Sq. Ft.	0
Office Park	Sq. Ft.	0
Bank/Financial Services	Sq. Ft.	0
Commercial Uses	**Variable**	**Floor Area/Rooms**
Specialty Retail Commercial	Sq. Ft.	0
Convenience Store	Sq. Ft.	0
Movie Theater	Sq. Ft.	0
Shopping Center	Sq. Ft.	0
Sit-Down Restaurant	Sq. Ft.	0
Fast-Food Restaurant	Sq. Ft.	0
Hotel	Rooms	0
Manufacturing Uses	**Variable**	**Total Floor Area**
Industrial Park	Sq. Ft.	0
Manufacturing	Sq. Ft.	0
General Light Industry	Sq. Ft.	0
Warehouse	Sq. Ft.	410,241
Public/Institutional	**Variable**	**Total Floor Area**
Public/Institutional	Sq. Ft.	0
Open Space	Sq. Ft.	0

Table 2: Projected Utility Consumption and Generation

Summary of Project Impacts **- Results of analysis identified below. No modifications should be made to this Table.**

Utilities Consumption and Generation	Factor	Rates

Water Consumption	**gallons/day**	**18,461**
Sewage Generation	**gallons/day**	**10,256**
Solid Waste Generation	**pounds/day**	**3,663**

Table 3: Water Consumption

Project Component	Units of Measure	Consumption Factor		Projected Consumption
Residential Uses	**No. of Units**	**Gals. of Water**	**Variable**	**Gals./Day**
Single-Family Residential	0	390.000	Gals./Day/Unit	0.0
Medium Density Residential	0	300.000	Gals./Day/Unit	0.0
Multiple-Family Residential	0	234.000	Gals./Day/Unit	0.0
Mobile Home	0	234.000	Gals./Day/Unit	0.0
Office Uses	**Sq. Ft.**	**Gals. of Water**	**Variable**	**Gals./Day**
Office	0	0.300	Gals./Day/Sq. Ft.	0.0
Medical Office Building	0	0.300	Gals./Day/Sq. Ft.	0.0
Office Park	0	0.300	Gals./Day/Sq. Ft.	0.0
Bank/Financial Services	0	0.150	Gals./Day/Sq. Ft.	0.0
Commercial Uses	**Sq. Ft./Room**	**Gals. of Water**	**Variable**	**Gals./Day**
Specialty Retail Commercial	0	0.150	Gals./Day/Sq. Ft.	0.0
Convenience Store	0	0.150	Gals./Day/Sq. Ft.	0.0
Movie Theater	0	0.195	Gals./Day/Sq. Ft.	0.0
Shopping Center	0	0.495	Gals./Day/Sq. Ft.	0.0
Sit-Down Restaurant	0	1.500	Gals./Day/Sq. Ft.	0.0
Fast-Food Restaurant	0	0.120	Gals./Day/Sq. Ft.	0.0
Hotel	0	187.500	Gals./Day/Room.	0.0
Manufacturing Uses	**Sq. Ft.**	**Gals. of Water**	**Variable**	**Gals./Day**
Industrial Park	0	0.300	Gals./Day/Sq. Ft.	0.0
Manufacturing	0	0.300	Gals./Day/Sq. Ft.	0.0
General Light Industry	0	0.300	Gals./Day/Sq. Ft.	0.0
Warehouse	410,241	0.045	Gals./Day/Sq. Ft.	18,460.8
Public/Institutional Use	**Sq. Ft.**	**Gals. of Water**	**Variable**	**Gals./Day**
Public/Institutional	0	0.120	Gals./Day/Sq. Ft.	0.0
Open Space	0	0.120	Gals./Day/Sq. Ft.	0.0
Total Daily Water Consumption (gallons/day)				**18,460.8**

Source: Derived from Los Angeles County Sanitation District rates (150% of effluent generation).

Table 4: Sewage Generation

Project Component	Units of Measure	Generation Factor		Projected Consumption
Residential Uses	**# of Units**	**Gals. of Effluent**	**Variable**	**Gals./Day**
Single-Family Residential	0	260.000	Gals./Day/Unit	0.0
Medium Density Residential	0	200.000	Gals./Day/Unit	0.0
Multiple-Family Residential	0	156.000	Gals./Day/Unit	0.0
Mobile Home	0	156.000	Gals./Day/Unit	0.0
Office Uses	**Sq. Ft.**	**Gals. of Effluent**	**Variable**	**Gals./Day**
Office	0	0.200	Gals./Day/Sq. Ft.	0.0
Medical Office Building	0	0.200	Gals./Day/Sq. Ft.	0.0
Office Park	0	0.200	Gals./Day/Sq. Ft.	0.0
Bank/Financial Services	0	0.100	Gals./Day/Sq. Ft.	0.0
Commercial Uses	**Sq. Ft./# Rooms**	**Gals. of Effluent**	**Variable**	**Gals./Day**
Specialty Retail Commercial	0	0.100	Gals./Day/Sq. Ft.	0.0
Convenience Store	0	0.100	Gals./Day/Sq. Ft.	0.0
Movie Theater	0	0.130	Gals./Day/Sq. Ft.	0.0
Shopping Center	0	0.330	Gals./Day/Sq. Ft.	0.0
Sit-Down Restaurant	0	1.000	Gals./Day/Sq. Ft.	0.0
Fast-Food Restaurant	0	0.080	Gals./Day/Sq. Ft.	0.0
Hotel	0	125.000	Gals./Day/Room.	0.0
Manufacturing Uses	**Sq. Ft.**	**Gals. of Effluent**	**Variable**	**Gals./Day**
Industrial Park	0	0.200	Gals./Day/Sq. Ft.	0.0
Manufacturing	0	0.200	Gals./Day/Sq. Ft.	0.0
General Light Industry	0	0.200	Gals./Day/Sq. Ft.	0.0
Warehouse	410,241	0.025	Gals./Day/Sq. Ft.	10,256.0
Public/Institutional Use	**Sq. Ft.**	**Gals. of Effluent**	**Variable**	**Gals./Day**
Public/Institutional	0	0.096	Gals./Day/Sq. Ft.	0.0
Open Space	0	0.096	Gals./Day/Sq. Ft.	0.0

Total Daily Sewage Generation (gallons/day)	**10,256.0**
Source: Los Angeles County Sanitation Districts.	

Table 5: Solid Waste Generation				
Project Component	Units of Measure	Generation Factor		Projected Generation
Residential Uses	# of Units	Lbs.of Waste	Variable	Lbs./Day
Single-Family Residential	0	12.23	Lbs./Day/Unit	0.0
Medium Density Residential	0	12.23	Lbs./Day/Unit	0.0
Multiple-Family Residential	0	12.23	Lbs./Day/Unit	0.0
Mobile Home	0	12.23	Lbs./Day/Unit	0.0
Office Uses	Sq. Ft.	Lbs.of Waste	Variable	Lbs./Day
Office	0	6.00	Lbs./Day/1,000 Sq. Ft.	0.0
Medical Office Building	0	6.00	Lbs./Day/1,000 Sq. Ft.	0.0
Office Park	0	6.00	Lbs./Day/1,000 Sq. Ft.	0.0
Bank/Financial Services	0	6.00	Lbs./Day/1,000 Sq. Ft.	0.0
Commercial Uses	Sq. Ft./# Rooms	Lbs.of Waste	Variable	Lbs./Day
Specialty Retail Commercial	0	42.00	Lbs./Day/1,000 Sq. Ft.	0.0
Convenience Store	0	42.00	Lbs./Day/1,000 Sq. Ft.	0.0
Movie Theater	0	6.00	Lbs./Day/1,000 Sq. Ft.	0.0
Shopping Center	0	6.00	Lbs./Day/1,000 Sq. Ft.	0.0
Sit-Down Restaurant	0	6.00	Lbs./Day/1,000 Sq. Ft.	0.0
Fast-Food Restaurant	0	42.00	Lbs./Day/1,000 Sq. Ft.	0.0
Hotel	0	6.00	Lbs./Day/Room	0.0
Manufacturing Uses	Sq. Ft.	Lbs.of Waste	Variable	Lbs./Day
Industrial Park	0	8.93	Lbs./Day/1,000 Sq. Ft.	0.0
Manufacturing	0	8.93	Lbs./Day/1,000 Sq. Ft.	0.0
General Light Industry	0	8.93	Lbs./Day/1,000 Sq. Ft.	0.0
Warehouse	410,241	8.93	Lbs./Day/1,000 Sq. Ft.	3,663.5
Public/Institutional Use	Sq. Ft.	Lbs.of Waste	Variable	Lbs./Day
Public/Institutional	0	4.00	Lbs./Day/1,000 Sq. Ft.	0.0
Open Space	0	3.00	Lbs./Day/1,000 Sq. Ft.	0.0
Total Daily Solid Waste Generation				3,663.5

Source: City of Los Angeles CEQA Thresholds Guide, 2006, and
City of Los Angeles Average Solid Waste Generation Rates, April 1981

RED
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SOLUTION

Preliminary Hydrology Study

August 12, 2023

APN: 0463-213-26, 27, 28

Johnson Road Industrial Building

RBS PROJECT NO: 220033

San Bernardino

REGISTERED PROFESSIONAL ENGINEER
DAVID W LARSON
No. C 52991
EXP 12-31-2024
CIVIL
STATE OF CALIFORNIA

PROFESSIONAL ENGINEER'S AFFIRMATIVE STATEMENT

I have examined and am familiar with the information in this document and all appendices, and based on my inquiries of individuals immediately responsible for obtaining the information in this document, I believe that the information is true, accurate, and complete

Prepared by

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Table of Contents

Appendix A

Appendix B

I. INTRODUCTION

Location of Property

The proposed project consists of three (3) undeveloped parcels in the County of San Bernadino, California in the Town of Apple Valley at the Northwest corner of the intersection of Navajo Road and Johnson Road. The land area is 20.54 acres consisting of Assessor's Parcel Numbers (APN) 0463-213-26, 27, and 28. See the adjacent figure, Exhibit A for Location Map and Exhibit B for Land Use Map.

The three undeveloped lots have improved access on the south along Johnson Road, unimproved access along Navajo Road on the east; and vacant land abutting the west and north sides of the site.

Project Description

`After the dedication of 2.34 acres to street right-of-way, the remaining 18.20-acre site is proposed to be developed as one (1) parcel with an approximately 350,000 square foot industrial building with associated truck docks and truck and vehicle parking on it. There is limited landscaping proposed for the site.

Purpose and Scope

The purpose of this study is to analyze the combined on-site and off-site flows for the existing and developed conditions in order to obtain the differential volume need to be stored such that only historical volumes of storm water are released to the dry lakebed. The differential storm water volume will be retained on site and infiltrated into the ground water basin. Building PADS will be elevated such that a 1-foot elevation above the neighboring flood water surface elevation to protect the property from flood and storm water damages.

Methodology

This study is based on the San Bernardino County Hydrology Manual, Detention Basin Design Criteria for San Bernardino and the April 6, 2010, Addendum that addresses the Antecedent Moisture Condition (AMC) for arid regions of the County, and CivilDesign Rational Method and Unit Hydrograph Software to model the storm channel flows.

The following criteria were used to calculate the flows:

1.	Current land use:	Vacant Land
2.	Proportion Impervious:	Pre-Developed: 10%. Post-Developed: 15%
3.	Intended Use:	Industrial Building and Truck/Employee Parking
4.	Soil Type:	Hydrologic Soil Group A, C, & D(See Exhibit C)
5.	NOAA 14 Precipitation Frequency:	100-year 1-hour=1.08 inches (See Exhibit D) 100-year 6-hour=2.01 inches (See Exhibit D)

100-year 24-hour=3.43 inches (See Exhibit D)

6. San Bernadino County Hydrology Manual — Unit Hydrograph Method

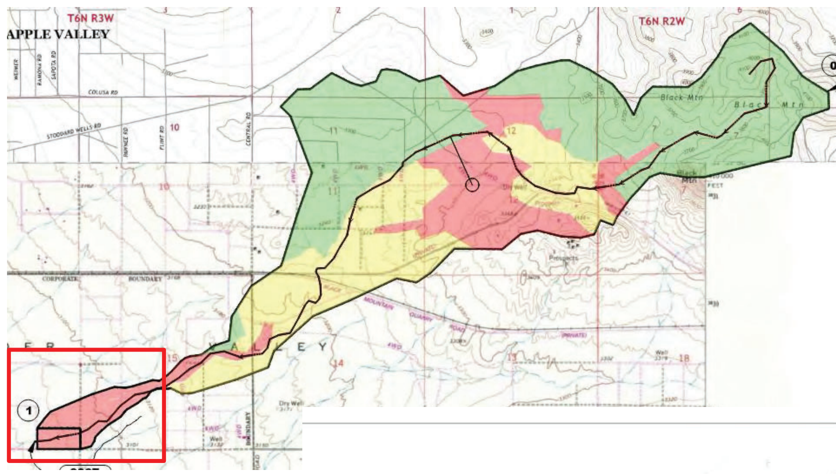
Floodplain Information

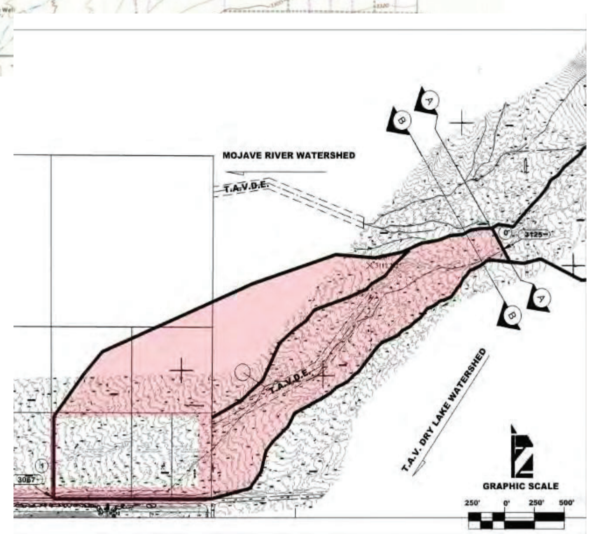
The project site is located inside of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map Panel 06071C5830H effective August 28, 2008. This panel indicates that the site is located within Zone D, defined by FEMA as "Area with Flood Risk Due to Levee." (See Appendix A, Exhibit E) for San Bernardino County.

II. OFF SITE HYDROLOGY

Off Site Drainage Description

The off-site area that contributes drainage to this site consists of approximately 1956 acres and extends to the north and northeast of the site. The land is undeveloped, relatively flat at the lower elevations, and steep and rocky at the upper elevations. Vegetation consists of fair coverage of sage brush and annual plants.

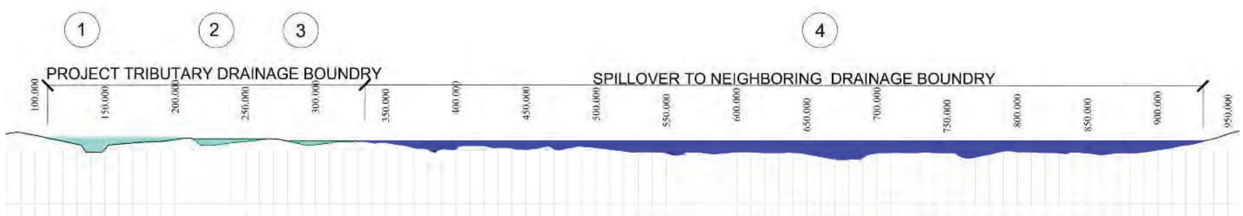


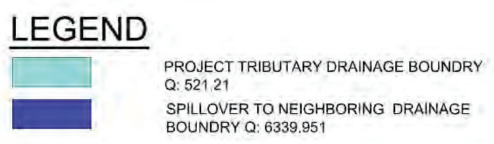


Although the off-site watershed lies within the Town of Apple Valley Dry Lake watershed draining south to the dry lakebed, its northern border is the division line between the Dry Lake watershed and the Mojave River Watershed. As the storm flows build from the northeast, the storm flows will become larger and larger until they exceed the capacity of the natural channels within the off-site watershed boundary and sheet flow to the north into the Mojave River watershed channels that have much greater capacity to retain these flows.

This is pronounced at Sections A-A where the tributary watershed within the dry lakebed watershed necks down to a narrow channel area with a limiting capacity of 521 cfs for channels 1-3 per Section A-A below.

SECTION A-A





However, channel area 4, which is the Mojave River Watershed, has a limited capacity of 6,340 cfs. (See Exhibit I for Mannings calculations)

Pre-Developed Hydrology

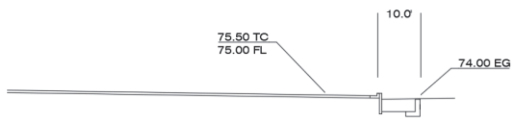
Based on the San Bernardino County Hydrology Manual and CivilDesign Unit Hydrograph Software, Exhibit F shows the 1956-acre tributary area, soils areas, CN values, and lengths as well as the Lag Calculation. Once entered into the software with the 100-year 24-hour rainfall data, it was determined that the Watershed would produce 1681 cfs with an associated volume of 433 acre-feet of storm water.

Based on the limitations associated with Section A-A above, only 521 cfs is passing through of 1681 cfs tributary to the site. At this point it was determined that an additional 158.25 cfs (see exhibit H) would add on as the flows travel west to the site for a total of 679.25 cfs as these flows leave the site on the west. The volume associated with this flow can be deduced as (679.25/1956*433=) 139 acre-feet.

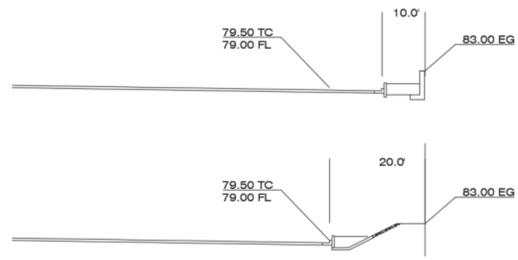
Post-Developed Drainage Description

The 18.20 acre development will support a building that is approximately 350,000 square feet, truck docks, employee and truck parking with limited landscaping. There will also be outside seating areas, trash facilities and other appurtenances. The pavement at the northern side of the building will be depressed 4-feet below the building to provide docking space for semi-trucks. A portion of this area will be used as retention for the excess stormwater that is generated by the development of the site. The eastern, western, and southern sides of the building will be at grade to channelize storm flows around the building along with the street sections. Off-site grading is proposed on the east side of Navajo Road to direct the storm flows south to a culvert crossing and local road tilt section that will convey the off-site flows to the north side of Johnson Road where these flows will be convey west and released into the historic natural drainage conveyance west of the project site. Tributary flows along the northern property line will be collected in a channel system between the truck parking and the northern property line.

Sections C-C and B-B, shown below, detail the proposed channel design along the northern property line. Section B-B shows two options. The top option on section B-B illustrates a vertical drop while the lower option illustrates a rip-rap slop to the channel. Exhibit J provides a Mannings calculation showing that the proposed channel can capture the 83 cfs off-site flows and convey them west at a depth of 1.42 feet.



C NORTHERN PL DRAINAGE CHANNEL
SECTION C-C



B NORTHERN PL DRAINAGE CHANNEL
SECTION B-B

Post-Developed Hydrology

When considering a volume-based reduction associated with the dry lakebed, the change in volume is subject to the change in Ap (pervious Area). Thus, a conservative approach would be to assume the whole site is effectively impervious. Considering that the entire 20-acre site becomes impervious is the same as assuming the Ap is zero for the site which then makes the CN value for the site 98.

The on-site area lies exclusively with in Soils Type A, which based on the soils report comprises of 20% of the overall 1956-acre watershed or 391.2 -acres. Thus, as shown on Exhibit G, if we breakdown the pre-developed 391.2 acres into its respective impervious and pervious areas ratio the following areas are obtained:

Given:

Type A Soils Area = 391.2 acres	Pre-Developed Soils Ratio
Ap=0.10	Impervious Area = 391.2 * 0.10 = 39.12 acres
	Pervious Area = 391.2 * 0.90 = 352.08 acres

When Developed, 20-acres would be added to the impervious area and subtracted from the previous area as follows

Developed Site Soils Ratio
39.12-acres + 20-acres = 59.12-aces /391.2= 0.15 impervious
352.08-acres – 20-acres = 332.08-acres / 391.2 = 0.85 pervious

Thus, by adjusting the Type A soils pervious area (Ap) from 0.90 to 0.85, the development site’s effect on the watershed reveals a change in Q100 to 1687.54 cfs and a volume of 436.74 AF.

Thus, to mitigate the volume change to the dry lakebed, a retention volume of (436.74-433.28=) 3.46 AF must be provided on-site and infiltrated.

Infiltration Basin Sizing of Off-Site Flows.

To meet the infiltration requirements, three basins have been utilized. One along the western property line 530-lf long with a cross-sectional area of 72 square feet. The other two utilize a sharp crested weir configuration to create a drop structure that will hold back a portion of the channelized flows. Each channel area at depth “P” will be utilized as infiltration basins, which consists of the following:

Johnson Road:	Western Basin:	0.66 AF
	Eastern Basin:	1.35 AF
Western Basin:		0.876 AF
ADS Underground		0.58 AF
Total:		3.46 AF

The sharp crested weir calculation is based on “Kindsvater-Carter Method” Equation:

Q=CeLeHe^1.5

Le=L+kb	L=25	B=31	kb=0.0145
He= H+kh	P=4.25	H=3.75	kh= 0.003
Ce=3.7			

Where:

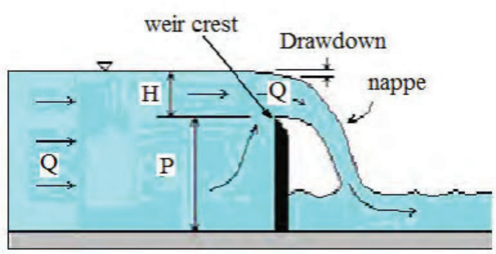
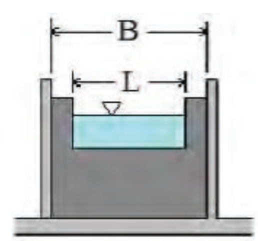


Figure 1. Longitudinal Section, Flow Over a Sharp-crested Weir

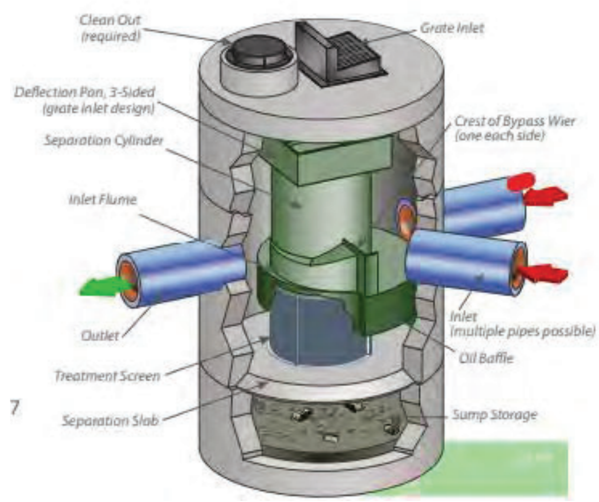


(c) contracted rectangular

The use of this equation resulted in a Q of 673 at the western weir when L= 25 and a Q of 828 cfs when L=33.5 feet (see Exhibit)

On-Site Storm Flow Clarifiers – CDS System Sizing

In order to protect off-site flows from on-site contaminated flows, two Contech CDS System clarifiers CDS2020-5 will be installed to treat on-site flows prior to exiting the site into the 0ff-site drainage conveyance channels. The CDS System separates and traps trash, debris, sediment, and hydrocarbons from storm water runoff.



III. CONCLUSIONS

The proposed project will follow regional and local laws and ordinances that require a portion of the on-site rainfall to be stored on-site and eventually infiltrate into the ground. When all systems are installed, the project will be protected from off-site flows and flooding from on-site developed flows. Thus, the project meets the requirements for Flood Protection as outlined in the San Bernardino County Hydrology Manual.

APPENDIX A

Exhibits:

Location Map – A

Land Use Map - B

USDA Soil Report – C

USDA Tributary Area Soil Report – C1

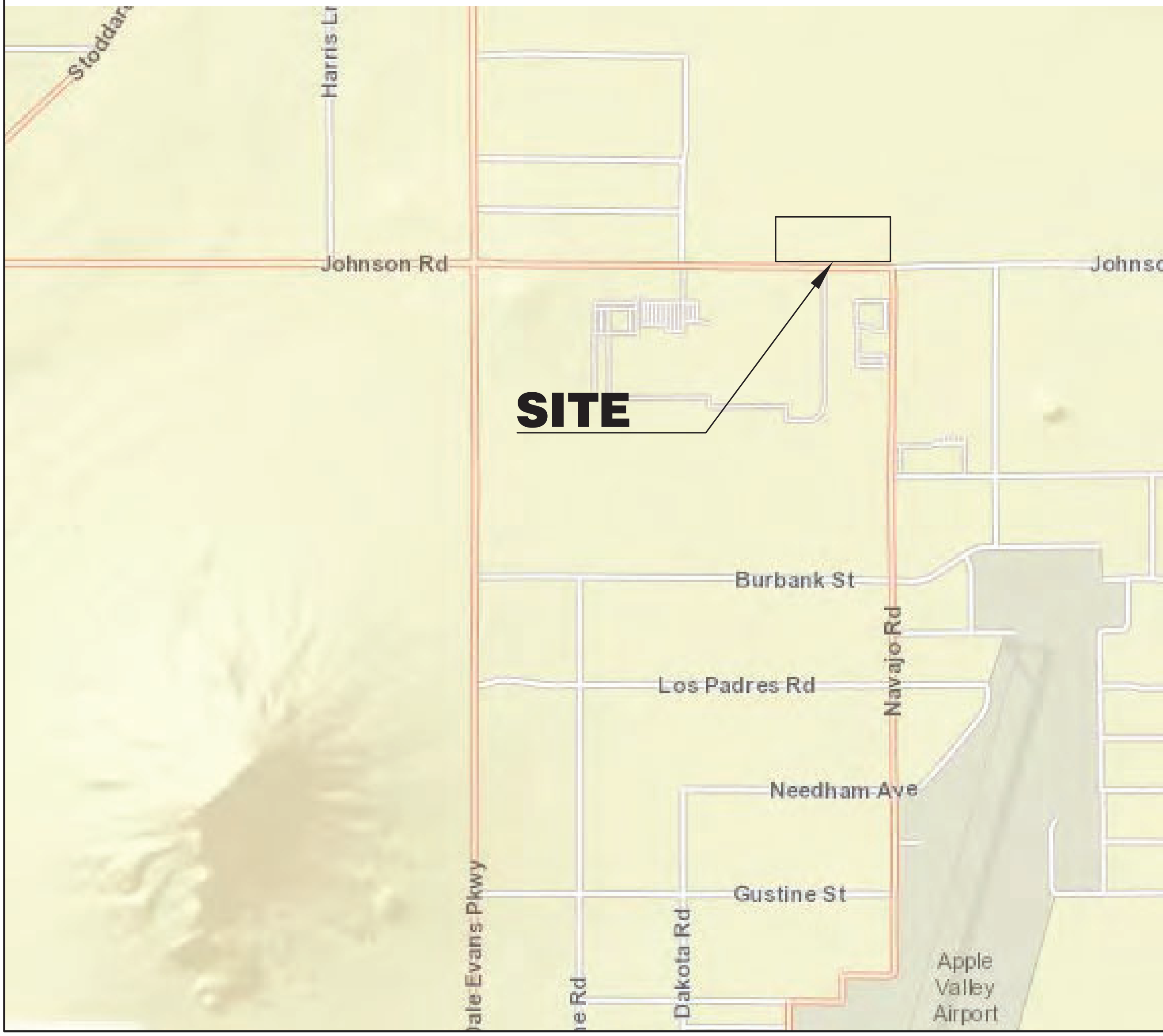
NOAA 14 Precipitation Depths – D

FEMA Firmette – E

Off-Site Tributary Flows – F

Pre-Developed Hydrology Plan – G

Post-Developed Hydrology Plan - H



Latitude	Longitude
34.602008	-117.158187

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SCALE: NTS

EXHIBIT A
LOCATION MAP

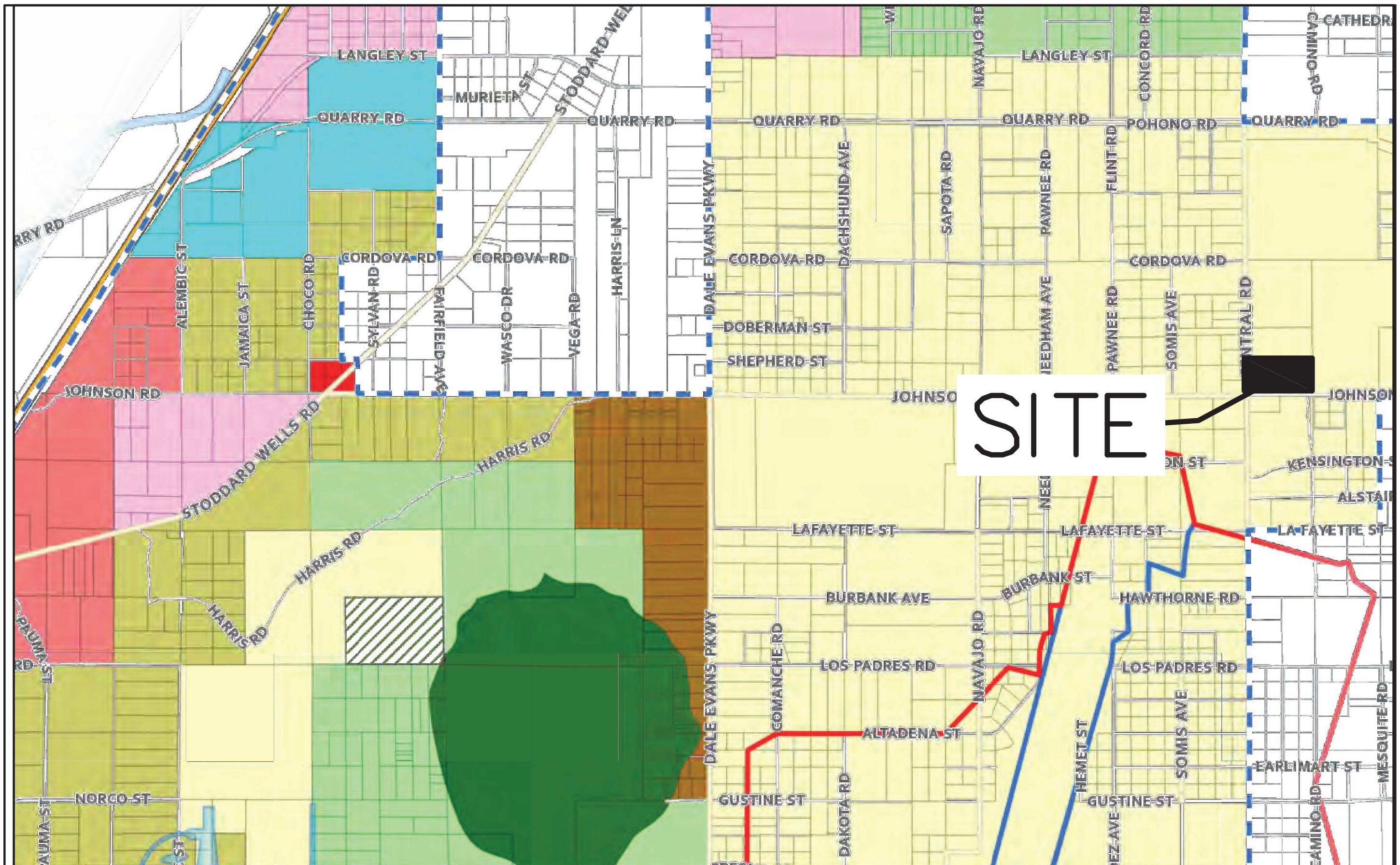
JOHNSON ROAD and NAVAJO ROAD INDUSTRIAL PROJECT

TOWN of APPLE VALLY, CA

APN: 0463-213-26, -27 & -28

RED BRICK SOLUTION

CONSULTING ENGINEERS & ARCHITECTS



Legend

Zoning

- (R-VLD) Very Low Density Residential (1du/5 or more gross acres)
- (R-A) Residential Agriculture (1du/2.5 gross acres)
- (R-LD) Low Density Residential (1 du/2.5 to 5 gross acres)
- (R-E) Estate Residential (1 du/1 to 2.5 gross acres)
- (RE-3/4) Estate Residential 3/4 (1 du/0.75 net acre)
- (R-EQ) Equestrian Residential (1 du/0.4 to 0.9 net acre)
- (R-SF) Single Family Residential (1du/0.4 to 0.9 net acre)
- (R-M) Multi-Family Residential (2 to 20 du/net acre)
- (MHP) Mobile Home Park
- (PRD) Planned Residential Development
- (C-G) General Commercial
- (C-V) Village Commercial
- (C-S) Service Commercial
- (O-P) Office Professional
- (C-R) Regional Commercial
- (I-P) Planned Industrial
- (I-RE) Resource Extraction
- (P-F) Public Facilities
- (OS-C) Open Space Conservation
- (OS-R) Open Space Recreation
- (M-U) Mixed Use
- (SP) Specific Plan

- Town Boundary
- Sphere of Influence
- Parcels
- (A-1) Airport Overlay District
- (A-2) Airport Overlay District
- (F-H) Flood Hazard Overlay District
- (FH-L) Flood Hazard Lake Overlay District
- High Desert Corridor (Future)

Printed: 12/17/2021
Brandon Cales, CGCIO, GISP
Dept. of Innovation and Technology

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EXHIBIT B
LAND USE MAP
JOHNSON ROAD and NAVAJO ROAD INDUSTRIAL PROJECT
TOWN of APPLE VALLY, CA
APN: 0463-213-26, -27 & -28

RED BRICK SOLUTION
CONSULTING ENGINEERS & ARCHITECTS

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 San Bernardino County, California, Mojave River Area

February 22, 2023

San Bernardino County, California, Mojave River Area

118—CAJON-ARIZO COMPLEX, 2 TO 15 PERCENT SLOPES*

Map Unit Setting

National map unit symbol: hkrq
Elevation: 2,800 to 3,300 feet
Mean annual precipitation: 3 to 6 inches
Mean annual air temperature: 59 to 66 degrees F
Frost-free period: 180 to 290 days
Farmland classification: Not prime farmland

Map Unit Composition

Cajon, gravelly surface, and similar soils: 55 percent
Arizo and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cajon, Gravelly Surface

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite sources

Typical profile

H1 - 0 to 6 inches: gravelly sand
H2 - 6 to 60 inches: gravelly sand

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: R030XF028CA - COBBLY SANDY
Hydric soil rating: No

Description of Arizo

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite sources

Typical profile

H1 - 0 to 6 inches: gravelly loamy sand
H2 - 6 to 60 inches: extremely gravelly loamy coarse sand

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A
Ecological site: R030XF025CA - GRAVELLY COARSE LOAMY
Hydric soil rating: No

Minor Components

Helendale

Percent of map unit: 4 percent
Hydric soil rating: No

Bryman

Percent of map unit: 4 percent
Hydric soil rating: No

Joshua

Percent of map unit: 4 percent
Hydric soil rating: No

Cajon, clayey substratum

Percent of map unit: 3 percent

133—HELENDALE-BRYMAN LOAMY SANDS, 2 TO 5 PERCENT SLOPES*

Map Unit Setting

National map unit symbol: hks6

Elevation: 2,500 to 4,000 feet
Mean annual precipitation: 3 to 6 inches
Mean annual air temperature: 59 to 63 degrees F
Frost-free period: 180 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Helendale and similar soils: 50 percent
Bryman and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Helendale

Setting
Landform: Fan remnants
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite sources

Typical profile
H1 - 0 to 6 inches: loamy sand
H2 - 6 to 30 inches: sandy loam
H3 - 30 to 66 inches: sandy loam
H4 - 66 to 99 inches: loamy sand

Properties and qualities
Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups
Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: R030XF012CA - Sandy
Hydric soil rating: No

Description of Bryman

Setting
Landform: Fan remnants
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite sources

Typical profile

H1 - 0 to 8 inches: loamy sand
H2 - 8 to 12 inches: sandy loam
H3 - 12 to 44 inches: sandy clay loam
H4 - 44 to 60 inches: loamy sand

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
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
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R030XF012CA - Sandy
Hydric soil rating: No

Minor Components

Cajon

Percent of map unit: 5 percent
Hydric soil rating: No

Mohave variant

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

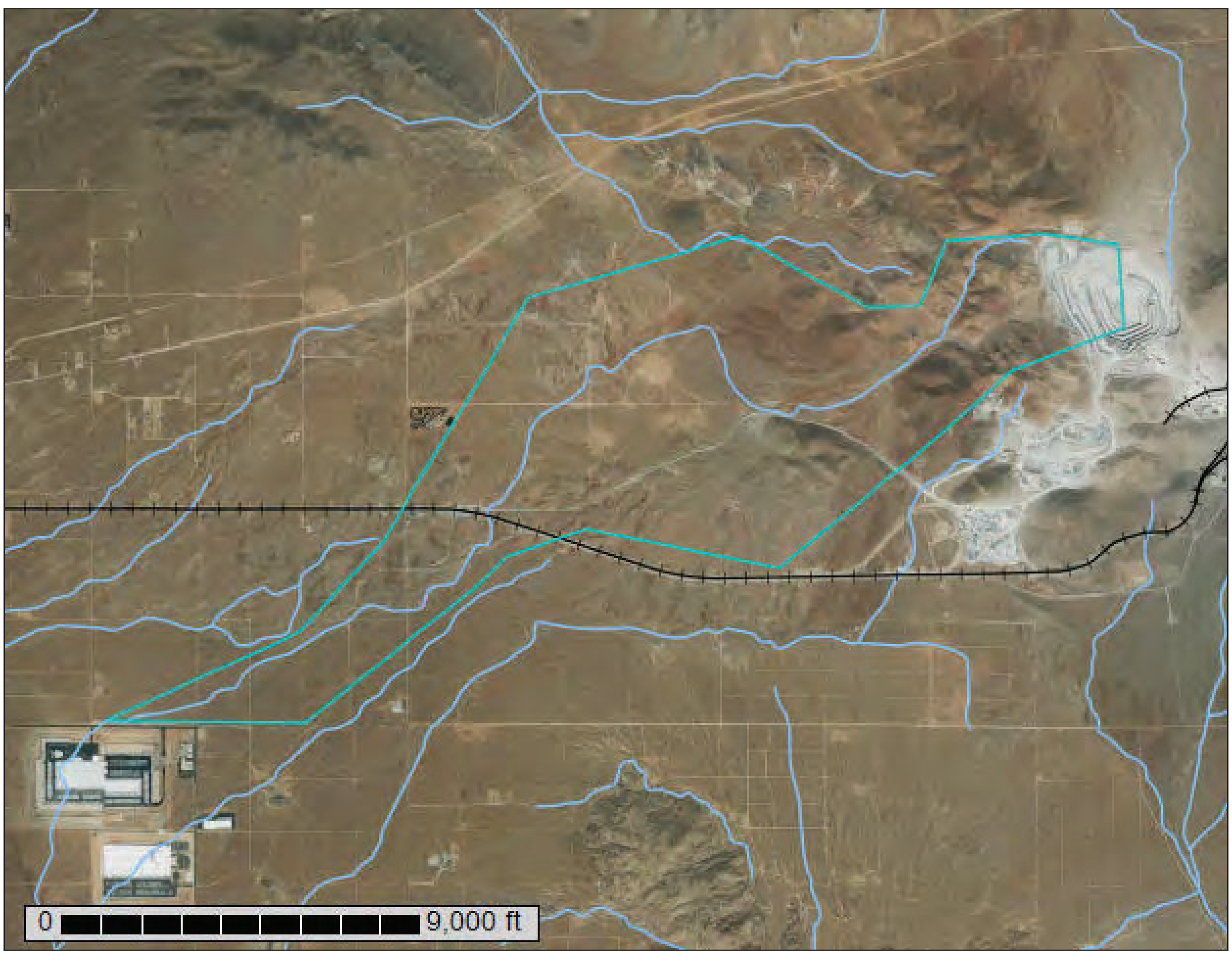
United States Department of Agriculture

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 San Bernardino County, California, Mojave River Area



July 10, 2022

San Bernardino County, California, Mojave River Area

113—CAJON SAND, 2 TO 9 PERCENT SLOPES

Map Unit Setting

National map unit symbol: hkrk
Elevation: 1,800 to 3,500 feet
Mean annual precipitation: 3 to 6 inches
Mean annual air temperature: 59 to 68 degrees F
Frost-free period: 180 to 290 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Cajon and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cajon

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed sources

Typical profile

A - 0 to 6 inches: sand
C1 - 6 to 25 inches: sand
C2 - 25 to 60 inches: gravelly sand

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R030XF012CA - Sandy
Hydric soil rating: No

Minor Components

Cajon, gravelly surface

Percent of map unit: 5 percent

Landform: Alluvial fans

Helendale

Percent of map unit: 5 percent
Landform: Alluvial fans
Hydric soil rating: No

Kimberlina

Percent of map unit: 5 percent
Landform: Alluvial fans
Hydric soil rating: No

118—CAJON-ARIZO COMPLEX, 2 TO 15 PERCENT SLOPES*

Map Unit Setting

National map unit symbol: hkrq
Elevation: 2,800 to 3,300 feet
Mean annual precipitation: 3 to 6 inches
Mean annual air temperature: 59 to 66 degrees F
Frost-free period: 180 to 290 days
Farmland classification: Not prime farmland

Map Unit Composition

Cajon, gravelly surface, and similar soils: 55 percent
Arizo and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cajon, Gravelly Surface

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite sources

Typical profile

H1 - 0 to 6 inches: gravelly sand
H2 - 6 to 60 inches: gravelly sand

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None

Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: R030XF028CA - COBBLY SANDY
Hydric soil rating: No

Description of Arizo

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite sources

Typical profile

H1 - 0 to 6 inches: gravelly loamy sand
H2 - 6 to 60 inches: extremely gravelly loamy coarse sand

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A
Ecological site: R030XF025CA - GRAVELLY COARSE LOAMY
Hydric soil rating: No

Minor Components

Helendale

Percent of map unit: 4 percent
Hydric soil rating: No

Bryman

Percent of map unit: 4 percent
Hydric soil rating: No

Joshua

Percent of map unit: 4 percent
Hydric soil rating: No

Cajon, clayey substratum

Percent of map unit: 3 percent

133—HELENDALE-BRYMAN LOAMY SANDS, 2 TO 5 PERCENT SLOPES*

Map Unit Setting

National map unit symbol: hks6
Elevation: 2,500 to 4,000 feet
Mean annual precipitation: 3 to 6 inches
Mean annual air temperature: 59 to 63 degrees F
Frost-free period: 180 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Helendale and similar soils: 50 percent
Bryman and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Helendale

Setting

Landform: Fan remnants
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite sources

Typical profile

H1 - 0 to 6 inches: loamy sand
H2 - 6 to 30 inches: sandy loam
H3 - 30 to 66 inches: sandy loam
H4 - 66 to 99 inches: loamy sand

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: R030XF012CA - Sandy
Hydric soil rating: No

Description of Bryman

Setting

Landform: Fan remnants
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite sources

Typical profile

H1 - 0 to 8 inches: loamy sand
H2 - 8 to 12 inches: sandy loam
H3 - 12 to 44 inches: sandy clay loam
H4 - 44 to 60 inches: loamy sand

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
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
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R030XF012CA - Sandy
Hydric soil rating: No

Minor Components

Cajon

Percent of map unit: 5 percent
Hydric soil rating: No

Mohave variant

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

148—MIRAGE SANDY LOAM, 2 TO 5 PERCENT SLOPES*

Map Unit Setting

National map unit symbol: hksp
Elevation: 2,600 to 3,400 feet
Mean annual precipitation: 3 to 5 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 200 to 290 days
Farmland classification: Not prime farmland

Map Unit Composition

Mirage and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mirage

Setting

Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite sources

Typical profile

H1 - 0 to 5 inches: sandy loam
H2 - 5 to 21 inches: gravelly sandy clay loam
H3 - 21 to 39 inches: gravelly sandy loam
H4 - 39 to 60 inches: gravelly loamy sand

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
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
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Strongly saline (16.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R030XG024CA - DESERT PAVEMENT

Hydric soil rating: No

Minor Components

Nebona

Percent of map unit: 5 percent
Hydric soil rating: No

Cuddeback

Percent of map unit: 5 percent
Hydric soil rating: No

Mirage

Percent of map unit: 4 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 1 percent
Hydric soil rating: No

149—MIRAGE-JOSHUA COMPLEX, 2 TO 5 PERCENT SLOPES*

Map Unit Setting

National map unit symbol: hksq
Elevation: 2,600 to 3,400 feet
Mean annual precipitation: 3 to 5 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 200 to 290 days
Farmland classification: Not prime farmland

Map Unit Composition

Mirage and similar soils: 50 percent
Joshua and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mirage

Setting

Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite sources

Typical profile

H1 - 0 to 5 inches: sandy loam
H2 - 5 to 21 inches: gravelly sandy clay loam
H3 - 21 to 39 inches: gravelly sandy loam
H4 - 39 to 60 inches: gravelly loamy sand

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
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
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Strongly saline (16.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R030XG024CA - DESERT PAVEMENT
Hydric soil rating: No

Description of Joshua

Setting

Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed sources

Typical profile

H1 - 0 to 3 inches: loam
H2 - 3 to 20 inches: gravelly sandy clay loam
H3 - 20 to 55 inches: very gravelly loamy coarse sand

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R030XG024CA - DESERT PAVEMENT
Hydric soil rating: No

Minor Components

Unnamed soils
Percent of map unit: 10 percent
Hydric soil rating: No

Nebona
Percent of map unit: 5 percent
Hydric soil rating: No

Cuddeback
Percent of map unit: 5 percent
Hydric soil rating: No

151—NEBONA-CUDDEBACK COMPLEX, 2 TO 9 PERCENT SLOPES*

Map Unit Setting
National map unit symbol: hkss
Elevation: 1,800 to 3,400 feet
Mean annual precipitation: 3 to 5 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 200 to 290 days
Farmland classification: Not prime farmland

Map Unit Composition
Nebona and similar soils: 60 percent
Cuddeback and similar soils: 20 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nebona

Setting
Landform: Fan remnants
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed sources

Typical profile
H1 - 0 to 2 inches: sandy loam
H2 - 2 to 8 inches: fine sandy loam
H3 - 8 to 12 inches: indurated
H4 - 12 to 65 inches: stratified gravelly sand to loam

Properties and qualities
Slope: 2 to 9 percent
Depth to restrictive feature: 6 to 14 inches to duripan
Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 0.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R030XF030CA - DESERT PAVEMENT
Hydric soil rating: No

Description of Cuddeback

Setting

Landform: Inset fans
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed sources

Typical profile

H1 - 0 to 3 inches: sandy loam
H2 - 3 to 6 inches: sandy loam
H3 - 6 to 17 inches: gravelly sandy clay loam
H4 - 17 to 34 inches: gravelly sandy loam
H5 - 34 to 38 inches: indurated

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Drainage class: Well drained
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
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R030XG024CA - DESERT PAVEMENT
Hydric soil rating: No

Minor Components

Unnamed soils

Percent of map unit: 19 percent
Hydric soil rating: No

Unnamed

Percent of map unit: 1 percent
Landform: Playas
Hydric soil rating: Yes

155—PITS

Map Unit Composition

Pits: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pits

Setting

Landform: Stream terraces, alluvial fans
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Mountainflank, side slope, tread
Down-slope shape: Linear
Across-slope shape: Linear

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

Arizo

Percent of map unit: 5 percent
Hydric soil rating: No

Cajon

Percent of map unit: 3 percent
Hydric soil rating: No

Yermo

Percent of map unit: 2 percent
Hydric soil rating: No

Riverwash

Percent of map unit: 2 percent
Landform: Channels
Hydric soil rating: Yes

Trigger

Percent of map unit: 1 percent
Hydric soil rating: No

Sparkhule

Percent of map unit: 1 percent

Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Hydric soil rating: No

158—ROCK OUTCROP-LITHIC TORRIORTHENTS COMPLEX, 15 TO 50 PERCENT SLOPES*

Map Unit Setting

National map unit symbol: hkt0
Elevation: 650 to 9,000 feet
Mean annual precipitation: 3 to 5 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 200 to 290 days
Farmland classification: Not prime farmland

Map Unit Composition

Rock outcrop: 60 percent
Lithic torriorthents and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rock Outcrop

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave
Across-slope shape: Concave

Typical profile

H1 - 0 to 10 inches: unweathered bedrock

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Description of Lithic Torriorthents

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum weathered from granite

Typical profile

H1 - 0 to 15 inches: variable
H2 - 15 to 29 inches: bedrock

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: 8 to 20 inches to lithic bedrock
Drainage class: Excessively drained
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 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydric soil rating: No

Minor Components

Sparkhule

Percent of map unit: 4 percent
Hydric soil rating: No

Trigger

Percent of map unit: 3 percent
Hydric soil rating: No

Rock outcrop

Percent of map unit: 3 percent
Hydric soil rating: No

162—SPARKHULE-ROCK OUTCROP COMPLEX, 15 TO 50 PERCENT SLOPES*

Map Unit Setting

National map unit symbol: hkt4
Elevation: 650 to 4,500 feet
Mean annual precipitation: 3 to 6 inches
Mean annual air temperature: 59 to 66 degrees F
Frost-free period: 180 to 290 days
Farmland classification: Not prime farmland

Map Unit Composition

Sparkhule and similar soils: 60 percent
Rock outcrop: 35 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sparkhule

Setting

Landform: Mountains

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Colluvium derived from and/or residuum weathered from dacite

Typical profile
H1 - 0 to 2 inches: gravelly sandy loam
H2 - 2 to 18 inches: gravelly sandy clay loam
H3 - 18 to 28 inches: unweathered bedrock

Properties and qualities
Slope: 15 to 50 percent
Depth to restrictive feature: 14 to 20 inches to lithic bedrock
Drainage class: Well drained
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
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R030XF033CA - GRAVELLY LOAM
Hydric soil rating: No

Description of Rock Outcrop

Setting
Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave
Across-slope shape: Concave

Typical profile
H1 - 0 to 60 inches: unweathered bedrock

Properties and qualities
Slope: 15 to 50 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

Unnamed, sl-grscl subsoil
Percent of map unit: 5 percent
Hydric soil rating: No

165—TRIGGER-SPARKHULE-ROCK OUTCROP ASSOCIATION, STEEP*

Map Unit Setting

National map unit symbol: hkt7
Elevation: 650 to 4,500 feet
Mean annual precipitation: 3 to 5 inches
Mean annual air temperature: 59 to 66 degrees F
Frost-free period: 180 to 290 days
Farmland classification: Not prime farmland

Map Unit Composition

Trigger and similar soils: 40 percent
Sparkhule and similar soils: 30 percent
Rock outcrop: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Trigger

Setting

Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from calcareous conglomerate

Typical profile

H1 - 0 to 12 inches: gravelly sandy loam
H2 - 12 to 22 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 40 percent
Depth to restrictive feature: 10 to 18 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R030XF033CA - GRAVELLY LOAM
Hydric soil rating: No

Description of Sparkhule

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Colluvium derived from and/or residuum weathered from dacite

Typical profile

H1 - 0 to 2 inches: gravelly sandy loam
H2 - 2 to 18 inches: gravelly sandy clay loam
H3 - 18 to 28 inches: unweathered bedrock

Properties and qualities

Slope: 20 to 30 percent
Depth to restrictive feature: 14 to 20 inches to lithic bedrock
Drainage class: Well drained
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
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R030XF033CA - GRAVELLY LOAM
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Concave

Typical profile

H1 - 0 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 20 to 40 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Curve (1) Numbers of Hydrologic Soil-Cover Complexes For Pervious Areas-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
NATURAL COVERS -					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparral, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor Fair Good	53 40 31	70 63 57	80 75 71	85 81 78
Chaparral, Narrowleaf (Chamise and redshank)	Poor Fair	71 55	82 72	88 81	91 86
Grass, Annual or Perennial	Poor Fair Good	67 50 38	78 69 61	86 79 74	89 84 80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor Fair Good	63 51 30	77 70 58	85 80 71	88 84 78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor Fair Good	62 46 41	76 66 63	84 77 75	88 83 81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent.)	Poor Fair Good	45 36 25	66 60 55	77 73 70	83 79 77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor Fair Good	57 44 33	73 65 58	82 77 72	86 82 79
URBAN COVERS -					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor Fair Good	58 44 33	74 65 58	83 77 72	87 82 79
AGRICULTURAL COVERS -					
Fallow (Land plowed but not tilled or seeded)		77	86	91	94

SAN BERNARDINO COUNTY

HYDROLOGY MANUAL

CURVE NUMBERS FOR PERVIOUS AREAS

Figure C-3 (1 of 2)

NOAA Atlas 14, Volume 6, Version 2
Location name: Apple Valley, California, USA*
Latitude: 34.6026°, Longitude: -117.1922°
Elevation: 3077.44 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.082** (0.068-0.101)	**0.116** (0.095-0.142)	**0.162** (0.133-0.200)	**0.203** (0.165-0.252)	**0.261** (0.206-0.335)	**0.309** (0.239-0.405)	**0.360** (0.272-0.483)	**0.416** (0.305-0.574)	**0.497** (0.350-0.713)	**0.564** (0.384-0.837)
10-min	**0.118** (0.097-0.144)	**0.166** (0.136-0.203)	**0.233** (0.191-0.287)	**0.291** (0.237-0.361)	**0.374** (0.295-0.480)	**0.443** (0.342-0.580)	**0.517** (0.389-0.692)	**0.597** (0.438-0.822)	**0.712** (0.501-1.02)	**0.808** (0.550-1.20)
15-min	**0.142** (0.117-0.175)	**0.200** (0.165-0.246)	**0.281** (0.231-0.347)	**0.351** (0.286-0.436)	**0.453** (0.357-0.580)	**0.536** (0.414-0.701)	**0.625** (0.471-0.837)	**0.722** (0.529-0.994)	**0.861** (0.606-1.24)	**0.977** (0.665-1.45)
30-min	**0.195** (0.160-0.239)	**0.274** (0.226-0.337)	**0.385** (0.316-0.474)	**0.481** (0.391-0.597)	**0.620** (0.488-0.794)	**0.733** (0.566-0.959)	**0.855** (0.644-1.15)	**0.988** (0.724-1.36)	**1.18** (0.830-1.69)	**1.34** (0.910-1.98)
60-min	**0.245** (0.202-0.300)	**0.345** (0.284-0.423)	**0.484** (0.397-0.596)	**0.605** (0.492-0.751)	**0.779** (0.614-0.999)	**0.922** (0.712-1.21)	**1.08** (0.810-1.44)	**1.24** (0.911-1.71)	**1.48** (1.04-2.13)	**1.68** (1.14-2.50)
2-hr	**0.348** (0.286-0.426)	**0.471** (0.387-0.578)	**0.641** (0.526-0.789)	**0.786** (0.640-0.976)	**0.995** (0.784-1.28)	**1.17** (0.899-1.52)	**1.34** (1.01-1.80)	**1.54** (1.13-2.12)	**1.81** (1.28-2.60)	**2.04** (1.39-3.03)
3-hr	**0.422** (0.348-0.517)	**0.564** (0.464-0.692)	**0.759** (0.623-0.934)	**0.925** (0.753-1.15)	**1.16** (0.915-1.49)	**1.35** (1.04-1.77)	**1.55** (1.17-2.08)	**1.77** (1.30-2.44)	**2.08** (1.46-2.98)	**2.32** (1.58-3.45)
6-hr	**0.575** (0.474-0.705)	**0.760** (0.625-0.933)	**1.01** (0.830-1.25)	**1.22** (0.996-1.52)	**1.52** (1.20-1.95)	**1.76** (1.36-2.30)	**2.01** (1.52-2.70)	**2.28** (1.67-3.14)	**2.65** (1.87-3.80)	**2.95** (2.01-4.38)
12-hr	**0.740** (0.609-0.907)	**0.981** (0.807-1.20)	**1.31** (1.07-1.61)	**1.58** (1.28-1.96)	**1.96** (1.54-2.51)	**2.25** (1.74-2.95)	**2.56** (1.93-3.44)	**2.89** (2.12-3.98)	**3.34** (2.35-4.80)	**3.70** (2.52-5.50)
24-hr	**0.972** (0.863-1.12)	**1.31** (1.16-1.50)	**1.75** (1.55-2.02)	**2.12** (1.85-2.46)	**2.62** (2.22-3.16)	**3.02** (2.51-3.71)	**3.43** (2.78-4.32)	**3.85** (3.04-4.99)	**4.44** (3.36-5.99)	**4.90** (3.58-6.85)
2-day	**1.15** (1.02-1.33)	**1.57** (1.39-1.81)	**2.13** (1.88-2.46)	**2.59** (2.27-3.02)	**3.22** (2.73-3.87)	**3.70** (3.07-4.55)	**4.20** (3.41-5.29)	**4.72** (3.72-6.12)	**5.43** (4.11-7.33)	**5.99** (4.37-8.37)
3-day	**1.25** (1.11-1.44)	**1.73** (1.53-1.99)	**2.36** (2.08-2.72)	**2.87** (2.52-3.34)	**3.57** (3.03-4.30)	**4.12** (3.42-5.06)	**4.67** (3.79-5.89)	**5.25** (4.14-6.80)	**6.04** (4.57-8.16)	**6.66** (4.87-9.31)
4-day	**1.33** (1.18-1.53)	**1.84** (1.63-2.12)	**2.51** (2.22-2.90)	**3.06** (2.68-3.57)	**3.82** (3.23-4.59)	**4.40** (3.65-5.40)	**4.99** (4.04-6.28)	**5.61** (4.42-7.26)	**6.45** (4.87-8.70)	**7.11** (5.19-9.93)
7-day	**1.45** (1.28-1.67)	**1.99** (1.76-2.29)	**2.71** (2.39-3.13)	**3.30** (2.89-3.84)	**4.10** (3.48-4.94)	**4.73** (3.93-5.82)	**5.38** (4.36-6.77)	**6.04** (4.76-7.83)	**6.96** (5.26-9.40)	**7.68** (5.61-10.7)
10-day	**1.53** (1.36-1.76)	**2.09** (1.85-2.41)	**2.84** (2.51-3.28)	**3.46** (3.03-4.03)	**4.32** (3.66-5.20)	**4.98** (4.14-6.12)	**5.67** (4.59-7.14)	**6.38** (5.03-8.26)	**7.36** (5.56-9.94)	**8.13** (5.94-11.4)
20-day	**1.75** (1.55-2.02)	**2.40** (2.13-2.77)	**3.28** (2.90-3.79)	**4.01** (3.52-4.67)	**5.03** (4.26-6.06)	**5.83** (4.84-7.17)	**6.66** (5.40-8.39)	**7.53** (5.93-9.75)	**8.73** (6.60-11.8)	**9.68** (7.07-13.5)
30-day	**1.98** (1.76-2.28)	**2.73** (2.41-3.14)	**3.74** (3.30-4.32)	**4.59** (4.02-5.34)	**5.78** (4.90-6.96)	**6.72** (5.58-8.27)	**7.71** (6.24-9.71)	**8.74** (6.89-11.3)	**10.2** (7.69-13.7)	**11.3** (8.27-15.8)
45-day	**2.33** (2.07-2.68)	**3.22** (2.85-3.71)	**4.43** (3.92-5.12)	**5.46** (4.79-6.36)	**6.93** (5.87-8.34)	**8.10** (6.72-9.96)	**9.32** (7.56-11.7)	**10.6** (8.37-13.8)	**12.4** (9.41-16.8)	**13.9** (10.2-19.4)
60-day	**2.55** (2.26-2.94)	**3.51** (3.11-4.05)	**4.85** (4.28-5.60)	**5.98** (5.24-6.97)	**7.61** (6.45-9.16)	**8.93** (7.41-11.0)	**10.3** (8.36-13.0)	**11.8** (9.30-15.3)	**13.9** (10.5-18.8)	**15.6** (11.4-21.8)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

NOAA Atlas 14, Volume 6, Version 2
Location name: Apple Valley, California, USA*
Latitude: 34.6228°, Longitude: -117.1403°
Elevation: 3422 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.082** (0.067-0.101)	**0.116** (0.095-0.142)	**0.162** (0.133-0.200)	**0.203** (0.165-0.252)	**0.261** (0.205-0.335)	**0.309** (0.238-0.404)	**0.360** (0.271-0.482)	**0.415** (0.304-0.572)	**0.495** (0.348-0.710)	**0.561** (0.382-0.832)
10-min	**0.117** (0.097-0.144)	**0.166** (0.136-0.204)	**0.233** (0.191-0.287)	**0.291** (0.236-0.361)	**0.374** (0.295-0.480)	**0.442** (0.341-0.579)	**0.515** (0.388-0.691)	**0.595** (0.436-0.820)	**0.709** (0.499-1.02)	**0.804** (0.547-1.19)
15-min	**0.142** (0.117-0.174)	**0.200** (0.165-0.246)	**0.281** (0.231-0.347)	**0.351** (0.286-0.436)	**0.452** (0.356-0.580)	**0.535** (0.413-0.700)	**0.623** (0.470-0.836)	**0.719** (0.527-0.991)	**0.858** (0.604-1.23)	**0.972** (0.661-1.44)
30-min	**0.196** (0.162-0.241)	**0.277** (0.228-0.340)	**0.389** (0.319-0.480)	**0.486** (0.395-0.603)	**0.626** (0.493-0.802)	**0.740** (0.571-0.968)	**0.862** (0.649-1.16)	**0.995** (0.729-1.37)	**1.19** (0.835-1.70)	**1.34** (0.915-2.00)
60-min	**0.253** (0.209-0.311)	**0.357** (0.294-0.439)	**0.502** (0.412-0.619)	**0.627** (0.510-0.778)	**0.807** (0.635-1.03)	**0.954** (0.736-1.25)	**1.11** (0.838-1.49)	**1.28** (0.940-1.77)	**1.53** (1.08-2.20)	**1.73** (1.18-2.57)
2-hr	**0.357** (0.294-0.438)	**0.484** (0.398-0.595)	**0.659** (0.541-0.812)	**0.809** (0.659-1.00)	**1.02** (0.807-1.31)	**1.20** (0.925-1.57)	**1.39** (1.04-1.86)	**1.59** (1.16-2.18)	**1.87** (1.32-2.68)	**2.10** (1.43-3.12)
3-hr	**0.433** (0.356-0.531)	**0.578** (0.476-0.711)	**0.779** (0.639-0.960)	**0.950** (0.773-1.18)	**1.19** (0.940-1.53)	**1.39** (1.07-1.82)	**1.60** (1.21-2.15)	**1.82** (1.34-2.51)	**2.14** (1.51-3.07)	**2.40** (1.63-3.56)
6-hr	**0.583** (0.480-0.715)	**0.771** (0.634-0.947)	**1.03** (0.842-1.27)	**1.24** (1.01-1.55)	**1.55** (1.22-1.99)	**1.80** (1.39-2.35)	**2.06** (1.55-2.76)	**2.33** (1.71-3.21)	**2.72** (1.91-3.90)	**3.03** (2.06-4.50)
12-hr	**0.740** (0.610-0.909)	**0.984** (0.809-1.21)	**1.31** (1.08-1.62)	**1.59** (1.29-1.97)	**1.97** (1.56-2.53)	**2.28** (1.76-2.99)	**2.60** (1.96-3.49)	**2.94** (2.15-4.05)	**3.41** (2.40-4.89)	**3.79** (2.58-5.62)
24-hr	**0.969** (0.859-1.12)	**1.30** (1.16-1.50)	**1.75** (1.55-2.02)	**2.13** (1.86-2.47)	**2.64** (2.24-3.18)	**3.05** (2.53-3.75)	**3.47** (2.81-4.37)	**3.91** (3.08-5.06)	**4.52** (3.42-6.10)	**5.01** (3.66-6.99)
2-day	**1.14** (1.01-1.32)	**1.56** (1.38-1.80)	**2.12** (1.87-2.44)	**2.58** (2.26-3.00)	**3.21** (2.72-3.86)	**3.70** (3.07-4.55)	**4.21** (3.41-5.31)	**4.75** (3.74-6.15)	**5.48** (4.15-7.40)	**6.07** (4.43-8.48)
3-day	**1.24** (1.10-1.43)	**1.71** (1.51-1.97)	**2.33** (2.06-2.69)	**2.84** (2.49-3.31)	**3.54** (3.00-4.26)	**4.09** (3.40-5.03)	**4.65** (3.77-5.86)	**5.24** (4.13-6.79)	**6.06** (4.58-8.18)	**6.70** (4.89-9.36)
4-day	**1.32** (1.17-1.51)	**1.82** (1.61-2.09)	**2.48** (2.19-2.86)	**3.02** (2.65-3.52)	**3.77** (3.19-4.54)	**4.35** (3.61-5.35)	**4.95** (4.01-6.23)	**5.57** (4.39-7.22)	**6.43** (4.86-8.68)	**7.11** (5.19-9.94)
7-day	**1.44** (1.28-1.66)	**1.97** (1.75-2.27)	**2.68** (2.36-3.09)	**3.26** (2.85-3.79)	**4.05** (3.44-4.88)	**4.67** (3.88-5.74)	**5.31** (4.30-6.69)	**5.98** (4.71-7.74)	**6.90** (5.21-9.31)	**7.63** (5.57-10.7)
10-day	**1.53** (1.35-1.76)	**2.08** (1.85-2.40)	**2.82** (2.49-3.26)	**3.43** (3.00-3.99)	**4.26** (3.61-5.13)	**4.91** (4.08-6.04)	**5.58** (4.52-7.03)	**6.28** (4.95-8.13)	**7.25** (5.48-9.79)	**8.02** (5.85-11.2)
20-day	**1.76** (1.56-2.03)	**2.41** (2.14-2.78)	**3.27** (2.89-3.78)	**3.98** (3.49-4.64)	**4.96** (4.21-5.97)	**5.73** (4.76-7.04)	**6.52** (5.29-8.22)	**7.35** (5.79-9.52)	**8.50** (6.43-11.5)	**9.42** (6.88-13.2)
30-day	**2.00** (1.78-2.30)	**2.74** (2.43-3.16)	**3.73** (3.30-4.31)	**4.55** (3.99-5.30)	**5.69** (4.82-6.85)	**6.58** (5.47-8.09)	**7.51** (6.09-9.46)	**8.49** (6.69-11.0)	**9.84** (7.44-13.3)	**10.9** (7.98-15.3)
45-day	**2.35** (2.08-2.70)	**3.22** (2.86-3.71)	**4.40** (3.89-5.08)	**5.38** (4.72-6.27)	**6.76** (5.73-8.13)	**7.84** (6.51-9.64)	**8.98** (7.28-11.3)	**10.2** (8.02-13.2)	**11.9** (8.97-16.0)	**13.2** (9.65-18.5)
60-day	**2.59** (2.30-2.98)	**3.54** (3.14-4.08)	**4.83** (4.27-5.58)	**5.91** (5.18-6.89)	**7.44** (6.31-8.96)	**8.66** (7.19-10.6)	**9.94** (8.05-12.5)	**11.3** (8.91-14.6)	**13.2** (10.0-17.9)	**14.8** (10.8-20.7)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

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PF graphical

NOAA Atlas 14, Volume 6, Version 2
Location name: Apple Valley, California, USA*
Latitude: 34.6312°, Longitude: -117.1163°
Elevation: 4021.78 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

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PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.083** (0.068-0.101)	**0.116** (0.096-0.143)	**0.163** (0.134-0.201)	**0.203** (0.165-0.252)	**0.261** (0.205-0.335)	**0.308** (0.238-0.404)	**0.359** (0.270-0.481)	**0.413** (0.303-0.570)	**0.492** (0.346-0.706)	**0.556** (0.379-0.826)
10-min	**0.118** (0.098-0.145)	**0.167** (0.137-0.205)	**0.234** (0.191-0.288)	**0.291** (0.237-0.362)	**0.374** (0.294-0.480)	**0.442** (0.341-0.578)	**0.514** (0.387-0.689)	**0.592** (0.434-0.816)	**0.705** (0.496-1.01)	**0.797** (0.543-1.18)
15-min	**0.143** (0.118-0.176)	**0.202** (0.166-0.248)	**0.282** (0.232-0.348)	**0.352** (0.286-0.437)	**0.452** (0.356-0.580)	**0.534** (0.412-0.700)	**0.622** (0.468-0.834)	**0.716** (0.525-0.987)	**0.852** (0.600-1.22)	**0.964** (0.656-1.43)
30-min	**0.199** (0.164-0.245)	**0.280** (0.230-0.344)	**0.393** (0.322-0.484)	**0.490** (0.398-0.608)	**0.629** (0.495-0.807)	**0.743** (0.573-0.973)	**0.865** (0.651-1.16)	**0.996** (0.730-1.37)	**1.19** (0.834-1.70)	**1.34** (0.912-1.99)
60-min	**0.260** (0.214-0.320)	**0.366** (0.301-0.450)	**0.513** (0.421-0.632)	**0.639** (0.520-0.794)	**0.822** (0.647-1.05)	**0.971** (0.749-1.27)	**1.13** (0.851-1.52)	**1.30** (0.954-1.79)	**1.55** (1.09-2.22)	**1.75** (1.19-2.60)
2-hr	**0.366** (0.301-0.449)	**0.494** (0.406-0.607)	**0.671** (0.550-0.827)	**0.822** (0.669-1.02)	**1.04** (0.818-1.33)	**1.22** (0.937-1.59)	**1.40** (1.06-1.88)	**1.60** (1.17-2.21)	**1.89** (1.33-2.71)	**2.12** (1.44-3.15)
3-hr	**0.443** (0.365-0.544)	**0.591** (0.485-0.726)	**0.793** (0.650-0.977)	**0.965** (0.785-1.20)	**1.21** (0.954-1.55)	**1.41** (1.09-1.85)	**1.62** (1.22-2.17)	**1.85** (1.35-2.54)	**2.16** (1.52-3.10)	**2.42** (1.65-3.59)
6-hr	**0.595** (0.490-0.731)	**0.785** (0.645-0.965)	**1.04** (0.855-1.29)	**1.26** (1.03-1.57)	**1.57** (1.24-2.02)	**1.82** (1.40-2.38)	**2.08** (1.57-2.79)	**2.36** (1.73-3.25)	**2.75** (1.93-3.94)	**3.06** (2.08-4.54)
12-hr	**0.752** (0.619-0.923)	**0.999** (0.821-1.23)	**1.33** (1.09-1.64)	**1.61** (1.31-2.00)	**2.01** (1.58-2.57)	**2.32** (1.79-3.03)	**2.64** (1.99-3.54)	**2.98** (2.18-4.11)	**3.46** (2.43-4.96)	**3.84** (2.61-5.69)
24-hr	**0.980** (0.869-1.13)	**1.32** (1.17-1.53)	**1.78** (1.58-2.06)	**2.17** (1.90-2.52)	**2.69** (2.28-3.24)	**3.11** (2.58-3.82)	**3.54** (2.87-4.46)	**3.99** (3.14-5.17)	**4.61** (3.49-6.23)	**5.11** (3.73-7.13)
2-day	**1.16** (1.02-1.33)	**1.58** (1.40-1.82)	**2.15** (1.90-2.48)	**2.62** (2.29-3.05)	**3.27** (2.77-3.93)	**3.77** (3.13-4.64)	**4.30** (3.48-5.41)	**4.84** (3.82-6.27)	**5.60** (4.23-7.56)	**6.20** (4.53-8.66)
3-day	**1.25** (1.11-1.44)	**1.73** (1.53-1.99)	**2.36** (2.08-2.72)	**2.88** (2.52-3.35)	**3.59** (3.05-4.33)	**4.15** (3.45-5.11)	**4.73** (3.84-5.96)	**5.34** (4.21-6.91)	**6.18** (4.67-8.34)	**6.84** (5.00-9.56)
4-day	**1.33** (1.18-1.53)	**1.83** (1.62-2.11)	**2.51** (2.21-2.89)	**3.06** (2.68-3.56)	**3.82** (3.24-4.60)	**4.42** (3.67-5.43)	**5.03** (4.08-6.34)	**5.67** (4.47-7.35)	**6.56** (4.96-8.86)	**7.26** (5.31-10.1)
7-day	**1.46** (1.29-1.67)	**2.00** (1.77-2.30)	**2.72** (2.40-3.14)	**3.31** (2.90-3.85)	**4.13** (3.50-4.97)	**4.76** (3.95-5.85)	**5.42** (4.39-6.82)	**6.10** (4.81-7.91)	**7.05** (5.33-9.52)	**7.80** (5.70-10.9)
10-day	**1.54** (1.37-1.78)	**2.11** (1.87-2.43)	**2.87** (2.53-3.31)	**3.49** (3.06-4.06)	**4.34** (3.68-5.23)	**5.01** (4.16-6.16)	**5.70** (4.62-7.18)	**6.42** (5.06-8.32)	**7.42** (5.61-10.0)	**8.21** (5.99-11.5)
20-day	**1.79** (1.59-2.06)	**2.46** (2.17-2.83)	**3.34** (2.95-3.86)	**4.07** (3.56-4.74)	**5.08** (4.30-6.11)	**5.86** (4.87-7.21)	**6.68** (5.41-8.41)	**7.53** (5.93-9.75)	**8.71** (6.58-11.8)	**9.64** (7.04-13.5)
30-day	**2.03** (1.80-2.34)	**2.80** (2.48-3.22)	**3.81** (3.37-4.40)	**4.66** (4.08-5.42)	**5.82** (4.94-7.01)	**6.74** (5.60-8.28)	**7.69** (6.23-9.68)	**8.69** (6.84-11.2)	**10.1** (7.61-13.6)	**11.2** (8.16-15.6)
45-day	**2.38** (2.12-2.74)	**3.28** (2.91-3.78)	**4.49** (3.96-5.18)	**5.49** (4.81-6.39)	**6.89** (5.84-8.30)	**8.00** (6.64-9.83)	**9.15** (7.42-11.5)	**10.4** (8.17-13.4)	**12.1** (9.13-16.3)	**13.4** (9.81-18.8)
60-day	**2.64** (2.34-3.04)	**3.62** (3.21-4.17)	**4.94** (4.36-5.70)	**6.05** (5.30-7.04)	**7.60** (6.44-9.15)	**8.84** (7.34-10.9)	**10.1** (8.21-12.8)	**11.5** (9.07-14.9)	**13.5** (10.2-18.2)	**15.0** (11.0-21.0)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical

National Flood Hazard Layer FIRMette

FEMA

117°11'16"W 34°36'14"N

117°10'39"W 34°35'45"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

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*
- Effective LOMRs
- 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
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

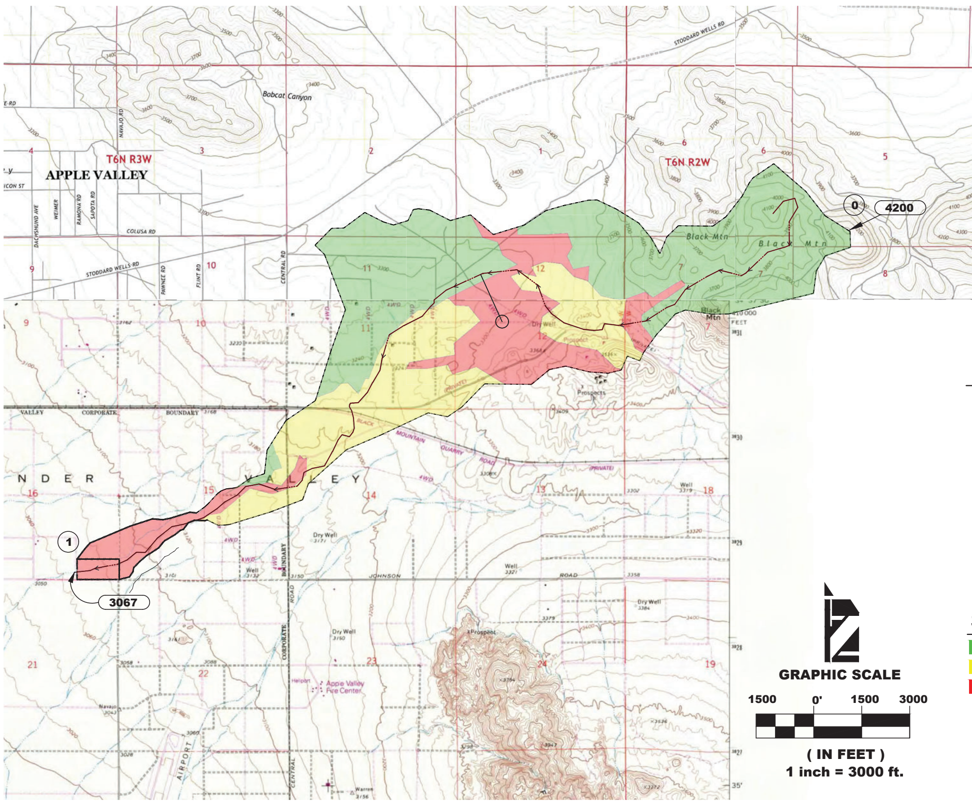
N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/8/2023 at 2:55 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



LEGEND:

TRIBUTARY DRAINAGE AREA
SUBAREA BOUNDARY
SUBAREA FLOWLINE
PROPERTY LINE
NODE
XX.XX SPOT ELEVATION
EG EXISTING GRADE
FG FINISH GRADE
FS FINISH SURFACE
FF FINISH FLOOR
IE INVERT ELEVATION

LAG CALC AREA "A"

1Lag = $C_t * ((L*L_{ca})/s^{0.5})^m$

$C_t = 24\bar{n}$ ($\bar{n}$ = 0.040)

L = 5.97 miles

L_{ca} = 3.32 miles (to the Centroid)

S = 1133/5.79 = 189.70 (feet/mile)

m = 0.38

$\boxed{\text{Lag = 0.910}}$

GRAPHIC SCALE

1500 0' 1500 3000

(IN FEET)
1 inch = 3000 ft.

SOIL TYPES

		%AREA	OPEN BRUSH FAIR COVER AMC II CN	Ap
(green)	SOIL TYPE D	52%	83	0.9
(yellow)	SOIL TYPE C	28%	77	0.9
(red)	SOIL TYPE A	20%	46	0.9

Q100= 1680.56 cfs
V=433.28 AF

HYDROLOGY ANALYSIS

PRE-DEVELOPED TRIBUTARY WATERSHED AREA

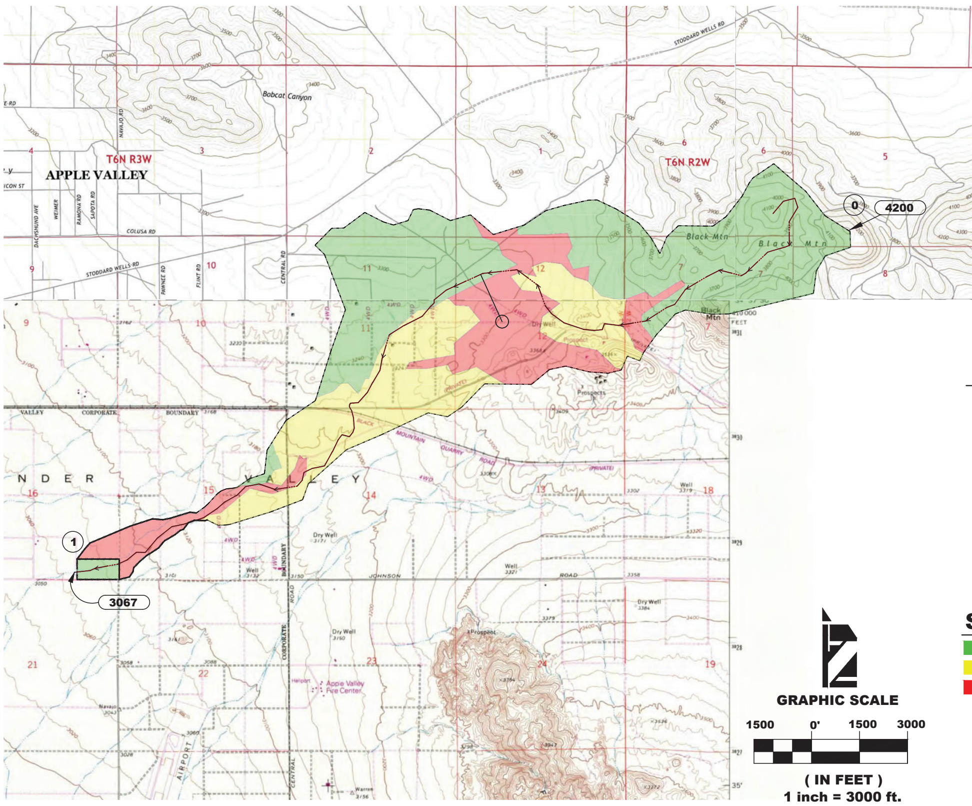
FOR:
JOHNSON ROAD NAVAJO ROAD INDUSTRIAL

TOWN OF APPLE VALLEY, CA

APN:
0463-213-28, 27, 26

RED BRICK SOLUTION
CONSULTING ENGINEERS & ARCHITECTS

EXHIBIT F



LEGEND:

	TRIBUTARY DRAINAGE AREA
	SUBAREA BOUNDARY
	SUBAREA FLOWLINE
	PROPERTY LINE
##	NODE #
XX.XX	SPOT ELEVATION
EG	EXISTING GRADE
FG	FINISH GRADE
FS	FINISH SURFACE
FF	FINISH FLOOR
IE	INVERT ELEVATION

LAG CALC AREA "A"

$1Lag = C_t * ((L*L_{ca})/s^{0.5})^m$

$C_t = 24\bar{n}$ $(\bar{n} = 0.040)$

$L = 5.97$ miles

$L_{ca} = 3.32$ miles (to the Centroid)

$S = 1133/5.79 = 189.70$ (feet/mile)

$m = 0.38$

$\boxed{Lag = 0.910}$

SOIL TYPES

		%AREA	OPEN BRUSH FAIR COVER AMC II CN	Ap
	SOIL TYPE D	52%	83	0.9
	SOIL TYPE C	28%	77	0.9
	SOIL TYPE A	20%	46	0.85

Q100= 1687.54 cfs
V=436.74 AF

GRAPHIC SCALE

1500 0' 1500 3000

(IN FEET)
1 inch = 3000 ft.

HYDROLOGY ANALYSIS

DEVELOPED-SITE TRIBUTARY WATERSHED AREA

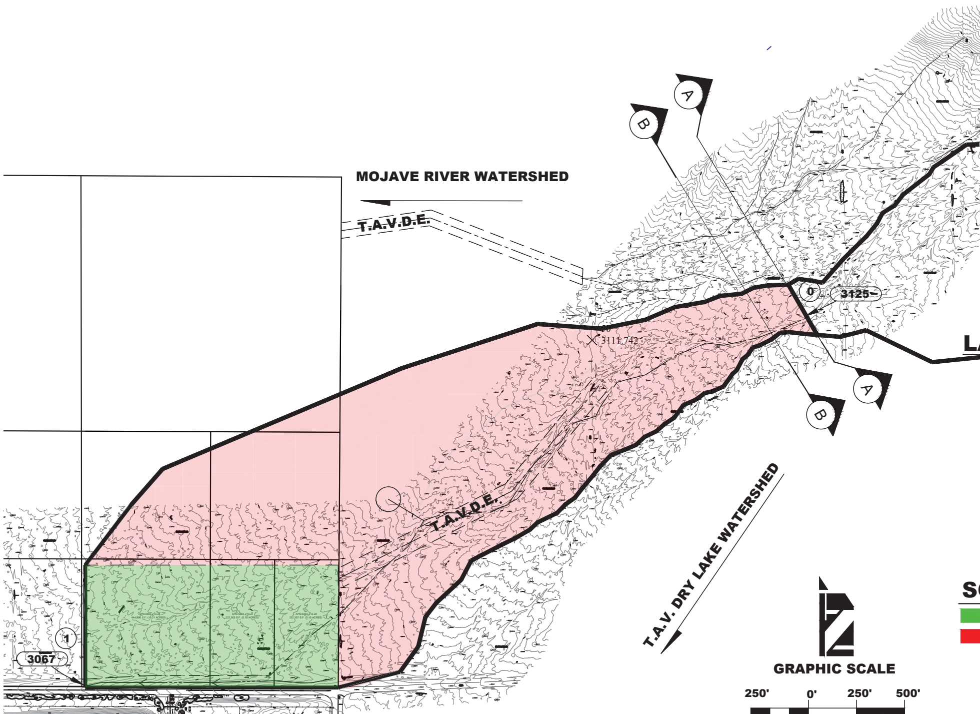
FOR:
JOHNSON ROAD NAVAJO ROAD INDUSTRIAL

TOWN OF APPLE VALLEY, CA

APN:
0463-213-28, 27, 26

RED BRICK SOLUTION
CONSULTING ENGINEERS & ARCHITECTS

EXHIBIT G



LEGEND:

	TRIBUTARY DRAINAGE AREA
	SUBAREA BOUNDARY
	SUBAREA FLOWLINE
	PROPERTY LINE
##	NODE #
XX.XX	SPOT ELEVATION
EG	EXISTING GRADE
FG	FINISH GRADE
FS	FINISH SURFACE
FF	FINISH FLOOR
IE	INVERT ELEVATION

LAG CALC AREA "A"

$1Lag = C_t * ((L*L_{ca})/s^{0.5})^m$

$C_t = 24\bar{n}$ ($\bar{n} = 0.040$)

$L = 0.856$ miles

$L_{ca} = 0.402$ miles (to the Centroid)

$S = 58/0.856 = 67.75$ (feet/mile)

$m = 0.38$

$\boxed{Lag = 0.237}$

SOIL TYPES

		OPEN BRUSH FAIR COVER AMC II CN	PRE Ap	POST Ap
(green)	SOIL TYPE A	98	0.1	0.32
(red)	SOIL TYPE A	46	0.90	0.68

GRAPHIC SCALE
250' 0' 250' 500'
(IN FEET)
1 inch = 500 ft.

PRE-DEVELOPMENT
Q100= 158.25 cfs
V=9.82 AF

POST-DEVELOPMENT
Q100= 167.91 cfs
V=13.10 AF

HYDROLOGY STUDY

DEVELOPED SITE CONDITION

FOR:
ONE (1) WAREHOUSE BUILDING ON JOHNSON ROAD

IN THE:
CITY OF APPLE VALLEY, CA

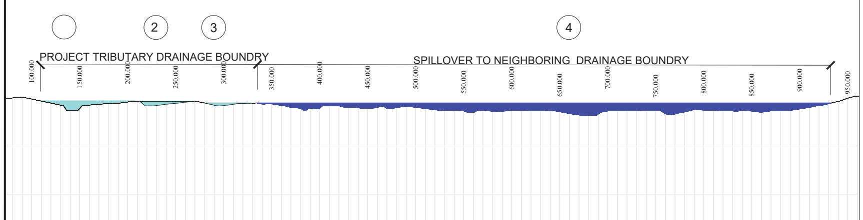
APN:
0463-213-26, 27, 28

RED BRICK SOLUTION

CONSULTING ENGINEERS & ARCHITECTS

EXHIBIT H

SECTION A-A

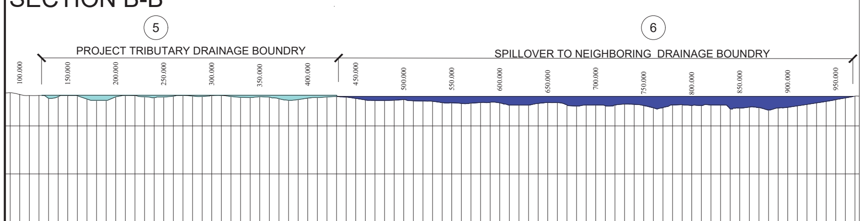


LEGEND

PROJECT TRIBUTARY DRAINAGE BOUNDRY Q: 521.21

SPILLOVER TO NEIGHBORING DRAINAGE BOUNDRY Q: 6339.951

SECTION B-B



LEGEND

PROJECT TRIBUTARY DRAINAGE BOUNDRY Q: 317.27

SPILLOVER TO NEIGHBORING DRAINAGE BOUNDRY Q: 8057.505

A-A

1

AREA	=	76.02
WETTED PERIMETER	=	99.47
R= A/P	=	0.764251
SLOPE	=	0.018244
n	=	0.033
Q	=	387.1936

2

AREA	=	13.9037
WETTED PERIMETER	=	54.3242
R= A/P	=	0.255939
SLOPE	=	0.01692
n	=	0.033
Q	=	32.76836

3

AREA	=	27.377
WETTED PERIMETER	=	54.6028
R= A/P	=	0.501385
SLOPE	=	0.01692
n	=	0.033
Q	=	101.2448

4

AREA	=	817.072
WETTED PERIMETER	=	598.591
R= A/P	=	1.364992
SLOPE	=	0.019464
n	=	0.033
Q	=	6339.951

B-B

5

AREA	=	120.879
WETTED PERIMETER	=	308.0429
R= A/P	=	0.39241
SLOPE	=	0.011836
n	=	0.033
Q	=	317.2716

6

AREA	=	807.87
WETTED PERIMETER	=	538.0588
R= A/P	=	1.501453
SLOPE	=	0.028304
n	=	0.033
Q	=	8057.505

HYDROLOGY STUDY

CROSS-SECTIONS

FOR:
JOHNSON ROAD INDUSTRIAL

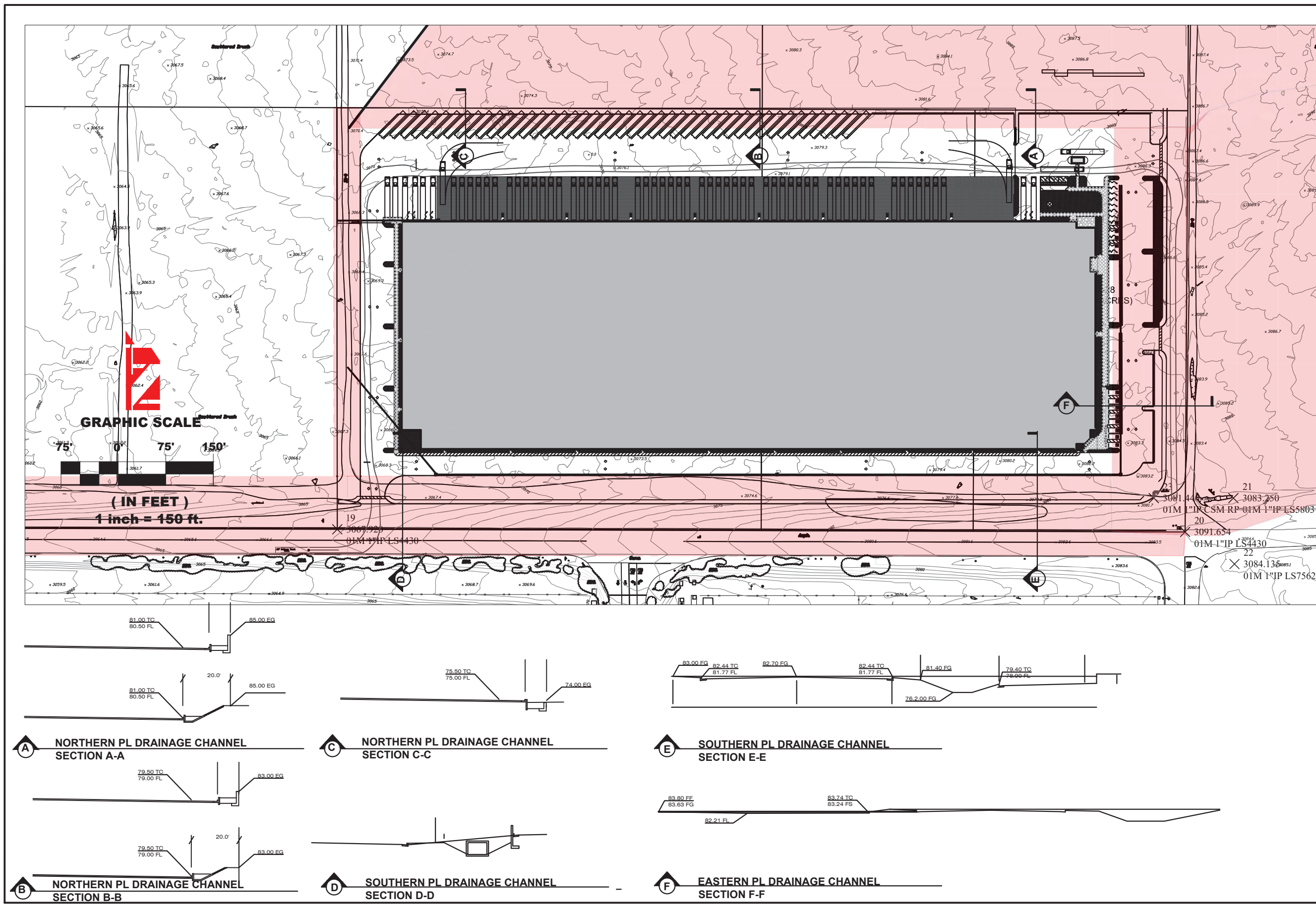
IN THE:
TOWN OF APPLE VALLEY, CA

APN:
0463-213-26,27,28

RED BRICK SOLUTION

CONSULTING ENGINEERS & ARCHITECTS

EXHIBIT I



HYDROLOGY STUDY

CANNALIZATION OF OFF-SITE FLOWS

FOR:
ONE (1) WAREHOUSE BUILDING ON JOHNSON ROAD

IN THE:
CITY OF APPLE VALLEY, CA

APN:
0463-213-26, 27, 28

RED BRICK SOLUTION

CONSULTING ENGINEERS
& ARCHITECTS

EXHIBIT H

The factor k_h has a constant value equal to 0.003 ft. The factor k_b varies with the ratio of crest length to average width of approach channel (L/B). Values of k_b for ratios of L/B from 0 to 1 are available from Figure 3 (as given in *Water Measurement Manual*).

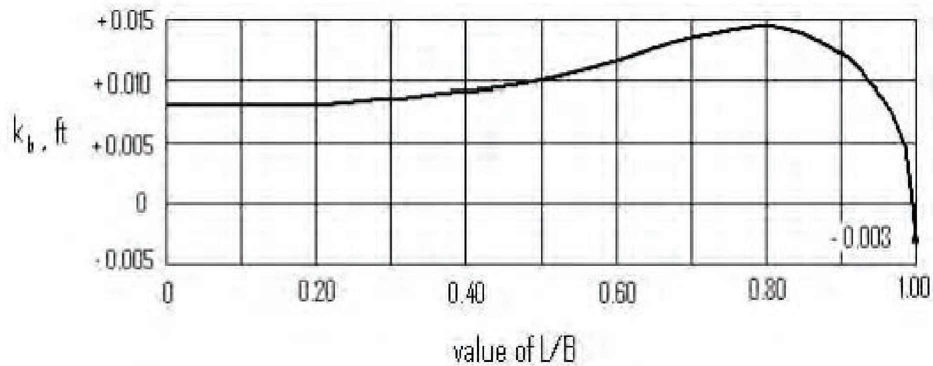


Figure 3. k_b as a function of L/B (as given in *Water Measurement Manual*)

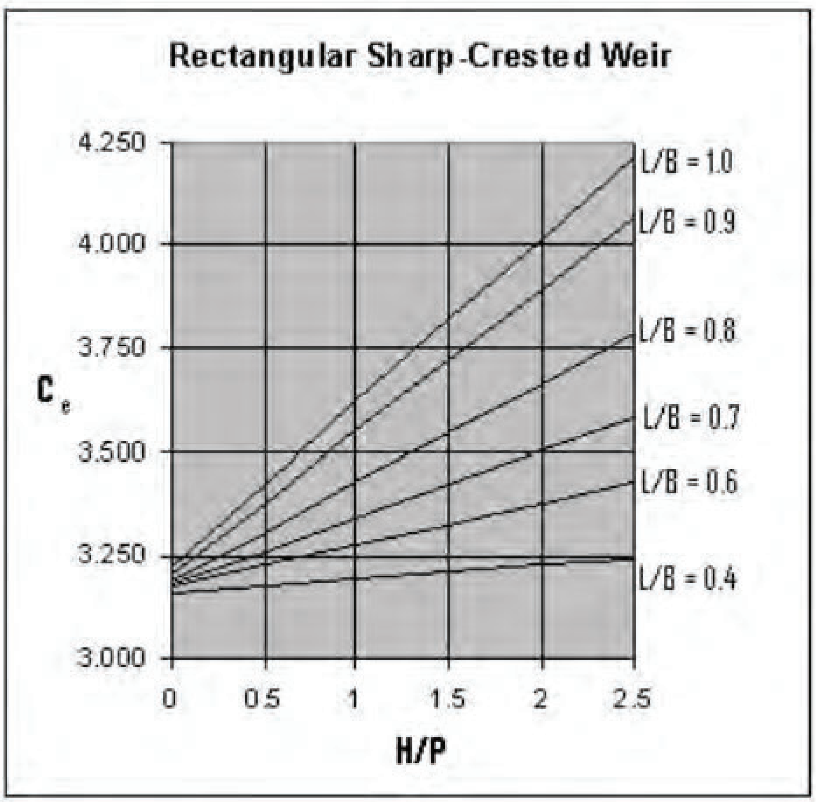


Figure 4. C_e as a function of H/P & L/B for Rect. Sharp-crested Weir

U n i t   H y d r o g r a p h   A n a l y s i s

Study date 07/10/23

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6434

PRE-DEVELOPED WATERSHED
100-YEAR 24-HOUR
AMC III

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
0.00	1	1.12
1956.00	1	1.12
Rainfall data for year 100		
1956.00	6	2.06
Rainfall data for year 100		
1956.00	24	3.47

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
83.0	95.8	1017.00	0.520	0.083	0.900	0.074
77.0	92.2	548.00	0.280	0.151	0.900	0.136
46.0	66.0	391.00	0.200	0.593	0.900	0.534

Area-averaged adjusted loss rate Fm (In/Hr) = 0.184

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
915.30	0.468	83.0	95.8	0.44	0.863
101.70	0.052	98.0	98.0	0.20	0.933
493.20	0.252	77.0	92.2	0.85	0.757
54.80	0.028	98.0	98.0	0.20	0.933
351.90	0.180	46.0	66.0	5.15	0.226
39.10	0.020	98.0	98.0	0.20	0.933

Area-averaged catchment yield fraction, Y = 0.729
Area-averaged low loss fraction, Yb = 0.271
+++
Watercourse length = 31535.00(Ft.)
Length from concentration point to centroid = 17553.00(Ft.)
Elevation difference along watercourse = 1133.00(Ft.)
Mannings friction factor along watercourse = 0.033
Watershed area = 1956.00(Ac.)
Catchment Lag time = 0.910 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 9.1566
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.184(In/Hr)
Average low loss rate fraction (Yb) = 0.271 (decimal)
DESERT S-Graph Selected
Computed peak 5-minute rainfall = 0.531(In)
Computed peak 30-minute rainfall = 0.910(In)
Specified peak 1-hour rainfall = 1.120(In)
Computed peak 3-hour rainfall = 1.627(In)
Specified peak 6-hour rainfall = 2.060(In)
Specified peak 24-hour rainfall = 3.470(In)

Rainfall depth area reduction factors:
Using a total area of 1956.00(Ac.) (Ref: fig. E-4)

5-minute factor = 0.908	Adjusted rainfall = 0.483(In)
30-minute factor = 0.908	Adjusted rainfall = 0.826(In)
1-hour factor = 0.908	Adjusted rainfall = 1.017(In)
3-hour factor = 0.988	Adjusted rainfall = 1.608(In)
6-hour factor = 0.994	Adjusted rainfall = 2.047(In)
24-hour factor = 0.998	Adjusted rainfall = 3.462(In)

U n i t H y d r o g r a p h

+++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K =	23655.38 (CFS))	
1	0.403	95.305
2	1.356	225.531
3	2.872	358.645
4	4.948	490.969
5	7.548	615.162
6	11.026	822.729
7	16.645	1329.063
8	24.823	1934.488

9	33.695	2098.877
10	41.366	1814.618
11	47.529	1457.752
12	52.756	1236.594
13	57.201	1051.294
14	60.728	834.343
15	63.724	708.884
16	66.369	625.517
17	68.744	561.906
18	70.946	520.854
19	72.879	457.364
20	74.624	412.705
21	76.227	379.177
22	77.770	364.893
23	79.095	313.569
24	80.304	285.916
25	81.492	281.164
26	82.517	242.449
27	83.506	233.931
28	84.468	227.612
29	85.352	209.130
30	86.231	207.939
31	87.042	191.735
32	87.775	173.301
33	88.502	172.068
34	89.105	142.580
35	89.654	129.962
36	90.199	128.850
37	90.716	122.353
38	91.229	121.298
39	91.720	116.078
40	92.161	104.403
41	92.600	103.960
42	93.020	99.249
43	93.423	95.305
44	93.821	94.226
45	94.154	78.717
46	94.465	73.645
47	94.777	73.645
48	95.088	73.645
49	95.399	73.645
50	95.684	67.310
51	95.923	56.499
52	96.161	56.317
53	96.399	56.317
54	96.637	56.317
55	96.869	54.968
56	97.047	42.164
57	97.212	38.988
58	97.377	38.988
59	97.542	38.988
60	97.707	38.988
61	97.840	31.430
62	97.931	21.698
63	98.023	21.660
64	98.114	21.660
65	98.206	21.660
66	98.300	22.146
67	98.407	25.392
68	98.517	25.992
69	98.627	25.992
70	98.737	25.992
71	98.846	25.992

72	98.956	25.992
73	99.066	25.992
74	99.176	25.992
75	99.286	25.992
76	99.396	25.992
77	99.498	24.092
78	99.560	14.785
79	99.617	13.538
80	99.675	13.538
81	99.732	13.538
82	99.789	13.538
83	99.846	13.538
84	99.904	13.538
85	99.961	13.538
86	100.000	9.266

Total soil rain loss = 0.80(In)
Total effective rainfall = 2.66(In)
Peak flow rate in flood hydrograph = 1680.56(CFS)

+++

24 - H O U R   S T O R M
R u n o f f   H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	425.0	850.0	1275.0	1700.0
0+ 5	0.0022	0.32	Q	|	|	|	|
0+10	0.0095	1.07	Q	|	|	|	|
0+15	0.0251	2.26	Q	|	|	|	|
0+20	0.0519	3.90	Q	|	|	|	|
0+25	0.0929	5.95	Q	|	|	|	|
0+30	0.1529	8.70	Q	|	|	|	|
0+35	0.2434	13.14	Q	|	|	|	|
0+40	0.3784	19.61	Q	|	|	|	|
0+45	0.5619	26.64	Q	|	|	|	|
0+50	0.7874	32.75	Q	|	|	|	|
0+55	1.0470	37.69	Q	|	|	|	|
1+ 0	1.3357	41.92	Q	|	|	|	|
1+ 5	1.6495	45.55	VQ	|	|	|	|
1+10	1.9833	48.47	VQ	|	|	|	|
1+15	2.3344	50.99	VQ	|	|	|	|
1+20	2.7011	53.23	VQ	|	|	|	|
1+25	3.0818	55.28	VQ	|	|	|	|
1+30	3.4757	57.19	VQ	|	|	|	|
1+35	3.8814	58.91	VQ	|	|	|	|
1+40	4.2979	60.48	VQ	|	|	|	|
1+45	4.7245	61.94	VQ	|	|	|	|
1+50	5.1609	63.37	VQ	|	|	|	|
1+55	5.6060	64.63	VQ	|	|	|	|
2+ 0	6.0591	65.80	VQ	|	|	|	|
2+ 5	6.5203	66.96	VQ	|	|	|	|
2+10	6.9886	68.00	VQ	|	|	|	|
2+15	7.4639	69.02	VQ	|	|	|	|
2+20	7.9462	70.02	VQ	|	|	|	|
2+25	8.4349	70.96	VQ	|	|	|	|
2+30	8.9301	71.90	VQ	|	|	|	|
2+35	9.4314	72.80	VQ	|	|	|	|
2+40	9.9385	73.64	VQ	|	|	|	|

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  2+45      10.4514     74.47  VQ        |         |         |         |
  2+50      10.9695     75.22  |Q        |         |         |         |
  2+55      11.4924     75.92  |Q        |         |         |         |
  3+ 0      12.0201     76.63  |Q        |         |         |         |
  3+ 5      12.5526     77.32  |Q        |         |         |         |
  3+10      13.0899     78.01  |Q        |         |         |         |
  3+15      13.6318     78.69  |Q        |         |         |         |
  3+20      14.1782     79.33  |Q        |         |         |         |
  3+25      14.7290     79.98  |Q        |         |         |         |
  3+30      15.2841     80.61  |Q        |         |         |         |
  3+35      15.8436     81.23  |Q        |         |         |         |
  3+40      16.4074     81.86  |Q        |         |         |         |
  3+45      16.9751     82.44  |Q        |         |         |         |
  3+50      17.5467     83.00  |Q        |         |         |         |
  3+55      18.1223     83.57  |Q        |         |         |         |
  4+ 0      18.7018     84.14  |Q        |         |         |         |
  4+ 5      19.2853     84.72  |Q        |         |         |         |
  4+10      19.8726     85.28  |VQ       |         |         |         |
  4+15      20.4636     85.81  |VQ       |         |         |         |
  4+20      21.0582     86.34  |VQ       |         |         |         |
  4+25      21.6566     86.88  |VQ       |         |         |         |
  4+30      22.2586     87.42  | Q       |         |         |         |
  4+35      22.8644     87.96  | Q       |         |         |         |
  4+40      23.4737     88.46  | Q       |         |         |         |
  4+45      24.0864     88.96  | Q       |         |         |         |
  4+50      24.7025     89.46  | Q       |         |         |         |
  4+55      25.3222     89.97  | Q       |         |         |         |
  5+ 0      25.9453     90.48  | Q       |         |         |         |
  5+ 5      26.5718     90.97  | Q       |         |         |         |
  5+10      27.2015     91.43  | Q       |         |         |         |
  5+15      27.8344     91.90  | Q       |         |         |         |
  5+20      28.4706     92.37  | Q       |         |         |         |
  5+25      29.1100     92.85  | Q       |         |         |         |
  5+30      29.7528     93.33  | Q       |         |         |         |
  5+35      30.3990     93.83  | Q       |         |         |         |
  5+40      31.0487     94.34  | Q       |         |         |         |
  5+45      31.7020     94.85  | Q       |         |         |         |
  5+50      32.3587     95.36  | Q       |         |         |         |
  5+55      33.0191     95.89  | QV      |         |         |         |
  6+ 0      33.6831     96.41  | QV      |         |         |         |
  6+ 5      34.3508     96.95  | QV      |         |         |         |
  6+10      35.0222     97.49  | QV      |         |         |         |
  6+15      35.6974     98.03  | QV      |         |         |         |
  6+20      36.3763     98.58  | QV      |         |         |         |
  6+25      37.0591     99.13  | QV      |         |         |         |
  6+30      37.7454     99.66  | QV      |         |         |         |
  6+35      38.4354    100.19  | QV      |         |         |         |
  6+40      39.1291    100.72  | QV      |         |         |         |
  6+45      39.8265    101.26  | QV      |         |         |         |
  6+50      40.5277    101.81  | QV      |         |         |         |
  6+55      41.2327    102.37  | QV      |         |         |         |
  7+ 0      41.9416    102.93  | QV      |         |         |         |
  7+ 5      42.6543    103.50  | QV      |         |         |         |
  7+10      43.3710    104.06  | Q V     |         |         |         |
  7+15      44.0913    104.60  | Q V     |         |         |         |
  7+20      44.8154    105.14  | Q V     |         |         |         |
  7+25      45.5434    105.69  | Q V     |         |         |         |
  7+30      46.2751    106.25  | Q V     |         |         |         |
  7+35      47.0108    106.82  | Q V     |         |         |         |
  7+40      47.7505    107.40  | Q V     |         |         |         |
  7+45      48.4942    107.98  | Q V     |         |         |         |
  7+50      49.2420    108.58  | Q V     |         |         |         |
  7+55      49.9939    109.18  | Q V     |         |         |         |
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 8+ 0     50.7500    109.79  | Q V     |          |          |          |
 8+ 5     51.5104    110.41  | Q V     |          |          |          |
 8+10     52.2752    111.04  | Q V     |          |          |          |
 8+15     53.0443    111.68  | Q V     |          |          |          |
 8+20     53.8179    112.33  | Q V     |          |          |          |
 8+25     54.5961    112.99  | Q  V    |          |          |          |
 8+30     55.3788    113.66  | Q  V    |          |          |          |
 8+35     56.1663    114.33  | Q  V    |          |          |          |
 8+40     56.9584    115.03  | Q  V    |          |          |          |
 8+45     57.7555    115.73  | Q  V    |          |          |          |
 8+50     58.5574    116.44  | Q  V    |          |          |          |
 8+55     59.3643    117.16  | Q  V    |          |          |          |
 9+ 0     60.1763    117.90  | Q  V    |          |          |          |
 9+ 5     60.9934    118.65  | Q  V    |          |          |          |
 9+10     61.8158    119.41  | Q  V    |          |          |          |
 9+15     62.6435    120.19  | Q  V    |          |          |          |
 9+20     63.4767    120.97  | Q  V    |          |          |          |
 9+25     64.3154    121.78  | Q  V    |          |          |          |
 9+30     65.1597    122.59  | Q   V   |          |          |          |
 9+35     66.0097    123.42  | Q   V   |          |          |          |
 9+40     66.8655    124.27  | Q   V   |          |          |          |
 9+45     67.7273    125.13  | Q   V   |          |          |          |
 9+50     68.5951    126.01  | Q   V   |          |          |          |
 9+55     69.4691    126.90  | Q   V   |          |          |          |
10+ 0     70.3493    127.81  |  Q  V   |          |          |          |
10+ 5     71.2359    128.74  |  Q  V   |          |          |          |
10+10     72.1291    129.68  |  Q  V   |          |          |          |
10+15     73.0288    130.65  |  Q  V   |          |          |          |
10+20     73.9354    131.63  |  Q  V   |          |          |          |
10+25     74.8489    132.64  |  Q  V   |          |          |          |
10+30     75.7694    133.66  |  Q  V   |          |          |          |
10+35     76.6972    134.71  |  Q   V  |          |          |          |
10+40     77.6322    135.77  |  Q   V  |          |          |          |
10+45     78.5748    136.87  |  Q   V  |          |          |          |
10+50     79.5251    137.98  |  Q   V  |          |          |          |
10+55     80.4832    139.12  |  Q   V  |          |          |          |
11+ 0     81.4493    140.28  |  Q   V  |          |          |          |
11+ 5     82.4237    141.47  |  Q   V  |          |          |          |
11+10     83.4064    142.69  |  Q   V  |          |          |          |
11+15     84.3976    143.93  |  Q   V  |          |          |          |
11+20     85.3977    145.21  |  Q   V  |          |          |          |
11+25     86.4067    146.51  |  Q   V  |          |          |          |
11+30     87.4249    147.85  |  Q    V |          |          |          |
11+35     88.4526    149.22  |  Q    V |          |          |          |
11+40     89.4900    150.62  |  Q    V |          |          |          |
11+45     90.5372    152.06  |  Q    V |          |          |          |
11+50     91.5946    153.54  |  Q    V |          |          |          |
11+55     92.6625    155.05  |  Q    V |          |          |          |
12+ 0     93.7411    156.61  |  Q    V |          |          |          |
12+ 5     94.8303    158.15  |  Q    V |          |          |          |
12+10     95.9298    159.65  |  Q    V |          |          |          |
12+15     97.0393    161.11  |  Q    V |          |          |          |
12+20     98.1587    162.53  |  Q     V|          |          |          |
12+25     99.2876    163.92  |  Q     V|          |          |          |
12+30    100.4256    165.24  |  Q     V|          |          |          |
12+35    101.5708    166.28  |  Q     V|          |          |          |
12+40    102.7208    166.99  |  Q     V|          |          |          |
12+45    103.8755    167.65  |  Q     V|          |          |          |
12+50    105.0363    168.55  |  Q     V|          |          |          |
12+55    106.2053    169.74  |  Q     V|          |          |          |
13+ 0    107.3839    171.14  |   Q    V|          |          |          |
13+ 5    108.5735    172.72  |   Q     V          |          |          |
13+10    109.7754    174.52  |   Q     V          |          |          |
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13+15     110.9909    176.49  |   Q     V         |         |         |
13+20     112.2209    178.59  |   Q     V         |         |         |
13+25     113.4663    180.83  |   Q     V         |         |         |
13+30     114.7280    183.20  |   Q     V         |         |         |
13+35     116.0070    185.72  |   Q     V         |         |         |
13+40     117.3044    188.37  |   Q     V         |         |         |
13+45     118.6210    191.18  |   Q     V         |         |         |
13+50     119.9580    194.13  |   Q     |V        |         |         |
13+55     121.3165    197.25  |   Q     |V        |         |         |
14+ 0     122.6976    200.55  |   Q     |V        |         |         |
14+ 5     124.1042    204.23  |   Q     |V        |         |         |
14+10     125.5395    208.41  |   Q     |V        |         |         |
14+15     127.0072    213.10  |    Q    |V        |         |         |
14+20     128.5107    218.32  |    Q    |V        |         |         |
14+25     130.0539    224.07  |    Q    | V       |         |         |
14+30     131.6418    230.57  |    Q    | V       |         |         |
14+35     133.2845    238.52  |    Q    | V       |         |         |
14+40     134.9937    248.18  |    Q    | V       |         |         |
14+45     136.7748    258.61  |     Q   | V       |         |         |
14+50     138.6265    268.86  |     Q   | V       |         |         |
14+55     140.5467    278.81  |     Q   | V       |         |         |
15+ 0     142.5355    288.78  |     Q   |  V      |         |         |
15+ 5     144.5944    298.95  |      Q  |  V      |         |         |
15+10     146.7246    309.30  |      Q  |  V      |         |         |
15+15     148.9295    320.15  |      Q  |  V      |         |         |
15+20     151.2140    331.70  |      Q  |  V      |         |         |
15+25     153.5795    343.48  |       Q |   V     |         |         |
15+30     156.0273    355.42  |       Q |   V     |         |         |
15+35     158.5599    367.73  |       Q |   V     |         |         |
15+40     161.1819    380.72  |       Q |   V     |         |         |
15+45     163.9029    395.08  |        Q|    V    |         |         |
15+50     166.7326    410.88  |        Q|    V    |         |         |
15+55     169.6824    428.31  |         Q    V    |         |         |
16+ 0     172.7869    450.77  |         Q    V    |         |         |
16+ 5     176.3549    518.09  |         | Q   V   |         |         |
16+10     180.5312    606.39  |         |   Q V   |         |         |
16+15     185.3621    701.45  |         |     QV  |         |         |
16+20     190.8811    801.36  |         |      VQ |         |         |
16+25     197.1512    910.42  |         |       V |Q        |         |
16+30     204.5301   1071.42  |         |       V |    Q    |         |
16+35     213.8261   1349.79  |         |        V|         |Q        |
16+40     225.0429   1628.68  |         |         V         |       Q |
16+45     236.6170   1680.56  |         |         |V        |        Q|
16+50     247.1036   1522.65  |         |         | V       |    Q    |
16+55     256.2714   1331.17  |         |         |  V      |Q        |
17+ 0     264.5221   1197.99  |         |         |   V  Q  |         |
17+ 5     271.9731   1081.90  |         |         |    Q    |         |
17+10     278.5672    957.45  |         |         | Q  V    |         |
17+15     284.5869    874.06  |         |         Q     V   |         |
17+20     290.1788    811.94  |         |        Q|     V   |         |
17+25     295.4153    760.34  |         |      Q  |      V  |         |
17+30     300.3612    718.15  |         |     Q   |      V  |         |
17+35     304.9595    667.67  |         |    Q    |       V |         |
17+40     309.2685    625.67  |         |   Q     |       V |         |
17+45     313.3297    589.68  |         |  Q      |       V |         |
17+50     317.2013    562.16  |         |  Q      |        V|         |
17+55     320.7993    522.43  |         | Q       |        V|         |
18+ 0     324.2042    494.40  |         |Q        |        V|         |
18+ 5     327.4855    476.44  |         |Q        |         V         |
18+10     330.5674    447.50  |         Q         |         V         |
18+15     333.5417    431.87  |         Q         |         V         |
18+20     336.4197    417.89  |        Q|         |         |V        |
18+25     339.1758    400.18  |        Q|         |         |V        |
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18+30     341.8566    389.24   |        Q|         |         |V        |
18+35     344.4261    373.10   |       Q |         |         |V        |
18+40     346.8853    357.08   |       Q |         |         | V       |
18+45     349.2795    347.64   |       Q |         |         | V       |
18+50     351.5371    327.80   |      Q  |         |         | V       |
18+55     353.7112    315.68   |      Q  |         |         | V       |
19+ 0     355.8373    308.71   |      Q  |         |         | V       |
19+ 5     357.9045    300.15   |      Q  |         |         |  V      |
19+10     359.9265    293.59   |     Q   |         |         |  V      |
19+15     361.8913    285.30   |     Q   |         |         |  V      |
19+20     363.7847    274.92   |     Q   |         |         |  V      |
19+25     365.6388    269.20   |     Q   |         |         |  V      |
19+30     367.4437    262.07   |     Q   |         |         |  V      |
19+35     369.2020    255.31   |     Q   |         |         |   V     |
19+40     370.9190    249.32   |    Q    |         |         |   V     |
19+45     372.5584    238.04   |    Q    |         |         |   V     |
19+50     374.1533    231.57   |    Q    |         |         |   V     |
19+55     375.7203    227.53   |    Q    |         |         |   V     |
20+ 0     377.2605    223.63   |    Q    |         |         |   V     |
20+ 5     378.7711    219.35   |    Q    |         |         |   V     |
20+10     380.2338    212.38   |   Q     |         |         |    V    |
20+15     381.6399    204.16   |   Q     |         |         |    V    |
20+20     383.0213    200.58   |   Q     |         |         |    V    |
20+25     384.3801    197.29   |   Q     |         |         |    V    |
20+30     385.7148    193.81   |   Q     |         |         |    V    |
20+35     387.0188    189.34   |   Q     |         |         |    V    |
20+40     388.2628    180.63   |   Q     |         |         |    V    |
20+45     389.4767    176.25   |   Q     |         |         |    V    |
20+50     390.6709    173.41   |   Q     |         |         |     V   |
20+55     391.8453    170.52   |   Q     |         |         |     V   |
21+ 0     392.9967    167.18   |  Q      |         |         |     V   |
21+ 5     394.1040    160.79   |  Q      |         |         |     V   |
21+10     395.1652    154.08   |  Q      |         |         |     V   |
21+15     396.2099    151.69   |  Q      |         |         |     V   |
21+20     397.2403    149.62   |  Q      |         |         |     V   |
21+25     398.2578    147.74   |  Q      |         |         |     V   |
21+30     399.2646    146.19   |  Q      |         |         |     V   |
21+35     400.2684    145.75   |  Q      |         |         |     V   |
21+40     401.2618    144.24   |  Q      |         |         |      V  |
21+45     402.2431    142.49   |  Q      |         |         |      V  |
21+50     403.2128    140.79   |  Q      |         |         |      V  |
21+55     404.1711    139.15   |  Q      |         |         |      V  |
22+ 0     405.1180    137.50   |  Q      |         |         |      V  |
22+ 5     406.0537    135.86   |  Q      |         |         |      V  |
22+10     406.9778    134.19   |  Q      |         |         |      V  |
22+15     407.8899    132.43   |  Q      |         |         |      V  |
22+20     408.7880    130.40   |  Q      |         |         |      V  |
22+25     409.6648    127.31   | Q       |         |         |      V  |
22+30     410.5020    121.57   | Q       |         |         |      V  |
22+35     411.3243    119.39   | Q       |         |         |      V  |
22+40     412.1362    117.90   | Q       |         |         |       V |
22+45     412.9383    116.46   | Q       |         |         |       V |
22+50     413.7303    114.99   | Q       |         |         |       V |
22+55     414.5119    113.49   | Q       |         |         |       V |
23+ 0     415.2824    111.89   | Q       |         |         |       V |
23+ 5     416.0396    109.95   | Q       |         |         |       V |
23+10     416.7706    106.13   | Q       |         |         |       V |
23+15     417.4641    100.71   | Q       |         |         |       V |
23+20     418.1480     99.30   | Q       |         |         |       V |
23+25     418.8237     98.11   | Q       |         |         |       V |
23+30     419.4918     97.01   | Q       |         |         |       V |
23+35     420.1525     95.93   | Q       |         |         |       V |
23+40     420.8060     94.90   | Q       |         |         |       V |
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 23+45     421.4529     93.92  | Q        |          |          |        V |
 23+50     422.0932     92.98  | Q        |          |          |        V |
 23+55     422.7273     92.07  | Q        |          |          |         V|
 24+ 0     423.3554     91.20  | Q        |          |          |         V|
 24+ 5     423.9756     90.04  | Q        |          |          |         V|
 24+10     424.5850     88.49  | Q        |          |          |         V|
 24+15     425.1811     86.55  | Q        |          |          |         V|
 24+20     425.7609     84.19  |Q         |          |          |         V|
 24+25     426.3219     81.46  |Q         |          |          |         V|
 24+30     426.8595     78.06  |Q         |          |          |         V|
 24+35     427.3624     73.02  |Q         |          |          |         V|
 24+40     427.8171     66.02  |Q         |          |          |         V|
 24+45     428.2201     58.52  |Q         |          |          |         V|
 24+50     428.5785     52.03  |Q         |          |          |         V|
 24+55     428.9006     46.77  |Q         |          |          |         V|
 25+ 0     429.1918     42.29  Q          |          |          |         V|
 25+ 5     429.4567     38.45  Q          |          |          |         V|
 25+10     429.7002     35.37  Q          |          |          |         V|
 25+15     429.9256     32.72  Q          |          |          |         V|
 25+20     430.1347     30.36  Q          |          |          |         V|
 25+25     430.3292     28.24  Q          |          |          |         V|
 25+30     430.5101     26.28  Q          |          |          |         V|
 25+35     430.6791     24.54  Q          |          |          |         V|
 25+40     430.8372     22.96  Q          |          |          |         V|
 25+45     430.9853     21.51  Q          |          |          |         V|
 25+50     431.1239     20.12  Q          |          |          |         V|
 25+55     431.2541     18.91  Q          |          |          |         V|
 26+ 0     431.3767     17.80  Q          |          |          |         V|
 26+ 5     431.4918     16.72  Q          |          |          |         V|
 26+10     431.6004     15.77  Q          |          |          |         V|
 26+15     431.7028     14.87  Q          |          |          |         V|
 26+20     431.7991     13.99  Q          |          |          |         V|
 26+25     431.8899     13.18  Q          |          |          |         V|
 26+30     431.9752     12.38  Q          |          |          |         V|
 26+35     432.0553     11.64  Q          |          |          |         V|
 26+40     432.1309     10.97  Q          |          |          |         V|
 26+45     432.2019     10.31  Q          |          |          |         V|
 26+50     432.2691      9.75  Q          |          |          |         V|
 26+55     432.3327      9.24  Q          |          |          |         V|
 27+ 0     432.3930      8.74  Q          |          |          |         V|
 27+ 5     432.4499      8.27  Q          |          |          |         V|
 27+10     432.5036      7.80  Q          |          |          |         V|
 27+15     432.5542      7.35  Q          |          |          |         V|
 27+20     432.6020      6.94  Q          |          |          |         V|
 27+25     432.6471      6.54  Q          |          |          |         V|
 27+30     432.6895      6.16  Q          |          |          |         V|
 27+35     432.7295      5.80  Q          |          |          |         V|
 27+40     432.7670      5.44  Q          |          |          |         V|
 27+45     432.8023      5.14  Q          |          |          |         V|
 27+50     432.8358      4.85  Q          |          |          |         V|
 27+55     432.8673      4.57  Q          |          |          |         V|
 28+ 0     432.8968      4.29  Q          |          |          |         V|
 28+ 5     432.9245      4.01  Q          |          |          |         V|
 28+10     432.9504      3.76  Q          |          |          |         V|
 28+15     432.9748      3.54  Q          |          |          |         V|
 28+20     432.9977      3.33  Q          |          |          |         V|
 28+25     433.0192      3.12  Q          |          |          |         V|
 28+30     433.0392      2.91  Q          |          |          |         V|
 28+35     433.0579      2.70  Q          |          |          |         V|
 28+40     433.0754      2.54  Q          |          |          |         V|
 28+45     433.0919      2.40  Q          |          |          |         V|
 28+50     433.1074      2.25  Q          |          |          |         V|
 28+55     433.1218      2.10  Q          |          |          |         V|
```

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   29+ 0     433.1353      1.96  Q         |         |         |        V|
   29+ 5     433.1480      1.84  Q         |         |         |        V|
   29+10     433.1601      1.75  Q         |         |         |        V|
   29+15     433.1716      1.67  Q         |         |         |        V|
   29+20     433.1825      1.59  Q         |         |         |        V|
   29+25     433.1929      1.50  Q         |         |         |        V|
   29+30     433.2026      1.42  Q         |         |         |        V|
   29+35     433.2117      1.32  Q         |         |         |        V|
   29+40     433.2202      1.23  Q         |         |         |        V|
   29+45     433.2280      1.13  Q         |         |         |        V|
   29+50     433.2352      1.04  Q         |         |         |        V|
   29+55     433.2417      0.95  Q         |         |         |        V|
   30+ 0     433.2476      0.85  Q         |         |         |        V|
   30+ 5     433.2528      0.76  Q         |         |         |        V|
   30+10     433.2574      0.67  Q         |         |         |        V|
   30+15     433.2614      0.58  Q         |         |         |        V|
   30+20     433.2648      0.49  Q         |         |         |        V|
   30+25     433.2676      0.41  Q         |         |         |        V|
   30+30     433.2701      0.35  Q         |         |         |        V|
   30+35     433.2722      0.31  Q         |         |         |        V|
   30+40     433.2740      0.26  Q         |         |         |        V|
   30+45     433.2754      0.21  Q         |         |         |        V|
   30+50     433.2766      0.17  Q         |         |         |        V|
   30+55     433.2774      0.12  Q         |         |         |        V|
   31+ 0     433.2780      0.08  Q         |         |         |        V|
   31+ 5     433.2782      0.03  Q         |         |         |        V|
-----------------------------------------------------------------------
```

U n i t   H y d r o g r a p h   A n a l y s i s

Study date 07/11/23

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6434

DEVELOPED SITE TRIBUTARY WATERSHED
100-YEAR 24-HOUR
AMC III
Ap 0.85

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
1956.00	1	1.12
Rainfall data for year 100		
1956.00	6	2.06
Rainfall data for year 100		
1956.00	24	3.47

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
83.0	95.8	1017.00	0.520	0.083	0.900	0.074
77.0	92.2	548.00	0.280	0.151	0.900	0.136
46.0	66.0	391.00	0.200	0.593	0.850	0.504

Area-averaged adjusted loss rate Fm (In/Hr) = 0.178

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
915.30	0.468	83.0	95.8	0.44	0.863
101.70	0.052	98.0	98.0	0.20	0.933
493.20	0.252	77.0	92.2	0.85	0.757
54.80	0.028	98.0	98.0	0.20	0.933
332.35	0.170	46.0	66.0	5.15	0.226
58.65	0.030	98.0	98.0	0.20	0.933

Area-averaged catchment yield fraction, Y = 0.736
Area-averaged low loss fraction, Yb = 0.264
++
Watercourse length = 31535.00(Ft.)
Length from concentration point to centroid = 17553.00(Ft.)
Elevation difference along watercourse = 1133.00(Ft.)
Mannings friction factor along watercourse = 0.033
Watershed area = 1956.00(Ac.)
Catchment Lag time = 0.910 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 9.1566
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.178(In/Hr)
Average low loss rate fraction (Yb) = 0.264 (decimal)
DESERT S-Graph Selected
Computed peak 5-minute rainfall = 0.531(In)
Computed peak 30-minute rainfall = 0.910(In)
Specified peak 1-hour rainfall = 1.120(In)
Computed peak 3-hour rainfall = 1.627(In)
Specified peak 6-hour rainfall = 2.060(In)
Specified peak 24-hour rainfall = 3.470(In)

Rainfall depth area reduction factors:
Using a total area of 1956.00(Ac.) (Ref: fig. E-4)

5-minute factor = 0.908	Adjusted rainfall = 0.483(In)
30-minute factor = 0.908	Adjusted rainfall = 0.826(In)
1-hour factor = 0.908	Adjusted rainfall = 1.017(In)
3-hour factor = 0.988	Adjusted rainfall = 1.608(In)
6-hour factor = 0.994	Adjusted rainfall = 2.047(In)
24-hour factor = 0.998	Adjusted rainfall = 3.462(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 23655.38 (CFS))	
1	0.403	95.305
2	1.356	225.531
3	2.872	358.645
4	4.948	490.969
5	7.548	615.162
6	11.026	822.729
7	16.645	1329.063
8	24.823	1934.488

9	33.695	2098.877
10	41.366	1814.618
11	47.529	1457.752
12	52.756	1236.594
13	57.201	1051.294
14	60.728	834.343
15	63.724	708.884
16	66.369	625.517
17	68.744	561.906
18	70.946	520.854
19	72.879	457.364
20	74.624	412.705
21	76.227	379.177
22	77.770	364.893
23	79.095	313.569
24	80.304	285.916
25	81.492	281.164
26	82.517	242.449
27	83.506	233.931
28	84.468	227.612
29	85.352	209.130
30	86.231	207.939
31	87.042	191.735
32	87.775	173.301
33	88.502	172.068
34	89.105	142.580
35	89.654	129.962
36	90.199	128.850
37	90.716	122.353
38	91.229	121.298
39	91.720	116.078
40	92.161	104.403
41	92.600	103.960
42	93.020	99.249
43	93.423	95.305
44	93.821	94.226
45	94.154	78.717
46	94.465	73.645
47	94.777	73.645
48	95.088	73.645
49	95.399	73.645
50	95.684	67.310
51	95.923	56.499
52	96.161	56.317
53	96.399	56.317
54	96.637	56.317
55	96.869	54.968
56	97.047	42.164
57	97.212	38.988
58	97.377	38.988
59	97.542	38.988
60	97.707	38.988
61	97.840	31.430
62	97.931	21.698
63	98.023	21.660
64	98.114	21.660
65	98.206	21.660
66	98.300	22.146
67	98.407	25.392
68	98.517	25.992
69	98.627	25.992
70	98.737	25.992
71	98.846	25.992

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 72              98.956                 25.992
 73              99.066                 25.992
 74              99.176                 25.992
 75              99.286                 25.992
 76              99.396                 25.992
 77              99.498                 24.092
 78              99.560                 14.785
 79              99.617                 13.538
 80              99.675                 13.538
 81              99.732                 13.538
 82              99.789                 13.538
 83              99.846                 13.538
 84              99.904                 13.538
 85              99.961                 13.538
 86             100.000                  9.266
---------------------------------------------------------------------
--------------------------------------------------------------------
--------------------------------------------------------------------
Total soil rain loss =      0.78(In)
Total effective rainfall =      2.68(In)
Peak flow rate in flood hydrograph =   1687.54(CFS)
---------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    24 - H O U R   S T O R M
               R u n o f f     H y d r o g r a p h
--------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

--------------------------------------------------------------------
```

```
Time(h+m) Volume Ac.Ft   Q(CFS)  0      425.0     850.0    1275.0    1700.0
-----------------------------------------------------------------------
  0+ 5       0.0022      0.32  Q         |         |         |         |
  0+10       0.0096      1.08  Q         |         |         |         |
  0+15       0.0253      2.28  Q         |         |         |         |
  0+20       0.0524      3.94  Q         |         |         |         |
  0+25       0.0938      6.01  Q         |         |         |         |
  0+30       0.1543      8.79  Q         |         |         |         |
  0+35       0.2457     13.27  Q         |         |         |         |
  0+40       0.3821     19.80  Q         |         |         |         |
  0+45       0.5673     26.90  Q         |         |         |         |
  0+50       0.7950     33.07  Q         |         |         |         |
  0+55       1.0572     38.06  Q         |         |         |         |
  1+ 0       1.3487     42.33  Q         |         |         |         |
  1+ 5       1.6654     45.99  VQ        |         |         |         |
  1+10       2.0025     48.94  VQ        |         |         |         |
  1+15       2.3571     51.48  VQ        |         |         |         |
  1+20       2.7272     53.75  VQ        |         |         |         |
  1+25       3.1116     55.81  VQ        |         |         |         |
  1+30       3.5094     57.75  VQ        |         |         |         |
  1+35       3.9190     59.48  VQ        |         |         |         |
  1+40       4.3395     61.06  VQ        |         |         |         |
  1+45       4.7703     62.54  VQ        |         |         |         |
  1+50       5.2109     63.98  VQ        |         |         |         |
  1+55       5.6603     65.25  VQ        |         |         |         |
  2+ 0       6.1179     66.44  VQ        |         |         |         |
  2+ 5       6.5835     67.61  VQ        |         |         |         |
  2+10       7.0564     68.66  VQ        |         |         |         |
  2+15       7.5363     69.69  VQ        |         |         |         |
  2+20       8.0232     70.70  VQ        |         |         |         |
  2+25       8.5166     71.65  VQ        |         |         |         |
  2+30       9.0166     72.60  VQ        |         |         |         |
  2+35       9.5229     73.50  VQ        |         |         |         |
  2+40      10.0349     74.35  VQ        |         |         |         |
```

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2+45      10.5528     75.20  VQ         |         |         |         |
2+50      11.0758     75.95  |Q         |         |         |         |
2+55      11.6038     76.66  |Q         |         |         |         |
3+ 0      12.1367     77.37  |Q         |         |         |         |
3+ 5      12.6743     78.07  |Q         |         |         |         |
3+10      13.2168     78.77  |Q         |         |         |         |
3+15      13.7640     79.45  |Q         |         |         |         |
3+20      14.3157     80.10  |Q         |         |         |         |
3+25      14.8718     80.75  |Q         |         |         |         |
3+30      15.4323     81.39  |Q         |         |         |         |
3+35      15.9972     82.02  |Q         |         |         |         |
3+40      16.5664     82.65  |Q         |         |         |         |
3+45      17.1397     83.24  |Q         |         |         |         |
3+50      17.7169     83.81  |Q         |         |         |         |
3+55      18.2980     84.38  |Q         |         |         |         |
4+ 0      18.8831     84.96  |Q         |         |         |         |
4+ 5      19.4722     85.54  |VQ        |         |         |         |
4+10      20.0653     86.11  |VQ        |         |         |         |
4+15      20.6620     86.64  |VQ        |         |         |         |
4+20      21.2624     87.18  |VQ        |         |         |         |
4+25      21.8665     87.72  | Q        |         |         |         |
4+30      22.4744     88.27  | Q        |         |         |         |
4+35      23.0861     88.81  | Q        |         |         |         |
4+40      23.7013     89.32  | Q        |         |         |         |
4+45      24.3199     89.82  | Q        |         |         |         |
4+50      24.9420     90.33  | Q        |         |         |         |
4+55      25.5677     90.84  | Q        |         |         |         |
5+ 0      26.1968     91.36  | Q        |         |         |         |
5+ 5      26.8294     91.85  | Q        |         |         |         |
5+10      27.4652     92.32  | Q        |         |         |         |
5+15      28.1043     92.79  | Q        |         |         |         |
5+20      28.7466     93.27  | Q        |         |         |         |
5+25      29.3923     93.75  | Q        |         |         |         |
5+30      30.0413     94.24  | Q        |         |         |         |
5+35      30.6938     94.74  | Q        |         |         |         |
5+40      31.3498     95.25  | Q        |         |         |         |
5+45      32.0093     95.77  | Q        |         |         |         |
5+50      32.6725     96.29  | Q        |         |         |         |
5+55      33.3392     96.82  | QV       |         |         |         |
6+ 0      34.0097     97.35  | QV       |         |         |         |
6+ 5      34.6839     97.89  | QV       |         |         |         |
6+10      35.3618     98.43  | QV       |         |         |         |
6+15      36.0435     98.98  | QV       |         |         |         |
6+20      36.7290     99.54  | QV       |         |         |         |
6+25      37.4183    100.09  | QV       |         |         |         |
6+30      38.1114    100.63  | QV       |         |         |         |
6+35      38.8081    101.16  | QV       |         |         |         |
6+40      39.5085    101.70  | QV       |         |         |         |
6+45      40.2126    102.25  | QV       |         |         |         |
6+50      40.9206    102.80  | QV       |         |         |         |
6+55      41.6324    103.36  | QV       |         |         |         |
7+ 0      42.3482    103.93  | QV       |         |         |         |
7+ 5      43.0679    104.50  | QV       |         |         |         |
7+10      43.7915    105.07  | Q V      |         |         |         |
7+15      44.5188    105.61  | Q V      |         |         |         |
7+20      45.2499    106.16  | Q V      |         |         |         |
7+25      45.9849    106.72  | Q V      |         |         |         |
7+30      46.7238    107.28  | Q V      |         |         |         |
7+35      47.4666    107.86  | Q V      |         |         |         |
7+40      48.2134    108.44  | Q V      |         |         |         |
7+45      48.9644    109.03  | Q V      |         |         |         |
7+50      49.7194    109.63  | Q V      |         |         |         |
7+55      50.4786    110.24  | Q V      |         |         |         |
```

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 8+ 0      51.2421    110.86  | Q V     |         |         |         |
 8+ 5      52.0098    111.48  | Q V     |         |         |         |
 8+10      52.7820    112.12  | Q V     |         |         |         |
 8+15      53.5586    112.76  | Q V     |         |         |         |
 8+20      54.3397    113.42  | Q V     |         |         |         |
 8+25      55.1254    114.08  | Q  V    |         |         |         |
 8+30      55.9157    114.76  | Q  V    |         |         |         |
 8+35      56.7108    115.44  | Q  V    |         |         |         |
 8+40      57.5107    116.14  | Q  V    |         |         |         |
 8+45      58.3154    116.85  | Q  V    |         |         |         |
 8+50      59.1251    117.57  | Q  V    |         |         |         |
 8+55      59.9398    118.30  | Q  V    |         |         |         |
 9+ 0      60.7597    119.04  | Q  V    |         |         |         |
 9+ 5      61.5848    119.80  | Q  V    |         |         |         |
 9+10      62.4151    120.57  | Q  V    |         |         |         |
 9+15      63.2509    121.35  | Q  V    |         |         |         |
 9+20      64.0921    122.15  | Q  V    |         |         |         |
 9+25      64.9389    122.96  | Q  V    |         |         |         |
 9+30      65.7914    123.78  | Q   V   |         |         |         |
 9+35      66.6496    124.62  | Q   V   |         |         |         |
 9+40      67.5138    125.47  | Q   V   |         |         |         |
 9+45      68.3839    126.34  | Q   V   |         |         |         |
 9+50      69.2601    127.23  | Q   V   |         |         |         |
 9+55      70.1426    128.13  |  Q  V   |         |         |         |
10+ 0      71.0313    129.05  |  Q  V   |         |         |         |
10+ 5      71.9266    129.99  |  Q  V   |         |         |         |
10+10      72.8284    130.94  |  Q  V   |         |         |         |
10+15      73.7369    131.92  |  Q  V   |         |         |         |
10+20      74.6522    132.91  |  Q  V   |         |         |         |
10+25      75.5746    133.92  |  Q  V   |         |         |         |
10+30      76.5040    134.96  |  Q   V  |         |         |         |
10+35      77.4407    136.01  |  Q   V  |         |         |         |
10+40      78.3849    137.09  |  Q   V  |         |         |         |
10+45      79.3366    138.19  |  Q   V  |         |         |         |
10+50      80.2961    139.32  |  Q   V  |         |         |         |
10+55      81.2635    140.47  |  Q   V  |         |         |         |
11+ 0      82.2390    141.64  |  Q   V  |         |         |         |
11+ 5      83.2228    142.84  |  Q   V  |         |         |         |
11+10      84.2150    144.07  |  Q   V  |         |         |         |
11+15      85.2159    145.33  |  Q   V  |         |         |         |
11+20      86.2256    146.61  |  Q   V  |         |         |         |
11+25      87.2444    147.93  |  Q   V  |         |         |         |
11+30      88.2725    149.28  |  Q    V |         |         |         |
11+35      89.3102    150.67  |  Q    V |         |         |         |
11+40      90.3576    152.08  |  Q    V |         |         |         |
11+45      91.4150    153.54  |  Q    V |         |         |         |
11+50      92.4827    155.03  |  Q    V |         |         |         |
11+55      93.5609    156.56  |  Q    V |         |         |         |
12+ 0      94.6499    158.13  |  Q    V |         |         |         |
12+ 5      95.7497    159.68  |  Q    V |         |         |         |
12+10      96.8598    161.20  |  Q    V |         |         |         |
12+15      97.9801    162.67  |  Q    V |         |         |         |
12+20      99.1103    164.11  |  Q     V|         |         |         |
12+25     100.2502    165.51  |  Q     V|         |         |         |
12+30     101.3993    166.84  |  Q     V|         |         |         |
12+35     102.5555    167.89  |  Q     V|         |         |         |
12+40     103.7167    168.61  |  Q     V|         |         |         |
12+45     104.8825    169.28  |  Q     V|         |         |         |
12+50     106.0546    170.18  |   Q    V|         |         |         |
12+55     107.2350    171.39  |   Q    V|         |         |         |
13+ 0     108.4250    172.80  |   Q    V|         |         |         |
13+ 5     109.6261    174.40  |   Q     V         |         |         |
13+10     110.8397    176.22  |   Q     V         |         |         |
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13+15     112.0670    178.20  |   Q     V         |         |         |
13+20     113.3089    180.32  |   Q     V         |         |         |
13+25     114.5664    182.59  |   Q     V         |         |         |
13+30     115.8403    184.98  |   Q     V         |         |         |
13+35     117.1317    187.52  |   Q     V         |         |         |
13+40     118.4416    190.20  |   Q     V         |         |         |
13+45     119.7711    193.03  |   Q     V         |         |         |
13+50     121.1210    196.01  |   Q     |V        |         |         |
13+55     122.4926    199.16  |   Q     |V        |         |         |
14+ 0     123.8872    202.49  |   Q     |V        |         |         |
14+ 5     125.3074    206.21  |   Q     |V        |         |         |
14+10     126.7566    210.43  |   Q     |V        |         |         |
14+15     128.2385    215.17  |    Q    |V        |         |         |
14+20     129.7566    220.43  |    Q    |V        |         |         |
14+25     131.3148    226.25  |    Q    | V       |         |         |
14+30     132.9181    232.80  |    Q    | V       |         |         |
14+35     134.5767    240.83  |    Q    | V       |         |         |
14+40     136.3025    250.59  |    Q    | V       |         |         |
14+45     138.1009    261.12  |     Q   | V       |         |         |
14+50     139.9705    271.47  |     Q   | V       |         |         |
14+55     141.9093    281.51  |     Q   | V       |         |         |
15+ 0     143.9174    291.58  |     Q   |  V      |         |         |
15+ 5     145.9963    301.85  |      Q  |  V      |         |         |
15+10     148.1471    312.30  |      Q  |  V      |         |         |
15+15     150.3734    323.26  |      Q  |  V      |         |         |
15+20     152.6800    334.92  |      Q  |  V      |         |         |
15+25     155.0685    346.81  |       Q |   V     |         |         |
15+30     157.5400    358.86  |       Q |   V     |         |         |
15+35     160.0971    371.30  |       Q |   V     |         |         |
15+40     162.7446    384.41  |        Q|   V     |         |         |
15+45     165.4919    398.91  |        Q|    V    |         |         |
15+50     168.3491    414.86  |        Q|    V    |         |         |
15+55     171.3274    432.45  |         Q    V    |         |         |
16+ 0     174.4615    455.08  |         Q    V    |         |         |
16+ 5     178.0606    522.59  |         | Q   V   |         |         |
16+10     182.2696    611.15  |         |   Q V   |         |         |
16+15     187.1356    706.53  |         |     QV  |         |         |
16+20     192.6921    806.82  |         |      VQ |         |         |
16+25     199.0027    916.29  |         |       V |Q        |         |
16+30     206.4251   1077.73  |         |       V |    Q    |         |
16+35     215.7673   1356.49  |         |        V|         |Q        |
16+40     227.0319   1635.63  |         |         V         |       Q |
16+45     238.6541   1687.54  |         |         |V        |        Q|
16+50     249.1874   1529.43  |         |         | V       |    Q    |
16+55     258.3998   1337.64  |         |         |  V      |Q        |
17+ 0     266.6928   1204.15  |         |         |   V   Q |         |
17+ 5     274.1843   1087.77  |         |         |    Q    |         |
17+10     280.8169    963.05  |         |         | Q  V    |         |
17+15     286.8733    879.39  |         |         Q     V   |         |
17+20     292.5002    817.03  |         |        Q|     V   |         |
17+25     297.7702    765.21  |         |       Q |      V  |         |
17+30     302.7482    722.80  |         |      Q  |      V  |         |
17+35     307.3770    672.10  |         |    Q    |       V |         |
17+40     311.7151    629.89  |         |   Q     |       V |         |
17+45     315.8039    593.69  |         |  Q      |       V |         |
17+50     319.7019    565.99  |         |  Q      |        V|         |
17+55     323.3251    526.09  |         | Q       |        V|         |
18+ 0     326.7542    497.91  |         |Q        |        V|         |
18+ 5     330.0587    479.81  |         |Q        |         V         |
18+10     333.1630    450.75  |         Q         |         V         |
18+15     336.1589    435.00  |         Q         |         V         |
18+20     339.0578    420.92  |        Q|         |         |V        |
18+25     341.8341    403.12  |        Q|         |         |V        |
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18+30     344.5345    392.09  |        Q|         |         |V        |
18+35     347.1230    375.86  |       Q |         |         |V        |
18+40     349.6007    359.76  |       Q |         |         | V       |
18+45     352.0129    350.25  |       Q |         |         | V       |
18+50     354.2880    330.34  |      Q  |         |         | V       |
18+55     356.4791    318.16  |      Q  |         |         | V       |
19+ 0     358.6218    311.12  |      Q  |         |         | V       |
19+ 5     360.7053    302.51  |      Q  |         |         |  V      |
19+10     362.7431    295.89  |     Q   |         |         |  V      |
19+15     364.7234    287.54  |     Q   |         |         |  V      |
19+20     366.6319    277.12  |     Q   |         |         |  V      |
19+25     368.5007    271.35  |     Q   |         |         |  V      |
19+30     370.3200    264.17  |     Q   |         |         |  V      |
19+35     372.0925    257.35  |     Q   |         |         |   V     |
19+40     373.8233    251.32  |    Q    |         |         |   V     |
19+45     375.4762    240.00  |    Q    |         |         |   V     |
19+50     377.0842    233.49  |    Q    |         |         |   V     |
19+55     378.6641    229.40  |    Q    |         |         |   V     |
20+ 0     380.2169    225.47  |    Q    |         |         |   V     |
20+ 5     381.7399    221.14  |    Q    |         |         |   V     |
20+10     383.2148    214.14  |    Q    |         |         |    V    |
20+15     384.6327    205.89  |   Q     |         |         |    V    |
20+20     386.0257    202.27  |   Q     |         |         |    V    |
20+25     387.3959    198.95  |   Q     |         |         |    V    |
20+30     388.7419    195.44  |   Q     |         |         |    V    |
20+35     390.0569    190.93  |   Q     |         |         |    V    |
20+40     391.3116    182.19  |   Q     |         |         |    V    |
20+45     392.5360    177.78  |   Q     |         |         |    V    |
20+50     393.7407    174.91  |   Q     |         |         |     V   |
20+55     394.9252    172.00  |   Q     |         |         |     V   |
21+ 0     396.0866    168.63  |  Q      |         |         |     V   |
21+ 5     397.2037    162.21  |  Q      |         |         |     V   |
21+10     398.2745    155.48  |  Q      |         |         |     V   |
21+15     399.3286    153.06  |  Q      |         |         |     V   |
21+20     400.3684    150.97  |  Q      |         |         |     V   |
21+25     401.3950    149.07  |  Q      |         |         |     V   |
21+30     402.4109    147.51  |  Q      |         |         |     V   |
21+35     403.4237    147.05  |  Q      |         |         |     V   |
21+40     404.4259    145.52  |  Q      |         |         |      V  |
21+45     405.4159    143.75  |  Q      |         |         |      V  |
21+50     406.3941    142.04  |  Q      |         |         |      V  |
21+55     407.3609    140.38  |  Q      |         |         |      V  |
22+ 0     408.3162    138.71  |  Q      |         |         |      V  |
22+ 5     409.2602    137.06  |  Q      |         |         |      V  |
22+10     410.1925    135.37  |  Q      |         |         |      V  |
22+15     411.1126    133.60  |  Q      |         |         |      V  |
22+20     412.0185    131.54  |  Q      |         |         |      V  |
22+25     412.9031    128.44  |  Q      |         |         |      V  |
22+30     413.7480    122.68  | Q       |         |         |      V  |
22+35     414.5778    120.49  | Q       |         |         |      V  |
22+40     415.3973    118.98  | Q       |         |         |       V |
22+45     416.2067    117.53  | Q       |         |         |       V |
22+50     417.0059    116.04  | Q       |         |         |       V |
22+55     417.7947    114.53  | Q       |         |         |       V |
23+ 0     418.5723    112.91  | Q       |         |         |       V |
23+ 5     419.3364    110.95  | Q       |         |         |       V |
23+10     420.0742    107.12  | Q       |         |         |       V |
23+15     420.7745    101.68  | Q       |         |         |       V |
23+20     421.4650    100.26  | Q       |         |         |       V |
23+25     422.1472     99.06  | Q       |         |         |       V |
23+30     422.8218     97.95  | Q       |         |         |       V |
23+35     423.4889     96.86  | Q       |         |         |       V |
23+40     424.1488     95.82  | Q       |         |         |       V |
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 23+45     424.8019     94.83  | Q       |         |         |        V |
 23+50     425.4484     93.88  | Q       |         |         |        V |
 23+55     426.0887     92.97  | Q       |         |         |         V|
 24+ 0     426.7229     92.09  | Q       |         |         |         V|
 24+ 5     427.3491     90.92  | Q       |         |         |         V|
 24+10     427.9644     89.35  | Q       |         |         |         V|
 24+15     428.5662     87.39  | Q       |         |         |         V|
 24+20     429.1517     85.01  | Q       |         |         |         V|
 24+25     429.7181     82.25  |Q        |         |         |         V|
 24+30     430.2610     78.82  |Q        |         |         |         V|
 24+35     430.7687     73.73  |Q        |         |         |         V|
 24+40     431.2278     66.66  |Q        |         |         |         V|
 24+45     431.6347     59.09  |Q        |         |         |         V|
 24+50     431.9966     52.54  |Q        |         |         |         V|
 24+55     432.3218     47.23  |Q        |         |         |         V|
 25+ 0     432.6159     42.70  |Q        |         |         |         V|
 25+ 5     432.8833     38.83  Q         |         |         |         V|
 25+10     433.1292     35.71  Q         |         |         |         V|
 25+15     433.3567     33.03  Q         |         |         |         V|
 25+20     433.5679     30.66  Q         |         |         |         V|
 25+25     433.7642     28.52  Q         |         |         |         V|
 25+30     433.9470     26.53  Q         |         |         |         V|
 25+35     434.1176     24.77  Q         |         |         |         V|
 25+40     434.2772     23.18  Q         |         |         |         V|
 25+45     434.4268     21.72  Q         |         |         |         V|
 25+50     434.5667     20.31  Q         |         |         |         V|
 25+55     434.6981     19.09  Q         |         |         |         V|
 26+ 0     434.8219     17.97  Q         |         |         |         V|
 26+ 5     434.9381     16.88  Q         |         |         |         V|
 26+10     435.0478     15.93  Q         |         |         |         V|
 26+15     435.1512     15.01  Q         |         |         |         V|
 26+20     435.2485     14.12  Q         |         |         |         V|
 26+25     435.3401     13.31  Q         |         |         |         V|
 26+30     435.4262     12.50  Q         |         |         |         V|
 26+35     435.5071     11.75  Q         |         |         |         V|
 26+40     435.5834     11.08  Q         |         |         |         V|
 26+45     435.6551     10.41  Q         |         |         |         V|
 26+50     435.7230      9.85  Q         |         |         |         V|
 26+55     435.7872      9.33  Q         |         |         |         V|
 27+ 0     435.8480      8.83  Q         |         |         |         V|
 27+ 5     435.9055      8.35  Q         |         |         |         V|
 27+10     435.9597      7.87  Q         |         |         |         V|
 27+15     436.0108      7.42  Q         |         |         |         V|
 27+20     436.0591      7.01  Q         |         |         |         V|
 27+25     436.1046      6.61  Q         |         |         |         V|
 27+30     436.1475      6.22  Q         |         |         |         V|
 27+35     436.1878      5.86  Q         |         |         |         V|
 27+40     436.2257      5.49  Q         |         |         |         V|
 27+45     436.2614      5.19  Q         |         |         |         V|
 27+50     436.2951      4.90  Q         |         |         |         V|
 27+55     436.3269      4.62  Q         |         |         |         V|
 28+ 0     436.3568      4.33  Q         |         |         |         V|
 28+ 5     436.3847      4.05  Q         |         |         |         V|
 28+10     436.4108      3.80  Q         |         |         |         V|
 28+15     436.4355      3.58  Q         |         |         |         V|
 28+20     436.4587      3.36  Q         |         |         |         V|
 28+25     436.4803      3.15  Q         |         |         |         V|
 28+30     436.5006      2.94  Q         |         |         |         V|
 28+35     436.5194      2.73  Q         |         |         |         V|
 28+40     436.5371      2.57  Q         |         |         |         V|
 28+45     436.5537      2.42  Q         |         |         |         V|
 28+50     436.5694      2.27  Q         |         |         |         V|
 28+55     436.5840      2.12  Q         |         |         |         V|
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  29+ 0     436.5976      1.98  Q         |         |         |        V|
  29+ 5     436.6104      1.86  Q         |         |         |        V|
  29+10     436.6226      1.77  Q         |         |         |        V|
  29+15     436.6342      1.69  Q         |         |         |        V|
  29+20     436.6452      1.60  Q         |         |         |        V|
  29+25     436.6557      1.52  Q         |         |         |        V|
  29+30     436.6655      1.43  Q         |         |         |        V|
  29+35     436.6748      1.34  Q         |         |         |        V|
  29+40     436.6833      1.24  Q         |         |         |        V|
  29+45     436.6912      1.14  Q         |         |         |        V|
  29+50     436.6984      1.05  Q         |         |         |        V|
  29+55     436.7050      0.96  Q         |         |         |        V|
  30+ 0     436.7109      0.86  Q         |         |         |        V|
  30+ 5     436.7162      0.77  Q         |         |         |        V|
  30+10     436.7209      0.68  Q         |         |         |        V|
  30+15     436.7249      0.59  Q         |         |         |        V|
  30+20     436.7283      0.49  Q         |         |         |        V|
  30+25     436.7312      0.41  Q         |         |         |        V|
  30+30     436.7336      0.36  Q         |         |         |        V|
  30+35     436.7358      0.31  Q         |         |         |        V|
  30+40     436.7376      0.26  Q         |         |         |        V|
  30+45     436.7391      0.22  Q         |         |         |        V|
  30+50     436.7402      0.17  Q         |         |         |        V|
  30+55     436.7411      0.12  Q         |         |         |        V|
  31+ 0     436.7416      0.08  Q         |         |         |        V|
  31+ 5     436.7418      0.03  Q         |         |         |         V
-----------------------------------------------------------------------
```

U n i t   H y d r o g r a p h   A n a l y s i s

Study date 07/12/23

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6434

PRE-DEVELOPED SITE SMALL OFF-SITE
100-YEARF 24-HOUR
AMC III
Ap 0.9

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
85.83	1	1.08
Rainfall data for year 100		
85.83	6	2.01
Rainfall data for year 100		
85.83	24	3.43

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
46.0	66.0	85.83	1.000	0.593	0.900	0.534

Area-averaged adjusted loss rate Fm (In/Hr) = 0.534

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
77.25	0.900	46.0	66.0	5.15	0.222
8.58	0.100	98.0	98.0	0.20	0.932

Area-averaged catchment yield fraction, Y = 0.293
Area-averaged low loss fraction, Yb = 0.707
++
Watercourse length = 4520.00(Ft.)
Length from concentration point to centroid = 2123.00(Ft.)
Elevation difference along watercourse = 58.00(Ft.)
Mannings friction factor along watercourse = 0.033
Watershed area = 85.83(Ac.)
Catchment Lag time = 0.237 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 35.1542
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.534(In/Hr)
Average low loss rate fraction (Yb) = 0.707 (decimal)
DESERT S-Graph Selected
Computed peak 5-minute rainfall = 0.512(In)
Computed peak 30-minute rainfall = 0.877(In)
Specified peak 1-hour rainfall = 1.080(In)
Computed peak 3-hour rainfall = 1.581(In)
Specified peak 6-hour rainfall = 2.010(In)
Specified peak 24-hour rainfall = 3.430(In)

Rainfall depth area reduction factors:
Using a total area of 85.83(Ac.) (Ref: fig. E-4)

5-minute factor = 0.996 Adjusted rainfall = 0.510(In)
30-minute factor = 0.996 Adjusted rainfall = 0.874(In)
1-hour factor = 0.996 Adjusted rainfall = 1.076(In)
3-hour factor = 0.999 Adjusted rainfall = 1.580(In)
6-hour factor = 1.000 Adjusted rainfall = 2.009(In)
24-hour factor = 1.000 Adjusted rainfall = 3.430(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 1038.01 (CFS))	
1	2.248	23.335
2	13.541	117.220
3	41.235	287.469
4	60.195	196.805
5	70.336	105.264
6	77.106	70.269
7	81.911	49.875
8	85.600	38.291
9	88.528	30.402
10	90.698	22.515
11	92.510	18.813
12	94.020	15.676
13	95.235	12.610
14	96.239	10.423
15	97.068	8.606
16	97.690	6.457

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      17              98.100                    4.257
      18              98.483                    3.966
      19              98.904                    4.377
      20              99.325                    4.371
      21              99.629                    3.154
      22              99.849                    2.281
      23             100.000                    1.569
     ---------------------------------------------------------------------
     --------------------------------------------------------------------
     --------------------------------------------------------------------
     Total soil rain loss =      2.05(In)
     Total effective rainfall =      1.37(In)
     Peak flow rate in flood hydrograph =    158.25(CFS)
     ---------------------------------------------------------------------
     ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R   S T O R M
                   R u n o f f     H y d r o g r a p h
     --------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

     --------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       50.0     100.0     150.0     200.0
-----------------------------------------------------------------------
  0+ 5       0.0002      0.03  Q         |         |         |         |
  0+10       0.0015      0.19  Q         |         |         |         |
  0+15       0.0055      0.58  Q         |         |         |         |
  0+20       0.0113      0.84  Q         |         |         |         |
  0+25       0.0181      0.99  Q         |         |         |         |
  0+30       0.0256      1.09  Q         |         |         |         |
  0+35       0.0336      1.16  Q         |         |         |         |
  0+40       0.0419      1.21  Q         |         |         |         |
  0+45       0.0506      1.26  Q         |         |         |         |
  0+50       0.0595      1.29  Q         |         |         |         |
  0+55       0.0686      1.32  Q         |         |         |         |
  1+ 0       0.0779      1.35  Q         |         |         |         |
  1+ 5       0.0873      1.37  Q         |         |         |         |
  1+10       0.0969      1.39  Q         |         |         |         |
  1+15       0.1066      1.40  Q         |         |         |         |
  1+20       0.1163      1.42  Q         |         |         |         |
  1+25       0.1262      1.43  Q         |         |         |         |
  1+30       0.1361      1.44  Q         |         |         |         |
  1+35       0.1461      1.45  Q         |         |         |         |
  1+40       0.1561      1.46  Q         |         |         |         |
  1+45       0.1662      1.47  Q         |         |         |         |
  1+50       0.1764      1.48  Q         |         |         |         |
  1+55       0.1866      1.49  Q         |         |         |         |
  2+ 0       0.1969      1.49  Q         |         |         |         |
  2+ 5       0.2072      1.50  Q         |         |         |         |
  2+10       0.2176      1.50  Q         |         |         |         |
  2+15       0.2279      1.51  Q         |         |         |         |
  2+20       0.2383      1.51  Q         |         |         |         |
  2+25       0.2488      1.52  QV        |         |         |         |
  2+30       0.2593      1.52  QV        |         |         |         |
  2+35       0.2698      1.53  QV        |         |         |         |
  2+40       0.2804      1.53  QV        |         |         |         |
  2+45       0.2910      1.54  QV        |         |         |         |
  2+50       0.3016      1.55  QV        |         |         |         |
  2+55       0.3123      1.55  QV        |         |         |         |
  3+ 0       0.3231      1.56  QV        |         |         |         |
  3+ 5       0.3338      1.56  QV        |         |         |         |
  3+10       0.3446      1.57  QV        |         |         |         |
  3+15       0.3555      1.58  QV        |         |         |         |
  3+20       0.3664      1.58  QV        |         |         |         |
```

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 3+25       0.3773      1.59  QV         |          |          |          |
 3+30       0.3883      1.59  QV         |          |          |          |
 3+35       0.3993      1.60  QV         |          |          |          |
 3+40       0.4104      1.61  QV         |          |          |          |
 3+45       0.4215      1.61  QV         |          |          |          |
 3+50       0.4327      1.62  QV         |          |          |          |
 3+55       0.4439      1.63  QV         |          |          |          |
 4+ 0       0.4551      1.63  QV         |          |          |          |
 4+ 5       0.4664      1.64  QV         |          |          |          |
 4+10       0.4778      1.65  QV         |          |          |          |
 4+15       0.4892      1.65  QV         |          |          |          |
 4+20       0.5006      1.66  Q V        |          |          |          |
 4+25       0.5121      1.67  Q V        |          |          |          |
 4+30       0.5237      1.68  Q V        |          |          |          |
 4+35       0.5353      1.68  Q V        |          |          |          |
 4+40       0.5469      1.69  Q V        |          |          |          |
 4+45       0.5586      1.70  Q V        |          |          |          |
 4+50       0.5703      1.71  Q V        |          |          |          |
 4+55       0.5821      1.71  Q V        |          |          |          |
 5+ 0       0.5940      1.72  Q V        |          |          |          |
 5+ 5       0.6059      1.73  Q V        |          |          |          |
 5+10       0.6178      1.74  Q V        |          |          |          |
 5+15       0.6298      1.74  Q V        |          |          |          |
 5+20       0.6419      1.75  Q V        |          |          |          |
 5+25       0.6540      1.76  Q V        |          |          |          |
 5+30       0.6662      1.77  Q V        |          |          |          |
 5+35       0.6784      1.78  Q V        |          |          |          |
 5+40       0.6907      1.79  Q V        |          |          |          |
 5+45       0.7031      1.79  Q V        |          |          |          |
 5+50       0.7155      1.80  Q V        |          |          |          |
 5+55       0.7280      1.81  Q V        |          |          |          |
 6+ 0       0.7405      1.82  Q  V       |          |          |          |
 6+ 5       0.7531      1.83  Q  V       |          |          |          |
 6+10       0.7658      1.84  Q  V       |          |          |          |
 6+15       0.7785      1.85  Q  V       |          |          |          |
 6+20       0.7913      1.86  Q  V       |          |          |          |
 6+25       0.8041      1.87  Q  V       |          |          |          |
 6+30       0.8171      1.88  Q  V       |          |          |          |
 6+35       0.8301      1.89  Q  V       |          |          |          |
 6+40       0.8431      1.90  Q  V       |          |          |          |
 6+45       0.8562      1.91  Q  V       |          |          |          |
 6+50       0.8694      1.92  Q  V       |          |          |          |
 6+55       0.8827      1.93  Q  V       |          |          |          |
 7+ 0       0.8960      1.94  Q  V       |          |          |          |
 7+ 5       0.9094      1.95  Q  V       |          |          |          |
 7+10       0.9229      1.96  Q  V       |          |          |          |
 7+15       0.9365      1.97  Q  V       |          |          |          |
 7+20       0.9501      1.98  Q  V       |          |          |          |
 7+25       0.9638      1.99  Q  V       |          |          |          |
 7+30       0.9776      2.00  Q  V       |          |          |          |
 7+35       0.9915      2.01  Q   V      |          |          |          |
 7+40       1.0055      2.03  Q   V      |          |          |          |
 7+45       1.0195      2.04  Q   V      |          |          |          |
 7+50       1.0336      2.05  Q   V      |          |          |          |
 7+55       1.0478      2.06  Q   V      |          |          |          |
 8+ 0       1.0621      2.08  Q   V      |          |          |          |
 8+ 5       1.0765      2.09  Q   V      |          |          |          |
 8+10       1.0910      2.10  Q   V      |          |          |          |
 8+15       1.1055      2.11  Q   V      |          |          |          |
 8+20       1.1202      2.13  Q   V      |          |          |          |
 8+25       1.1349      2.14  Q   V      |          |          |          |
 8+30       1.1498      2.15  Q   V      |          |          |          |
 8+35       1.1647      2.17  Q   V      |          |          |          |
```

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 8+40       1.1797      2.18  Q   V     |         |         |         |
 8+45       1.1949      2.20  Q   V     |         |         |         |
 8+50       1.2101      2.21  Q   V     |         |         |         |
 8+55       1.2255      2.23  Q   V     |         |         |         |
 9+ 0       1.2409      2.24  Q    V    |         |         |         |
 9+ 5       1.2565      2.26  Q    V    |         |         |         |
 9+10       1.2721      2.27  Q    V    |         |         |         |
 9+15       1.2879      2.29  Q    V    |         |         |         |
 9+20       1.3038      2.31  Q    V    |         |         |         |
 9+25       1.3198      2.32  Q    V    |         |         |         |
 9+30       1.3360      2.34  Q    V    |         |         |         |
 9+35       1.3522      2.36  Q    V    |         |         |         |
 9+40       1.3686      2.38  Q    V    |         |         |         |
 9+45       1.3851      2.40  Q    V    |         |         |         |
 9+50       1.4017      2.41  Q    V    |         |         |         |
 9+55       1.4185      2.43  Q    V    |         |         |         |
10+ 0       1.4353      2.45  Q    V    |         |         |         |
10+ 5       1.4524      2.47  Q    V    |         |         |         |
10+10       1.4695      2.49  Q    V    |         |         |         |
10+15       1.4868      2.51  Q     V   |         |         |         |
10+20       1.5043      2.53  Q     V   |         |         |         |
10+25       1.5219      2.56  Q     V   |         |         |         |
10+30       1.5397      2.58  Q     V   |         |         |         |
10+35       1.5576      2.60  Q     V   |         |         |         |
10+40       1.5756      2.62  Q     V   |         |         |         |
10+45       1.5939      2.65  Q     V   |         |         |         |
10+50       1.6123      2.67  Q     V   |         |         |         |
10+55       1.6309      2.70  Q     V   |         |         |         |
11+ 0       1.6496      2.72  Q     V   |         |         |         |
11+ 5       1.6685      2.75  Q     V   |         |         |         |
11+10       1.6877      2.78  Q     V   |         |         |         |
11+15       1.7070      2.80  Q     V   |         |         |         |
11+20       1.7265      2.83  Q      V  |         |         |         |
11+25       1.7462      2.86  Q      V  |         |         |         |
11+30       1.7661      2.89  Q      V  |         |         |         |
11+35       1.7862      2.92  Q      V  |         |         |         |
11+40       1.8065      2.95  Q      V  |         |         |         |
11+45       1.8271      2.99  Q      V  |         |         |         |
11+50       1.8478      3.02  Q      V  |         |         |         |
11+55       1.8689      3.05  Q      V  |         |         |         |
12+ 0       1.8901      3.09  Q      V  |         |         |         |
12+ 5       1.9116      3.12  Q      V  |         |         |         |
12+10       1.9331      3.12  Q      V  |         |         |         |
12+15       1.9542      3.07  Q      V  |         |         |         |
12+20       1.9751      3.04  Q       V |         |         |         |
12+25       1.9962      3.05  Q       V |         |         |         |
12+30       2.0173      3.07  Q       V |         |         |         |
12+35       2.0386      3.10  Q       V |         |         |         |
12+40       2.0602      3.13  Q       V |         |         |         |
12+45       2.0820      3.17  Q       V |         |         |         |
12+50       2.1041      3.21  Q       V |         |         |         |
12+55       2.1265      3.25  Q       V |         |         |         |
13+ 0       2.1492      3.30  Q       V |         |         |         |
13+ 5       2.1722      3.35  Q       V |         |         |         |
13+10       2.1956      3.40  Q       V |         |         |         |
13+15       2.2194      3.46  Q        V|         |         |         |
13+20       2.2437      3.52  Q        V|         |         |         |
13+25       2.2683      3.58  Q        V|         |         |         |
13+30       2.2934      3.64  Q        V|         |         |         |
13+35       2.3190      3.71  Q        V|         |         |         |
13+40       2.3451      3.79  Q        V|         |         |         |
13+45       2.3717      3.86  Q        V|         |         |         |
13+50       2.3988      3.94  Q        V|         |         |         |
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13+55       2.4266      4.03  Q        V|         |         |         |
14+ 0       2.4550      4.12  Q        V|         |         |         |
14+ 5       2.4841      4.22  Q         V         |         |         |
14+10       2.5139      4.33  Q         V         |         |         |
14+15       2.5446      4.45  Q         V         |         |         |
14+20       2.5761      4.57  Q         V         |         |         |
14+25       2.6085      4.71  Q         V         |         |         |
14+30       2.6418      4.84  Q         V         |         |         |
14+35       2.6763      5.00  Q         V         |         |         |
14+40       2.7117      5.15  |Q        |V        |         |         |
14+45       2.7484      5.33  |Q        |V        |         |         |
14+50       2.7864      5.51  |Q        |V        |         |         |
14+55       2.8259      5.73  |Q        |V        |         |         |
15+ 0       2.8668      5.95  |Q        |V        |         |         |
15+ 5       2.9096      6.21  |Q        |V        |         |         |
15+10       2.9543      6.49  |Q        | V       |         |         |
15+15       3.0012      6.81  |Q        | V       |         |         |
15+20       3.0506      7.17  |Q        | V       |         |         |
15+25       3.1027      7.57  |Q        | V       |         |         |
15+30       3.1570      7.89  |Q        | V       |         |         |
15+35       3.2128      8.10  |Q        |  V      |         |         |
15+40       3.2715      8.52  |Q        |  V      |         |         |
15+45       3.3353      9.26  |Q        |  V      |         |         |
15+50       3.4060     10.27  | Q       |  V      |         |         |
15+55       3.4900     12.19  | Q       |   V     |         |         |
16+ 0       3.6063     16.89  |  Q      |   V     |         |         |
16+ 5       3.8631     37.29  |      Q  |    V    |         |         |
16+10       4.4700     88.11  |         |      QV |         |         |
16+15       5.5598    158.25  |         |         | V       |Q        |
16+20       6.3302    111.85  |         |         | Q  V    |         |
16+25       6.7896     66.71  |         |  Q      |      V  |         |
16+30       7.1187     47.78  |        Q|         |       V |         |
16+35       7.3707     36.59  |      Q  |         |         V         |
16+40       7.5754     29.73  |    Q    |         |         V         |
16+45       7.7456     24.72  |   Q     |         |         |V        |
16+50       7.8840     20.09  |   Q     |         |         | V       |
16+55       8.0043     17.47  |  Q      |         |         | V       |
17+ 0       8.1093     15.24  |  Q      |         |         |  V      |
17+ 5       8.2000     13.17  | Q       |         |         |  V      |
17+10       8.2796     11.56  | Q       |         |         |  V      |
17+15       8.3495     10.15  | Q       |         |         |  V      |
17+20       8.4093      8.69  |Q        |         |         |   V     |
17+25       8.4601      7.37  |Q        |         |         |   V     |
17+30       8.5081      6.97  |Q        |         |         |   V     |
17+35       8.5554      6.87  |Q        |         |         |   V     |
17+40       8.6005      6.55  |Q        |         |         |    V    |
17+45       8.6400      5.73  |Q        |         |         |    V    |
17+50       8.6748      5.06  |Q        |         |         |    V    |
17+55       8.7056      4.47  Q         |         |         |    V    |
18+ 0       8.7304      3.60  Q         |         |         |    V    |
18+ 5       8.7542      3.46  Q         |         |         |    V    |
18+10       8.7774      3.37  Q         |         |         |    V    |
18+15       8.8005      3.35  Q         |         |         |    V    |
18+20       8.8232      3.30  Q         |         |         |    V    |
18+25       8.8455      3.24  Q         |         |         |     V   |
18+30       8.8674      3.17  Q         |         |         |     V   |
18+35       8.8888      3.11  Q         |         |         |     V   |
18+40       8.9098      3.04  Q         |         |         |     V   |
18+45       8.9303      2.98  Q         |         |         |     V   |
18+50       8.9504      2.92  Q         |         |         |     V   |
18+55       8.9701      2.86  Q         |         |         |     V   |
19+ 0       8.9895      2.81  Q         |         |         |     V   |
19+ 5       9.0085      2.76  Q         |         |         |     V   |
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19+10       9.0271      2.71  Q         |         |         |     V   |
19+15       9.0454      2.66  Q         |         |         |     V   |
19+20       9.0634      2.61  Q         |         |         |     V   |
19+25       9.0811      2.57  Q         |         |         |     V   |
19+30       9.0985      2.52  Q         |         |         |      V  |
19+35       9.1156      2.48  Q         |         |         |      V  |
19+40       9.1324      2.44  Q         |         |         |      V  |
19+45       9.1490      2.41  Q         |         |         |      V  |
19+50       9.1653      2.37  Q         |         |         |      V  |
19+55       9.1814      2.34  Q         |         |         |      V  |
20+ 0       9.1972      2.30  Q         |         |         |      V  |
20+ 5       9.2129      2.27  Q         |         |         |      V  |
20+10       9.2283      2.24  Q         |         |         |      V  |
20+15       9.2435      2.21  Q         |         |         |      V  |
20+20       9.2585      2.18  Q         |         |         |      V  |
20+25       9.2733      2.15  Q         |         |         |      V  |
20+30       9.2879      2.12  Q         |         |         |      V  |
20+35       9.3023      2.10  Q         |         |         |      V  |
20+40       9.3166      2.07  Q         |         |         |      V  |
20+45       9.3306      2.04  Q         |         |         |      V  |
20+50       9.3446      2.02  Q         |         |         |       V |
20+55       9.3583      2.00  Q         |         |         |       V |
21+ 0       9.3719      1.97  Q         |         |         |       V |
21+ 5       9.3854      1.95  Q         |         |         |       V |
21+10       9.3987      1.93  Q         |         |         |       V |
21+15       9.4118      1.91  Q         |         |         |       V |
21+20       9.4249      1.89  Q         |         |         |       V |
21+25       9.4377      1.87  Q         |         |         |       V |
21+30       9.4505      1.85  Q         |         |         |       V |
21+35       9.4631      1.83  Q         |         |         |       V |
21+40       9.4756      1.82  Q         |         |         |       V |
21+45       9.4880      1.80  Q         |         |         |       V |
21+50       9.5003      1.78  Q         |         |         |       V |
21+55       9.5124      1.76  Q         |         |         |       V |
22+ 0       9.5245      1.75  Q         |         |         |       V |
22+ 5       9.5364      1.73  Q         |         |         |       V |
22+10       9.5482      1.72  Q         |         |         |       V |
22+15       9.5599      1.70  Q         |         |         |       V |
22+20       9.5715      1.69  Q         |         |         |       V |
22+25       9.5830      1.67  Q         |         |         |        V|
22+30       9.5944      1.66  Q         |         |         |        V|
22+35       9.6058      1.64  Q         |         |         |        V|
22+40       9.6170      1.63  Q         |         |         |        V|
22+45       9.6281      1.62  Q         |         |         |        V|
22+50       9.6392      1.60  Q         |         |         |        V|
22+55       9.6501      1.59  Q         |         |         |        V|
23+ 0       9.6610      1.58  Q         |         |         |        V|
23+ 5       9.6718      1.57  Q         |         |         |        V|
23+10       9.6825      1.55  Q         |         |         |        V|
23+15       9.6931      1.54  Q         |         |         |        V|
23+20       9.7036      1.53  Q         |         |         |        V|
23+25       9.7141      1.52  Q         |         |         |        V|
23+30       9.7245      1.51  Q         |         |         |        V|
23+35       9.7348      1.50  Q         |         |         |        V|
23+40       9.7451      1.49  Q         |         |         |        V|
23+45       9.7552      1.48  Q         |         |         |        V|
23+50       9.7653      1.47  Q         |         |         |        V|
23+55       9.7754      1.46  Q         |         |         |        V|
24+ 0       9.7853      1.45  Q         |         |         |        V|
24+ 5       9.7950      1.41  Q         |         |         |        V|
24+10       9.8035      1.24  Q         |         |         |        V|
24+15       9.8093      0.84  Q         |         |         |        V|
24+20       9.8133      0.57  Q         |         |         |        V|
```

24+25	9.8162	0.43	Q	|	|	|	V|
24+30	9.8185	0.33	Q	|	|	|	V|
24+35	9.8203	0.26	Q	|	|	|	V|
24+40	9.8217	0.21	Q	|	|	|	V|
24+45	9.8229	0.17	Q	|	|	|	V|
24+50	9.8238	0.13	Q	|	|	|	V|
24+55	9.8245	0.11	Q	|	|	|	V|
25+ 0	9.8251	0.09	Q	|	|	|	V|
25+ 5	9.8256	0.07	Q	|	|	|	V|
25+10	9.8260	0.05	Q	|	|	|	V|
25+15	9.8263	0.04	Q	|	|	|	V|
25+20	9.8265	0.03	Q	|	|	|	V|
25+25	9.8267	0.03	Q	|	|	|	V|
25+30	9.8268	0.02	Q	|	|	|	V|
25+35	9.8269	0.02	Q	|	|	|	V|
25+40	9.8270	0.01	Q	|	|	|	V|
25+45	9.8270	0.01	Q	|	|	|	V|
25+50	9.8270	0.00	Q	|	|	|	V|

U n i t   H y d r o g r a p h   A n a l y s i s

Study date 07/12/23

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6434

DEVELOPED SITE SMALL OFF-SITE
100-YEAR 24-HOUR
AMC III
AP 0.68

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
85.83	1	1.08
Rainfall data for year 100		
85.83	6	2.01
Rainfall data for year 100		
85.83	24	3.43

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
46.0	66.0	85.83	1.000	0.593	0.680	0.403

Area-averaged adjusted loss rate Fm (In/Hr) = 0.403

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
58.36	0.680	46.0	66.0	5.15	0.222
27.47	0.320	98.0	98.0	0.20	0.932

Area-averaged catchment yield fraction, Y = 0.449
Area-averaged low loss fraction, Yb = 0.551
+++
Watercourse length =   4520.00(Ft.)
Length from concentration point to centroid =   2123.00(Ft.)
Elevation difference along watercourse =   58.00(Ft.)
Mannings friction factor along watercourse = 0.033
Watershed area =   85.83(Ac.)
Catchment Lag time =   0.237 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 35.1542
Hydrograph baseflow =   0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.403(In/Hr)
Average low loss rate fraction (Yb) = 0.551 (decimal)
DESERT S-Graph Selected
Computed peak 5-minute rainfall = 0.512(In)
Computed peak 30-minute rainfall = 0.877(In)
Specified peak 1-hour rainfall = 1.080(In)
Computed peak 3-hour rainfall = 1.581(In)
Specified peak 6-hour rainfall = 2.010(In)
Specified peak 24-hour rainfall = 3.430(In)

Rainfall depth area reduction factors:
Using a total area of   85.83(Ac.) (Ref: fig. E-4)

5-minute factor = 0.996   Adjusted rainfall = 0.510(In)
30-minute factor = 0.996   Adjusted rainfall = 0.874(In)
1-hour factor = 0.996   Adjusted rainfall = 1.076(In)
3-hour factor = 0.999   Adjusted rainfall = 1.580(In)
6-hour factor = 1.000   Adjusted rainfall = 2.009(In)
24-hour factor = 1.000   Adjusted rainfall = 3.430(In)

U n i t   H y d r o g r a p h
+++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 1038.01 (CFS))	
1	2.248	23.335
2	13.541	117.220
3	41.235	287.469
4	60.195	196.805
5	70.336	105.264
6	77.106	70.269
7	81.911	49.875
8	85.600	38.291
9	88.528	30.402
10	90.698	22.515
11	92.510	18.813
12	94.020	15.676
13	95.235	12.610
14	96.239	10.423
15	97.068	8.606
16	97.690	6.457

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     17              98.100                  4.257
     18              98.483                  3.966
     19              98.904                  4.377
     20              99.325                  4.371
     21              99.629                  3.154
     22              99.849                  2.281
     23             100.000                  1.569
    ---------------------------------------------------------------------
    --------------------------------------------------------------------
    --------------------------------------------------------------------
    Total soil rain loss =      1.60(In)
    Total effective rainfall =      1.83(In)
    Peak flow rate in flood hydrograph =    167.91(CFS)
    ---------------------------------------------------------------------
    ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R   S T O R M
                   R u n o f f     H y d r o g r a p h
    --------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

    --------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       50.0     100.0     150.0     200.0
-----------------------------------------------------------------------
  0+ 5       0.0003      0.05  Q         |         |         |         |
  0+10       0.0023      0.29  Q         |         |         |         |
  0+15       0.0084      0.89  Q         |         |         |         |
  0+20       0.0173      1.29  Q         |         |         |         |
  0+25       0.0278      1.52  Q         |         |         |         |
  0+30       0.0393      1.67  Q         |         |         |         |
  0+35       0.0515      1.77  Q         |         |         |         |
  0+40       0.0643      1.86  Q         |         |         |         |
  0+45       0.0776      1.93  Q         |         |         |         |
  0+50       0.0912      1.98  Q         |         |         |         |
  0+55       0.1051      2.03  Q         |         |         |         |
  1+ 0       0.1194      2.07  Q         |         |         |         |
  1+ 5       0.1338      2.10  Q         |         |         |         |
  1+10       0.1485      2.13  Q         |         |         |         |
  1+15       0.1633      2.15  Q         |         |         |         |
  1+20       0.1783      2.17  Q         |         |         |         |
  1+25       0.1933      2.19  Q         |         |         |         |
  1+30       0.2085      2.20  Q         |         |         |         |
  1+35       0.2238      2.22  Q         |         |         |         |
  1+40       0.2392      2.24  Q         |         |         |         |
  1+45       0.2547      2.25  Q         |         |         |         |
  1+50       0.2703      2.26  Q         |         |         |         |
  1+55       0.2860      2.28  Q         |         |         |         |
  2+ 0       0.3017      2.28  Q         |         |         |         |
  2+ 5       0.3175      2.29  Q         |         |         |         |
  2+10       0.3334      2.30  QV        |         |         |         |
  2+15       0.3493      2.31  QV        |         |         |         |
  2+20       0.3652      2.32  QV        |         |         |         |
  2+25       0.3812      2.33  QV        |         |         |         |
  2+30       0.3973      2.33  QV        |         |         |         |
  2+35       0.4134      2.34  QV        |         |         |         |
  2+40       0.4296      2.35  QV        |         |         |         |
  2+45       0.4459      2.36  QV        |         |         |         |
  2+50       0.4622      2.37  QV        |         |         |         |
  2+55       0.4786      2.38  QV        |         |         |         |
  3+ 0       0.4950      2.39  QV        |         |         |         |
  3+ 5       0.5115      2.40  QV        |         |         |         |
  3+10       0.5281      2.41  QV        |         |         |         |
  3+15       0.5447      2.42  QV        |         |         |         |
  3+20       0.5614      2.42  QV        |         |         |         |
```

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  3+25       0.5782      2.43  QV        |         |         |         |
  3+30       0.5950      2.44  QV        |         |         |         |
  3+35       0.6119      2.45  QV        |         |         |         |
  3+40       0.6289      2.46  QV        |         |         |         |
  3+45       0.6459      2.47  QV        |         |         |         |
  3+50       0.6630      2.48  Q V       |         |         |         |
  3+55       0.6802      2.49  Q V       |         |         |         |
  4+ 0       0.6974      2.50  Q V       |         |         |         |
  4+ 5       0.7147      2.51  Q V       |         |         |         |
  4+10       0.7321      2.52  Q V       |         |         |         |
  4+15       0.7496      2.54  Q V       |         |         |         |
  4+20       0.7671      2.55  Q V       |         |         |         |
  4+25       0.7847      2.56  Q V       |         |         |         |
  4+30       0.8024      2.57  Q V       |         |         |         |
  4+35       0.8202      2.58  Q V       |         |         |         |
  4+40       0.8380      2.59  Q V       |         |         |         |
  4+45       0.8559      2.60  Q V       |         |         |         |
  4+50       0.8739      2.61  Q V       |         |         |         |
  4+55       0.8920      2.62  Q V       |         |         |         |
  5+ 0       0.9101      2.64  Q V       |         |         |         |
  5+ 5       0.9284      2.65  Q V       |         |         |         |
  5+10       0.9467      2.66  Q V       |         |         |         |
  5+15       0.9651      2.67  Q V       |         |         |         |
  5+20       0.9836      2.68  Q  V      |         |         |         |
  5+25       1.0022      2.70  Q  V      |         |         |         |
  5+30       1.0208      2.71  Q  V      |         |         |         |
  5+35       1.0396      2.72  Q  V      |         |         |         |
  5+40       1.0584      2.74  Q  V      |         |         |         |
  5+45       1.0774      2.75  Q  V      |         |         |         |
  5+50       1.0964      2.76  Q  V      |         |         |         |
  5+55       1.1155      2.78  Q  V      |         |         |         |
  6+ 0       1.1347      2.79  Q  V      |         |         |         |
  6+ 5       1.1540      2.80  Q  V      |         |         |         |
  6+10       1.1734      2.82  Q  V      |         |         |         |
  6+15       1.1929      2.83  Q  V      |         |         |         |
  6+20       1.2125      2.85  Q  V      |         |         |         |
  6+25       1.2322      2.86  Q  V      |         |         |         |
  6+30       1.2520      2.87  Q  V      |         |         |         |
  6+35       1.2719      2.89  Q  V      |         |         |         |
  6+40       1.2919      2.90  Q  V      |         |         |         |
  6+45       1.3120      2.92  Q   V     |         |         |         |
  6+50       1.3322      2.94  Q   V     |         |         |         |
  6+55       1.3526      2.95  Q   V     |         |         |         |
  7+ 0       1.3730      2.97  Q   V     |         |         |         |
  7+ 5       1.3936      2.98  Q   V     |         |         |         |
  7+10       1.4142      3.00  Q   V     |         |         |         |
  7+15       1.4350      3.02  Q   V     |         |         |         |
  7+20       1.4559      3.03  Q   V     |         |         |         |
  7+25       1.4769      3.05  Q   V     |         |         |         |
  7+30       1.4980      3.07  Q   V     |         |         |         |
  7+35       1.5193      3.09  Q   V     |         |         |         |
  7+40       1.5407      3.10  Q   V     |         |         |         |
  7+45       1.5622      3.12  Q   V     |         |         |         |
  7+50       1.5838      3.14  Q   V     |         |         |         |
  7+55       1.6056      3.16  Q   V     |         |         |         |
  8+ 0       1.6275      3.18  Q   V     |         |         |         |
  8+ 5       1.6495      3.20  Q    V    |         |         |         |
  8+10       1.6717      3.22  Q    V    |         |         |         |
  8+15       1.6940      3.24  Q    V    |         |         |         |
  8+20       1.7165      3.26  Q    V    |         |         |         |
  8+25       1.7391      3.28  Q    V    |         |         |         |
  8+30       1.7618      3.30  Q    V    |         |         |         |
  8+35       1.7847      3.32  Q    V    |         |         |         |
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 8+40       1.8077      3.35  Q    V    |         |         |         |
 8+45       1.8309      3.37  Q    V    |         |         |         |
 8+50       1.8543      3.39  Q    V    |         |         |         |
 8+55       1.8778      3.41  Q    V    |         |         |         |
 9+ 0       1.9015      3.44  Q    V    |         |         |         |
 9+ 5       1.9253      3.46  Q    V    |         |         |         |
 9+10       1.9493      3.49  Q    V    |         |         |         |
 9+15       1.9735      3.51  Q     V   |         |         |         |
 9+20       1.9978      3.54  Q     V   |         |         |         |
 9+25       2.0224      3.56  Q     V   |         |         |         |
 9+30       2.0471      3.59  Q     V   |         |         |         |
 9+35       2.0720      3.62  Q     V   |         |         |         |
 9+40       2.0971      3.64  Q     V   |         |         |         |
 9+45       2.1223      3.67  Q     V   |         |         |         |
 9+50       2.1478      3.70  Q     V   |         |         |         |
 9+55       2.1735      3.73  Q     V   |         |         |         |
10+ 0       2.1994      3.76  Q     V   |         |         |         |
10+ 5       2.2255      3.79  Q     V   |         |         |         |
10+10       2.2518      3.82  Q     V   |         |         |         |
10+15       2.2783      3.85  Q     V   |         |         |         |
10+20       2.3050      3.88  Q      V  |         |         |         |
10+25       2.3320      3.92  Q      V  |         |         |         |
10+30       2.3592      3.95  Q      V  |         |         |         |
10+35       2.3867      3.99  Q      V  |         |         |         |
10+40       2.4144      4.02  Q      V  |         |         |         |
10+45       2.4423      4.06  Q      V  |         |         |         |
10+50       2.4705      4.09  Q      V  |         |         |         |
10+55       2.4990      4.13  Q      V  |         |         |         |
11+ 0       2.5277      4.17  Q      V  |         |         |         |
11+ 5       2.5567      4.21  Q      V  |         |         |         |
11+10       2.5860      4.25  Q      V  |         |         |         |
11+15       2.6156      4.30  Q      V  |         |         |         |
11+20       2.6455      4.34  Q       V |         |         |         |
11+25       2.6756      4.38  Q       V |         |         |         |
11+30       2.7061      4.43  Q       V |         |         |         |
11+35       2.7370      4.48  Q       V |         |         |         |
11+40       2.7681      4.52  Q       V |         |         |         |
11+45       2.7996      4.57  Q       V |         |         |         |
11+50       2.8315      4.62  Q       V |         |         |         |
11+55       2.8637      4.68  Q       V |         |         |         |
12+ 0       2.8963      4.73  Q       V |         |         |         |
12+ 5       2.9292      4.78  Q       V |         |         |         |
12+10       2.9621      4.78  Q        V|         |         |         |
12+15       2.9944      4.70  Q        V|         |         |         |
12+20       3.0265      4.66  Q        V|         |         |         |
12+25       3.0587      4.67  Q        V|         |         |         |
12+30       3.0911      4.70  Q        V|         |         |         |
12+35       3.1238      4.75  Q        V|         |         |         |
12+40       3.1568      4.79  Q        V|         |         |         |
12+45       3.1902      4.85  Q        V|         |         |         |
12+50       3.2241      4.91  Q        V|         |         |         |
12+55       3.2584      4.98  Q        V|         |         |         |
13+ 0       3.2932      5.05  |Q       V         |         |         |
13+ 5       3.3285      5.13  |Q       V         |         |         |
13+10       3.3644      5.21  |Q       V         |         |         |
13+15       3.4009      5.30  |Q       V         |         |         |
13+20       3.4380      5.39  |Q       V         |         |         |
13+25       3.4757      5.48  |Q       V         |         |         |
13+30       3.5142      5.58  |Q       V         |         |         |
13+35       3.5534      5.69  |Q       V         |         |         |
13+40       3.5933      5.80  |Q       V         |         |         |
13+45       3.6341      5.92  |Q       |V        |         |         |
13+50       3.6757      6.04  |Q       |V        |         |         |
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13+55       3.7183       6.18  |Q        |V        |         |         |
14+ 0       3.7618       6.32  |Q        |V        |         |         |
14+ 5       3.8064       6.47  |Q        |V        |         |         |
14+10       3.8520       6.63  |Q        |V        |         |         |
14+15       3.8990       6.82  |Q        |V        |         |         |
14+20       3.9473       7.01  |Q        | V       |         |         |
14+25       3.9970       7.21  |Q        | V       |         |         |
14+30       4.0481       7.42  |Q        | V       |         |         |
14+35       4.1008       7.65  |Q        | V       |         |         |
14+40       4.1552       7.89  |Q        | V       |         |         |
14+45       4.2114       8.17  |Q        | V       |         |         |
14+50       4.2696       8.45  |Q        |  V      |         |         |
14+55       4.3301       8.77  |Q        |  V      |         |         |
15+ 0       4.3929       9.12  |Q        |  V      |         |         |
15+ 5       4.4584       9.51  |Q        |  V      |         |         |
15+10       4.5268       9.94  |Q        |  V      |         |         |
15+15       4.5987      10.44  | Q       |   V     |         |         |
15+20       4.6744      10.98  | Q       |   V     |         |         |
15+25       4.7543      11.60  | Q       |   V     |         |         |
15+30       4.8375      12.09  | Q       |   V     |         |         |
15+35       4.9231      12.42  | Q       |    V    |         |         |
15+40       5.0129      13.05  | Q       |    V    |         |         |
15+45       5.1107      14.19  | Q       |    V    |         |         |
15+50       5.2191      15.74  |  Q      |    V    |         |         |
15+55       5.3463      18.47  |  Q      |     V   |         |         |
16+ 0       5.5130      24.21  |   Q     |     V   |         |         |
16+ 5       5.8284      45.79  |        Q|      V  |         |         |
16+10       6.4992      97.40  |         |        Q|         |         |
16+15       7.6556     167.91  |         |         |  V      |  Q      |
16+20       8.4909     121.29  |         |         |   QV    |         |
16+25       9.0070      74.94  |         |   Q     |      V  |         |
16+30       9.3849      54.86  |         Q         |       V |         |
16+35       9.6805      42.93  |       Q |         |        V|         |
16+40       9.9246      35.44  |      Q  |         |         V         |
16+45      10.1304      29.89  |    Q    |         |         V         |
16+50      10.3012      24.79  |   Q     |         |         |V        |
16+55      10.4511      21.77  |   Q     |         |         |V        |
17+ 0      10.5833      19.19  |  Q      |         |         | V       |
17+ 5      10.6992      16.82  |  Q      |         |         | V       |
17+10      10.8021      14.95  | Q       |         |         | V       |
17+15      10.8938      13.30  | Q       |         |         |  V      |
17+20      10.9739      11.63  | Q       |         |         |  V      |
17+25      11.0437      10.13  | Q       |         |         |  V      |
17+30      11.1096       9.58  |Q        |         |         |  V      |
17+35      11.1740       9.35  |Q        |         |         |   V     |
17+40      11.2353       8.90  |Q        |         |         |   V     |
17+45      11.2901       7.95  |Q        |         |         |   V     |
17+50      11.3394       7.17  |Q        |         |         |   V     |
17+55      11.3840       6.48  |Q        |         |         |   V     |
18+ 0      11.4220       5.52  |Q        |         |         |   V     |
18+ 5      11.4585       5.30  |Q        |         |         |   V     |
18+10      11.4941       5.16  |Q        |         |         |    V    |
18+15      11.5294       5.13  |Q        |         |         |    V    |
18+20      11.5642       5.06  |Q        |         |         |    V    |
18+25      11.5984       4.97  Q         |         |         |    V    |
18+30      11.6319       4.86  Q         |         |         |    V    |
18+35      11.6647       4.76  Q         |         |         |    V    |
18+40      11.6968       4.66  Q         |         |         |    V    |
18+45      11.7283       4.57  Q         |         |         |    V    |
18+50      11.7591       4.48  Q         |         |         |    V    |
18+55      11.7894       4.39  Q         |         |         |    V    |
19+ 0      11.8190       4.30  Q         |         |         |     V   |
19+ 5      11.8481       4.22  Q         |         |         |     V   |
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19+10      11.8766      4.15  Q          |         |         |     V   |
19+15      11.9047      4.07  Q          |         |         |     V   |
19+20      11.9323      4.00  Q          |         |         |     V   |
19+25      11.9593      3.93  Q          |         |         |     V   |
19+30      11.9860      3.87  Q          |         |         |     V   |
19+35      12.0122      3.81  Q          |         |         |     V   |
19+40      12.0380      3.75  Q          |         |         |     V   |
19+45      12.0634      3.69  Q          |         |         |     V   |
19+50      12.0884      3.63  Q          |         |         |     V   |
19+55      12.1131      3.58  Q          |         |         |     V   |
20+ 0      12.1374      3.53  Q          |         |         |      V  |
20+ 5      12.1613      3.48  Q          |         |         |      V  |
20+10      12.1849      3.43  Q          |         |         |      V  |
20+15      12.2082      3.38  Q          |         |         |      V  |
20+20      12.2312      3.34  Q          |         |         |      V  |
20+25      12.2539      3.29  Q          |         |         |      V  |
20+30      12.2763      3.25  Q          |         |         |      V  |
20+35      12.2984      3.21  Q          |         |         |      V  |
20+40      12.3202      3.17  Q          |         |         |      V  |
20+45      12.3418      3.13  Q          |         |         |      V  |
20+50      12.3631      3.10  Q          |         |         |      V  |
20+55      12.3842      3.06  Q          |         |         |      V  |
21+ 0      12.4050      3.03  Q          |         |         |      V  |
21+ 5      12.4256      2.99  Q          |         |         |      V  |
21+10      12.4460      2.96  Q          |         |         |      V  |
21+15      12.4662      2.93  Q          |         |         |       V |
21+20      12.4861      2.90  Q          |         |         |       V |
21+25      12.5059      2.87  Q          |         |         |       V |
21+30      12.5254      2.84  Q          |         |         |       V |
21+35      12.5448      2.81  Q          |         |         |       V |
21+40      12.5639      2.78  Q          |         |         |       V |
21+45      12.5829      2.75  Q          |         |         |       V |
21+50      12.6017      2.73  Q          |         |         |       V |
21+55      12.6203      2.70  Q          |         |         |       V |
22+ 0      12.6387      2.68  Q          |         |         |       V |
22+ 5      12.6570      2.65  Q          |         |         |       V |
22+10      12.6751      2.63  Q          |         |         |       V |
22+15      12.6931      2.61  Q          |         |         |       V |
22+20      12.7109      2.58  Q          |         |         |       V |
22+25      12.7285      2.56  Q          |         |         |       V |
22+30      12.7460      2.54  Q          |         |         |       V |
22+35      12.7633      2.52  Q          |         |         |       V |
22+40      12.7805      2.50  Q          |         |         |        V|
22+45      12.7976      2.48  Q          |         |         |        V|
22+50      12.8145      2.46  Q          |         |         |        V|
22+55      12.8313      2.44  Q          |         |         |        V|
23+ 0      12.8480      2.42  Q          |         |         |        V|
23+ 5      12.8645      2.40  Q          |         |         |        V|
23+10      12.8809      2.38  Q          |         |         |        V|
23+15      12.8972      2.36  Q          |         |         |        V|
23+20      12.9133      2.35  Q          |         |         |        V|
23+25      12.9294      2.33  Q          |         |         |        V|
23+30      12.9453      2.31  Q          |         |         |        V|
23+35      12.9611      2.30  Q          |         |         |        V|
23+40      12.9768      2.28  Q          |         |         |        V|
23+45      12.9924      2.26  Q          |         |         |        V|
23+50      13.0079      2.25  Q          |         |         |        V|
23+55      13.0232      2.23  Q          |         |         |        V|
24+ 0      13.0385      2.22  Q          |         |         |        V|
24+ 5      13.0533      2.15  Q          |         |         |        V|
24+10      13.0664      1.90  Q          |         |         |        V|
24+15      13.0753      1.29  Q          |         |         |        V|
24+20      13.0813      0.88  Q          |         |         |        V|
```

```
  24+25      13.0858      0.66  Q         |         |         |        V|
  24+30      13.0893      0.51  Q         |         |         |        V|
  24+35      13.0921      0.40  Q         |         |         |        V|
  24+40      13.0943      0.32  Q         |         |         |        V|
  24+45      13.0960      0.25  Q         |         |         |        V|
  24+50      13.0974      0.21  Q         |         |         |        V|
  24+55      13.0986      0.17  Q         |         |         |        V|
  25+ 0      13.0995      0.13  Q         |         |         |        V|
  25+ 5      13.1002      0.10  Q         |         |         |        V|
  25+10      13.1008      0.08  Q         |         |         |        V|
  25+15      13.1012      0.06  Q         |         |         |        V|
  25+20      13.1016      0.05  Q         |         |         |        V|
  25+25      13.1018      0.04  Q         |         |         |        V|
  25+30      13.1021      0.03  Q         |         |         |        V|
  25+35      13.1022      0.02  Q         |         |         |        V|
  25+40      13.1023      0.01  Q         |         |         |        V|
  25+45      13.1024      0.01  Q         |         |         |        V|
  25+50      13.1024      0.00  Q         |         |         |         V
-----------------------------------------------------------------------
```

```
            |<--------(  5.00')---------->|
            |                             |
    * * * * *                             * * * * *
          * *                             * *
          * *^^^Water Surface (  1.42')^^^* *
          * *                             * *
          * *                             * *
          * *                             * *
          * * * * * * * * * * * * * * * * * *
          * * * * * * * * * * * * * * * * * *
```

Rectangular Open Channel

```
Flowrate .................       83.000  CFS
Velocity .................       11.712  fps
Depth of Flow ............        1.417  feet
Critical Depth ...........        2.045  feet
Total Depth ..............        1.417  feet
Base Width ...............        5.000  feet
Slope of Channel .........        1.200  %
X-Sectional Area .........        7.087  sq. ft.
Wetted Perimeter .........        7.835  feet
AR^(2/3) .................        6.628
Mannings 'n' .............        0.013
```

CONTECH®
ENGINEERED SOLUTIONS

CDS Guide
Operation, Design, Performance and Maintenance

CDS®

Using patented continuous deflective separation technology, the CDS system screens, separates and traps debris, sediment, and oil and grease from stormwater runoff. The indirect screening capability of the system allows for 100% removal of floatables and neutrally buoyant material without blinding. Flow and screening controls physically separate captured solids, and minimize the re-suspension and release of previously trapped pollutants. Inline units can treat up to 6 cfs, and internally bypass flows in excess of 50 cfs (1416 L/s). Available precast or cast-in-place, offline units can treat flows from 1 to 300 cfs (28.3 to 8495 L/s). The pollutant removal capacity of the CDS system has been proven in lab and field testing.

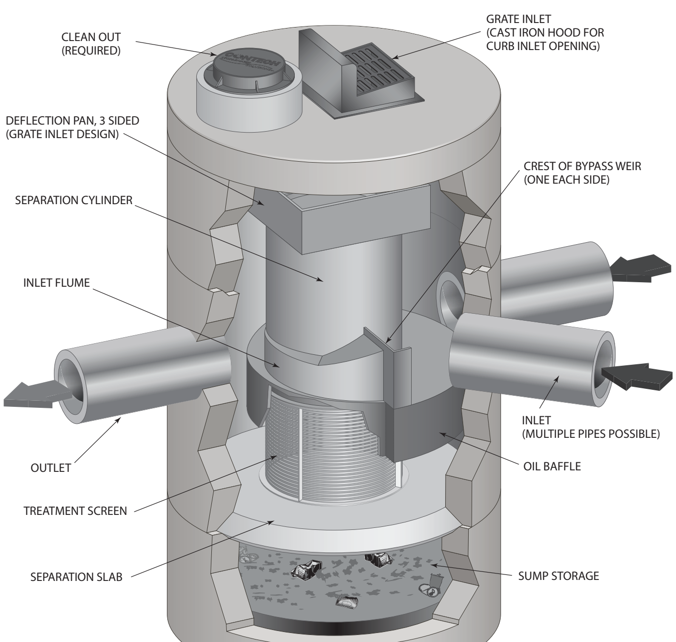
Operation Overview

Stormwater enters the diversion chamber where the diversion weir guides the flow into the unit's separation chamber and pollutants are removed from the flow. All flows up to the system's treatment design capacity enter the separation chamber and are treated.

Swirl concentration and screen deflection force floatables and solids to the center of the separation chamber where 100% of floatables and neutrally buoyant debris larger than the screen apertures are trapped.

Stormwater then moves through the separation screen, under the oil baffle and exits the system. The separation screen remains clog free due to continuous deflection.

During the flow events exceeding the treatment design capacity, the diversion weir bypasses excessive flows around the separation chamber, so captured pollutants are retained in the separation cylinder.



Design Basics

There are three primary methods of sizing a CDS system. The Water Quality Flow Rate Method determines which model size provides the desired removal efficiency at a given flow rate for a defined particle size. The Rational Rainfall Method™ or the and Probabilistic Method is used when a specific removal efficiency of the net annual sediment load is required.

Typically in the Unites States, CDS systems are designed to achieve an 80% annual solids load reduction based on lab generated performance curves for a gradation with an average particle size (d50) of 125 microns (μm). For some regulatory environments, CDS systems can also be designed to achieve an 80% annual solids load reduction based on an average particle size (d50) of 75 microns (μm) or 50 microns (μm).

Water Quality Flow Rate Method

In some cases, regulations require that a specific treatment rate, often referred to as the water quality design flow (WQQ), be treated. This WQQ represents the peak flow rate from either an event with a specific recurrence interval, e.g. the six-month storm, or a water quality depth, e.g. 1/2-inch (13 mm) of rainfall.

The CDS is designed to treat all flows up to the WQQ. At influent rates higher than the WQQ, the diversion weir will direct most flow exceeding the WQQ around the separation chamber. This allows removal efficiency to remain relatively constant in the separation chamber and eliminates the risk of washout during bypass flows regardless of influent flow rates.

Treatment flow rates are defined as the rate at which the CDS will remove a specific gradation of sediment at a specific removal efficiency. Therefore the treatment flow rate is variable, based on the gradation and removal efficiency specified by the design engineer.

Rational Rainfall Method™

Differences in local climate, topography and scale make every site hydraulically unique. It is important to take these factors into consideration when estimating the long-term performance of any stormwater treatment system. The Rational Rainfall Method combines site-specific information with laboratory generated performance data, and local historical precipitation records to estimate removal efficiencies as accurately as possible.

Short duration rain gauge records from across the United States and Canada were analyzed to determine the percent of the total annual rainfall that fell at a range of intensities. US stations' depths were totaled every 15 minutes, or hourly, and recorded in 0.01-inch increments. Depths were recorded hourly with 1-mm resolution at Canadian stations. One trend was consistent at all sites; the vast majority of precipitation fell at low intensities and high intensity storms contributed relatively little to the total annual depth.

These intensities, along with the total drainage area and runoff coefficient for each specific site, are translated into flow rates using the Rational Rainfall Method. Since most sites are relatively small and highly impervious, the Rational Rainfall Method is appropriate. Based on the runoff flow rates calculated for each intensity, operating rates within a proposed CDS system are determined. Performance efficiency curve determined from full scale laboratory tests on defined sediment PSDs is applied to calculate solids removal efficiency. The relative removal efficiency at each operating rate is added to produce a net annual pollutant removal efficiency estimate.

Probabilistic Rational Method

The Probabilistic Rational Method is a sizing program Contech developed to estimate a net annual sediment load reduction for a particular CDS model based on site size, site runoff coefficient, regional rainfall intensity distribution, and anticipated pollutant characteristics.

The Probabilistic Method is an extension of the Rational Method used to estimate peak discharge rates generated by storm events of varying statistical return frequencies (e.g. 2-year storm event). Under the Rational Method, an adjustment factor is used to adjust the runoff coefficient estimated for the 10-year event, correlating a known hydrologic parameter with the target storm event. The rainfall intensities vary depending on the return frequency of the storm event under consideration. In general, these two frequency dependent parameters (rainfall intensity and runoff coefficient) increase as the return frequency increases while the drainage area remains constant.

These intensities, along with the total drainage area and runoff coefficient for each specific site, are translated into flow rates using the Rational Method. Since most sites are relatively small and highly impervious, the Rational Method is appropriate. Based on the runoff flow rates calculated for each intensity, operating rates within a proposed CDS are determined. Performance efficiency curve on defined sediment PSDs is applied to calculate solids removal efficiency. The relative removal efficiency at each operating rate is added to produce a net annual pollutant removal efficiency estimate.

Treatment Flow Rate

The inlet throat area is sized to ensure that the WQQ passes through the separation chamber at a water surface elevation equal to the crest of the diversion weir. The diversion weir bypasses excessive flows around the separation chamber, thus preventing re-suspension or re-entrainment of previously captured particles.

Hydraulic Capacity

The hydraulic capacity of a CDS system is determined by the length and height of the diversion weir and by the maximum allowable head in the system. Typical configurations allow hydraulic capacities of up to ten times the treatment flow rate. The crest of the diversion weir may be lowered and the inlet throat may be widened to increase the capacity of the system at a given water surface elevation. The unit is designed to meet project specific hydraulic requirements.

Performance

Full-Scale Laboratory Test Results

A full-scale CDS system (Model CDS2020-5B) was tested at the facility of University of Florida, Gainesville, FL. This CDS unit was evaluated under controlled laboratory conditions of influent flow rate and addition of sediment.

Two different gradations of silica sand material (UF Sediment & OK-110) were used in the CDS performance evaluation. The particle size distributions (PSDs) of the test materials were analyzed using standard method "Gradation ASTM D-422 "Standard Test Method for Particle-Size Analysis of Soils" by a certified laboratory.

UF Sediment is a mixture of three different products produced by the U.S. Silica Company: "Sil-Co-Sil 106", "#1 DRY" and "20/40 Oil Frac". Particle size distribution analysis shows that the UF Sediment has a very fine gradation (d50 = 20 to 30 μm) covering a wide size range (Coefficient of Uniformity, C averaged at 10.6). In comparison with the hypothetical TSS gradation specified in the NJDEP (New Jersey Department of Environmental Protection) and NJCAT (New Jersey Corporation for Advanced Technology) protocol for lab testing, the UF Sediment covers a similar range of particle size but with a finer d50 (d50 for NJDEP is approximately 50 μm) (NJDEP, 2003).

The OK-110 silica sand is a commercial product of U.S. Silica Sand. The particle size distribution analysis of this material, also included in Figure 1, shows that 99.9% of the OK-110 sand is finer than 250 microns, with a mean particle size (d50) of 106 microns. The PSDs for the test material are shown in Figure 1.

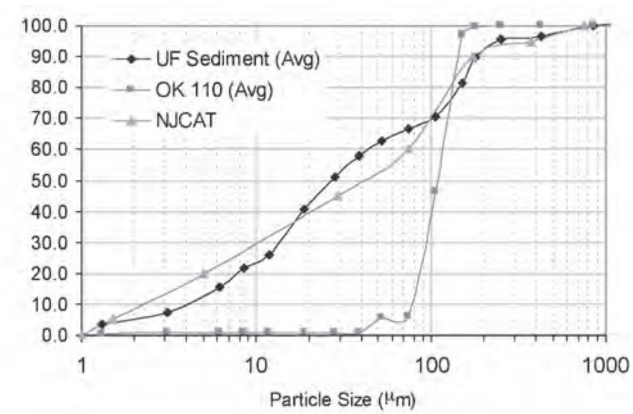


Figure 1. Particle size distributions

Tests were conducted to quantify the performance of a specific CDS unit (1.1 cfs (31.3-L/s) design capacity) at various flow rates, ranging from 1% up to 125% of the treatment design capacity of the unit, using the 2400 micron screen. All tests were conducted with controlled influent concentrations of approximately 200 mg/L. Effluent samples were taken at equal time intervals across the entire duration of each test run. These samples were then processed with a Dekaport Cone sample splitter to obtain representative sub-samples for Suspended Sediment Concentration (SSC) testing using ASTM D3977-97 "Standard Test Methods for Determining Sediment Concentration in Water Samples", and particle size distribution analysis.

Results and Modeling

Based on the data from the University of Florida, a performance model was developed for the CDS system. A regression analysis was used to develop a fitting curve representative of the scattered data points at various design flow rates. This model, which demonstrated good agreement with the laboratory data, can then be used to predict CDS system performance with respect to SSC removal for any particle size gradation, assuming the particles are inorganic sandy-silt. Figure 2 shows CDS predictive performance for two typical particle size gradations (NJCAT gradation and OK-110 sand) as a function of operating rate.

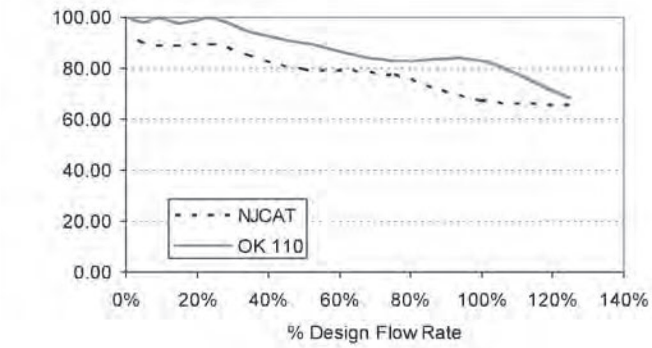


Figure 2. CDS stormwater treatment predictive performance for various particle gradations as a function of operating rate.

Many regulatory jurisdictions set a performance standard for hydrodynamic devices by stating that the devices shall be capable of achieving an 80% removal efficiency for particles having a mean particle size (d50) of 125 microns (e.g. Washington State Department of Ecology — WASDOE - 2008). The model can be used to calculate the expected performance of such a PSD (shown in Figure 3). The model indicates (Figure 4) that the CDS system with 2400 micron screen achieves approximately 80% removal at the design (100%) flow rate, for this particle size distribution (d50 = 125 μm).

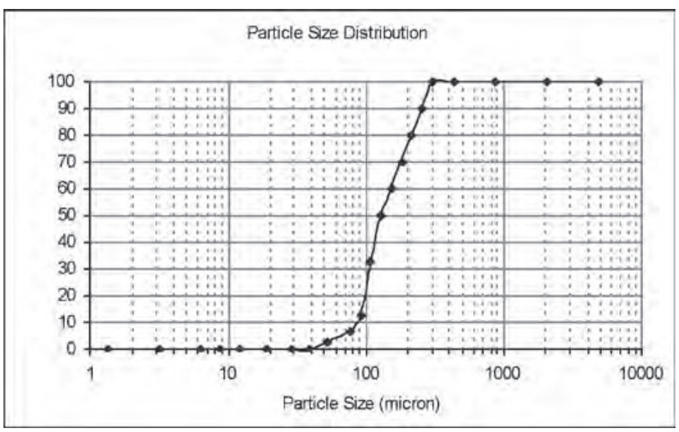


Figure 3. WASDOE PSD

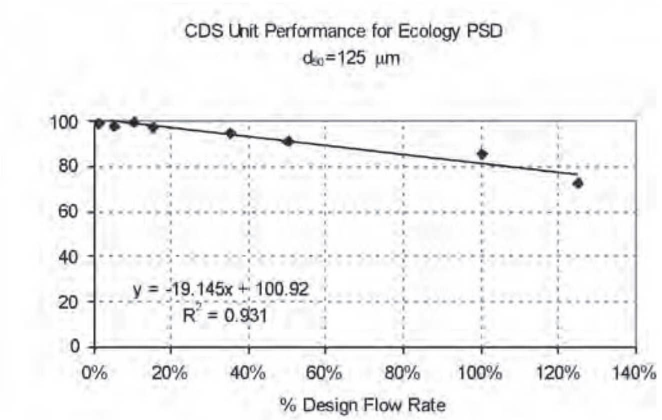


Figure 4. Modeled performance for WASDOE PSD.

Maintenance

The CDS system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit. For example, unstable soils or heavy winter sanding will cause the grit chamber to fill more quickly but regular sweeping of paved surfaces will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (e.g. spring and fall) however more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid accumulations, or in equipment washdown areas. Installations should also be inspected more frequently where excessive amounts of trash are expected.

The visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet and separation screen. The inspection should also quantify the accumulation of hydrocarbons, trash, and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent material should also be identified

during inspection. It is useful and often required as part of an operating permit to keep a record of each inspection. A simple form for doing so is provided.

Access to the CDS unit is typically achieved through two manhole access covers. One opening allows for inspection and cleanout of the separation chamber (cylinder and screen) and isolated sump. The other allows for inspection and cleanout of sediment captured and retained outside the screen. For deep units, a single manhole access point would allows both sump cleanout and access outside the screen.

The CDS system should be cleaned when the level of sediment has reached 75% of capacity in the isolated sump or when an appreciable level of hydrocarbons and trash has accumulated. If absorbent material is used, it should be replaced when significant discoloration has occurred. Performance will not be impacted until 100% of the sump capacity is exceeded however it is recommended that the system be cleaned prior to that for easier removal of sediment. The level of sediment is easily determined by measuring from finished grade down to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Particles at the top of the pile typically offer less resistance to the end of the rod than consolidated particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine weather the height of the sediment pile off the bottom of the sump floor exceeds 75% of the total height of isolated sump.

Cleaning

Cleaning of a CDS systems should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole covers and insert the vacuum hose into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The area outside the screen should also be cleaned out if pollutant build-up exists in this area.

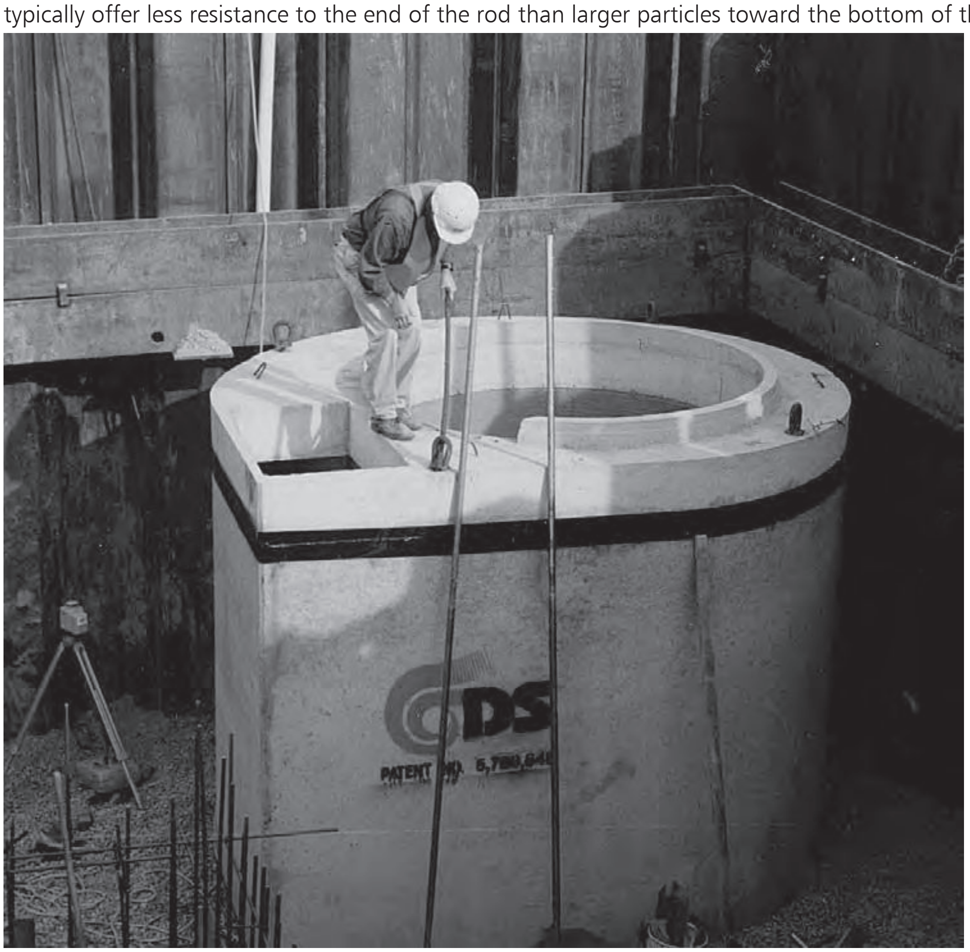
In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. The screen should be cleaned to ensure it is free of trash and debris.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure that proper safety precautions have been followed. Confined space entry procedures need to be followed if physical access is required. Disposal of all material removed from the CDS system should be done in accordance with local regulations. In many jurisdictions, disposal of the sediments may be handled in the same manner as the disposal of sediments removed from catch basins or deep sump manholes. Check your local regulations for specific requirements on disposal.

CDS Model	Diameter		Distance from Water Surface to Top of Sediment Pile		Sediment Storage Capacity	
	ft	m	ft	m	y^3	m^3
CDS1515	3	0.9	3.0	0.9	0.5	0.4
CDS2015	4	1.2	3.0	0.9	0.9	0.7
CDS2015	5	1.5	3.0	0.9	1.3	1.0
CDS2020	5	1.5	3.5	1.1	1.3	1.0
CDS2025	5	1.5	4.0	1.2	1.3	1.0
CDS3020	6	1.8	4.0	1.2	2.1	1.6
CDS3025	6	1.8	4.0	1.2	2.1	1.6
CDS3030	6	1.8	4.6	1.4	2.1	1.6
CDS3035	6	1.8	5.0	1.5	2.1	1.6
CDS4030	8	2.4	4.6	1.4	5.6	4.3
CDS4040	8	2.4	5.7	1.7	5.6	4.3
CDS4045	8	2.4	6.2	1.9	5.6	4.3
CDS5640	10	3.0	6.3	1.9	8.7	6.7
CDS5653	10	3.0	7.7	2.3	8.7	6.7
CDS5668	10	3.0	9.3	2.8	8.7	6.7
CDS5678	10	3.0	10.3	3.1	8.7	6.7

Table 1: CDS Maintenance Indicators and Sediment Storage Capacities

Note: To avoid underestimating the volume of sediment in the chamber, carefully lower the measuring device to the top of the sediment pile. Finer silty particles at the top of the pile may be more difficult to feel with a measuring stick. These finer particles typically offer less resistance to the end of the rod than larger particles toward the bottom of the pile.



CDS Inspection & Maintenance Log

CDS Model: ______________________ Location: ______________________

Date	Water depth to sediment[1]	Floatable Layer Thickness[2]	Describe Maintenance Performed	Maintenance Personnel	Comments

1. The water depth to sediment is determined by taking two measurements with a stadia rod: one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than the values listed in table 1 the system should be cleaned out. **Note: to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile**.

2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

SUPPORT

- Drawings and specifications are available at www.ContechES.com.
- Site-specific design support is available from our engineers.

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The product(s) described may be protected by one or more of the following US patents: 5,322,629; 5,624,576; 5,707,527; 5,759,415; 5,788,848; 5,985,157; 6,027,639; 6,350,374; 6,406,218; 6,641,720; 6,511,595; 6,649,048; 6,991,114; 6,998,038; 7,186,058; 7,296,692; 7,297,266; related foreign patents or other patents pending.

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JOHNSON ROAD INDUSTRIAL BUILDING (WAREHOUSE)

APN: 0463-213-26, 27, 28

TOWN OF APPLE VALLEY, CALIFORNIA

Prepared by:

DAVID EVANS AND ASSOCIATES INC.

DRAFT REPORT

i **November 27, 2023**

DAVID EVANS AND ASSOCIATES INC.

November 27, 2023 Job No. PIXI5AMG-0002

Mr. Simon Bouzaglou
55555 Amargosa LLC
5901 South Eastern Avenue
Commerce, CA 90040

RE: DRAFT FOCUSED TRAFFIC IMPACT ANALYSIS FOR THE PROPOSED JOHNSON ROAD INDUSTRIAL BUILDING (WAREHOUSE) LOCATED AT THE NWC OF JOHNSON ROAD AND NAVAJO ROAD IN THE TOWN OF APPLE VALLEY, CA (APN: 0463-213-26, 27, AND 28)

Dear Mr. Bouzaglou,

David Evans and Associates, Inc. is pleased to submit this Draft Traffic Impact Analysis report for your proposed warehouse development in the Town of Apple Valley. The proposed project consists of a 379,657 square foot speculative industrial warehouse building located on approximately 18.71-acres in the Town of Apple Valley, California.

This report was prepared in accordance with San Bernardino County's Traffic Impact Study Guidelines for level of service (LOS) assessment published in July 2019, and the Town's adopted Resolution No. 2021-08 (May 2021) establishing thresholds of significance for a development's project-generated vehicle miles traveled (VMT) and the development's overall effect of VMT on the town's circulation system.

A VMT analysis was prepared to identify potentially significant transportation impacts for environmental clearance under the California Environmental Quality Act (CEQA). The VMT analysis findings and conclusions are summarized in the Executive Summary of this report and the full VMT analysis report is included in the appendix.

We are pleased to have been of assistance to you in processing and obtaining approval for the project. If you have any questions or comments, please feel free to contact me at 909-912-7304.

Respectfully submitted,

DAVID EVANS AND ASSOCIATES, INC.

James M. Daisa, P.E.
Senior Project Manager / Associate

REGISTERED PROFESSIONAL ENGINEER
JAMES M. DAISA
No. TR 1624
TRAFFIC
STATE OF CALIFORNIA

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1 EXECUTIVE SUMMARY

This executive summary presents the findings and recommendations of this study.

1.1 Project Description

The Proposed Johnson Road Industrial Project consists of a 379,657 square foot speculative industrial warehouse building located on approximately 18.71-acres in the north part of the town and within the North Apple Valley Industrial Specific Plan area. The North Apple Valley Industrial Specific Plan is the regulatory plan that governs all development within its boundaries. It designates land uses and provides design standards for the construction of buildings and defines the area's required infrastructure for transportation / circulation, public services, and utilities.

The warehouse building includes 63 loading docks on the north side, 166 automobile parking spaces, and 92 trailer parking spaces.

Access to the site will be from driveways on Johnson Road and Navajo Road. Proposed circulation and access improvements include improving Navajo Road from Johnson Road to the project boundary and providing a driveway on Johnson Road. One commercial driveway is proposed on Johnson Road accessing the site's automobile parking, in the study this driveway will be assumed as primarily auto access.

It is assumed in the study the primary truck access to the secure gated loading dock and truck/trailer parking area is provided by a commercial driveway on Navajo Road (approximately 560 feet north of Johnson Road (measured from centerline to centerline)). The internal gates securing the loading dock and truck / trailer parking area of the site are setback from Navajo Road by about 80 feet—enough space for a single interstate truck/trailer combination.

1.2 Town of Apple Valley and Caltrans Intersection Level of Service Policies

The Town of Apple Valley's General Plan policy (Policy 1.A, Program 1.A.4) on level of service is to maintain a level of service (LOS) D in the AM and PM peak hours on all its roadways. This level of service policy applies to local Apple Valley roadways, roads of regional importance as part of the county's Congestion Management Program (CMP) network, and state highways.

The Caltrans' Guide for the Preparation of Traffic Impact Studies (December 2002) states "Caltrans endeavors to maintain a target level of service at the transition between LOS "C" and LOS "D" on State highway facilities. However, Caltrans acknowledges that this may not always be feasible, so their practice is to allow level of service thresholds equal to the threshold of the jurisdiction where the facility is located but preferably no greater than a 45 second average delay per vehicle in the peak hour (mid LOS D). For this study, the town's LOS D is assumed to be the minimum level of service criteria for the study intersections.

1.3 Level of Service Comparison With and Without the Proposed Project

1.3.1 Determination of Level of Service Deficiencies

Table 1-1 compares the weekday AM and PM peak hour background conditions and project conditions LOS at the study intersections. Background conditions represent the project's opening year of 2025 without the project and includes growth in ambient traffic from regional development equaling 3.5 percent annually, and other approved development within the study area (see **Appendix D**).

In this scenario, the addition of project traffic contributes to intersection LOS deficiencies that occur in background conditions at the following two study intersections: Stoddard Wells Rd / Outer Highway 15 / I-15 NB Ramps and Stoddard Wells Rd / Quarry Rd. As a result, these intersections are identified as cumulative deficiencies occurring prior to the addition of project traffic.

Table 1-1: Comparison of Background Conditions and Project Conditions LOS

Intersection	Control Type	Background Conditions				Background + Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Navajo Road / Johnson Road	SSSC	9.9	A	9.9	A	11.6	B	10.9	B
2. Dale Evans Parkway / Johnson Road	AWSC	9.0	A	13.9	B	9.8	A	18.3	C
3. Central Road / Johnson Road	SSSC	8.7	A	8.8	A	8.7	A	8.8	A
4. Stoddard Wells Road / Johnson Road	SSSC	10.7	B	16.6	C	11.4	B	20.8	C
5. Stoddard Wells Road / I-15 NB Ramps	SSSC	‡	F	‡	F	‡	F	‡	F
6. Stoddard Wells Road / Quarry Road	SSSC	42.7	E	23.6	C	58.3	F	26.7	D
7. I-15 Southbound Ramps / Quarry Road	SSSC	15.2	C	23.0	C	15.9	C	24.7	C
8. Johnson Road / Project Driveway	SSSC	Future Intersection				9.4	A	9.5	A
9. Navajo Road / Project Driveway	SSSC	Future Intersection				8.4	A	8.5	A

Notes:
‡ Delay cannot be calculated using the Highway Capacity Manual 6 algorithms because the intersection is over-saturated for the type of control being analyzed. In these conditions the intersection can result in exponentially high delays.
Shaded cells in the table represent intersection peak hours with LOS deficiencies (LOS E or F).
Abbreviations:
TWSC = Two-way (or side street) stop control, AWSC = All-way stop control, Not Applicable – Not Applicable Future Intersection
Delay – seconds per vehicle, LOS – Level of Service

Table 1-2 compares the weekday AM and PM peak hour Future year 2040 and Future year 2040 plus project LOS at the study intersections. Future year 2040 conditions represent a long-range forecast for addressing the cumulative impacts of regional growth in traffic as determined through traffic forecasts from the San Bernardino Countywide Traffic Analysis Model (SBTAM). It should be noted that the peak hour factor utilized in the Future year 2040 conditions and future year 2040 plus project conditions capacity analysis is set to 0.95 for all intersections consistent with county guidelines. Four study intersections have LOS deficiencies in future year 2040 conditions without the project.

Table 1-2: Comparison of Future 2040 and Future 2040 Plus Project LOS

Intersection	Control Type	Future Conditions				Future + Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Navajo Road / Johnson Road	SSSC	9.5	A	9.9	A	10.6	B	10.8	B
2. Dale Evans Parkway / Johnson Road	AWSC	13.1	B	37.3	E	15.1	C	53.0	F
3. Central Road / Johnson Road	SSSC	8.6	A	8.8	A	8.6	A	8.8	A
4. Stoddard Wells Road / Johnson Road	SSSC	15.7	C	110.3	F	17.5	C	200.6	F
5. Stoddard Wells Rd / I-15 NB Ramps	SSSC	‡	F	‡	F	‡	F	‡	F
6. Stoddard Wells Road / Quarry Road	SSSC	40.5	E	25.4	D	55.9	F	29.0	D
7. I-15 Southbound Ramps / Quarry Road	SSSC	15.3	C	20.6	C	16.0	C	21.6	C
8. Johnson Road / Project Driveway	SSSC	Future Intersection				9.4	A	9.1	A
9. Navajo Road / Project Driveway	SSSC	Future Intersection				8.4	A	8.4	A

Notes:
‡ Delay cannot be calculated using the Highway Capacity Manual 6 algorithms because the intersection is over-saturated for the type of control being analyzed. In these conditions the intersection can result in exponentially high delays.
Shaded cells in the table represent intersection peak hours with LOS deficiencies (LOS E or F).
Abbreviations:
TWSC = Two-way (or side street) stop control, AWSC = All-way stop control, Not Applicable – Not Applicable Future Intersection
Delay – seconds per vehicle, LOS – Level of Service

In the future year 2040 plus project conditions scenario, the combination of growth in ambient traffic and the addition of project traffic through the year 2040 contributes to the intersection LOS deficiencies at the following four study intersections: Dale Evans Parkway / Johnson Road, Stoddard Wells Road / Johnson Road, Stoddard Wells Road / I-15 Northbound Ramps, and Stoddard Wells Rd / Quarry Road. The addition of project traffic in this scenario exacerbates the intersection LOS deficiencies that occur at all four intersections before the addition of project traffic. As a result, these intersections are identified as cumulative deficiencies occurring prior to the addition of project traffic.

1.4 Recommended Measures to Improve Level of Service at Deficient Intersections

Table 1-5 (on the following page) summarizes the recommended near-term opening year (2025) and long-range cumulative (year 2040) intersection improvements required to improve deficient intersection levels of service with the addition of project traffic to conform with the town's general plan policy of maintaining a minimum LOS D during peak hours. For two of these intersections, Stoddard Wells Road / I-15 Northbound Ramps and Stoddard Wells Road / Quarry Road, the recommended improvements are the improvements from the approved Apple Valley 143 Transportation Impact Analysis, dated November 2022 (see **Appendix D**).

FIGURE ES-1 illustrates the near-term opening year intersection improvements required to improve deficient intersection levels of service in the project conditions (year 2025) scenario. **FIGURE ES- 2** illustrates the long-range cumulative intersection improvements required to improve deficiencies in the future 2040 plus project conditions scenario.

1.5 Project Fair-Share Contribution to Level of Service Deficiency Improvements

Table 1-3 shows the proposed project's percent contribution to the total growth in entering traffic volumes, otherwise known as the fair-share calculation. The fair share percentages shown in the table are used to determine the fair share fee for each intersection by forecast year in the next section. The formula for calculating the percentages is:

$$\text{Percent of Total} = \frac{\text{(Total Project Trips)}}{\text{((Total Non-Project Forecasted Trips + Total Project Trips) - Existing Trips)}} \text{ X } 100\%$$

Table 1-3: Project's Fair Share of Deficient Intersections by Year and Peak Hour

Intersection	Near-Term % (Year 2025)		Long-Term % (Year 2040)	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
2.Dale Evans Parkway / Johnson Road	Not Applicable		20.9%	18.6%
4. Stoddard Wells Road / Johnson Road	Not Applicable		17.3%	13.2%
5. Stoddard Wells Rd / I-15 NB Ramps	10.2%	8.9%	6.3%	5.4%
6. Stoddard Wells Road / Quarry Road	9.8%	8.4%	8.0%	5.7%
Notes: Project traffic used in calculating the fair-share percentage is based on Passenger Car Equivalents (PCEs).				

1.6 Project Fair-Share Fee Contribution to Level of Service Deficiency Improvements

The Fair Share Fee provided in **Table 1-4** represent the estimated cost associated with the near-term opening year improvements described in and are based on background + project scenario traffic.

Table 1-4: Project's Fair Share of Near-Term (Year 2025) Improvement Fees

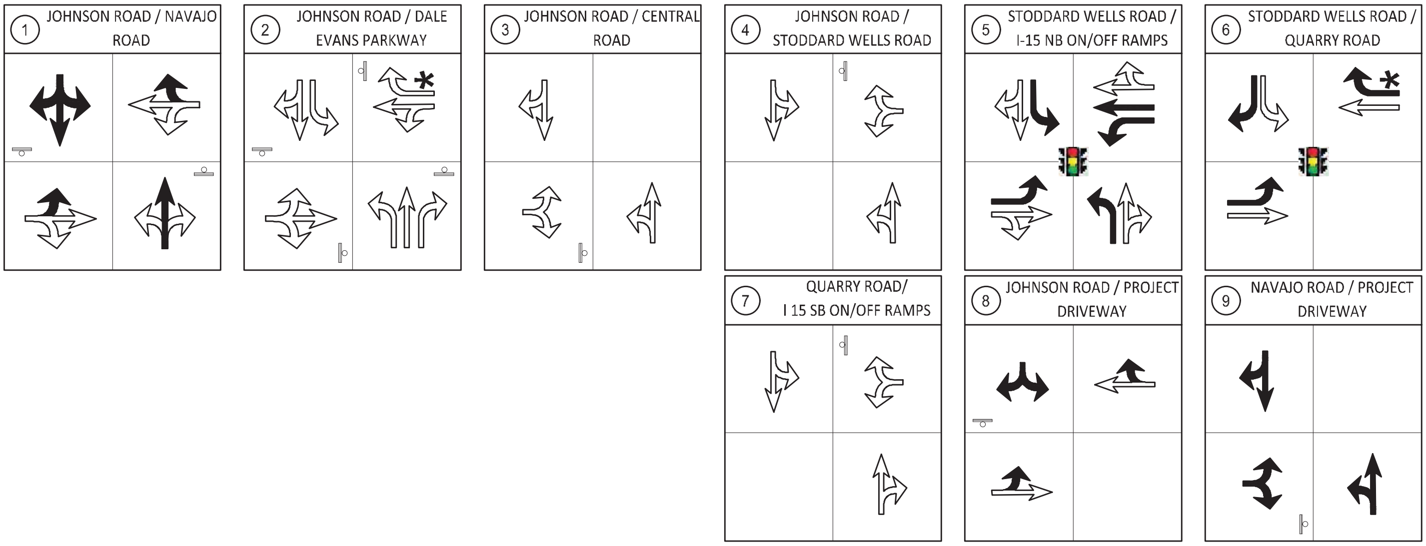
Intersection	Est. Cost ($)	Fair Share %	Fair Share Fee
5. Stoddard Wells Road / I-15 Northbound Ramps	$1,400,000	10.2%	$142,462
6. Stoddard Wells Road / Quarry Road	$800,000	9.8%	$78,153
Notes: Project traffic used in calculating the fair-share percentage is based on Passenger Car Equivalents (PCEs).			

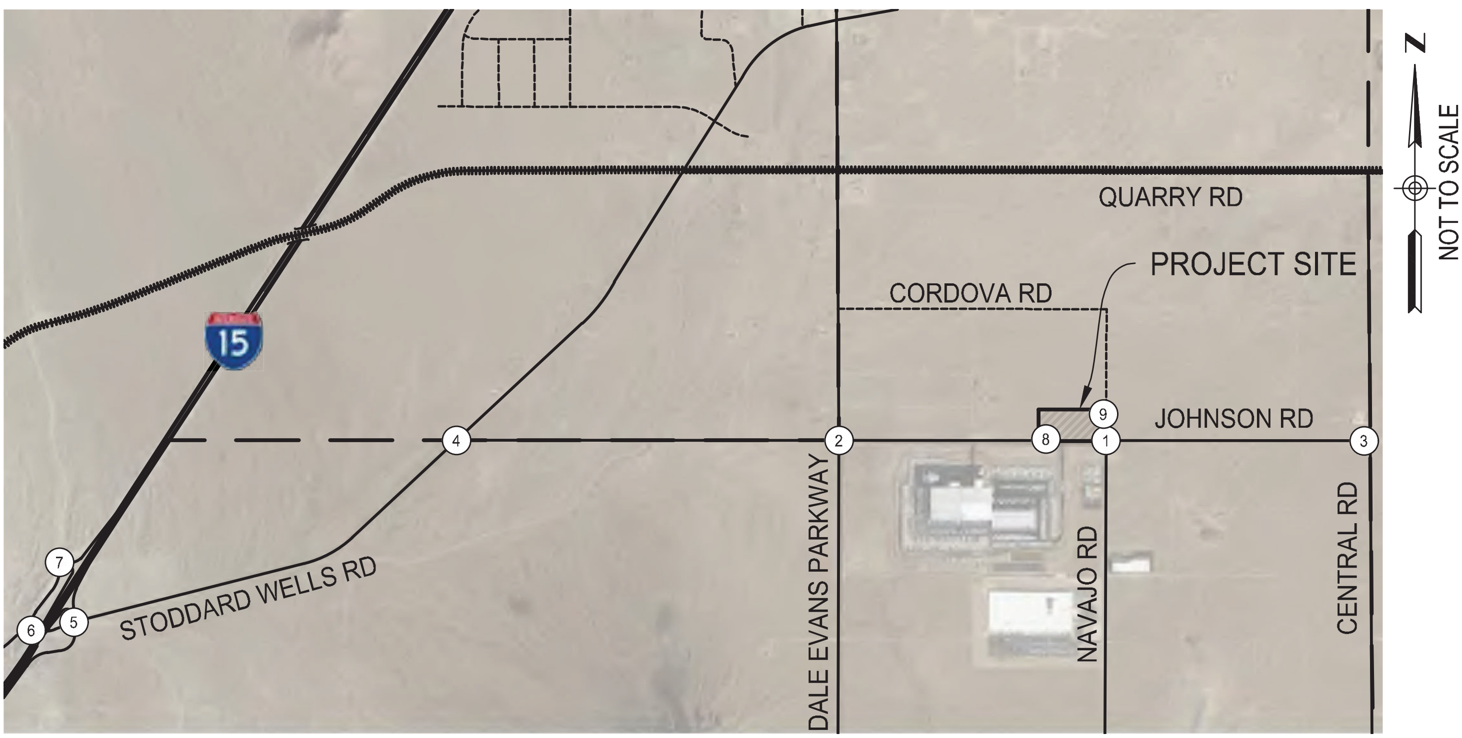
Table 1-5: Near-Term and Cumulative Long-Term Improvements to Mitigate LOS Deficiencies

Intersection	Near-Term Opening Year Improvements (See **Figure ES- 1**)	Cumulative Long-Term Improvements (See **Figure ES- 2)**
2. Dale Evans Parkway / Johnson Road	**Not Applicable. No deficiency in this scenario.**	**Install a traffic signal at Dale Evans Parkway and Johnson Road** Reconfigure intersection: □ Westbound approach: remove free right and convert the lane to a through-right lane and convert the existing shared through-left lane to an exclusive left turn lane (250 feet long + a 120-foot transition). □ Eastbound approach: provide an exclusive left turn lane (250 feet long + 120-foot transition) and shared through-right lane. □ Northbound approach: remove the northbound offset right turn lane and add a second though lane and an exclusive right turn lane. □ Southbound approach: provide an exclusive right turn lane.
4. Stoddard Wells Road / Johnson Road	**Not Applicable. No deficiency in this scenario.**	**Convert intersection to all-way stop-control and Reconfigure intersection**: □ Westbound approach: widen approach to accommodate dual left-turn lanes and an exclusive right-turn lane. □ Northbound approach: widen approach to an exclusive free-right turn lane with an exclusive receiving lane eastbound on Johnson Road; design radius of free right turn lane to accommodate an STAA or California legal truck at a speed of 25 to 30 mph. □ Southbound approach: widen approach to add an exclusive left-turn lane and an additional through lane
5. Stoddard Wells Road / I-15 Northbound Ramps	**Install a traffic signal [1]** Widen the eastbound, westbound, northbound, and southbound approaches to accommodate turn lanes. Reconfigure intersection: □ Eastbound approach: widen and configure Stoddard Wells Road to add a left turn lane from Stoddard Wells Road to I-15 NB on-ramp and maintain the existing lane as a shared through-right lane. Provide eastbound left turn protected phasing. □ Westbound approach: widen and configure Stoddard Wells Road to add left turn lane from Stoddard Wells Road to Outer Highway 15 (250 feet long + a 120-foot transition), and a second through lane, maintain the existing lane as a through-right turn lane. Provide westbound left turn protected phasing.	**Retain the <u>near-term opening year proposed improvements</u>**

Intersection	Near-Term Opening Year Improvements (See **Figure ES- 1**)	Cumulative Long-Term Improvements (See **Figure ES- 2)**
	☐ Northbound approach: widen and configure Outer Highway 15 to add left turn lane from Outer Highway 15 to Stoddard Wells Road (250 feet long + a 120-foot transition) and retain existing lane as a shared through-right lane. Provide northbound left turn protected-permissive phasing. ☐ Southbound approach: widen and configure the I-15 southbound off-ramp to add a left turn lane (250-feet long + 120-foot transition) and maintain the existing lane as a shared through-right lane. Provide southbound left turn protected-permissive phasing.	
6. Stoddard Wells Rd / Quarry Rd	**Install a traffic signal [2]** Widen the eastbound, westbound, and southbound approaches to accommodate turn lanes. Reconfigure intersection: ☐ Eastbound approach: widen and configure Stoddard Wells Road to add left turn lane from Stoddard Wells Road to Quarry Rd (250 feet long + a 120-foot transition) and maintain the existing lane as a through lane. Provide eastbound left turn protected phasing. ☐ Westbound approach: widen and configure Stoddard Wells Road to add a right turn lane from Stoddard Wells Road to Quarry Rd with a receiving lane and maintain the existing lane as a through lane. ☐ Southbound approach: widen and configure Quarry Rd to add a right turn lane (250-feet long + 120-foot transition) and maintain the existing lane as a left lane. Provide southbound left turn protected phasing.	**Retain the <u>near-term opening year proposed improvements</u>**

Notes:
[1] The improvements identified for the intersection of Stoddard Wells Rd / I-15 NB Ramps are the improvements recommended in the approved Apple Valley 143 Transportation Impact Analysis, dated November 2022, by Dudek. Excerpt of the report is provided in **Appendix D.**
[2] The widening of the segment of Stoddard Wells Rd between Quarry Road to I-15 NB Ramps/Outer I-15 are the improvements recommended in the approved Apple Valley 143 Transportation Impact Analysis, dated November 2022, by Dudek. Excerpt of the report is provided in **Appendix D.**





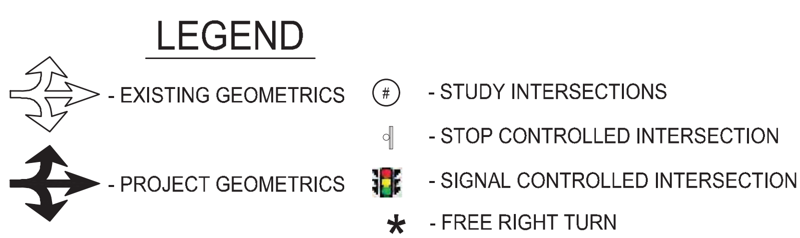


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FIGURE ES-1: NEAR-TERM OPENING YEAR PLUS PROJECT INTERSECTION IMPROVEMENTS
JOHNSON ROAD INDUSTRIAL
APPLE VALLEY, CALIFORNIA

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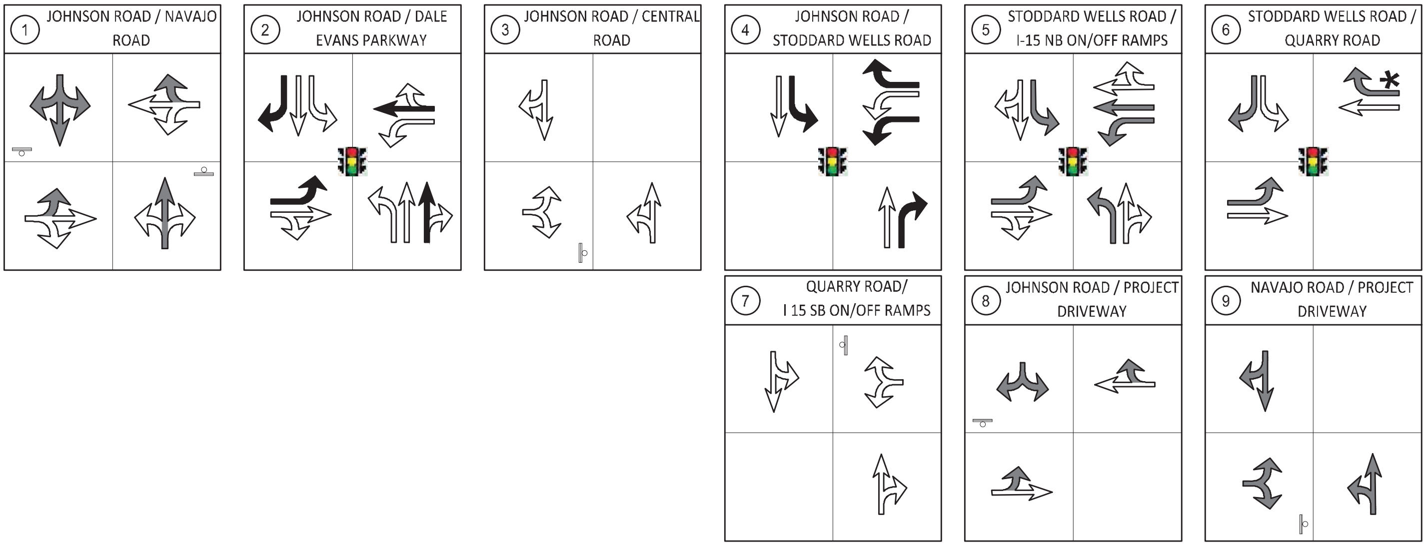
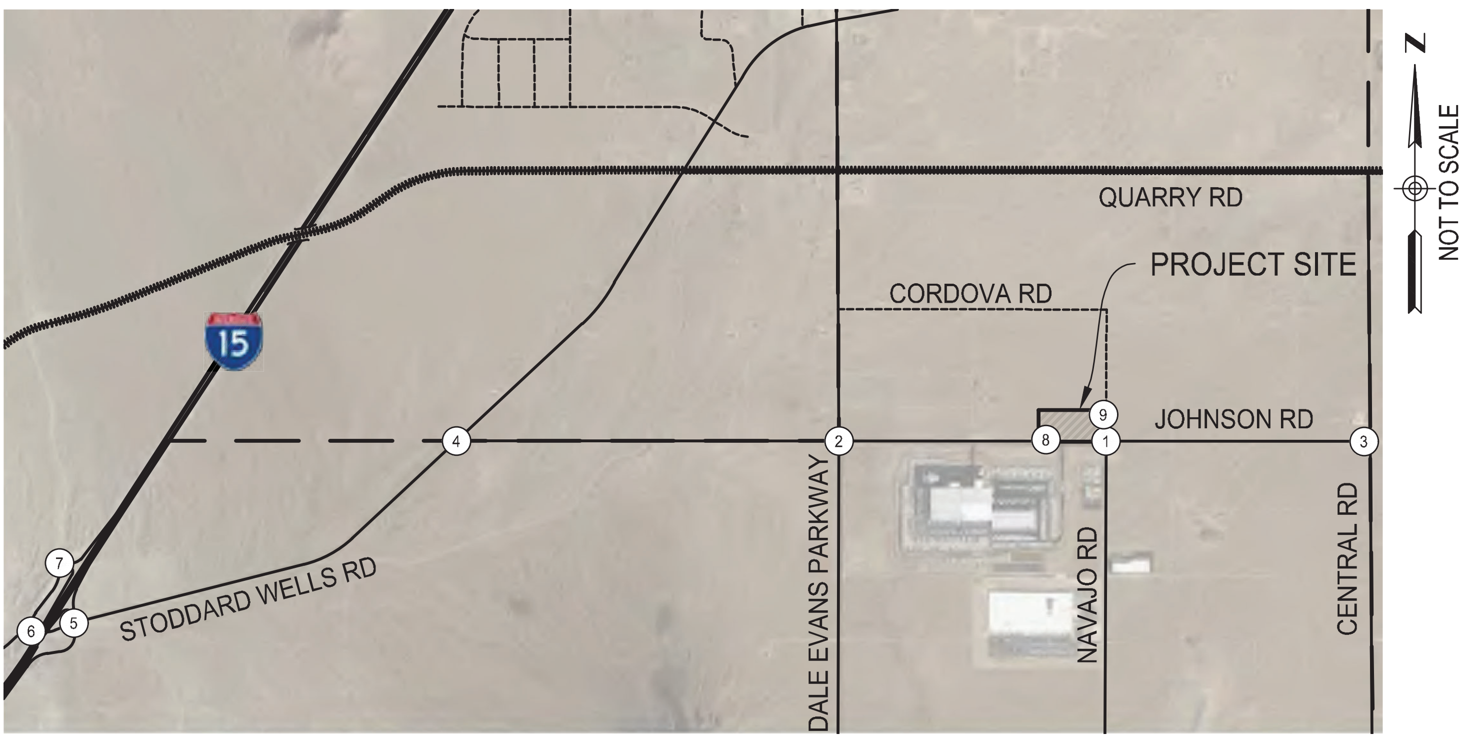
Last Opened: Sep 20, 2023 - 12:57pm by: Tnm





LEGEND

- EXISTING GEOMETRICS
- PROJECT GEOMETRICS
- FUTURE GEOMETRICS

(#) - STUDY INTERSECTIONS
- STOP CONTROLLED INTERSECTION
- SIGNAL CONTROLLED INTERSECTION
* - FREE RIGHT TURN

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FIGURE ES-2: FUTURE YEAR 2040 PLUS PROJECT INTERSECTION IMPROVEMENTS
JOHNSON ROAD INDUSTRIAL
APPLE VALLEY, CALIFORNIA

The fair share fee provided in **Table 1-6** represent the estimated cost associated with the long-range cumulative measures described in and are based on the future 2040 + project conditions traffic. The fair share fee for the intersections of Stoddard Wells Road / I-15 Northbound Ramps and Stoddard Wells Road / Quarry Road are included in the near-term fair share fee calculation.

Table 1-6: Project's Fair Share of Cumulative Long-Term (Year 2040) Improvement Fees

Intersection	Est. Cost ($)	Fair Share %	Fair Share Fee
2. Dale Evans Parkway / Johnson Road	$700,000	20.9%	$146,341
4. Stoddard Wells Road / Johnson Road	$900,000	17.3%	$155,437
5. Stoddard Wells Road / I-15 Northbound Ramps	Included in Near-Term Conditions		
6. Stoddard Wells Road / Quarry Road	Included in Near-Term Conditions		
Notes: Project traffic used in calculating the fair-share percentage is based on Passenger Car Equivalents (PCEs).			

1.7 Level of Service With Recommended Improvements

This section presents the level of service at deficient intersections before and after implementation of the recommended mitigation measures summarized in in order of intersection number. The near-term project conditions scenarios in the following tables present the mitigated levels of service for near-term opening year improvements—improvements for which the project contributes its fair share.
The improved level of service under the long-term future year 2040 plus project conditions scenarios reflect cumulative conditions for which all development is responsible for its fair-share of the cost of the improvements. The last columns in the series of tables in this section present the change in delay (the measurement used to establish LOS). The top row shows the increase in delay caused by the proposed project's traffic added to the without project scenario. The bottom row shows the reduction in delay after implementation of the mitigation measure.

Because most of the study intersections are side-street stop-controlled intersections, for which level of service is defined as the LOS of the worst stop-controlled movement, the method of calculating average delay at saturated intersections produces exponentially high delays, although unrealistic, the calculated delay indicates that the type of traffic control (side-street stop-control) is inadequate for the projected traffic demand.

1.7.1 Dale Evans Parkway and Johnson Road

Table 1-7 shows the intersection level of service under future year 2040 plus project conditions with the long-range cumulative measures of installing a traffic signal and reconfiguring the intersection. In the long-term further lane capacity added to Dale Evans Parkway consistent with the general plan's ultimate section for this road will keep up with traffic growth. The long-range cumulative measures will improve the intersection to a LOS B in this scenario for both peak hours.

Table 1-7: Improved Level of Service with Long-Range Cumulative Measures

Intersection	Future Year 2040 Conditions				Future Year 2040 + Project Conditions				Change in Delay (Seconds) *	
	AM Peak		PM Peak		AM Peak		PM Peak			
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	AM	PM
2. Dale Evans Parkway / Johnson Road	13.1	B	37.3	E	15.1	C	53.0	F	2.0	15.7
w/cumulative improvements: install traffic signal and add a NBTH, SBR, EBL, and WBL	Not Applicable				15.0	B	18.0	B	1.9	(19.3)
Notes: *Positive numbers represent increases in delay while negative numbers (shown in parenthesis) represent reductions, or improvements, in delay.										

1.7.2 Stoddard Wells Road and Johnson Road

Table 1-8 shows the intersection level of service under future year 2040 plus project conditions with the long-range cumulative measures to convert the intersection to all-way stop-control, add a southbound left turn, a southbound through lane, a westbound left turn, a westbound right turn, and converting the northbound free right turn. The long-range cumulative measures will improve the intersection to a LOS B or better in this scenario for both peak hours.

Table 1-8: Improved Level of Service with Long-Range Cumulative Measures

Intersection	Future Year 2040 Conditions (With Cordova Complex)				Future Year 2040 + Project Conditions (With Cordova Complex)				Change in Delay (Seconds)*	
	AM Peak		PM Peak		AM Peak		PM Peak			
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	AM	PM
Stoddard Wells Road / Johnson Road	15.7	C	110.3	F	17.5	C	200.6	F	1.8	90.3
w/cumulative improvements convert to AWSC, add SBL, SBTH, WBL, WBR, and free NBR	Not Applicable				9.9	A	11.9	B	(5.8)	(98.4)

Notes:
*Positive numbers represent increases in delay while negative numbers (shown in parenthesis) represent reductions, or improvements, in delay.

1.7.3 Stoddard Wells Road / I-15 Northbound Ramps

The existing side-street stop-controlled approach (I-15 southbound on and off ramps) of this intersection will experience failure in background plus project conditions.

Table 1-9 shows the intersection level of service under background plus project conditions with the near-term opening year improvements, installing a traffic signal and reconfiguring the intersection. The near-term opening year improvements mitigations will improve the intersection to a LOS C or better in both peak hours.

Table 1-9: Improved Level of Service with Near-Term Opening Year Improvements

Intersection	Background Conditions (Without Cordova Complex)				Background + Project Conditions (Without Cordova Complex)				Change in Delay (Seconds)*	
	AM Peak		PM Peak		AM Peak		PM Peak			
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	AM	PM
Stoddard Wells Road / I-15 NB Ramps	‡	F	‡	F	‡	F	‡	F	N/A	N/A
w/Improvements: install traffic signal and add a SBR, EBL, WBL and WBTH	Not Applicable				34.1	C	34.1	C	N/A	N/A

Notes:
‡ Delay cannot be calculated using the Highway Capacity Manual 6 algorithms because the intersection is over-saturated for the type of control being analyzed. In these conditions the intersection can result in exponentially high delays.
*Positive numbers represent increases in delay while negative numbers (shown in parenthesis) represent reductions, or improvements, in delay. N/A = the increase and/or reduction in delay is not calculated because the deficient delay is exponentially high and not presented.

Table 1-10 shows the intersection level of service under future year 2040 plus project conditions with the recommended near-term opening year improvements of installing a traffic signal and reconfiguring the intersection.

The near-term opening year mitigations will improve the intersection to a LOS D or better in this scenario for both peak hours.

Table 1-10: Improved Level of Service with Long-Range Cumulative Measures

Intersection	Future Year 2040 Conditions				Future Year 2040 + Project Conditions				Change in Delay (Seconds)*	
	AM Peak		PM Peak		AM Peak		PM Peak			
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	AM	PM
Stoddard Wells Road / I-15 NB Ramps	‡	F	‡	F	‡	F	‡	F	N/A	N/A
w/ near-term improvements	Not Applicable				37.1	D	50.2	D	N/A	N/A

Notes:
‡ Delay cannot be calculated using the Highway Capacity Manual 6 algorithms because the intersection is over-saturated for the type of control being analyzed. In these conditions the intersection can result in exponentially high delays.
*Positive numbers represent increases in delay while negative numbers (shown in parenthesis) represent reductions, or improvements, in delay. N/A = the increase and/or reduction in delay is not calculated because the deficient delay is exponentially high and not presented.

1.7.4 Stoddard Wells Road / Quarry Road

The existing side-street stop-controlled approach (Quarry Road) of this intersection will experience failure in background plus project conditions.

Table 1-11 compares the intersection level of service under background and background plus project conditions with the near-term opening year improvements, installing a traffic signal and reconfiguring the intersection. The near-term opening year improvements mitigations will improve the intersection to a LOS C or better in both peak hours.

Table 1-11: Improved Level of Service with Near-Term Opening Year Improvements

Intersection	Background Conditions				Background + Project Conditions				Change in Delay (Seconds)*	
	AM Peak		PM Peak		AM Peak		PM Peak			
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	AM	PM
Stoddard Wells Road / Quarry Road	42.7	E	23.6	C	58.3	F	26.7	D	15.6	3.1
w/Improvements: install traffic signal and add SBR, EBL, and WBR	Not Applicable				22.7	C	22.4	C	(20.0)	(1.2)

Notes:
*Positive numbers represent increases in delay while negative numbers (shown in parenthesis) represent reductions, or improvements, in delay.

Table 1-12 shows the intersection level of service under future year 2040 plus project conditions with the recommended near-term opening year improvements of installing a traffic signal and reconfiguring the intersection.

The near-term opening year improvements mitigations will improve the intersection to a LOS D or better in this scenario for both peak hours.

Table 1-12: Improved Level of Service with Long-Range Cumulative Measures

Intersection	Future Year 2040 Conditions				Future Year 2040 + Project Conditions				Change in Delay (Seconds)*	
	AM Peak		PM Peak		AM Peak		PM Peak			
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	AM	PM
Stoddard Wells Road / I-15 Northbound Ramps	40.5	E	25.4	D	55.9	F	29.0	D	15.4	3.6
w/cumulative improvements: retain the project specific improvements	Not Applicable				22.7	C	23.7	C	(17.8)	(1.7)

Notes:
*Positive numbers represent increases in delay while negative numbers (shown in parenthesis) represent reductions, or improvements, in delay.

1.8 Traffic Signal Warrant Analysis

Stop-controlled intersections operating with a LOS deficiency in any project-related scenario are subject to a warrant analysis to justify installing a traffic signal. Satisfying a warrant or multiple warrants for a traffic signal does not in of itself require the installation of a signal. Warrants are tools used in conjunction with engineering assessment and judgement regarding improving safety and operating conditions at stop-controlled intersections.

Table 1-13, on the following page, summarizes the findings of the signal warrant analyses conducted for each deficient intersection under each project-related scenario.

Under background plus project (2025) and future plus project (2040) conditions the intersections of Dale Evans Parkway / Johnson Road, Stoddard Wells Road / Johnson Road, Stoddard Wells Road / I-15, Northbound Ramps, Stoddard Wells Road / Quarry Road satisfy Warrant 3 (Peak Hour).

Table 1-13: Summary of Traffic Signal Warrant Analyses of Deficient Intersections

Deficient Intersection	Scenarios Satisfying Warrant 3 (Peak Hour) at Deficient Intersections [a]	
	Background + Project Conditions	Future + Project Conditions
2. Dale Evans Parkway / Johnson Road	Not Applicable in this Scenario	YES
4. Stoddard Wells Road / Johnson Road	Not Applicable in this Scenario	YES
5. Stoddard Wells Road / I-15 Northbound Ramps	YES	YES
6. Stoddard Wells Road / Quarry Road	YES	YES

Notes:
[a] The California Manual on Uniform Traffic Control Devices (CA MUTCD) provides procedures and standards for evaluating the need for installation of a traffic signal at a stop-controlled intersection. Of the nine warrants included in the MUTCD, warrant 3 (based on peak hour traffic volumes) is frequently used in planning and impact studies because it is standard practice to evaluate peak hour operating conditions using traffic forecasts. The other warrants generally require data that cannot be accurately forecasted.
The MUTCD emphasizes that satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic signal and a traffic signal should not be installed unless an engineering study indicates that installing a traffic signal will improve the overall safety and/or operation of the intersection.

1.9 Project-Specific Frontage and Access Improvements

This section summarizes site frontage and access improvements typically required in the town's Conditions of Approval:

1. **Construct access and site frontage improvements on Johnson Road:**
   a. Construct and improve the project's frontage with Johnson Road from the western project limit to Navajo Road.
      - The project will be required to dedicate land and construct the 71-foot half-width of a major divided parkway road section including the project's driveway accessing Johnson Road.
      - May include land dedication to accommodate additional lanes at the intersection of Johnson Road and Navajo Road if required by the town.
2. **Construct access and site frontage improvements on Navajo Road:**
   a. Construct and improve the project's frontage with Navajo Road.
      - The project will be required to dedicate land and construct the 44-foot half-width of Navajo Road's secondary road designation including the proposed driveway accessing Navajo Road.
      - May include land dedication to accommodate additional lanes at the intersection of Johnson Road and Navajo Road if required by the town.

1.10 Vehicle Miles of Travel (VMT) Analysis

A VMT analysis was prepared in accordance with the Town's adopted Resolution No. 2021-08 (Adopting Thresholds of Significance for Vehicle Miles Traveled (VMT) Under the California Environmental Quality Act (CEQA)) which states that a development project would result in a significant project-generated VMT impact if either of the following conditions are satisfied:

1. The baseline project generated VMT per service population (population plus employees) exceeds the Town of Apple Valley General Plan Buildout VMT per service population, or
2. The cumulative (2040) project generated VMT per service population exceeds the Town of Apple Valley General Plan Buildout VMT per service population.

In addition to project-generated VMT, the town adopted significance thresholds for a project's effect on VMT in Apple Valley. The resolution states that a project's effect on VMT would be considered significant if it resulted in either of the following conditions to be satisfied:

3. The baseline link-level boundary Town-wide VMT per service population increases under the plus project condition compared to the no project condition, or
4. The cumulative link-level boundary Town-wide VMT per service population increases under the plus project condition compared to the no project condition.

The term "link-level boundary Town-wide" refers to all vehicle miles of travel on all roadways within the town limits of Apple Valley. The following describes the key findings and the conclusions of the VMT analysis. The VMT analysis is described in detail in **Chapter 9** and the full report is in **Appendix F.**

A. Project-Generated VMT and Effect on Roadway VMT Analyses

The SBTAM model was used to estimate project-generated VMT for a baseline (2016) and a horizon year (2040) scenario. The SBTAM socioeconomic database for each scenario was updated with the project land use to calculate project VMT. The databases were also used to obtain the town's population and employment to estimate service population.

In both the baseline and horizon year scenarios, the VMT/service population metric for the Johnson Road Industrial Building (Warehouse) project is less than the Town of Apple Valley's general plan buildout significance threshold.

The second analysis, the project's effect on town-wide VMT, used the SBTAM model to estimate the VMT on all roadways within the town's limits for the baseline and 2040 scenarios with and without the project. The metric indicating a significant impact (VMT/Service population) at a town-wide scale under the "with project" conditions compared to the metric under the "without project" conditions does not increase and does not satisfy the town's significance threshold.

B. Conclusions of the VMT Analyses

This study concludes that the project-generated VMT metric of VMT / Service population is less than the VMT / Service population representing buildout of Apple Valley's general plan and, **therefore, the project does not cause a significant impact based on the town's adopted significance thresholds for project-generated VMT**.

This study also concludes that the metric for the project's "effects on town-wide VMT" –VMT / service population—for the baseline and horizon year scenarios "with the project" do not increase the metric over the "without project" scenarios. **Therefore, the proposed Johnson Road Industrial Building (Warehouse) project does not have a significant impact based on the town's adopted significance thresholds for the project's effect on town-wide VMT.**

2 INTRODUCTION

This report identifies the traffic impacts and presents recommendations for access and traffic mitigation for the proposed Johnson Road Industrial Building (Warehouse) project in the Town of Apple Valley, California. The proposed project consists of 379,657 square foot speculative industrial warehouse building located on approximately 18.71-acres in the north part of the town and within the North Apple Valley Industrial Specific Plan area. **Figure 1** illustrates the vicinity map, and **Figure 2** illustrates the proposed project site plan.

The intent of this report is to evaluate potentially significant traffic impacts caused by the proposed development in accordance with the Town of Apple Valley and San Bernardino County traffic impact analysis requirements under the following scenarios:

2.1 Analysis Scenarios

The scenarios analyzed in this study are consistent with the requirements of San Bernardino County's Transportation Impact Study Guidelines (July 2019). The analysis scenarios are as follows:

- Existing Conditions
- Background Conditions (Year 2025)
- Project Conditions (Year 2025)
- Future Year 2040 Conditions
- Future Year 2040 + Project Conditions

2.2 Scenario Definitions

Existing Conditions. This scenario represents existing transportation conditions at the time this report was prepared. Data includes traffic counts collected in June 2022, November 2022, and August 2023. This scenario is used as the baseline condition to identify existing deficiencies and establish context.

Background Conditions (Year 2025). This scenario represents conditions at the time the project is anticipated to be fully constructed and occupied (known as buildout year 2025) but without traffic generated by the project. This scenario is comprised of ambient growth, a general rate of growth in traffic from overall regional growth but not specific to any nearby development (assumed to be 3.0% annually for this study). In addition, two approved development projects in the immediate vicinity of the proposed project — Love's Travel Center and Apple Valley 143 Project — are included in all background scenarios. The approved improvements from Apple Valley 143 project were used for this scenario.

Background Plus Project Conditions (Year 2025). This scenario adds the project's estimated traffic generation at buildout (2025) to the Background Conditions scenario described above. Impacts identified in this near-term scenario are considered "cumulative" impacts—impacts that the project contributes to, but does not solely cause, and may be responsible for a fair-share of the cost to implement any improvement measures.

Future Conditions (Year 2040). This scenario reflects regional growth in traffic up to the year 2040. Growth in traffic is from forecasts from the San Bernardino County Transportation Analysis Model (SBTAM). Intersection turn movements were derived from post processing forecasted approach volumes and balancing the turn movement volumes for each study intersection.

Future Plus Project Conditions (Year 2040). This scenario adds the project's estimated traffic generation to the future condition's scenario described above. Impacts identified in this scenario are considered "cumulative" impacts—impacts that the project contributes to, but does not solely cause, and may be responsible for a fair-share of the cost to implement any improvement measures.

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FIGURE 1: VICINITY MAP
JOHNSON ROAD INDUSTRIAL
APPLE VALLEY, CALIFORNIA

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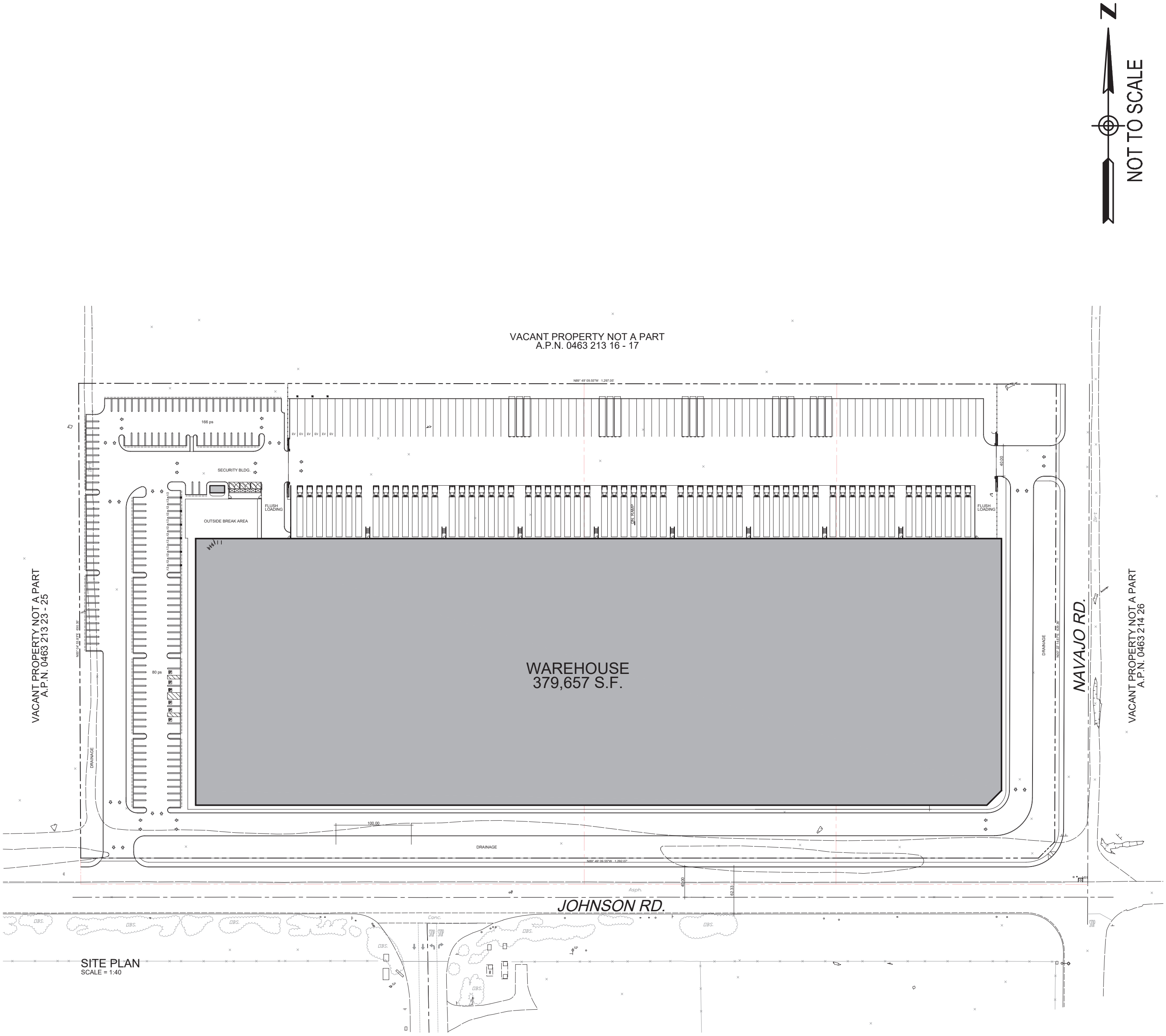

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FIGURE 2: PROJECT SITE PLAN
JOHNSON ROAD INDUSTRIAL
APPLE VALLEY, CALIFORNIA

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3 EXISTING CONDITIONS

3.1 Town of Apple Valley and Caltrans Intersection Level of Service Policies

The Town of Apple Valley's General Plan policy (Policy 1.A, Program 1.A.4) on level of service is to maintain a level of service (LOS) D in the AM and PM peak hours on all its roadways. This level of service policy applies to local Apple Valley roadways, roads of regional importance as part of the county's Congestion Management Program (CMP) network, and state highways.

The Caltrans' Guide for the Preparation of Traffic Impact Studies (December 2002) states "Caltrans endeavors to maintain a target level of service at the transition between LOS "C" and LOS "D" on State highway facilities. However, Caltrans acknowledges that this may not always be feasible, so their practice is to allow level of service thresholds equal to the threshold of the jurisdiction where the facility is located but preferably no greater than a 45 second average delay per vehicle in the peak hour (mid LOS D). For this study, the town's LOS D is assumed to be the minimum level of service criteria for the study intersections.

3.2 Study Intersections

This focused traffic study evaluates key intersections on routes expected to be used by project traffic to access the site. **Figure 3** and the list below identifies the intersections analyzed in this study.

1. Navajo Road / Johnson Road
2. Dale Evans Parkway / Johnson Road
3. Central Road / Johnson Road
4. Stoddard Wells Road / Johnson Road
5. Stoddard Wells Road / I-15 Northbound Ramps
6. Stoddard Wells Road / Quarry Road
7. I-15 Southbound Ramps / Quarry Road
8. Johnson Road / Project Driveway
9. Navajo Road / Project Driveway

All the study intersections are currently side-street stop controlled, or all-way stop-controlled.

3.3 Existing Traffic Volumes

Turn movement counts were conducted in collected in June 2022, November 2022, and August 2023 by Newport Traffic Studies, an independent traffic data collection company. These counts were collected during the AM (7:00-9:00 AM) and PM (4:00-6:00 PM) peak periods. The existing turn movement counts are included in **Appendix B** of this study. **Figure 4** illustrates the existing peak hour traffic volumes in the study area.

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FIGURE 3: STUDY INTERSECTIONS
JOHNSON ROAD INDUSTRIAL
APPLE VALLEY, CALIFORNIA

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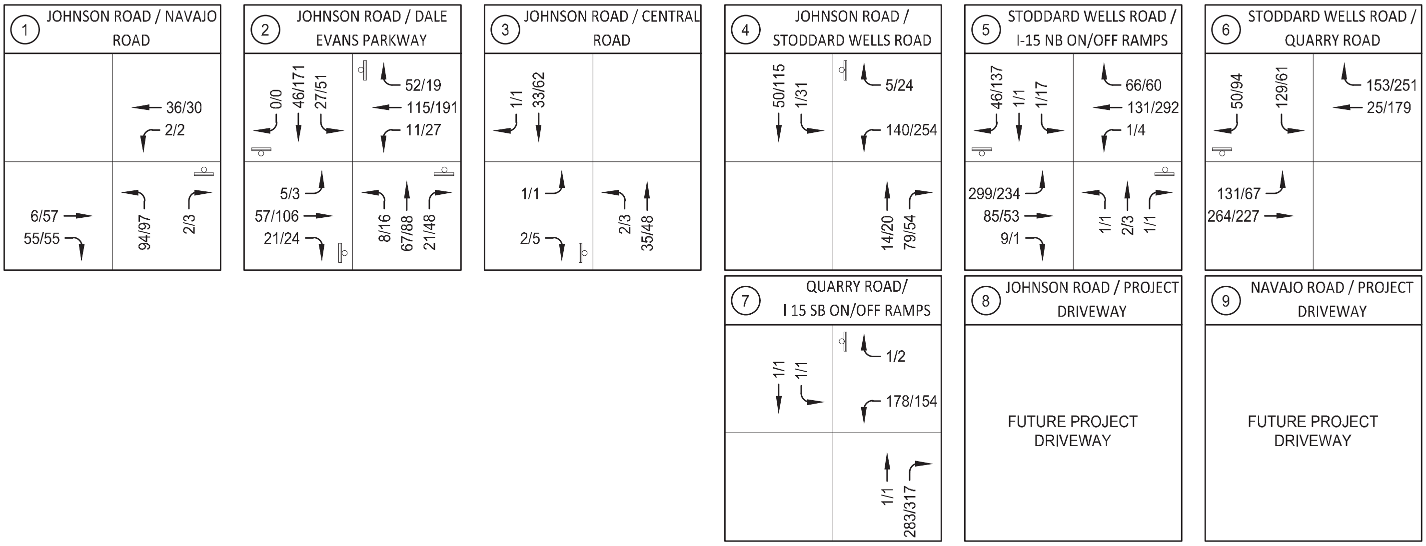

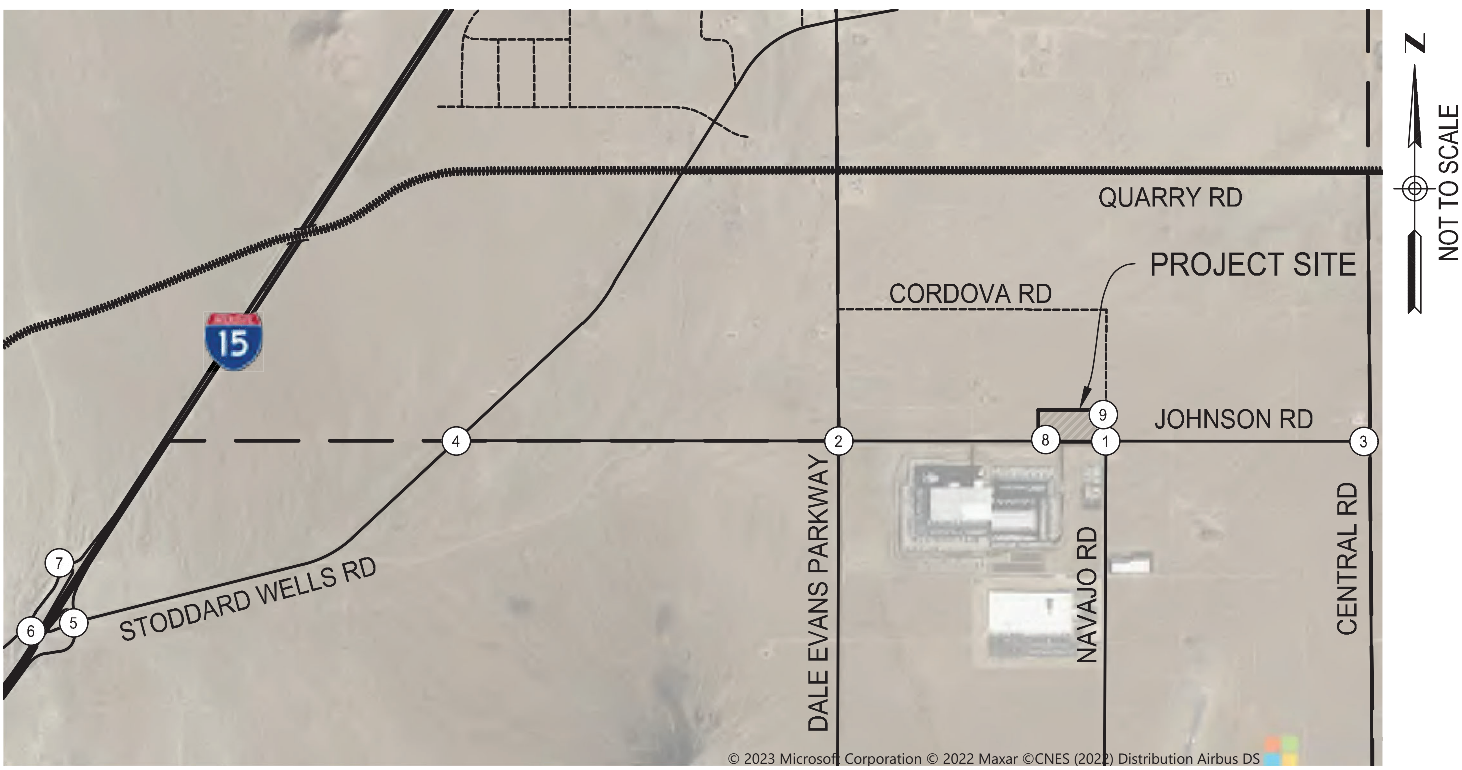

LEGEND

- XX/XX - AM/PM PCE TRAFFIC VOLUMES
- (#) - STUDY INTERSECTIONS
- STOP CONTROLLED INTERSECTION
- SIGNAL CONTROLLED INTERSECTION

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FIGURE 4: EXISTING PCE TRAFFIC VOLUMES
JOHNSON ROAD INDUSTRIAL
APPLE VALLEY, CALIFORNIA

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3.4 Intersection Capacity Analysis Methodology

In this study, intersection level of service (LOS) was determined using Synchro software[3] which implements the methodologies in Chapter 19 and Chapter 20 of the Highway Capacity Manual, 6th Edition (HCM 6)[4] and conforms to the procedures and assumptions in the county's Traffic Impact Analysis Guidelines. The intersection analyses use existing intersection geometrics and existing traffic volumes in determining AM and PM peak hour intersection level of service.

Table 3-1 provides LOS thresholds for both two-way stop-controlled (TWSC) and all-way stop-controlled intersections which is determined by the computed or measured control delay. Unsignalized intersections have lower delay criteria than signalized intersections because stop-control is associated with more uncertainty for users, as delays are less predictable than they are at signals, which reduces the user's tolerance for delay.

The level of service at TWSC intersections is measured as the control delay for the worst stop-controlled movement at the intersection regardless of the movement's traffic volume. The level of service at AWSC intersections is also measured as the control delay, but it applies to the entire intersection not individual movements.

Table 3-1: Level of Service Criteria for Two-Way and All-Way Stop Controlled (TWSC & AWSC) Intersections

Control Delay (s/veh)	**LOS by Volume-to-Capacity Ratio [a]**	
	≤1.0	**>1.0**
0 - 10	A	F
> 10 -15	B	F
> 15 - 25	C	F
> 25 - 35	D	F
> 35 - 50	E	F
> 50	F	F

Note:
The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for the uncontrolled major-Street approaches or for the intersection as a whole.
[a] For approaches and intersectionwide assessment, LOS is defined solely by control delay.
Source: Highway Capacity Manual 6th Edition, Exhibit 20-2.

3.5 Existing Traffic Analysis

Existing intersection geometrics and existing AM and PM peak hour traffic counts are used in analyzing existing intersection capacity. **Table 3-2** and **Appendix E** provide the results of the analysis. **Figure 5** illustrates the existing intersection geometrics used in the capacity analysis. As presented in **Table 3-2***,* under existing conditions, all study intersections currently operate at LOS C or better in both peak hours.

Table 3-2: Intersection Level of Service for Existing (2023) Conditions

Intersection	Intersection Control Type	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
1. Navajo Road / Johnson Road	SSSC	9.7	A	9.7	A
2. Dale Evans Parkway / Johnson Road	AWSC	8.7	A	12.4	B
3. Central Road / Johnson Road	SSSC	8.6	A	8.8	A
4. Stoddard Wells Road / Johnson Road	SSSC	10.2	B	14.5	B
5. Stoddard Wells Road / I-15 Northbound Ramps	SSSC	20.5	C	23.0	C
6. Stoddard Wells Road / Quarry Road	SSSC	16.6	C	12.8	B
7. I-15 Southbound Ramps / Quarry Road	SSSC	10.7	B	11.3	B
8. Johnson Road / Project Driveway	SSSC	Future Intersection			
9. Navajo Road / Project Driveway	SSSC	Future Intersection			

Abbreviations:
SSSC – Side Street Stop Controlled Intersection, AWSC – All Way Stop Controlled Intersection, Not Applicable – Not Applicable Future Intersection Delay – seconds per vehicle, LOS – Level of Service

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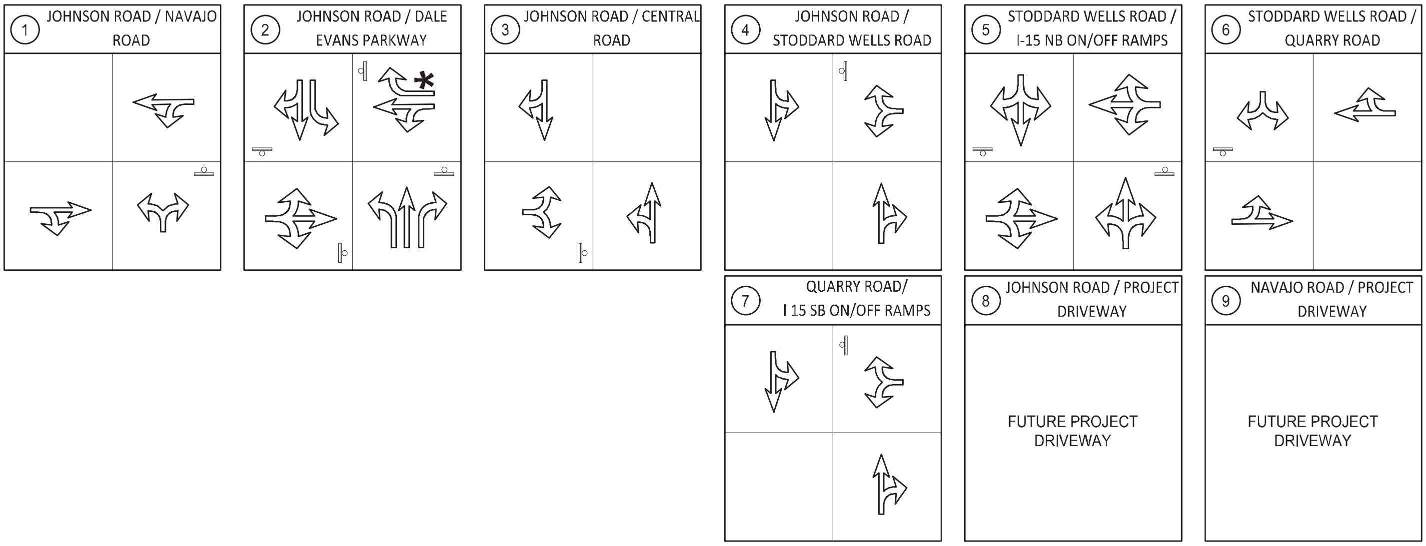
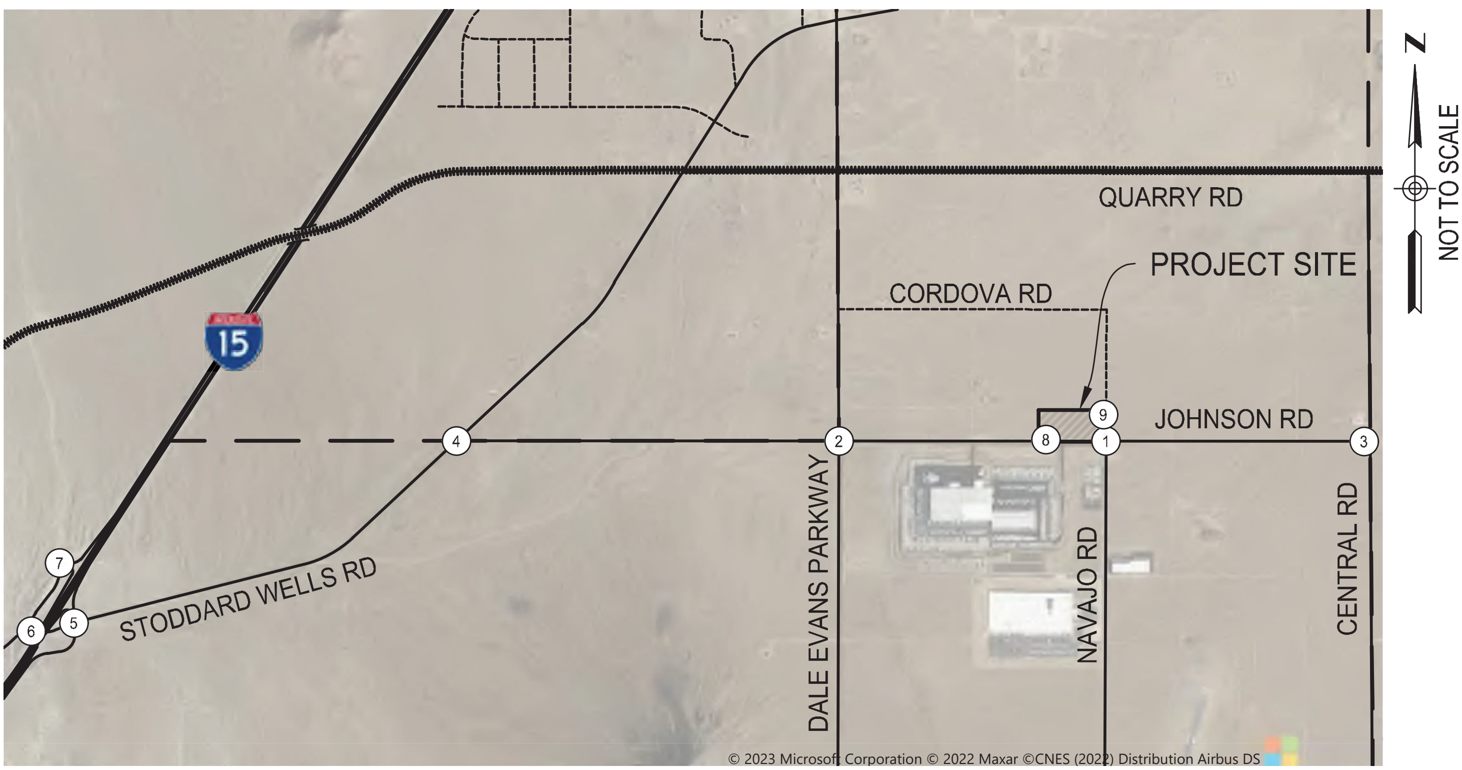
[3] Trafficware Ltd, version 10.

[4] Transportation Research Board, Washington D.C., 2010.





LEGEND

- EXISTING GEOMETRICS
- STUDY INTERSECTIONS
- STOP CONTROLLED INTERSECTION
- SIGNAL CONTROLLED INTERSECTION
* - FREE RIGHT TURN

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FIGURE 5: EXISTING INTERSECTION GEOMETRICS
JOHNSON ROAD INDUSTRIAL
APPLE VALLEY, CALIFORNIA

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4 BACKGROUND CONDITIONS

This scenario represents conditions at the time the project is anticipated to be fully constructed and occupied (known as opening year 2025) but without traffic generated by the project. This scenario is comprised of ambient growth over a two-year period, at a general rate of growth in traffic from overall regional growth but not specific to any nearby development (assumed to be 3.5% annually for this study).

In addition, two approved development projects in the immediate vicinity of the proposed project are included in all background scenarios. The development described in the approved Apple Valley 143 project was included in this scenario. Also, the approved Love's Traveler Center development is included in this scenario. The other approved development projects were provided by the Town of Apple Valley Planning Department. The Other Area Approved Developments Excerpts are provided in **Appendix D**.

4.1 Background Conditions Traffic Analysis

The Background Conditions intersection level of service analysis uses existing intersection geometrics and the traffic volumes shown in is provided in **Figure 6. Table 4-1** and **Appendix E** provides the results of the analysis.

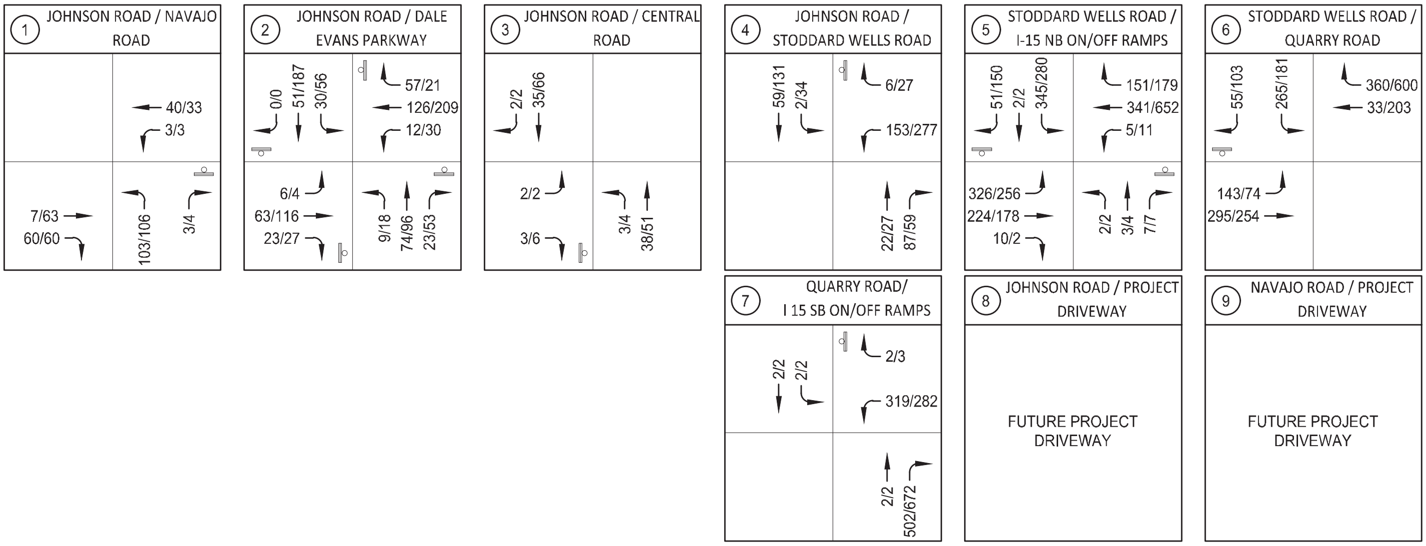
Table 4-1: Intersection Level of Service for Background Conditions

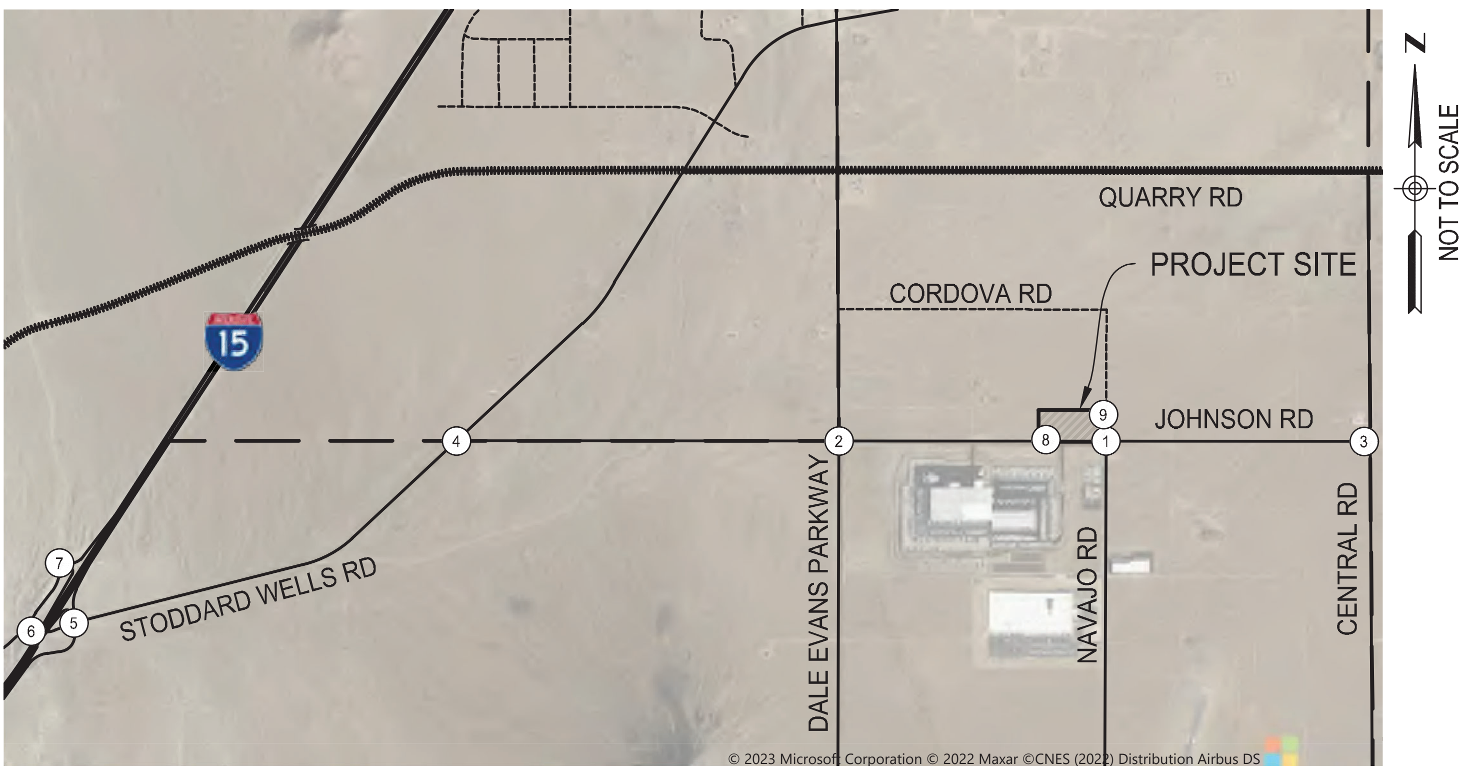
Intersection	Intersection Control Type	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
1. Navajo Road / Johnson Road	SSSC	9.9	A	9.9	A
2. Dale Evans Parkway / Johnson Road	AWSC	9.0	A	13.9	B
3. Central Road / Johnson Road	SSSC	8.7	A	8.8	A
4. Stoddard Wells Road / Johnson Road	SSSC	10.7	B	16.6	C
5. Stoddard Wells Road / I-15 NB Ramps	SSSC	‡	F	‡	F
6. Stoddard Wells Road / Quarry Road	SSSC	42.7	E	23.6	C
7. I-15 Southbound Ramps / Quarry Road	SSSC	15.2	C	23.0	C
8. Johnson Road / Project Driveway	SSSC	Future Intersection			
9. Navajo Road / Project Driveway	SSSC	Future Intersection			

Notes:
‡ Delay cannot be calculated using the Highway Capacity Manual 6 algorithms because the intersection is over-saturated for the type of control being analyzed. In these conditions the intersection can result in exponentially high delays.
The shaded cells in the table represent intersection peak hours with LOS deficiencies (LOS E or F).
Abbreviations:
SSSC – Side Street Stop Controlled Intersection, AWSC – All Way Stop Controlled Intersection, Not Applicable – Not Applicable Future Intersection Delay – seconds per vehicle, LOS – Level of Service

As presented in **Table 4-1**, under background conditions, the study intersections are anticipated to operate at an acceptable level of service with the exception of two intersections: Stoddard Wells Rd / Outer Hwy 15 / I-15 NB Ramps and Stoddard Wells Rd / Quarry Rd.

The intersection of Stoddard Wells Rd / Outer Hwy 15 / I-15 NB Ramps is anticipated to operate at an LOS F during the AM Peak hour and PM peak hour. The intersection of Stoddard Wells Rd / Quarry Rd is anticipated to operate at an LOS E during the AM Peak hour. These service levels are below the Town's peak hour level of service standard. As a result, these intersections are identified as having deficient levels of service prior to the addition of project traffic.





LEGEND

XX/XX - AM/PM PCE TRAFFIC VOLUMES

\# - STUDY INTERSECTIONS

- STOP CONTROLLED INTERSECTION

- SIGNAL CONTROLLED INTERSECTION

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FIGURE 6: BACKGROUND PCE TRAFFIC VOLUMES
JOHNSON ROAD INDUSTRIAL
APPLE VALLEY, CALIFORNIA

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5 PROJECT CONDITIONS

This scenario adds the project's estimated traffic generation in the opening year (2025) to the background conditions scenario analyzed in **Chapter 4**. Level of service impacts identified in this scenario are considered "cumulative" impacts—impacts that the project contributes to, but does not solely cause, and may be responsible for a fair-share of the cost to implement any mitigation measures.

5.1 Project Description and Trip Generation

The proposed project is a speculative warehouse where the tenant(s) and function as a potential short term storage facility, distribution center, fulfillment center, etc. are unknown. While the impact analysis needs to reflect a reasonable spectrum of tenant types, there is a risk when estimating trip generation of over or under-estimating traffic. The 11th Edition of the Institute of Transportation Engineers' Trip Generation manual contains data for the most common types of warehouse operations with a wide range of rates. **Table 5-1** summarizes the trip generation rates for warehouse facilities in the current edition of ITE's Trip Generation.

Table 5-1: Trip Generation Rates for ITE Land Use Categories of Warehousing

Warehouse Type	ITE Land Use Code	Average Trip Generation Rates for Warehouse Types (Trips Per KSF) (Source: ITE Trip Generation 11th Edition)		
		Average Daily Traffic	AM Peak Hour of Adjacent Street Traffic	PM Peak Hour of Adjacent Street Traffic
		Total (In + Out)	Total (In + Out)	Total (In + Out)
High-Cube Transload and Short-Term Storage Warehouse	154	1.54	0.08	0.10
High-Cube Cold Storage Warehouse	157	2.12	0.11	0.12
High-Cube Fulfillment Center Warehouse - Non-Sort	155	1.81	0.15	0.16
General Warehouse	150	1.71	0.17	0.18
High-Cube Parcel Hub Warehouse	156	4.63	0.70	0.64
High-Cube Fulfillment Center Warehouse - Sort	155	6.44	0.87	1.20
Average of All Warehouse Types		3.04	0.35	0.40
Average Without High-Cube Sort Fulfillment Center		2.36	0.24	0.24

To help select a trip generation rate for the proposed Johnson Road Industrial Building (Warehouse) project representative of the range of potential owners/tenants, **Table 5-1** includes the average of the rates for all warehouse types in the ITE Trip Generation manual and the average of the rates for all warehouse types except High-Cube Fulfillment Sort Facility—the most intensive type of warehouse which is not expected for the proposed project. The secondary average rate (excluding High-Cube Fulfillment Sort Facility) represents two thirds the ITE warehouse types and covers a broad range of tenant types and operations.

Table 5-2 summarizes the estimated trip generation of the proposed project for an average weekday, and weekday AM (7-9 AM) and PM (4-6 PM) peak hours, based on the secondary average rates identified in **Table 5-1**. The proposed Johnson Road Industrial Building (Warehouse) would generate about 896 vehicle trips per day and 91 vehicle trips in both the AM and PM peak hour.

It is standard practice to convert vehicle trips to passenger car equivalents (PCEs) for intersection capacity analysis. This conversion reflects the effects of large vehicles on intersection operations both from the physical space a truck occupies but also from their effect on the intersection's saturation flow rate due to the slower acceleration of trucks.

When converted to PCEs, the Johnson Road Industrial Building (Warehouse) generates about 1,259 daily PCEs, and 128 PCEs in both the AM and PM peak hour.

Table 5-2: Johnson Road Industrial Building (Warehouse) Project Trip Generation

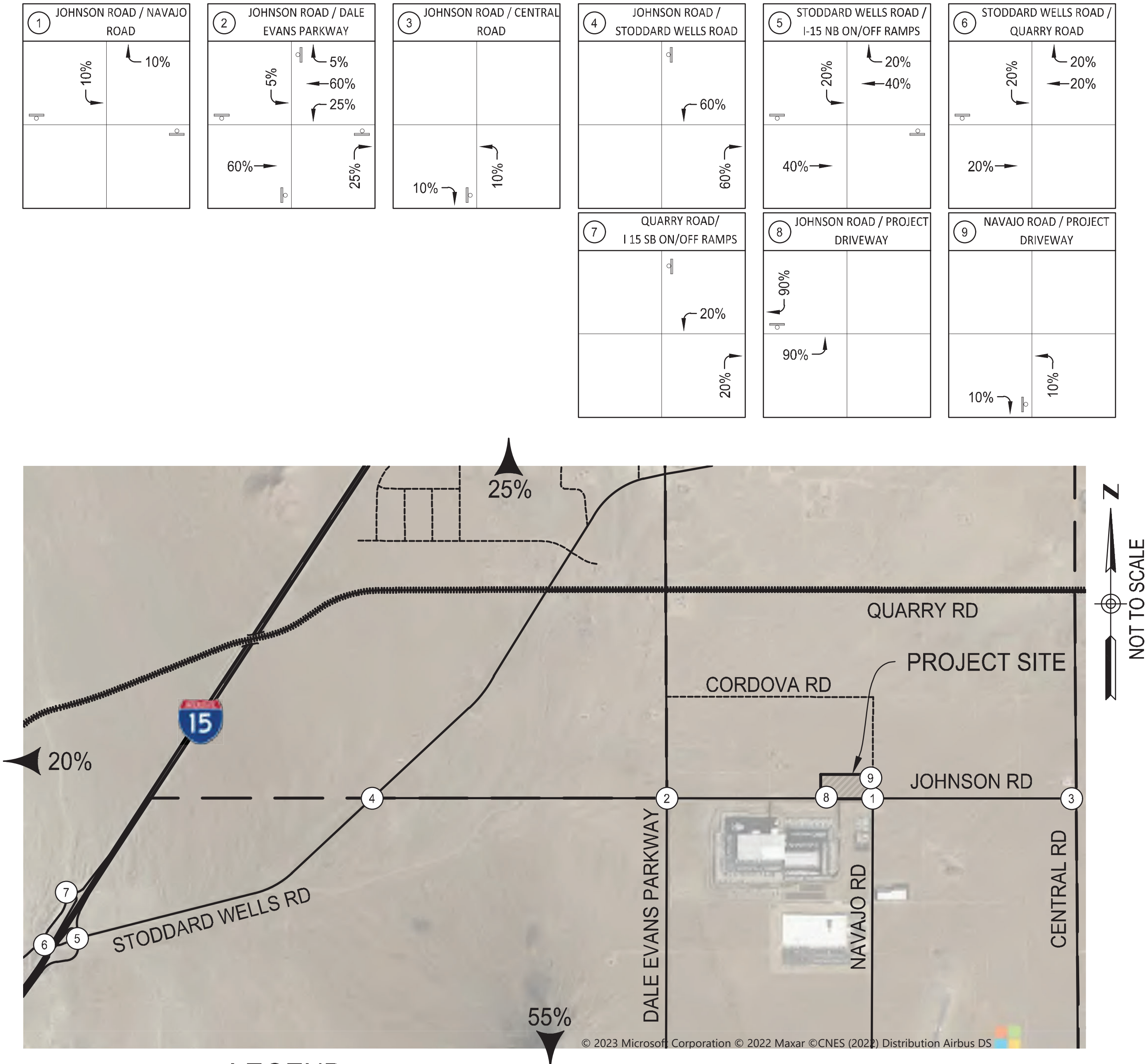
Land Use	Gross Floor Area (KSF)	Daily	AM Peak Hour of Adjacent Street Traffic			PM Peak Hour of Adjacent Street Traffic		
			In	Out	Total	In	Out	Total
Warehouse (Rates are the Average of ITE Land Use Categories 150, 154, 156, and 157)	379.66	Vehicle Trip Generation Rates (Trips Per 1,000 Square Feet of Gross Floor Area)						
		2.36	0.18	0.06	0.24	0.07	0.17	0.24
		Total Vehicle Trip Generation						
		896	70	21	91	26	66	91
	Mode Share	Project Trip Generation by Vehicle Type						
Passenger Cars (Percent of Total)	74.21%	665	52	16	68	19	49	68
2-Axle Trucks (Percent of Total)	4.55%	41	3	1	4	1	3	4
3-Axle Trucks (Percent of Total)	4.18%	37	3	1	4	1	3	4
4-Axle Trucks (Percent of Total)	17.04%	153	12	4	16	4	11	16
	PCE Factor	Project Trip Generation in Passenger Car Equivalents (PCE)						
Passenger Cars)	1.0	665	52	16	68	19	49	68
2-Axle Trucks	1.5	61	5	1	6	2	4	6
3-Axle Trucks	2.0	75	6	2	8	2	5	8
4 + Axle Trucks	3.0	458	36	11	47	13	34	47
Total Passenger Car Equivalents (PCE)		**1,259**	**99**	**29**	**128**	**36**	**92**	**128**

Notes:
KSF = Thousands of Square Feet.
AM / PM Peak Hour of Adjacent Street Traffic = Trip generation coinciding with the highest hourly volumes of traffic on the adjacent streets during the AM (7:00 AM and 9:00 AM) and PM (4:00 PM and 6:00 PM) commuter peak periods.
Source of trip generation rates: Institute of Transportation Engineers (ITE) Trip Generation (11th Edition). Average rates for land use category 150 (Warehouse).
Source of passenger car / truck mode share (percentage of total): South Coast Air Quality Management District High Cube Warehouse Trip Generation Study (2016). Based on data from eight high cube warehouses in the Inland Empire over 1,000,000 square feet in size. The average warehouse building size is 1,364,496 square feet.
Passenger Car Equivalents (PCE) factors: Industry standard values utilized in neighboring jurisdictions

5.2 Project Trip Distribution and Assignment

Project traffic is distributed by direction separately for automobiles (employees) and trucks. The automobile distribution is based on where the warehouse employees are likely to reside or perform other activities (e.g., concentration of residential neighborhoods and commercial centers). The truck distribution is based on the most direct routes to major roadways and highways trucks are likely to use to access the project and depart for delivery of freight. Project trips are assigned to the area streets that provide the most direct route to the destinations.

Figure 7 shows the distribution of project-generated automobile to roadways as a percentage by direction and route. **Figure 8** shows the distribution of project-generated truck trips to roadways as a percentage by direction and route. Truck traffic volumes have been converted into passenger car equivalents (PCEs) as required in the San Bernardino County guidelines for intersection capacity analysis. **Figure 9** shows the total project PCE trips.



LEGEND

XX% - GENERAL PROJECT TRIP DISTRIBUTION

XX% - SPECIFIC PROJECT TRIP PERCENTAGE

- STUDY INTERSECTIONS

- STOP CONTROLLED INTERSECTION

- SIGNAL CONTROLLED INTERSECTION

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FIGURE 7: PROJECT AUTOMOBILE TRIP DISTRIBUTION
JOHNSON ROAD INDUSTRIAL
APPLE VALLEY, CALIFORNIA

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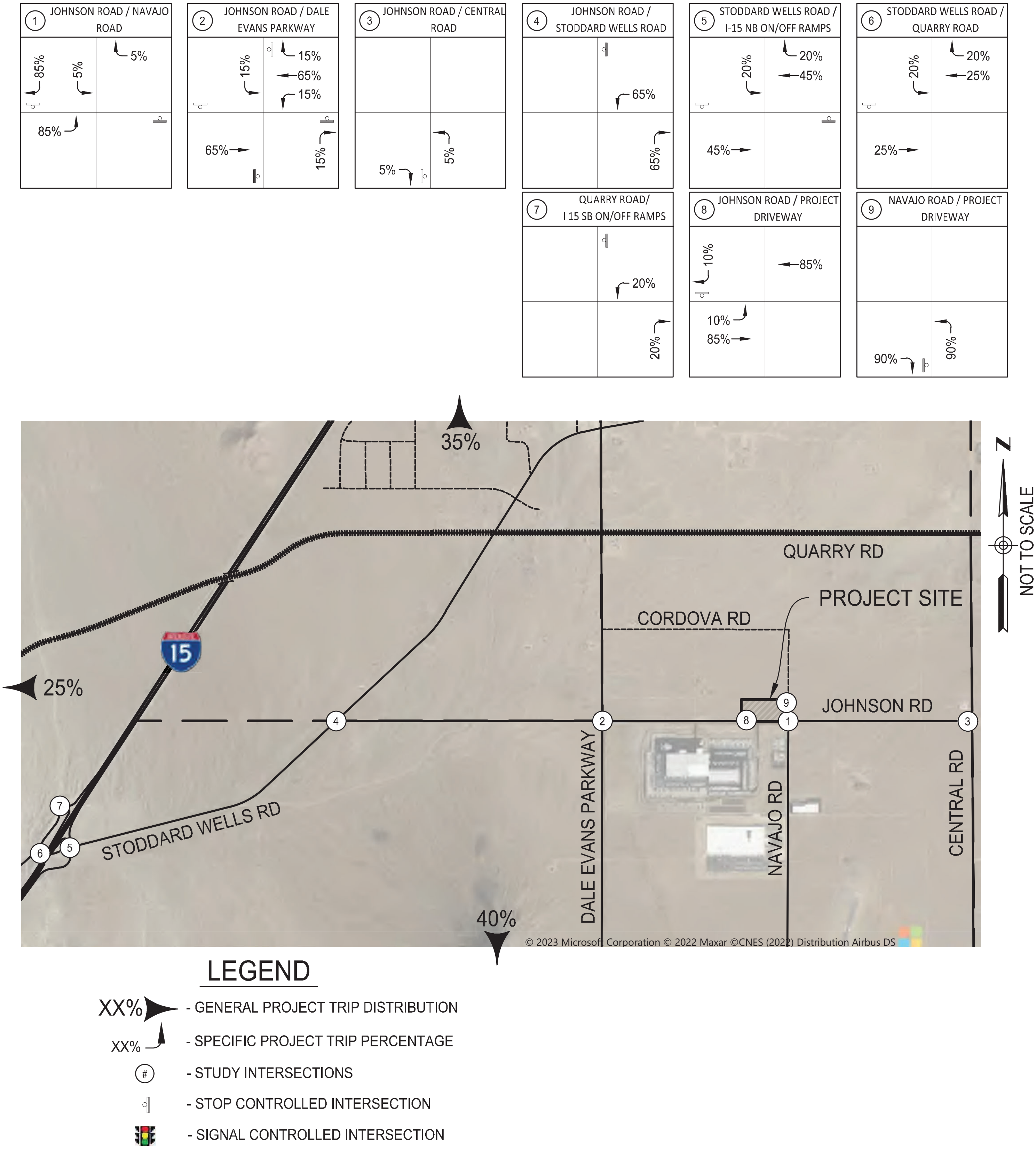

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FIGURE 8: PROJECT TRUCK TRIP DISTRIBUTION
JOHNSON ROAD INDUSTRIAL
APPLE VALLEY, CALIFORNIA

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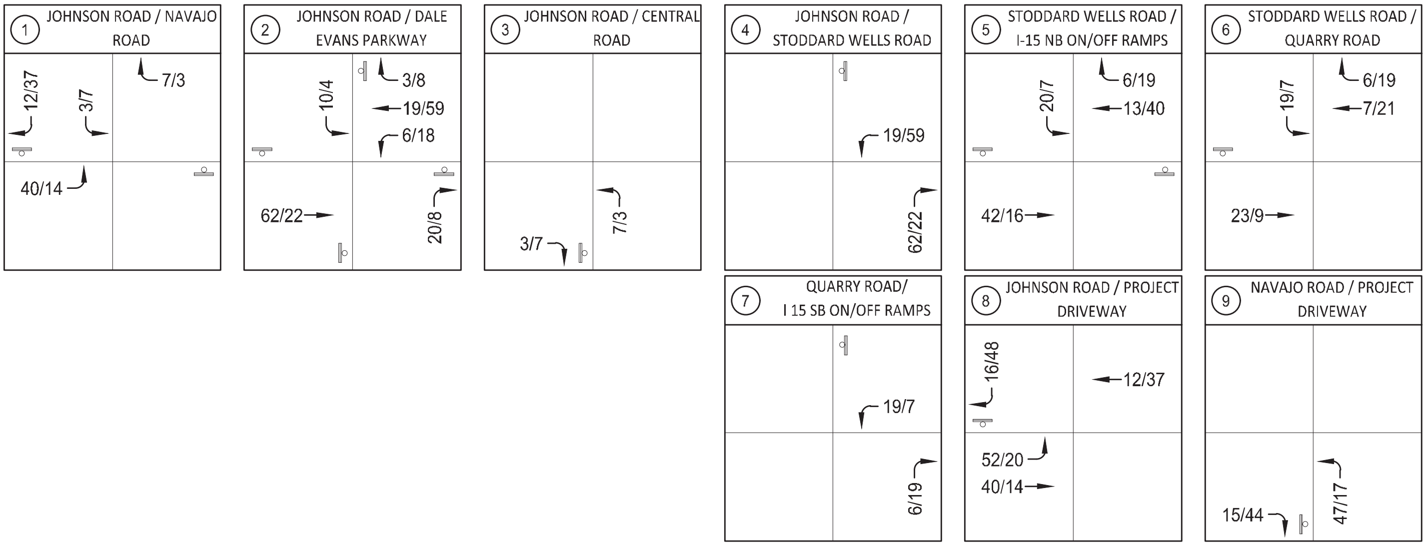

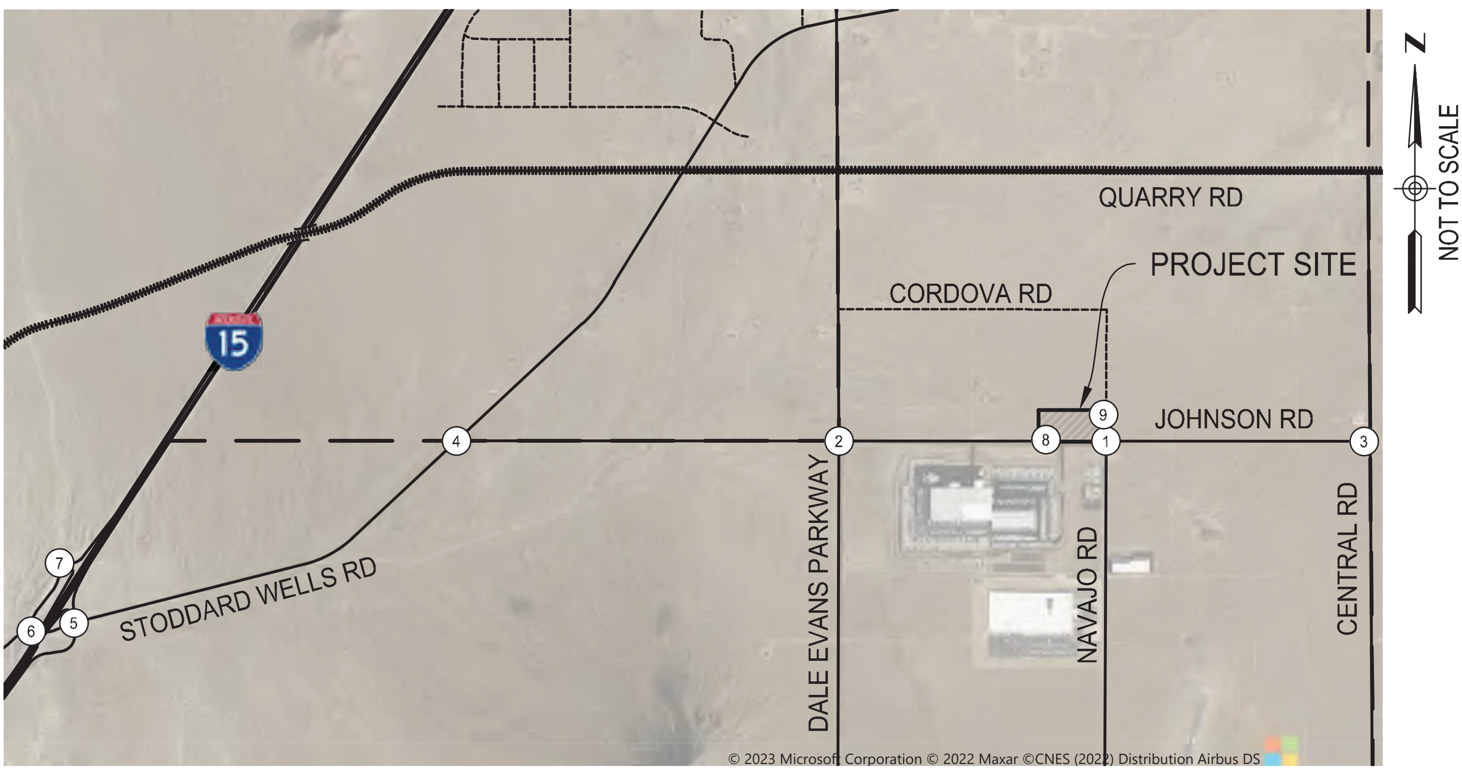

TOTAL PROJECT PCE TRIPS

AM PEAK HOUR TRIPS - 99 IN / 30 OUT
PM PEAK HOUR TRIPS - 36 IN / 92 OUT

LEGEND

XX/XX - AM/PM TOTAL PCE PROJECT TRIPS
- STUDY INTERSECTIONS
- STOP CONTROLLED INTERSECTION
- SIGNAL CONTROLLED INTERSECTION

DAVID EVANS AND ASSOCIATES INC.

FIGURE 9: TOTAL PROJECT PCE TRIPS
JOHNSON ROAD INDUSTRIAL
APPLE VALLEY, CALIFORNIA

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5.3 Project Conditions Traffic Analysis

Table 5-3 compares intersection level of service of Background and Project Conditions. The Project Conditions traffic volumes shown in **Figure 10**. The capacity analysis worksheets are in **Appendix E.**

Table 5-3: Comparison of Background and Project Conditions LOS

Intersection	Control Type	Background Conditions				Background + Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Navajo Road / Johnson Road	SSSC	9.9	A	9.9	A	11.6	B	10.9	B
2. Dale Evans Parkway / Johnson Road	AWSC	9.0	A	13.9	B	9.8	A	18.3	C
3. Central Road / Johnson Road	SSSC	8.7	A	8.8	A	8.7	A	8.8	A
4. Stoddard Wells Road / Johnson Road	SSSC	10.7	B	16.6	C	11.4	B	20.8	C
5. Stoddard Wells Road / I-15 NB Ramps	SSSC	‡	F	‡	F	‡	F	‡	F
6. Stoddard Wells Road / Quarry Road	SSSC	42.7	E	23.6	C	58.3	F	26.7	D
7. I-15 Southbound Ramps / Quarry Road	SSSC	15.2	C	23.0	C	15.9	C	24.7	C
8. Johnson Road / Project Driveway	SSSC	Future Intersection				9.4	A	9.5	A
9. Navajo Road / Project Driveway	SSSC	Future Intersection				8.4	A	8.5	A

Notes:
‡ Delay cannot be calculated using the Highway Capacity Manual 6 algorithms because the intersection is over-saturated for the type of control being analyzed. In these conditions the intersection can result in exponentially high delays.
Shaded cells in the table represent intersection peak hours with LOS deficiencies (LOS E or F).
Abbreviations:
TWSC = Two-way (or side street) stop control, AWSC = All-way stop control, Not Applicable – Not Applicable Future Intersection Delay – seconds per vehicle, LOS – Level of Service

As presented in **Table 5-3**, under Project Conditions, the combination of ambient traffic, project trips from other area approved development, and the addition of project traffic through the year 2025 causes intersection LOS deficiencies (from LOS D or better to LOS E or F) at two study intersections. The two study intersections are as follows: Stoddard Wells Rd / I-15 NB Ramps and Stoddard Wells Rd / Quarry Rd.

5.3.1 Level of Service With Recommended Improvements

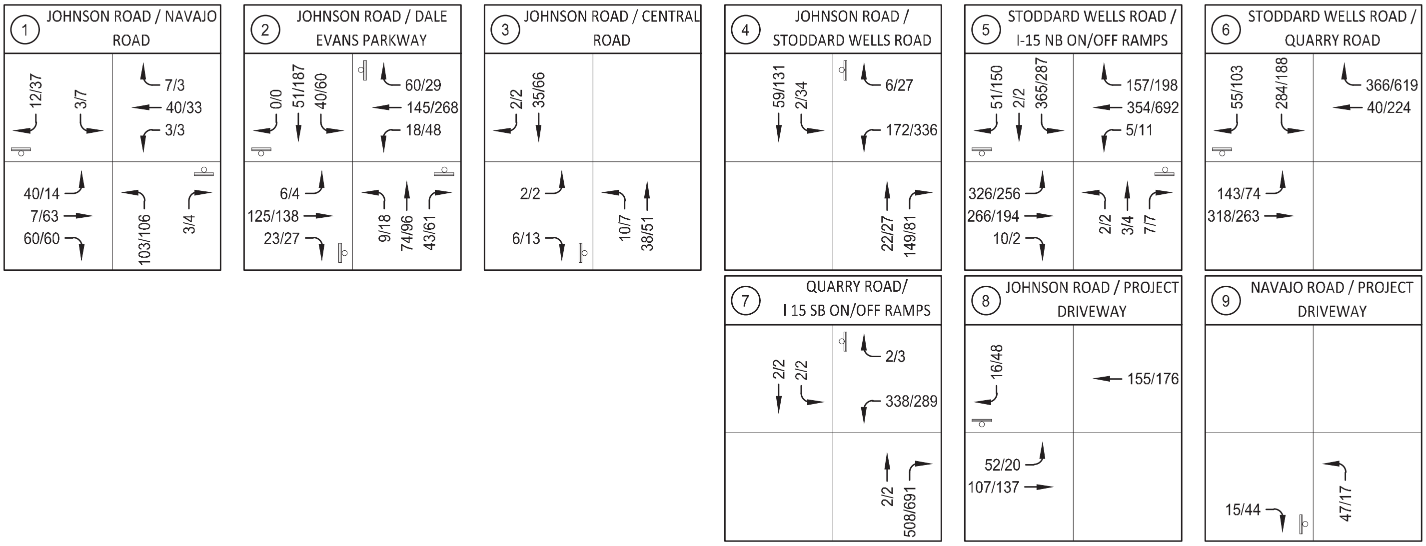
The two existing side-street stop-controlled intersections of Stoddard Wells Rd / I-15 NB Ramps and Stoddard Wells Rd / Quarry Rd experience failure in background plus project conditions. Improvements to the intersection of Stoddard Wells Rd / Outer Highway 15 / I-15 NB Ramps and the widening of the segment of Stoddard Wells Rd between Quarry Road to I-15 NB Ramps/Outer I-15 were identified in the approved Apple Valley 143 Transportation Impact Analysis, dated November 2022, by Dudek. Excerpt of the report is provided in **Appendix D.**

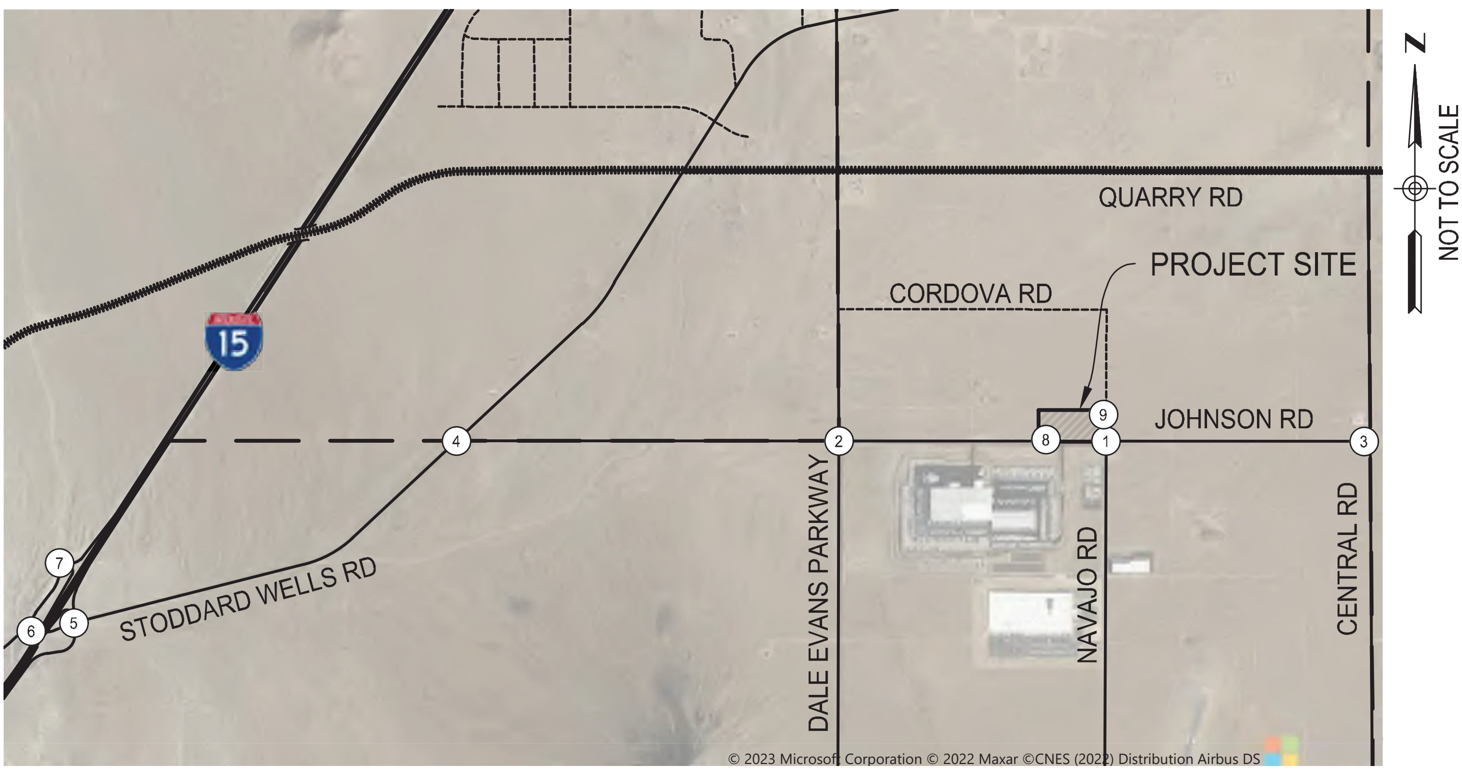
Table 5-4 provides the capacity analysis with the near-term opening year improvements in Section 1.4 and illustrated in **Figure 11.** The proposed mitigation improves the LOS deficiency, to a LOS C.

Table 5-4: Improved Level of Service Under Project Conditions

Intersection	Control Type	Background Conditions				Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
5. Stoddard Wells Road / I-15 NB Ramps	SSSC	‡	F	‡	F	‡	F	‡	F
With Improvements: install traffic signal and provide turn lanes. See Table 1.3.	TS	Not Applicable				34.1	C	34.1	C
6. Stoddard Wells Road / Quarry Road	SSSC	42.7	E	23.6	C	58.3	F	26.7	D
With Improvements: install traffic signal and provide turn lanes. See Table 1.3.	TS	Not Applicable				22.7	C	22.4	C

‡ Delay cannot be calculated using the Highway Capacity Manual 6 algorithms because the intersection is over-saturated for the type of control being analyzed. In these conditions the intersection can result in exponentially high delays.
Abbreviations:
SSSC – Side Street Stop Controlled Intersection, AWSC – All Way Stop Controlled Intersection, TS – Traffic Signal Controlled Intersection, N/A – Not Applicable Future Intersection Delay – seconds per vehicle, LOS – Level of Service





LEGEND

XX/XX - AM/PM PCE TRAFFIC VOLUMES

\# - STUDY INTERSECTIONS

- STOP CONTROLLED INTERSECTION

- SIGNAL CONTROLLED INTERSECTION

DAVID EVANS AND ASSOCIATES INC.

FIGURE 10: PROJECT PCE TRAFFIC VOLUMES
JOHNSON ROAD INDUSTRIAL
APPLE VALLEY, CALIFORNIA

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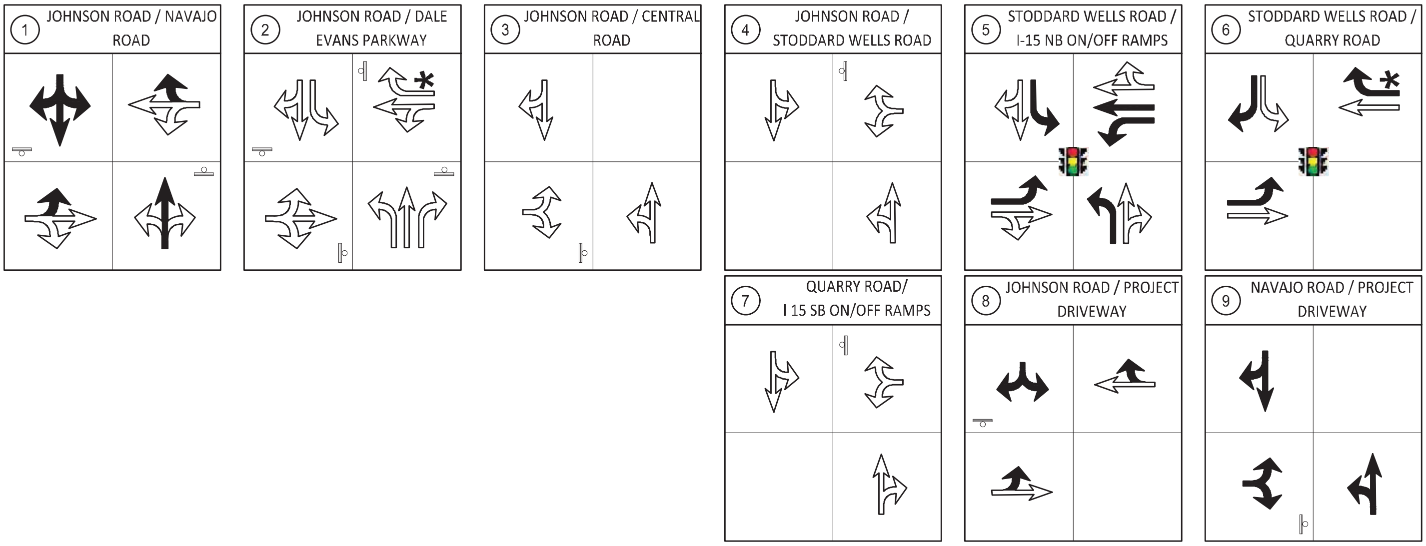

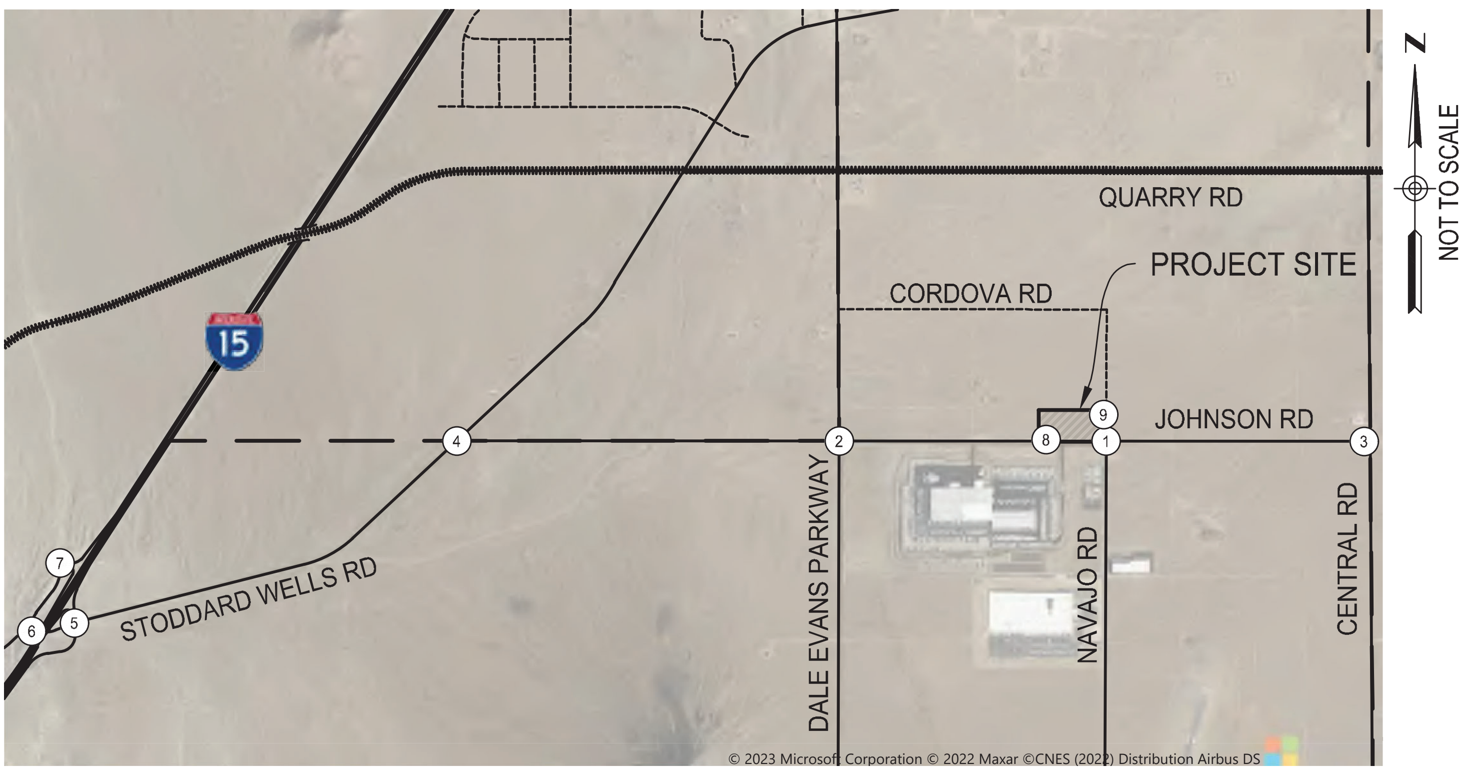

LEGEND

- EXISTING GEOMETRICS
- PROJECT GEOMETRICS
- STUDY INTERSECTIONS
- STOP CONTROLLED INTERSECTION
- SIGNAL CONTROLLED INTERSECTION
- FREE RIGHT TURN

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FIGURE 11: PROJECT INTERSECTION GEOMETRICS
JOHNSON ROAD INDUSTRIAL
APPLE VALLEY, CALIFORNIA

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6 FUTURE YEAR 2040 CONDITIONS

The Future Year 2040 Conditions scenario reflects regional growth in traffic up to the year 2040. Growth in traffic is from forecasts from the San Bernardino County Transportation Analysis Model (SBTAM). Intersection turn movements were derived from post processing forecasted approach volumes and balancing the turn movement volumes for each study intersection. The SBTAM traffic model plots are provided in **Appendix C**. As requested by the Town of Apple Valley Staff the Other Area Approved Developments Trips (described in Chapter 4) were added to the balanced post processed forecast volumes to produce the Future Year 2040 Conditions traffic volumes provided in **Figure 12.** The Other Area Approved Developments Excerpts are provided in **Appendix D**.

6.1 Future Conditions Traffic Analysis

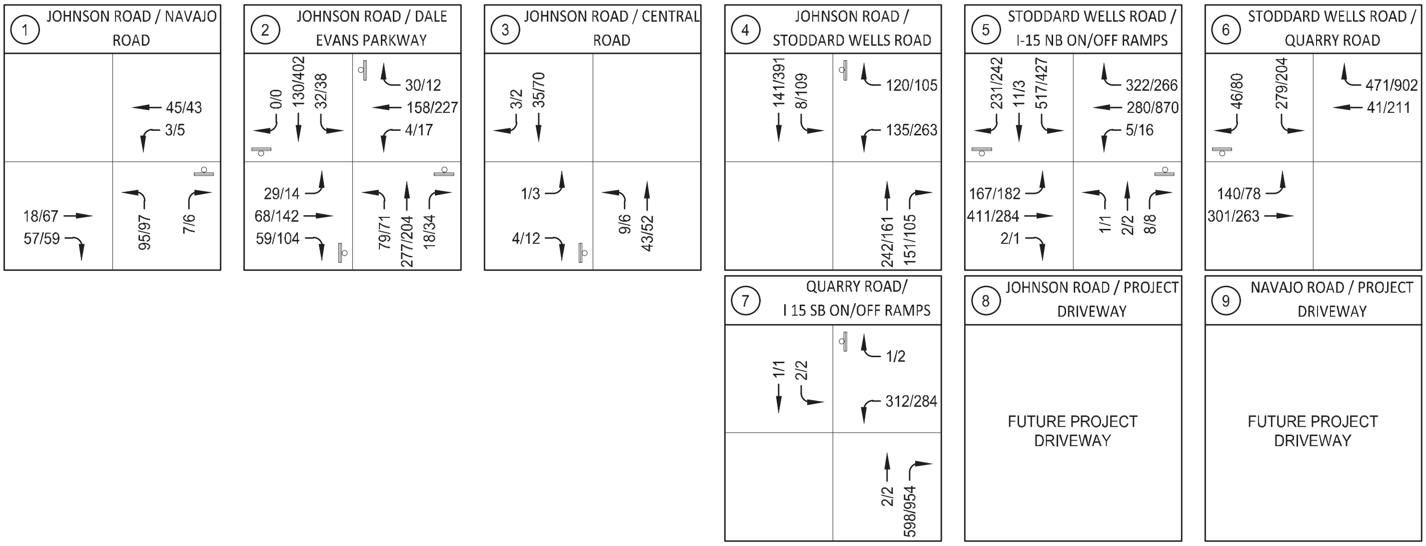
The Future Year 2040 Conditions intersection capacity analysis uses existing intersection geometrics and the traffic volumes provided in **Figure 12**. **Table 6-1** and **Appendix E** provide the results of the analysis.

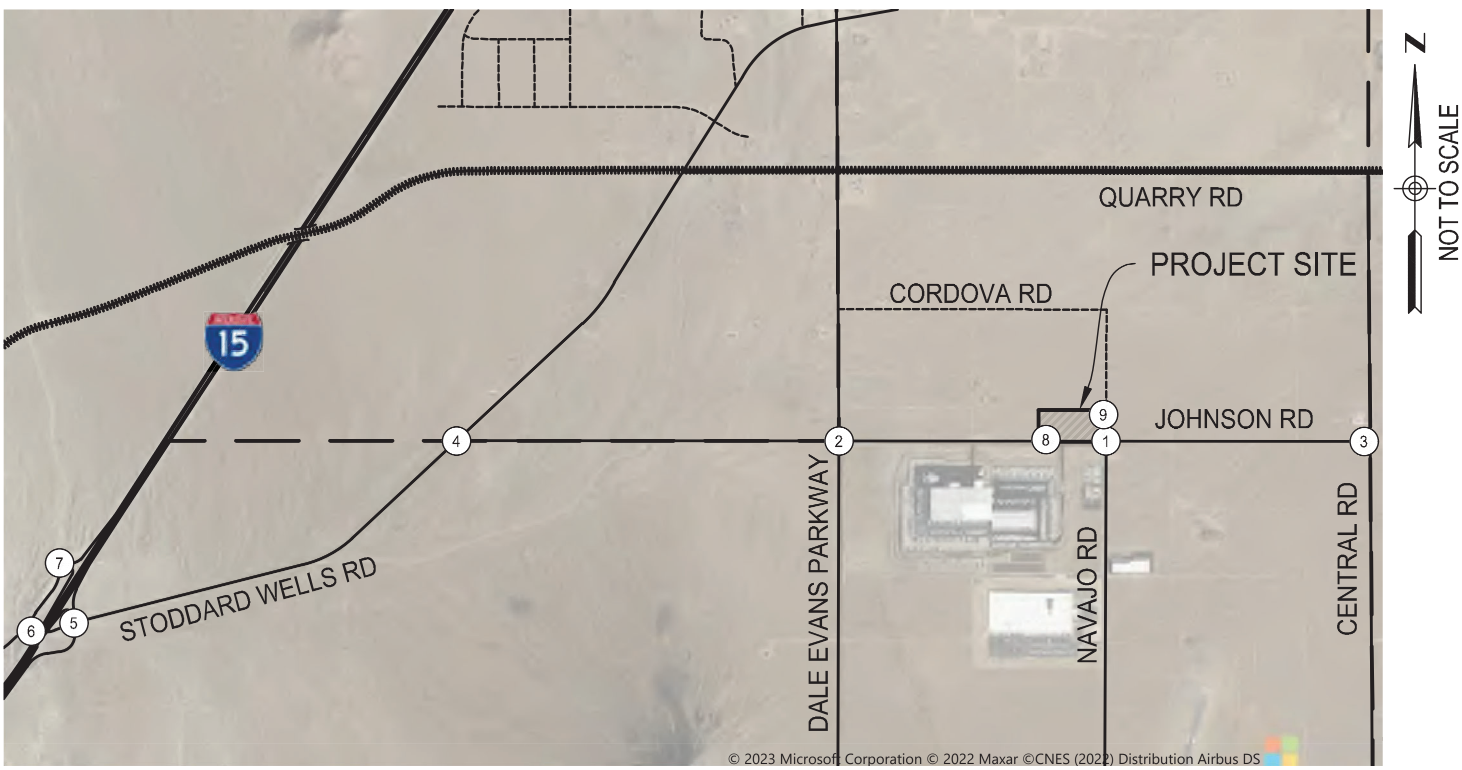
Table 6-1: Intersection Level of Service for Future Year 2040 Conditions

Intersection	Intersection Control Type	Future Conditions			
		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
1. Navajo Road / Johnson Road	SSSC	9.5	A	9.9	A
2. Dale Evans Parkway / Johnson Road	AWSC	13.1	B	37.3	E
3. Central Road / Johnson Road	SSSC	8.6	A	8.8	A
4. Stoddard Wells Road / Johnson Road	SSSC	15.7	C	110.3	F
5. Stoddard Wells Road / I-15 Northbound Ramps	SSSC	‡	F	‡	F
6. Stoddard Wells Road / Quarry Road	SSSC	40.5	E	25.4	D
7. I-15 Southbound Ramps / Quarry Road	SSSC	15.3	C	20.6	C
8. Johnson Road / Project Driveway	SSSC	Future Intersection			
9. Navajo Road / Project Driveway	SSSC	Future Intersection			

Notes:
‡ Delay cannot be calculated using the Highway Capacity Manual 6 algorithms because the intersection is over-saturated for the type of control being analyzed. In these conditions the intersection can result in exponentially high delays. The shaded cells in the table represent intersection peak hours with LOS deficiencies (LOS E or F).
Abbreviations:
SSSC – Side Street Stop Controlled Intersection, AWSC – All Way Stop Controlled Intersection, Not Applicable – Not Applicable Future Intersection Delay – seconds per vehicle, LOS – Level of Service

As presented in **Table 6-1***,* under future year 2040 conditions, four intersections are projected to operate at deficient levels of service without the proposed project.





LEGEND

XX/XX - AM/PM PCE TRAFFIC VOLUMES

\# - STUDY INTERSECTIONS

- STOP CONTROLLED INTERSECTION

- SIGNAL CONTROLLED INTERSECTION

DAVID EVANS AND ASSOCIATES INC.

FIGURE 12: FUTURE YEAR PCE TRAFFIC VOLUMES
JOHNSON ROAD INDUSTRIAL
APPLE VALLEY, CALIFORNIA

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7 FUTURE 2040 PLUS PROJECT CONDITIONS

The Future Plus Project Conditions scenario adds the project's estimated traffic generation to the Future Year 2040 Condition's scenario described in Chapter 6. As described in the previous section, the forecasted Future Year 2040 Conditions intersection turn movement volumes were derived from a combination of post processing forecasted approach volumes from the SBTAM model and the project trips generated by Other Area Approved Developments for each study intersection. The SBTAM traffic model plots are provided in **Appendix C**. The impacts identified in this scenario are considered "cumulative" impacts—impacts that the project contributes to, but does not solely cause, and may be responsible for a fair-share of the cost to implement any mitigation measures.

7.1 Future Plus Project Traffic Analysis

The intersection level of service analysis for Future Plus Project Conditions uses existing intersection geometrics and the traffic volumes shown in is provided in **Figure 13**. **Table 7-1** and **Appendix E** provide the results of the analysis.

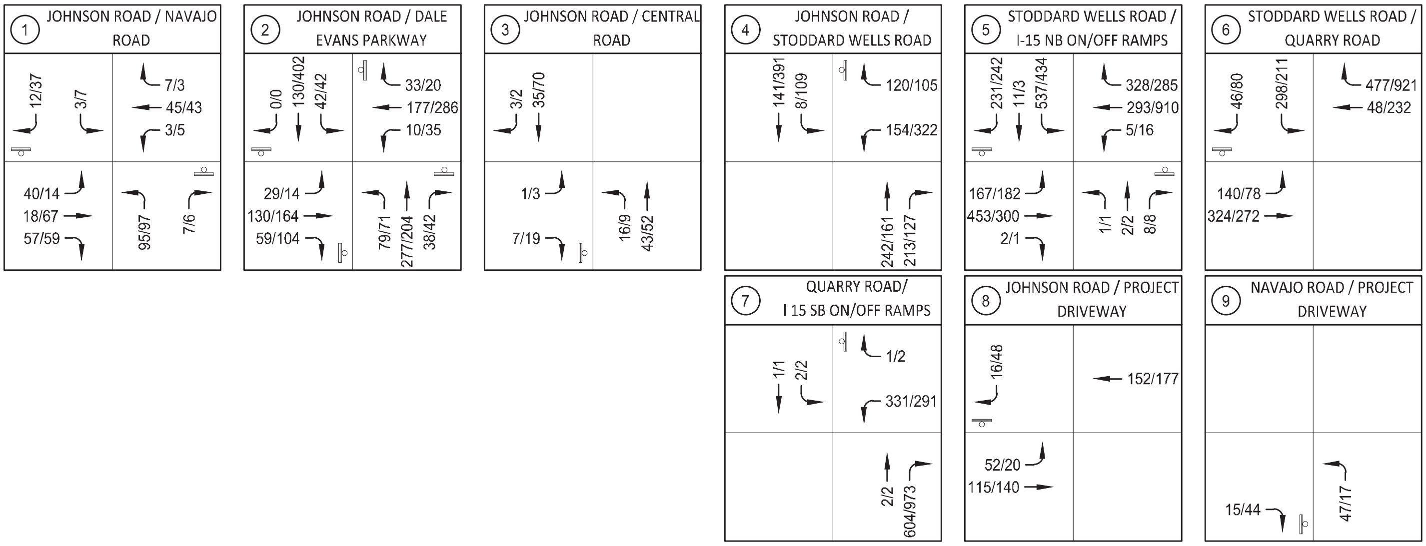
Table 7-1: Comparison of Future 2040 and Future 2040 Plus Project LOS

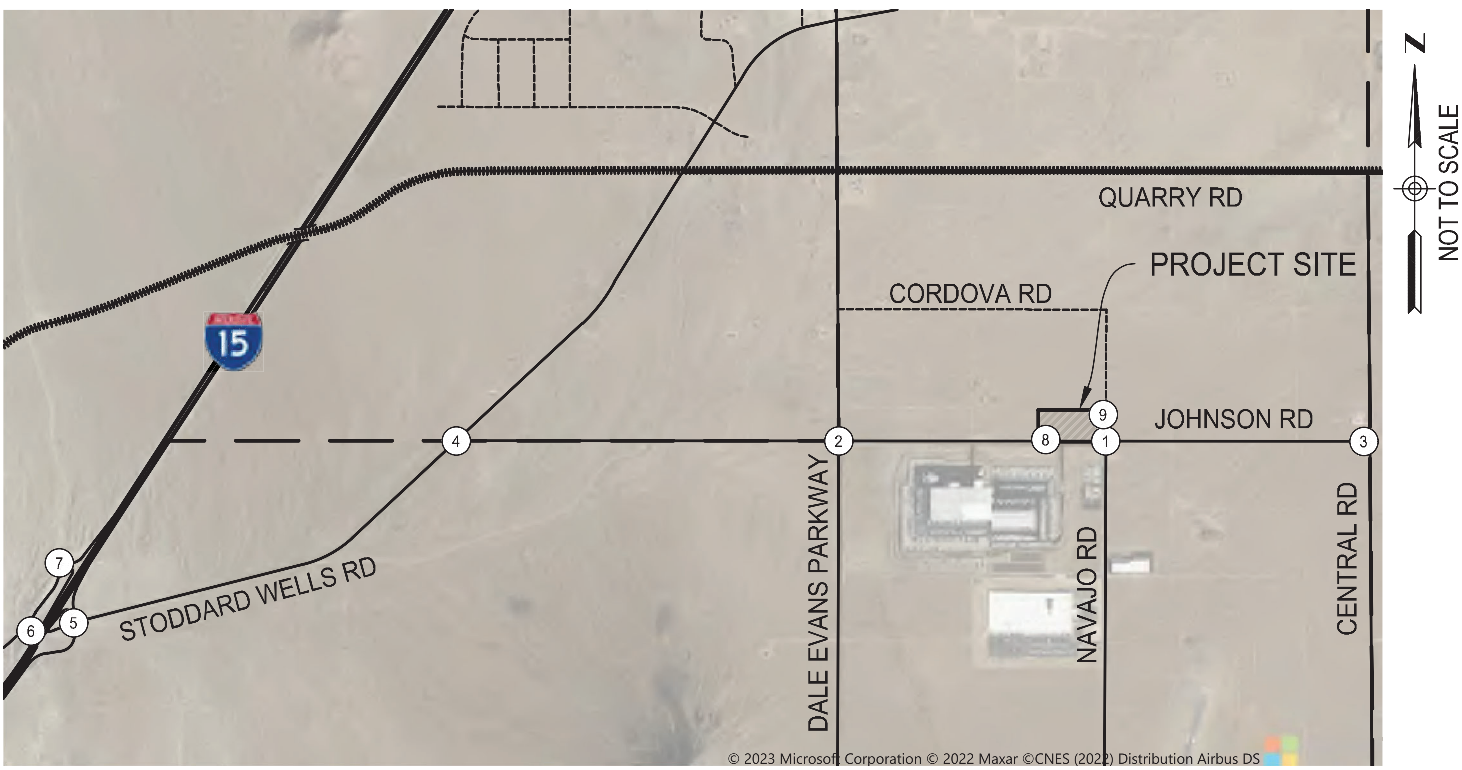
Intersection	Control Type	Future Conditions				Future + Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Navajo Road / Johnson Road	SSSC	9.5	A	9.9	A	10.6	B	10.8	B
2. Dale Evans Parkway / Johnson Road	AWSC	13.1	B	37.3	E	15.1	C	53.0	F
3. Central Road / Johnson Road	SSSC	8.6	A	8.8	A	8.6	A	8.8	A
4. Stoddard Wells Road / Johnson Road	SSSC	15.7	C	110.3	F	17.5	C	200.6	F
5. Stoddard Wells Rd / I-15 NB Ramps	SSSC	‡	F	‡	F	‡	F	‡	F
6. Stoddard Wells Road / Quarry Road	SSSC	40.5	E	25.4	D	55.9	F	29.0	D
7. I-15 Southbound Ramps / Quarry Road	SSSC	15.3	C	20.6	C	16.0	C	21.6	C
8. Johnson Road / Project Driveway	SSSC	Future Intersection				9.4	A	9.1	A
9. Navajo Road / Project Driveway	SSSC	Future Intersection				8.4	A	8.4	A

Notes:
‡ Delay cannot be calculated using the Highway Capacity Manual 6 algorithms because the intersection is over-saturated for the type of control being analyzed. In these conditions the intersection can result in exponentially high delays.
Shaded cells in the table represent intersection peak hours with LOS deficiencies (LOS E or F).
Abbreviations:
TWSC = Two-way (or side street) stop control, AWSC = All-way stop control, Not Applicable – Not Applicable Future Intersection Delay – seconds per vehicle, LOS – Level of Service

As presented in **Table 7-1**, the combination of ambient traffic and the addition of project traffic through the year 2040 causes intersection LOS deficiencies at the following four study intersections: Dale Evans Parkway / Johnson Road, Stoddard Wells Road / Johnson Road, Stoddard Wells Road / I-15 NB Ramps, and Stoddard Wells Road / Quarry Road.

The addition of project traffic in this scenario exacerbates the intersection LOS deficiencies that occur at the four intersections before the addition of project traffic. As a result, these intersections are identified as cumulative deficiencies occurring prior to the addition of project traffic.





LEGEND

XX/XX - AM/PM PCE TRAFFIC VOLUMES

(#) - STUDY INTERSECTIONS

- STOP CONTROLLED INTERSECTION

- SIGNAL CONTROLLED INTERSECTION

DAVID EVANS AND ASSOCIATES INC.

FIGURE 13: FUTURE YEAR WITH PROJECT PCE TRAFFIC VOLUMES
JOHNSON ROAD INDUSTRIAL
APPLE VALLEY, CALIFORNIA

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7.1.1 Level of Service With Recommended Improvements

The four existing side-street stop-controlled intersections of Dale Evans Parkway / Johnson Road, Stoddard Wells Road / Johnson Road, Stoddard Wells Rd / I-15 NB Ramps, and Stoddard Wells Rd / Quarry Rd experience failure in Future Plus Project Conditions.

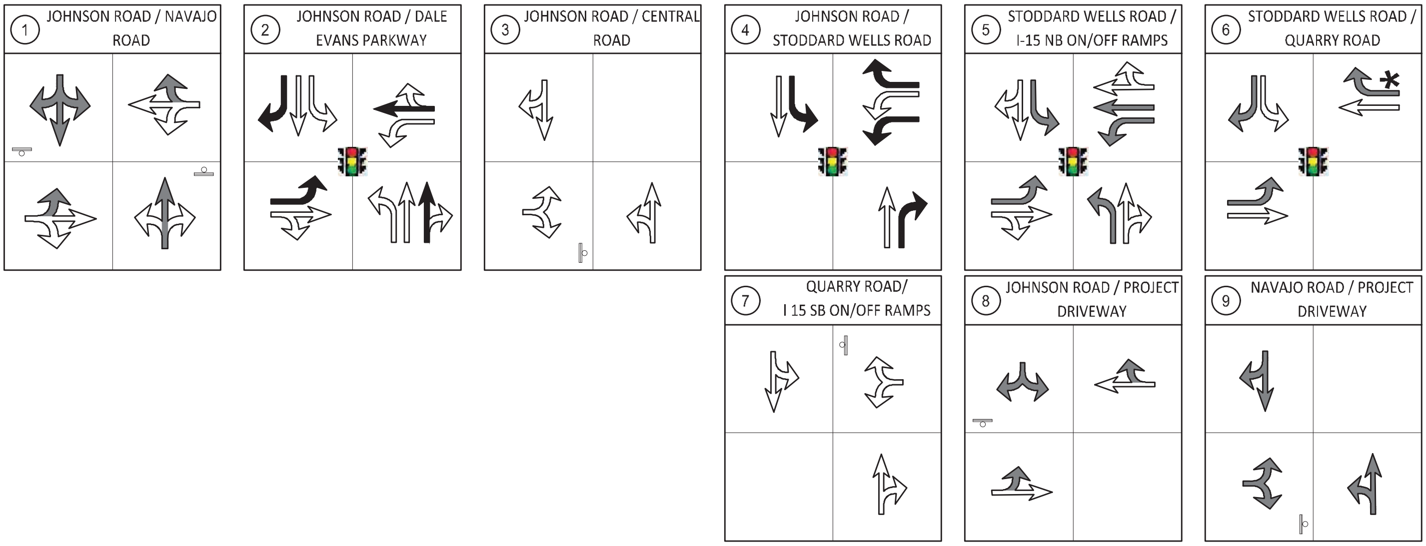
Improvements to the intersection of Stoddard Wells Rd / Outer Highway 15 / I-15 NB Ramps and the widening of the segment of Stoddard Wells Rd between Quarry Road to I-15 NB Ramps/Outer I-15 were identified in the approved Apple Valley 143 Transportation Impact Analysis, dated November 2022, by Dudek. Excerpt of the report is provided in **Appendix D.**

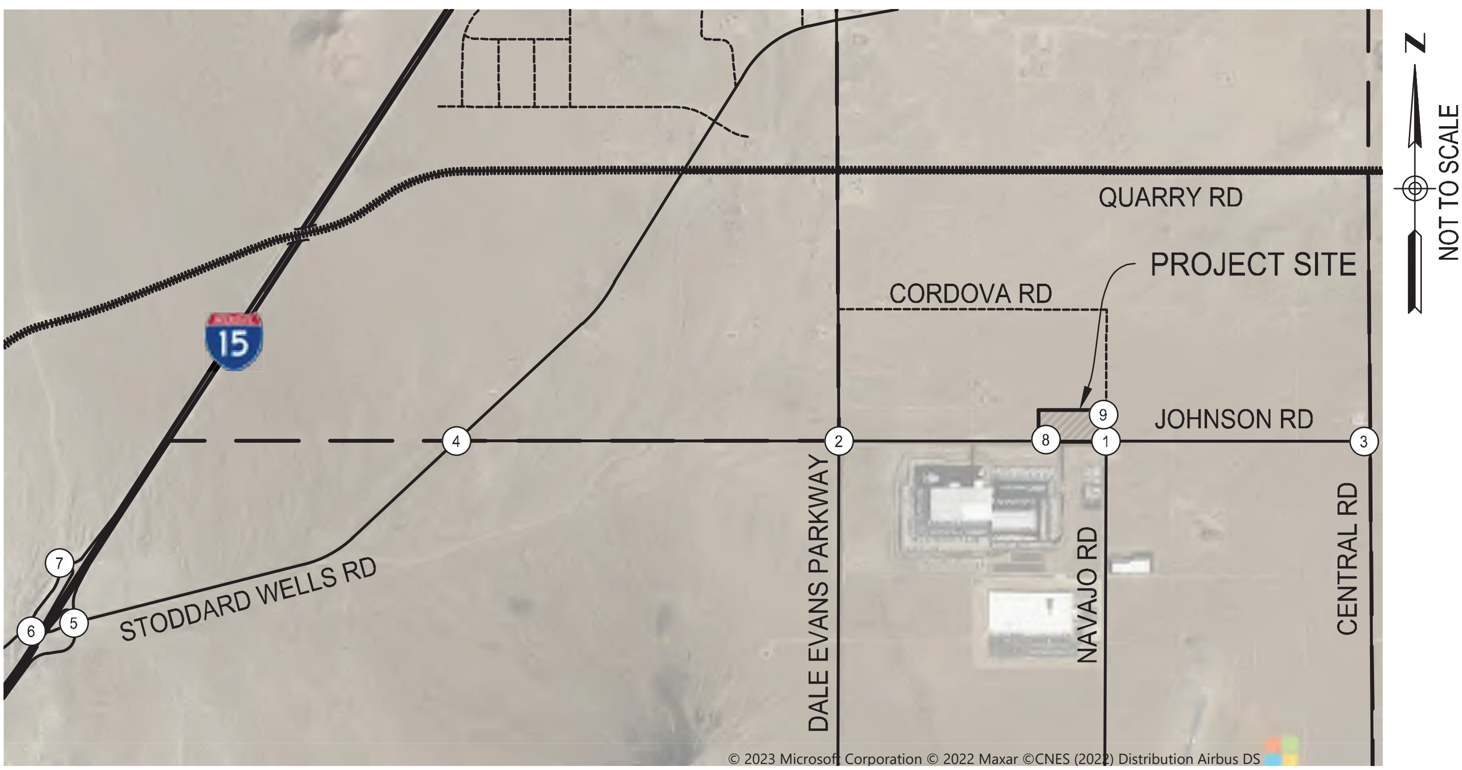
Table 7-2 provides the capacity analysis utilizing the long-term cumulative intersection improvements are outlined in **Chapter 1.4** and illustrated in **Figure 14.** The proposed mitigation improves the LOS deficiency, to a LOS D or better.

Table 7-2: Improved Level of Service Under Future 2040 + Project Conditions

Intersection	Control Type	Future Conditions				Future + Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
2.Dale Evans Parkway / Johnson Road	AWSC	13.1	B	37.3	E	15.1	C	53.0	F
w/cumulative improvements: install traffic signal and add a NBTH, SBR, EBL, and WBL	TS	Not Applicable				15.0	B	18.0	B
4. Stoddard Wells Road / Johnson Road	SSSC	15.7	C	110.3	F	17.5	C	200.6	F
w/cumulative improvements convert to AWSC, add SBL, SBTH, WBL, WBR, and free NBR	AWSC	Not Applicable				9.9	A	11.9	B
5. Stoddard Wells Road / I-15 Northbound Ramps	SSSC	‡	F	‡	F	‡	F	‡	F
w/cumulative improvements: retain near-term improvements	TS	Not Applicable				37.1	D	50.2	D
6. Stoddard Wells Road / Quarry Road	SSSC	40.5	E	25.4	D	55.9	F	29.0	D
w/cumulative improvements: retain near-term improvements	TS	Not Applicable				22.7	C	23.7	C

Notes:
‡ Delay cannot be calculated using the Highway Capacity Manual 6 algorithms because the intersection is over-saturated for the type of control being analyzed. In these conditions the intersection can result in exponentially high delays.
Shaded cells in the table represent intersection peak hours with LOS deficiencies (LOS E or F).
Abbreviations:
TWSC = Two-way (or side street SSSC) stop control, AWSC = All-way stop control, Not Applicable – Not Applicable Future Intersection Delay – seconds per vehicle, LOS – Level of Service





LEGEND

- EXISTING GEOMETRICS
- PROJECT GEOMETRICS
- FUTURE GEOMETRICS
- STUDY INTERSECTIONS
- STOP CONTROLLED INTERSECTION
- SIGNAL CONTROLLED INTERSECTION
* - FREE RIGHT TURN

DAVID EVANS AND ASSOCIATES INC.

FIGURE 14: FUTURE YEAR WITH PROJECT INTERSECTION GEOMETRICS JOHNSON ROAD INDUSTRIAL APPLE VALLEY, CALIFORNIA

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8 RECOMMENDED MITIGATION MEASURES AND PROJECT-SPECIFIC FRONTAGE IMPROVEMENTS

8.1 Recommended Mitigation Measures to Improve LOS Deficiencies

The recommended mitigation measures to improve intersections with deficient levels of service is described comprehensively beginning in **Section 1.4** of Section 1 (Executive Summary). The required mitigation measures (both near-term and long-term) are cumulative in nature in which the project contributes, but does not cause, the LOS deficits requiring mitigation.

8.1.1 Near-Term Improvements (Fair Share Contribution)

1. Stoddard Wells Rd / I-15 NB Ramps: install a traffic signal and widen the eastbound, westbound, northbound, and southbound approaches to accommodate turn lanes.
2. Stoddard Wells Rd / Quarry Rd: install a traffic signal and widen the eastbound, westbound, northbound, and southbound approaches to accommodate turn lanes.

8.1.2 Cumulative Long-Term Improvements (Fair Share Contribution)

1. Dale Evans Parkway / Johnson Road: install a traffic signal and widen the westbound, eastbound, northbound, and southbound approaches to accommodate additional turn lanes.
2. Stoddard Wells Road / Johnson Road: widen the westbound, northbound, and southbound approaches to accommodate additional turn lanes.
3. Stoddard Wells Rd / I-15 NB Ramps: Retain the near-term improvements.
4. Stoddard Wells Rd / Quarry Rd: Retain the near-term improvements.

8.2 Project-Specific Frontage and Access Improvements

The required project-specific frontage and access improvements described in **Section 1.9** of the Executive Summary and repeated below. These site frontage and access improvements are typically required in the town's Conditions of Approval:

3. **Construct access and site frontage improvements on Johnson Road:**
   b. Construct and improve the project's frontage with Johnson Road from the western project limit to Navajo Road.
      - The project will be required to dedicate land and construct the 71-foot half-width of a major divided parkway road section including the project's driveway accessing Johnson Road.
      - May include land dedication to accommodate additional lanes at the intersection of Johnson Road and Navajo Road if required by the town.
4. **Construct access and site frontage improvements on Navajo Road:**
   b. Construct and improve the project's frontage with Navajo Road.
      - The project will be required to dedicate land and construct the 44-foot half-width of Navajo Road's secondary road designation including the proposed driveway accessing Navajo Road.
      - May include land dedication to accommodate additional lanes at the intersection of Johnson Road and Navajo Road if required by the town.

8.3 Fair Share Calculations

The fair share percentages calculated in Chapter 1.5 are used to determine the Fair Share Fee for each intersection and by forecast year. The Fair Share Fee provided in **Table 8-1** represent the estimated cost associated with the near-term improvements described in **Section 8.1.1** for the Near-Term (Year 2025) Scenario and are based on background + project scenario traffic.

Table 8-1: Project's Fair Share of Deficient Intersections for Near-Term (Year 2025)

Intersection	Cost ($)	Fair Share %	Fair Share Fee
5. Stoddard Wells Road / I-15 Northbound Ramps	$1,400,000	10.2%	$142,462
6. Stoddard Wells Road / Quarry Road	$800,000	9.8%	$78,153
Notes: Project traffic used in calculating the fair-share percentage is based on Passenger Car Equivalents (PCEs).			

The Fair Share Fee provided in **Table 8-2** represent the estimated cost associated with the long-range cumulative measures described in **Section 8.1.2** for the Long-Term (Year 2040) Scenario and are based on the future 2040 + project conditions traffic.

Table 8-2: Project's Fair Share of Deficient Intersections for Long-Term (Year 2040)

Intersection	Cost ($)	Fair Share %	Fair Share Fee
2. Dale Evans Parkway / Johnson Road	$700,000	20.9%	$146,341
4. Stoddard Wells Road / Johnson Road	$900,000	17.3%	$155,437
5. Stoddard Wells Road / I-15 Northbound Ramps	Included in Near-Term Conditions		
6. Stoddard Wells Road / Quarry Road	Included in Near-Term Conditions		
Notes: Project traffic used in calculating the fair-share percentage is based on Passenger Car Equivalents (PCEs).			

9 VEHICLE MILES OF TRAVEL (VMT) ANALYSIS

The VMT analysis screening assessment included in the approved April 10, 2023, scoping agreement concluded that the Johnson Road Industrial Building (Warehouse) project was required to prepare a detailed analysis of project-generated VMT and its effect on VMT town-wide as part of the project's environmental clearance under CEQA.

The VMT analysis was prepared in accordance with the Town's adopted Resolution No. 2021-08 (Adopting Thresholds of Significance for Vehicle Miles Traveled (VMT) Under the California Environmental Quality Act (CEQA)) which states that a development project would result in a significant project-generated VMT impact if either of the following conditions are satisfied:

1. The baseline project generated VMT per service population (population plus employees) exceeds the Town of Apple Valley General Plan Buildout VMT per service population, or
2. The cumulative (2040) project generated VMT per service population exceeds the Town of Apple Valley General Plan Buildout VMT per service population.

In addition to project-generated VMT, the town adopted significance thresholds for a project's effect on VMT in Apple Valley. The resolution states that a project's effect on VMT would be considered significant if it resulted in either of the following conditions to be satisfied:

3. The baseline link-level boundary Town-wide VMT per service population increases under the plus project condition compared to the no project condition, or
4. The cumulative link-level boundary Town-wide VMT per service population increases under the plus project condition compared to the no project condition.

The term "link-level boundary Town-wide" refers to all vehicle miles of travel on all roadways within the town limits of Apple Valley. The following describes the key findings and the conclusions of the VMT analysis. The full report is in **Appendix F.**

C. Project-Generated VMT and Effect on Roadway VMT Analyses

The SBTAM model was used to estimate project-generated VMT for a baseline (2016) and a horizon year (2040) scenario. The SBTAM socioeconomic database for each scenario was updated with the project land use to calculate project VMT. The databases were also used to obtain the town's population and employment to estimate service population.

Table 9-1 on the following page present the outcome of the project-generated VMT analyses for the baseline and horizon year scenarios. As shown in **Table 9-1**, in both the baseline and horizon year scenarios, the VMT/service population metric for the Johnson Road Industrial Building (Warehouse) project is less than the Town of Apple Valley's general plan buildout significance threshold.

The outcome of the second analysis, the project's effect on town-wide VMT, is presented on the following page in **Table 9-2.** The SBTAM model was used to estimate the VMT on all roadways within the town's limits for the baseline and 2040 scenarios with and without the project. Using the resulting town-wide VMT, the metric indicating a significant impact (VMT/Service population) at a town-wide scale was calculated.

Table 9-2 shows that the VMT/Service population metric under the "with project" conditions compared to the metric under the "without project" conditions in both scenarios does not increase and does not satisfy the town's significance threshold described above.

D. Conclusions of the VMT Analyses

The VMT analysis conducted to identify potentially significant project-generated VMT impacts under CEQA concludes that the proposed project generates a VMT / Service population less than the VMT / Service population representing buildout of Apple Valley's general plan and, therefore, does not cause a significant impact based on the town's adopted significance thresholds for project-generated VMT.

Another VMT analysis conducted to identify potentially significant impacts of the project's "effects on town-wide VMT" under CEQA concludes that the VMT / service population metric for the baseline and horizon year scenarios "with the project" do not increase the metric over the "without project" scenarios. Therefore, the proposed Johnson Road Industrial Building (Warehouse) project does not have a significant impact based on the town's adopted significance thresholds for the project's effect on town-wide VMT.

Table 9-1: Project-Generated VMT Analysis

Metric	2016 Baseline Conditions		2040 Conditions	
	Johnson Road Warehouse (project)	Town of Apple Valley General Plan Buildout (Threshold) [a]	Johnson Road Warehouse (project)	Town of Apple Valley General Plan Buildout (Threshold) [a]
Population	0		0	
Employment [b]	180		180	
Service Population	180		180	
OD VMT [c]	5,950		5,694	
OD VMT per service population	33.1	33.2	31.6	33.2

Notes:
[a] Source: SBCTA VMT Screening Tool: https://www.gosbcta.com/vmtscreening
[b] Source: SCAG Employment Density Study Summary Report, October 31, 2001 (using 2,111 square feet per employee).
[c] The project's Origin/Destination (OD) VMT derived from the San Bernardino Traffic Analysis Model (SBTAM)
Source of analysis: General Technologies and Solutions (GTS)

Table 9-2: Project Effect on Roadway VMT within Town of Apple Valley

Metric	2016 Baseline		2040 Conditions	
	With Project	Without Project	With Project	Without Project
Roadway VMT [a]	849,362	847,823	1,361,983	1,362,981
Service population [b]	91,293	91,113	126,986	126,806
VMT per service population	9.3	9.3	10.7	10.7

Notes:
[a] Roadway VMT = sum of all vehicle miles travel on all streets within the town limits of Apple Valley
[b] Service population = sum of residents and employees in Apple Valley in the scenario being analyzed. Source: 2016 and 2040 land use summaries from the San Bernardino Traffic Analysis Model (SBTAM)
Source of analysis: General Technologies and Solutions (GTS)

10 APPENDICES

Appendix A: Approved Scope Agreement
Appendix B: Traffic Counts
Appendix C: Forecast Model Plots and Volume Development
Appendix D: Other Area Approved Developments Excerpts
Appendix E: Intersection Capacity Analysis Worksheets
Appendix F: VMT Analysis

Appendix A: Approved Scope Agreement

DAVID EVANS AND ASSOCIATES INC.

March 10, 2023 Job No. PIXI5AMG-0002

MEMORANDUM

REGISTERED PROFESSIONAL ENGINEER JAMES M. DAISA No. TR 1624 TRAFFIC STATE OF CALIFORNIA

To: Mr. Simon Bouzaglou
55555 Amargosa LLC
5901 South Eastern Avenue
Commerce, CA 90040

From: James Daisa, PE
Senior Transportation Project Manager / Associate

RE: FOCUSED TRAFFIC IMPACT ANALYSIS SCOPING AGREEMENT FOR THE PROPOSED JOHNSON ROAD INDUSTRIAL BUILDING (WAREHOUSE) LOCATED IN THE NWC OF JOHNSON ROAD AND NAVAJO ROAD, TOWN OF APPLE VALLEY, CA (A.P.N. 0463-213-26, 27, 28)

This memorandum presents key elements of the proposed Focused Traffic Impact Analysis (TIA Report) scope of work for the above referenced development project. The purpose of this memorandum is to inform the Town of Apple Valley of the TIA's assumptions and methodologies prior to preparing the analysis. We will incorporate any changes specified by the Town, and once approved, this document will serve as our notification to proceed.

The Town of Apple Valley does not have guidelines for conducting intersection level of service deficiency studies, therefore the assumptions and methods described in this document conform to San Bernardino County's Transportation Impact Study Guidelines (July 2019). With respect to VMT impacts, the Town of Apple Valley adopted Resolution No. 2021-08 in May 2021. This resolution defines the Town's thresholds of significance for project generated VMT and the project's overall effect of VMT at the town-wide scale. The resolution also defines the specific methods for analyzing VMT in Apple Valley.

The Town has not, however, adopted criteria for screening development from requiring a VMT analysis under CEQA. This scoping agreement uses the county's screening criteria to identify if the Proposed Johnson Road Industrial Project requires a VMT analysis as part of its environmental review.

A. Project Description

The Proposed Johnson Road Industrial Project consists of a 379,657 square foot speculative industrial warehouse building located on approximately 18.71-acres in the north part of the town and within the North Apple Valley Industrial Specific Plan area. The North Apple Valley Industrial Specific Plan is the regulatory plan that governs all development within its boundaries. It designates land uses and provides design standards for the construction of buildings and defines the area's required infrastructure for transportation / circulation, public services, and utilities.

The project site is located at the northwest corner of Johnson Road and Navajo Road, as illustrated in **Exhibit A**. The site is bounded to the north by undeveloped land; to the south by Johnson Road and Victor Valley Community College Regional Public Safety Training Center and the existing Walmart Distribution Center south of Johnson Road; to the west by undeveloped land; and to the east by unimproved Navajo Road and undeveloped land. The warehouse building includes 63 loading docks on north side, 166 automobile parking spaces, and 92 trailer parking spaces. **Exhibit B** shows the proposed site plan.

Site Access and Circulation Improvements

Access to the site will be from driveways on Johnson Road and Navajo Road. The proposed circulation and access include improving Navajo Road from Johnson Road to Project boundary and providing a driveway on Johnson Road. One commercial driveway is proposed on Johnson Road accessing the site's automobile parking, in the study this driveway will be assumed as the primarily auto access. It is assumed in the study the primary truck access to the secure gated loading dock and truck/trailer parking area is provided by a commercial driveway on Navajo Road (approximately 560 feet north of Johnson Road (measured from centerline to centerline)). The internal gates securing the loading dock and truck / trailer parking area of the site are setback from Navajo Road by about 80 feet—enough space for a single interstate truck/trailer combination. The site as shown in **Exhibit B**.

B. Project Trip Generation

The Proposed Johnson Road Industrial Project is a speculative warehouse where the tenant(s) and function as a potential short term storage facility, distribution center, fulfillment center, etc. is unknown. While the impact analysis needs to reflect a reasonable spectrum of tenant types, there is a risk when estimating trip generation of over or under-estimating traffic. The 11th Edition of the Institute of Transportation Engineers' Trip Generation manual contains data for the most common types of warehouse operations with a wide range of rates. **Table 1** summarizes the trip generation rates for warehouse facilities in the current edition of ITE's Trip Generation.

Table 1: Trip Generation Rates for ITE Land Use Categories of Warehousing

Warehouse Type	ITE Land Use Code	Average Trip Generation Rates for Warehouse Types (Trips Per KSF) (Source: ITE Trip Generation 11th Edition)		
		Average Daily Traffic	AM Peak Hour of Adjacent Street Traffic	PM Peak Hour of Adjacent Street Traffic
		Total (In + Out)	Total (In + Out)	Total (In + Out)
High-Cube Transload and Short-Term Storage Warehouse	154	1.54	0.08	0.10
High-Cube Cold Storage Warehouse	157	2.12	0.11	0.12
High-Cube Fulfillment Center Warehouse - Non-Sort	155	1.81	0.15	0.16
General Warehouse	150	1.71	0.17	0.18
High-Cube Parcel Hub Warehouse	156	4.63	0.70	0.64
High-Cube Fulfillment Center Warehouse - Sort	155	6.44	0.87	1.20
Average of All Warehouse Types		3.04	0.35	0.40
Average Without High-Cube Sort Fulfillment Center		2.36	0.24	0.24

To help select a trip generation rate for the Proposed Johnson Road Industrial Project representative of the range of potential owners/tenants, **Table 1** includes the average of the rates for all warehouse types in the ITE Trip Generation manual and the average of the rates for all warehouse types except High-Cube Fulfillment Sort Facility—the most intensive type of warehouse. The secondary average rate (excluding High-Cube Fulfillment Sort Facility) represents two thirds the ITE warehouse types and covers a broad range of tenant types and operations.

Table 2 summarizes the estimated trip generation of the Proposed Johnson Road Industrial Project for an average weekday, and weekday AM (7-9 AM) and PM (4-6 PM) peak hours, based on the secondary average rates identified in **Table 1**. The Proposed Johnson Road Industrial Project complex would generate about 896 vehicle trips per day and 91 vehicle trips in both the AM and PM peak hours.

It is standard practice to convert vehicle trips to passenger car equivalents (PCEs) for intersection capacity analysis. This conversion reflects the effects of large vehicles on intersection operations both from the physical space a truck occupies but also from their effect on the intersection's saturation flow rate due to the slower acceleration of trucks.

When converted to PCEs, the Proposed Johnson Road Industrial Project generates approximately 1,259 daily PCEs, and 128 PCEs in both the AM and PM peak hours.

Table 2: Project Trip Generation

Land Use	Gross Floor Area (KSF)	Daily	AM Peak Hour of Adjacent Street Traffic			PM Peak Hour of Adjacent Street Traffic		
			In	Out	Total	In	Out	Total
Warehouse (Rates are the Average of ITE Land Use Categories 150, 154, 156, and 157)	379.66	Vehicle Trip Generation Rates (Trips Per 1,000 Square Feet of Gross Floor Area)						
		2.36	0.18	0.06	0.24	0.07	0.17	0.24
		Total Vehicle Trip Generation						
		896	70	21	91	26	66	91
	Mode Share	Project Trip Generation by Vehicle Type						
Passenger Cars (Percent of Total)	74.21%	665	52	16	68	19	49	68
2-Axle Trucks (Percent of Total)	4.55%	41	3	1	4	1	3	4
3-Axle Trucks (Percent of Total)	4.18%	37	3	1	4	1	3	4
4-Axle Trucks (Percent of Total)	17.04%	153	12	4	16	4	11	16
	PCE Factor	Project Trip Generation in Passenger Car Equivalents (PCE)						
Passenger Cars)	1.0	665	52	16	68	19	49	68
2-Axle Trucks	1.5	61	5	1	6	2	4	6
3-Axle Trucks	2.0	75	6	2	8	2	5	8
4 + Axle Trucks	3.0	458	36	11	47	13	34	47
Total Passenger Car Equivalents (PCE)		**1,259**	**99**	**29**	**128**	**36**	**92**	**128**

Notes:
KSF = Thousands of Square Feet.
AM / PM Peak Hour of Adjacent Street Traffic = Trip generation coinciding with the highest hourly volumes of traffic on the adjacent streets during the AM (7:00 AM and 9:00 AM) and PM (4:00 PM and 6:00 PM) commuter peak periods.
Source of trip generation rates: Institute of Transportation Engineers (ITE) Trip Generation (11th Edition). Average rates for land use category 150 (Warehouse).
Source of passenger car / truck mode share (percentage of total): South Coast Air Quality Management District High Cube Warehouse Trip Generation Study (2016). Based on data from eight high cube warehouses in the Inland Empire over 1,000,000 square feet in size. The average warehouse building size is 1,364,496 square feet.
Passenger Car Equivalents (PCE) factors: Industry standard values utilized in neighboring jurisdictions

C. Study Intersections

This focused traffic study evaluates key intersections on routes expected to be used by project traffic to access the site. **Exhibit C** and the list below identify the intersections proposed for inclusion in the study.

1. Navajo Road / Johnson Road
2. Dale Evans Parkway / Johnson Road
3. Central Road / Johnson Road
4. Stoddard Wells Road / Johnson Road
5. Stoddard Wells Road / I-15 Northbound Ramps
6. Stoddard Wells Road / Quarry Road
7. I-15 Southbound Ramps / Quarry Road
8. Johnson Road / Project Driveway
9. Navajo Road / Project Driveway

Project driveways will be reviewed for required traffic control and the primary truck gated driveway will be analyzed for traffic control, lane geometries, and queuing behind the access gate based on industry standard gate processing time.

All the study intersections are currently side-street stop controlled, or all-way stop-controlled.

D. Project Trip Distribution and Assignment

Project traffic is distributed by direction separately for automobiles (employees) and trucks. The automobile distribution is based on where the warehouse employees are likely to reside or perform other activities (e.g., concentration of residential neighborhoods and commercial centers). The truck distribution is based on the most direct routes to major roadways and highways trucks are likely to use to access the project and depart for delivery of freight. Project trips are assigned to the area streets that provide the most direct route to the destinations.

Exhibit D1 shows the distribution of project-generated automobile to roadways as a percentage by direction and route. **Exhibit D2** shows the distribution of truck trips to roadways as a percentage by direction and route. The following exhibits show the assignment of project generated traffic at the study intersections. Truck traffic volumes have been converted into passenger car equivalents (PCEs) as required in the San Bernardino County guidelines for intersection capacity analysis. **Exhibit E** shows the total project PCE trips.

E. Traffic Analysis Scenarios

The traffic analysis scenarios, consistent with the county's impact analysis guidelines, include:

1. Existing Conditions AM (7-9 AM) and PM (4-6 PM)
2. Background Conditions (year 2025)
   a. representing the projects opening year growth in ambient traffic
   b. Growth forecasts (based on the estimated combination of the ambient growth in traffic plus traffic generated by nearby, but unidentified, development equaling 3.5% annually).
3. Background (Year 2025) + Project Conditions
   a. Project traffic in PCE's added to Background Conditions forecasts
4. Cumulative (Year 2040) Conditions
   a. representing the regional planning horizon of 2040 without project[1]
   b. Forecasts derived from the San Bernardino Transportation Analysis Model (SBTAM) representing buildout of the General Plan
5. Cumulative (Year 2040) Conditions Plus Project
   a. Project traffic in PCE's added to the Cumulative (Year 2040) Conditions forecasts

F. Level of Service Standard

The Town's General Plan policy on level of service is to maintain a level of service (LOS) D in the AM and PM peak hours.

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[1] Caltrans typically requires that cumulative traffic forecasts represent a 20-year design life for infrastructure. If required, the cumulative scenario will be linearly extrapolated to the year 2044.

G. Analyses Included in Traffic Impact Analysis

- Intersection capacity analyses will be conducted using SYNCHRO software based on the unsignalized methods in the 6th Edition of the Highway Capacity Manual.
- A traffic signal warrant analysis (warrant 3 – peak hour) will be conducted at public intersections found to operate at LOS E or F under any project scenario.

H. Vehicle Miles of Travel (VMT) Screening

The Town of Apple Valley has adopted thresholds of significance for potential VMT impacts of development as well as the specific methodology for analyzing VMT impacts (Resolution No. 2021-08 - Adopting Thresholds of Significance for Vehicle Miles Traveled (VMT) Under the California Environmental Quality Act (CEQA)). According to the Town's resolution a development project would result in a significant project-generated VMT impact if either of the following conditions are satisfied:

1. The baseline (2023) project generated VMT per service population (population plus employees) exceeds the Town of Apple Valley General Plan Buildout VMT per service population, or
2. The cumulative (2040) project generated VMT per service population exceeds the Town of Apple Valley General Plan Buildout VMT per service population

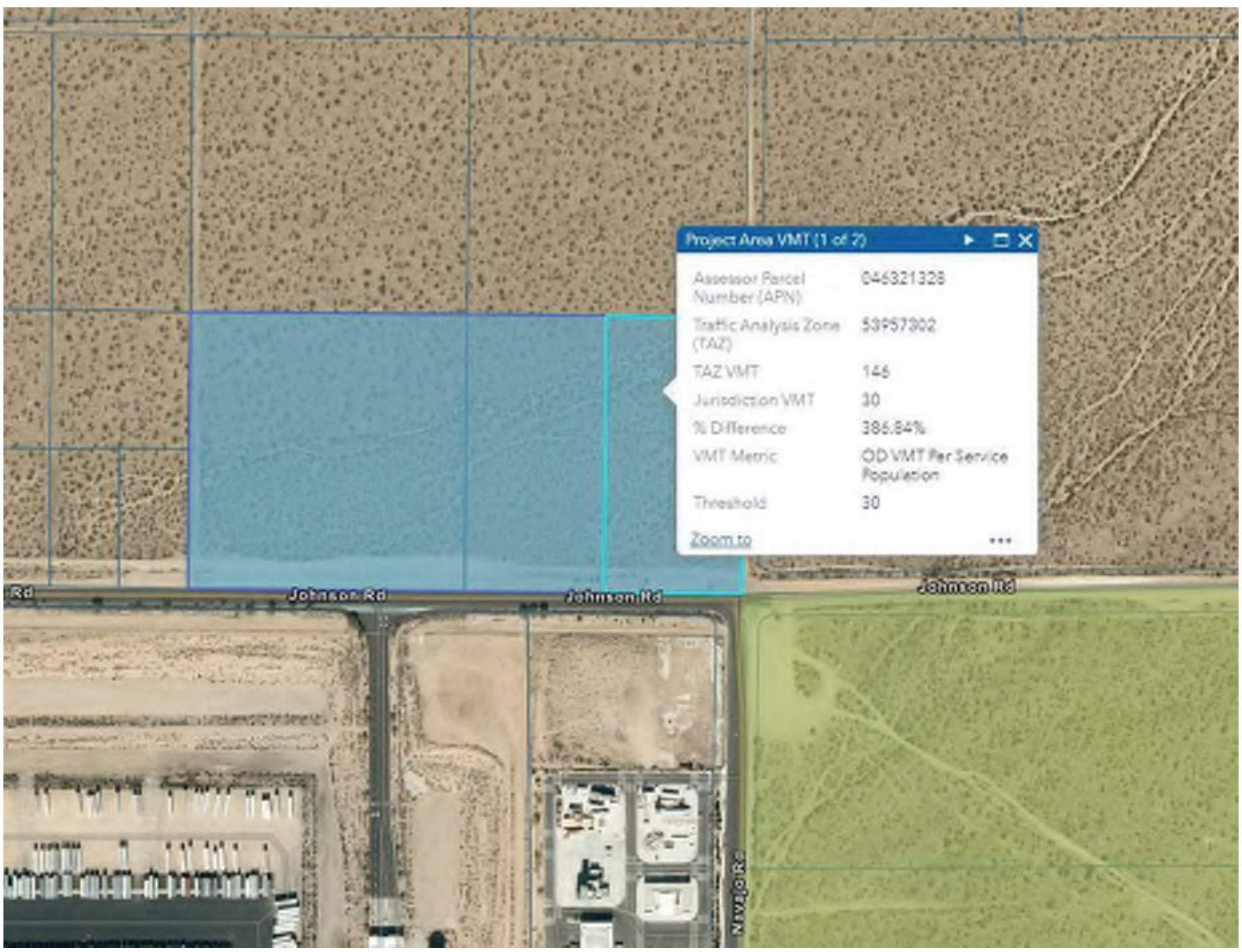


Figure 1: low VMT generating traffic analysis zones are highlighted in green. The traffic analysis zone in which the project is located is forecast to generate VMT that exceeds the jurisdictional threshold based on allowed General Plan land uses. Therefore, the proposed project is not located in a low VMT generating area.

The proposed project parcels (indicated in blue) are not in a low VMT-generating Traffic Analysis Zone (which are indicated in green) in baseline year 2023 and in future year 2040 conditions. The TAZ containing the project exceeds the county's VMT / Service population threshold by more than 385% in baseline conditions and a little over 100% in future 2040 conditions. Because the project does not satisfy any of the county's screening criteria it is required to prepare a VMT analysis. Source: San Bernardino County Transportation Authority (SBCTA) VMT Screening Tool. https://sbcta.maps.arcgis.com/apps/webappviewer/index.html?id=779a71bc659041ad995cd48d9ef4052b

The Town, however, has not adopted criteria for screening projects from requiring a VMT analysis. The county and nearby municipalities have adopted such criteria consistent with the technical advisories published by the Governor's Office of Planning and Research. In this scoping agreement, the county's screening criteria are applied to the Proposed Johnson Road Industrial Project for the Town's consideration.

Applying the county's VMT screening criteria results in demonstrating that the proposed project requires a detailed VMT analysis under CEQA.

Screening criteria includes:

1. The project serves the local community and has the potential to reduce VMT by providing services that capture trips locally (the Proposed Johnson Road Industrial Project is not a locally serving type of land use).
2. The project is located within a Transit Priority Area (the Proposed Johnson Road Industrial Project is not located in a TPA).
3. The project generates less than 110 daily vehicle trips (the Proposed Johnson Road Industrial Project generates more than 110 daily trips).
4. The project is in a low VMT generating traffic analysis zone (the Proposed Johnson Road Industrial Project is not located in a low VMT generating zone in baseline year 2022, see **Figure 1**).

The proposed project does not meet the county's four screening criteria and therefore is required to conduct a VMT analysis to identify potentially significant impacts under CEQA.

If you have any questions or comments, please feel free to contact me at (909) 912-7304.

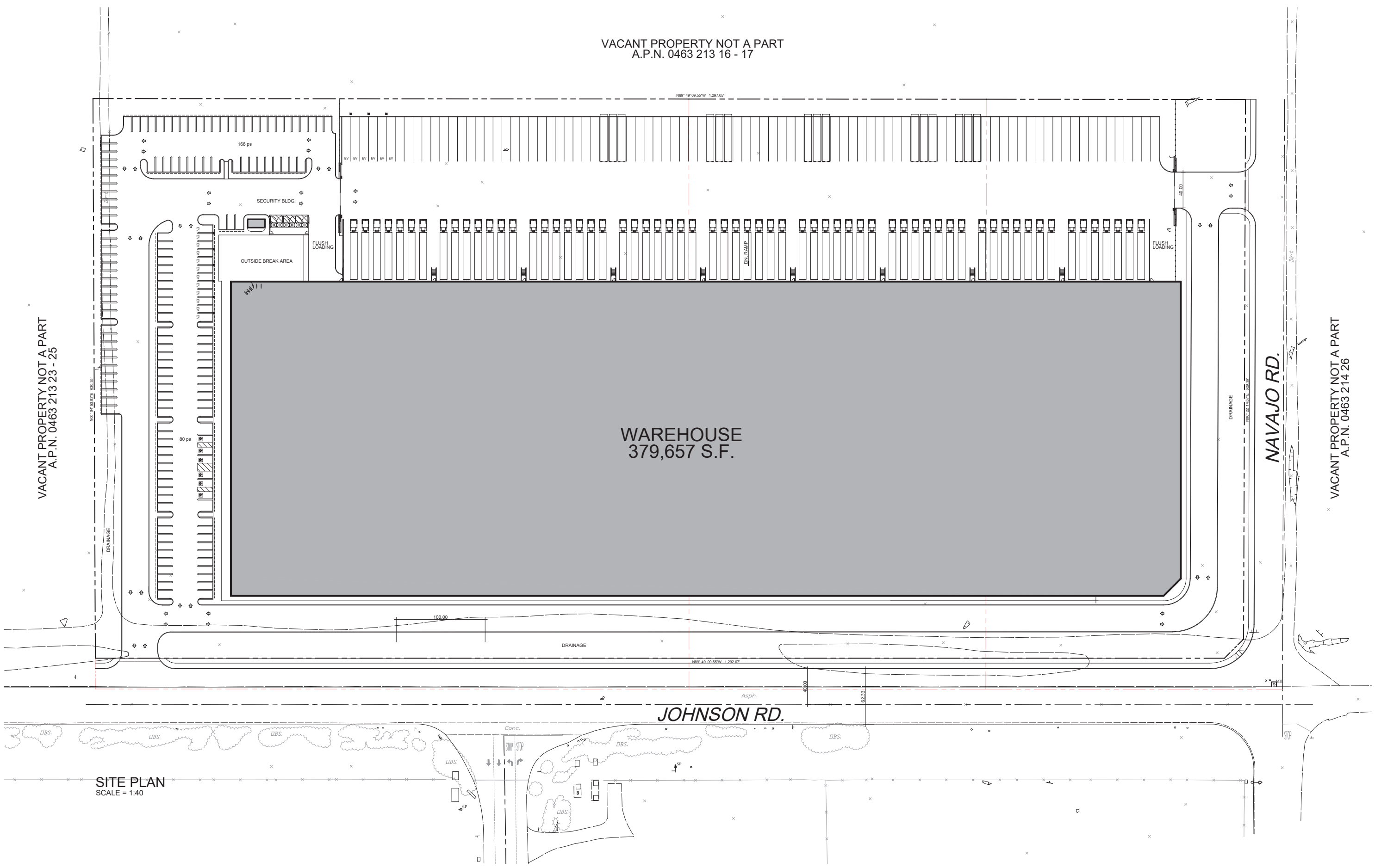
Attachments:

1. Exhibit A –Vicinity Map
2. Exhibit B – Project Site Plan
3. Exhibit C – Study Intersections
4. Exhibit D1 – Project Automobile Distribution
5. Exhibit D2 – Project Truck Trip Distribution
6. Exhibit E – Total Project PCE Trips (AM Peak Hour)

DAVID EVANS AND ASSOCIATES INC.

EXHIBIT A: VICINITY MAP
JOHNSON ROAD INDUSTRIAL
APPLE VALLEY, CALIFORNIA

Drawing Name: \\deainc.com\files\PROJECT\P\PIXI5AMG0002\0400CAD\TT\EXHIBITS\Scope\Exhibit A.dwg
Last Opened: Mar 08, 2023 - 2:15pm by: heay



DAVID EVANS AND ASSOCIATES INC.

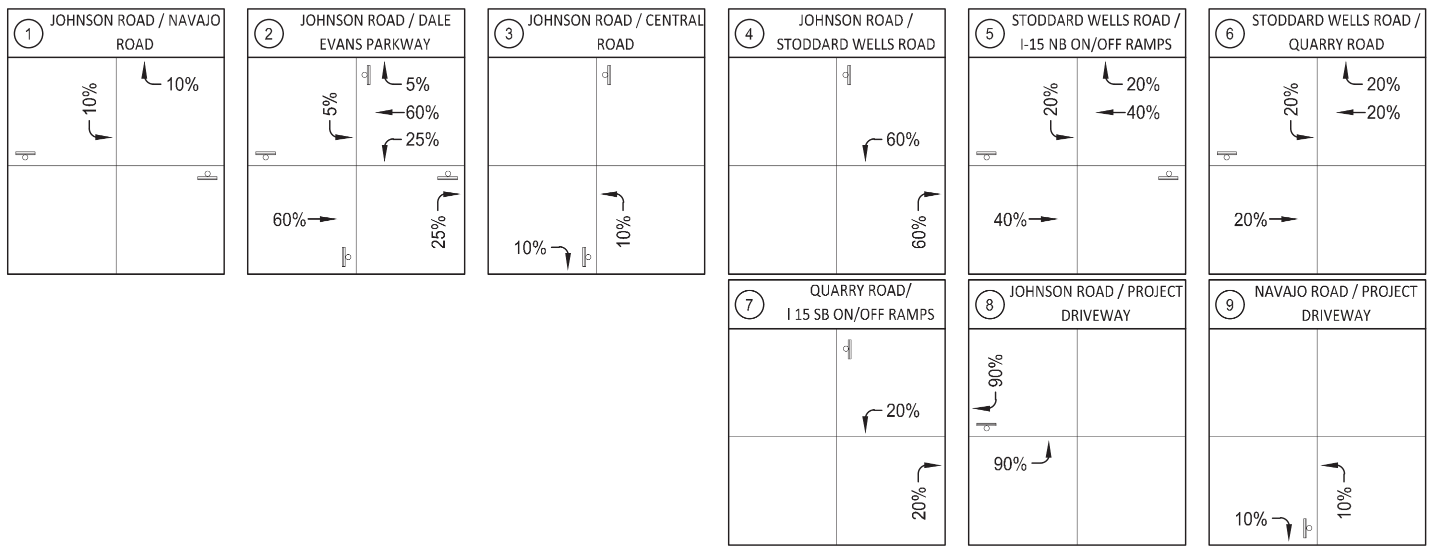
EXHIBIT B: PROJECT SITE PLAN
JOHNSON ROAD INDUSTRIAL
APPLE VALLEY, CALIFORNIA

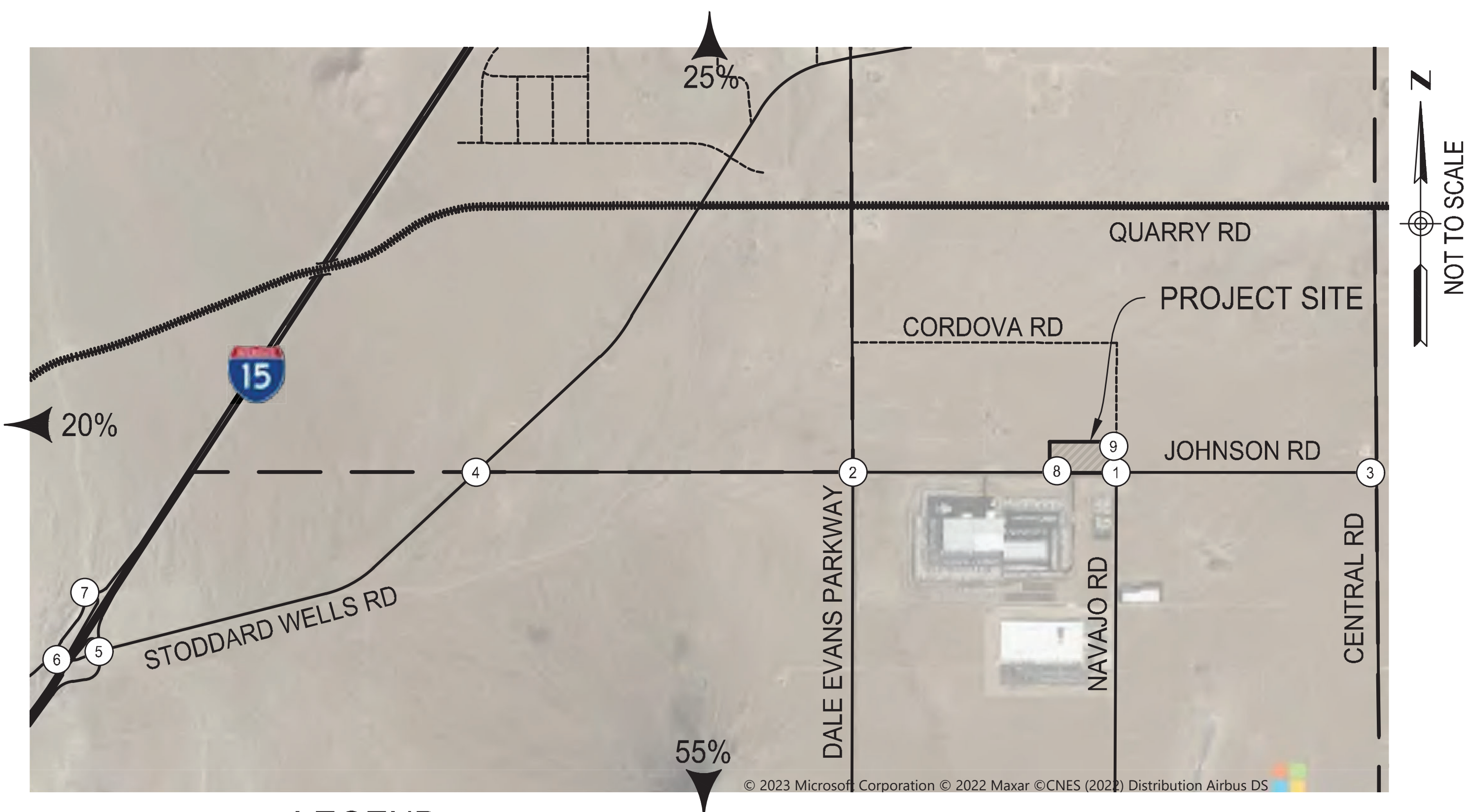
Drawing Name: \\deainc.com\files\PROJECT\P\PIXI5AMG0002\0400CADITT\EXHIBITS\Scope\Exhibit B.dwg
Last Opened: Mar 08, 2023 - 2:15pm by: heay

DAVID EVANS AND ASSOCIATES INC.

EXHIBIT C: STUDY INTERSECTIONS
JOHNSON ROAD INDUSTRIAL
APPLE VALLEY, CALIFORNIA

Drawing Name: P:\P\PIXI5AMG00020400CAD\TT\EXHIBITS\Scope\Exhibit C.dwg
Last Opened: Mar 10, 2023 - 7:05am by: Tnm





LEGEND

XX% - GENERAL PROJECT TRIP DISTRIBUTION

XX% - SPECIFIC PROJECT TRIP PERCENTAGE

- STUDY INTERSECTIONS

- STOP CONTROLLED INTERSECTION

- SIGNAL CONTROLLED INTERSECTION

DAVID EVANS AND ASSOCIATES INC.

EXHIBIT D1: PROJECT AUTOMOBILE TRIP DISTRIBUTION
JOHNSON ROAD INDUSTRIAL
APPLE VALLEY, CALIFORNIA

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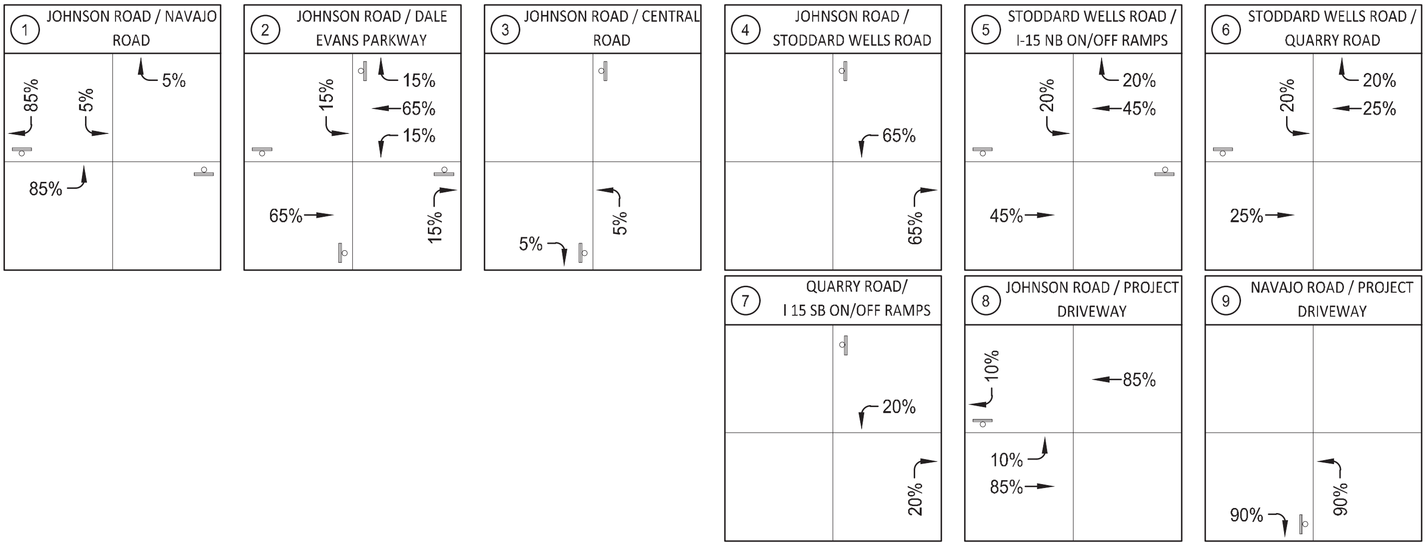

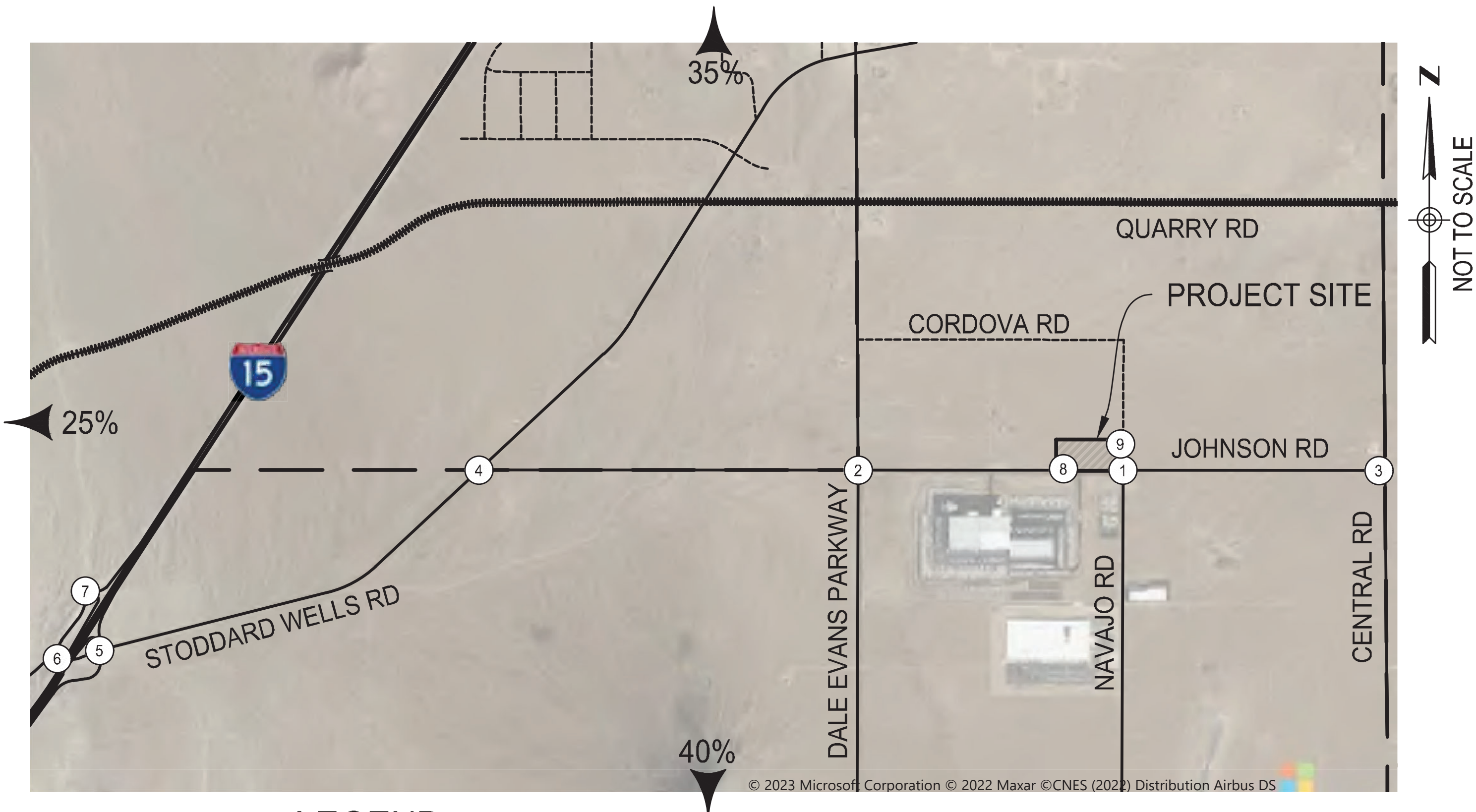

LEGEND

XX% - GENERAL PROJECT TRIP DISTRIBUTION

XX% - SPECIFIC PROJECT TRIP PERCENTAGE

- STUDY INTERSECTIONS

- STOP CONTROLLED INTERSECTION

- SIGNAL CONTROLLED INTERSECTION

DAVID EVANS AND ASSOCIATES INC.

EXHIBIT D2: PROJECT TRUCK TRIP DISTRIBUTION
JOHNSON ROAD INDUSTRIAL
APPLE VALLEY, CALIFORNIA

Drawing Name: P:\P\PIXI5AMG00020400\CADT\EXHIBITS\Scope\Exhibit D2.dwg
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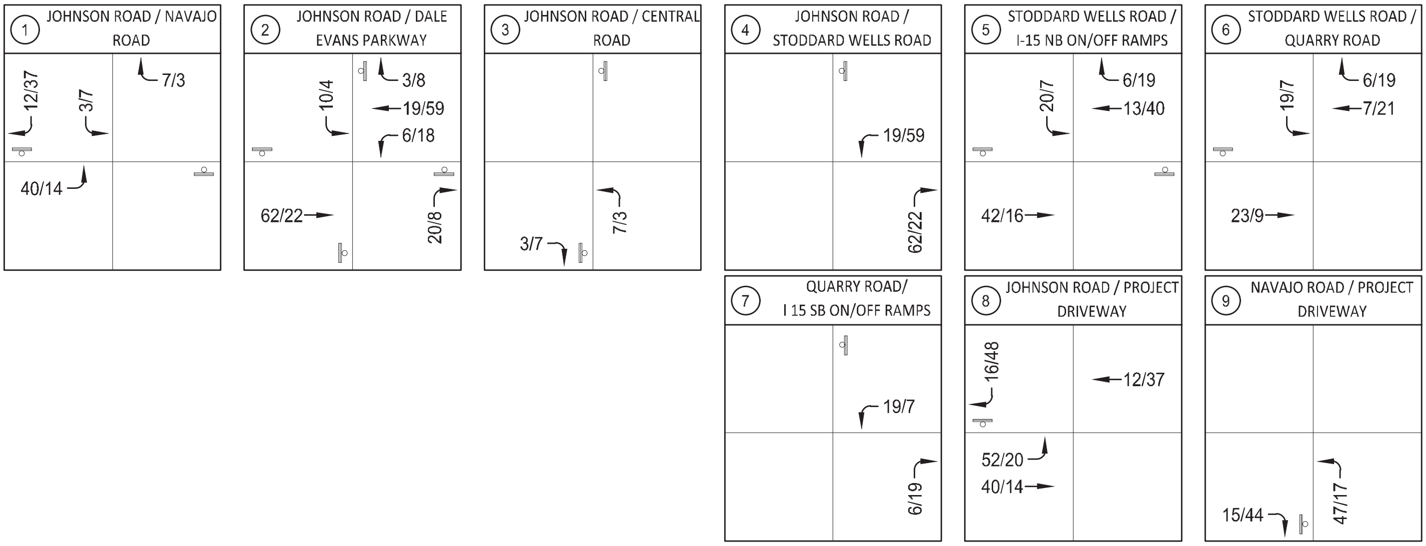
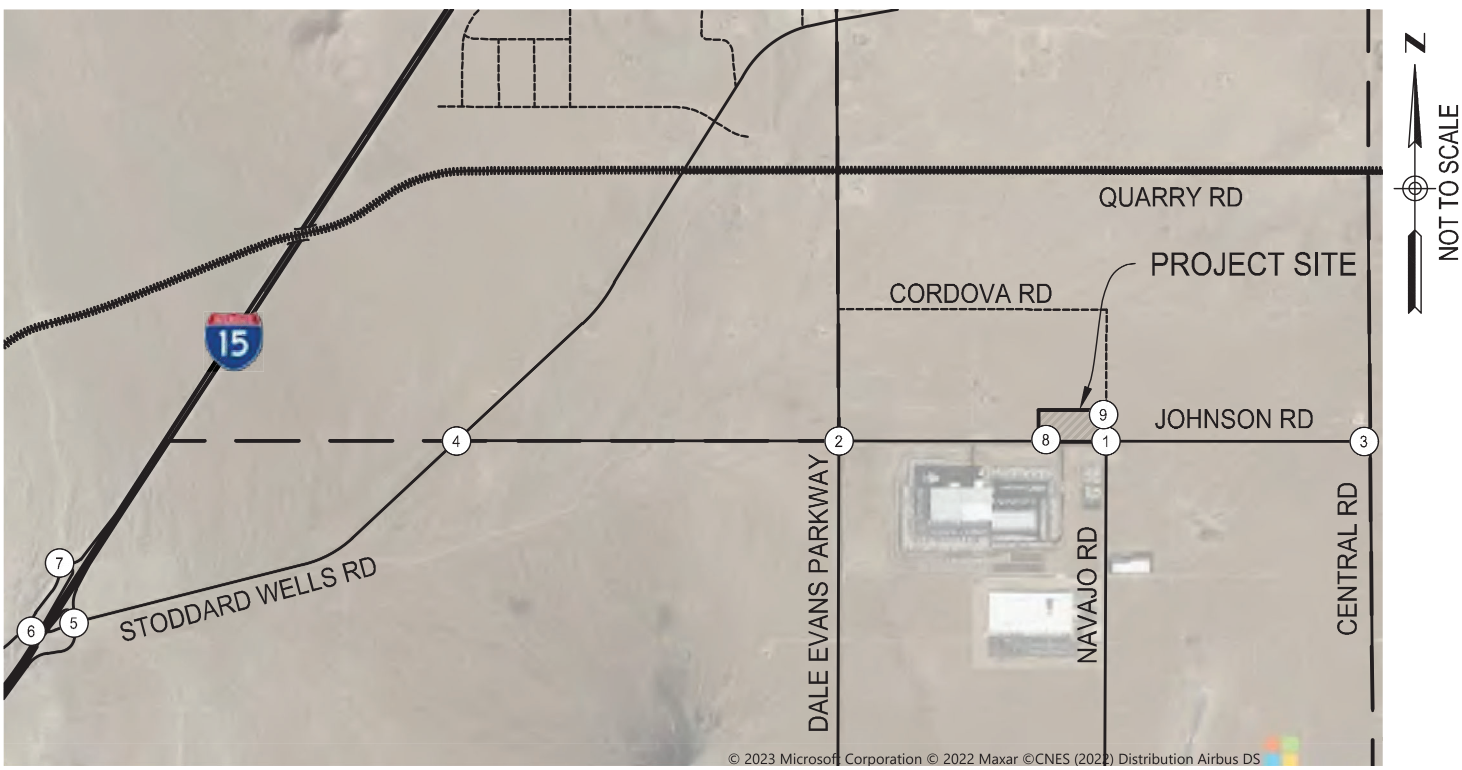




TOTAL PROJECT PCE TRIPS

AM PEAK HOUR TRIPS	- 99 IN / 30 OUT
PM PEAK HOUR TRIPS	- 36 IN / 92 OUT

LEGEND

XX/XX - AM/PM TOTAL PCE PROJECT TRIPS

(#) - STUDY INTERSECTIONS

- STOP CONTROLLED INTERSECTION

- SIGNAL CONTROLLED INTERSECTION

DAVID EVANS AND ASSOCIATES INC.

EXHIBIT E: TOTAL PROJECT PCE TRIPS
JOHNSON ROAD INDUSTRIAL
APPLE VALLEY, CALIFORNIA

Drawing Name: P:\P\PIXI5AMG00020400CAD\TT\EXHIBITS\Scope\Exhibit E.dwg
Last Opened: Mar 10, 2023 - 7:06am by: Tnm

Appendix B: Traffic Counts

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: NAVAJO RD
EAST-WEST STREET: JOHNSON RD
JURISDICTION: APPLE VALLEY

DATE: 11-03-22

PEAK HOUR: 07:45AM

NORTH LEG

TOTAL: 0

	Rt	Thru	Lt
Total			
1st	0	0	0
2nd	0	0	0
3rd	0	0	0
4th	0	0	0

EAST LEG TOTAL: 35

	1st	2nd	3rd	4th	Total
Rt	0	0	0	0	
Thru	1	8	14	10	33
Lt	2	0	0	0	2

	Total	1st	2nd	3rd	4th
Lt		0	0	0	0
Thru	6	3	0	1	2
Rt	53	10	11	20	12

WEST LEG TOTAL: 59

PEAK HOUR FACTORS

NORTH LEG =
SOUTH LEG = 0.81
EAST LEG = 0.63
WEST LEG = 0.70

ALL LEGS = 0.73

	Lt	Thru	Rt
1st	22	0	0
2nd	22	0	0
3rd	25	0	2
4th	16	0	0
Total	85		2

TOTAL: 87

SOUTH LEG

HOUR TOTAL: 181

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : NAVAJO RD — APPLE VALLEY

EAST-WEST STREET : JOHNSON RD — 11-03-22

BEGINNING TIME : 07:00AM

AUTOS			LARGE 2 AXLE			3 AXLE			4(+) AXLE			TOTALS
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
NORTH LEG												
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH LEG												
0	0	13	0	0	0	0	0	0	0	0	2	15
0	0	18	0	0	1	0	0	1	0	0	0	20
0	0	19	0	0	0	0	0	0	0	0	2	21
0	0	17	0	0	2	0	0	1	0	0	2	22
0	0	22	0	0	0	0	0	0	0	0	0	22
2	0	23	0	0	1	0	0	0	0	0	1	27
0	0	16	0	0	0	0	0	0	0	0	0	16
1	0	15	0	0	0	0	0	0	0	0	0	16
3	0	143	0	0	4	0	0	2	0	0	7	159
EAST LEG												
0	3	0	0	0	0	0	0	0	0	0	0	3
0	5	0	0	0	0	0	0	0	0	0	0	5
0	1	2	0	0	0	0	1	0	0	0	0	4
0	1	2	0	0	0	0	0	0	0	0	0	3
0	7	0	0	0	0	0	0	0	0	1	0	8
0	14	0	0	0	0	0	0	0	0	0	0	14
0	9	0	0	0	0	0	1	0	0	0	0	10
0	9	1	0	0	0	0	0	0	0	1	0	11
0	49	5	0	0	0	0	2	0	0	2	0	58
WEST LEG												
8	2	0	0	0	0	1	0	0	1	0	0	12
9	2	0	2	0	0	0	0	0	0	0	0	13
8	4	0	0	0	0	0	0	0	2	0	0	14
10	3	0	0	0	0	0	0	0	0	0	0	13
10	0	0	0	0	0	0	0	0	1	0	0	11
20	1	0	0	0	0	0	0	0	0	0	0	21
12	2	0	0	0	0	0	0	0	0	0	0	14
11	0	0	0	0	0	0	0	0	0	0	0	11
88	14	0	2	0	0	1	0	0	4	0	0	109

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: NAVAJO RD

EAST-WEST STREET: JOHNSON RD

TIME: 07:00AM-08:00AM DATE: 11-03-22

NORTH LEG

	Rt	Thru	Lt
Total	0	0	0
1st	0	0	0
2nd	0	0	0
3rd	0	0	0
4th	0	0	0

	1st	2nd	3rd	4th	Total
Rt	0	0	0	0	0
Thru	3	5	2	1	11
Lt	0	0	2	2	4

Total	1st	2nd	3rd	4th	
0	0	0	0	0	Lt
11	2	2	4	3	Thru
41	10	11	10	10	Rt

	Lt	Thru	Rt
1st	15	0	0
2nd	20	0	0
3rd	21	0	0
4th	22	0	0
Total	78	0	0

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: NAVAJO RD

EAST-WEST STREET: JOHNSON RD

TIME: 08:00AM-09:00AM DATE: 11-03-22

NORTH LEG

	Rt	Thru	Lt
Total	0	0	0
1st	0	0	0
2nd	0	0	0
3rd	0	0	0
4th	0	0	0

	1st	2nd	3rd	4th	Total
Rt	0	0	0	0	0
Thru	8	14	10	10	42
Lt	0	0	0	1	1

	Total	1st	2nd	3rd	4th
Lt	0	0	0	0	0
Thru	3	0	1	2	0
Rt	54	11	20	12	11

	Lt	Thru	Rt
1st	22	0	0
2nd	25	0	2
3rd	16	0	0
4th	15	0	1
Total	78	0	3

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: NAVAJO RD
EAST-WEST STREET: JOHNSON RD
JURISDICTION: APPLE VALLEY

DATE: 11-03-22

PEAK HOUR: 04:15PM

NORTH LEG

TOTAL: 0

	Rt	Thru	Lt
Total			
1st	0	0	0
2nd	0	0	0
3rd	0	0	0
4th	0	0	0

EAST LEG TOTAL: 32

	1st	2nd	3rd	4th	Total
Rt	0	0	0	0	
Thru	6	5	9	10	30
Lt	1	1	0	0	2

WEST LEG

	Total	1st	2nd	3rd	4th
Lt		0	0	0	0
Thru	57	10	10	16	21
Rt	52	21	10	11	10

WEST LEG TOTAL: 109

SOUTH LEG

	Lt	Thru	Rt
1st	27	0	1
2nd	33	0	1
3rd	21	0	1
4th	14	0	0
Total	95		3

TOTAL: 98

PEAK HOUR FACTORS

NORTH LEG =
SOUTH LEG = 0.72
EAST LEG = 0.80
WEST LEG = 0.88

ALL LEGS = 0.91

HOUR TOTAL: 239

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : NAVAJO RD APPLE VALLEY

EAST-WEST STREET : JOHNSON RD 11-03-22

BEGINNING TIME : 04:00PM

AUTOS			LARGE 2 AXLE			3 AXLE			4(+) AXLE			TOTALS
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
NORTH LEG												
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH LEG												
0	0	13	0	0	0	0	0	0	0	0	3	16
1	0	27	0	0	0	0	0	0	0	0	0	28
1	0	33	0	0	0	0	0	0	0	0	0	34
1	0	21	0	0	0	0	0	0	0	0	0	22
0	0	13	0	0	0	0	0	0	0	0	1	14
1	0	19	0	0	0	0	0	0	0	0	0	20
0	0	25	0	0	0	0	0	0	0	0	0	25
1	0	16	0	0	0	0	0	0	0	0	0	17
5	0	167	0	0	0	0	0	0	0	0	4	176
EAST LEG												
0	8	0	0	0	0	0	0	0	0	0	0	8
0	6	1	0	0	0	0	0	0	0	0	0	7
0	5	1	0	0	0	0	0	0	0	0	0	6
0	9	0	0	0	0	0	0	0	0	0	0	9
0	10	0	0	0	0	0	0	0	0	0	0	10
0	8	2	0	0	0	0	0	0	0	0	0	10
0	11	1	0	0	0	0	0	0	0	0	0	12
0	6	0	0	0	0	0	0	0	0	0	0	6
0	63	5	0	0	0	0	0	0	0	0	0	68
WEST LEG												
14	14	0	1	0	0	0	0	0	0	0	0	29
21	10	0	0	0	0	0	0	0	0	0	0	31
8	10	0	0	0	0	1	0	0	1	0	0	20
11	16	0	0	0	0	0	0	0	0	0	0	27
10	21	0	0	0	0	0	0	0	0	0	0	31
6	16	0	1	0	0	0	0	0	1	0	0	24
16	10	0	0	0	0	0	0	0	0	0	0	26
10	10	0	0	0	0	0	0	0	0	0	0	20
96	107	0	2	0	0	1	0	0	2	0	0	208

Prepared by Newport Traffic Studies

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: NAVAJO RD

EAST-WEST STREET: JOHNSON RD

TIME: 04:00PM-05:00PM DATE: 11-03-22

NORTH LEG

	Rt	Thru	Lt
Total	0	0	0
1st	0	0	0
2nd	0	0	0
3rd	0	0	0
4th	0	0	0

	1st	2nd	3rd	4th	Total
Rt	0	0	0	0	0
Thru	8	6	5	9	28
Lt	0	1	1	0	2

	Total	1st	2nd	3rd	4th
Lt	0	0	0	0	0
Thru	50	14	10	10	16
Rt	57	15	21	10	11

	Lt	Thru	Rt
1st	16	0	0
2nd	27	0	1
3rd	33	0	1
4th	21	0	1
Total	97	0	3

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: NAVAJO RD

EAST-WEST STREET: JOHNSON RD

TIME: 05:00PM-06:00PM DATE: 11-03-22

NORTH LEG

Rt	Thru	Lt	
0	0	0	Total
0	0	0	1st
0	0	0	2nd
0	0	0	3rd
0	0	0	4th

	1st	2nd	3rd	4th	Total
Rt	0	0	0	0	0
Thru	10	8	11	6	35
Lt	0	2	1	0	3

Total	1st	2nd	3rd	4th	
0	0	0	0	0	Lt
57	21	16	10	10	Thru
44	10	8	16	10	Rt

	Lt	Thru	Rt
1st	14	0	0
2nd	19	0	1
3rd	25	0	0
4th	16	0	1
Total	74	0	2

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: DALE EVANS PKWY
EAST-WEST STREET: JOHNSON RD
JURISDICTION: APPLE VALLEY

DATE: 11-03-22

PEAK HOUR: 07:15AM

NORTH LEG

TOTAL: 55

	Rt	Thru	Lt
Total		35	20
1st	0	13	4
2nd	0	5	8
3rd	0	8	5
4th	0	9	3

EAST LEG TOTAL: 153

	1st	2nd	3rd	4th	Total
Rt	6	6	10	11	33
Thru	26	32	22	29	109
Lt	3	2	3	3	11

	Total	1st	2nd	3rd	4th
Lt	5	2	0	2	1
Thru	50	15	11	14	10
Rt	14	0	3	7	4

WEST LEG TOTAL: 69

PEAK HOUR FACTORS

NORTH LEG = 0.81
SOUTH LEG = 0.82
EAST LEG = 0.89
WEST LEG = 0.75

ALL LEGS = 0.95

	Lt	Thru	Rt
1st	0	25	4
2nd	2	13	5
3rd	3	15	5
4th	3	14	6
Total	8	67	20

TOTAL: 95

SOUTH LEG

HOUR TOTAL: 372

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : DALE EVANS PKWY APPLE VALLEY

EAST-WEST STREET : JOHNSON RD 11-03-22

BEGINNING TIME : 07:00AM

AUTOS			LARGE 2 AXLE			3 AXLE			4(+) AXLE			TOTALS
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
NORTH LEG												
0	12	1	0	1	0	0	0	0	0	2	1	17
0	13	3	0	0	1	0	0	0	0	0	0	17
0	4	8	0	1	0	0	0	0	0	0	0	13
0	5	3	0	0	0	0	0	0	0	3	2	13
0	6	2	0	1	0	0	0	0	0	2	1	12
0	6	6	0	0	0	0	0	0	0	3	0	15
0	6	5	0	0	0	0	0	0	0	0	0	11
0	12	1	0	0	1	0	0	0	0	0	3	17
0	64	29	0	3	2	0	0	0	0	10	7	115
SOUTH LEG												
5	25	0	0	0	0	0	0	0	0	0	0	30
3	25	0	1	0	0	0	0	0	0	0	0	29
5	13	2	0	0	0	0	0	0	0	0	0	20
5	15	3	0	0	0	0	0	0	0	0	0	23
6	14	3	0	0	0	0	0	0	0	0	0	23
4	9	2	0	0	0	0	0	0	0	0	0	15
6	8	2	0	0	0	0	0	0	0	0	0	16
5	11	0	0	0	0	0	0	0	0	0	0	16
39	120	12	1	0	0	0	0	0	0	0	0	172
EAST LEG												
3	24	1	0	1	0	0	0	0	2	1	0	32
5	24	3	0	1	0	1	1	0	0	0	0	35
4	30	2	0	0	0	0	1	0	2	1	0	40
6	18	3	1	2	0	0	1	0	3	1	0	35
10	28	3	1	0	0	0	0	0	0	1	0	43
9	27	2	1	1	0	0	1	0	0	0	0	41
3	30	2	0	0	0	0	1	0	1	0	0	37
6	48	0	0	0	0	0	0	0	1	0	0	55
46	229	16	3	5	0	1	5	0	9	4	0	318
WEST LEG												
0	9	2	0	0	0	0	1	0	0	0	0	12
0	14	2	0	1	0	0	0	0	0	0	0	17
2	9	0	0	1	0	0	0	0	1	1	0	14
6	14	2	0	0	0	1	0	0	0	0	0	23
2	7	1	0	1	0	0	1	0	2	1	0	15
5	16	0	0	0	0	0	0	0	0	0	0	21
5	14	0	0	0	0	0	0	0	0	0	0	19
3	8	1	0	0	0	0	1	0	0	0	0	13
23	91	8	0	3	0	1	3	0	3	2	0	134

Prepared by Newport Traffic Studies

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: DALE EVANS PKWY

EAST-WEST STREET: JOHNSON RD

TIME: 07:00AM-08:00AM DATE: 11-03-22

NORTH LEG

	Rt	Thru	Lt
Total	0	41	19
1st	0	15	2
2nd	0	13	4
3rd	0	5	8
4th	0	8	5

	1st	2nd	3rd	4th	Total
Rt	5	6	6	10	27
Thru	26	26	32	22	106
Lt	1	3	2	3	9

	Total	1st	2nd	3rd	4th
Lt	6	2	2	0	2
Thru	50	10	15	11	14
Rt	10	0	0	3	7

	Lt	Thru	Rt
1st	0	25	5
2nd	0	25	4
3rd	2	13	5
4th	3	15	5
Total	5	78	19

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: DALE EVANS PKWY

EAST-WEST STREET: JOHNSON RD

TIME: 08:00AM-09:00AM DATE: 11-03-22

NORTH LEG

	Rt	Thru	Lt
Total	0	36	19
1st	0	9	3
2nd	0	9	6
3rd	0	6	5
4th	0	12	5

	1st	2nd	3rd	4th	Total
Rt	11	10	4	7	32
Thru	29	29	31	48	137
Lt	3	2	2	0	7

Total	1st	2nd	3rd	4th	
2	1	0	0	1	Lt
49	10	16	14	9	Thru
17	4	5	5	3	Rt

	Lt	Thru	Rt
1st	3	14	6
2nd	2	9	4
3rd	2	8	6
4th	0	11	5
Total	7	42	21

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: DALE EVANS PKWY
EAST-WEST STREET: JOHNSON RD
JURISDICTION: APPLE VALLEY

DATE: 11-03-22

PEAK HOUR: 04:15PM

NORTH LEG

TOTAL: 214

	Rt	Thru	Lt
Total		170	44
1st	0	29	12
2nd	0	50	15
3rd	0	40	11
4th	0	51	6

EAST LEG TOTAL: 231

	1st	2nd	3rd	4th	Total
Rt	7	5	4	3	19
Thru	45	50	44	46	185
Lt	10	8	5	4	27

Total	1st	2nd	3rd	4th	
3	2	1	0	0	Lt
101	26	31	29	15	Thru
22	3	7	5	7	Rt

WEST LEG TOTAL: 126

PEAK HOUR FACTORS

NORTH LEG = 0.82
SOUTH LEG = 0.88
EAST LEG = 0.92
WEST LEG = 0.81

ALL LEGS = 0.86

	Lt	Thru	Rt
1st	2	18	15
2nd	5	25	11
3rd	3	11	14
4th	6	26	8
Total	16	80	48

TOTAL: 144

SOUTH LEG

HOUR TOTAL: 715

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : DALE EVANS PKWY   APPLE VALLEY

EAST-WEST STREET : JOHNSON RD   11-03-22

BEGINNING TIME : 04:00PM

AUTOS RT	AUTOS THRU	AUTOS LT	LARGE 2 AXLE RT	LARGE 2 AXLE THRU	LARGE 2 AXLE LT	3 AXLE RT	3 AXLE THRU	3 AXLE LT	4(+) AXLE RT	4(+) AXLE THRU	4(+) AXLE LT	TOTALS
NORTH LEG												
0	21	11	0	0	1	0	0	0	0	1	0	34
0	29	12	0	0	0	0	0	0	0	0	0	41
0	50	13	0	0	1	0	0	1	0	0	0	65
0	40	8	0	0	0	0	0	1	0	0	2	51
0	50	6	0	1	0	0	0	0	0	0	0	57
0	40	6	0	0	2	0	0	0	0	0	0	48
0	38	2	0	0	0	0	0	0	0	0	3	43
0	29	5	0	0	0	0	0	0	0	0	1	35
0	297	63	0	1	4	0	0	2	0	1	6	374
SOUTH LEG												
10	13	3	0	0	0	0	0	0	0	1	0	27
15	17	2	0	0	0	0	0	0	0	1	0	35
11	24	5	0	0	0	0	0	0	0	1	0	41
14	9	3	0	0	0	0	0	0	0	2	0	28
8	26	6	0	0	0	0	0	0	0	0	0	40
10	27	5	0	0	0	0	0	0	0	3	0	45
6	7	3	0	0	0	0	0	0	0	0	0	16
6	9	5	0	0	0	0	0	0	0	0	0	20
80	132	32	0	0	0	0	0	0	0	8	0	252
EAST LEG												
5	30	3	0	0	0	0	0	0	0	3	0	41
7	45	10	0	0	0	0	0	0	0	0	0	62
5	48	8	0	0	0	0	0	0	0	2	0	63
4	44	5	0	0	0	0	0	0	0	0	0	53
3	45	4	0	0	0	0	0	0	0	1	0	53
5	35	4	0	0	0	0	0	0	0	0	0	44
5	39	5	0	0	0	0	0	0	0	0	0	49
3	42	3	0	0	0	0	0	0	0	0	0	48
37	328	42	0	0	0	0	0	0	0	6	0	413
WEST LEG												
3	24	0	0	1	0	0	0	0	0	0	0	28
3	26	2	0	0	0	0	0	0	0	0	0	31
6	30	1	0	1	0	0	0	0	1	0	0	39
5	28	0	0	0	0	0	0	0	0	1	0	34
7	14	0	0	0	0	0	0	0	0	1	0	22
7	13	1	0	0	0	0	0	0	0	0	0	21
4	14	1	0	0	0	0	0	0	0	0	0	19
4	11	1	0	0	0	0	0	0	1	0	0	17
39	160	6	0	2	0	0	0	0	2	2	0	211

Prepared by Newport Traffic Studies

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: DALE EVANS PKWY

EAST-WEST STREET: JOHNSON RD

TIME: 04:00PM-05:00PM DATE: 11-03-22

NORTH LEG

	Rt	Thru	Lt
Total	0	141	50
1st	0	22	12
2nd	0	29	12
3rd	0	50	15
4th	0	40	11

	1st	2nd	3rd	4th	Total
Rt	5	7	5	4	21
Thru	33	45	50	44	172
Lt	3	10	8	5	26

Total	1st	2nd	3rd	4th	
3	0	2	1	0	Lt
111	25	26	31	29	Thru
18	3	3	7	5	Rt

	Lt	Thru	Rt
1st	3	14	10
2nd	2	18	15
3rd	5	25	11
4th	3	11	14
Total	13	68	50

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: DALE EVANS PKWY

EAST-WEST STREET: JOHNSON RD

TIME: 05:00PM-06:00PM DATE: 11-03-22

NORTH LEG

Rt	Thru	Lt	
0	158	25	Total
0	51	6	1st
0	40	8	2nd
0	38	5	3rd
0	29	6	4th

	1st	2nd	3rd	4th	Total
Rt	3	5	5	3	16
Thru	46	35	39	42	162
Lt	4	4	5	3	16

Total	1st	2nd	3rd	4th	
3	0	1	1	1	Lt
53	15	13	14	11	Thru
23	7	7	4	5	Rt

	Lt	Thru	Rt
1st	6	26	8
2nd	5	30	10
3rd	3	7	6
4th	5	9	6
Total	19	72	30

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: CENTRAL RD
EAST-WEST STREET: JOHNSON RD
JURISDICTION: APPLE VALLEY

DATE: 08-31-23

PEAK HOUR: 07:00AM

NORTH LEG

TOTAL: 29

Rt	Thru	Lt	
	29		Total
0	9	0	1st
0	7	0	2nd
0	8	0	3rd
0	5	0	4th

EAST LEG TOTAL: 0

	1st	2nd	3rd	4th	Total
Rt	0	0	0	0	
Thru	0	0	0	0	
Lt	0	0	0	0	

Total	1st	2nd	3rd	4th	
1	0	0	0	1	Lt
	0	0	0	0	Thru
2	0	0	1	1	Rt

WEST LEG TOTAL: 3

PEAK HOUR FACTORS

NORTH LEG = 0.81
SOUTH LEG = 0.83
EAST LEG =
WEST LEG = 0.38

ALL LEGS = 0.86

	Lt	Thru	Rt
1st	0	9	0
2nd	0	5	0
3rd	0	9	0
4th	2	5	0
Total	2	28	

TOTAL: 30

SOUTH LEG

HOUR TOTAL: 62

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : CENTRAL RD APPLE VALLEY

EAST-WEST STREET : JOHNSON RD 08-31-23

BEGINNING TIME : 07:00AM

AUTOS			LARGE 2 AXLE			3 AXLE			4(+) AXLE			TOTALS
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
NORTH LEG												
0	9	0	0	0	0	0	0	0	0	0	0	9
0	6	0	0	1	0	0	0	0	0	0	0	7
0	8	0	0	0	0	0	0	0	0	0	0	8
0	2	0	0	1	0	0	1	0	0	1	0	5
0	1	0	0	1	0	0	1	0	0	1	0	4
0	2	0	0	0	0	0	0	0	0	1	0	3
0	6	0	0	0	0	0	0	0	0	0	0	6
0	1	0	0	1	0	0	1	0	0	0	0	3
0	35	0	0	4	0	0	3	0	0	3	0	45
SOUTH LEG												
0	9	0	0	0	0	0	0	0	0	0	0	9
0	2	0	0	1	0	0	0	0	0	2	0	5
0	7	0	0	1	0	0	1	0	0	0	0	9
0	4	2	0	0	0	0	1	0	0	0	0	7
0	4	1	0	0	0	0	0	0	0	0	0	5
0	5	1	0	2	0	0	0	0	0	1	0	9
0	4	0	0	0	0	0	0	0	0	1	0	5
0	3	0	0	1	0	0	0	0	0	1	0	5
0	38	4	0	5	0	0	2	0	0	5	0	54
EAST LEG												
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
WEST LEG												
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	1
1	0	1	0	0	0	0	0	0	0	0	0	2
0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	1	0	0	0	0	0	0	0	0	0	3
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0	1
4	0	3	0	0	0	0	0	0	0	0	0	7

Prepared by Newport Traffic Studies

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: CENTRAL RD

EAST-WEST STREET: JOHNSON RD

TIME: 07:00AM-08:00AM DATE: 08-31-23

NORTH LEG

	Rt	Thru	Lt
Total	0	29	0
1st	0	9	0
2nd	0	7	0
3rd	0	8	0
4th	0	5	0

	1st	2nd	3rd	4th	Total
Rt	0	0	0	0	0
Thru	0	0	0	0	0
Lt	0	0	0	0	0

Total	1st	2nd	3rd	4th	
1	0	0	0	1	Lt
0	0	0	0	0	Thru
2	0	0	1	1	Rt

	Lt	Thru	Rt
1st	0	9	0
2nd	0	5	0
3rd	0	9	0
4th	2	5	0
Total	2	28	0

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: CENTRAL RD

EAST-WEST STREET: JOHNSON RD

TIME: 08:00AM-09:00AM DATE: 08-31-23

NORTH LEG

Rt	Thru	Lt	
0	16	0	Total
0	4	0	1st
0	3	0	2nd
0	6	0	3rd
0	3	0	4th

	1st	2nd	3rd	4th	Total
Rt	0	0	0	0	0
Thru	0	0	0	0	0
Lt	0	0	0	0	0

Total	1st	2nd	3rd	4th	
2	0	1	0	1	Lt
0	0	0	0	0	Thru
2	0	2	0	0	Rt

	Lt	Thru	Rt
1st	1	4	0
2nd	1	8	0
3rd	0	5	0
4th	0	5	0
Total	2	22	0

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: CENTRAL RD
EAST-WEST STREET: JOHNSON RD
JURISDICTION: APPLE VALLEY

DATE: 08-31-23

PEAK HOUR: 04:00PM

NORTH LEG

TOTAL: 53

	Rt	Thru	Lt
Total		49	4
1st	0	12	0
2nd	0	11	2
3rd	0	14	2
4th	0	12	0

EAST LEG TOTAL: 8

	1st	2nd	3rd	4th	Total
Rt	0	0	1	0	1
Thru	0	2	1	0	3
Lt	1	1	1	1	4

Total	1st	2nd	3rd	4th	
1	0	0	1	0	Lt
1	0	1	0	0	Thru
5	3	0	1	1	Rt

WEST LEG TOTAL: 7

PEAK HOUR FACTORS

NORTH LEG = 0.83
SOUTH LEG = 0.73
EAST LEG = 0.67
WEST LEG = 0.58

ALL LEGS = 0.78

	Lt	Thru	Rt
1st	0	9	0
2nd	1	10	0
3rd	2	10	2
4th	0	6	1
Total	3	35	3

TOTAL: 41

SOUTH LEG

HOUR TOTAL: 109

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : CENTRAL RD — APPLE VALLEY

EAST-WEST STREET : JOHNSON RD — 08-31-23

BEGINNING TIME : 04:00PM

AUTOS			LARGE 2 AXLE			3 AXLE			4(+) AXLE			TOTALS
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
NORTH LEG												
0	10	0	0	0	0	0	1	0	0	1	0	12
0	8	2	0	2	0	0	0	0	0	1	0	13
0	13	2	0	0	0	0	1	0	0	0	0	16
0	8	0	0	1	0	0	1	0	0	2	0	12
0	14	0	0	1	0	0	0	0	0	0	0	15
0	11	3	0	0	0	0	0	0	0	0	0	14
0	7	0	0	1	0	0	1	0	0	1	0	10
0	4	2	0	1	0	0	0	0	0	1	0	8
0	75	9	0	6	0	0	4	0	0	6	0	100
SOUTH LEG												
0	9	0	0	0	0	0	0	0	0	0	0	9
0	4	1	0	2	0	0	2	0	0	2	0	11
2	8	2	0	1	0	0	0	0	0	1	0	14
1	3	0	0	1	0	0	1	0	0	1	0	7
1	4	0	0	0	0	0	0	0	0	1	0	6
0	4	0	0	1	0	0	0	0	0	0	0	5
1	5	2	0	1	0	0	0	0	0	0	0	9
0	2	0	0	1	0	0	0	0	0	1	0	4
5	39	5	0	7	0	0	3	0	0	6	0	65
EAST LEG												
0	0	1	0	0	0	0	0	0	0	0	0	1
0	2	1	0	0	0	0	0	0	0	0	0	3
1	1	1	0	0	0	0	0	0	0	0	0	3
0	0	1	0	0	0	0	0	0	0	0	0	1
1	0	0	0	0	0	0	0	0	0	0	0	1
0	1	1	0	0	0	0	0	0	0	0	0	2
0	1	1	0	0	0	0	0	0	0	0	0	2
0	0	1	0	0	0	0	0	0	0	0	0	1
2	5	7	0	0	0	0	0	0	0	0	0	14
WEST LEG												
3	0	0	0	0	0	0	0	0	0	0	0	3
0	1	0	0	0	0	0	0	0	0	0	0	1
1	0	1	0	0	0	0	0	0	0	0	0	2
1	0	0	0	0	0	0	0	0	0	0	0	1
0	0	1	0	0	0	0	0	0	0	0	0	1
0	0	1	0	0	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	0	0	0	0	0	2
1	0	1	0	0	0	0	0	0	0	0	0	2
8	1	4	0	0	0	0	0	0	0	0	0	13

Prepared by Newport Traffic Studies

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: CENTRAL RD

EAST-WEST STREET: JOHNSON RD

TIME: 04:00PM-05:00PM DATE: 08-31-23

NORTH LEG

	Rt	Thru	Lt
Total	0	49	4
1st	0	12	0
2nd	0	11	2
3rd	0	14	2
4th	0	12	0

	1st	2nd	3rd	4th	Total
Rt	0	0	1	0	1
Thru	0	2	1	0	3
Lt	1	1	1	1	4

Total	1st	2nd	3rd	4th	
1	0	0	1	0	Lt
1	0	1	0	0	Thru
5	3	0	1	1	Rt

	Lt	Thru	Rt
1st	0	9	0
2nd	1	10	0
3rd	2	10	2
4th	0	6	1
Total	3	35	3

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: CENTRAL RD

EAST-WEST STREET: JOHNSON RD

TIME: 05:00PM-06:00PM DATE: 08-31-23

NORTH LEG

	Rt	Thru	Lt
Total	0	42	5
1st	0	15	0
2nd	0	11	3
3rd	0	10	0
4th	0	6	2

	1st	2nd	3rd	4th	Total
Rt	1	0	0	0	1
Thru	0	1	1	0	2
Lt	0	1	1	1	3

Total	1st	2nd	3rd	4th	
3	1	1	0	1	Lt
0	0	0	0	0	Thru
3	0	0	2	1	Rt

	Lt	Thru	Rt
1st	0	5	1
2nd	0	5	0
3rd	2	6	1
4th	0	4	0
Total	2	20	2

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: STODDARD WELLS RD
EAST-WEST STREET: JOHNSON RD
JURISDICTION: APPLE VALLEY

DATE: 11-09-22

PEAK HOUR: 07:15AM

NORTH LEG

TOTAL: 50

	Rt	Thru	Lt
Total		49	1
1st	0	12	0
2nd	0	15	1
3rd	0	11	0
4th	0	11	0

EAST LEG TOTAL: 138

	1st	2nd	3rd	4th	Total
Rt	2	0	1	2	5
Thru	0	0	0	0	
Lt	25	38	40	30	133

	Total	1st	2nd	3rd	4th
Lt		0	0	0	0
Thru		0	0	0	0
Rt		0	0	0	0

WEST LEG TOTAL: 0

PEAK HOUR FACTORS

NORTH LEG = 0.78
SOUTH LEG = 0.46
EAST LEG = 0.84
WEST LEG =

ALL LEGS = 0.79

	Lt	Thru	Rt
1st	0	8	40
2nd	0	0	15
3rd	0	1	7
4th	0	4	13
Total		13	75

TOTAL: 88

SOUTH LEG

HOUR TOTAL: 276

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : STODDARD WELLS RD — APPLE VALLEY

EAST-WEST STREET : JOHNSON RD — 11-09-22

BEGINNING TIME : 07:00AM

	AUTOS			LARGE 2 AXLE			3 AXLE			4(+) AXLE			TOTALS
	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
NORTH LEG													
	0	10	0	0	0	0	0	0	0	0	0	0	10
	0	12	0	0	0	0	0	0	0	0	0	0	12
	0	15	1	0	0	0	0	0	0	0	0	0	16
	0	11	0	0	0	0	0	0	0	0	0	0	11
	0	10	0	0	0	0	0	1	0	0	0	0	11
	0	12	0	0	1	0	0	1	0	0	0	0	14
	0	10	2	0	0	0	0	0	0	0	0	0	12
	0	8	1	0	0	0	0	0	0	0	0	0	9
	0	88	4	0	1	0	0	2	0	0	0	0	95
SOUTH LEG													
	12	1	0	0	0	0	1	0	0	0	0	0	14
	38	8	0	0	0	0	1	0	0	1	0	0	48
	15	0	0	0	0	0	0	0	0	0	0	0	15
	6	1	0	1	0	0	0	0	0	0	0	0	8
	13	3	0	0	0	0	0	1	0	0	0	0	17
	3	1	0	0	0	0	0	0	0	1	0	0	5
	8	2	0	0	0	0	0	0	0	0	0	0	10
	3	0	0	0	0	0	0	0	0	0	0	0	3
	98	16	0	1	0	0	2	1	0	2	0	0	120
EAST LEG													
	0	0	30	0	0	0	0	0	1	0	0	1	32
	2	0	20	0	0	2	0	0	1	0	0	2	27
	0	0	38	0	0	0	0	0	0	0	0	0	38
	1	0	39	0	0	1	0	0	0	0	0	0	41
	2	0	30	0	0	0	0	0	0	0	0	0	32
	2	0	29	0	0	1	0	0	4	0	0	0	36
	1	0	20	0	0	0	0	0	0	0	0	0	21
	2	0	13	0	0	0	0	0	0	0	0	0	15
	10	0	219	0	0	4	0	0	6	0	0	3	242
WEST LEG													
	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0

Prepared by Newport Traffic Studies

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: STODDARD WELLS RD

EAST-WEST STREET: JOHNSON RD

TIME: 07:00AM-08:00AM DATE: 11-09-22

NORTH LEG

	Rt	Thru	Lt
Total	0	48	1
1st	0	10	0
2nd	0	12	0
3rd	0	15	1
4th	0	11	0

	1st	2nd	3rd	4th	Total
Rt	0	2	0	1	3
Thru	0	0	0	0	0
Lt	32	25	38	40	135

	Total	1st	2nd	3rd	4th
Lt	0	0	0	0	0
Thru	0	0	0	0	0
Rt	0	0	0	0	0

	Lt	Thru	Rt
1st	0	1	13
2nd	0	8	40
3rd	0	0	15
4th	0	1	7
Total	0	10	75

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: STODDARD WELLS RD

EAST-WEST STREET: JOHNSON RD

TIME: 08:00AM-09:00AM DATE: 11-09-22

NORTH LEG

Rt	Thru	Lt	
0	43	3	Total
0	11	0	1st
0	14	0	2nd
0	10	2	3rd
0	8	1	4th

	1st	2nd	3rd	4th	Total
Rt	2	2	1	2	7
Thru	0	0	0	0	0
Lt	30	34	20	13	97

Total	1st	2nd	3rd	4th	
0	0	0	0	0	Lt
0	0	0	0	0	Thru
0	0	0	0	0	Rt

	Lt	Thru	Rt
1st	0	4	13
2nd	0	1	4
3rd	0	2	8
4th	0	0	3
Total	0	7	28

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: STODDARD WELLS RD
EAST-WEST STREET: JOHNSON RD
JURISDICTION: APPLE VALLEY

DATE: 11-09-22

PEAK HOUR: 04:00PM

NORTH LEG

TOTAL: 146

	Rt	Thru	Lt
Total		115	31
1st	0	32	6
2nd	0	25	6
3rd	0	28	8
4th	0	30	11

EAST LEG TOTAL: 267

	1st	2nd	3rd	4th	Total
Rt	6	5	9	4	24
Thru	0	0	0	0	
Lt	84	34	64	61	243

	Total	1st	2nd	3rd	4th
Lt		0	0	0	0
Thru		0	0	0	0
Rt		0	0	0	0

WEST LEG TOTAL: 0

PEAK HOUR FACTORS

NORTH LEG = 0.89
SOUTH LEG = 0.80
EAST LEG = 0.74
WEST LEG =

ALL LEGS = 0.81

	Lt	Thru	Rt
1st	0	5	16
2nd	0	7	15
3rd	0	4	10
4th	0	4	9
Total		20	50

TOTAL: 70

SOUTH LEG

HOUR TOTAL: 483

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : STODDARD WELLS RD APPLE VALLEY

EAST-WEST STREET : JOHNSON RD 11-09-22

BEGINNING TIME : 04:00PM

AUTOS			LARGE 2 AXLE			3 AXLE			4(+) AXLE			TOTALS
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
NORTH LEG												
0	32	6	0	0	0	0	0	0	0	0	0	38
0	25	6	0	0	0	0	0	0	0	0	0	31
0	28	8	0	0	0	0	0	0	0	0	0	36
0	30	11	0	0	0	0	0	0	0	0	0	41
0	28	4	0	0	0	0	0	0	0	0	0	32
0	35	5	0	0	0	0	0	0	0	0	0	40
0	22	5	0	0	0	0	0	0	0	0	0	27
0	25	4	0	0	0	0	0	0	0	0	0	29
0	225	49	0	0	0	0	0	0	0	0	0	274
SOUTH LEG												
16	5	0	0	0	0	0	0	0	0	0	0	21
15	7	0	0	0	0	0	0	0	0	0	0	22
8	4	0	0	0	0	0	0	0	2	0	0	14
9	4	0	0	0	0	0	0	0	0	0	0	13
11	4	0	0	0	0	0	0	0	0	0	0	15
16	5	0	0	0	0	0	0	0	0	0	0	21
12	5	0	0	0	0	0	0	0	0	0	0	17
10	4	0	0	0	0	0	0	0	0	0	0	14
97	38	0	0	0	0	0	0	0	2	0	0	137
EAST LEG												
6	0	78	0	0	1	0	0	0	0	0	5	90
5	0	34	0	0	0	0	0	0	0	0	0	39
9	0	64	0	0	0	0	0	0	0	0	0	73
4	0	61	0	0	0	0	0	0	0	0	0	65
5	0	42	0	0	0	0	0	0	0	0	0	47
5	0	62	0	0	0	0	0	0	0	0	0	67
7	0	40	0	0	0	0	0	0	0	0	0	47
4	0	45	0	0	0	0	0	0	0	0	0	49
45	0	426	0	0	1	0	0	0	0	0	5	477
WEST LEG												
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0

Prepared by Newport Traffic Studies

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: STODDARD WELLS RD

EAST-WEST STREET: JOHNSON RD

TIME: 04:00PM-05:00PM DATE: 11-09-22

NORTH LEG

Rt	Thru	Lt	
0	115	31	Total
0	32	6	1st
0	25	6	2nd
0	28	8	3rd
0	30	11	4th

	1st	2nd	3rd	4th	Total
Rt	6	5	9	4	24
Thru	0	0	0	0	0
Lt	84	34	64	61	243

Total	1st	2nd	3rd	4th	
0	0	0	0	0	Lt
0	0	0	0	0	Thru
0	0	0	0	0	Rt

	Lt	Thru	Rt
1st	0	5	16
2nd	0	7	15
3rd	0	4	10
4th	0	4	9
Total	0	20	50

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: STODDARD WELLS RD

EAST-WEST STREET: JOHNSON RD

TIME: 05:00PM-06:00PM DATE: 11-09-22

NORTH LEG

	Rt	Thru	Lt
Total	0	110	18
1st	0	28	4
2nd	0	35	5
3rd	0	22	5
4th	0	25	4

	1st	2nd	3rd	4th	Total
Rt	5	5	7	4	21
Thru	0	0	0	0	0
Lt	42	62	40	45	189

	Total	1st	2nd	3rd	4th
Lt	0	0	0	0	0
Thru	0	0	0	0	0
Rt	0	0	0	0	0

	Lt	Thru	Rt
1st	0	4	11
2nd	0	5	16
3rd	0	5	12
4th	0	4	10
Total	0	18	49

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: I-15 NB RAMPS
EAST-WEST STREET: STODDARD WELLS RD DATE: 11-09-22
JURISDICTION: APPLE VALLEY

PEAK HOUR: 07:00AM

NORTH LEG

TOTAL: 43

	Rt	Thru	Lt
Total	42		1
1st	1	0	1
2nd	16	0	0
3rd	19	0	0
4th	6	0	0

EAST LEG TOTAL: 183

	1st	2nd	3rd	4th	Total
Rt	7	14	15	21	57
Thru	34	23	38	30	125
Lt	1	0	0	0	1

	Total	1st	2nd	3rd	4th
Lt	256	93	25	77	61
Thru	80	11	58	4	7
Rt	9	2	5	2	0

WEST LEG TOTAL: 345

PEAK HOUR FACTORS

NORTH LEG = 0.57
SOUTH LEG = 0.25
EAST LEG = 0.86
WEST LEG = 0.81

ALL LEGS = 0.92

	Lt	Thru	Rt
1st	0	2	0
2nd	0	0	0
3rd	0	0	0
4th	0	0	0
Total		2	

TOTAL: 2

SOUTH LEG

HOUR TOTAL: 573

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : I-15 NB RAMPS — APPLE VALLEY

EAST-WEST STREET : STODDARD WELLS RD — 11-09-22

BEGINNING TIME : 07:00AM

AUTOS			LARGE 2 AXLE			3 AXLE			4(+) AXLE			TOTALS
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
NORTH LEG												
0	0	0	1	0	0	0	0	1	0	0	0	2
15	0	0	1	0	0	0	0	0	0	0	0	16
18	0	0	0	0	0	1	0	0	0	0	0	19
6	0	0	0	0	0	0	0	0	0	0	0	6
10	0	2	1	0	0	2	0	0	0	0	0	15
13	0	3	4	0	0	2	0	0	0	0	0	22
18	0	1	0	0	0	0	0	0	0	0	0	19
12	0	0	0	0	0	0	0	0	0	0	0	12
92	0	6	7	0	0	5	0	1	0	0	0	111
SOUTH LEG												
0	2	0	0	0	0	0	0	0	0	0	0	2
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	6
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
6	2	0	0	0	0	0	0	0	0	0	0	8
EAST LEG												
5	34	1	0	0	0	1	0	0	1	0	0	42
10	22	0	2	0	0	1	0	0	1	1	0	37
15	38	0	0	0	0	0	0	0	0	0	0	53
20	30	0	1	0	0	0	0	0	0	0	0	51
12	28	0	0	0	0	1	0	0	0	0	0	41
18	22	0	2	1	0	5	0	0	0	0	0	48
10	20	0	0	0	0	0	0	0	0	0	0	30
9	13	0	0	0	0	0	0	0	0	0	0	22
99	207	1	5	1	0	8	0	0	2	1	0	324
WEST LEG												
2	11	88	0	0	1	0	0	0	0	0	4	106
5	57	15	0	0	4	0	0	1	0	1	5	88
2	4	69	0	0	1	0	0	4	0	0	3	83
0	6	58	0	1	1	0	0	1	0	0	1	68
0	8	39	0	0	3	0	1	1	0	0	9	61
0	1	6	0	0	0	0	0	2	0	1	8	18
1	9	40	0	0	0	0	0	0	0	0	1	51
0	3	49	0	0	0	0	0	0	0	0	1	53
10	99	364	0	1	10	0	1	9	0	2	32	528

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: I-15 NB RAMPS

EAST-WEST STREET: STODDARD WELLS RD

TIME: 07:00AM-08:00AM DATE: 11-09-22

NORTH LEG

	Rt	Thru	Lt
Total	42	0	1
1st	1	0	1
2nd	16	0	0
3rd	19	0	0
4th	6	0	0

	1st	2nd	3rd	4th	Total
Rt	7	14	15	21	57
Thru	34	23	38	30	125
Lt	1	0	0	0	1

	Total	1st	2nd	3rd	4th
Lt	256	93	25	77	61
Thru	80	11	58	4	7
Rt	9	2	5	2	0

	Lt	Thru	Rt
1st	0	2	0
2nd	0	0	0
3rd	0	0	0
4th	0	0	0
Total	0	2	0

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: I-15 NB RAMPS

EAST-WEST STREET: STODDARD WELLS RD

TIME: 08:00AM-09:00AM DATE: 11-09-22

NORTH LEG

Rt	Thru	Lt	
62	0	6	Total
13	0	2	1st
19	0	3	2nd
18	0	1	3rd
12	0	0	4th

	1st	2nd	3rd	4th	Total
Rt	13	25	10	9	57
Thru	28	23	20	13	84
Lt	0	0	0	0	0

Total	1st	2nd	3rd	4th	
159	52	16	41	50	Lt
23	9	2	9	3	Thru
1	0	0	1	0	Rt

	Lt	Thru	Rt
1st	0	0	6
2nd	0	0	0
3rd	0	0	0
4th	0	0	0
Total	0	0	6

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: I-15 NB RAMPS
EAST-WEST STREET: STODDARD WELLS RD   DATE: 11-09-22
JURISDICTION: APPLE VALLEY

PEAK HOUR: 04:30PM

NORTH LEG

TOTAL: 152

	Rt	Thru	Lt
Total	135		17
1st	20	0	4
2nd	19	0	4
3rd	64	0	5
4th	32	0	4

EAST LEG TOTAL: 354

	1st	2nd	3rd	4th	Total
Rt	17	14	12	17	60
Thru	74	81	57	78	290
Lt	0	0	1	3	4

WEST LEG

Total	1st	2nd	3rd	4th	
217	53	48	52	64	Lt
46	10	9	10	17	Thru
1	0	0	0	1	Rt

WEST LEG TOTAL: 264

PEAK HOUR FACTORS

NORTH LEG = 0.55
SOUTH LEG = 0.75
EAST LEG = 0.90
WEST LEG = 0.80

ALL LEGS = 0.89

	Lt	Thru	Rt
1st	0	1	0
2nd	0	0	0
3rd	0	1	0
4th	0	1	0
Total		3	

TOTAL: 3

SOUTH LEG

HOUR TOTAL: 773

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : I-15 NB RAMPS APPLE VALLEY

EAST-WEST STREET : STODDARD WELLS RD 11-09-22

BEGINNING TIME : 04:00PM

AUTOS			LARGE 2 AXLE			3 AXLE			4(+) AXLE			TOTALS
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
NORTH LEG												
17	0	1	2	0	0	1	0	0	0	0	0	21
29	0	3	0	0	0	0	0	0	0	0	0	32
19	0	4	0	0	0	1	0	0	0	0	0	24
19	0	4	0	0	0	0	0	0	0	0	0	23
64	0	5	0	0	0	0	0	0	0	0	0	69
32	0	4	0	0	0	0	0	0	0	0	0	36
57	0	6	0	0	0	0	0	0	0	0	0	63
11	0	1	0	0	0	0	0	0	0	0	0	12
248	0	28	2	0	0	2	0	0	0	0	0	280
SOUTH LEG												
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0	1
0	1	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	1
0	1	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	3	1	0	0	0	0	0	0	0	0	0	4
EAST LEG												
15	95	0	1	0	0	0	0	0	5	0	0	116
37	22	0	0	0	0	0	0	0	0	0	0	59
17	74	0	0	0	0	0	0	0	0	0	0	91
14	81	0	0	0	0	0	0	0	0	0	0	95
12	57	1	0	0	0	0	0	0	0	0	0	70
17	78	3	0	0	0	0	0	0	0	0	0	98
7	52	3	0	0	0	0	0	0	0	0	0	62
11	60	7	0	0	0	0	0	0	0	0	0	78
130	519	14	1	0	0	0	0	0	5	0	0	669
WEST LEG												
0	20	57	0	0	2	0	0	5	0	0	6	90
0	19	62	0	0	0	0	0	4	0	0	7	92
0	8	50	0	0	0	0	0	1	0	2	2	63
0	9	48	0	0	0	0	0	0	0	0	0	57
0	10	52	0	0	0	0	0	0	0	0	0	62
1	17	64	0	0	0	0	0	0	0	0	0	82
0	11	37	0	0	0	0	0	0	0	0	0	48
1	13	35	0	0	0	0	0	0	0	0	1	50
2	107	405	0	0	2	0	0	10	0	2	16	544

Prepared by Newport Traffic Studies

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: I-15 NB RAMPS

EAST-WEST STREET: STODDARD WELLS RD

TIME: 04:00PM-05:00PM DATE: 11-09-22

NORTH LEG

	Rt	Thru	Lt
Total	88	0	12
1st	20	0	1
2nd	29	0	3
3rd	20	0	4
4th	19	0	4

	1st	2nd	3rd	4th	Total
Rt	21	37	17	14	89
Thru	95	22	74	81	272
Lt	0	0	0	0	0

	Total	1st	2nd	3rd	4th
Lt	244	70	73	53	48
Thru	58	20	19	10	9
Rt	0	0	0	0	0

	Lt	Thru	Rt
1st	0	0	0
2nd	1	0	0
3rd	0	1	0
4th	0	0	0
Total	1	1	0

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: I-15 NB RAMPS

EAST-WEST STREET: STODDARD WELLS RD

TIME: 05:00PM-06:00PM DATE: 11-09-22

NORTH LEG

Rt	Thru	Lt	
164	0	16	Total
64	0	5	1st
32	0	4	2nd
57	0	6	3rd
11	0	1	4th

	1st	2nd	3rd	4th	Total
Rt	12	17	7	11	47
Thru	57	78	52	60	247
Lt	1	3	3	7	14

Total	1st	2nd	3rd	4th	
189	52	64	37	36	Lt
51	10	17	11	13	Thru
2	0	1	0	1	Rt

	Lt	Thru	Rt
1st	0	1	0
2nd	0	1	0
3rd	0	0	0
4th	0	0	0
Total	0	2	0

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: STODDARD WELLS RD
EAST-WEST STREET: QUARRY RD
DATE: 11-09-22
JURISDICTION: APPLE VALLEY

PEAK HOUR: 07:00AM

NORTH LEG

TOTAL: 148

	Rt	Thru	Lt
Total	40		108
1st	6		11
2nd	5		44
3rd	14		29
4th	15		24

EAST LEG TOTAL: 167

	1st	2nd	3rd	4th	Total
Rt	29	34	46	32	141
Thru	6	5	11	4	26
Lt					

WEST LEG

	Total	1st	2nd	3rd	4th
Lt	131	27	33	31	40
Thru	237	95	44	54	44
Rt					

WEST LEG TOTAL: 368

PEAK HOUR FACTORS

NORTH LEG = 0.76
SOUTH LEG =
EAST LEG = 0.73
WEST LEG = 0.75

ALL LEGS = 0.92

	Lt	Thru	Rt
1st			
2nd			
3rd			
4th			
Total			

TOTAL: 0

SOUTH LEG

HOUR TOTAL: 683

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : STODDARD WELLS RD — APPLE VALLEY

EAST-WEST STREET : QUARRY RD — 11-09-22

BEGINNING TIME : 07:00AM

AUTOS RT	AUTOS THRU	AUTOS LT	LARGE 2 AXLE RT	LARGE 2 AXLE THRU	LARGE 2 AXLE LT	3 AXLE RT	3 AXLE THRU	3 AXLE LT	4(+) AXLE RT	4(+) AXLE THRU	4(+) AXLE LT	TOTALS
NORTH LEG												
6	0	9	0	0	0	0	0	0	0	0	2	17
4	0	41	0	0	1	0	0	0	1	0	2	49
12	0	28	0	0	0	0	0	1	2	0	0	43
13	0	22	2	0	1	0	0	0	0	0	1	39
9	0	10	0	0	1	1	0	0	0	0	3	24
9	0	2	1	0	0	0	0	1	0	0	0	13
11	0	9	0	0	0	2	0	0	0	0	2	24
8	0	9	0	0	0	0	0	0	1	0	0	18
72	0	130	3	0	3	3	0	2	4	0	10	227
SOUTH LEG												
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
EAST LEG												
28	5	0	1	1	0	0	0	0	0	0	0	35
33	4	0	0	1	0	0	0	0	1	0	0	39
46	10	0	0	0	0	0	1	0	0	0	0	57
32	4	0	0	0	0	0	0	0	0	0	0	36
26	12	0	0	1	0	2	0	0	0	0	0	41
20	15	0	1	4	0	1	1	0	0	0	0	42
22	16	0	0	0	0	0	0	0	0	0	0	38
13	12	0	0	0	0	0	0	0	0	0	0	25
220	78	0	2	7	0	3	2	0	1	0	0	313
WEST LEG												
0	91	27	0	2	0	0	0	0	0	2	0	122
0	36	33	0	3	0	0	1	0	0	4	0	77
0	47	31	0	1	0	0	3	0	0	3	0	85
0	42	40	0	1	0	0	1	0	0	0	0	84
0	37	23	0	2	0	0	2	0	0	6	0	70
0	7	20	0	0	0	0	1	0	0	7	0	35
0	39	16	0	0	0	0	0	0	0	1	0	56
0	43	19	0	0	0	0	0	0	0	1	0	63
0	342	209	0	9	0	0	8	0	0	24	0	592

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: STODDARD WELLS RD

EAST-WEST STREET: QUARRY RD

TIME: 07:00AM-08:00AM DATE: 11-09-22

NORTH LEG

Rt	Thru	Lt	
40		108	Total
6		11	1st
5		44	2nd
14		29	3rd
15		24	4th

	1st	2nd	3rd	4th	Total
Rt	29	34	46	32	141
Thru	6	5	11	4	26
Lt					

Total	1st	2nd	3rd	4th	
131	27	33	31	40	Lt
237	95	44	54	44	Thru
					Rt

	Lt	Thru	Rt
1st			
2nd			
3rd			
4th			
Total			

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: STODDARD WELLS RD

EAST-WEST STREET: QUARRY RD

TIME: 08:00AM-09:00AM DATE: 11-09-22

NORTH LEG

Rt	Thru	Lt	
42		37	Total
10		14	1st
10		3	2nd
13		11	3rd
9		9	4th
Rt	Thru	Lt	

	1st	2nd	3rd	4th	Total
Rt	28	22	22	13	85
Thru	13	20	16	12	61
Lt					

Total	1st	2nd	3rd	4th	
78	23	20	16	19	Lt
146	47	15	40	44	Thru
					Rt

	Lt	Thru	Rt
1st			
2nd			
3rd			
4th			
Total			

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: STODDARD WELLS RD
EAST-WEST STREET: QUARRY RD
JURISDICTION: APPLE VALLEY

DATE: 11-09-22

PEAK HOUR: 04:30PM

NORTH LEG

TOTAL: 102

	Rt	Thru	Lt
Total	58		44
1st	16		8
2nd	19		13
3rd	10		7
4th	13		16

EAST LEG TOTAL: 425

	1st	2nd	3rd	4th	Total
Rt	66	70	53	57	246
Thru	28	30	69	52	179
Lt					

	Total	1st	2nd	3rd	4th
Lt	66	13	21	14	18
Thru	220	55	44	55	66
Rt					

WEST LEG TOTAL: 286

PEAK HOUR FACTORS

NORTH LEG = 0.80
SOUTH LEG =
EAST LEG = 0.87
WEST LEG = 0.85

ALL LEGS = 0.92

	Lt	Thru	Rt
1st			
2nd			
3rd			
4th			
Total			

TOTAL: 0

SOUTH LEG

HOUR TOTAL: 813

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : STODDARD WELLS RD APPLE VALLEY

EAST-WEST STREET : QUARRY RD 11-09-22

BEGINNING TIME : 04:00PM

AUTOS			LARGE 2 AXLE			3 AXLE			4(+) AXLE			TOTALS
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
NORTH LEG												
7	0	18	0	0	2	1	0	2	2	0	2	34
16	0	12	0	0	0	0	0	1	0	0	4	33
13	0	7	1	0	0	2	0	0	0	0	1	24
14	0	13	1	0	0	0	0	0	4	0	0	32
10	0	7	0	0	0	0	0	0	0	0	0	17
11	0	16	2	0	0	0	0	0	0	0	0	29
10	0	9	0	0	0	1	0	0	0	0	0	20
6	0	14	1	0	0	0	0	0	1	0	1	23
87	0	96	5	0	2	4	0	3	7	0	8	212
SOUTH LEG												
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
EAST LEG												
89	23	0	1	1	0	0	1	0	0	0	0	115
20	31	0	0	0	0	0	0	0	0	0	0	51
65	28	0	0	0	0	1	0	0	0	0	0	94
70	30	0	0	0	0	0	0	0	0	0	0	100
53	69	0	0	0	0	0	0	0	0	0	0	122
57	52	0	0	0	0	0	0	0	0	0	0	109
47	63	0	0	0	0	0	0	0	0	0	0	110
40	31	0	0	0	0	0	0	0	0	0	0	71
441	327	0	1	1	0	1	1	0	0	0	0	772
WEST LEG												
0	60	22	0	0	0	0	3	0	0	3	0	88
0	69	16	0	0	0	0	3	0	0	3	0	91
0	51	13	0	0	0	0	1	0	0	3	0	68
0	44	21	0	0	0	0	0	0	0	0	0	65
0	55	14	0	0	0	0	0	0	0	0	0	69
0	66	18	0	0	0	0	0	0	0	0	0	84
0	39	15	0	0	0	0	0	0	0	0	0	54
0	35	10	0	0	0	0	0	0	0	0	0	45
0	419	129	0	0	0	0	7	0	0	9	0	564

Prepared by Newport Traffic Studies

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: STODDARD WELLS RD

EAST-WEST STREET: QUARRY RD

TIME: 04:00PM-05:00PM DATE: 11-09-22

NORTH LEG

	Rt	Thru	Lt
Total	61		62
1st	10		24
2nd	16		17
3rd	16		8
4th	19		13

	1st	2nd	3rd	4th	Total
Rt	90	20	66	70	246
Thru	25	31	28	30	114
Lt					

Total	1st	2nd	3rd	4th	
72	22	16	13	21	Lt
240	66	75	55	44	Thru
					Rt

	Lt	Thru	Rt
1st			
2nd			
3rd			
4th			
Total			

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: STODDARD WELLS RD

EAST-WEST STREET: QUARRY RD

TIME: 05:00PM-06:00PM DATE: 11-09-22

NORTH LEG

	Rt	Thru	Lt
Total	42		47
1st	10		7
2nd	13		16
3rd	11		9
4th	8		15

	1st	2nd	3rd	4th	Total
Rt	53	57	47	40	197
Thru	69	52	63	31	215
Lt					

	Total	1st	2nd	3rd	4th
Lt	57	14	18	15	10
Thru	195	55	66	39	35
Rt					

	Lt	Thru	Rt
1st			
2nd			
3rd			
4th			
Total			

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: QUARRY RD
EAST-WEST STREET: I-15 SB RAMPS
JURISDICTION: APPLE VALLEY

DATE: 11-09-22

PEAK HOUR: 07:15AM

NORTH LEG

TOTAL: 1

Rt	Thru	Lt	
		1	Total
	0	0	1st
	0	0	2nd
	0	1	3rd
	0	0	4th

EAST LEG TOTAL: 156

	1st	2nd	3rd	4th	Total
Rt	0	0	1	0	1
Thru					
Lt	49	43	39	24	155

Total	1st	2nd	3rd	4th	
					Lt
					Thru
					Rt

WEST LEG TOTAL: 0

PEAK HOUR FACTORS

NORTH LEG = 0.25
SOUTH LEG = 0.89
EAST LEG = 0.80
WEST LEG =

ALL LEGS = 0.90

	Lt	Thru	Rt
1st		0	67
2nd		0	75
3rd		0	73
4th		1	50
Total		1	265

TOTAL: 266

SOUTH LEG

HOUR TOTAL: 423

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : QUARRY RD — APPLE VALLEY

EAST-WEST STREET : I-15 SB RAMPS — 11-09-22

BEGINNING TIME : 07:00AM

AUTOS RT	AUTOS THRU	AUTOS LT	LARGE 2 AXLE RT	LARGE 2 AXLE THRU	LARGE 2 AXLE LT	3 AXLE RT	3 AXLE THRU	3 AXLE LT	4(+) AXLE RT	4(+) AXLE THRU	4(+) AXLE LT	TOTALS
NORTH LEG												
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	0	0	0	0	0	2
SOUTH LEG												
54	2	0	1	0	0	0	0	0	0	0	0	57
66	0	0	0	0	0	0	0	0	1	0	0	67
75	0	0	0	0	0	0	0	0	0	0	0	75
73	0	0	0	0	0	0	0	0	0	0	0	73
48	1	0	0	0	0	2	0	0	0	0	0	51
40	0	0	1	0	0	1	0	0	0	0	0	42
39	0	0	0	0	0	0	0	0	0	0	0	39
31	1	0	0	0	0	0	0	0	0	0	0	32
426	4	0	2	0	0	3	0	0	1	0	0	436
EAST LEG												
0	0	15	0	0	0	0	0	0	0	0	2	17
0	0	45	0	0	1	0	0	0	0	0	3	49
0	0	40	0	0	0	0	0	1	0	0	2	43
1	0	35	0	0	3	0	0	0	0	0	1	40
0	0	19	0	0	1	0	0	1	0	0	3	24
0	0	12	0	0	1	0	0	1	0	0	0	14
0	0	21	0	0	0	0	0	2	0	0	2	25
0	0	15	0	0	0	0	0	0	0	0	1	16
1	0	202	0	0	6	0	0	5	0	0	14	228
WEST LEG												
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: QUARRY RD

EAST-WEST STREET: I-15 SB RAMPS

TIME: 07:00AM-08:00AM DATE: 11-09-22

NORTH LEG

Rt	Thru	Lt	
	0	1	Total
	0	0	1st
	0	0	2nd
	0	0	3rd
	0	1	4th

	1st	2nd	3rd	4th	Total
Rt	0	0	0	1	1
Thru					
Lt	17	49	43	39	148

Total	1st	2nd	3rd	4th	
					Lt
					Thru
					Rt

	Lt	Thru	Rt
1st		2	55
2nd		0	67
3rd		0	75
4th		0	73
Total		2	270

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: QUARRY RD

EAST-WEST STREET: I-15 SB RAMPS

TIME: 08:00AM-09:00AM DATE: 11-09-22

NORTH LEG

	Rt	Thru	Lt
Total		0	1
1st		0	0
2nd		0	1
3rd		0	0
4th		0	0

	1st	2nd	3rd	4th	Total
Rt	0	0	0	0	0
Thru					
Lt	24	14	25	16	79

	Total	1st	2nd	3rd	4th
Lt					
Thru					
Rt					

	Lt	Thru	Rt
1st		1	50
2nd		0	42
3rd		0	39
4th		1	31
Total		2	162

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: QUARRY RD
EAST-WEST STREET: I-15 SB RAMPS
JURISDICTION: APPLE VALLEY

DATE: 11-09-22

PEAK HOUR: 04:00PM

NORTH LEG

TOTAL: 1

	Rt	Thru	Lt
Total		1	
1st		0	0
2nd		0	0
3rd		1	0
4th		0	0

EAST LEG TOTAL: 122

	1st	2nd	3rd	4th	Total
Rt	0	0	2	0	2
Thru					
Lt	33	32	24	31	120

	Total	1st	2nd	3rd	4th
Lt					
Thru					
Rt					

WEST LEG TOTAL: 0

PEAK HOUR FACTORS

NORTH LEG = 0.25
SOUTH LEG = 0.71
EAST LEG = 0.92
WEST LEG =

ALL LEGS = 0.76

	Lt	Thru	Rt
1st		0	111
2nd		0	36
3rd		1	78
4th		0	90
Total		1	315

TOTAL: 316

SOUTH LEG

HOUR TOTAL: 439

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : QUARRY RD APPLE VALLEY

EAST-WEST STREET : I-15 SB RAMPS 11-09-22

BEGINNING TIME : 04:00PM

AUTOS			LARGE 2 AXLE			3 AXLE			4(+) AXLE			TOTALS
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
NORTH LEG												
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0	1
0	0	1	0	0	0	0	0	0	0	0	0	1
0	1	2	0	0	0	0	0	0	0	0	0	3
SOUTH LEG												
109	0	0	2	0	0	0	0	0	0	0	0	111
36	0	0	0	0	0	0	0	0	0	0	0	36
77	1	0	0	0	0	1	0	0	0	0	0	79
90	0	0	0	0	0	0	0	0	0	0	0	90
66	1	0	0	0	0	0	0	0	0	0	0	67
75	0	0	0	0	0	0	0	0	0	0	0	75
66	0	0	0	0	0	0	0	0	0	0	0	66
48	0	0	0	0	0	0	0	0	0	0	0	48
567	2	0	2	0	0	1	0	0	0	0	0	572
EAST LEG												
0	0	24	0	0	2	0	0	3	0	0	4	33
0	0	27	0	0	0	0	0	1	0	0	4	32
2	0	20	0	0	1	0	0	2	0	0	1	26
0	0	26	0	0	1	0	0	0	0	0	4	31
0	0	17	0	0	0	0	0	0	0	0	0	17
0	0	27	0	0	2	0	0	0	0	0	0	29
1	0	19	0	0	0	0	0	1	0	0	0	21
0	0	20	0	0	1	0	0	0	0	0	2	23
3	0	180	0	0	7	0	0	7	0	0	15	212
WEST LEG												
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0

Prepared by Newport Traffic Studies

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: QUARRY RD

EAST-WEST STREET: I-15 SB RAMPS

TIME: 04:00PM-05:00PM DATE: 11-09-22

NORTH LEG

	Rt	Thru	Lt
Total		1	0
1st		0	0
2nd		0	0
3rd		1	0
4th		0	0

EAST LEG

	1st	2nd	3rd	4th	Total
Rt	0	0	2	0	2
Thru					
Lt	33	32	24	31	120

WEST LEG

	Total	1st	2nd	3rd	4th
Lt					
Thru					
Rt					

SOUTH LEG

	Lt	Thru	Rt
1st		0	111
2nd		0	36
3rd		1	78
4th		0	90
Total		1	315

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: QUARRY RD

EAST-WEST STREET: I-15 SB RAMPS

TIME: 05:00PM-06:00PM DATE: 11-09-22

NORTH LEG

	Rt	Thru	Lt
Total		0	2
1st		0	0
2nd		0	0
3rd		0	1
4th		0	1

	1st	2nd	3rd	4th	Total
Rt	0	0	1	0	1
Thru					
Lt	17	29	20	23	89

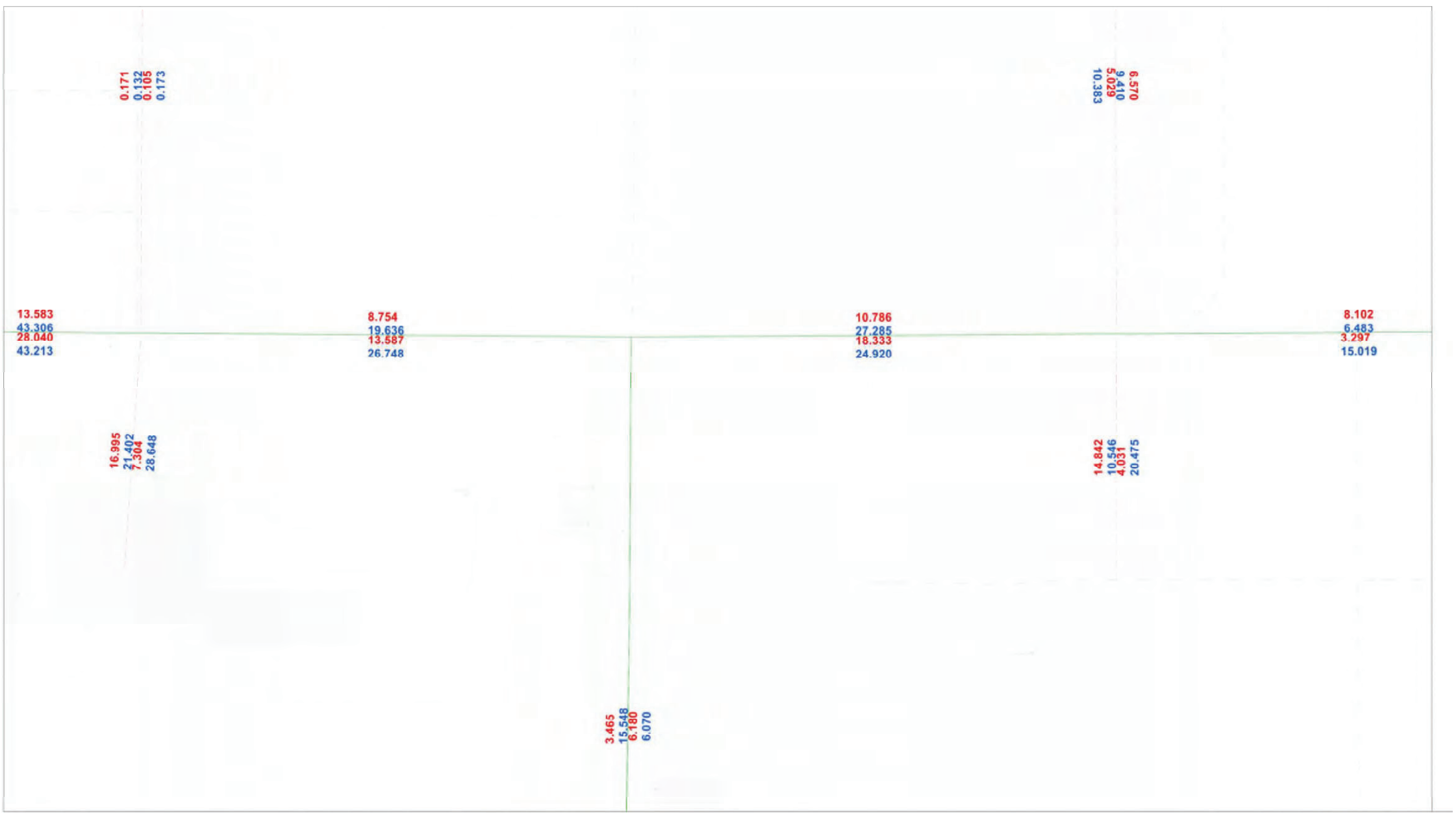
	Total	1st	2nd	3rd	4th
Lt					
Thru					
Rt					

	Lt	Thru	Rt
1st		1	66
2nd		0	75
3rd		0	66
4th		0	48
Total		1	255

Prepared by NEWPORT TRAFFIC STUDIES

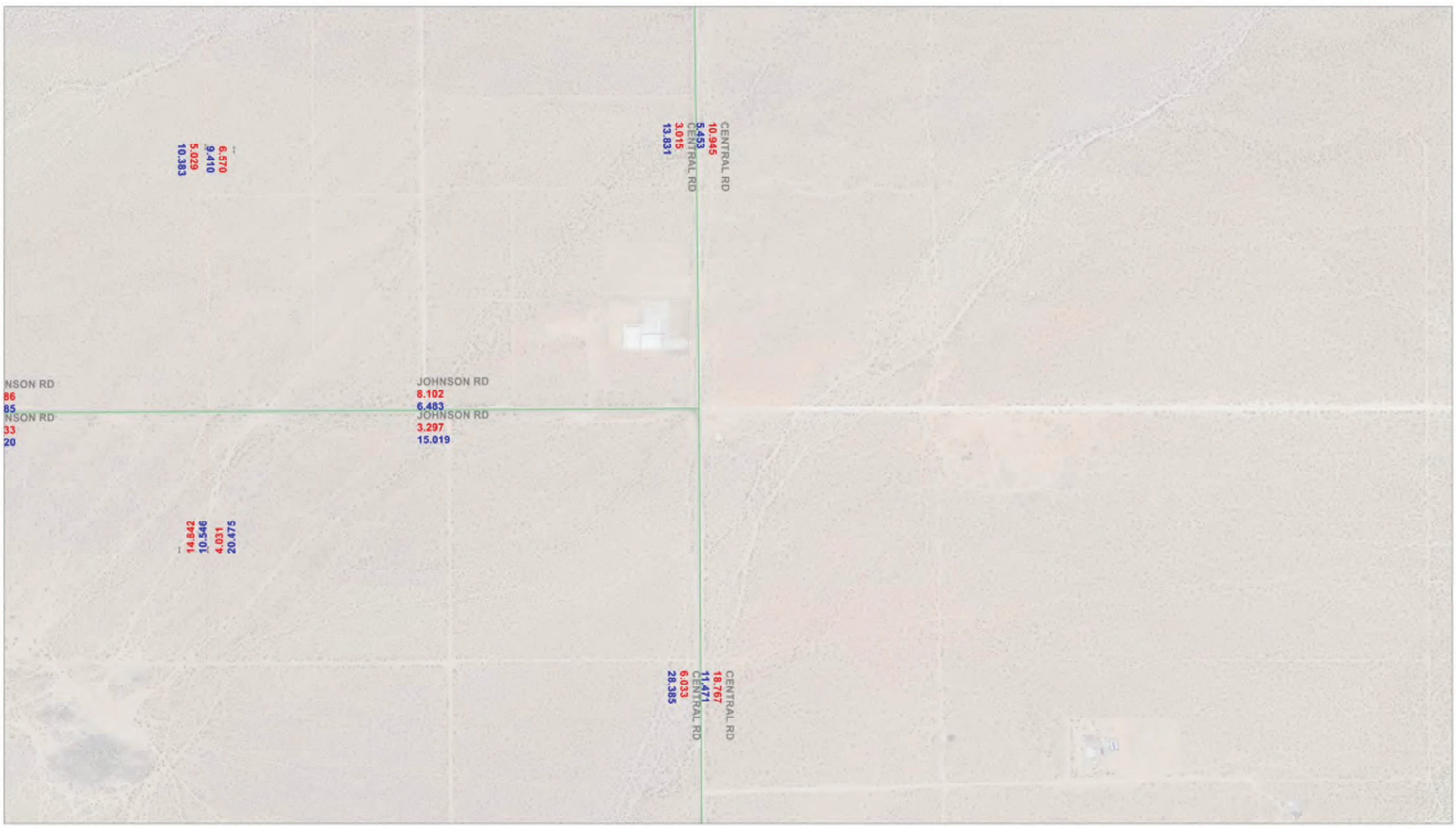
Appendix C: Forecast Model Plots and Volume Development

AM Volumes PM Volumes Intersection 1 - 2016

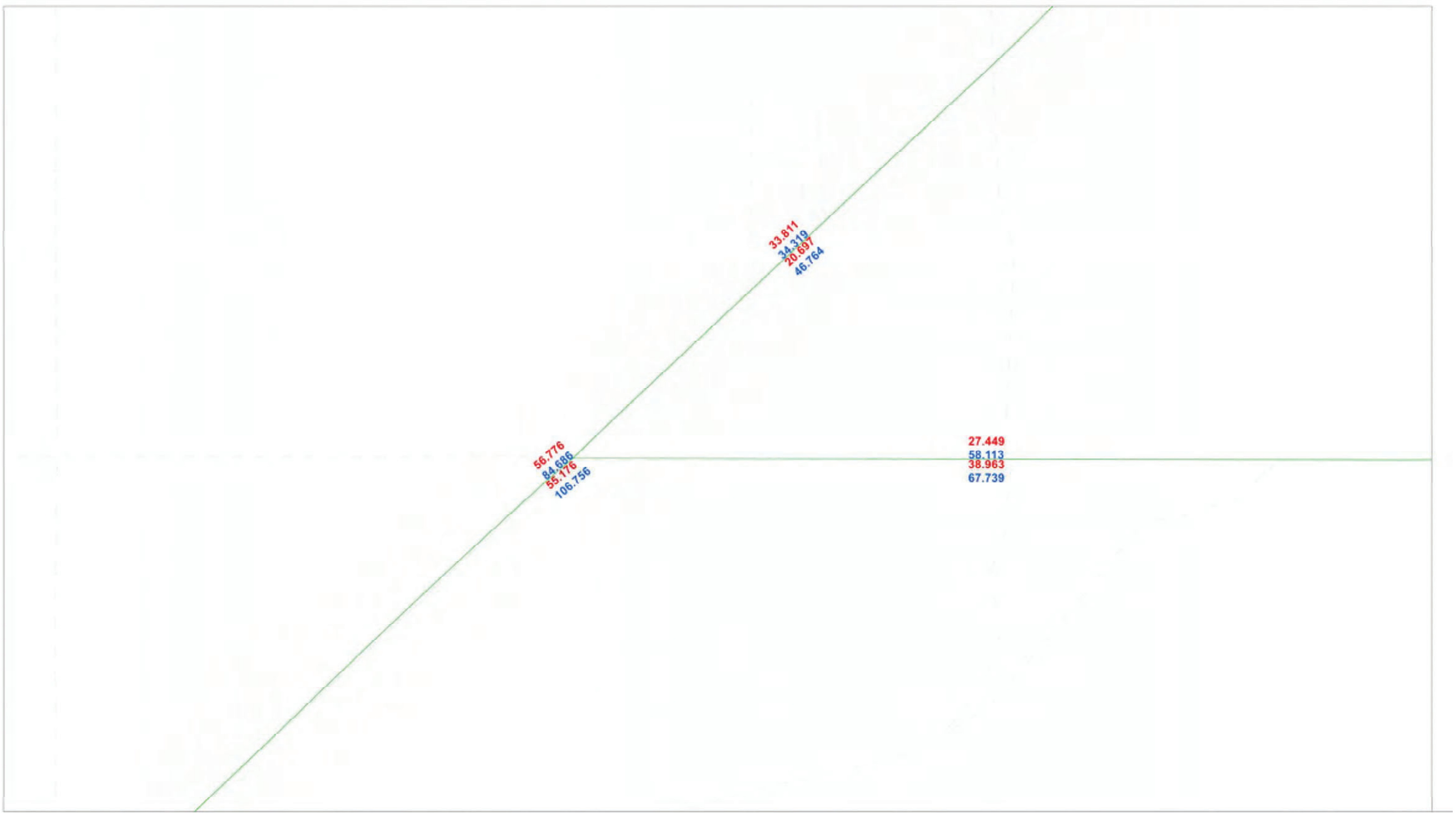


AM Volumes PM Volumes Intersection 2 - 2016

AM Volumes PM Volumes Intersection 3 - 2016

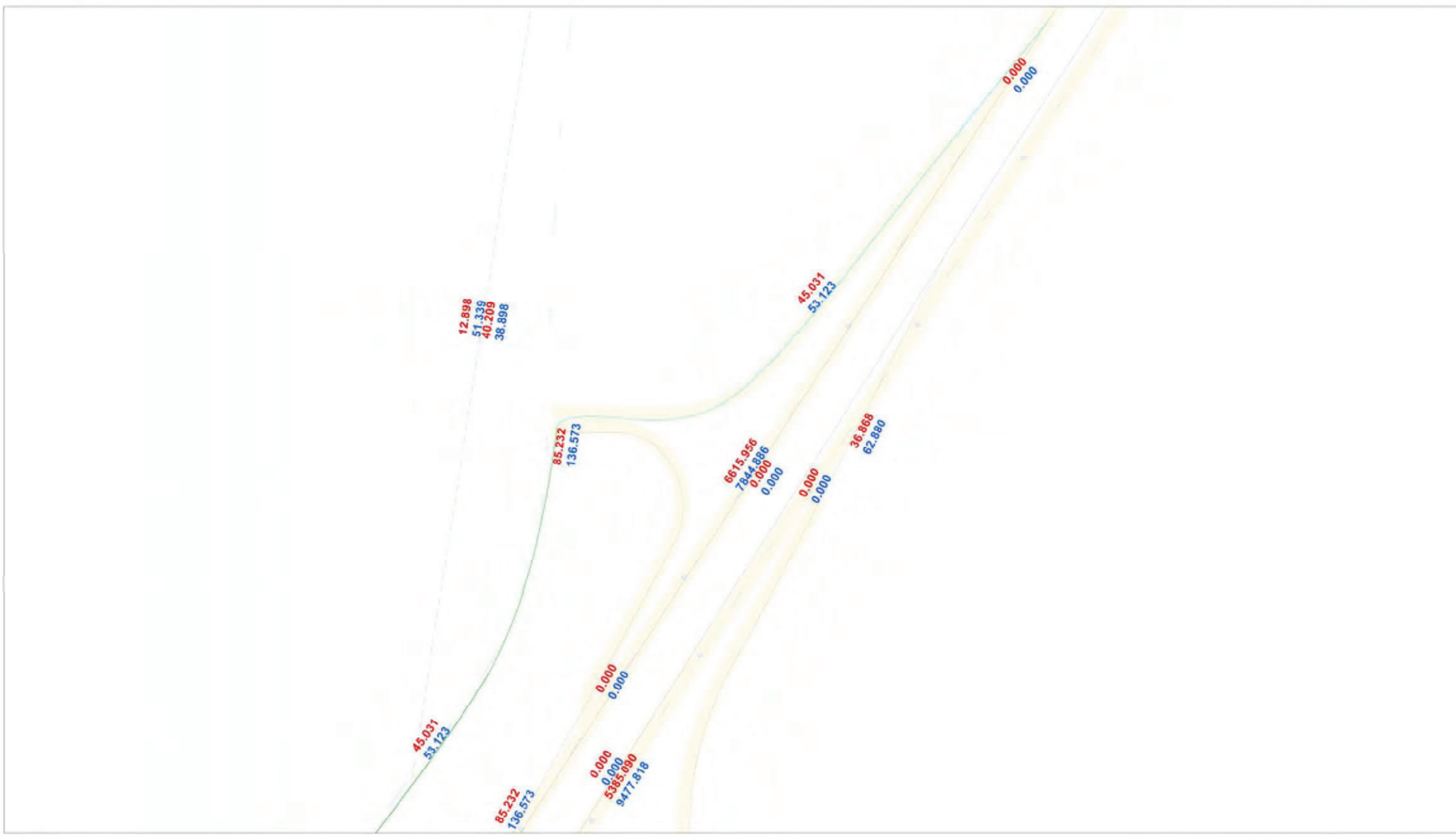


AM Volumes PM Volumes Intersection 4 - 2016

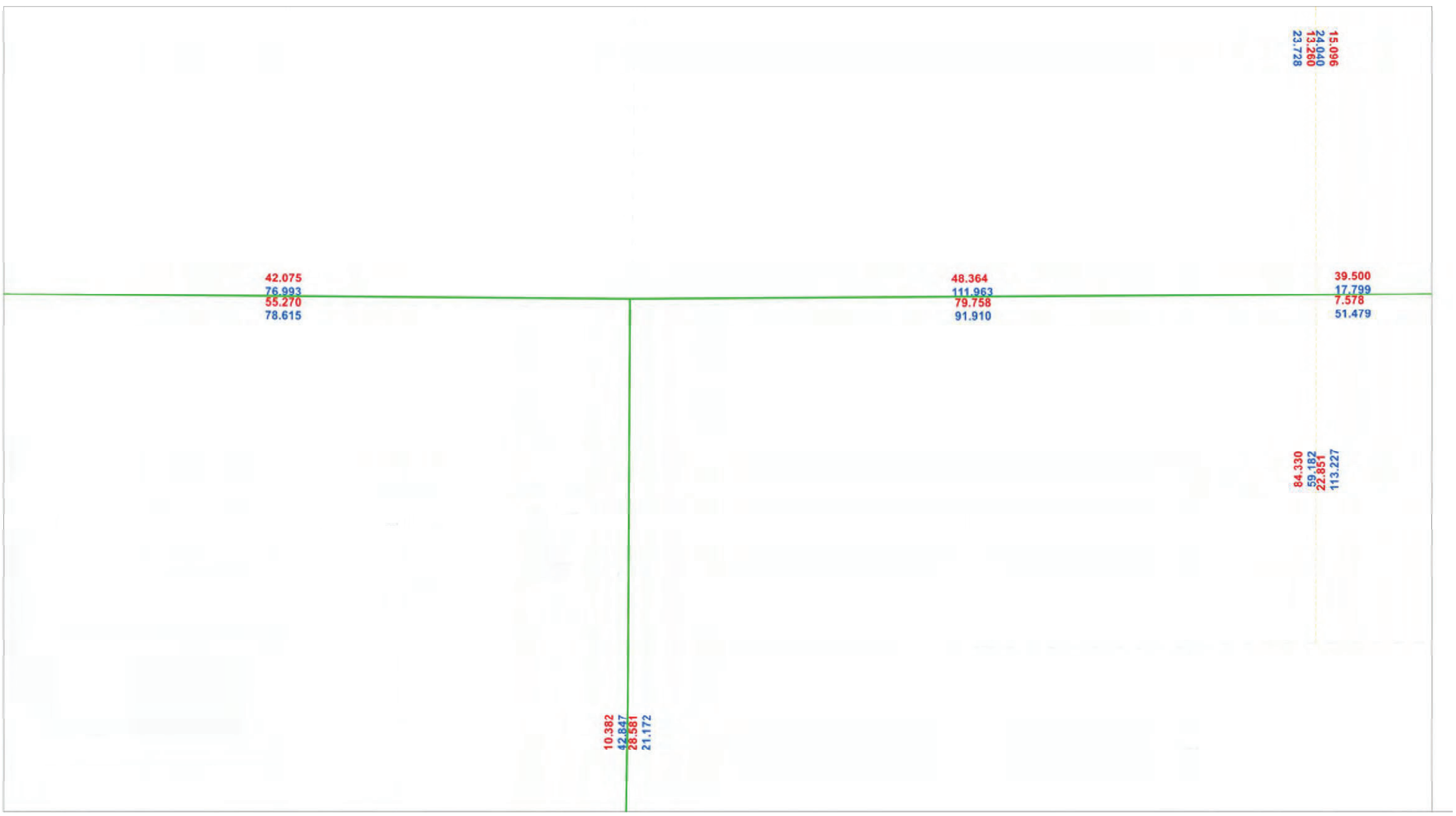


AM Volumes PM Volumes Intersections 5&6 - 2016

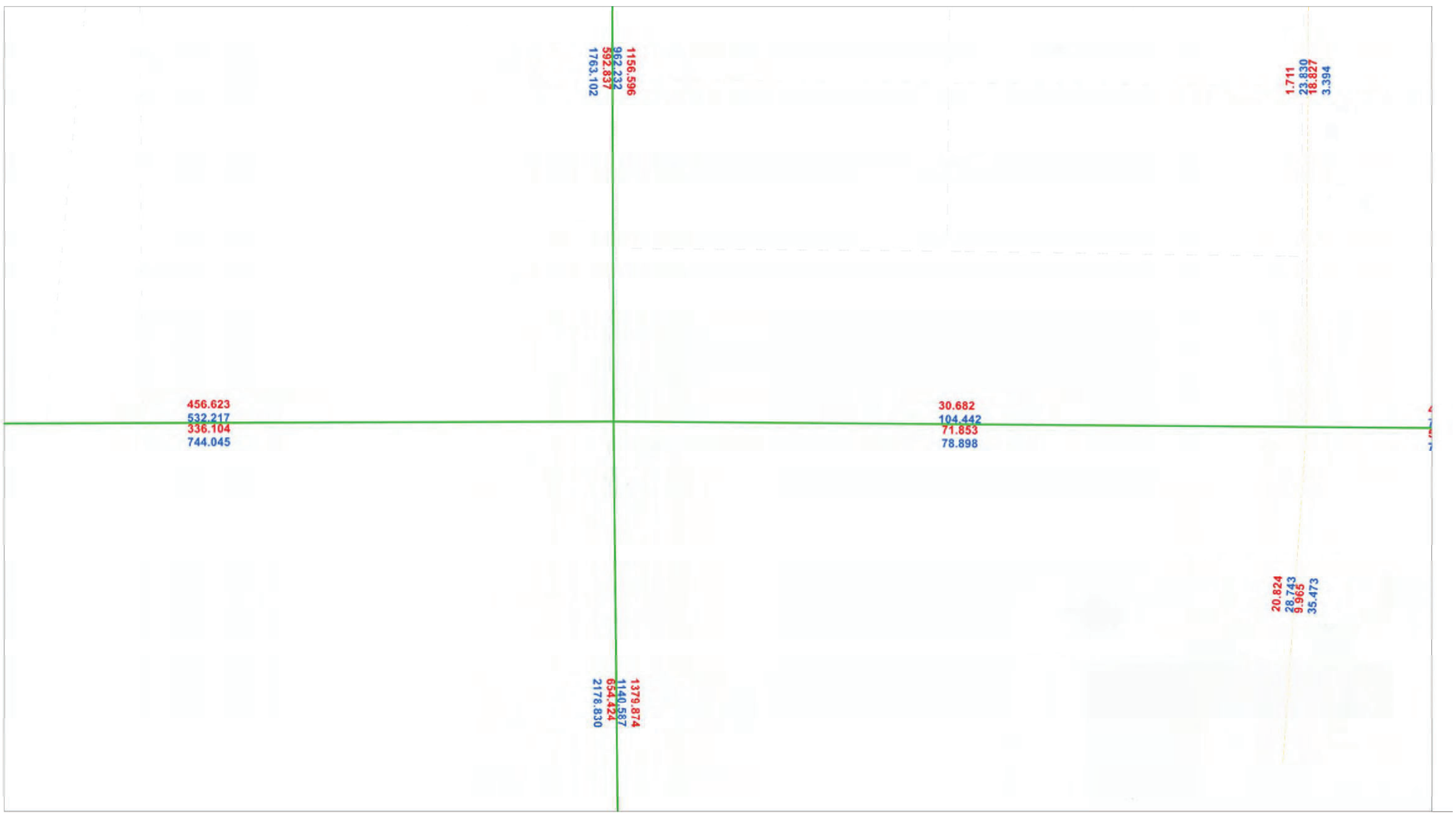
AM Volumes PM Volumes Intersection 7 - 2016



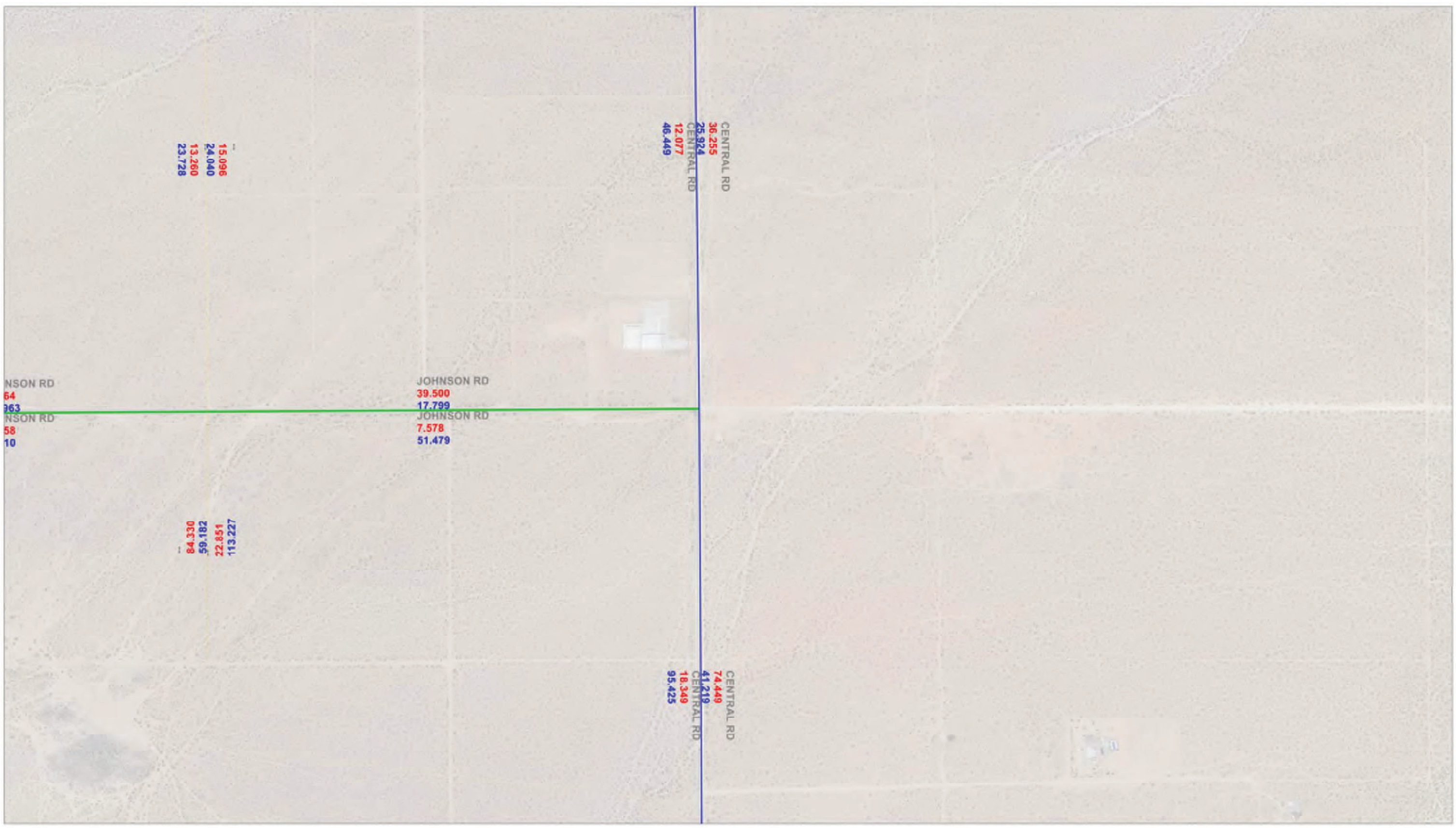
AM Volumes PM Volumes Intersection 1 - 2040



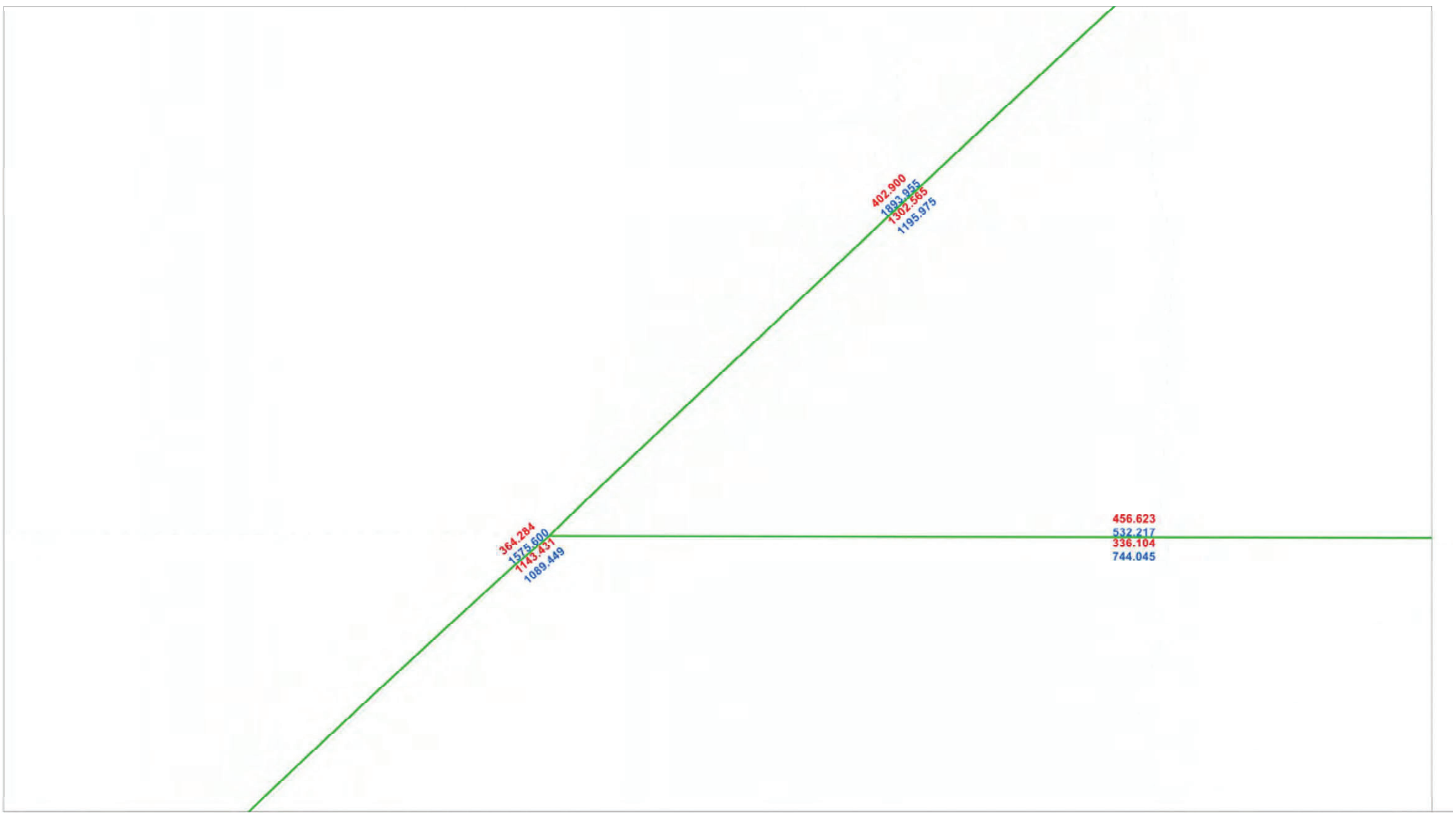
AM Volumes PM Volumes Intersection 2 - 2040



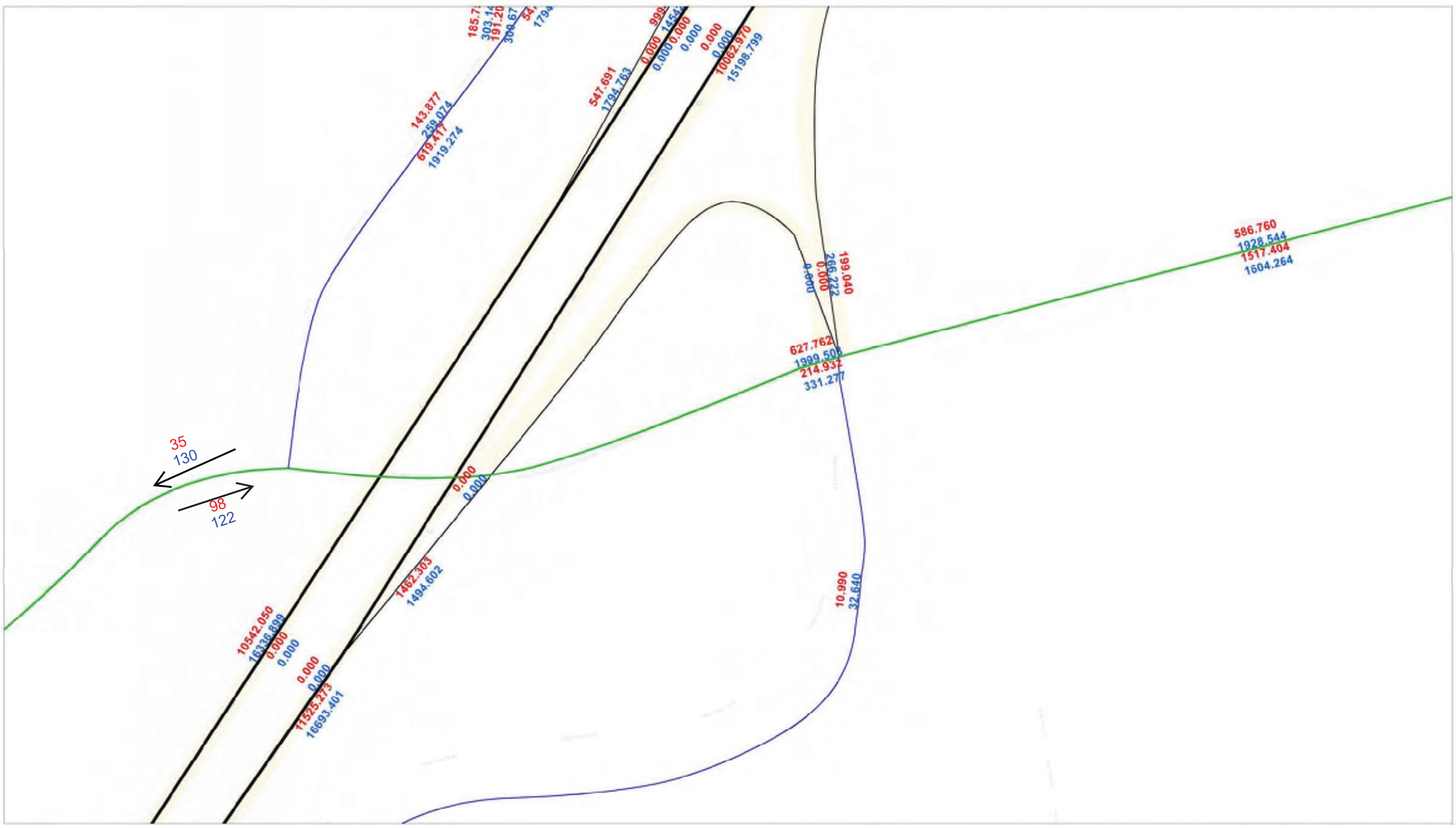
AM Volumes PM Volumes Intersection 3 - 2040



AM Volumes PM Volumes Intersection 4 - 2040



AM Volumes PM Volumes Intersections 5&6 - 2040



AM Volumes PM Volumes Intersection 7 - 2040

Appendix D: Other Area Approved Developments Excerpts

Initial Study

Apple Valley 143 Project

JULY 2022

Prepared for:

TOWN OF APPLE VALLEY
14955 Dale Evans Parkway
Apple Valley, California 92307
Contact: Daniel Alcayaga, Planning Manager

Prepared by:

DUDEK

38 N. Marengo Avenue
Pasadena, California 91101
Contact: Patrick Cruz, Project Manager

2 Project Description

2.1 Project Location

The approximately 143-acre Project site is located in the northern part of the Town, which is within the Victor Valley Region of San Bernardino County (Figure 1, Project Location). The Project site is located on the northeast quadrant of I-15 and Stoddard Wells Road. The Project site is located south of Johnson Road, approximately 0.25 miles west of Grasshopper Road, north of Stoddard Wells Road, and north of I-15. The Project site consists of Assessor's Parcel Numbers (APNs) 047-221-105, 047-221-106, 047-221-115, 047-222-206, and 047-222-211. Specifically, the Project site is located in Sections 13 and 24, Township 6N, Ranges 3W and 4W, as depicted on the U.S. Geological Survey Apple Valley North and Victorville, California 7.5-minute topographic quadrangle maps. Regional access to the Project site is provided via I-15, immediately adjacent to the northeast of the Project site.

2.2 Environmental Setting

Town of Apple Valley

The Town is approximately 72 square miles in the Victor Valley region of San Bernardino County. The Town is bordered by the City of Victorville to the west, the City of Hesperia to the southwest, and unincorporated County to the north and east.

Existing Project Site

The approximately 143-acre, irregularly-shaped project site consists of vacant, undeveloped land. The Project site is bordered to the west by I-15, which runs northeast-southwest, and to the southwest by another parcel, which gives the site its roughly trapezoidal shape. According to the Town's General Plan, the land use and zoning designations for the project site are Regional Commercial (C-R) (Town of Apple Valley 2015; Town of Apple Valley 2021) (see Figure 2, Land Use Designations, and Figure 3, Zoning Designations). Additionally, the Project site is located within the Warehouse Distribution Regional Commercial (C-R) Overlay.

Surrounding Land Uses

Land uses surrounding the Project site primarily consist of vacant land. Specific land uses located in the immediate vicinity of the Project site include the following:

- **North**: Johnson Road and vacant land
- **East**: vacant land and Grasshopper Road
- **South**: Stoddard Wells Road and a planned travel center
- **West**: I-15

2.3 Project Characteristics

The Project would include construction of three industrial/warehouse buildings and associated improvements on 143 acres of vacant land (see Figure 4, Site Plan). Building 1, the southernmost building, would be approximately

615,000 square feet, Building 2, the center building, would be approximately 1,220,000 square feet, and Building 3, the northernmost building, would be approximately 793,000 square feet. The Project would involve associated improvements, including loading docks, truck and vehicle parking, and landscaped areas.

On-Site and Off-Site Improvements

The Project would include improvements along Stoddard Wells Road and Johnson Road, including frontage landscaping and pedestrian improvements. A variety of trees, shrubs, plants, and land covers would be planted within the Project frontage's landscape setback area, as well as within the landscape areas found around the proposed industrial/warehouse buildings and throughout the Project site. The Project would also involve the off-site construction of Outer I-15 Road on the eastern boundary of the Project Site. This would be a public road once constructed.

Site Access and Circulation

Access to the Project site would be provided via Outer I-15 Road on the eastern boundary of the project site, as well as a driveway off of Stoddard Wells Road. Paved passenger vehicle parking areas would be provided within areas east of Buildings 1, 2 and 3, while tractor-trailer stalls and loading docks would be surrounding Building 1 to the north and south, and surrounding Buildings 2 and 3 to the north, south, and west. In total, the Project would provide approximately 515 loading dock positions, approximately 884 tractor-trailer stalls, roughly 975 passenger vehicle spaces, and approximately 920,000 square feet of landscape area coverage.

Utility Improvements

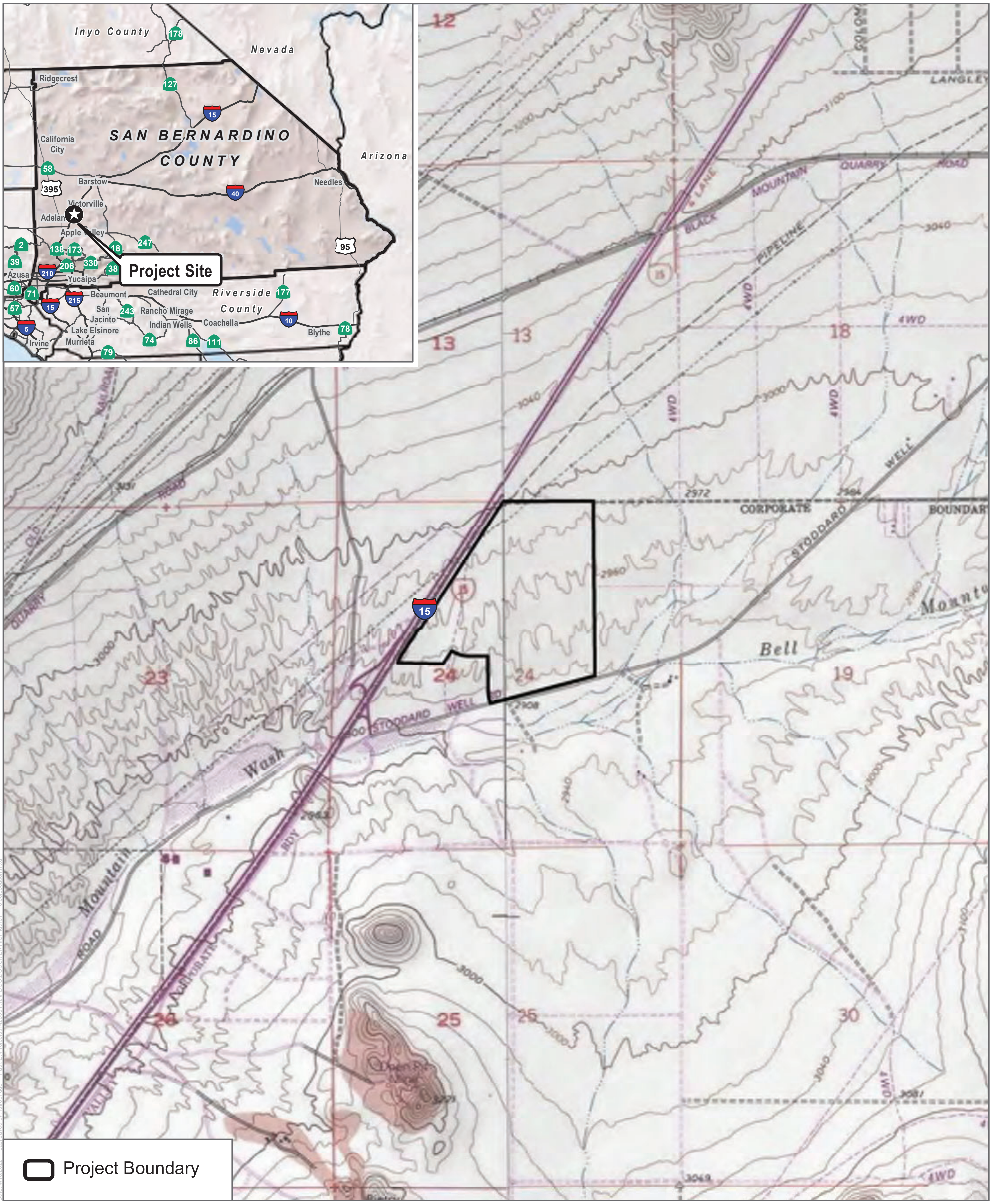
Given the vacant, undeveloped nature of the Project site, both wet and dry utilities, including domestic water, sanitary sewer, storm drainage, and electricity, would need to be extended onto the Project site.

Operations

Tenants for the Project have not been identified and the three industrial warehouse buildings are considered speculative. Business operations would be expected to be conducted within the enclosed buildings, with the exception of ingressing and egressing of trucks and passenger vehicles accessing the site, passenger and truck parking, the loading and unloading of trailers within designated truck courts/loading area, and the internal and external movement of materials around the Project site via forklifts, pallet jacks, yard hostlers, and similar equipment. It is anticipated that the facilities would be operated 24 hours a day, 7 days a week.

2.4 Project Approvals

At this time, it is anticipated that that the Project would require approval of a conditional use permit and development agreement. This list is preliminary and may not be comprehensive. Subsequent non-discretionary approvals (which would require separate processing through the Town) would include, but may not be limited to, a grading permit, building permits, and occupancy permits.



SOURCE: USGS 7.5-minute Series Victorville and Apple Valley North Quadrangles

DUDEK

0 1,000 2,000 Feet

FIGURE 1

Project Location

Apple Valley Stoddard Wells Warehouse Project Initial Study

SOURCE: RGA 2022

DUDEK

FIGURE 4

Site Plan

Apple Valley Stoddard Wells Warehouse Project Initial Study

Estimated Trip Generation of Apple Valley 143 Project

Land Use	Gross Floor Area (KSF)	Daily	AM Peak Hour of Adjacent Street Traffic			PM Peak Hour of Adjacent Street Traffic		
			In	Out	Total	In	Out	Total
Warehouse (ITE Land Use Category 150)	2,628.00	Vehicle Trip Generation Rates						
		2.36	0.18	0.06	0.24	0.07	0.17	0.24
		Total Vehicle Trip Generation						
		6,202	486	145	631	177	454	631
	Mode Share	Project Trip Generation by Vehicle Type						
Passenger Cars (Percent of Total)	74.21%	4,603	360	108	468	131	337	468
2-Axle Trucks (Percent of Total)	4.55%	282	22	7	29	8	21	29
3-Axle Trucks (Percent of Total)	4.18%	259	20	6	26	7	19	26
4-Axle Trucks (Percent of Total)	17.04%	1057	83	25	107	30	77	107
	PCE Factor	Project Trip Generation in Passenger Car Equivalents (PCE)						
Passenger Cars)	1.0	4,603	360	108	468	131	337	468
2-Axle Trucks	1.5	423	33	10	43	12	31	43
3-Axle Trucks	2.0	518	41	12	53	15	38	53
4 + Axle Trucks	3.0	3171	248	74	322	90	232	322
Total Passenger Car Equivalents (PCE)		**8,715**	**682**	**204**	**886**	**248**	**638**	**886**

Notes:
KSF = Thousands of Square Feet.
AM / PM Peak Hour of Adjacent Street Traffic = Trip generation coinciding with the highest hourly volumes of traffic on the adjacent streets during the AM (7:00 AM and 9:00 AM) and PM (4:00 PM and 6:00 PM) commuter peak periods.
Source of trip generation rates: Institute of Transportation Engineers (ITE) Trip Generation (11th Edition). Average rates for land use category 150 (Warehouse).
Source of passenger car / truck mode share (percentage of total): South Coast Air Quality Management District High Cube Warehouse Trip Generation Study (2016). Based on data from eight high cube warehouses in the Inland Empire over 1,000,000 square feet in size. The average warehouse building size is 1,364,496 square feet.
Passenger Car Equivalents (PCE) factors: Industry standard values utilized in neighboring jurisdictions

Building 1: 615,000 square feet
Building 2: 1,220,000 square feet
Building 3: 793,000 square feet
Total: 2,628,000 square feet

APPLE VALLEY 143 PROJECT TRIPS

		AM	AM	AM		
		PM	PM	PM		
AM	PM				AM	PM
AM	PM		Intersection #		AM	PM
AM	PM				AM	PM
		AM	AM	AM		
		PM	PM	PM		

AM PEAK: 682 IN / 204 OUT
PM PEAK: 248 IN / 638 OUT

MRound: 1

INSTRUCTIONS:
FILL OUT AM/PM PEAK ONLY. DATA CALCULATED BASED ON THE VALUES IN THE "PRIMARY MOVEMENT IN-OUT" AND "PRIMARY DISTRIBUTION" TABS. TO BE USED IN EXHIBT D1.

		0	0	0		
		0	0	0		
0	0				0	0
0	0		1		0	0
0	0				0	0
		0	0	0		
		0	0	0		

		0	0	0		
		0	0	0		
0	0				0	0
0	0		2		0	0
0	0				0	0
		0	0	0		
		0	0	0		

		0	0	0		
		0	0	0		
0	0				0	0
0	0		3		0	0
0	0				0	0
		0	0	0		
		0	0	0		

		0	0	0		
		0	0	0		
0	0				0	0
0	0		4		0	0
0	0				0	0
		0	0	0		
		0	0	0		

		0	0	0		
		0	0	0		
0	0				0	0
0	0		5		0	0
0	0				0	0
		0	0	0		
		0	0	0		

		0	0	377		
		0	0	138		
0	0				86	269
287	105		6		113	353
0	0				0	0
		0	0	0		
		0	0	0		

		0	0	287		
		0	0	105		
0	0				113	353
0	0		7		0	0
0	0				0	0
		0	0	0		
		0	0	0		

		0	0	0		
		0	0	0		
0	0				0	0
0	0		8		0	0
0	0				287	105
		0	0	113		
		0	0	353		

		0	0	0		
		0	0	0		
0	0				0	0
0	0		9		0	0
0	0				0	0
		0	0	0		
		0	0	0		

		0	0	0		
		0	0	0		
0	0				0	0
0	0		10		0	0
0	0				0	0
		0	0	0		
		0	0	0		

		0	0	0		
		0	0	0		
0	0				0	0
0	0		11		0	0
0	0				0	0
		0	0	0		
		0	0	0		

		0	0	0		
		0	0	0		
0	0				0	0
0	0		12		0	0
0	0				0	0
		0	0	0		
		0	0	0		

		0	0	0		
		0	0	0		
0	0				0	0
0	0		13		0	0
0	0				0	0
		0	0	0		
		0	0	0		

		0	0	0		
		0	0	0		
0	0				0	0
0	0		14		0	0
0	0				0	0
		0	0	0		
		0	0	0		

LOVE'S TRAVEL CENTER

DRAFT
Transportation Impact Study

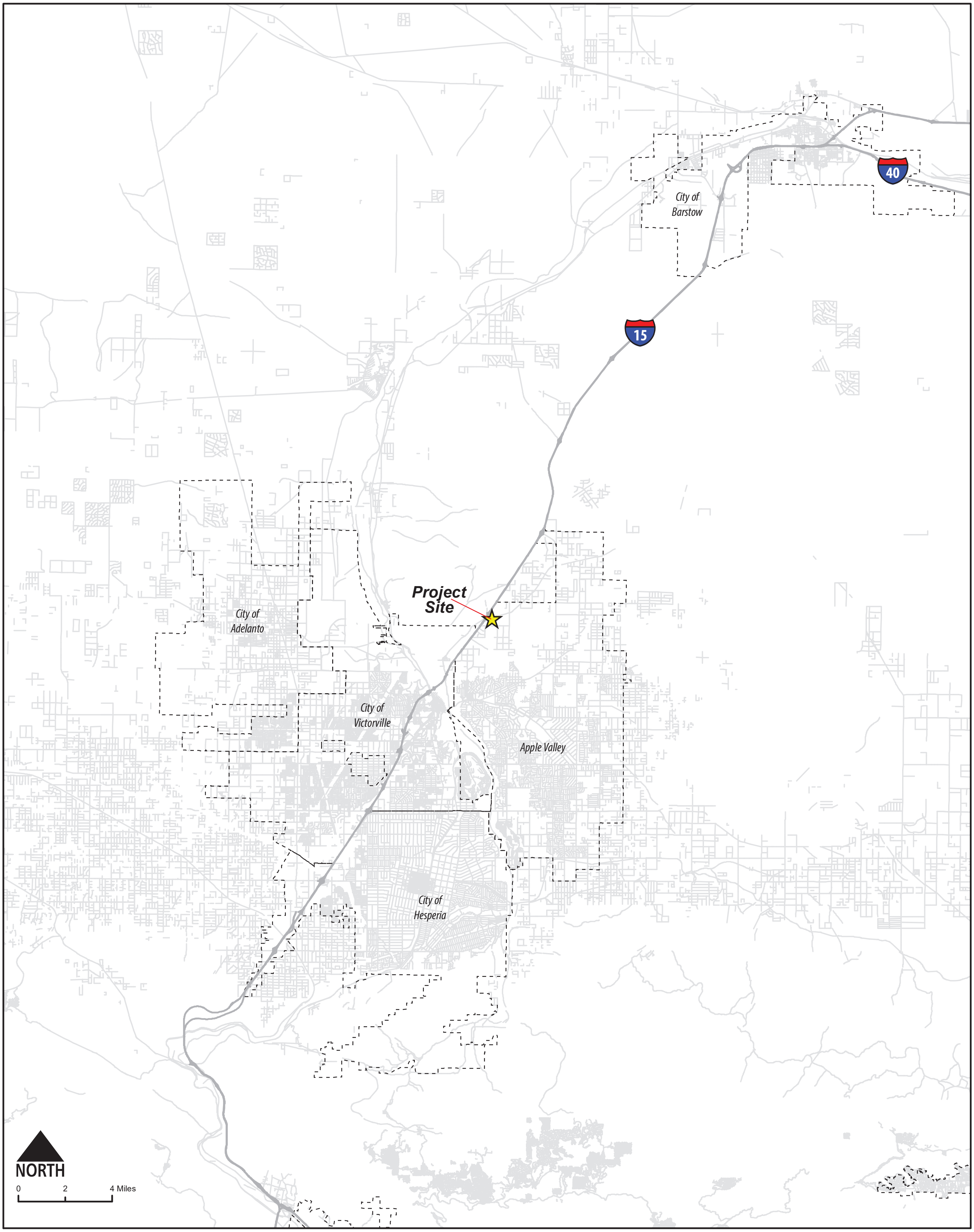
July 2022

Prepared For

Love's Travel Stops & Country Stores
10601 N. Pennsylvania Avenue
The Village, OK 73120

Prepared By

CR Associates
3900 Fifth Avenue, Suite 310
San Diego, CA 92103

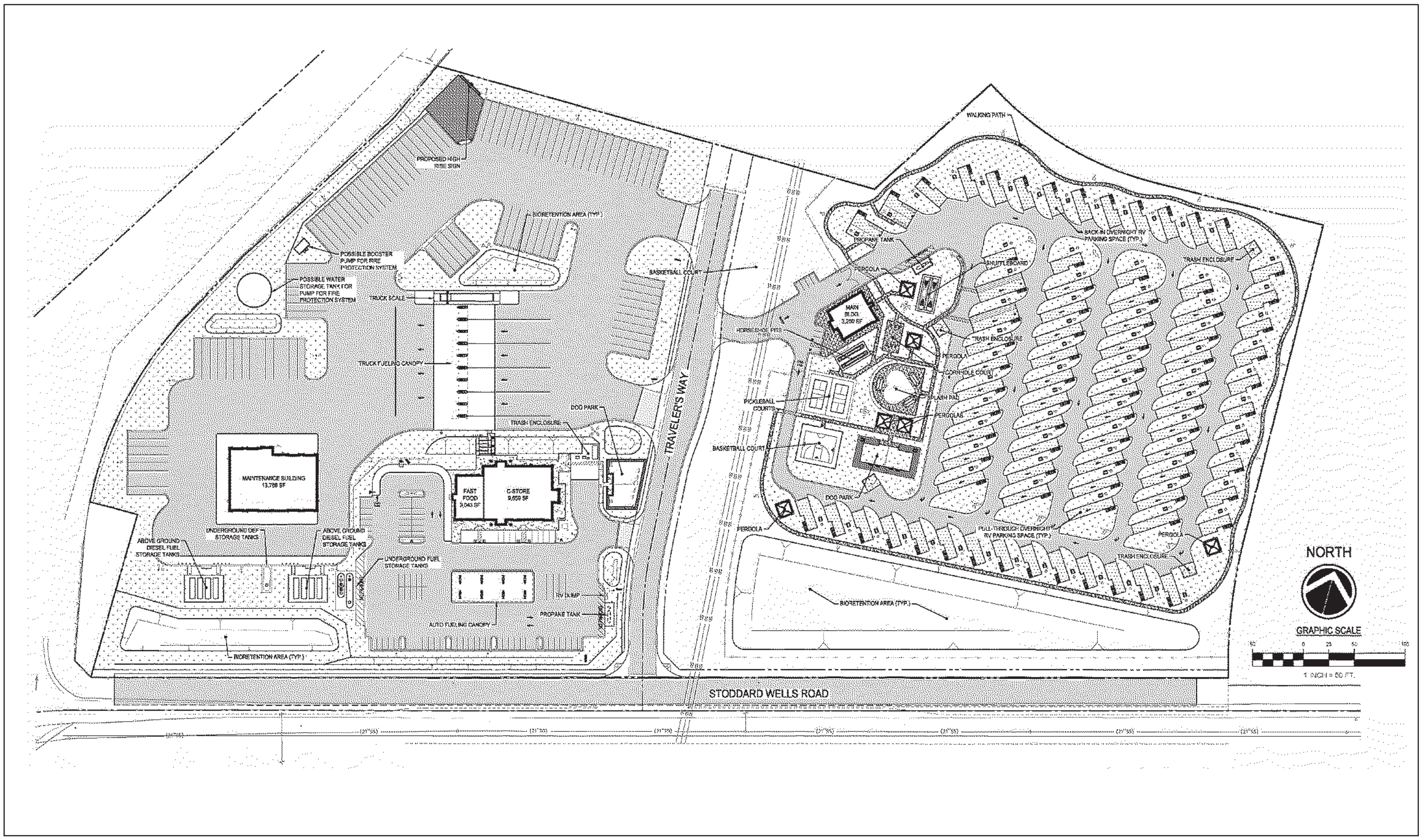


Love's Travel Center

Transportation Impact Study

Figure 1.1

Project Regional Location



Love's Travel Center
Transportation Impact Study

Figure 1.2
Project Site Plan

Table 3.1 Proposed Project Trip Generation

			Daily		AM Peak Hour				PM Peak Hour			
Land Use	Units	Vehicle Type	Trip Rate	Total	Trip Rate	Total	In	Out	Trip Rate	Total	In	Out
Travel Center	25 fuel positions	Total Travel Center Trips[1] (A)										
		Auto	106.52	2,663	5.24	131	66	66	6.92	173	87	86
		Truck	106.52	2,663	5.48	137	68	68	5.20	130	65	65
		Both		5,326		268	134	134		303	152	151
		Diverted Trip Reduction (B)										
		Auto	*90%*	*-2,397*	*90%*	*-118*	*-59*	*-59*	*90%*	*-156*	*-78*	*-77*
		Truck	*95%*	*-2,530*	*95%*	*-130*	*-65*	*-65*	*95%*	*-124*	*-62*	*-62*
		Both		*-4,927*		*-248*	*-124*	*-124*		*-280*	*-140*	*-139*
		Net New Travel Center Trips (C) = (A+B)										
		Auto		266		13	7	7		17	9	9
		Truck		133		7	3	3		6	3	3
		Both		399		20	10	10		23	12	12
		Total RV Stop Trips (D)										
RV Stop[2]	80 Overnight Parking Spots	-	2.7	216[3]	0.21	17	6	11	0.27	22	14	8
Proposed Project Total Trips (A+D)												
				5,542		285	140	145		325	166	159
Proposed Project Net New Trips (C+D)												
				615		37	16	21		45	26	20

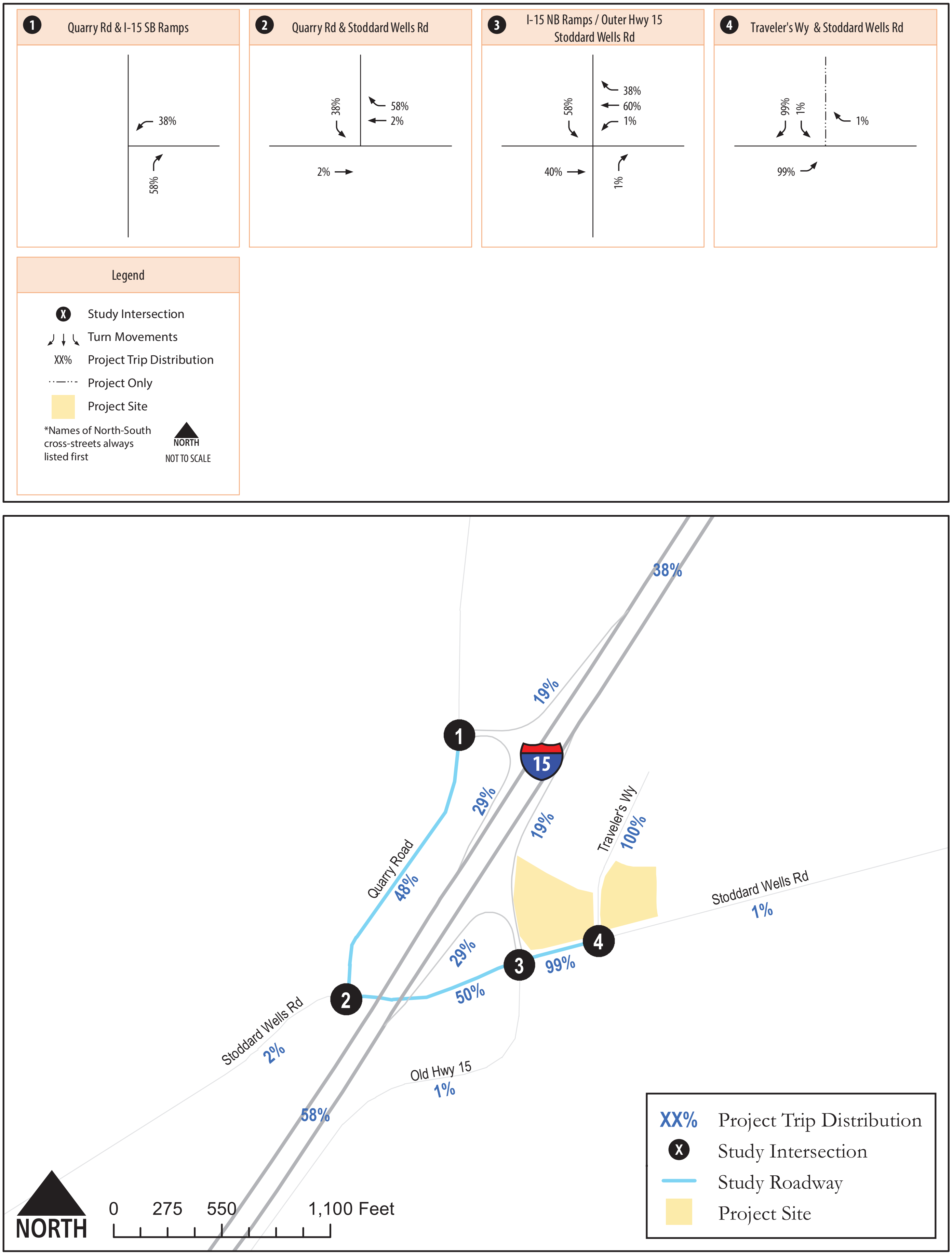
Notes:
[1]Trip generation rate from *Love's Trip Generation and Travel Characteristic Study (Omni-Means, June 2018).*
[2]Trip generation rate from ITE Trip Generation 11th Edition for LU Code 416 Campground/Recreational Vehicle Park.
[3]Daily trip rate not available for RV stop, therefore PM peak hour trips assumed to be 10 percent of daily traffic.

As shown, the Proposed Project land uses are anticipated to generate 5,542 daily trips, with 285 trips during the AM peak hour and 325 trips during the PM peak hour. These project trips were analyzed along adjacent roadway segments and intersections to determine if improvements are needed for study facilities to operate at acceptable levels of service.

Since most trips are assumed to be existing diverted trips, only 615 daily trips, 37 AM peak hour trips, and 45 PM peak hour trips are expected to be net new generated trips in the study area by the Proposed Project. This is important to Vehicle Miles Traveled (VMT) and further explained in Chapter 7.3 as most of the trips to the Travel Center are diverted, resulting in a low VMT for the Travel Center component.

3.2 Project Trip Distribution and Assignment

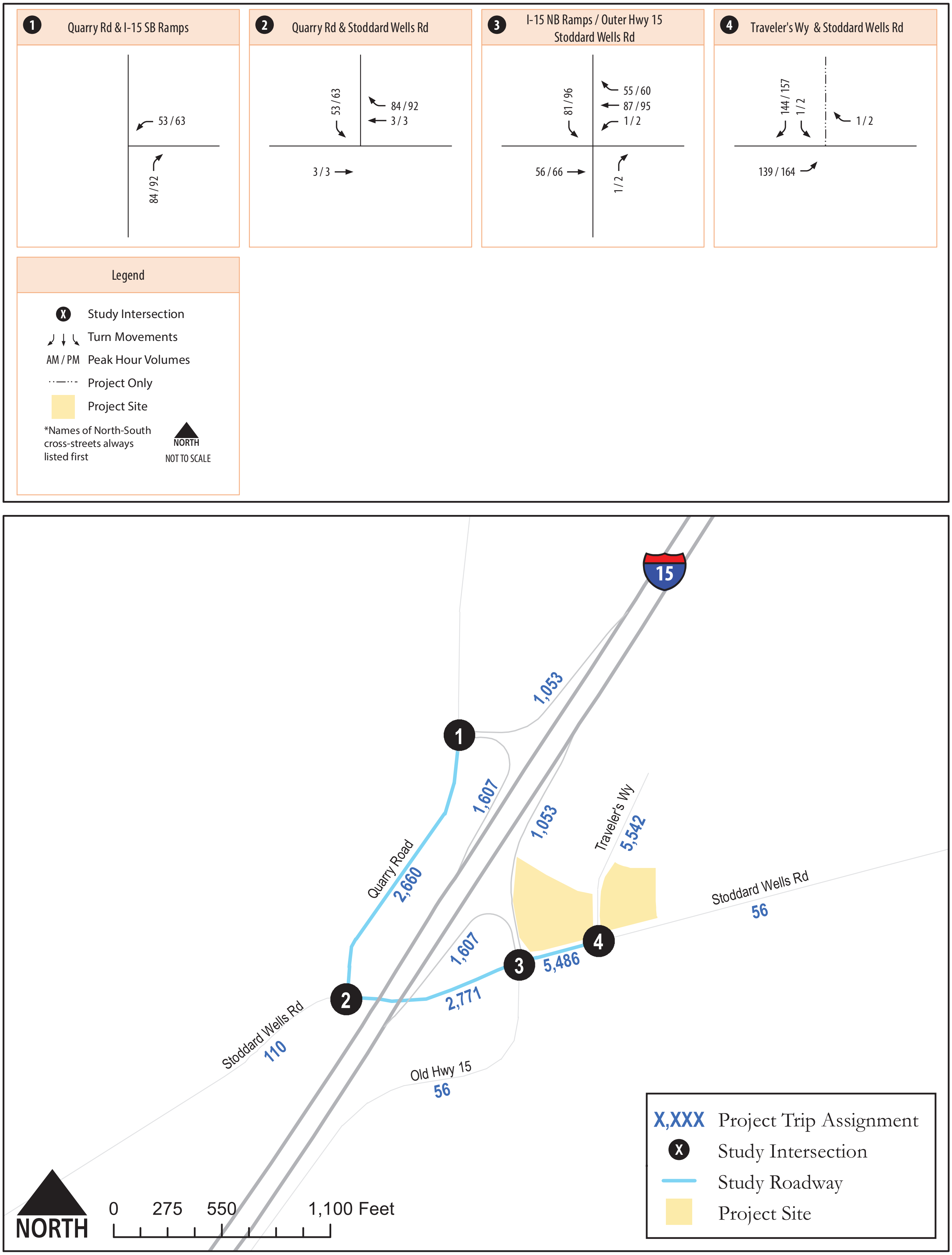
The project trip distribution was developed using engineering judgment based upon project land use characteristics, location, proximity to freeway access points, and corresponding land uses in the vicinity of the project site. **Figure 3.1** displays the regional trip distribution for the Proposed Project. Based upon the project trip distribution patterns, daily and AM/PM peak hour project trips were assigned to the adjacent roadway network. **Figure 3.2** displays the Proposed Project roadway and intersection trip assignment, respectively.



Love's Travel Center
Transportation Impact Study

C✚R

Figure 3.1
Project Trip Distribution



Love's Travel Center
Transportation Impact Study

Figure 3.2
Project Trip Assignment

Appendix E: Intersection Capacity Analysis Worksheets

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	TNM	12-Sep-23	PIXI5AMG-0002	1 OF 2

E/W STREET : JOHNSON RD
N/S STREET : NAVAJO RD
CONDITION : AM PEAK HOUR

INTERSECTION : 1
PROJECTED GROWTH PER YEAR : 3.0%

TURN MOVEMENTS

Condition	Existing Condition	Year 2025 Ambient Growth	Other Area Projects	Background Condition	Project Trips	Project Condition	Future Year 2040 Condition	Future Year 2040 + Project Condition
Scenario #	1			3		5	7	9
JOHNSON RD								
EB LEFT	0	0	0	0	40	40	0	40
EB THRU	6	1	0	7	0	7	18	18
EB RIGHT	55	5	0	60	0	60	57	57
WB LEFT	2	1	0	3	0	3	3	3
WB THRU	36	4	0	40	0	40	45	45
WB RIGHT	0	0	0	0	7	7	0	7
NAVAJO RD								
NB LEFT	94	9	0	103	0	103	95	95
NB THRU	0	0	0	0	0	0	0	0
NB RIGHT	2	1	0	3	0	3	7	7
SB LEFT	0	0	0	0	3	3	0	3
SB THRU	0	0	0	0	0	0	0	0
SB RIGHT	0	0	0	0	12	12	0	12
TOTALS	**195**	**21**	**0**	**216**	**62**	**278**	**225**	**287**

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN VOLUME SUMMARY	TNM	12-Sep-23	PIXI5AMG-0002	2 OF 2

E/W STREET : JOHNSON RD   N/S STREET : NAVAJO RD

CONDITION : AM PEAK HOUR   PHF : 0.73

Number of Axles	2-Axle Trucks	3-Axle Trucks	4+ Axle Trucks
PCE factor	1.5	2	3

NORTH LEG

AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

SOUTH LEG

AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	0	17	0	0	2	0	0	1	0	0	2
0	0	22	0	0	0	0	0	0	0	0	0
2	0	23	0	0	1	0	0	0	0	0	1
0	0	16	0	0	0	0	0	0	0	0	0

EAST LEG

AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	1	2	0	0	0	0	0	0	0	0	0
0	7	0	0	0	0	0	0	0	0	1	0
0	14	0	0	0	0	0	0	0	0	0	0
0	9	0	0	0	0	0	1	0	0	0	0

WEST LEG

AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
10	3	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	1	0	0
20	1	0	0	0	0	0	0	0	0	0	0
12	2	0	0	0	0	0	0	0	0	0	0

	Truck Volumes	Auto Volumes	Vehicle Totals	PCE Totals	Balanced PCE Totals
JOHNSON RD					
EB LEFT	0	0	**0**	**0**	**0**
EB THRU	0	6	**6**	**6**	**6**
EB RIGHT	1	52	**53**	**55**	**55**
WB LEFT	0	2	**2**	**2**	**2**
WB THRU	2	31	**33**	**36**	**36**
WB RIGHT	0	0	**0**	**0**	**0**
NAVAJO RD					
NB LEFT	7	78	**85**	**94**	**94**
NB THRU	0	0	**0**	**0**	**0**
NB RIGHT	0	2	**2**	**2**	**2**
SB LEFT	0	0	**0**	**0**	**0**
SB THRU	0	0	**0**	**0**	**0**
SB RIGHT	0	0	**0**	**0**	**0**

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Santa Clarita Office: 661.284.7400 ~ Temecula Office: 951.294.9300 ~ Tustin Office: 714.665.4500
Victorville Office: 760.524.9100

Intersection	
Int Delay, s/veh	4.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	6	55	2	36	94	2
Future Vol, veh/h	6	55	2	36	94	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	8	75	3	49	129	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	83	0	101	46
Stage 1	-	-	-	-	46	-
Stage 2	-	-	-	-	55	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1527	-	902	1029
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	973	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1527	-	900	1029
Mov Cap-2 Maneuver	-	-	-	-	900	-
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	971	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	902	-	-	1527	-
HCM Lane V/C Ratio	0.146	-	-	0.002	-
HCM Control Delay (s)	9.7	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection	
Int Delay, s/veh	5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	7	60	3	40	103	3
Future Vol, veh/h	7	60	3	40	103	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	10	82	4	55	141	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	92	0	114	51
Stage 1	-	-	-	-	51	-
Stage 2	-	-	-	-	63	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1515	-	887	1023
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	965	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1515	-	884	1023
Mov Cap-2 Maneuver	-	-	-	-	884	-
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	962	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	887	-	-	1515	-
HCM Lane V/C Ratio	0.164	-	-	0.003	-
HCM Control Delay (s)	9.9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0	-

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	40	7	60	3	40	7	103	0	3	3	0	12
Future Vol, veh/h	40	7	60	3	40	7	103	0	3	3	0	12
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	73	73	73	73	73	73	73	73	73
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	55	10	82	4	55	10	141	0	4	4	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	65	0	0	92	0	0	237	234	51	231	270	60
Stage 1	-	-	-	-	-	-	161	161	-	68	68	-
Stage 2	-	-	-	-	-	-	76	73	-	163	202	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1550	-	-	1515	-	-	722	670	1023	728	640	1011
Stage 1	-	-	-	-	-	-	846	769	-	947	842	-
Stage 2	-	-	-	-	-	-	938	838	-	844	738	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1550	-	-	1515	-	-	688	643	1023	703	614	1011
Mov Cap-2 Maneuver	-	-	-	-	-	-	688	643	-	703	614	-
Stage 1	-	-	-	-	-	-	814	740	-	911	839	-
Stage 2	-	-	-	-	-	-	920	835	-	809	710	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.8	0.4	11.6	9
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	694	1550	-	-	1515	-	-	930
HCM Lane V/C Ratio	0.209	0.035	-	-	0.003	-	-	0.022
HCM Control Delay (s)	11.6	7.4	0	-	7.4	0	-	9
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.8	0.1	-	-	0	-	-	0.1

Intersection						
Int Delay, s/veh	4.4					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	18	57	3	45	95	7
Future Vol, veh/h	18	57	3	45	95	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	19	60	3	47	100	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	79	0	102	49
Stage 1	-	-	-	-	49	-
Stage 2	-	-	-	-	53	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1532	-	901	1025
Stage 1	-	-	-	-	979	-
Stage 2	-	-	-	-	975	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1532	-	899	1025
Mov Cap-2 Maneuver	-	-	-	-	899	-
Stage 1	-	-	-	-	979	-
Stage 2	-	-	-	-	973	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	907	-	-	1532	-
HCM Lane V/C Ratio	0.118	-	-	0.002	-
HCM Control Delay (s)	9.5	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	18	57	3	45	7	95	0	7	3	0	12
Future Vol, veh/h	40	18	57	3	45	7	95	0	7	3	0	12
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	42	19	60	3	47	7	100	0	7	3	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	54	0	0	79	0	0	196	193	49	194	220	51
Stage 1	-	-	-	-	-	-	133	133	-	57	57	-
Stage 2	-	-	-	-	-	-	63	60	-	137	163	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1564	-	-	1532	-	-	767	706	1025	770	682	1023
Stage 1	-	-	-	-	-	-	875	790	-	960	851	-
Stage 2	-	-	-	-	-	-	953	849	-	871	767	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1564	-	-	1532	-	-	740	685	1025	747	662	1023
Mov Cap-2 Maneuver	-	-	-	-	-	-	740	685	-	747	662	-
Stage 1	-	-	-	-	-	-	851	768	-	933	849	-
Stage 2	-	-	-	-	-	-	939	847	-	841	746	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.6	0.4	10.6	8.8
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	754	1564	-	-	1532	-	-	953
HCM Lane V/C Ratio	0.142	0.027	-	-	0.002	-	-	0.017
HCM Control Delay (s)	10.6	7.4	0	-	7.4	0	-	8.8
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-	-	0.1

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	TNM	12-Sep-23	PIXI5AMG-0002	1 OF 2

E/W STREET : JOHNSON RD
N/S STREET : NAVAJO RD
CONDITION : PM PEAK HOUR

INTERSECTION : 1
PROJECTED GROWTH PER YEAR : 3.0%

TURN MOVEMENTS

Condition	Existing Condition	Year 2025 Ambient Growth	Other Area Projects	Background Condition	Project Trips	Project Condition	Future Year 2040 Condition	Future Year 2040 + Project Condition
Scenario #	2			4		6	8	10
JOHNSON RD								
EB LEFT	0	0	0	0	14	14	0	14
EB THRU	57	6	0	63	0	63	67	67
EB RIGHT	55	5	0	60	0	60	59	59
WB LEFT	2	1	0	3	0	3	5	5
WB THRU	30	3	0	33	0	33	43	43
WB RIGHT	0	0	0	0	3	3	0	3
NAVAJO RD								
NB LEFT	97	9	0	106	0	106	97	97
NB THRU	0	0	0	0	0	0	0	0
NB RIGHT	3	1	0	4	0	4	6	6
SB LEFT	0	0	0	0	7	7	0	7
SB THRU	0	0	0	0	0	0	0	0
SB RIGHT	0	0	0	0	37	37	0	37
TOTALS	**244**	**25**	**0**	**269**	**61**	**330**	**277**	**338**

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN VOLUME SUMMARY	TNM	12-Sep-23	PIXI5AMG-0002	2 OF 2

E/W STREET : JOHNSON RD
CONDITION : PM PEAK HOUR

N/S STREET : NAVAJO RD
PHF : 0.91

NORTH LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

Number of Axles	2-Axle Trucks	3-Axle Trucks	4+ Axle Trucks
PCE factor	1.5	2	3

SOUTH LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
1	0	27	0	0	0	0	0	0	0	0	0
1	0	33	0	0	0	0	0	0	0	0	0
1	0	21	0	0	0	0	0	0	0	0	0
0	0	13	0	0	0	0	0	0	0	0	1

EAST LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	6	1	0	0	0	0	0	0	0	0	0
0	5	1	0	0	0	0	0	0	0	0	0
0	9	0	0	0	0	0	0	0	0	0	0
0	10	0	0	0	0	0	0	0	0	0	0

WEST LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
21	10	0	0	0	0	0	0	0	0	0	0
8	10	0	0	0	0	1	0	0	1	0	0
11	16	0	0	0	0	0	0	0	0	0	0
10	21	0	0	0	0	0	0	0	0	0	0

	Truck Volumes	Auto Volumes	Vehicle Totals	PCE Totals	Balanced PCE Totals
JOHNSON RD					
EB LEFT	0	0	**0**	**0**	**0**
EB THRU	0	57	**57**	**57**	**57**
EB RIGHT	2	50	**52**	**55**	**55**
WB LEFT	0	2	**2**	**2**	**2**
WB THRU	0	30	**30**	**30**	**30**
WB RIGHT	0	0	**0**	**0**	**0**
NAVAJO RD					
NB LEFT	1	94	**95**	**97**	**97**
NB THRU	0	0	**0**	**0**	**0**
NB RIGHT	0	3	**3**	**3**	**3**
SB LEFT	0	0	**0**	**0**	**0**
SB THRU	0	0	**0**	**0**	**0**
SB RIGHT	0	0	**0**	**0**	**0**

Intersection	
Int Delay, s/veh	4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	57	55	2	30	97	3
Future Vol, veh/h	57	55	2	30	97	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	63	60	2	33	107	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	123	0	130	93
Stage 1	-	-	-	-	93	-
Stage 2	-	-	-	-	37	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1477	-	869	970
Stage 1	-	-	-	-	936	-
Stage 2	-	-	-	-	991	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1477	-	868	970
Mov Cap-2 Maneuver	-	-	-	-	868	-
Stage 1	-	-	-	-	936	-
Stage 2	-	-	-	-	990	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	871	-	-	1477	-
HCM Lane V/C Ratio	0.126	-	-	0.001	-
HCM Control Delay (s)	9.7	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	63	60	3	33	106	4
Future Vol, veh/h	63	60	3	33	106	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	69	66	3	36	116	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	135	0	144	102
Stage 1	-	-	-	-	102	-
Stage 2	-	-	-	-	42	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1462	-	853	959
Stage 1	-	-	-	-	927	-
Stage 2	-	-	-	-	986	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1462	-	851	959
Mov Cap-2 Maneuver	-	-	-	-	851	-
Stage 1	-	-	-	-	927	-
Stage 2	-	-	-	-	984	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	854	-	-	1462	-
HCM Lane V/C Ratio	0.142	-	-	0.002	-
HCM Control Delay (s)	9.9	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	63	60	3	33	3	106	0	4	7	0	37
Future Vol, veh/h	14	63	60	3	33	3	106	0	4	7	0	37
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	15	69	66	3	36	3	116	0	4	8	0	41

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	39	0	0	135	0	0	196	177	102	178	209	38
Stage 1	-	-	-	-	-	-	132	132	-	44	44	-
Stage 2	-	-	-	-	-	-	64	45	-	134	165	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1584	-	-	1462	-	-	767	720	959	789	692	1040
Stage 1	-	-	-	-	-	-	876	791	-	975	862	-
Stage 2	-	-	-	-	-	-	952	861	-	874	766	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1584	-	-	1462	-	-	730	711	959	778	684	1040
Mov Cap-2 Maneuver	-	-	-	-	-	-	730	711	-	778	684	-
Stage 1	-	-	-	-	-	-	867	783	-	965	860	-
Stage 2	-	-	-	-	-	-	913	859	-	861	758	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.6	10.9	8.8
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	736	1584	-	-	1462	-	-	987
HCM Lane V/C Ratio	0.164	0.01	-	-	0.002	-	-	0.049
HCM Control Delay (s)	10.9	7.3	0	-	7.5	0	-	8.8
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.6	0	-	-	0	-	-	0.2

Intersection						
Int Delay, s/veh	3.8					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	67	59	5	43	97	6
Future Vol, veh/h	67	59	5	43	97	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	71	62	5	45	102	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	133	0	157	102
Stage 1	-	-	-	-	102	-
Stage 2	-	-	-	-	55	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1464	-	839	959
Stage 1	-	-	-	-	927	-
Stage 2	-	-	-	-	973	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1464	-	836	959
Mov Cap-2 Maneuver	-	-	-	-	836	-
Stage 1	-	-	-	-	927	-
Stage 2	-	-	-	-	969	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	842	-	-	1464	-
HCM Lane V/C Ratio	0.129	-	-	0.004	-
HCM Control Delay (s)	9.9	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	67	59	5	43	3	97	0	6	7	0	37
Future Vol, veh/h	14	67	59	5	43	3	97	0	6	7	0	37
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	15	71	62	5	45	3	102	0	6	7	0	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	48	0	0	133	0	0	208	190	102	192	220	47
Stage 1	-	-	-	-	-	-	132	132	-	57	57	-
Stage 2	-	-	-	-	-	-	76	58	-	135	163	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1572	-	-	1464	-	-	754	708	959	772	682	1028
Stage 1	-	-	-	-	-	-	876	791	-	960	851	-
Stage 2	-	-	-	-	-	-	938	851	-	873	767	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1572	-	-	1464	-	-	718	698	959	759	672	1028
Mov Cap-2 Maneuver	-	-	-	-	-	-	718	698	-	759	672	-
Stage 1	-	-	-	-	-	-	867	783	-	950	848	-
Stage 2	-	-	-	-	-	-	899	848	-	859	759	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.7	10.8	8.9
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	729	1572	-	-	1464	-	-	973
HCM Lane V/C Ratio	0.149	0.009	-	-	0.004	-	-	0.048
HCM Control Delay (s)	10.8	7.3	0	-	7.5	0	-	8.9
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.1

CALCULATION OF FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES (NCHRP 255)

Intersection No.: 1
North/South Street: NAVAJO RD
East/West Street: JOHNSON RD

Analysis Condition: YEAR 2040 FUTURE TRAFFIC

A.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year Link Volume			Turn Volume	Rounded Volume
South leg	Left	94	Approach	102	Left	94	95
NB	Through	0	Departure	59	Through	0	0
	Right	2			Right	6	7
North leg	Left	0	Approach	0	Left	0	0
SB	Through	0	Departure	0	Through	0	0
	Right	0			Right	0	0
West leg	Left	0	Approach	73	Left	0	0
EB	Through	6	Departure	139	Through	18	18
	Right	55			Right	56	57
East leg	Left	2	Approach	48	Left	3	3
WB	Through	36	Departure	24	Through	45	45
	Right	0			Right	0	0

P.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year Link Volume			Turn Volume	Rounded Volume
South leg	Left	97	Approach	103	Left	96	97
NB	Through	0	Departure	63	Through	0	0
	Right	3			Right	5	6
North leg	Left	0	Approach	0	Left	0	0
SB	Through	0	Departure	0	Through	0	0
	Right	0			Right	0	0
West leg	Left	0	Approach	122	Left	0	0
EB	Through	57	Departure	139	Through	67	67
	Right	55			Right	59	59
East leg	Left	2	Approach	48	Left	4	5
WB	Through	30	Departure	72	Through	43	43
	Right	0			Right	0	0

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	TNM	12-Sep-23	PIXI5AMG-0002	1 OF 2

E/W STREET : JOHNSON RD
N/S STREET : DALE EVANS PKWY
CONDITION : AM PEAK HOUR

INTERSECTION : 2
PROJECTED GROWTH PER YEAR : 3.0%

TURN MOVEMENTS

Condition	Existing Condition	Year 2025 Ambient Growth	Other Area Projects	Background Condition	Project Trips	Project Condition	Future Year 2040 Condition	Future Year 2040 + Project Condition
Scenario #	1			3		5	7	9
JOHNSON RD								
EB LEFT	5	1	0	6	0	6	29	29
EB THRU	57	6	0	63	62	125	68	130
EB RIGHT	21	2	0	23	0	23	59	59
WB LEFT	11	1	0	12	6	18	4	10
WB THRU	115	11	0	126	19	145	158	177
WB RIGHT	52	5	0	57	3	60	30	33
DALE EVANS PKWY								
NB LEFT	8	1	0	9	0	9	79	79
NB THRU	67	7	0	74	0	74	277	277
NB RIGHT	21	2	0	23	20	43	18	38
SB LEFT	27	3	0	30	10	40	32	42
SB THRU	46	5	0	51	0	51	130	130
SB RIGHT	0	0	0	0	0	0	0	0
TOTALS	**430**	**44**	**0**	**474**	**120**	**594**	**884**	**1004**

Los Angeles Office: 213.337.3680 ~ Ontario Office: 909.481.5750 ~ San Diego Office: 619.400.0600
Santa Clarita Office: 661.284.7400 ~ Temecula Office: 951.294.9300 ~ Tustin Office: 714.665.4500
Victorville Office: 760.524.9100

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN VOLUME SUMMARY	TNM	12-Sep-23	PIXI5AMG-0002	2 OF 2

E/W STREET : JOHNSON RD — N/S STREET : DALE EVANS PKWY

CONDITION : AM PEAK HOUR — PHF : 0.95

NORTH LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	13	3	0	0	1	0	0	0	0	0	0
0	4	8	0	1	0	0	0	0	0	0	0
0	5	3	0	0	0	0	0	0	0	3	2
0	6	2	0	1	0	0	0	0	0	2	1

Number of Axles	2-Axle Trucks	3-Axle Trucks	4+ Axle Trucks
PCE factor	1.5	2	3

SOUTH LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
3	25	0	1	0	0	0	0	0	0	0	0
5	13	2	0	0	0	0	0	0	0	0	0
5	15	3	0	0	0	0	0	0	0	0	0
6	14	3	0	0	0	0	0	0	0	0	0

EAST LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
5	24	3	0	1	0	1	1	0	0	0	0
4	30	2	0	0	0	0	1	0	2	1	0
6	18	3	1	2	0	0	1	0	3	1	0
10	28	3	1	0	0	0	0	0	0	1	0

WEST LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	14	2	0	1	0	0	0	0	0	0	0
2	9	0	0	1	0	0	0	0	1	1	0
6	14	2	0	0	0	1	0	0	0	0	0
2	7	1	0	1	0	0	1	0	2	1	0

	Truck Volumes	Auto Volumes	Vehicle Totals	PCE Totals	Balanced PCE Totals
JOHNSON RD					
EB LEFT	0	5	**5**	**5**	**5**
EB THRU	6	44	**50**	**57**	**57**
EB RIGHT	4	10	**14**	**21**	**21**
WB LEFT	0	11	**11**	**11**	**11**
WB THRU	9	100	**109**	**115**	**115**
WB RIGHT	8	25	**33**	**52**	**52**
DALE EVANS PKWY					
NB LEFT	0	8	**8**	**8**	**8**
NB THRU	0	67	**67**	**67**	**67**
NB RIGHT	1	19	**20**	**21**	**21**
SB LEFT	4	16	**20**	**27**	**27**
SB THRU	7	28	**35**	**46**	**46**
SB RIGHT	0	0	**0**	**0**	**0**

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	57	21	11	115	52	8	67	21	27	46	0
Future Vol, veh/h	5	57	21	11	115	52	8	67	21	27	46	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	60	22	12	121	55	8	71	22	28	48	0
Number of Lanes	0	1	0	0	1	1	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	2	1
HCM Control Delay	8.8	8.7	8.5	8.8
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	6%	9%	0%	100%	0%
Vol Thru, %	0%	100%	0%	69%	91%	0%	0%	100%
Vol Right, %	0%	0%	100%	25%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	8	67	21	83	126	52	27	46
LT Vol	8	0	0	5	11	0	27	0
Through Vol	0	67	0	57	115	0	0	46
RT Vol	0	0	21	21	0	52	0	0
Lane Flow Rate	8	71	22	87	133	55	28	48
Geometry Grp	8	8	8	8	8	8	8	8
Degree of Util (X)	0.014	0.106	0.029	0.127	0.193	0.068	0.047	0.074
Departure Headway (Hd)	5.94	5.436	4.731	5.233	5.236	4.491	5.988	5.484
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	601	657	753	682	684	795	596	651
Service Time	3.69	3.186	2.481	2.983	2.978	2.233	3.742	3.237
HCM Lane V/C Ratio	0.013	0.108	0.029	0.128	0.194	0.069	0.047	0.074
HCM Control Delay	8.8	8.8	7.6	8.8	9.2	7.6	9	8.7
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0.4	0.1	0.4	0.7	0.2	0.1	0.2

Intersection	
Intersection Delay, s/veh	9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	63	23	12	126	57	9	74	23	30	51	0
Future Vol, veh/h	6	63	23	12	126	57	9	74	23	30	51	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	66	24	13	133	60	9	78	24	32	54	0
Number of Lanes	0	1	0	0	1	1	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	2	1
HCM Control Delay	9	9	8.8	9
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	7%	9%	0%	100%	0%
Vol Thru, %	0%	100%	0%	68%	91%	0%	0%	100%
Vol Right, %	0%	0%	100%	25%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	74	23	92	138	57	30	51
LT Vol	9	0	0	6	12	0	30	0
Through Vol	0	74	0	63	126	0	0	51
RT Vol	0	0	23	23	0	57	0	0
Lane Flow Rate	9	78	24	97	145	60	32	54
Geometry Grp	8	8	8	8	8	8	8	8
Degree of Util (X)	0.016	0.12	0.032	0.144	0.215	0.076	0.053	0.083
Departure Headway (Hd)	6.041	5.537	4.831	5.336	5.318	4.572	6.094	5.589
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	590	643	736	668	673	779	585	637
Service Time	3.806	3.302	2.596	3.098	3.07	2.325	3.865	3.36
HCM Lane V/C Ratio	0.015	0.121	0.033	0.145	0.215	0.077	0.055	0.085
HCM Control Delay	8.9	9.1	7.8	9	9.5	7.7	9.2	8.9
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0.4	0.1	0.5	0.8	0.2	0.2	0.3

Intersection	
Intersection Delay, s/veh	9.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	125	23	18	145	60	9	74	43	40	51	0
Future Vol, veh/h	6	125	23	18	145	60	9	74	43	40	51	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	132	24	19	153	63	9	78	45	42	54	0
Number of Lanes	0	1	0	0	1	1	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	2	1
HCM Control Delay	10.3	9.9	9.2	9.6
HCM LOS	B	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	4%	11%	0%	100%	0%
Vol Thru, %	0%	100%	0%	81%	89%	0%	0%	100%
Vol Right, %	0%	0%	100%	15%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	74	43	154	163	60	40	51
LT Vol	9	0	0	6	18	0	40	0
Through Vol	0	74	0	125	145	0	0	51
RT Vol	0	0	43	23	0	60	0	0
Lane Flow Rate	9	78	45	162	172	63	42	54
Geometry Grp	8	8	8	8	8	8	8	8
Degree of Util (X)	0.017	0.129	0.066	0.256	0.271	0.087	0.077	0.09
Departure Headway (Hd)	6.481	5.975	5.267	5.684	5.691	4.933	6.563	6.056
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	553	601	681	634	635	729	547	593
Service Time	4.209	3.703	2.995	3.395	3.399	2.64	4.291	3.784
HCM Lane V/C Ratio	0.016	0.13	0.066	0.256	0.271	0.086	0.077	0.091
HCM Control Delay	9.3	9.6	8.4	10.3	10.5	8.1	9.8	9.4
HCM Lane LOS	A	A	A	B	B	A	A	A
HCM 95th-tile Q	0.1	0.4	0.2	1	1.1	0.3	0.2	0.3

Intersection	
Intersection Delay, s/veh	13.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	68	59	4	158	30	79	277	18	32	130	0
Future Vol, veh/h	29	68	59	4	158	30	79	277	18	32	130	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	31	72	62	4	166	32	83	292	19	34	137	0
Number of Lanes	0	1	0	0	1	1	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	2	1
HCM Control Delay	12.5	12.3	14.3	11.8
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	19%	2%	0%	100%	0%
Vol Thru, %	0%	100%	0%	44%	98%	0%	0%	100%
Vol Right, %	0%	0%	100%	38%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	79	277	18	156	162	30	32	130
LT Vol	79	0	0	29	4	0	32	0
Through Vol	0	277	0	68	158	0	0	130
RT Vol	0	0	18	59	0	30	0	0
Lane Flow Rate	83	292	19	164	171	32	34	137
Geometry Grp	8	8	8	8	8	8	8	8
Degree of Util (X)	0.158	0.513	0.03	0.307	0.323	0.054	0.069	0.26
Departure Headway (Hd)	6.836	6.329	5.618	6.724	6.821	6.101	7.357	6.847
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	522	566	633	530	524	582	484	521
Service Time	4.611	4.103	3.392	4.513	4.609	3.888	5.151	4.64
HCM Lane V/C Ratio	0.159	0.516	0.03	0.309	0.326	0.055	0.07	0.263
HCM Control Delay	10.9	15.7	8.6	12.5	12.9	9.2	10.7	12.1
HCM Lane LOS	B	C	A	B	B	A	B	B
HCM 95th-tile Q	0.6	2.9	0.1	1.3	1.4	0.2	0.2	1

Intersection	
Intersection Delay, s/veh	15.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	130	59	10	177	33	79	277	38	42	130	0
Future Vol, veh/h	29	130	59	10	177	33	79	277	38	42	130	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	31	137	62	11	186	35	83	292	40	44	137	0
Number of Lanes	0	1	0	0	1	1	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	2	1
HCM Control Delay	15.9	14.2	16	12.9
HCM LOS	C	B	C	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	13%	5%	0%	100%	0%
Vol Thru, %	0%	100%	0%	60%	95%	0%	0%	100%
Vol Right, %	0%	0%	100%	27%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	79	277	38	218	187	33	42	130
LT Vol	79	0	0	29	10	0	42	0
Through Vol	0	277	0	130	177	0	0	130
RT Vol	0	0	38	59	0	33	0	0
Lane Flow Rate	83	292	40	229	197	35	44	137
Geometry Grp	8	8	8	8	8	8	8	8
Degree of Util (X)	0.172	0.56	0.069	0.459	0.403	0.064	0.099	0.286
Departure Headway (Hd)	7.427	6.917	6.202	7.199	7.376	6.637	8.031	7.517
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	483	522	577	500	488	539	446	478
Service Time	5.172	4.662	3.947	4.946	5.126	4.387	5.784	5.27
HCM Lane V/C Ratio	0.172	0.559	0.069	0.458	0.404	0.065	0.099	0.287
HCM Control Delay	11.7	18.2	9.4	15.9	15	9.8	11.7	13.3
HCM Lane LOS	B	C	A	C	B	A	B	B
HCM 95th-tile Q	0.6	3.4	0.2	2.4	1.9	0.2	0.3	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	130	59	10	177	33	79	277	38	42	130	0
Future Volume (veh/h)	29	130	59	10	177	33	79	277	38	42	130	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1800	1800	1800	1800	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	31	137	62	11	186	35	83	292	40	44	137	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	51	284	129	20	330	62	102	760	103	64	410	347
Arrive On Green	0.03	0.24	0.24	0.01	0.22	0.22	0.06	0.25	0.25	0.04	0.23	0.00
Sat Flow, veh/h	1714	1173	531	1714	1473	277	1619	3026	410	1619	1800	1525
Grp Volume(v), veh/h	31	0	199	11	0	221	83	164	168	44	137	0
Grp Sat Flow(s),veh/h/ln	1714	0	1704	1714	0	1750	1619	1710	1726	1619	1800	1525
Q Serve(g_s), s	0.6	0.0	3.5	0.2	0.0	3.9	1.8	2.8	2.8	0.9	2.2	0.0
Cycle Q Clear(g_c), s	0.6	0.0	3.5	0.2	0.0	3.9	1.8	2.8	2.8	0.9	2.2	0.0
Prop In Lane	1.00		0.31	1.00		0.16	1.00		0.24	1.00		1.00
Lane Grp Cap(c), veh/h	51	0	413	20	0	392	102	429	433	64	410	347
V/C Ratio(X)	0.61	0.00	0.48	0.55	0.00	0.56	0.81	0.38	0.39	0.68	0.33	0.00
Avail Cap(c_a), veh/h	1073	0	1794	293	0	1046	461	1216	1228	276	1075	911
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	0.00
Uniform Delay (d), s/veh	16.8	0.0	11.4	17.3	0.0	12.1	16.3	10.9	10.9	16.7	11.3	0.0
Incr Delay (d2), s/veh	11.2	0.0	0.9	21.9	0.0	1.3	14.0	0.6	0.6	12.0	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	1.1	0.2	0.0	1.3	0.9	0.8	0.9	0.5	0.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.0	0.0	12.3	39.2	0.0	13.4	30.3	11.5	11.5	28.7	11.8	0.0
LnGrp LOS	C	A	B	D	A	B	C	B	B	C	B	A
Approach Vol, veh/h		230			232			415			181	
Approach Delay, s/veh		14.4			14.6			15.2			15.9	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.4	12.8	4.4	12.5	6.2	12.0	5.0	11.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	25.0	6.0	37.0	10.0	21.0	22.0	21.0
Max Q Clear Time (g_c+I1), s	2.9	4.8	2.2	5.5	3.8	4.2	2.6	5.9
Green Ext Time (p_c), s	0.0	1.7	0.0	1.2	0.1	0.6	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	15.0
HCM 6th LOS	B

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	TNM	12-Sep-23	PIXI5AMG-0002	1 OF 2

E/W STREET : JOHNSON RD
N/S STREET : DALE EVANS PKWY
CONDITION : PM PEAK HOUR

INTERSECTION : 2
PROJECTED GROWTH PER YEAR : 3.0%

TURN MOVEMENTS

Condition	Existing Condition	Year 2025 Ambient Growth	Other Area Projects	Background Condition	Project Trips	Project Condition	Future Year 2040 Condition	Future Year 2040 + Project Condition
Scenario #	2			4		6	8	10
JOHNSON RD								
EB LEFT	3	1	0	4	0	4	14	14
EB THRU	106	10	0	116	22	138	142	164
EB RIGHT	24	3	0	27	0	27	104	104
WB LEFT	27	3	0	30	18	48	17	35
WB THRU	191	18	0	209	59	268	227	286
WB RIGHT	19	2	0	21	8	29	12	20
DALE EVANS PKWY								
NB LEFT	16	2	0	18	0	18	71	71
NB THRU	88	8	0	96	0	96	204	204
NB RIGHT	48	5	0	53	8	61	34	42
SB LEFT	51	5	0	56	4	60	38	42
SB THRU	171	16	0	187	0	187	402	402
SB RIGHT	0	0	0	0	0	0	0	0
TOTALS	**744**	**73**	**0**	**817**	**119**	**936**	**1265**	**1384**

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN VOLUME SUMMARY	TNM	12-Sep-23	PIXI5AMG-0002	2 OF 2

E/W STREET : JOHNSON RD
CONDITION : PM PEAK HOUR

N/S STREET : DALE EVANS PKWY
PHF : 0.86

NORTH LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	29	12	0	0	0	0	0	0	0	0	0
0	50	13	0	0	1	0	0	1	0	0	0
0	40	8	0	0	0	0	0	1	0	0	2
0	50	6	0	1	0	0	0	0	0	0	0

Number of Axles	2-Axle Trucks	3-Axle Trucks	4+ Axle Trucks
PCE factor	1.5	2	3

SOUTH LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
15	17	2	0	0	0	0	0	0	0	1	0
11	24	5	0	0	0	0	0	0	0	1	0
14	9	3	0	0	0	0	0	0	0	2	0
8	26	6	0	0	0	0	0	0	0	0	0

EAST LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
7	45	10	0	0	0	0	0	0	0	0	0
5	48	8	0	0	0	0	0	0	0	2	0
4	44	5	0	0	0	0	0	0	0	0	0
3	45	4	0	0	0	0	0	0	0	1	0

WEST LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
3	26	2	0	0	0	0	0	0	0	0	0
6	30	1	0	1	0	0	0	0	1	0	0
5	28	0	0	0	0	0	0	0	0	1	0
7	14	0	0	0	0	0	0	0	0	1	0

	Truck Volumes	Auto Volumes	Vehicle Totals	PCE Totals	Balanced PCE Totals
JOHNSON RD					
EB LEFT	0	3	**3**	**3**	**3**
EB THRU	3	98	**101**	**106**	**106**
EB RIGHT	1	21	**22**	**24**	**24**
WB LEFT	0	27	**27**	**27**	**27**
WB THRU	3	182	**185**	**191**	**191**
WB RIGHT	0	19	**19**	**19**	**19**
DALE EVANS PKWY					
NB LEFT	0	16	**16**	**16**	**16**
NB THRU	4	76	**80**	**88**	**88**
NB RIGHT	0	48	**48**	**48**	**48**
SB LEFT	5	39	**44**	**51**	**51**
SB THRU	1	169	**170**	**171**	**171**
SB RIGHT	0	0	**0**	**0**	**0**

Intersection	
Intersection Delay, s/veh	12.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	106	24	27	191	19	16	88	48	51	171	0
Future Vol, veh/h	3	106	24	27	191	19	16	88	48	51	171	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	123	28	31	222	22	19	102	56	59	199	0
Number of Lanes	0	1	0	0	1	1	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	2	1
HCM Control Delay	11.9	14	10.5	12.4
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	2%	12%	0%	100%	0%
Vol Thru, %	0%	100%	0%	80%	88%	0%	0%	100%
Vol Right, %	0%	0%	100%	18%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	16	88	48	133	218	19	51	171
LT Vol	16	0	0	3	27	0	51	0
Through Vol	0	88	0	106	191	0	0	171
RT Vol	0	0	48	24	0	19	0	0
Lane Flow Rate	19	102	56	155	253	22	59	199
Geometry Grp	8	8	8	8	8	8	8	8
Degree of Util (X)	0.037	0.191	0.093	0.282	0.454	0.035	0.116	0.36
Departure Headway (Hd)	7.235	6.726	6.013	6.576	6.449	5.68	7.02	6.51
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	493	531	592	543	555	627	509	551
Service Time	5.012	4.503	3.79	4.352	4.216	3.447	4.79	4.28
HCM Lane V/C Ratio	0.039	0.192	0.095	0.285	0.456	0.035	0.116	0.361
HCM Control Delay	10.3	11.1	9.4	11.9	14.5	8.7	10.7	12.9
HCM Lane LOS	B	B	A	B	B	A	B	B
HCM 95th-tile Q	0.1	0.7	0.3	1.2	2.3	0.1	0.4	1.6

Intersection	
Intersection Delay, s/veh	13.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	116	27	30	209	21	18	96	53	56	187	0
Future Vol, veh/h	4	116	27	30	209	21	18	96	53	56	187	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	135	31	35	243	24	21	112	62	65	217	0
Number of Lanes	0	1	0	0	1	1	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	2	1
HCM Control Delay	13.1	16.2	11.1	13.7
HCM LOS	B	C	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	3%	13%	0%	100%	0%
Vol Thru, %	0%	100%	0%	79%	87%	0%	0%	100%
Vol Right, %	0%	0%	100%	18%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	18	96	53	147	239	21	56	187
LT Vol	18	0	0	4	30	0	56	0
Through Vol	0	96	0	116	209	0	0	187
RT Vol	0	0	53	27	0	21	0	0
Lane Flow Rate	21	112	62	171	278	24	65	217
Geometry Grp	8	8	8	8	8	8	8	8
Degree of Util (X)	0.044	0.221	0.11	0.33	0.525	0.041	0.134	0.416
Departure Headway (Hd)	7.628	7.117	6.402	6.956	6.803	6.032	7.398	6.887
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	470	505	560	516	531	596	486	524
Service Time	5.371	4.86	4.144	4.698	4.519	3.747	5.118	4.606
HCM Lane V/C Ratio	0.045	0.222	0.111	0.331	0.524	0.04	0.134	0.414
HCM Control Delay	10.7	11.9	9.9	13.1	16.8	9	11.3	14.4
HCM Lane LOS	B	B	A	B	C	A	B	B
HCM 95th-tile Q	0.1	0.8	0.4	1.4	3	0.1	0.5	2

Intersection	
Intersection Delay, s/veh	18.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	138	27	48	268	29	18	96	61	60	187	0
Future Vol, veh/h	4	138	27	48	268	29	18	96	61	60	187	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	160	31	56	312	34	21	112	71	70	217	0
Number of Lanes	0	1	0	0	1	1	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	2	1
HCM Control Delay	15.3	25	12.1	15.4
HCM LOS	C	C	B	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	2%	15%	0%	100%	0%
Vol Thru, %	0%	100%	0%	82%	85%	0%	0%	100%
Vol Right, %	0%	0%	100%	16%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	18	96	61	169	316	29	60	187
LT Vol	18	0	0	4	48	0	60	0
Through Vol	0	96	0	138	268	0	0	187
RT Vol	0	0	61	27	0	29	0	0
Lane Flow Rate	21	112	71	197	367	34	70	217
Geometry Grp	8	8	8	8	8	8	8	8
Degree of Util (X)	0.048	0.24	0.139	0.408	0.724	0.059	0.155	0.453
Departure Headway (Hd)	8.269	7.755	7.035	7.48	7.095	6.309	8.011	7.496
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	432	462	509	479	511	567	447	481
Service Time	6.032	5.517	4.797	5.242	4.848	4.061	5.768	5.253
HCM Lane V/C Ratio	0.049	0.242	0.139	0.411	0.718	0.06	0.157	0.451
HCM Control Delay	11.5	13	10.9	15.3	26.4	9.5	12.2	16.4
HCM Lane LOS	B	B	B	C	D	A	B	C
HCM 95th-tile Q	0.2	0.9	0.5	2	5.9	0.2	0.5	2.3

Intersection	
Intersection Delay, s/veh	37.3
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	142	104	17	227	12	71	204	34	38	402	0
Future Vol, veh/h	14	142	104	17	227	12	71	204	34	38	402	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	15	149	109	18	239	13	75	215	36	40	423	0
Number of Lanes	0	1	0	0	1	1	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	2	1
HCM Control Delay	26.8	26.1	18.6	63.2
HCM LOS	D	D	C	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	5%	7%	0%	100%	0%
Vol Thru, %	0%	100%	0%	55%	93%	0%	0%	100%
Vol Right, %	0%	0%	100%	40%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	71	204	34	260	244	12	38	402
LT Vol	71	0	0	14	17	0	38	0
Through Vol	0	204	0	142	227	0	0	402
RT Vol	0	0	34	104	0	12	0	0
Lane Flow Rate	75	215	36	274	257	13	40	423
Geometry Grp	8	8	8	8	8	8	8	8
Degree of Util (X)	0.194	0.527	0.081	0.659	0.643	0.029	0.098	0.981
Departure Headway (Hd)	9.363	8.843	8.115	8.672	9.009	8.249	8.862	8.342
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	382	406	439	416	401	432	403	436
Service Time	7.15	6.63	5.901	6.455	6.794	6.033	6.639	6.118
HCM Lane V/C Ratio	0.196	0.53	0.082	0.659	0.641	0.03	0.099	0.97
HCM Control Delay	14.4	21.2	11.6	26.8	26.8	11.3	12.6	68
HCM Lane LOS	B	C	B	D	D	B	B	F
HCM 95th-tile Q	0.7	3	0.3	4.6	4.3	0.1	0.3	12

Intersection	
Intersection Delay, s/veh	53
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	164	104	35	286	20	71	204	42	42	402	0
Future Vol, veh/h	14	164	104	35	286	20	71	204	42	42	402	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	15	173	109	37	301	21	75	215	44	44	423	0
Number of Lanes	0	1	0	0	1	1	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	2	1
HCM Control Delay	36.5	48.6	20.9	89.7
HCM LOS	E	E	C	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	5%	11%	0%	100%	0%
Vol Thru, %	0%	100%	0%	58%	89%	0%	0%	100%
Vol Right, %	0%	0%	100%	37%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	71	204	42	282	321	20	42	402
LT Vol	71	0	0	14	35	0	42	0
Through Vol	0	204	0	164	286	0	0	402
RT Vol	0	0	42	104	0	20	0	0
Lane Flow Rate	75	215	44	297	338	21	44	423
Geometry Grp	8	8	8	8	8	8	8	8
Degree of Util (X)	0.206	0.563	0.107	0.756	0.869	0.05	0.119	1.075
Departure Headway (Hd)	10.337	9.812	9.077	9.539	9.616	8.83	9.67	9.145
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	349	369	397	383	378	408	371	398
Service Time	8.037	7.512	6.777	7.239	7.316	6.53	7.425	6.899
HCM Lane V/C Ratio	0.215	0.583	0.111	0.775	0.894	0.051	0.119	1.063
HCM Control Delay	15.7	24.4	12.9	36.5	50.9	12	13.7	97.6
HCM Lane LOS	C	C	B	E	F	B	B	F
HCM 95th-tile Q	0.8	3.3	0.4	6.1	8.4	0.2	0.4	14.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	164	104	35	286	20	71	204	42	42	402	0
Future Volume (veh/h)	14	164	104	35	286	20	71	204	42	42	402	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1800	1800	1800	1800	1800	1800	1700	1800	1800	1700	1800	1800
Adj Flow Rate, veh/h	15	173	109	37	301	21	75	215	44	44	423	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	26	242	152	57	419	29	89	937	188	61	563	477
Arrive On Green	0.02	0.23	0.23	0.03	0.25	0.25	0.06	0.33	0.33	0.04	0.31	0.00
Sat Flow, veh/h	1714	1032	650	1714	1663	116	1619	2837	570	1619	1800	1525
Grp Volume(v), veh/h	15	0	282	37	0	322	75	128	131	44	423	0
Grp Sat Flow(s),veh/h/ln	1714	0	1683	1714	0	1779	1619	1710	1697	1619	1800	1525
Q Serve(g_s), s	0.4	0.0	6.8	0.9	0.0	7.2	2.0	2.4	2.5	1.2	9.3	0.0
Cycle Q Clear(g_c), s	0.4	0.0	6.8	0.9	0.0	7.2	2.0	2.4	2.5	1.2	9.3	0.0
Prop In Lane	1.00		0.39	1.00		0.07	1.00		0.34	1.00		1.00
Lane Grp Cap(c), veh/h	26	0	394	57	0	448	89	564	560	61	563	477
V/C Ratio(X)	0.57	0.00	0.72	0.65	0.00	0.72	0.84	0.23	0.23	0.72	0.75	0.00
Avail Cap(c_a), veh/h	274	0	1036	352	0	1177	222	1209	1200	258	1314	1113
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	0.00
Uniform Delay (d), s/veh	21.4	0.0	15.4	20.9	0.0	15.0	20.5	10.6	10.7	20.9	13.5	0.0
Incr Delay (d2), s/veh	18.3	0.0	2.4	11.9	0.0	2.2	18.3	0.2	0.2	14.5	2.0	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	2.4	0.5	0.0	2.6	1.1	0.7	0.8	0.6	3.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.8	0.0	17.9	32.9	0.0	17.2	38.8	10.8	10.9	35.4	15.6	0.0
LnGrp LOS	D	A	B	C	A	B	D	B	B	D	B	A
Approach Vol, veh/h		297			359			334			467	
Approach Delay, s/veh		19.0			18.8			17.1			17.4	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.7	18.5	5.5	14.3	6.4	17.7	4.7	15.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	7.0	31.0	9.0	27.0	6.0	32.0	7.0	29.0				
Max Q Clear Time (g_c+I1), s	3.2	4.5	2.9	8.8	4.0	11.3	2.4	9.2				
Green Ext Time (p_c), s	0.0	1.4	0.0	1.5	0.0	2.5	0.0	1.7				
Intersection Summary												
HCM 6th Ctrl Delay			18.0									
HCM 6th LOS			B									

CALCULATION OF FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES (NCHRP 255)

Intersection No.: 2
North/South Street: DALE EVANS PKWY
East/West Street: JOHNSON RD

Analysis Condition: YEAR 2040 FUTURE TRAFFIC

A.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year Link Volume			Turn Volume	Rounded Volume
South leg	Left	8	Approach	363	Left	79	79
NB	Through	67	Departure	191	Through	276	277
	Right	21			Right	18	18
North leg	Left	27	Approach	171	Left	32	32
SB	Through	46	Departure	335	Through	129	130
	Right	0			Right	0	0
West leg	Left	5	Approach	161	Left	29	29
EB	Through	57	Departure	236	Through	67	68
	Right	21			Right	59	59
East leg	Left	11	Approach	183	Left	3	4
WB	Through	115	Departure	117	Through	157	158
	Right	52			Right	30	30

P.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year Link Volume			Turn Volume	Rounded Volume
South leg	Left	16	Approach	302	Left	70	71
NB	Through	88	Departure	521	Through	203	204
	Right	48			Right	34	34
North leg	Left	51	Approach	447	Left	37	38
SB	Through	171	Departure	228	Through	401	402
	Right	0			Right	0	0
West leg	Left	3	Approach	261	Left	13	14
EB	Through	106	Departure	297	Through	141	142
	Right	24			Right	103	104
East leg	Left	27	Approach	249	Left	17	17
WB	Through	191	Departure	212	Through	227	227
	Right	19			Right	12	12

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	TNM	12-Sep-23	PIXI5AMG-0002	1 OF 2

E/W STREET : JOHNSON RD
N/S STREET : CENTRAL RD
CONDITION : AM PEAK HOUR

INTERSECTION : 3
PROJECTED GROWTH PER YEAR : 3.0%

TURN MOVEMENTS

Condition	Existing Condition	Year 2025 Ambient Growth	Other Area Projects	Background Condition	Project Trips	Project Condition	Future Year 2040 Condition	Future Year 2040 + Project Condition
Scenario #	1			3		5	7	9
JOHNSON RD								
EB LEFT	1	1	0	2	0	2	1	1
EB THRU	0	0	0	0	0	0	0	0
EB RIGHT	2	1	0	3	3	6	4	7
WB LEFT	0	0	0	0	0	0	0	0
WB THRU	0	0	0	0	0	0	0	0
WB RIGHT	0	0	0	0	0	0	0	0
CENTRAL RD								
NB LEFT	2	1	0	3	7	10	9	16
NB THRU	35	3	0	38	0	38	43	43
NB RIGHT	0	0	0	0	0	0	0	0
SB LEFT	0	0	0	0	0	0	0	0
SB THRU	33	2	0	35	0	35	35	35
SB RIGHT	1	1	0	2	0	2	3	3
TOTALS	**74**	**9**	**0**	**83**	**10**	**93**	**95**	**105**

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN VOLUME SUMMARY	TNM	12-Sep-23	PIXI5AMG-0002	2 OF 2

E/W STREET : JOHNSON RD
CONDITION : AM PEAK HOUR
N/S STREET : CENTRAL RD
PHF : 0.86

NORTH LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	9	0	0	0	0	0	0	0	0	0	0
0	6	0	0	1	0	0	0	0	0	0	0
0	8	0	0	0	0	0	0	0	0	0	0
0	2	0	0	1	0	0	1	0	0	1	0

SOUTH LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	9	0	0	0	0	0	0	0	0	0	0
0	2	0	0	1	0	0	0	0	0	2	0
0	7	0	0	1	0	0	1	0	0	0	0
0	4	2	0	0	0	0	1	0	0	0	0

EAST LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

WEST LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0
1	0	1	0	0	0	0	0	0	0	0	0

Number of Axles	2-Axle Trucks	3-Axle Trucks	4+ Axle Trucks
PCE factor	1.5	2	3

	Truck Volumes	Auto Volumes	Vehicle Totals	PCE Totals	Balanced PCE Totals
JOHNSON RD					
EB LEFT	0	1	**1**	**1**	**1**
EB THRU	0	0	**0**	**0**	**0**
EB RIGHT	0	2	**2**	**2**	**2**
WB LEFT	0	0	**0**	**0**	**0**
WB THRU	0	0	**0**	**0**	**0**
WB RIGHT	0	0	**0**	**0**	**0**
CENTRAL RD					
NB LEFT	0	2	**2**	**2**	**2**
NB THRU	6	22	**28**	**35**	**35**
NB RIGHT	0	0	**0**	**0**	**0**
SB LEFT	0	0	**0**	**0**	**0**
SB THRU	4	25	**29**	**33**	**33**
SB RIGHT	0	0	**0**	**0**	**1**

Intersection						
Int Delay, s/veh	0.5					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	2	2	35	33	1
Future Vol, veh/h	1	2	2	35	33	1
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	2	2	41	38	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	84	39	39	0	-	0
Stage 1	39	-	-	-	-	-
Stage 2	45	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	923	1038	1584	-	-	-
Stage 1	989	-	-	-	-	-
Stage 2	983	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	922	1038	1584	-	-	-
Mov Cap-2 Maneuver	922	-	-	-	-	-
Stage 1	988	-	-	-	-	-
Stage 2	983	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.6	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1584	-	996	-	-
HCM Lane V/C Ratio	0.001	-	0.004	-	-
HCM Control Delay (s)	7.3	0	8.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0.8					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	3	3	38	35	2
Future Vol, veh/h	2	3	3	38	35	2
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	2	3	3	44	41	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	92	42	43	0	-	0
Stage 1	42	-	-	-	-	-
Stage 2	50	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	913	1034	1579	-	-	-
Stage 1	986	-	-	-	-	-
Stage 2	978	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	911	1034	1579	-	-	-
Mov Cap-2 Maneuver	911	-	-	-	-	-
Stage 1	984	-	-	-	-	-
Stage 2	978	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	0.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1579	-	981	-	-
HCM Lane V/C Ratio	0.002	-	0.006	-	-
HCM Control Delay (s)	7.3	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	6	10	38	35	2
Future Vol, veh/h	2	6	10	38	35	2
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	2	7	12	44	41	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	110	42	43	0	-	0
Stage 1	42	-	-	-	-	-
Stage 2	68	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	892	1034	1579	-	-	-
Stage 1	986	-	-	-	-	-
Stage 2	960	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	885	1034	1579	-	-	-
Mov Cap-2 Maneuver	885	-	-	-	-	-
Stage 1	978	-	-	-	-	-
Stage 2	960	-	-	-	-	-

Approach	EB		NB		SB	
HCM Control Delay, s	8.7		1.5		0	
HCM LOS	A					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1579	-	992	-	-
HCM Lane V/C Ratio	0.007	-	0.009	-	-
HCM Control Delay (s)	7.3	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	1.2					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	4	9	43	35	3
Future Vol, veh/h	1	4	9	43	35	3
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	4	9	45	37	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	102	39	40	0	-	0
Stage 1	39	-	-	-	-	-
Stage 2	63	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	901	1038	1583	-	-	-
Stage 1	989	-	-	-	-	-
Stage 2	965	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	896	1038	1583	-	-	-
Mov Cap-2 Maneuver	896	-	-	-	-	-
Stage 1	983	-	-	-	-	-
Stage 2	965	-	-	-	-	-

Approach	EB		NB		SB	
HCM Control Delay, s	8.6		1.3		0	
HCM LOS	A					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1583	-	1006	-	-
HCM Lane V/C Ratio	0.006	-	0.005	-	-
HCM Control Delay (s)	7.3	0	8.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	7	16	43	35	3
Future Vol, veh/h	1	7	16	43	35	3
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	7	17	45	37	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	118	39	40	0	-	0
Stage 1	39	-	-	-	-	-
Stage 2	79	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	883	1038	1583	-	-	-
Stage 1	989	-	-	-	-	-
Stage 2	949	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	873	1038	1583	-	-	-
Mov Cap-2 Maneuver	873	-	-	-	-	-
Stage 1	978	-	-	-	-	-
Stage 2	949	-	-	-	-	-

Approach	EB		NB		SB	
HCM Control Delay, s	8.6		2		0	
HCM LOS	A					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1583	-	1014	-	-
HCM Lane V/C Ratio	0.011	-	0.008	-	-
HCM Control Delay (s)	7.3	0	8.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	TNM	12-Sep-23	PIXI5AMG-0002	1 OF 2

E/W STREET : JOHNSON RD
N/S STREET : CENTRAL RD
CONDITION : PM PEAK HOUR

INTERSECTION : 3
PROJECTED GROWTH PER YEAR : 3.0%

TURN MOVEMENTS

Condition	Existing Condition	Year 2025 Ambient Growth	Other Area Projects	Background Condition	Project Trips	Project Condition	Future Year 2040 Condition	Future Year 2040 + Project Condition
Scenario #	2			4		6	8	10
JOHNSON RD								
EB LEFT	1	1	0	2	0	2	3	3
EB THRU	0	0	0	0	0	0	0	0
EB RIGHT	5	1	0	6	7	13	12	19
WB LEFT	0	0	0	0	0	0	0	0
WB THRU	0	0	0	0	0	0	0	0
WB RIGHT	0	0	0	0	0	0	0	0
CENTRAL RD								
NB LEFT	3	1	0	4	3	7	6	9
NB THRU	48	3	0	51	0	51	52	52
NB RIGHT	0	0	0	0	0	0	0	0
SB LEFT	0	0	0	0	0	0	0	0
SB THRU	62	4	0	66	0	66	70	70
SB RIGHT	1	1	0	2	0	2	2	2
TOTALS	**120**	**11**	**0**	**131**	**10**	**141**	**145**	**155**

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN VOLUME SUMMARY	TNM	12-Sep-23	PIXI5AMG-0002	2 OF 2

E/W STREET : JOHNSON RD — N/S STREET : CENTRAL RD

CONDITION : PM PEAK HOUR — PHF : 0.83

NORTH LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	10	0	0	0	0	0	1	0	0	1	0
0	8	0	0	2	0	0	0	0	0	1	0
0	13	0	0	0	0	0	1	0	0	0	0
0	8	0	0	1	0	0	1	0	0	2	0

SOUTH LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	9	0	0	0	0	0	0	0	0	0	0
0	4	1	0	2	0	0	2	0	0	2	0
0	8	2	0	1	0	0	0	0	0	1	0
0	3	0	0	1	0	0	1	0	0	1	0

EAST LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

WEST LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
3	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0

Number of Axles	2-Axle Trucks	3-Axle Trucks	4+ Axle Trucks
PCE factor	1.5	2	3

	Truck Volumes	Auto Volumes	Vehicle Totals	PCE Totals	Balanced PCE Totals
JOHNSON RD					
EB LEFT	0	1	**1**	**1**	**1**
EB THRU	0	0	**0**	**0**	**0**
EB RIGHT	0	5	**5**	**5**	**5**
WB LEFT	0	0	**0**	**0**	**0**
WB THRU	0	0	**0**	**0**	**0**
WB RIGHT	0	0	**0**	**0**	**0**
CENTRAL RD					
NB LEFT	0	3	**3**	**3**	**3**
NB THRU	11	24	**35**	**48**	**48**
NB RIGHT	0	0	**0**	**0**	**0**
SB LEFT	0	0	**0**	**0**	**0**
SB THRU	10	39	**49**	**62**	**62**
SB RIGHT	0	0	**0**	**0**	**1**

Intersection						
Int Delay, s/veh	0.6					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	5	3	48	62	1
Future Vol, veh/h	1	5	3	48	62	1
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	6	4	58	75	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	142	76	76	0	-	0
Stage 1	76	-	-	-	-	-
Stage 2	66	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	856	991	1536	-	-	-
Stage 1	952	-	-	-	-	-
Stage 2	962	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	853	991	1536	-	-	-
Mov Cap-2 Maneuver	853	-	-	-	-	-
Stage 1	949	-	-	-	-	-
Stage 2	962	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1536	-	965	-	-
HCM Lane V/C Ratio	0.002	-	0.007	-	-
HCM Control Delay (s)	7.3	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0.7					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	6	4	51	66	2
Future Vol, veh/h	2	6	4	51	66	2
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	2	7	5	61	80	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	152	81	82	0	-	0
Stage 1	81	-	-	-	-	-
Stage 2	71	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	844	985	1528	-	-	-
Stage 1	947	-	-	-	-	-
Stage 2	957	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	841	985	1528	-	-	-
Mov Cap-2 Maneuver	841	-	-	-	-	-
Stage 1	944	-	-	-	-	-
Stage 2	957	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	0.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1528	-	945	-	-
HCM Lane V/C Ratio	0.003	-	0.01	-	-
HCM Control Delay (s)	7.4	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	1.3					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	13	7	51	66	2
Future Vol, veh/h	2	13	7	51	66	2
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	2	16	8	61	80	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	158	81	82	0	-	0
Stage 1	81	-	-	-	-	-
Stage 2	77	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	838	985	1528	-	-	-
Stage 1	947	-	-	-	-	-
Stage 2	951	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	834	985	1528	-	-	-
Mov Cap-2 Maneuver	834	-	-	-	-	-
Stage 1	942	-	-	-	-	-
Stage 2	951	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	0.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1528	-	962	-	-
HCM Lane V/C Ratio	0.006	-	0.019	-	-
HCM Control Delay (s)	7.4	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	1.2					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	12	6	52	70	2
Future Vol, veh/h	3	12	6	52	70	2
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	13	6	55	74	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	142	75	76	0	-	0
Stage 1	75	-	-	-	-	-
Stage 2	67	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	856	992	1536	-	-	-
Stage 1	953	-	-	-	-	-
Stage 2	961	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	853	992	1536	-	-	-
Mov Cap-2 Maneuver	853	-	-	-	-	-
Stage 1	949	-	-	-	-	-
Stage 2	961	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	0.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1536	-	961	-	-
HCM Lane V/C Ratio	0.004	-	0.016	-	-
HCM Control Delay (s)	7.4	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	1.7					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	19	9	52	70	2
Future Vol, veh/h	3	19	9	52	70	2
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	20	9	55	74	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	148	75	76	0	-	0
Stage 1	75	-	-	-	-	-
Stage 2	73	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	849	992	1536	-	-	-
Stage 1	953	-	-	-	-	-
Stage 2	955	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	844	992	1536	-	-	-
Mov Cap-2 Maneuver	844	-	-	-	-	-
Stage 1	947	-	-	-	-	-
Stage 2	955	-	-	-	-	-

Approach	EB		NB		SB	
HCM Control Delay, s	8.8		1.1		0	
HCM LOS	A					

Minor Lane/Major Mvmt		NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)		1536	-	969	-	-
HCM Lane V/C Ratio		0.006	-	0.024	-	-
HCM Control Delay (s)		7.4	0	8.8	-	-
HCM Lane LOS		A	A	A	-	-
HCM 95th %tile Q(veh)		0	-	0.1	-	-

CALCULATION OF FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES (NCHRP 255)

Intersection No.: 3
North/South Street: CENTRAL RD
East/West Street: JOHNSON RD

Analysis Condition: YEAR 2040 FUTURE TRAFFIC

A.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year: Link Volume			Turn Volume	Rounded Volume
South leg	Left	2	Approach	52	Left	9	9
NB	Through	35	Departure	38	Through	42	43
	Right	0			Right	0	0
North leg	Left	0	Approach	37	Left	0	0
SB	Through	33	Departure	43	Through	35	35
	Right	1			Right	2	3
West leg	Left	1	Approach	4	Left	1	1
EB	Through	0	Departure	11	Through	0	0
	Right	2			Right	3	4
East leg	Left	0	Approach	0	Left	0	0
WB	Through	0	Departure	0	Through	0	0
	Right	0			Right	0	0

P.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year: Link Volume			Turn Volume	Rounded Volume
South leg	Left	3	Approach	57	Left	5	6
NB	Through	48	Departure	81	Through	52	52
	Right	0			Right	0	0
North leg	Left	0	Approach	71	Left	0	0
SB	Through	62	Departure	54	Through	69	70
	Right	1			Right	2	2
West leg	Left	1	Approach	14	Left	2	3
EB	Through	0	Departure	7	Through	0	0
	Right	5			Right	12	12
East leg	Left	0	Approach	0	Left	0	0
WB	Through	0	Departure	0	Through	0	0
	Right	0			Right	0	0

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	TNM	13-Sep-23	PIXI5AMG-0002	1 OF 2

E/W STREET : JOHNSON RD
N/S STREET : STODDARD WELLS RD
CONDITION : AM PEAK HOUR

INTERSECTION : 4
PROJECTED GROWTH PER YEAR : 3.0%

TURN MOVEMENTS

Condition	Existing Condition	Year 2025 Ambient Growth	Other Area Projects	Background Condition	Project Trips	Project Condition	Future Year 2040 Condition	Future Year 2040 + Project Condition
Scenario #	1			3		5	7	9
JOHNSON RD								
EB LEFT	0	0	0	0	0	0	0	0
EB THRU	0	0	0	0	0	0	0	0
EB RIGHT	0	0	0	0	0	0	0	0
WB LEFT	140	13	0	153	19	172	135	154
WB THRU	0	0	0	0	0	0	0	0
WB RIGHT	5	1	0	6	0	6	120	120
STODDARD WELLS RD								
NB LEFT	0	0	0	0	0	0	0	0
NB THRU	14	2	6	22	0	22	242	242
NB RIGHT	79	8	0	87	62	149	151	213
SB LEFT	1	1	0	2	0	2	8	8
SB THRU	50	5	4	59	0	59	141	141
SB RIGHT	0	0	0	0	0	0	0	0
TOTALS	**289**	**30**	**10**	**329**	**81**	**410**	**797**	**878**

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN VOLUME SUMMARY	TNM	13-Sep-23	PIXI5AMG-0002	2 OF 2

E/W STREET : JOHNSON RD
CONDITION : AM PEAK HOUR

N/S STREET : STODDARD WELLS RD
PHF : 0.79

NORTH LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	12	0	0	0	0	0	0	0	0	0	0
0	15	1	0	0	0	0	0	0	0	0	0
0	11	0	0	0	0	0	0	0	0	0	0
0	10	0	0	0	0	0	1	0	0	0	0

SOUTH LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
38	8	0	0	0	0	1	0	0	1	0	0
15	0	0	0	0	0	0	0	0	0	0	0
6	1	0	1	0	0	0	0	0	0	0	0
13	3	0	0	0	0	0	1	0	0	0	0

EAST LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
2	0	20	0	0	2	0	0	1	0	0	2
0	0	38	0	0	0	0	0	0	0	0	0
1	0	39	0	0	1	0	0	0	0	0	0
2	0	30	0	0	0	0	0	0	0	0	0

WEST LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

Number of Axles	2-Axle Trucks	3-Axle Trucks	4+ Axle Trucks
PCE factor	1.5	2	3

	Truck Volumes	Auto Volumes	Vehicle Totals	PCE Totals	Balanced PCE Totals
JOHNSON RD					
EB LEFT	0	0	**0**	**0**	**0**
EB THRU	0	0	**0**	**0**	**0**
EB RIGHT	0	0	**0**	**0**	**0**
WB LEFT	6	127	**133**	**140**	**140**
WB THRU	0	0	**0**	**0**	**0**
WB RIGHT	0	5	**5**	**5**	**5**
STODDARD WELLS RD					
NB LEFT	0	0	**0**	**0**	**0**
NB THRU	1	12	**13**	**14**	**14**
NB RIGHT	3	72	**75**	**79**	**79**
SB LEFT	0	1	**1**	**1**	**1**
SB THRU	1	48	**49**	**50**	**50**
SB RIGHT	0	0	**0**	**0**	**0**

Intersection						
Int Delay, s/veh	5.1					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	140	5	14	79	1	50
Future Vol, veh/h	140	5	14	79	1	50
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	177	6	18	100	1	63

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	133	68	0	0	118	0
Stage 1	68	-	-	-	-	-
Stage 2	65	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	866	1001	-	-	1483	-
Stage 1	960	-	-	-	-	-
Stage 2	963	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	865	1001	-	-	1483	-
Mov Cap-2 Maneuver	865	-	-	-	-	-
Stage 1	960	-	-	-	-	-
Stage 2	962	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	869	1483	-
HCM Lane V/C Ratio	-	-	0.211	0.001	-
HCM Control Delay (s)	-	-	10.2	7.4	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0	-

Intersection	
Int Delay, s/veh	5.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	153	6	22	87	2	59
Future Vol, veh/h	153	6	22	87	2	59
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	194	8	28	110	3	75

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	164	83	0	0	138	0
Stage 1	83	-	-	-	-	-
Stage 2	81	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	831	982	-	-	1458	-
Stage 1	945	-	-	-	-	-
Stage 2	947	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	829	982	-	-	1458	-
Mov Cap-2 Maneuver	829	-	-	-	-	-
Stage 1	945	-	-	-	-	-
Stage 2	945	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	834	1458	-
HCM Lane V/C Ratio	-	-	0.241	0.002	-
HCM Control Delay (s)	-	-	10.7	7.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0	-

Intersection	
Int Delay, s/veh	5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	172	6	22	149	2	59
Future Vol, veh/h	172	6	22	149	2	59
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	218	8	28	189	3	75

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	204	123	0	0	217	0
Stage 1	123	-	-	-	-	-
Stage 2	81	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	789	933	-	-	1365	-
Stage 1	907	-	-	-	-	-
Stage 2	947	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	787	933	-	-	1365	-
Mov Cap-2 Maneuver	787	-	-	-	-	-
Stage 1	907	-	-	-	-	-
Stage 2	945	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.4	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	791	1365	-
HCM Lane V/C Ratio	-	-	0.285	0.002	-
HCM Control Delay (s)	-	-	11.4	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0	-

Intersection						
Int Delay, s/veh	5.1					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	135	120	242	151	8	141
Future Vol, veh/h	135	120	242	151	8	141
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	142	126	255	159	8	148

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	499	335	0	0	414	0
Stage 1	335	-	-	-	-	-
Stage 2	164	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	535	712	-	-	1156	-
Stage 1	729	-	-	-	-	-
Stage 2	870	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	531	712	-	-	1156	-
Mov Cap-2 Maneuver	531	-	-	-	-	-
Stage 1	729	-	-	-	-	-
Stage 2	863	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.7	0	0.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	603	1156	-
HCM Lane V/C Ratio	-	-	0.445	0.007	-
HCM Control Delay (s)	-	-	15.7	8.1	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	2.3	0	-

Intersection	
Int Delay, s/veh	5.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	154	120	242	213	8	141
Future Vol, veh/h	154	120	242	213	8	141
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	162	126	255	224	8	148

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	531	367	0	0	479	0
Stage 1	367	-	-	-	-	-
Stage 2	164	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	512	683	-	-	1094	-
Stage 1	705	-	-	-	-	-
Stage 2	870	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	508	683	-	-	1094	-
Mov Cap-2 Maneuver	508	-	-	-	-	-
Stage 1	705	-	-	-	-	-
Stage 2	863	-	-	-	-	-

Approach	WB		NB		SB	
HCM Control Delay, s	17.5		0		0.4	
HCM LOS	C					

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	572	1094	-
HCM Lane V/C Ratio	-	-	0.504	0.008	-
HCM Control Delay (s)	-	-	17.5	8.3	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	2.8	0	-

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	154	120	242	213	8	141
Future Vol, veh/h	154	120	242	213	8	141
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	162	126	255	224	8	148
Number of Lanes	2	1	1	1	1	2

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	3	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	3
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	3	3	0
HCM Control Delay	8.8	11	8.8
HCM LOS	A	B	A

Lane	NBLn1	NBLn2	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	0%	0%	100%	100%	0%	100%	0%	0%
Vol Thru, %	100%	0%	0%	0%	0%	0%	100%	100%
Vol Right, %	0%	100%	0%	0%	100%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	242	213	77	77	120	8	71	71
LT Vol	0	0	77	77	0	8	0	0
Through Vol	242	0	0	0	0	0	71	71
RT Vol	0	213	0	0	120	0	0	0
Lane Flow Rate	255	224	81	81	126	8	74	74
Geometry Grp	8	8	7	7	7	8	8	8
Degree of Util (X)	0.4	0.308	0.144	0.144	0.123	0.016	0.129	0.094
Departure Headway (Hd)	5.653	4.948	6.521	6.521	3.613	6.783	6.277	4.559
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	639	731	554	554	998	530	573	788
Service Time	3.353	2.648	4.221	4.221	1.313	4.499	3.994	2.275
HCM Lane V/C Ratio	0.399	0.306	0.146	0.146	0.126	0.015	0.129	0.094
HCM Control Delay	12.1	9.8	10.3	10.3	6.8	9.6	9.9	7.7
HCM Lane LOS	B	A	B	B	A	A	A	A
HCM 95th-tile Q	1.9	1.3	0.5	0.5	0.4	0	0.4	0.3

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	TNM	13-Sep-23	PIXI5AMG-0002	1 OF 2

E/W STREET : JOHNSON RD
N/S STREET : STODDARD WELLS RD
CONDITION : PM PEAK HOUR

INTERSECTION : 4
PROJECTED GROWTH PER YEAR : 3.0%

TURN MOVEMENTS

Condition	Existing Condition	Year 2025 Ambient Growth	Other Area Projects	Background Condition	Project Trips	Project Condition	Future Year 2040 Condition	Future Year 2040 + Project Condition
Scenario #	2			4		6	8	10
JOHNSON RD								
EB LEFT	0	0	0	0	0	0	0	0
EB THRU	0	0	0	0	0	0	0	0
EB RIGHT	0	0	0	0	0	0	0	0
WB LEFT	254	23	0	277	59	336	263	322
WB THRU	0	0	0	0	0	0	0	0
WB RIGHT	24	3	0	27	0	27	105	105
STODDARD WELLS RD								
NB LEFT	0	0	0	0	0	0	0	0
NB THRU	20	2	5	27	0	27	161	161
NB RIGHT	54	5	0	59	22	81	105	127
SB LEFT	31	3	0	34	0	34	109	109
SB THRU	115	11	5	131	0	131	391	391
SB RIGHT	0	0	0	0	0	0	0	0
TOTALS	**498**	**47**	**10**	**555**	**81**	**636**	**1134**	**1215**

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN VOLUME SUMMARY	TNM	13-Sep-23	PIXI5AMG-0002	2 OF 2

E/W STREET : JOHNSON RD

CONDITION : PM PEAK HOUR

N/S STREET : STODDARD WELLS RD

PHF : 0.81

NORTH LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	32	6	0	0	0	0	0	0	0	0	0
0	25	6	0	0	0	0	0	0	0	0	0
0	28	8	0	0	0	0	0	0	0	0	0
0	30	11	0	0	0	0	0	0	0	0	0

SOUTH LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
16	5	0	0	0	0	0	0	0	0	0	0
15	7	0	0	0	0	0	0	0	0	0	0
8	4	0	0	0	0	0	0	0	2	0	0
9	4	0	0	0	0	0	0	0	0	0	0

EAST LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
6	0	78	0	0	1	0	0	0	0	0	5
5	0	34	0	0	0	0	0	0	0	0	0
9	0	64	0	0	0	0	0	0	0	0	0
4	0	61	0	0	0	0	0	0	0	0	0

WEST LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

Number of Axles	2-Axle Trucks	3-Axle Trucks	4+ Axle Trucks
PCE factor	1.5	2	3

	Truck Volumes	Auto Volumes	Vehicle Totals	PCE Totals	Balanced PCE Totals
JOHNSON RD					
EB LEFT	0	0	**0**	**0**	**0**
EB THRU	0	0	**0**	**0**	**0**
EB RIGHT	0	0	**0**	**0**	**0**
WB LEFT	6	237	**243**	**254**	**254**
WB THRU	0	0	**0**	**0**	**0**
WB RIGHT	0	24	**24**	**24**	**24**
STODDARD WELLS RD					
NB LEFT	0	0	**0**	**0**	**0**
NB THRU	0	20	**20**	**20**	**20**
NB RIGHT	2	48	**50**	**54**	**54**
SB LEFT	0	31	**31**	**31**	**31**
SB THRU	0	115	**115**	**115**	**115**
SB RIGHT	0	0	**0**	**0**	**0**

Intersection	
Int Delay, s/veh	8.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	254	24	20	54	31	115
Future Vol, veh/h	254	24	20	54	31	115
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	314	30	25	67	38	142

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	277	59	0	0	92	0
Stage 1	59	-	-	-	-	-
Stage 2	218	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	717	1012	-	-	1515	-
Stage 1	969	-	-	-	-	-
Stage 2	823	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	698	1012	-	-	1515	-
Mov Cap-2 Maneuver	698	-	-	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	801	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.5	0	1.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	717	1515	-
HCM Lane V/C Ratio	-	-	0.479	0.025	-
HCM Control Delay (s)	-	-	14.5	7.4	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	2.6	0.1	-

Intersection	
Int Delay, s/veh	9.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	277	27	27	59	34	131
Future Vol, veh/h	277	27	27	59	34	131
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	342	33	33	73	42	162

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	316	70	0	0	106	0
Stage 1	70	-	-	-	-	-
Stage 2	246	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	681	998	-	-	1498	-
Stage 1	958	-	-	-	-	-
Stage 2	800	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	660	998	-	-	1498	-
Mov Cap-2 Maneuver	660	-	-	-	-	-
Stage 1	958	-	-	-	-	-
Stage 2	775	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.6	0	1.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	680	1498	-
HCM Lane V/C Ratio	-	-	0.552	0.028	-
HCM Control Delay (s)	-	-	16.6	7.5	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	3.4	0.1	-

Intersection	
Int Delay, s/veh	12.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	336	27	27	81	34	131
Future Vol, veh/h	336	27	27	81	34	131
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	415	33	33	100	42	162

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	329	83	0	0	133	0
Stage 1	83	-	-	-	-	-
Stage 2	246	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	670	982	-	-	1464	-
Stage 1	945	-	-	-	-	-
Stage 2	800	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	649	982	-	-	1464	-
Mov Cap-2 Maneuver	649	-	-	-	-	-
Stage 1	945	-	-	-	-	-
Stage 2	774	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.8	0	1.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	666	1464	-
HCM Lane V/C Ratio	-	-	0.673	0.029	-
HCM Control Delay (s)	-	-	20.8	7.5	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	5.2	0.1	-

Intersection						
Int Delay, s/veh	36.6					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	263	105	161	105	109	391
Future Vol, veh/h	263	105	161	105	109	391
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	277	111	169	111	115	412

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	867	225	0	0	280	0
Stage 1	225	-	-	-	-	-
Stage 2	642	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	326	819	-	-	1294	-
Stage 1	817	-	-	-	-	-
Stage 2	528	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	289	819	-	-	1294	-
Mov Cap-2 Maneuver	289	-	-	-	-	-
Stage 1	817	-	-	-	-	-
Stage 2	467	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	110.3	0	1.8
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	354	1294	-
HCM Lane V/C Ratio	-	-	1.094	0.089	-
HCM Control Delay (s)	-	-	110.3	8.1	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	14.3	0.3	-

Intersection						
Int Delay, s/veh	71.2					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	322	105	161	127	109	391
Future Vol, veh/h	322	105	161	127	109	391
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	339	111	169	134	115	412

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	878	236	0	0	303	0
Stage 1	236	-	-	-	-	-
Stage 2	642	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	~ 321	808	-	-	1269	-
Stage 1	808	-	-	-	-	-
Stage 2	528	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 283	808	-	-	1269	-
Mov Cap-2 Maneuver	~ 283	-	-	-	-	-
Stage 1	808	-	-	-	-	-
Stage 2	466	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	200.6	0	1.8
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	337	1269	-
HCM Lane V/C Ratio	-	-	1.334	0.09	-
HCM Control Delay (s)	-	-	200.6	8.1	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	21.8	0.3	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s   +: Computation Not Defined   *: All major volume in platoon

Intersection	
Intersection Delay, s/veh	11.9
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	322	105	161	127	109	391
Future Vol, veh/h	322	105	161	127	109	391
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	339	111	169	134	115	412
Number of Lanes	2	1	1	1	1	2

Approach	WB		NB		SB
Opposing Approach			SB		NB
Opposing Lanes	0		3		2
Conflicting Approach Left	NB				WB
Conflicting Lanes Left	2		0		3
Conflicting Approach Right	SB		WB		
Conflicting Lanes Right	3		3		0
HCM Control Delay	11.9		12.3		11.7
HCM LOS	B		B		B

Lane	NBLn1	NBLn2	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	0%	0%	100%	100%	0%	100%	0%	0%
Vol Thru, %	100%	0%	0%	0%	0%	0%	100%	100%
Vol Right, %	0%	100%	0%	0%	100%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	161	127	161	161	105	109	196	196
LT Vol	0	0	161	161	0	109	0	0
Through Vol	161	0	0	0	0	0	196	196
RT Vol	0	127	0	0	105	0	0	0
Lane Flow Rate	169	134	169	169	111	115	206	206
Geometry Grp	8	8	7	7	7	8	8	8
Degree of Util (X)	0.332	0.235	0.333	0.333	0.127	0.229	0.382	0.283
Departure Headway (Hd)	7.047	6.335	7.073	7.073	4.15	7.184	6.677	4.954
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	508	563	507	507	857	498	537	720
Service Time	4.824	4.112	4.835	4.835	1.91	4.954	4.446	2.722
HCM Lane V/C Ratio	0.333	0.238	0.333	0.333	0.13	0.231	0.384	0.286
HCM Control Delay	13.3	11.1	13.4	13.4	7.5	12.1	13.6	9.7
HCM Lane LOS	B	B	B	B	A	B	B	A
HCM 95th-tile Q	1.4	0.9	1.4	1.4	0.4	0.9	1.8	1.2

CALCULATION OF FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES (NCHRP 255)

Intersection No.: 4
North/South Street: STODDARD WELLS RD
East/West Street: JOHNSON RD

Analysis Condition: YEAR 2040 FUTURE TRAFFIC

A.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year: Link Volume			Turn Volume	Rounded Volume
South leg	Left	0	Approach	379	Left	0	0
NB	Through	14	Departure	271	Through	236	236
	Right	79			Right	150	151
North leg	Left	1	Approach	149	Left	8	8
SB	Through	50	Departure	355	Through	136	137
	Right	0			Right	0	0
West leg	Left	0	Approach	0	Left	0	0
EB	Through	0	Departure	0	Through	0	0
	Right	0			Right	0	0
East leg	Left	140	Approach	258	Left	135	135
WB	Through	0	Departure	158	Through	0	0
	Right	5			Right	119	120

P.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year: Link Volume			Turn Volume	Rounded Volume
South leg	Left	0	Approach	259	Left	0	0
NB	Through	20	Departure	648	Through	155	156
	Right	54			Right	104	105
North leg	Left	31	Approach	495	Left	109	109
SB	Through	115	Departure	260	Through	385	386
	Right	0			Right	0	0
West leg	Left	0	Approach	0	Left	0	0
EB	Through	0	Departure	0	Through	0	0
	Right	0			Right	0	0
East leg	Left	254	Approach	368	Left	263	263
WB	Through	0	Departure	213	Through	0	0
	Right	24			Right	105	105

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	TNM	12-Sep-23	PIXI5AMG-0002	1 OF 2

E/W STREET : STODDARD WELLS RD
N/S STREET : I-15 NB RAMPS
CONDITION : AM PEAK HOUR

INTERSECTION : 5
PROJECTED GROWTH PER YEAR : 3.0%

TURN MOVEMENTS

Condition	Existing Condition	Year 2025 Ambient Growth	Other Area Projects	Background Condition	Project Trips	Project Condition	Future Year 2040 Condition	Future Year 2040 + Project Condition
Scenario #	1			3		5	7	9
STODDARD WELLS RD								
EB LEFT	299	27	0	326	0	326	167	167
EB THRU	85	8	131	224	42	266	411	453
EB RIGHT	9	1	0	10	0	10	2	2
WB LEFT	1	1	3	5	0	5	5	5
WB THRU	131	12	198	341	13	354	280	293
WB RIGHT	66	6	79	151	6	157	322	328
I-15 NB RAMPS								
NB LEFT	1	1	0	2	0	2	1	1
NB THRU	2	1	0	3	0	3	2	2
NB RIGHT	1	1	5	7	0	7	8	8
SB LEFT	1	1	343	345	20	365	517	537
SB THRU	1	1	0	2	0	2	11	11
SB RIGHT	46	5	0	51	0	51	231	231
TOTALS	**643**	**65**	**759**	**1467**	**81**	**1548**	**1957**	**2038**

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN VOLUME SUMMARY	TNM	12-Sep-23	PIXI5AMG-0002	2 OF 2

E/W STREET : STODDARD WELLS RD N/S STREET : I-15 NB RAMPS

CONDITION : AM PEAK HOUR PHF : 0.92

NORTH LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	0	0	1	0	0	0	0	1	0	0	0
15	0	0	1	0	0	0	0	0	0	0	0
18	0	0	0	0	0	1	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0

SOUTH LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	2	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

EAST LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
5	34	1	0	0	0	1	0	0	1	0	0
10	22	0	2	0	0	1	0	0	1	1	0
15	38	0	0	0	0	0	0	0	0	0	0
20	30	0	1	0	0	0	0	0	0	0	0

WEST LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
2	11	88	0	0	1	0	0	0	0	0	4
5	57	15	0	0	4	0	0	1	0	1	5
2	4	69	0	0	1	0	0	4	0	0	3
0	6	58	0	1	1	0	0	1	0	0	1

Number of Axles	2-Axle Trucks	3-Axle Trucks	4+ Axle Trucks
PCE factor	1.5	2	3

	Truck Volumes	Auto Volumes	Vehicle Totals	PCE Totals	Balanced PCE Totals
STODDARD WELLS RD					
EB LEFT	26	230	**256**	**292**	**299**
EB THRU	2	78	**80**	**83**	**85**
EB RIGHT	0	9	**9**	**9**	**9**
WB LEFT	0	1	**1**	**1**	**1**
WB THRU	1	124	**125**	**127**	**131**
WB RIGHT	7	50	**57**	**66**	**66**
I-15 NB RAMPS					
NB LEFT	0	0	**1**	**1**	**1**
NB THRU	0	2	**2**	**2**	**2**
NB RIGHT	0	0	**1**	**1**	**1**
SB LEFT	1	0	**1**	**1**	**1**
SB THRU	0	0	**1**	**1**	**1**
SB RIGHT	3	39	**42**	**44**	**46**

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	299	85	9	1	131	66	1	2	1	1	1	46
Future Vol, veh/h	299	85	9	1	131	66	1	2	1	1	1	46
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	325	92	10	1	142	72	1	2	1	1	1	50

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	214	0	0	102	0	0	953	963	97	929	932	178
Stage 1	-	-	-	-	-	-	747	747	-	180	180	-
Stage 2	-	-	-	-	-	-	206	216	-	749	752	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1368	-	-	1503	-	-	241	258	965	250	269	870
Stage 1	-	-	-	-	-	-	408	423	-	826	754	-
Stage 2	-	-	-	-	-	-	801	728	-	407	421	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1368	-	-	1503	-	-	182	193	965	199	201	870
Mov Cap-2 Maneuver	-	-	-	-	-	-	182	193	-	199	201	-
Stage 1	-	-	-	-	-	-	305	316	-	618	753	-
Stage 2	-	-	-	-	-	-	753	727	-	302	315	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	6.4	0	20.5	10.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	237	1368	-	-	1503	-	-	763
HCM Lane V/C Ratio	0.018	0.238	-	-	0.001	-	-	0.068
HCM Control Delay (s)	20.5	8.4	0	-	7.4	0	-	10.1
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.9	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	528.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	326	224	10	5	341	151	2	3	7	345	2	51
Future Vol, veh/h	326	224	10	5	341	151	2	3	7	345	2	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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	354	243	11	5	371	164	2	3	8	375	2	55

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	535	0	0	254	0	0	1449	1502	249	1425	1425	453
Stage 1	-	-	-	-	-	-	957	957	-	463	463	-
Stage 2	-	-	-	-	-	-	492	545	-	962	962	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1043	-	-	1323	-	-	110	123	795	~ 114	137	611
Stage 1	-	-	-	-	-	-	312	339	-	583	568	-
Stage 2	-	-	-	-	-	-	562	522	-	~ 310	337	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1043	-	-	1323	-	-	68	74	795	~ 75	82	611
Mov Cap-2 Maneuver	-	-	-	-	-	-	68	74	-	~ 75	82	-
Stage 1	-	-	-	-	-	-	188	205	-	~ 352	565	-
Stage 2	-	-	-	-	-	-	506	519	-	~ 182	204	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5.9	0.1	30.9	$ 1938.9
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	152	1043	-	-	1323	-	-	85
HCM Lane V/C Ratio	0.086	0.34	-	-	0.004	-	-	5.09
HCM Control Delay (s)	30.9	10.2	0	-	7.7	0		$ 1938.9
HCM Lane LOS	D	B	A	-	A	A	-	F
HCM 95th %tile Q(veh)	0.3	1.5	-	-	0	-	-	46.9

Notes
~: Volume exceeds capacity $: Delay exceeds 300s   +: Computation Not Defined   *: All major volume in platoon

Intersection	
Int Delay, s/veh	656.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	326	266	10	5	354	157	2	3	7	365	2	51
Future Vol, veh/h	326	266	10	5	354	157	2	3	7	365	2	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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	354	289	11	5	385	171	2	3	8	397	2	55

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	556	0	0	300	0	0	1512	1569	295	1489	1489	471
Stage 1	-	-	-	-	-	-	1003	1003	-	481	481	-
Stage 2	-	-	-	-	-	-	509	566	-	1008	1008	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1025	-	-	1273	-	-	100	112	749	~ 103	125	597
Stage 1	-	-	-	-	-	-	294	322	-	570	557	-
Stage 2	-	-	-	-	-	-	550	511	-	~ 292	321	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1025	-	-	1273	-	-	60	65	749	~ 66	73	597
Mov Cap-2 Maneuver	-	-	-	-	-	-	60	65	-	~ 66	73	-
Stage 1	-	-	-	-	-	-	172	188	-	~ 333	554	-
Stage 2	-	-	-	-	-	-	494	508	-	~ 166	188	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5.6	0.1	34.5	$ 2423.3
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	135	1025	-	-	1273	-	-	74
HCM Lane V/C Ratio	0.097	0.346	-	-	0.004	-	-	6.14
HCM Control Delay (s)	34.5	10.4	0	-	7.8	0		$ 2423.3
HCM Lane LOS	D	B	A	-	A	A	-	F
HCM 95th %tile Q(veh)	0.3	1.6	-	-	0	-	-	50.9

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	326	266	10	5	354	157	2	3	7	365	2	51
Future Volume (veh/h)	326	266	10	5	354	157	2	3	7	365	2	51
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1800	1872	1800	1800	1800	1800	1800	1872	1800	1800	1872	1800
Adj Flow Rate, veh/h	354	289	11	5	385	171	2	3	8	397	2	55
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	390	847	32	9	579	254	327	80	214	611	19	527
Arrive On Green	0.23	0.47	0.47	0.01	0.25	0.25	0.00	0.18	0.18	0.17	0.34	0.34
Sat Flow, veh/h	1714	1792	68	1714	2314	1014	1714	451	1204	1714	56	1539
Grp Volume(v), veh/h	354	0	300	5	283	273	2	0	11	397	0	57
Grp Sat Flow(s),veh/h/ln	1714	0	1860	1714	1710	1618	1714	0	1655	1714	0	1595
Q Serve(g_s), s	18.1	0.0	9.1	0.3	13.4	13.7	0.1	0.0	0.5	15.0	0.0	2.2
Cycle Q Clear(g_c), s	18.1	0.0	9.1	0.3	13.4	13.7	0.1	0.0	0.5	15.0	0.0	2.2
Prop In Lane	1.00		0.04	1.00		0.63	1.00		0.73	1.00		0.96
Lane Grp Cap(c), veh/h	390	0	879	9	428	405	327	0	294	611	0	546
V/C Ratio(X)	0.91	0.00	0.34	0.56	0.66	0.67	0.01	0.00	0.04	0.65	0.00	0.10
Avail Cap(c_a), veh/h	457	0	879	114	428	405	437	0	294	611	0	546
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)	0.93	0.00	0.93	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.8	0.0	14.9	44.7	30.3	30.4	30.3	0.0	30.6	23.8	0.0	20.2
Incr Delay (d2), s/veh	18.7	0.0	1.0	44.8	7.8	8.7	0.0	0.0	0.2	2.4	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	8.9	0.0	3.5	0.2	5.9	5.8	0.0	0.0	0.2	7.2	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.5	0.0	15.9	89.5	38.2	39.1	30.3	0.0	30.9	26.3	0.0	20.6
LnGrp LOS	D	A	B	F	D	D	C	A	C	C	A	C
Approach Vol, veh/h		654			561			13			454	
Approach Delay, s/veh		35.7			39.1			30.8			25.5	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.5	46.5	4.2	34.8	24.5	26.5	19.0	20.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	37.0	6.0	25.0	24.0	19.0	15.0	16.0
Max Q Clear Time (g_c+I1), s	2.3	11.1	2.1	4.2	20.1	15.7	17.0	2.5
Green Ext Time (p_c), s	0.0	1.5	0.0	0.2	0.4	0.9	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	34.1
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	754

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	167	411	2	5	280	322	1	2	8	517	11	231
Future Vol, veh/h	167	411	2	5	280	322	1	2	8	517	11	231
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	176	433	2	5	295	339	1	2	8	544	12	243

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	634	0	0	435	0	0	1388	1430	434	1266	1262	465
Stage 1	-	-	-	-	-	-	786	786	-	475	475	-
Stage 2	-	-	-	-	-	-	602	644	-	791	787	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	959	-	-	1135	-	-	121	136	626	~ 147	171	602
Stage 1	-	-	-	-	-	-	388	406	-	574	561	-
Stage 2	-	-	-	-	-	-	490	471	-	~ 386	406	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	959	-	-	1135	-	-	55	102	626	~ 116	129	602
Mov Cap-2 Maneuver	-	-	-	-	-	-	55	102	-	~ 116	129	-
Stage 1	-	-	-	-	-	-	294	308	-	~ 435	557	-
Stage 2	-	-	-	-	-	-	284	468	-	~ 287	308	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.8	0.1	22.4	$ 1941.5
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	218	959	-	-	1135	-	-	154
HCM Lane V/C Ratio	0.053	0.183	-	-	0.005	-	-	5.188
HCM Control Delay (s)	22.4	9.6	0	-	8.2	0		$ 1941.5
HCM Lane LOS	C	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	0.2	0.7	-	-	0	-	-	84.2

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	874.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	167	453	2	5	293	328	1	2	8	537	11	231
Future Vol, veh/h	167	453	2	5	293	328	1	2	8	537	11	231
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	176	477	2	5	308	345	1	2	8	565	12	243

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	653	0	0	479	0	0	1448	1493	478	1326	1322	481
Stage 1	-	-	-	-	-	-	830	830	-	491	491	-
Stage 2	-	-	-	-	-	-	618	663	-	835	831	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	943	-	-	1094	-	-	110	124	591	~ 134	158	589
Stage 1	-	-	-	-	-	-	367	388	-	~ 563	552	-
Stage 2	-	-	-	-	-	-	480	462	-	~ 365	387	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	943	-	-	1094	-	-	48	92	591	~ 104	117	589
Mov Cap-2 Maneuver	-	-	-	-	-	-	48	92	-	~ 104	117	-
Stage 1	-	-	-	-	-	-	274	289	-	~ 420	548	-
Stage 2	-	-	-	-	-	-	274	458	-	~ 266	289	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.6	0.1	24.5	$ 2285.9
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	196	943	-	-	1094	-	-	138
HCM Lane V/C Ratio	0.059	0.186	-	-	0.005	-	-	5.942
HCM Control Delay (s)	24.5	9.7	0	-	8.3	0		$ 2285.9
HCM Lane LOS	C	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	0.2	0.7	-	-	0	-	-	88.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	167	453	2	5	293	328	1	2	8	537	11	231
Future Volume (veh/h)	167	453	2	5	293	328	1	2	8	537	11	231
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1800	1872	1800	1800	1800	1800	1800	1872	1800	1800	1872	1800
Adj Flow Rate, veh/h	176	477	2	5	308	345	1	2	8	565	12	243
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	209	839	4	9	571	509	82	29	116	586	27	557
Arrive On Green	0.12	0.45	0.45	0.01	0.33	0.33	0.00	0.09	0.09	0.28	0.37	0.37
Sat Flow, veh/h	1714	1863	8	1714	1710	1525	1714	327	1309	1714	75	1523
Grp Volume(v), veh/h	176	0	479	5	308	345	1	0	10	565	0	255
Grp Sat Flow(s),veh/h/ln	1714	0	1871	1714	1710	1525	1714	0	1636	1714	0	1598
Q Serve(g_s), s	9.0	0.0	17.0	0.3	13.2	17.5	0.0	0.0	0.5	23.3	0.0	10.8
Cycle Q Clear(g_c), s	9.0	0.0	17.0	0.3	13.2	17.5	0.0	0.0	0.5	23.3	0.0	10.8
Prop In Lane	1.00		0.00	1.00		1.00	1.00		0.80	1.00		0.95
Lane Grp Cap(c), veh/h	209	0	842	9	571	509	82	0	145	586	0	584
V/C Ratio(X)	0.84	0.00	0.57	0.56	0.54	0.68	0.01	0.00	0.07	0.96	0.00	0.44
Avail Cap(c_a), veh/h	229	0	842	76	571	509	175	0	291	586	0	639
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)	0.93	0.00	0.93	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.7	0.0	18.3	44.7	24.4	25.8	39.4	0.0	37.6	29.6	0.0	21.6
Incr Delay (d2), s/veh	21.3	0.0	2.6	44.8	3.6	7.1	0.1	0.0	0.2	28.2	0.0	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	4.8	0.0	6.9	0.2	5.3	6.6	0.0	0.0	0.2	15.2	0.0	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.0	0.0	20.9	89.5	28.0	32.9	39.5	0.0	37.8	57.7	0.0	22.1
LnGrp LOS	E	A	C	F	C	C	D	A	D	E	A	C
Approach Vol, veh/h		655			658			11			820	
Approach Delay, s/veh		31.4			31.0			37.9			46.7	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.5	44.5	4.1	36.9	14.9	34.1	29.0	12.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	4.0	29.0	5.0	36.0	12.0	21.0	25.0	16.0
Max Q Clear Time (g_c+I1), s	2.3	19.0	2.0	12.8	11.0	19.5	25.3	2.5
Green Ext Time (p_c), s	0.0	1.8	0.0	1.7	0.0	0.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	37.1
HCM 6th LOS	D

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	TNM	12-Sep-23	PIXI5AMG-0002	1 OF 2

E/W STREET : STODDARD WELLS RD
N/S STREET : I-15 NB RAMPS
CONDITION : PM PEAK HOUR

INTERSECTION : 5
PROJECTED GROWTH PER YEAR : 3.0%

TURN MOVEMENTS

Condition	Existing Condition	Year 2025 Ambient Growth	Other Area Projects	Background Condition	Project Trips	Project Condition	Future Year 2040 Condition	Future Year 2040 + Project Condition
Scenario #	2			4		6	8	10
STODDARD WELLS RD								
EB LEFT	234	22	0	256	0	256	182	182
EB THRU	53	5	120	178	16	194	284	300
EB RIGHT	1	1	0	2	0	2	1	1
WB LEFT	4	1	6	11	0	11	16	16
WB THRU	292	27	333	652	40	692	870	910
WB RIGHT	60	6	113	179	19	198	266	285
I-15 NB RAMPS								
NB LEFT	1	1	0	2	0	2	1	1
NB THRU	3	1	0	4	0	4	2	2
NB RIGHT	1	1	5	7	0	7	8	8
SB LEFT	17	2	261	280	7	287	427	434
SB THRU	1	1	0	2	0	2	3	3
SB RIGHT	137	13	0	150	0	150	242	242
TOTALS	**804**	**81**	**838**	**1723**	**82**	**1805**	**2302**	**2384**

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN VOLUME SUMMARY	TNM	12-Sep-23	PIXI5AMG-0002	2 OF 2

E/W STREET : STODDARD WELLS RD
N/S STREET : I-15 NB RAMPS
CONDITION : PM PEAK HOUR
PHF : 0.89

NORTH LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
19	0	4	0	0	0	1	0	0	0	0	0
19	0	4	0	0	0	0	0	0	0	0	0
64	0	5	0	0	0	0	0	0	0	0	0
32	0	4	0	0	0	0	0	0	0	0	0

Number of Axles	2-Axle Trucks	3-Axle Trucks	4+ Axle Trucks
PCE factor	1.5	2	3

SOUTH LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0

	Truck Volumes	Auto Volumes	Vehicle Totals	PCE Totals	Balanced PCE Totals
STODDARD WELLS RD					
EB LEFT	3	214	**217**	**222**	**234**
EB THRU	2	44	**46**	**50**	**53**
EB RIGHT	0	1	**1**	**1**	**1**
WB LEFT	0	4	**4**	**4**	**4**
WB THRU	0	290	**290**	**290**	**292**
WB RIGHT	0	60	**60**	**60**	**60**
I-15 NB RAMPS					
NB LEFT	0	0	**1**	**1**	**1**
NB THRU	0	3	**3**	**3**	**3**
NB RIGHT	0	0	**1**	**1**	**1**
SB LEFT	0	17	**17**	**17**	**17**
SB THRU	0	0	**1**	**1**	**1**
SB RIGHT	1	134	**135**	**136**	**137**

EAST LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
17	74	0	0	0	0	0	0	0	0	0	0
14	81	0	0	0	0	0	0	0	0	0	0
12	57	1	0	0	0	0	0	0	0	0	0
17	78	3	0	0	0	0	0	0	0	0	0

WEST LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	8	50	0	0	0	0	0	1	0	2	2
0	9	48	0	0	0	0	0	0	0	0	0
0	10	52	0	0	0	0	0	0	0	0	0
1	17	64	0	0	0	0	0	0	0	0	0

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	234	53	1	4	292	60	1	3	1	17	1	137
Future Vol, veh/h	234	53	1	4	292	60	1	3	1	17	1	137
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	263	60	1	4	328	67	1	3	1	19	1	154

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	395	0	0	61	0	0	1034	990	61	959	957	362
Stage 1	-	-	-	-	-	-	587	587	-	370	370	-
Stage 2	-	-	-	-	-	-	447	403	-	589	587	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1175	-	-	1555	-	-	212	248	1010	239	260	687
Stage 1	-	-	-	-	-	-	499	500	-	654	624	-
Stage 2	-	-	-	-	-	-	595	603	-	498	500	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1175	-	-	1555	-	-	134	190	1010	193	199	687
Mov Cap-2 Maneuver	-	-	-	-	-	-	134	190	-	193	199	-
Stage 1	-	-	-	-	-	-	383	384	-	502	622	-
Stage 2	-	-	-	-	-	-	459	601	-	379	384	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	7.3	0.1	23	15.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	206	1175	-	-	1555	-	-	530
HCM Lane V/C Ratio	0.027	0.224	-	-	0.003	-	-	0.329
HCM Control Delay (s)	23	8.9	0	-	7.3	0	-	15.1
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0.9	-	-	0	-	-	1.4

Intersection	
Int Delay, s/veh	700.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	256	178	2	11	652	179	2	4	7	280	2	150
Future Vol, veh/h	256	178	2	11	652	179	2	4	7	280	2	150
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	288	200	2	12	733	201	2	4	8	315	2	169

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	934	0	0	202	0	0	1720	1735	201	1641	1636	834
Stage 1	-	-	-	-	-	-	777	777	-	858	858	-
Stage 2	-	-	-	-	-	-	943	958	-	783	778	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	741	-	-	1382	-	-	71	89	845	~ 81	102	371
Stage 1	-	-	-	-	-	-	393	410	-	354	376	-
Stage 2	-	-	-	-	-	-	318	338	-	390	410	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	741	-	-	1382	-	-	24	49	845	~ 49	56	371
Mov Cap-2 Maneuver	-	-	-	-	-	-	24	49	-	~ 49	56	-
Stage 1	-	-	-	-	-	-	221	230	-	~ 199	369	-
Stage 2	-	-	-	-	-	-	169	332	-	~ 213	230	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	7.6	0.1	64.3	$ 2785.6
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	75	741	-	-	1382	-	-	70
HCM Lane V/C Ratio	0.195	0.388	-	-	0.009	-	-	6.934
HCM Control Delay (s)	64.3	12.9	0	-	7.6	0		$ 2785.6
HCM Lane LOS	F	B	A	-	A	A	-	F
HCM 95th %tile Q(veh)	0.7	1.8	-	-	0	-	-	55.2

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	840.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	256	194	2	11	692	198	2	4	7	287	2	150
Future Vol, veh/h	256	194	2	11	692	198	2	4	7	287	2	150
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	288	218	2	12	778	222	2	4	8	322	2	169

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1000	0	0	220	0	0	1794	1819	219	1714	1709	889
Stage 1	-	-	-	-	-	-	795	795	-	913	913	-
Stage 2	-	-	-	-	-	-	999	1024	-	801	796	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	700	-	-	1361	-	-	63	79	826	~ 72	92	345
Stage 1	-	-	-	-	-	-	384	402	-	330	355	-
Stage 2	-	-	-	-	-	-	296	315	-	381	402	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	700	-	-	1361	-	-	19	41	826	~ 41	48	345
Mov Cap-2 Maneuver	-	-	-	-	-	-	19	41	-	~ 41	48	-
Stage 1	-	-	-	-	-	-	204	213	-	~ 175	348	-
Stage 2	-	-	-	-	-	-	147	308	-	~ 196	213	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	7.7	0.1	80.1	$ 3446.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	62	700	-	-	1361	-	-	59
HCM Lane V/C Ratio	0.236	0.411	-	-	0.009	-	-	8.36
HCM Control Delay (s)	80.1	13.7	0	-	7.7	0		$ 3446.1
HCM Lane LOS	F	B	A	-	A	A	-	F
HCM 95th %tile Q(veh)	0.8	2	-	-	0	-	-	57.5

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	256	194	2	11	692	198	2	4	7	287	2	150
Future Volume (veh/h)	256	194	2	11	692	198	2	4	7	287	2	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1800	1872	1800	1800	1800	1800	1800	1872	1800	1800	1872	1800
Adj Flow Rate, veh/h	288	218	2	12	778	222	2	4	8	322	2	169
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	321	1090	10	20	1083	309	201	99	198	385	4	332
Arrive On Green	0.19	0.59	0.59	0.01	0.41	0.41	0.01	0.18	0.18	0.04	0.21	0.21
Sat Flow, veh/h	1714	1852	17	1714	2626	749	1714	557	1114	1714	19	1571
Grp Volume(v), veh/h	288	0	220	12	507	493	2	0	12	322	0	171
Grp Sat Flow(s),veh/h/ln	1714	0	1869	1714	1710	1665	1714	0	1671	1714	0	1589
Q Serve(g_s), s	14.8	0.0	4.9	0.6	22.3	22.3	0.0	0.0	0.5	0.0	0.0	8.6
Cycle Q Clear(g_c), s	14.8	0.0	4.9	0.6	22.3	22.3	0.0	0.0	0.5	0.0	0.0	8.6
Prop In Lane	1.00		0.01	1.00		0.45	1.00		0.67	1.00		0.99
Lane Grp Cap(c), veh/h	321	0	1100	20	706	687	201	0	297	385	0	336
V/C Ratio(X)	0.90	0.00	0.20	0.61	0.72	0.72	0.01	0.00	0.04	0.84	0.00	0.51
Avail Cap(c_a), veh/h	343	0	1100	114	706	687	353	0	297	538	0	336
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)	0.97	0.00	0.97	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.7	0.0	8.6	44.3	22.1	22.1	37.0	0.0	30.6	35.9	0.0	31.4
Incr Delay (d2), s/veh	23.5	0.0	0.4	26.5	6.2	6.4	0.0	0.0	0.3	8.0	0.0	5.4
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	7.7	0.0	1.7	0.4	8.9	8.7	0.0	0.0	0.2	7.7	0.0	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.2	0.0	9.0	70.8	28.3	28.4	37.0	0.0	30.9	43.9	0.0	36.8
LnGrp LOS	E	A	A	E	C	C	D	A	C	D	A	D
Approach Vol, veh/h		508			1012			14			493	
Approach Delay, s/veh		37.5			28.8			31.8			41.5	
Approach LOS		D			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.0	57.0	5.0	23.0	20.9	41.1	8.0	20.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	40.0	9.0	19.0	18.0	28.0	12.0	16.0
Max Q Clear Time (g_c+I1), s	2.6	6.9	2.0	10.6	16.8	24.3	2.0	2.5
Green Ext Time (p_c), s	0.0	1.1	0.0	0.6	0.1	1.9	0.7	0.0

Intersection Summary	
HCM 6th Ctrl Delay	34.1
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	1431.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	182	284	1	16	870	266	1	2	8	427	3	242
Future Vol, veh/h	182	284	1	16	870	266	1	2	8	427	3	242
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	192	299	1	17	916	280	1	2	8	449	3	255

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1196	0	0	300	0	0	1903	1914	300	1779	1774	1056
Stage 1	-	-	-	-	-	-	684	684	-	1090	1090	-
Stage 2	-	-	-	-	-	-	1219	1230	-	689	684	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	591	-	-	1273	-	-	53	69	744	~ 65	84	276
Stage 1	-	-	-	-	-	-	442	452	-	~ 263	294	-
Stage 2	-	-	-	-	-	-	223	252	-	~ 439	452	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	591	-	-	1273	-	-	3	40	744	~ 42	49	276
Mov Cap-2 Maneuver	-	-	-	-	-	-	3	40	-	~ 42	49	-
Stage 1	-	-	-	-	-	-	270	276	-	~ 160	281	-
Stage 2	-	-	-	-	-	-	16	241	-	~ 263	276	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5.5	0.1	204.9	$ 4896
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	28	591	-	-	1273	-	-	61
HCM Lane V/C Ratio	0.414	0.324	-	-	0.013	-	-	11.596
HCM Control Delay (s)	204.9	14	0	-	7.9	0	-	$ 4896
HCM Lane LOS	F	B	A	-	A	A	-	F
HCM 95th %tile Q(veh)	1.3	1.4	-	-	0	-	-	84

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1677

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	182	300	1	16	910	285	1	2	8	434	3	242
Future Vol, veh/h	182	300	1	16	910	285	1	2	8	434	3	242
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	192	316	1	17	958	300	1	2	8	457	3	255

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1258	0	0	317	0	0	1972	1993	317	1848	1843	1108
Stage 1	-	-	-	-	-	-	701	701	-	1142	1142	-
Stage 2	-	-	-	-	-	-	1271	1292	-	706	701	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	560	-	-	1255	-	-	47	61	728	~ 58	76	258
Stage 1	-	-	-	-	-	-	433	444	-	~ 246	278	-
Stage 2	-	-	-	-	-	-	208	236	-	~ 430	444	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	560	-	-	1255	-	-	0	34	728	~ 36	42	258
Mov Cap-2 Maneuver	-	-	-	-	-	-	0	34	-	~ 36	42	-
Stage 1	-	-	-	-	-	-	253	259	-	~ 144	264	-
Stage 2	-	-	-	-	-	-	2	224	-	~ 246	259	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5.6	0.1	32.4	$ 5883.2
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	143	560	-	-	1255	-	-	52
HCM Lane V/C Ratio	0.081	0.342	-	-	0.013	-	-	13.745
HCM Control Delay (s)	32.4	14.7	0	-	7.9	0		$ 5883.2
HCM Lane LOS	D	B	A	-	A	A	-	F
HCM 95th %tile Q(veh)	0.3	1.5	-	-	0	-	-	86

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	182	300	1	16	910	285	1	2	8	434	3	242
Future Volume (veh/h)	182	300	1	16	910	285	1	2	8	434	3	242
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1800	1872	1800	1800	1800	1800	1800	1872	1800	1800	1872	1800
Adj Flow Rate, veh/h	192	316	1	17	958	300	1	2	8	457	3	255
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	190	900	3	26	993	310	91	58	233	496	6	516
Arrive On Green	0.11	0.48	0.48	0.02	0.39	0.39	0.00	0.18	0.18	0.15	0.33	0.33
Sat Flow, veh/h	1714	1865	6	1714	2566	800	1714	327	1309	1714	18	1571
Grp Volume(v), veh/h	192	0	317	17	637	621	1	0	10	457	0	258
Grp Sat Flow(s),veh/h/ln	1714	0	1871	1714	1710	1656	1714	0	1636	1714	0	1589
Q Serve(g_s), s	10.0	0.0	9.5	0.9	32.7	33.1	0.0	0.0	0.5	10.4	0.0	11.7
Cycle Q Clear(g_c), s	10.0	0.0	9.5	0.9	32.7	33.1	0.0	0.0	0.5	10.4	0.0	11.7
Prop In Lane	1.00		0.00	1.00		0.48	1.00		0.80	1.00		0.99
Lane Grp Cap(c), veh/h	190	0	903	26	662	641	91	0	291	496	0	522
V/C Ratio(X)	1.01	0.00	0.35	0.64	0.96	0.97	0.01	0.00	0.03	0.92	0.00	0.49
Avail Cap(c_a), veh/h	190	0	903	95	662	641	270	0	291	578	0	522
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)	0.92	0.00	0.92	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	40.0	0.0	14.5	44.1	26.9	27.0	32.7	0.0	30.6	32.6	0.0	24.2
Incr Delay (d2), s/veh	64.6	0.0	1.0	23.3	26.8	28.7	0.0	0.0	0.2	18.8	0.0	3.3
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	7.3	0.0	3.7	0.5	16.4	16.3	0.0	0.0	0.2	12.0	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	104.6	0.0	15.5	67.4	53.8	55.7	32.8	0.0	30.8	51.4	0.0	27.5
LnGrp LOS	F	A	B	E	D	E	C	A	C	D	A	C
Approach Vol, veh/h		509			1275			11			715	
Approach Delay, s/veh		49.1			54.9			31.0			42.8	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.4	47.5	3.6	33.6	14.0	38.8	17.2	20.0
Change Period (Y+Rc), s	4.0	4.0	3.5	4.0	4.0	4.0	4.0	* 4
Max Green Setting (Gmax), s	5.0	36.0	9.5	24.0	10.0	31.0	17.5	* 16
Max Q Clear Time (g_c+I1), s	2.9	11.5	2.0	13.7	12.0	35.1	12.4	2.5
Green Ext Time (p_c), s	0.0	1.5	0.0	1.2	0.0	0.0	0.8	0.0

Intersection Summary	
HCM 6th Ctrl Delay	50.2
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

CALCULATION OF FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES (NCHRP 255)

Intersection No.: 5
North/South Street: I-15 NB RAMPS
East/West Street: STODDARD WELLS RD

Analysis Condition: YEAR 2040 FUTURE TRAFFIC

A.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year	Link Volume		Turn Volume	Rounded Volume
South leg	Left	1	Approach	4	Left	0	1
NB	Through	2	Departure	14	Through	1	2
	Right	1			Right	3	3
North leg	Left	1	Approach	408	Left	174	174
SB	Through	1	Departure	410	Through	11	11
	Right	46			Right	231	231
West leg	Left	299	Approach	438	Left	166	167
EB	Through	85	Departure	313	Through	279	280
	Right	9			Right	2	2
East leg	Left	1	Approach	319	Left	1	2
WB	Through	131	Departure	456	Through	82	82
	Right	66			Right	243	243

P.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year	Link Volume		Turn Volume	Rounded Volume
South leg	Left	1	Approach	5	Left	0	1
NB	Through	3	Departure	13	Through	2	2
	Right	1			Right	3	3
North leg	Left	17	Approach	401	Left	165	166
SB	Through	1	Departure	336	Through	2	3
	Right	137			Right	242	242
West leg	Left	234	Approach	338	Left	181	182
EB	Through	53	Departure	779	Through	163	164
	Right	1			Right	1	1
East leg	Left	4	Approach	686	Left	10	10
WB	Through	292	Departure	331	Through	537	537
	Right	60			Right	153	153

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	TNM	12-Sep-23	PIXI5AMG-0002	1 OF 2

E/W STREET : STODDARD WELLS RD
N/S STREET : QUARRY RD
CONDITION : AM PEAK HOUR

INTERSECTION : 6
PROJECTED GROWTH PER YEAR : 3.0%

TURN MOVEMENTS

Condition	Existing Condition	Year 2025 Ambient Growth	Other Area Projects	Background Condition	Project Trips	Project Condition	Future Year 2040 Condition	Future Year 2040 + Project Condition
Scenario #	1			3		5	7	9
STODDARD WELLS RD								
EB LEFT	131	12	0	143	0	143	140	140
EB THRU	264	24	7	295	23	318	301	324
EB RIGHT	0	0	0	0	0	0	0	0
WB LEFT	0	0	0	0	0	0	0	0
WB THRU	25	3	5	33	7	40	41	48
WB RIGHT	153	14	193	360	6	366	471	477
QUARRY RD								
NB LEFT	0	0	0	0	0	0	0	0
NB THRU	0	0	0	0	0	0	0	0
NB RIGHT	0	0	0	0	0	0	0	0
SB LEFT	129	12	124	265	19	284	279	298
SB THRU	0	0	0	0	0	0	0	0
SB RIGHT	50	5	0	55	0	55	46	46
TOTALS	**752**	**70**	**329**	**1151**	**55**	**1206**	**1278**	**1333**

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN VOLUME SUMMARY	TNM	12-Sep-23	PIXI5AMG-0002	2 OF 2

E/W STREET : STODDARD WELLS RD
N/S STREET : QUARRY RD
CONDITION : AM PEAK HOUR
PHF : 0.92

NORTH LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
6	0	9	0	0	0	0	0	0	0	0	2
4	0	41	0	0	1	0	0	0	1	0	2
12	0	28	0	0	0	0	0	1	2	0	0
13	0	22	2	0	1	0	0	0	0	0	1

Number of Axles	2-Axle Trucks	3-Axle Trucks	4+ Axle Trucks
PCE factor	1.5	2	3

SOUTH LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

EAST LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
28	5	0	1	1	0	0	0	0	0	0	0
33	4	0	0	1	0	0	0	0	1	0	0
46	10	0	0	0	0	0	1	0	0	0	0
32	4	0	0	0	0	0	0	0	0	0	0

WEST LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	91	27	0	2	0	0	0	0	0	2	0
0	36	33	0	3	0	0	1	0	0	4	0
0	47	31	0	1	0	0	3	0	0	3	0
0	42	40	0	1	0	0	1	0	0	0	0

	Truck Volumes	Auto Volumes	Vehicle Totals	PCE Totals	Balanced PCE Totals
STODDARD WELLS RD					
EB LEFT	0	131	**131**	**131**	**131**
EB THRU	21	216	**237**	**264**	**264**
EB RIGHT	0	0	**0**	**0**	**0**
WB LEFT	0	0	**0**	**0**	**0**
WB THRU	3	23	**26**	**25**	**25**
WB RIGHT	2	139	**141**	**153**	**153**
QUARRY RD					
NB LEFT	0	0	**0**	**0**	**0**
NB THRU	0	0	**0**	**0**	**0**
NB RIGHT	0	0	**0**	**0**	**0**
SB LEFT	8	100	**108**	**120**	**129**
SB THRU	0	0	**0**	**0**	**0**
SB RIGHT	5	35	**40**	**47**	**50**

Intersection						
Int Delay, s/veh	6.6					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	131	264	25	153	129	50
Future Vol, veh/h	131	264	25	153	129	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	142	287	27	166	140	54

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	27	0	-	0	598	27
Stage 1	-	-	-	-	27	-
Stage 2	-	-	-	-	571	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1600	-	-	0	468	1054
Stage 1	-	-	-	0	1001	-
Stage 2	-	-	-	0	569	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1600	-	-	-	418	1054
Mov Cap-2 Maneuver	-	-	-	-	418	-
Stage 1	-	-	-	-	895	-
Stage 2	-	-	-	-	569	-

Approach	EB	WB	SB
HCM Control Delay, s	2.5	0	16.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1
Capacity (veh/h)	1600	-	-	503
HCM Lane V/C Ratio	0.089	-	-	0.387
HCM Control Delay (s)	7.5	0	-	16.6
HCM Lane LOS	A	A	-	C
HCM 95th %tile Q(veh)	0.3	-	-	1.8

Intersection						
Int Delay, s/veh	18.7					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	143	295	33	360	265	55
Future Vol, veh/h	143	295	33	360	265	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	155	321	36	391	288	60

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	36	0	-	0	667	36
Stage 1	-	-	-	-	36	-
Stage 2	-	-	-	-	631	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1588	-	-	0	427	1042
Stage 1	-	-	-	0	992	-
Stage 2	-	-	-	0	534	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1588	-	-	-	376	1042
Mov Cap-2 Maneuver	-	-	-	-	376	-
Stage 1	-	-	-	-	874	-
Stage 2	-	-	-	-	534	-

Approach	EB	WB	SB
HCM Control Delay, s	2.5	0	42.7
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1
Capacity (veh/h)	1588	-	-	422
HCM Lane V/C Ratio	0.098	-	-	0.824
HCM Control Delay (s)	7.5	0	-	42.7
HCM Lane LOS	A	A	-	E
HCM 95th %tile Q(veh)	0.3	-	-	7.7

Intersection						
Int Delay, s/veh	24.8					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	143	318	40	366	284	55
Future Vol, veh/h	143	318	40	366	284	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	155	346	43	398	309	60

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	43	0	-	0	699	43
Stage 1	-	-	-	-	43	-
Stage 2	-	-	-	-	656	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1579	-	-	0	409	1033
Stage 1	-	-	-	0	985	-
Stage 2	-	-	-	0	520	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1579	-	-	-	360	1033
Mov Cap-2 Maneuver	-	-	-	-	360	-
Stage 1	-	-	-	-	866	-
Stage 2	-	-	-	-	520	-

Approach	EB	WB	SB
HCM Control Delay, s	2.3	0	58.3
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1
Capacity (veh/h)	1579	-	-	403
HCM Lane V/C Ratio	0.098	-	-	0.914
HCM Control Delay (s)	7.5	0	-	58.3
HCM Lane LOS	A	A	-	F
HCM 95th %tile Q(veh)	0.3	-	-	9.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	143	318	40	366	284	55
Future Volume (veh/h)	143	318	40	366	284	55
Initial Q (Qb), veh	0	0	0	0	0	0
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	1800	1872	1872	1800	1872	1800
Adj Flow Rate, veh/h	155	346	43	0	309	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	190	874	583		792	678
Arrive On Green	0.11	0.47	0.31	0.00	0.44	0.44
Sat Flow, veh/h	1714	1872	1872	1525	1783	1525
Grp Volume(v), veh/h	155	346	43	0	309	60
Grp Sat Flow(s),veh/h/ln	1714	1872	1872	1525	1783	1525
Q Serve(g_s), s	8.0	10.9	1.5	0.0	10.5	2.0
Cycle Q Clear(g_c), s	8.0	10.9	1.5	0.0	10.5	2.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	190	874	583		792	678
V/C Ratio(X)	0.82	0.40	0.07		0.39	0.09
Avail Cap(c_a), veh/h	362	874	583		792	678
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.68	0.00	1.00	1.00
Uniform Delay (d), s/veh	39.1	15.7	21.8	0.0	16.8	14.5
Incr Delay (d2), s/veh	8.2	1.3	0.2	0.0	1.4	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	3.5	4.3	0.6	0.0	4.3	2.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	47.4	17.0	22.0	0.0	18.2	14.7
LnGrp LOS	D	B	C		B	B
Approach Vol, veh/h		501	43		369	
Approach Delay, s/veh		26.4	22.0		17.7	
Approach LOS		C	C		B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		46.0		44.0	14.0	32.0
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		42.0		40.0	19.0	19.0
Max Q Clear Time (g_c+I1), s		12.9		12.5	10.0	3.5
Green Ext Time (p_c), s		1.8		1.1	0.2	0.1

Intersection Summary						
HCM 6th Ctrl Delay			22.7			
HCM 6th LOS			C			

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	17.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	140	301	41	471	279	46
Future Vol, veh/h	140	301	41	471	279	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	147	317	43	496	294	48

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	43	0	-	0	654	43
Stage 1	-	-	-	-	43	-
Stage 2	-	-	-	-	611	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1579	-	-	0	435	1033
Stage 1	-	-	-	0	985	-
Stage 2	-	-	-	0	546	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1579	-	-	-	386	1033
Mov Cap-2 Maneuver	-	-	-	-	386	-
Stage 1	-	-	-	-	874	-
Stage 2	-	-	-	-	546	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	40.5
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1
Capacity (veh/h)	1579	-	-	424
HCM Lane V/C Ratio	0.093	-	-	0.807
HCM Control Delay (s)	7.5	0	-	40.5
HCM Lane LOS	A	A	-	E
HCM 95th %tile Q(veh)	0.3	-	-	7.3

Intersection	
Int Delay, s/veh	23.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	140	324	48	477	298	46
Future Vol, veh/h	140	324	48	477	298	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	147	341	51	502	314	48

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	51	0	-	0	686	51
Stage 1	-	-	-	-	51	-
Stage 2	-	-	-	-	635	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1568	-	-	0	416	1023
Stage 1	-	-	-	0	977	-
Stage 2	-	-	-	0	532	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1568	-	-	-	368	1023
Mov Cap-2 Maneuver	-	-	-	-	368	-
Stage 1	-	-	-	-	864	-
Stage 2	-	-	-	-	532	-

Approach	EB	WB	SB
HCM Control Delay, s	2.3	0	55.9
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1
Capacity (veh/h)	1568	-	-	402
HCM Lane V/C Ratio	0.094	-	-	0.901
HCM Control Delay (s)	7.5	0	-	55.9
HCM Lane LOS	A	A	-	F
HCM 95th %tile Q(veh)	0.3	-	-	9.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	140	324	48	477	298	46
Future Volume (veh/h)	140	324	48	477	298	46
Initial Q (Qb), veh	0	0	0	0	0	0
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	1800	1872	1872	1800	1872	1800
Adj Flow Rate, veh/h	147	341	51	0	314	48
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	181	811	530		852	729
Arrive On Green	0.11	0.43	0.28	0.00	0.48	0.48
Sat Flow, veh/h	1714	1872	1872	1525	1783	1525
Grp Volume(v), veh/h	147	341	51	0	314	48
Grp Sat Flow(s),veh/h/ln	1714	1872	1872	1525	1783	1525
Q Serve(g_s), s	7.5	11.4	1.8	0.0	10.0	1.5
Cycle Q Clear(g_c), s	7.5	11.4	1.8	0.0	10.0	1.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	181	811	530		852	729
V/C Ratio(X)	0.81	0.42	0.10		0.37	0.07
Avail Cap(c_a), veh/h	362	811	530		852	729
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.78	0.00	1.00	1.00
Uniform Delay (d), s/veh	39.4	17.7	23.8	0.0	14.9	12.7
Incr Delay (d2), s/veh	8.4	1.6	0.3	0.0	1.2	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	3.4	4.6	0.8	0.0	4.1	1.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	47.7	19.3	24.1	0.0	16.1	12.8
LnGrp LOS	D	B	C		B	B
Approach Vol, veh/h		488	51		362	
Approach Delay, s/veh		27.8	24.1		15.7	
Approach LOS		C	C		B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		43.0		47.0	13.5	29.5
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		39.0		43.0	19.0	16.0
Max Q Clear Time (g_c+I1), s		13.4		12.0	9.5	3.8
Green Ext Time (p_c), s		1.7		1.1	0.2	0.1

Intersection Summary		
HCM 6th Ctrl Delay		22.7
HCM 6th LOS		C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	TNM	12-Sep-23	PIXI5AMG-0002	1 OF 2

E/W STREET : STODDARD WELLS RD
N/S STREET : QUARRY RD
CONDITION : PM PEAK HOUR

INTERSECTION : 6
PROJECTED GROWTH PER YEAR : 3.0%

TURN MOVEMENTS

Condition	Existing Condition	Year 2025 Ambient Growth	Other Area Projects	Background Condition	Project Trips	Project Condition	Future Year 2040 Condition	Future Year 2040 + Project Condition
Scenario #	2			4		6	8	10
STODDARD WELLS RD								
EB LEFT	67	7	0	74	0	74	78	78
EB THRU	227	21	6	254	9	263	263	272
EB RIGHT	0	0	0	0	0	0	0	0
WB LEFT	0	0	0	0	0	0	0	0
WB THRU	179	17	7	203	21	224	211	232
WB RIGHT	251	23	326	600	19	619	902	921
QUARRY RD								
NB LEFT	0	0	0	0	0	0	0	0
NB THRU	0	0	0	0	0	0	0	0
NB RIGHT	0	0	0	0	0	0	0	0
SB LEFT	61	6	114	181	7	188	204	211
SB THRU	0	0	0	0	0	0	0	0
SB RIGHT	94	9	0	103	0	103	80	80
TOTALS	**879**	**83**	**453**	**1415**	**56**	**1471**	**1738**	**1794**

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN VOLUME SUMMARY	TNM	12-Sep-23	PIXI5AMG-0002	2 OF 2

E/W STREET : STODDARD WELLS RD

CONDITION : PM PEAK HOUR

N/S STREET : QUARRY RD

PHF : 0.92

NORTH LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
13	0	7	1	0	0	2	0	0	0	0	1
14	0	13	1	0	0	0	0	0	4	0	0
10	0	7	0	0	0	0	0	0	0	0	0
11	0	16	2	0	0	0	0	0	0	0	0

Number of Axles	2-Axle Trucks	3-Axle Trucks	4+ Axle Trucks
PCE factor	1.5	2	3

SOUTH LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

EAST LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
65	28	0	0	0	0	1	0	0	0	0	0
70	30	0	0	0	0	0	0	0	0	0	0
53	69	0	0	0	0	0	0	0	0	0	0
57	52	0	0	0	0	0	0	0	0	0	0

WEST LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	51	13	0	0	0	0	1	0	0	3	0
0	44	21	0	0	0	0	0	0	0	0	0
0	55	14	0	0	0	0	0	0	0	0	0
0	66	18	0	0	0	0	0	0	0	0	0

	Truck Volumes	Auto Volumes	Vehicle Totals	PCE Totals	Balanced PCE Totals
STODDARD WELLS RD					
EB LEFT	0	66	**66**	**66**	**67**
EB THRU	4	216	**220**	**227**	**227**
EB RIGHT	0	0	**0**	**0**	**0**
WB LEFT	0	0	**0**	**0**	**0**
WB THRU	0	179	**179**	**179**	**179**
WB RIGHT	1	245	**246**	**247**	**251**
QUARRY RD					
NB LEFT	0	0	**0**	**0**	**0**
NB THRU	0	0	**0**	**0**	**0**
NB RIGHT	0	0	**0**	**0**	**0**
SB LEFT	1	43	**44**	**46**	**61**
SB THRU	0	0	**0**	**0**	**0**
SB RIGHT	10	48	**58**	**70**	**94**

Intersection						
Int Delay, s/veh	4					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	67	227	179	251	61	94
Future Vol, veh/h	67	227	179	251	61	94
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	73	247	195	273	66	102

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	195	0	-	0	588	195
Stage 1	-	-	-	-	195	-
Stage 2	-	-	-	-	393	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1390	-	-	0	475	851
Stage 1	-	-	-	0	843	-
Stage 2	-	-	-	0	686	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1390	-	-	-	446	851
Mov Cap-2 Maneuver	-	-	-	-	446	-
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	686	-

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1
Capacity (veh/h)	1390	-	-	627
HCM Lane V/C Ratio	0.052	-	-	0.269
HCM Control Delay (s)	7.7	0	-	12.8
HCM Lane LOS	A	A	-	B
HCM 95th %tile Q(veh)	0.2	-	-	1.1

Intersection						
Int Delay, s/veh	8.9					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	74	254	203	600	181	103
Future Vol, veh/h	74	254	203	600	181	103
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	80	276	221	652	197	112

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	221	0	-	0	657	221
Stage 1	-	-	-	-	221	-
Stage 2	-	-	-	-	436	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1360	-	-	0	433	824
Stage 1	-	-	-	0	821	-
Stage 2	-	-	-	0	656	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1360	-	-	-	403	824
Mov Cap-2 Maneuver	-	-	-	-	403	-
Stage 1	-	-	-	-	764	-
Stage 2	-	-	-	-	656	-

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	23.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1
Capacity (veh/h)	1360	-	-	495
HCM Lane V/C Ratio	0.059	-	-	0.624
HCM Control Delay (s)	7.8	0	-	23.6
HCM Lane LOS	A	A	-	C
HCM 95th %tile Q(veh)	0.2	-	-	4.2

Intersection						
Int Delay, s/veh	9.8					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	74	263	224	619	188	103
Future Vol, veh/h	74	263	224	619	188	103
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	80	286	243	673	204	112

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	243	0	-	0	689	243
Stage 1	-	-	-	-	243	-
Stage 2	-	-	-	-	446	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1335	-	-	0	415	801
Stage 1	-	-	-	0	802	-
Stage 2	-	-	-	0	649	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1335	-	-	-	386	801
Mov Cap-2 Maneuver	-	-	-	-	386	-
Stage 1	-	-	-	-	745	-
Stage 2	-	-	-	-	649	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	26.7
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1
Capacity (veh/h)	1335	-	-	473
HCM Lane V/C Ratio	0.06	-	-	0.669
HCM Control Delay (s)	7.9	0	-	26.7
HCM Lane LOS	A	A	-	D
HCM 95th %tile Q(veh)	0.2	-	-	4.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	74	263	224	619	188	103
Future Volume (veh/h)	74	263	224	619	188	103
Initial Q (Qb), veh	0	0	0	0	0	0
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	1800	1872	1872	1800	1872	1800
Adj Flow Rate, veh/h	80	286	243	0	204	112
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	103	1019	824		654	559
Arrive On Green	0.06	0.54	0.15	0.00	0.37	0.37
Sat Flow, veh/h	1714	1872	1872	1525	1783	1525
Grp Volume(v), veh/h	80	286	243	0	204	112
Grp Sat Flow(s),veh/h/ln	1714	1872	1872	1525	1783	1525
Q Serve(g_s), s	4.1	7.4	10.4	0.0	7.4	4.5
Cycle Q Clear(g_c), s	4.1	7.4	10.4	0.0	7.4	4.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	103	1019	824		654	559
V/C Ratio(X)	0.78	0.28	0.29		0.31	0.20
Avail Cap(c_a), veh/h	305	1019	824		654	559
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.42	0.00	1.00	1.00
Uniform Delay (d), s/veh	41.7	11.0	26.0	0.0	20.4	19.5
Incr Delay (d2), s/veh	11.9	0.7	0.4	0.0	1.2	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	2.7	4.7	0.0	3.2	4.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	53.6	11.7	26.4	0.0	21.6	20.3
LnGrp LOS	D	B	C		C	C
Approach Vol, veh/h		366	243		316	
Approach Delay, s/veh		20.9	26.4		21.2	
Approach LOS		C	C		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		53.0		37.0	9.4	43.6
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		49.0		33.0	16.0	29.0
Max Q Clear Time (g_c+I1), s		9.4		9.4	6.1	12.4
Green Ext Time (p_c), s		1.5		0.9	0.1	1.0

Intersection Summary			
HCM 6th Ctrl Delay			22.4
HCM 6th LOS			C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection						
Int Delay, s/veh	9.4					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	78	263	211	902	204	80
Future Vol, veh/h	78	263	211	902	204	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	82	277	222	949	215	84

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	222	0	-	0	663	222
Stage 1	-	-	-	-	222	-
Stage 2	-	-	-	-	441	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1359	-	-	0	429	823
Stage 1	-	-	-	0	820	-
Stage 2	-	-	-	0	653	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1359	-	-	-	399	823
Mov Cap-2 Maneuver	-	-	-	-	399	-
Stage 1	-	-	-	-	762	-
Stage 2	-	-	-	-	653	-

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	25.4
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1
Capacity (veh/h)	1359	-	-	467
HCM Lane V/C Ratio	0.06	-	-	0.64
HCM Control Delay (s)	7.8	0	-	25.4
HCM Lane LOS	A	A	-	D
HCM 95th %tile Q(veh)	0.2	-	-	4.4

Intersection						
Int Delay, s/veh	10.4					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	78	272	232	921	211	80
Future Vol, veh/h	78	272	232	921	211	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	82	286	244	969	222	84

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	244	0	-	0	694	244
Stage 1	-	-	-	-	244	-
Stage 2	-	-	-	-	450	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1334	-	-	0	412	800
Stage 1	-	-	-	0	801	-
Stage 2	-	-	-	0	647	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1334	-	-	-	382	800
Mov Cap-2 Maneuver	-	-	-	-	382	-
Stage 1	-	-	-	-	743	-
Stage 2	-	-	-	-	647	-

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	29
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1
Capacity (veh/h)	1334	-	-	446
HCM Lane V/C Ratio	0.062	-	-	0.687
HCM Control Delay (s)	7.9	0	-	29
HCM Lane LOS	A	A	-	D
HCM 95th %tile Q(veh)	0.2	-	-	5.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	78	272	232	921	211	80
Future Volume (veh/h)	78	272	232	921	211	80
Initial Q (Qb), veh	0	0	0	0	0	0
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	1800	1872	1872	1800	1872	1800
Adj Flow Rate, veh/h	82	286	244	0	222	84
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	105	1420	1222		272	232
Arrive On Green	0.06	0.76	0.22	0.00	0.15	0.15
Sat Flow, veh/h	1714	1872	1872	1525	1783	1525
Grp Volume(v), veh/h	82	286	244	0	222	84
Grp Sat Flow(s),veh/h/ln	1714	1872	1872	1525	1783	1525
Q Serve(g_s), s	4.2	3.9	9.6	0.0	10.9	4.4
Cycle Q Clear(g_c), s	4.2	3.9	9.6	0.0	10.9	4.4
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	105	1420	1222		272	232
V/C Ratio(X)	0.78	0.20	0.20		0.82	0.36
Avail Cap(c_a), veh/h	305	1420	1222		654	559
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.09	0.00	1.00	1.00
Uniform Delay (d), s/veh	41.6	3.1	16.0	0.0	36.9	34.2
Incr Delay (d2), s/veh	11.7	0.3	0.0	0.0	6.0	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	2.0	0.8	3.7	0.0	5.0	3.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	53.3	3.4	16.1	0.0	42.9	35.2
LnGrp LOS	D	A	B		D	D
Approach Vol, veh/h		368	244		306	
Approach Delay, s/veh		14.5	16.1		40.8	
Approach LOS		B	B		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		72.3		17.7	9.5	62.8
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		49.0		33.0	16.0	29.0
Max Q Clear Time (g_c+I1), s		5.9		12.9	6.2	11.6
Green Ext Time (p_c), s		1.5		0.9	0.1	1.0
Intersection Summary						
HCM 6th Ctrl Delay			23.7			
HCM 6th LOS			C			

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

CALCULATION OF FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES (NCHRP 255)

Intersection No.: 6
North/South Street: QUARRY RD
East/West Street: STODDARD WELLS RD

Analysis Condition: YEAR 2040 FUTURE TRAFFIC

A.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year: Link Volume			Turn Volume	Rounded Volume
South leg	Left	0	Approach	0	Left	0	0
NB	Through	0	Departure	0	Through	0	0
	Right	0			Right	0	0
North leg	Left	129	Approach	193	Left	148	155
SB	Through	0	Departure	417	Through	0	0
	Right	50			Right	45	46
West leg	Left	131	Approach	421	Left	140	140
EB	Through	264	Departure	81	Through	281	294
	Right	0			Right	0	0
East leg	Left	0	Approach	313	Left	0	0
WB	Through	25	Departure	429	Through	36	36
	Right	153			Right	277	278

P.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year: Link Volume			Turn Volume	Rounded Volume
South leg	Left	0	Approach	0	Left	0	0
NB	Through	0	Departure	0	Through	0	0
	Right	0			Right	0	0
North leg	Left	61	Approach	152	Left	83	90
SB	Through	0	Departure	652	Through	0	0
	Right	94			Right	70	80
West leg	Left	67	Approach	316	Left	78	78
EB	Through	227	Departure	273	Through	240	257
	Right	0			Right	0	0
East leg	Left	0	Approach	775	Left	0	0
WB	Through	179	Departure	323	Through	203	204
	Right	251			Right	574	576

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	TNM	12-Sep-23	PIXI5AMG-0002	1 OF 2

E/W STREET : I-15 SB RAMPS
N/S STREET : QUARRY RD
CONDITION : AM PEAK HOUR

INTERSECTION : 7
PROJECTED GROWTH PER YEAR : 3.0%

TURN MOVEMENTS

Condition	Existing Condition	Year 2025 Ambient Growth	Other Area Projects	Background Condition	Project Trips	Project Condition	Future Year 2040 Condition	Future Year 2040 + Project Condition
Scenario #	1			3		5	7	9
I-15 SB RAMPS								
EB LEFT	0	0	0	0	0	0	0	0
EB THRU	0	0	0	0	0	0	0	0
EB RIGHT	0	0	0	0	0	0	0	0
WB LEFT	178	17	124	319	19	338	312	331
WB THRU	0	0	0	0	0	0	0	0
WB RIGHT	1	1	0	2	0	2	1	1
QUARRY RD								
NB LEFT	0	0	0	0	0	0	0	0
NB THRU	1	1	0	2	0	2	2	2
NB RIGHT	283	26	193	502	6	508	598	604
SB LEFT	1	1	0	2	0	2	2	2
SB THRU	1	1	0	2	0	2	1	1
SB RIGHT	0	0	0	0	0	0	0	0
TOTALS	**465**	**47**	**317**	**829**	**25**	**854**	**916**	**941**

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN VOLUME SUMMARY	TNM	12-Sep-23	PIXI5AMG-0002	2 OF 2

E/W STREET : I-15 SB RAMPS N/S STREET : QUARRY RD

CONDITION : AM PEAK HOUR PHF : 0.90

NORTH LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

Number of Axles	2-Axle Trucks	3-Axle Trucks	4+ Axle Trucks
PCE factor	1.5	2	3

SOUTH LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
66	0	0	0	0	0	0	0	0	1	0	0
75	0	0	0	0	0	0	0	0	0	0	0
73	0	0	0	0	0	0	0	0	0	0	0
48	1	0	0	0	0	2	0	0	0	0	0

EAST LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	0	45	0	0	1	0	0	0	0	0	3
0	0	40	0	0	0	0	0	1	0	0	2
1	0	35	0	0	3	0	0	0	0	0	1
0	0	19	0	0	1	0	0	1	0	0	3

WEST LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

	Truck Volumes	Auto Volumes	Vehicle Totals	PCE Totals	Balanced PCE Totals
I-15 SB RAMPS					
EB LEFT	0	0	**0**	**0**	**0**
EB THRU	0	0	**0**	**0**	**0**
EB RIGHT	0	0	**0**	**0**	**0**
WB LEFT	16	139	**155**	**178**	**178**
WB THRU	0	0	**0**	**0**	**0**
WB RIGHT	0	1	**1**	**1**	**1**
QUARRY RD					
NB LEFT	0	0	**0**	**0**	**0**
NB THRU	0	1	**1**	**1**	**1**
NB RIGHT	3	262	**265**	**269**	**283**
SB LEFT	0	1	**1**	**1**	**1**
SB THRU	0	0	**1**	**1**	**1**
SB RIGHT	0	0	**0**	**0**	**0**

Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	178	1	1	283	1	1
Future Vol, veh/h	178	1	1	283	1	1
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	198	1	1	314	1	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	161	158	0	0	315	0
Stage 1	158	-	-	-	-	-
Stage 2	3	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	835	893	-	-	1257	-
Stage 1	875	-	-	-	-	-
Stage 2	1025	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	834	893	-	-	1257	-
Mov Cap-2 Maneuver	834	-	-	-	-	-
Stage 1	875	-	-	-	-	-
Stage 2	1024	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	3.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	834	1257	-
HCM Lane V/C Ratio	-	-	0.238	0.001	-
HCM Control Delay (s)	-	-	10.7	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0	-

Intersection	
Int Delay, s/veh	5.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	319	2	2	502	2	2
Future Vol, veh/h	319	2	2	502	2	2
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	354	2	2	558	2	2

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	287	281	0	0	560	0
Stage 1	281	-	-	-	-	-
Stage 2	6	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	708	763	-	-	1021	-
Stage 1	771	-	-	-	-	-
Stage 2	1022	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	707	763	-	-	1021	-
Mov Cap-2 Maneuver	707	-	-	-	-	-
Stage 1	771	-	-	-	-	-
Stage 2	1020	-	-	-	-	-

Approach	WB		NB		SB	
HCM Control Delay, s	15.2		0		4.3	
HCM LOS	C					

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	707	1021	-
HCM Lane V/C Ratio	-	-	0.504	0.002	-
HCM Control Delay (s)	-	-	15.2	8.5	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	2.9	0	-

Intersection	
Int Delay, s/veh	6.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	338	2	2	508	2	2
Future Vol, veh/h	338	2	2	508	2	2
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	376	2	2	564	2	2

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	290	284	0	0	566	0
Stage 1	284	-	-	-	-	-
Stage 2	6	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	705	760	-	-	1016	-
Stage 1	769	-	-	-	-	-
Stage 2	1022	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	704	760	-	-	1016	-
Mov Cap-2 Maneuver	704	-	-	-	-	-
Stage 1	769	-	-	-	-	-
Stage 2	1020	-	-	-	-	-

Approach	WB		NB		SB	
HCM Control Delay, s	15.9		0		4.3	
HCM LOS	C					

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	704	1016	-
HCM Lane V/C Ratio	-	-	0.537	0.002	-
HCM Control Delay (s)	-	-	15.9	8.6	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	3.2	0	-

Intersection	
Int Delay, s/veh	5.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	312	1	2	598	2	1
Future Vol, veh/h	312	1	2	598	2	1
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	328	1	2	629	2	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	322	317	0	0	631	0
Stage 1	317	-	-	-	-	-
Stage 2	5	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	676	728	-	-	961	-
Stage 1	743	-	-	-	-	-
Stage 2	1023	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	675	728	-	-	961	-
Mov Cap-2 Maneuver	675	-	-	-	-	-
Stage 1	743	-	-	-	-	-
Stage 2	1021	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.3	0	5.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	675	961	-
HCM Lane V/C Ratio	-	-	0.488	0.002	-
HCM Control Delay (s)	-	-	15.3	8.8	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	2.7	0	-

Intersection	
Int Delay, s/veh	5.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	331	1	2	604	2	1
Future Vol, veh/h	331	1	2	604	2	1
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	348	1	2	636	2	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	325	320	0	0	638	0
Stage 1	320	-	-	-	-	-
Stage 2	5	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	673	725	-	-	956	-
Stage 1	741	-	-	-	-	-
Stage 2	1023	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	672	725	-	-	956	-
Mov Cap-2 Maneuver	672	-	-	-	-	-
Stage 1	741	-	-	-	-	-
Stage 2	1021	-	-	-	-	-

Approach	WB		NB		SB	
HCM Control Delay, s	16		0		5.8	
HCM LOS	C					

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	672	956	-
HCM Lane V/C Ratio	-	-	0.52	0.002	-
HCM Control Delay (s)	-	-	16	8.8	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	3	0	-

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	TNM	12-Sep-23	PIXI5AMG-0002	1 OF 2

E/W STREET : I-15 SB RAMPS
N/S STREET : QUARRY RD
CONDITION : PM PEAK HOUR

INTERSECTION : 7
PROJECTED GROWTH PER YEAR : 3.0%

TURN MOVEMENTS

Condition	Existing Condition	Year 2025 Ambient Growth	Other Area Projects	Background Condition	Project Trips	Project Condition	Future Year 2040 Condition	Future Year 2040 + Project Condition
Scenario #	2			4		6	8	10
I-15 SB RAMPS								
EB LEFT	0	0	0	0	0	0	0	0
EB THRU	0	0	0	0	0	0	0	0
EB RIGHT	0	0	0	0	0	0	0	0
WB LEFT	154	14	114	282	7	289	284	291
WB THRU	0	0	0	0	0	0	0	0
WB RIGHT	2	1	0	3	0	3	2	2
QUARRY RD								
NB LEFT	0	0	0	0	0	0	0	0
NB THRU	1	1	0	2	0	2	2	2
NB RIGHT	317	29	326	672	19	691	954	973
SB LEFT	1	1	0	2	0	2	2	2
SB THRU	1	1	0	2	0	2	1	1
SB RIGHT	0	0	0	0	0	0	0	0
TOTALS	**476**	**47**	**440**	**963**	**26**	**989**	**1245**	**1271**

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN VOLUME SUMMARY	TNM	12-Sep-23	PIXI5AMG-0002	2 OF 2

E/W STREET : I-15 SB RAMPS   N/S STREET : QUARRY RD

CONDITION : PM PEAK HOUR   PHF : 0.76

NORTH LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

Number of Axles	2-Axle Trucks	3-Axle Trucks	4+ Axle Trucks
PCE factor	1.5	2	3

SOUTH LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
109	0	0	2	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0
77	1	0	0	0	0	1	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0

	Truck Volumes	Auto Volumes	Vehicle Totals	PCE Totals	Balanced PCE Totals
I-15 SB RAMPS					
EB LEFT	0	0	**0**	**0**	**0**
EB THRU	0	0	**0**	**0**	**0**
EB RIGHT	0	0	**0**	**0**	**0**
WB LEFT	23	97	**120**	**154**	**154**
WB THRU	0	0	**0**	**0**	**0**
WB RIGHT	0	2	**2**	**2**	**2**
QUARRY RD					
NB LEFT	0	0	**0**	**0**	**0**
NB THRU	0	1	**1**	**1**	**1**
NB RIGHT	3	312	**315**	**317**	**317**
SB LEFT	0	0	**1**	**1**	**1**
SB THRU	0	1	**1**	**1**	**1**
SB RIGHT	0	0	**0**	**0**	**0**

EAST LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	0	24	0	0	2	0	0	3	0	0	4
0	0	27	0	0	0	0	0	1	0	0	4
2	0	20	0	0	1	0	0	2	0	0	1
0	0	26	0	0	1	0	0	0	0	0	4

WEST LEG											
AUTOS			2 AXLE			3 AXLE			4(+) AXLE		
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

Los Angeles Office: 213.337.3680 ~ Ontario Office: 909.481.5750 ~ San Diego Office: 619.400.0600

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Victorville Office: 760.524.9100

CALCULATION OF FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES (NCHRP 255)

Intersection No.: 7
North/South Street: QUARRY RD
East/West Street: I-15 SB RAMPS

Analysis Condition: YEAR 2040 FUTURE TRAFFIC

A.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year Link Volume			Forecast Future Year Turn Volume	Forecast Future Year Rounded Volume
South leg	Left	0	Approach	406	Left	0	0
NB	Through	1	Departure	188	Through	1	2
	Right	283			Right	405	405
North leg	Left	1	Approach	2	Left	1	2
SB	Through	1	Departure	2	Through	1	1
	Right	0			Right	0	0
West leg	Left	0	Approach	0	Left	0	0
EB	Through	0	Departure	0	Through	0	0
	Right	0			Right	0	0
East leg	Left	178	Approach	188	Left	187	188
WB	Through	0	Departure	406	Through	0	0
	Right	1			Right	1	1

P.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year Link Volume			Forecast Future Year Turn Volume	Forecast Future Year Rounded Volume
South leg	Left	0	Approach	629	Left	0	0
NB	Through	1	Departure	170	Through	1	2
	Right	317			Right	628	628
North leg	Left	1	Approach	2	Left	1	2
SB	Through	1	Departure	3	Through	1	1
	Right	0			Right	0	0
West leg	Left	0	Approach	0	Left	0	0
EB	Through	0	Departure	0	Through	0	0
	Right	0			Right	0	0
East leg	Left	154	Approach	171	Left	169	170
WB	Through	0	Departure	629	Through	0	0
	Right	2			Right	2	2

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	TNM	12-Sep-23	PIXI5AMG-0002	1 OF 2

E/W STREET : JOHNSON RD
N/S STREET : PROJECT DRIVEWAY
CONDITION : AM PEAK HOUR

INTERSECTION : 8
PROJECTED GROWTH PER YEAR : 3.0%

TURN MOVEMENTS

Condition	Existing Condition	Year 2025 Ambient Growth	Other Area Projects	Background Condition	Project Trips	Project Condition	Future Year 2040 Condition	Future Year 2040 + Project Condition
Scenario #	1			3		5	7	9
JOHNSON RD								
EB LEFT	0	0	0	0	52	52	0	52
EB THRU	61	6	0	67	40	107	75	115
EB RIGHT	0	0	0	0	0	0	0	0
WB LEFT	0	0	0	0	0	0	0	0
WB THRU	130	13	0	143	12	155	140	152
WB RIGHT	0	0	0	0	0	0	0	0
PROJECT DRIVEWAY								
NB LEFT	0	0	0	0	0	0	0	0
NB THRU	0	0	0	0	0	0	0	0
NB RIGHT	0	0	0	0	0	0	0	0
SB LEFT	0	0	0	0	0	0	0	0
SB THRU	0	0	0	0	0	0	0	0
SB RIGHT	0	0	0	0	16	16	0	16
TOTALS	**191**	**19**	**0**	**210**	**120**	**330**	**215**	**335**

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	52	107	155	0	0	16
Future Vol, veh/h	52	107	155	0	0	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	71	147	212	0	0	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	212	0	-	0	501	212
Stage 1	-	-	-	-	212	-
Stage 2	-	-	-	-	289	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1370	-	-	-	533	833
Stage 1	-	-	-	-	828	-
Stage 2	-	-	-	-	765	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1370	-	-	-	503	833
Mov Cap-2 Maneuver	-	-	-	-	503	-
Stage 1	-	-	-	-	782	-
Stage 2	-	-	-	-	765	-

Approach	EB	WB	SB
HCM Control Delay, s	2.5	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1370	-	-	-	833
HCM Lane V/C Ratio	0.052	-	-	-	0.026
HCM Control Delay (s)	7.8	0	-	-	9.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0.1

Intersection						
Int Delay, s/veh	1.6					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	52	115	152	0	0	16
Future Vol, veh/h	52	115	152	0	0	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	55	121	160	0	0	17

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	160	0	-	0	391	160
Stage 1	-	-	-	-	160	-
Stage 2	-	-	-	-	231	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1432	-	-	-	617	890
Stage 1	-	-	-	-	874	-
Stage 2	-	-	-	-	812	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1432	-	-	-	592	890
Mov Cap-2 Maneuver	-	-	-	-	592	-
Stage 1	-	-	-	-	838	-
Stage 2	-	-	-	-	812	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1432	-	-	-	890
HCM Lane V/C Ratio	0.038	-	-	-	0.019
HCM Control Delay (s)	7.6	0	-	-	9.1
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	TNM	12-Sep-23	PIXI5AMG-0002	1 OF 2

E/W STREET : JOHNSON RD
N/S STREET : PROJECT DRIVEWAY
CONDITION : PM PEAK HOUR

INTERSECTION : 8
PROJECTED GROWTH PER YEAR : 3.0%

TURN MOVEMENTS

Condition	Existing Condition	Year 2025 Ambient Growth	Other Area Projects	Background Condition	Project Trips	Project Condition	Future Year 2040 Condition	Future Year 2040 + Project Condition
Scenario #	2			4		6	8	10
JOHNSON RD								
EB LEFT	0	0	0	0	20	20	0	20
EB THRU	112	11	0	123	14	137	126	140
EB RIGHT	0	0	0	0	0	0	0	0
WB LEFT	0	0	0	0	0	0	0	0
WB THRU	127	12	0	139	37	176	140	177
WB RIGHT	0	0	0	0	0	0	0	0
PROJECT DRIVEWAY								
NB LEFT	0	0	0	0	0	0	0	0
NB THRU	0	0	0	0	0	0	0	0
NB RIGHT	0	0	0	0	0	0	0	0
SB LEFT	0	0	0	0	0	0	0	0
SB THRU	0	0	0	0	0	0	0	0
SB RIGHT	0	0	0	0	48	48	0	48
TOTALS	**239**	**23**	**0**	**262**	**119**	**381**	**266**	**385**

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	137	176	0	0	48
Future Vol, veh/h	20	137	176	0	0	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	22	151	193	0	0	53

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	193	0	-	0	388	193
Stage 1	-	-	-	-	193	-
Stage 2	-	-	-	-	195	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1392	-	-	-	619	854
Stage 1	-	-	-	-	845	-
Stage 2	-	-	-	-	843	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1392	-	-	-	608	854
Mov Cap-2 Maneuver	-	-	-	-	608	-
Stage 1	-	-	-	-	831	-
Stage 2	-	-	-	-	843	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1392	-	-	-	854
HCM Lane V/C Ratio	0.016	-	-	-	0.062
HCM Control Delay (s)	7.6	0	-	-	9.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection						
Int Delay, s/veh	1.6					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	140	177	0	0	48
Future Vol, veh/h	20	140	177	0	0	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	21	147	186	0	0	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	186	0	-	0	375	186
Stage 1	-	-	-	-	186	-
Stage 2	-	-	-	-	189	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1401	-	-	-	630	861
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	848	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1401	-	-	-	620	861
Mov Cap-2 Maneuver	-	-	-	-	620	-
Stage 1	-	-	-	-	837	-
Stage 2	-	-	-	-	848	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1401	-	-	-	861
HCM Lane V/C Ratio	0.015	-	-	-	0.059
HCM Control Delay (s)	7.6	0	-	-	9.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	TNM	12-Sep-23	PIXI5AMG-0002	1 OF 2

E/W STREET : PROJECT DRIVEWAY
N/S STREET : NAVAJO RD
CONDITION : AM PEAK HOUR

INTERSECTION : 9
PROJECTED GROWTH PER YEAR : 3.0%

TURN MOVEMENTS

Condition	Existing Condition	Year 2025 Ambient Growth	Other Area Projects	Background Condition	Project Trips	Project Condition	Future Year 2040 Condition	Future Year 2040 + Project Condition
Scenario #	1			3		5	7	9
PROJECT DRIVEWAY								
EB LEFT	0	0	0	0	0	0	0	0
EB THRU	0	0	0	0	0	0	0	0
EB RIGHT	0	0	0	0	15	15	0	15
WB LEFT	0	0	0	0	0	0	0	0
WB THRU	0	0	0	0	0	0	0	0
WB RIGHT	0	0	0	0	0	0	0	0
NAVAJO RD								
NB LEFT	0	0	0	0	47	47	0	47
NB THRU	0	0	0	0	0	0	0	0
NB RIGHT	0	0	0	0	0	0	0	0
SB LEFT	0	0	0	0	0	0	0	0
SB THRU	0	0	0	0	0	0	0	0
SB RIGHT	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**0**	**0**	**62**	**62**	**0**	**62**

Intersection	
Int Delay, s/veh	7.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	15	47	0	0	0
Future Vol, veh/h	0	15	47	0	0	0
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	21	64	0	0	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	129	1	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	128	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	870	1090	1635	-	-	-
Stage 1	1028	-	-	-	-	-
Stage 2	903	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	836	1090	1635	-	-	-
Mov Cap-2 Maneuver	836	-	-	-	-	-
Stage 1	988	-	-	-	-	-
Stage 2	903	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	7.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1635	-	1090	-	-
HCM Lane V/C Ratio	0.039	-	0.019	-	-
HCM Control Delay (s)	7.3	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	7.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	15	47	0	0	0
Future Vol, veh/h	0	15	47	0	0	0
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	16	49	0	0	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	99	1	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	98	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	905	1090	1635	-	-	-
Stage 1	1028	-	-	-	-	-
Stage 2	931	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	878	1090	1635	-	-	-
Mov Cap-2 Maneuver	878	-	-	-	-	-
Stage 1	997	-	-	-	-	-
Stage 2	931	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	7.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1635	-	1090	-	-
HCM Lane V/C Ratio	0.03	-	0.014	-	-
HCM Control Delay (s)	7.3	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0	-	-

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	TNM	12-Sep-23	PIXI5AMG-0002	1 OF 2

E/W STREET : PROJECT DRIVEWAY
N/S STREET : NAVAJO RD
CONDITION : PM PEAK HOUR

INTERSECTION : 9
PROJECTED GROWTH PER YEAR : 3.0%

TURN MOVEMENTS

Condition	Existing Condition	Year 2025 Ambient Growth	Other Area Projects	Background Condition	Project Trips	Project Condition	Future Year 2040 Condition	Future Year 2040 + Project Condition
Scenario #	2			4		6	8	10

PROJECT DRIVEWAY

EB LEFT	0	0	0	0	0	0	0	0
EB THRU	0	0	0	0	0	0	0	0
EB RIGHT	0	0	0	0	44	44	0	44
WB LEFT	0	0	0	0	0	0	0	0
WB THRU	0	0	0	0	0	0	0	0
WB RIGHT	0	0	0	0	0	0	0	0

NAVAJO RD

NB LEFT	0	0	0	0	17	17	0	17
NB THRU	0	0	0	0	0	0	0	0
NB RIGHT	0	0	0	0	0	0	0	0
SB LEFT	0	0	0	0	0	0	0	0
SB THRU	0	0	0	0	0	0	0	0
SB RIGHT	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**0**	**0**	**61**	**61**	**0**	**61**

Intersection	
Int Delay, s/veh	8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	44	17	0	0	0
Future Vol, veh/h	0	44	17	0	0	0
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	48	19	0	0	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	39	1	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	38	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	978	1090	1635	-	-	-
Stage 1	1028	-	-	-	-	-
Stage 2	990	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	966	1090	1635	-	-	-
Mov Cap-2 Maneuver	966	-	-	-	-	-
Stage 1	1016	-	-	-	-	-
Stage 2	990	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	7.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1635	-	1090	-	-
HCM Lane V/C Ratio	0.011	-	0.044	-	-
HCM Control Delay (s)	7.2	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	7.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	44	17	0	0	0
Future Vol, veh/h	0	44	17	0	0	0
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	46	18	0	0	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	37	1	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	36	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	981	1090	1635	-	-	-
Stage 1	1028	-	-	-	-	-
Stage 2	992	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	970	1090	1635	-	-	-
Mov Cap-2 Maneuver	970	-	-	-	-	-
Stage 1	1017	-	-	-	-	-
Stage 2	992	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	7.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1635	-	1090	-	-
HCM Lane V/C Ratio	0.011	-	0.042	-	-
HCM Control Delay (s)	7.2	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Appendix F: VMT Analysis

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MEMORANDUM

Date:	August 18, 2023	**GTS:** 230709.00
To:	James M. Daisa, DEA	
From:	Rawad Hani, GTS	
Subject:	**Vehicle Miles Traveled (VMT) Analysis** **Johnson Road Warehouse, Town of Apple Valley, CA**	

This memorandum describes the development of vehicle miles traveled (VMT) analysis for the proposed Johnson Road warehouse in the Town of Apple Valley (City), CA. The project is located at the northwest corner of Johnson Road and Navajo Road, in the north part of the city and within the North Apple Valley Industrial Specific Plan area. The project proposes development of 379,657 square foot (SF) speculative industrial warehouse building on approximately 18.71-acres. This VMT analysis evaluated the project using the 2016 and 2040 model years obtained from the San Bernardino County Transportation Authority (SBCTA).

Background

On December 28, 2018, the California Office of Administrative Law cleared the revised California Environmental Quality Act (CEQA) guidelines for use. Among the changes to the guidelines was removal of vehicle delay and level of service from consideration under CEQA. With the adopted guidelines, transportation impacts are to be evaluated based on a project's effect on vehicle miles traveled (VMT).

Methodology

The project VMT analysis was conducted using the Town of Apple Valley Resolution "*Resolution No. 2021-08, A Resolution of the City Council of the Town of Apple Valley, California, Adopting thresholds of Significance for Vehicle Miles Traveled (VMT) under the California Environmental Quality Act (CEQA)*" adopted during the Town Council Meeting, May 11, 2021. A full VMT analysis was conducted using San Bernardino County Transportation Analysis Model (SBTAM). The guidelines recommend use of VMT per service population to evaluate land use projects. The project would have a significant impact if the project VMT per service population is greater than Town of Apple Valley's General Plan Buildout VMT per service population.

SBTAM model is a socioeconomic data based model and so the project land uses were converted into model employment categories using conversion factors from SCAG's "Employment Density Study Summary Report – dated October 31, 2001". The land use conversion yielded a total of 180 employees as shown in Table 1 which was used as input for the model runs.

Table 1: Johnson Road Warehouse – Employment Estimates

Land Use Type	Square Footage (SF)	SF/Employee *	Total Employees
Warehouse Building	379,657	2,111	**180**
Total	**379,657**		**180**

Source: SCAG Employment Density Study Summary Report, October 31, 2001

VMT Analysis

Both baseline (2016) and horizon year (2040) model runs were used to estimate project's VMT impacts. SBTAM socioeconomic databases for the scenarios were updated with the project land use to calculate project VMT. Typically, project VMT is calculated by isolating the project in a new TAZ or multiple TAZs depending on the diversity of project land uses and project size. Since, SBTAM does not allow addition of new TAZs, one TAZ was borrowed for this project. The project TAZ was utilized to calculate project specific VMT per service population.

No project specific network modifications were conducted for the model scenarios. Full model runs with feedback loops were conducted for all project scenarios. It should be noted that the project land use was included in the model as additional land use in the cumulative (2040) scenario and no shifting of land use from other TAZs was used. In that regard, the cumulative VMT analysis can be considered as a conservative estimate.

As indicated previously, project's Origin/Destination (OD) VMT per service population can be used to evaluate project impact according to the guidelines. The Origin/Destination (OD) method for calculating VMT sums all weekday VMT generated by trips with at least one trip-end in the study area and tracks those trips to their origin or destination. Origins are all vehicle trips that start in a specific TAZ, while destinations are all vehicle trips that end in a specific TAZ. The OD method accounts for all trips (i.e., both passenger cars and trucks) and trip purposes (i.e., total VMT) and therefore provides a more complete estimate of VMT. Origin-destination matrix outputs were used as trips and the trip lengths were derived from the skimming step to estimate OD VMT. OD matrix outputs include vehicle trips and hence no conversion for auto occupancy was applied. The trip length or distance was obtained using the model outputs from the "Skimming" step. The model skim outputs include peak and off-peak skim matrices by mode, similar to trip outputs from the model. OD VMT was estimated for both peak and off-peak and added together to estimate the total daily VMT for the project.

Based on the guidelines, the project would constitute a significant impact if the project OD VMT per service population for base or cumulative scenarios is greater than Town of Apple Valley General Plan Buildout OD VMT per service population. The Town of Apple Valley General Plan Buildout OD VMT per service population was obtained from SBCTA VMT Screening Tool (*https://www.gosbcta.com/vmtscreening*).

Table 2 below shows the project VMT metrics for both baseline (2016) and cumulative (2040) conditions along with the regional VMT thresholds.

Table 2: Project VMT analysis

2016	Johnson Road Warehouse (project)	Town of Apple Valley General Plan Buildout (Threshold) *
Population	0	
Employment	180	
Service Population	180	
OD VMT	5,950	
OD VMT per service population	33.1	33.2
2040	**Johnson Road Warehouse (project)**	**Town of Apple Valley General Plan Buildout (Threshold) ***
Population	0	
Employment	180	
Service Population	180	
OD VMT	5,694	
OD VMT per service population	31.6	33.2

** Threshold value obtained from SBCTA VMT Screening Tool: https://www.gosbcta.com/vmtscreening*

Table 3 illustrates the project's effect on VMT. The project's effect on VMT is a comparison of roadway VMT within Town of Apple Valley for both "With project" and "Without project" conditions.

Table 3: Roadway VMT within Town of Apple Valley

2016	With Project	Without Project
Roadway VMT	849,362	847,823
Service population	91,293	91,113
VMT per service population	9.3	9.3
2040	**With Project**	**Without Project**
Roadway VMT	1,361,983	1,362,981
Service population	126,986	126,806
VMT per service population	10.7	10.7

Conclusion

Based on the VMT analysis as shown in above tables 2 and 3, the project doesn't constitute a significant impact for both "project generated VMT" and "project's effect on VMT.

JOHNSON ROAD WAREHOUSE PROJECT

TOWN OF APPLE VALLEY, SAN BERNARDINO COUNTY, CALIFORNIA

Delineation of State and Federal Jurisdictional Waters

Prepared For:
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October 2024

JOHNSON ROAD WAREHOUSE PROJECT

TOWN OF APPLE VALLEY, SAN BERNARDINO COUNTY, CALIFORNIA

Delineation of State and Federal Jurisdictional Waters

The undersigned certify that the statements furnished in this report and exhibits present data and information required for this biological evaluation, and the facts, statements, and information presented is a complete and accurate account of the findings and conclusions to the best of our knowledge and beliefs.

Travis J. McGill
Biologist/Director

Thomas J. McGill, Ph.D.
Managing Director

October 2024

Executive Summary

ELMT Consulting (ELMT) has prepared this Delineation of State and Federal Jurisdictional Waters Report for the Johnson Road Warehouse Project (Project site or site) located in the Town of Apple Valley, San Bernardino County, California. The jurisdictional delineation documents the regulatory authority of the U.S. Army Corps of Engineers (Corps), the Regional Water Quality Control Board (Regional Board), and the California Department of Fish and Wildlife (CDFW) pursuant to Section 401 and 404 of the Federal Clean Water Act (CWA), the California Porter-Cologne Water Quality Control Act, and Sections 1600 *et. seq.* of the California Fish and Game Code.[1]

Two ephemeral drainages, named Drainage 1 and Drainage 2, were observed passing from the eastern boundary through the site and out through the western boundary of the project site during the field delineation. The drainages onsite flow into a storm drain that extends under Johnson Road and into detention basins associated with the Distribution Cetner south of the project site.

The onsite ephemeral drainage features are not relatively permanent, standing, or continuously flowing bodies of water and, therefore, will not qualify as waters of the United States under the regulatory authority of the Corps (*Sackett v. EPA* (2022) 143 S. Ct. 1322, 1336). However, the onsite drainage features will likely qualify was waters of the State and fall under the regulatory authority of the Regional Board and CDFW. Table ES-1 identifies the on-site jurisdictional including the total acreage of jurisdiction for each regulatory agency within the boundaries of the project site.

Table ES-1: Jurisdictional Areas

Jurisdictional Feature	Stream Flow	Cowardin Class	Class of Aquatic Resource	Regional Board Jurisdiction		CDFW Jurisdiction	
				Acreage	Linear Feet	Acreage	Linear Feet
Drainages 1	Ephemeral	Riverine	Non-Section 10 Non-Wetland	0.40	2,663	0.40	2,663
Drainages 2	Ephemeral	Riverine	Non-Section 10 Non-Wetland	0.20	1,247	0.20	1,247
			TOTALS	**0.60**	**3,910**	**0.60**	**3,910**

Approximately 0.60 acres (3,910 linear feet) of non-wetland waters of the State occur on-site under the jurisdictional authority of the Regional Board. Likewise, the on-site drainage features exhibit characteristics consistent with CDFW's methodology and would be considered CDFW streambed totaling 0.60 acres (3,910 linear feet).

Impacts to the on-site jurisdictional areas will require a Corps Approved Jurisdictional Determination or Waiver, Regional Board CWA Section Report of Waste Discharge, and a CDFW Section 1602 Lake and Streambed

1 The field surveys for this jurisdictional delineation were conducted on February 12, 2024 pursuant to the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0* (Corps 2008); and *Minimum Standards for Acceptance of Aquatic Resources Delineation Reports* (Corps 2017); *The MESA Field Guide: Mapping Episodic Stream Activity* (CDFW 2014); and a *Review of Stream Processes and Forms in Dryland Watersheds* (CDFW 2010).

Alteration Agreement prior to Project implementation. Refer to Sections 1-7 for a detailed analysis of site conditions and regulatory requirements.

Table of Contents

EXHIBITS

APPENDIX

Section 1 Introduction

This jurisdictional delineation has been prepared for the Johnson Road Warehouse Project (Project site or site) in order to document the potential jurisdictional authority of the U.S. Army Corps of Engineers (Corps), the Regional Water Quality Control Board (Regional Board), and the California Department of Fish and Wildlife (CDFW) pursuant to Section 401 and 404 of the Federal Clean Water Act (CWA), the California Porter-Cologne Water Quality Control Act and Sections 1600 *et seq.* of the California Fish and Game Code. The analysis presented in this report is supported by field surveys and verification of site conditions conducted on September 24, 2024.

This jurisdictional delineation explains the methodology undertaken by ELMT Consulting (ELMT) to define the regulatory authority of regulatory authority of the U.S. Army Corps of Engineers (Corps), the Regional Water Quality Control Board (Regional Board), and the California Department of Fish and Wildlife (CDFW) and documents the findings made by ELMT. This report documents the jurisdictional boundaries using the most up-to-date regulations, written policy, and guidance from the regulatory agencies.

1.1 PROJECT LOCATION

The project site is generally located south and east of Interstate 15, west of State Route 247, and north of State Route 18 in the Town of Apple Valley, San Bernardino County, California (Exhibit 1, *Regional Vicinity*). The site is depicted on the Apple Valley North quadrangle of the United States Geological Survey's (USGS) 7.5-minute map series within Section 16 of Township 6 North, Range 3 West (Exhibit 2, *Site Vicinity*). Specifically, the approximately 20 acre site is located south of Quarry Road, east of Dachshund Avenue, bound to the south by Johnson Road, and bound to the east by Navajo Road; and is located within Assessor Parcel Numbers (APNs) 0463-213-26, -27, and -28 (Exhibit 3, *Project Site*).

1.2 PROJECT DESCRIPTION

The project proposes to construct a single industrial warehouse building that encompass approximately 410,241 square feet on approximately 20 acres. The development will consist of structures to accommodate the proposed use in addition to accessory structures, loading docks, truck trailer parking, automobile parking, and associated infrastructure improvements. Refer to Appendix D, *Site Plan.*

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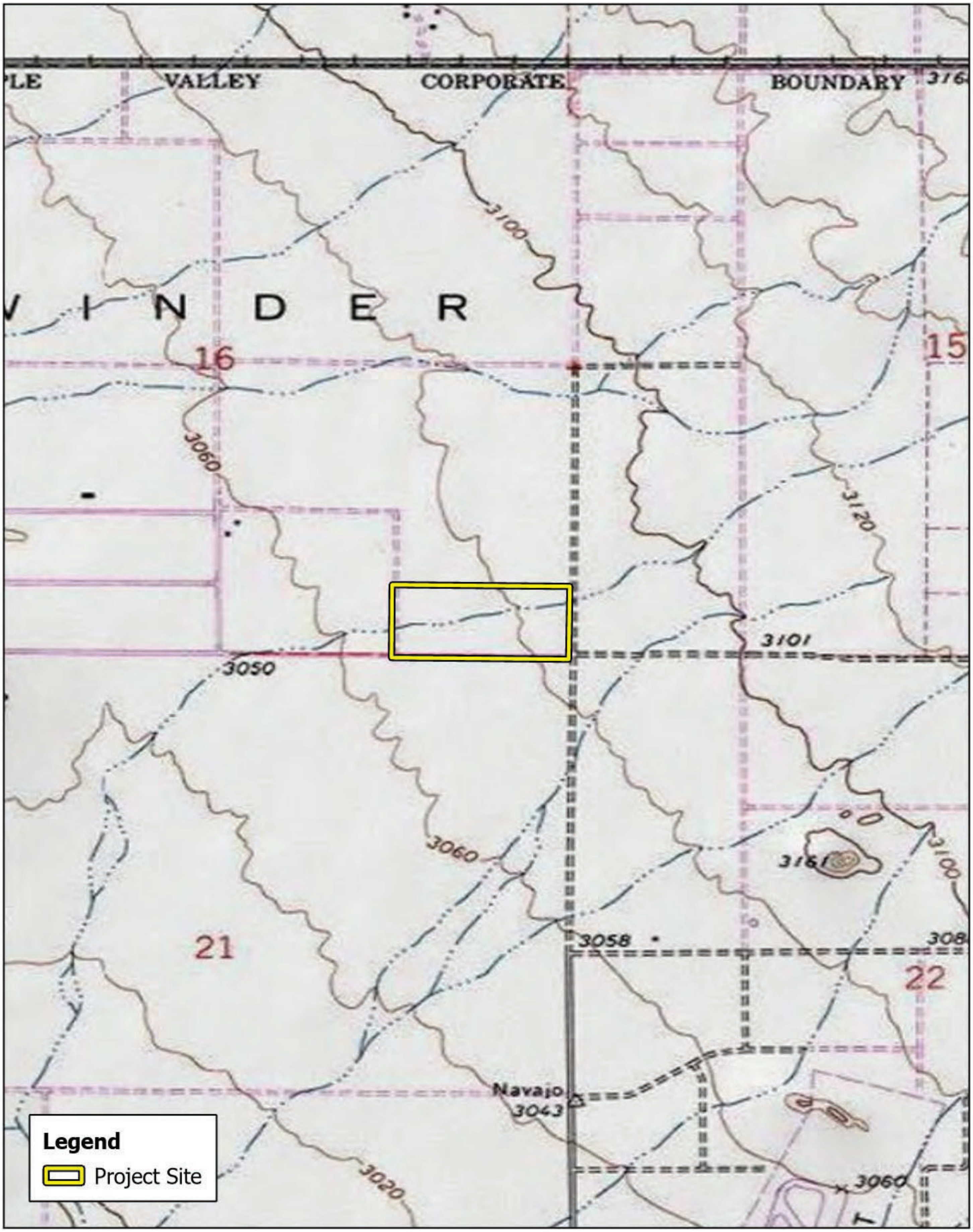
JOHNSON ROAD WAREHOUSE PROJECT

Regional Vicinity

Exhibit 1

Source: ESRI World Street Map



ELMT CONSULTING

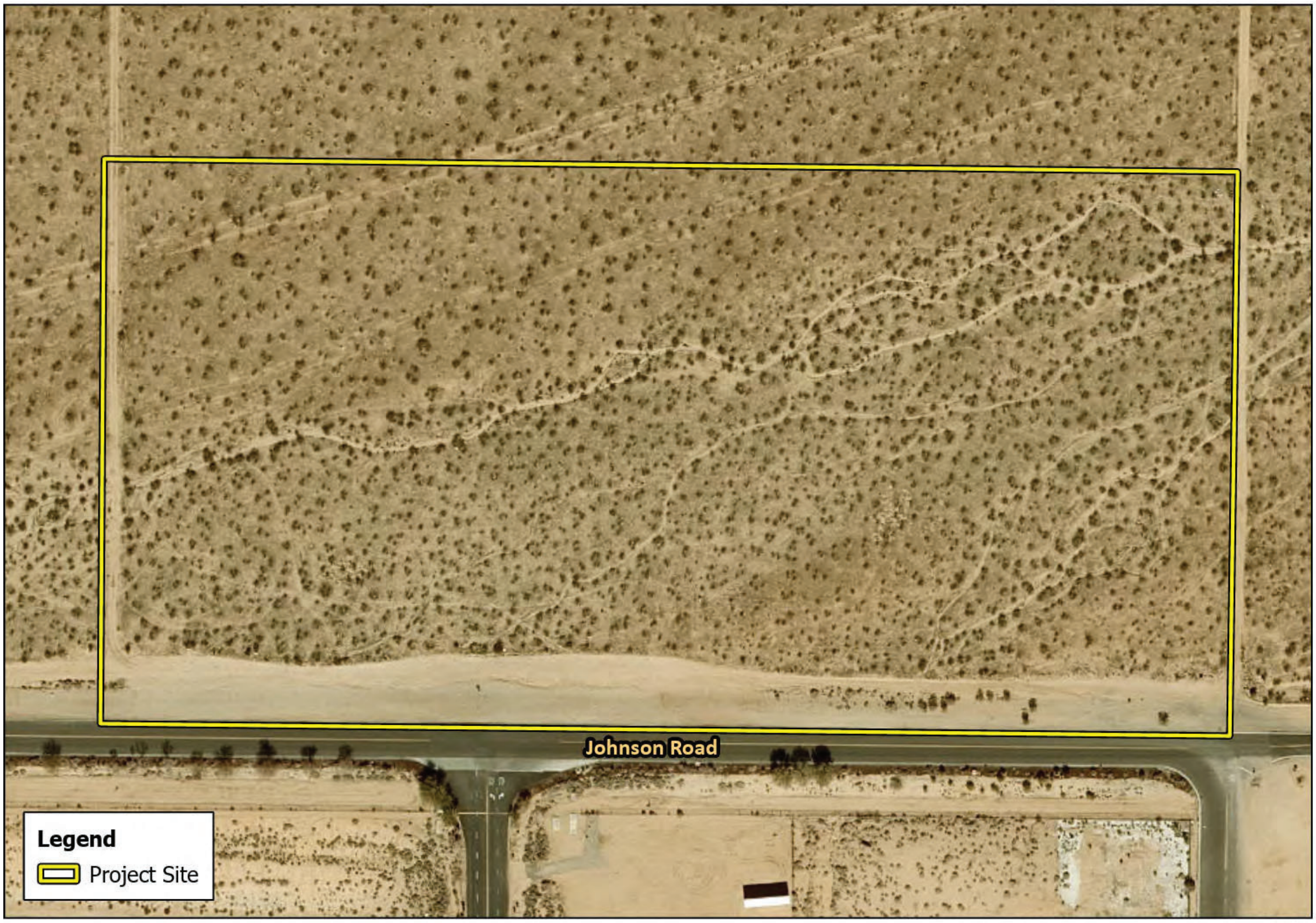
N 0 500 1,000 2,000 Feet

Source: USA Topo Maps, San Bernardino County

JOHNSON ROAD WAREHOUSE PROJECT

Site Vicinity

Exhibit 2



N 0 125 250 500 Feet

ELMT CONSULTING

JOHNSON ROAD WAREHOUSE PROJECT

Project Site

Source: ESRI Aerial Imagery, San Bernardino County

Exhibit 3

Section 2 Regulations

There are three key agencies that regulate activities within inland streams, wetlands, and riparian areas in California. The Corps Regulatory Division regulates activities pursuant to Section 404 of the CWA, Section 10 of the Rivers and Harbors Act, and Section 103 of the Marine Protection, Research, and Sanctuaries Act. The Regional Board regulates activities pursuant to Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act and the CDFW regulates activities under Sections 1600 *et seq*. of the California Fish and Game Code.

2.1 U.S. ARMY CORPS OF ENGINEERS

In accordance with the Revised Definition of "Waters of the United States"; Conforming (September 8, 2023), "waters of the United Sates" are defined as follows:

(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

(b) The following are not "waters of the United States" even where they otherwise meet the terms of paragraphs (a)(2) through (5) of this section:

(1) Waste treatment systems, including treatment ponds or lagoons, designed to meet the requirements of the Clean Water Act;

(2) Prior converted cropland designated by the Secretary of Agriculture. The exclusion would cease upon a change of use, which means that the area is no longer available for the production of agricultural commodities. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA;

(3) Ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water;

(4) Artificially irrigated areas that would revert to dry land if the irrigation ceased;

(5) Artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;

(6) Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons;

(7) Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States; and

(8) Swales and erosional features (*e.g.,* gullies, small washes) characterized by low volume, infrequent, or short duration flow.

(c) In this section, the following definitions apply:

(1) ***Wetlands*** means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

(2) ***Adjacent*** means having a continuous surface connection

(3) ***High tide line*** means the line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

(4) ***Ordinary high water mark*** means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as 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.

(5) ***Tidal waters*** means those waters that rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by hydrologic, wind, or other effects.

2.2 REGIONAL WATER QUALITY CONTROL BOARD

Pursuant to Section 401 of the CWA, any applicant for a federal license or permit to conduct any activity which may result in any discharge to waters of the United States must provide certification from the State or Indian tribe in which the discharge originates. This certification provides for the protection of the physical, chemical, and biological integrity of waters, addresses impacts to water quality that may result from issuance of federal permits and helps ensure that federal actions will not violate water quality standards of the State or Indian tribe. In California, there are nine Regional Boards that issue or deny certification for discharges to waters of the United States and waters of the State, including wetlands, within their geographical jurisdiction. The State Water Resources Control Board (SWRCB) assumes this responsibility when a project has the potential to result in the discharge to waters within multiple Regional Boards.

Additionally, the California Porter-Cologne Water Quality Control Act gives the State very broad authority to regulate waters of the State, which are defined as any surface water or groundwater, including saline waters. The Porter-Cologne Water Quality Control Act has become an important tool post *Solid Waste Agency of Northern Cook County vs. United States Corps of Engineers*[2] (SWANCC) and *Rapanos v. United States*[3] (Rapanos) court cases with respect to the State's regulatory authority over isolated and insignificant waters. Generally, any applicant proposing to discharge waste into a water body must file a Report of Waste Discharge in the event that there is no Section 404/401 nexus. Although "waste" is partially defined as any waste substance associated with human habitation, the Regional Board also interprets this to include discharge of dredged and fill material into water bodies.

Under the State Water Resources Control Board Sate Wetland Definition, an area is a wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.

2.3 CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

Sections 1600 *et seq.* of the California Fish and Game Code establishes a fee-based process to ensure that projects conducted in and around lakes, rivers, or streams do not substantially adversely impact fish and wildlife resources, or, when adverse impacts cannot be avoided, ensures that adequate mitigation and/or

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2 Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers, 531 U.S. 159 (2001)
3 Rapanos v. United States, 547 U.S. 715 (2006)

compensation is provided. Pursuant to Section 1602 of the California Fish and Game Code, a notification must be submitted to the CDFW for any activity that will divert or obstruct the natural flow or alter the bed, channel, or bank (which may include associated biological resources) of a river or stream or use material from a streambed. One CDFW guidance document, although not a formally adopted rule or policy, requires notification for activities taking place within rivers or streams that flow perennially or episodically and that are defined by the area in which surface water currently flows, or has flowed, over a given course during the historic hydrologic regime, and where the width of its course can reasonably be identified by physical and biological indicators. If the project will not "substantially adversely affect an existing fish or wildlife resource," following notification to CDFW, the project may commence without an agreement with CDFW. (Fish & G. Code, § 1602(a)(4)(A)(i).)

Section 3 Methodology

The analysis presented in this report is supported by field surveys and verification of site conditions conducted on September 24, 2024. ELMT conducted a field delineation to determine the jurisdictional limits of the "waters of the United States", "waters of the State" and jurisdictional streambed (including potential wetlands), located within the boundaries of the Project site. While in the field, jurisdictional features were recorded on an aerial base map at a scale of 1" = 50' using topographic contours and visible landmarks as guidelines. Data points were obtained with a Garmin Map62 Global Positioning System to record and identify specific widths for ordinary high water mark (OHWM) indicators and the locations of photographs, soil pits, and other pertinent jurisdictional features, if present. This data was then transferred as a .shp file and added to the Project's jurisdictional exhibits. The jurisdictional exhibits were prepared using ESRI ArcInfo Version 10 software.

3.1 WATERS OF THE UNITED STATES

In the absence of adjacent wetlands, the limits of the Corps jurisdiction in non-tidal waters extend to the OHWM, which 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.*"[4] Indicators of an OHWM are defined in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Corps 2008). In addition to characteristics listed above, wracking; vegetation matted down, bent, or absent; sediment sorting; leaf litter disturbed or washed away; scour; deposition; multiple observed flow events; bed and banks; water staining; and/or change in plant community.

Pursuant to the Corps Wetland Delineation Manual (Corps 1987), the identification of wetlands is based on a three-parameter approach involving indicators of hydrophytic vegetation, hydric soils, and wetland hydrology. In order to qualify as a wetland, a feature must exhibit at least minimal characteristics within each of these three parameters. It should also be noted that both the Regional Board and CDFW follow the methods utilized by the Corps to identify wetlands. For this Project, Corps jurisdictional wetlands are delineated using the methods outlined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0* (Corps 2008).

3.2 WATERS OF THE STATE

3.2.1 REGIONAL WATER QUALITY CONTROL BOARD

The California *Porter-Cologne Water Quality Control Act* gives the Regional Board very broad authority to regulate waters of the State, which are defined as any surface water or groundwater, including saline

[4] CWA regulations 33 CFR §328.3(e).

waters. The Regional Board shares the Corps' methodology for delineating the limits of jurisdiction based on the identification of OHWM indicators and utilizing the three parameter approach for wetlands.

3.2.2 CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

Sections 1600 *et seq*. of the California Fish and Game Code applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the State. CDFW Regulations define "stream" as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation." (14 Cal. Code Regs., § 1.72.) For this Project location, CDFW jurisdictional limits were delineated using this definition of "stream."

Section 4 Literature Review

ELMT conducted a thorough review of relevant literature and materials to preliminarily identify areas that may fall under the jurisdiction of the regulatory agencies. A summary of materials utilized during ELMT's literature review is provided below and in Appendix A, *Documentation*. In addition, refer to Section 8 for a complete list of references used throughout the course of this delineation.

4.1 WATERSHED REVIEW

The project site is located near the middle of the southern portion of the Mojave Watershed (HUC 18090208). The Mojave Watershed is a large, closed basin in the western Mojave Desert that occurs within central and western San Bernardino County and drains approximately 4,500 square miles. The primary geographic and hydrologic feature of the Mojave Watershed is the Mojave River, which occurs approximately 9.8 miles to the west of the site. The headwaters of the Mojave River are in the San Bernardino Mountains, which annually receives greater than forty inches of precipitation at its highest elevations. Much of the winter precipitation in the San Bernardino Mountains falls in the form of snow, which provides spring recharge to the Mojave River system. This results in an annual recharge to the Mojave River of approximately 75,000 acre-feet. The Mojave River transects the watershed north and east to its terminus at Silver Lake, just north of the Community of Baker. South of Mojave Forks Dam, the Mojave River is fed by the West Fork Mojave River to the west, which also forms the Mojave River Forks Reservoir, and Deep Creek to the east. Elevations within the watershed range from 8,500 feet above mean sea level at Butler Peak in the San Bernardino Mountains to 1,400 feet above mean sea level at Afton Canyon near the terminus of the Mojave River. There are multiple intermittent or ephemeral waterways in the eastern portion of the watershed which convey surface water runoff to Silver Lake during extreme rain events. Silver Lake remains dry most of the year. Aside from extreme rain events, the Mojave River channel is typically dry downstream of the Mojave Forks Dam, except in certain locations where groundwater is forced to the surface by geologic influences.

4.2 LOCAL CLIMATE

The Mojave Desert is found at elevations of 2,000 to 5,000 feet above mean sea level (msl) and is characterized by cool winter temperatures and warm summer temperatures, with its rainfall occurring almost entirely in the winter. Climatological data obtained from nearby weather stations indicates the annual precipitation in Apple Valley averages 20.2 inches per year. Almost all of the precipitation occurs November through April, with hardly any occurring between May and October. The wettest month of February, with a monthly average total of 4.3 inches. The average maximum and minimum temperatures for Apple Valley are 88- and 55-degrees Fahrenheit (°F), respectively with July being the hottest month and December being the coldest. Temperatures during the site visits were in the mid-70's to low-80's (degrees Fahrenheit) with light winds and little to no cloud cover.

4.3 USGS TOPOGRAPHIC QUADRANGLE

The USGS 7.5 Minute Series Topographic Quadrangle maps show geological formations and their characteristics, describing the physical setting of an area through contour lines and major surface features including lakes, rivers, streams, buildings, landmarks, and other factors that may fall under an agency's jurisdiction. Additionally, the maps depict topography through color and contour lines, which are helpful in determining elevations and latitude and longitude within the project site.

According to the topographic map, the project site occurs within the Apple Valley North 7.5-minute quadrangle. The site consists of undeveloped land with a significantly disturbed area in the southern portion of the site associated with vehicular use as a turnaround and shoulder area alongside Johnson Road.

On-site elevation is relatively flat and ranges from approximately 3,076 to 3,096 feet above mean sea level, sloping marginally from northeast to southwest.

4.4 AERIAL PHOTOGRAPHS

Prior to conducting the field delineation, ELMT reviewed current and historical aerial photographs (1985-2023) of the project as available from Google Earth Pro Imaging. Aerial photographs can be useful during the delineation process, as they often indicate the presence of drainage features and riverine habitat within the boundaries of the project site, if any.

The project site is located in a predominantly undeveloped area, in the northeastern limits of the Town of Apple Valley. Limited residential parcels and industrial development are scattered throughout the area. Notable developments in the vicinity include Quarry Road and an associated railroad located adjacent to the northern boundary of the site, Apple Valley Speedway located approximately 1.67 miles to the northeast, Apple Valley Airport located approximately 0.8 miles to the southeast, and a Walmart distribution center located south and across Johnson Road.

The survey area supports a mix of undeveloped and disturbed land. The areas on the perimeter of the project site are marginally disturbed with the presence of dirt access roads. The central portion of the site is relatively undisturbed, while the southern portion of the site is highly disturbed due to use as a truck pull off area. Refer to Appendix A, *Site Photographs*, for representative site photographs. The project site has undergone minimal changes since 1985.

4.5 SOILS

Soils within and adjacent to the Project site were researched prior to the field delineation using the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Custom Soil Resource Report for San Bernardino County, Mojave River Area. Soil surveys furnish soil maps and interpretations originally needed in providing technical assistance to farmers and ranchers; in guiding other decisions about soil selection, use, and management; and in planning, research, and disseminating the results of the research. In addition, soil surveys are now heavily utilized in order to obtain soil information with respect to potential wetland environments and jurisdictional areas (i.e., soil characteristics, drainage, and color).

According to the USDS Web Soil Survey the project site is entirely underlain by Helendale-Bryman loamy sands (2 to 5 percent slopes). Soils within the southern area of the project site have been compacted by heavy disturbance associated with vehicle use, while soils in the remaining areas of the project site are relatively undisturbed. Refer to Exhibit 4, *Soils*.

4.6 HYDRIC SOILS LIST OF CALIFORNIA

ELMT reviewed the USDA NRCS Hydric Soils List of California in an effort to verify whether on-site soils are considered to be hydric[5]. It should be noted that lists of hydric soils along with soil survey maps provide off-site ancillary tools to assist in wetland determinations, but they are not a substitute for field investigations. The presence of hydric soils is initially investigated by comparing the mapped soil series for the site to the County list of hydric soils. According to the hydric soils list, Helendale-Bryman loamy sands (2 to 5 percent slopes) have not been listed as hydric in San Bernardino County Mojave River Area.

4.7 NATIONAL WETLANDS INVENTORY

ELMT reviewed the U.S. Fish and Wildlife Service's (USFWS) National Wetland Inventory maps. No riverine resources are mapped within the boundaries of the project site, The NWI mapping for this area was photo interpreted using 1 meter (or less) digital, true color imagery from 2012. Refer to Appendix B, *Documentation*.

4.8 FLOOD ZONE

The Federal Emergency Management Act (FEMA) website was searched for flood data for the project site. Based on Flood Insurance Rate Maps No. 06071C5830H, the project site is located within Zone D – areas of undetermined flood hazard.

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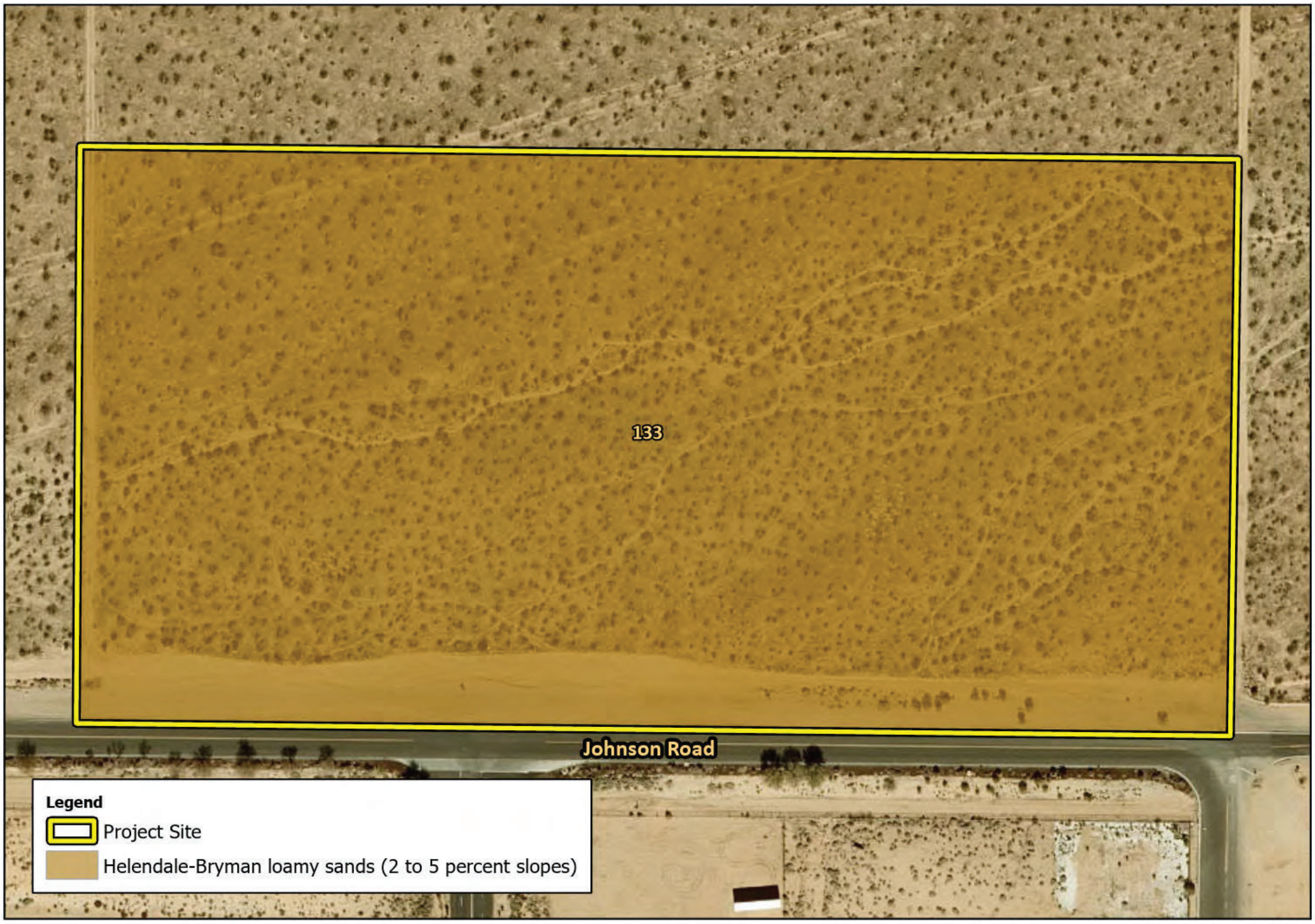
5 A hydric soil is a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part.



ELMT CONSULTING

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Source: ESRI Aerial Imagery, San Bernardino County

JOHNSON ROAD WAREHOUSE PROJECT

Soils

Exhibit 4

Section 5 Site Conditions

ELMT biologist Andrew N. Mestas conducted a field delineation on September 24, 2024, to verify existing site conditions and document the extent of potential jurisdictional areas within the boundaries of the project site. ELMT field staff encountered no limitations during the field delineation.

The project site is composed of primarily undeveloped land with a low degree of disturbance. Onsite disturbance consists of vehicular use along the southern boundary associated with Johnson Road. Undisturbed areas onsite support a creosote-bush scrub plant community.

5.1 ON-SITE FEATURES

5.1.1 DRAINAGE FEATURES

Two (2) ephemeral drainage features were observed on the project site during the field delineation. ELMT carefully assessed the site for depressions, inundation, presence of hydrophytic vegetation, staining, cracked soil, ponding, and indicators of active surface flow and corresponding 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. Suspected jurisdictional areas were checked for the presence of definable channels, soils, and hydrology. Two drainages (Drainage 1, and 2) occurring within the site boundaries were mapped based on such physical characteristics. Refer to Exhibit 5, *Jurisdictional Areas*.

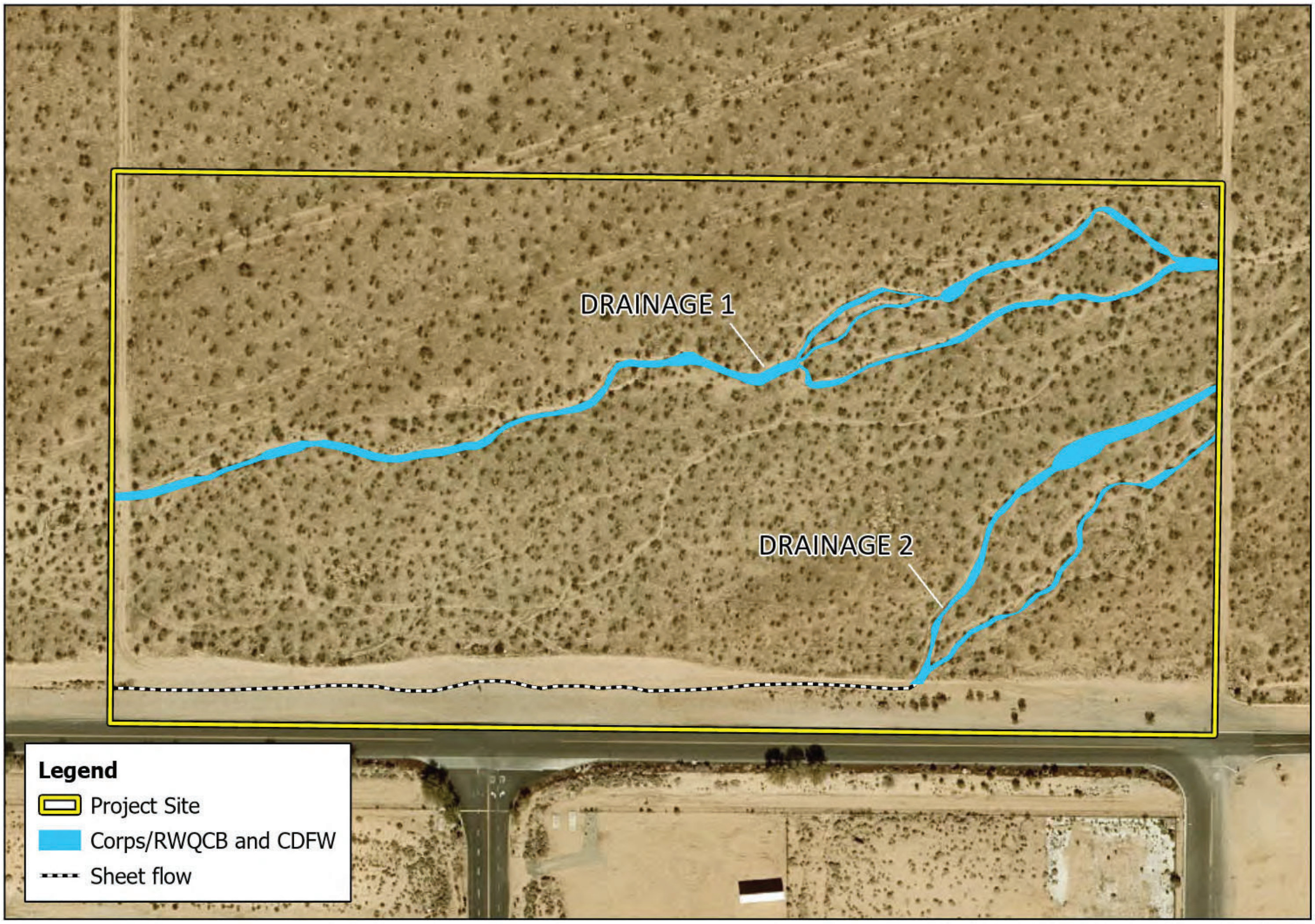
The onsite drainage features generally flow in a northeast to southwest direction across the project site. No surface water was present within the drainage features during the site visit; however, evidence of an OHWM and bed and bank were observed via scour, changes in substrate, shelving, and lack of vegetation within all of onsite features. Across all of the drainage features, the OWHM ranged from approximately 2-10 feet in width throughout the length of the drainages. These features only convey surface flow in direct response to precipitation, and do not support riparian vegetation.

The onsite drainage features primarily consisted of sandy substrate consisting of loose sandy soils and small cobble with minimal vegetation. The banks of the drainage features were vegetated with upland plant species indicative of the surrounding Larrea Tridentata Shrubland Alliance (Creosote Bush Scrub).

The onsite drainage features eventually flow offsite to the southwest and terminate at the Walmart Distribution Cetner south of Johnson Road. The onsite drainage features do not have a surface hydrologic connection to downstream waters of the United States; however, the onsite drainages will fall under the regulatory authority of the Regional Board as waters of the State, and, CDFW as jurisdictional streambed.

5.1.2 WETLAND FEATURES

In order to qualify as a wetland, a feature must exhibit all three wetland parameters (i.e., vegetation, soils, and hydrology) described in the Corps Arid West Regional Supplement. Although evidence of hydrology (i.e., scour, changes in substrate, lack of vegetation) was present within the on-site drainages, these areas were dominated by upland plant species. Further, water does not persist long enough on the Project site to create hydric soil (anaerobic) conditions, and none of the on-site drainages supported a dominance of hydrophytic vegetation. As a result, no features on-site meet the Corps' or Regional Board's wetland definition to qualify as jurisdictional wetlands.



ELMT CONSULTING

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Source: ESRI Aerial Imagery, San Bernardino County

JOHNSON ROAD WAREHOUSE PROJECT

Jurisdictional Areas

Exhibit 5

Section 6 Findings

This report presents the extent of jurisdictional features using the most up-to-date regulations, written policy, and guidance from the regulatory agencies. Please refer to the following sections for a summary of jurisdictional areas within the Project site.

6.1 U.S. ARMY CORPS OF ENGINEERS DETERMINATION

6.1.1 WATERS OF THE UNITED STATES DETERMINATION

The onsite ephemeral drainage features are not relatively permanent, standing, or continuously flowing bodies of water and, therefore, will not qualify as waters of the United States under the regulatory authority of the Corps (*Sackett v. EPA* (2022) 143 S. Ct. 1322, 1336).

6.1.2 FEDERAL WETLAND DETERMINATION

An area must exhibit all three wetland parameters described in the Corps Arid West Regional Supplement to be considered a jurisdictional wetland. Based on the results of the field delineation, it was determined that no areas within the Project site met all three wetland parameters. Therefore, no jurisdictional wetland features exist within the Project site.

6.2 REGIONAL WATER QUALITY CONTROL BOARD

6.2.1 WATERS OF THE STATE DETERMINATION

The on-site drainage features exhibit characteristics consistent with the Regional Board's methodology and will therefore be considered jurisdictional waters of the State. Approximately 0.6 acre (3,910 linear feet) of non-wetland waters of the State occur on-site.

Table 1: Regional Board Jurisdictional Areas

Jurisdictional Features	Regional Board Jurisdictional Streambed	
	On-Site Jurisdiction acreage (linear feet)	**Impacts** acreage (linear feet)
Drainage 1	0.40	2,663
Drainage 2	0.20	1,247
TOTALS	**0.60**	**3,910**

6.2.2 STATE WETLAND DETERMINATION

Under the State Water Resources Control Board State Wetland Definition, an area is a wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.

Based on the results of the field delineation, it was determined that no areas within the Project site meet the State Wetland Definition. Therefore, no state wetland features exist within the Project site.

6.3 CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

The on-site drainage features exhibit characteristics consistent with CDFW's methodology and are therefore considered CDFW streambed. Approximately 0.6 acre (3,910 linear feet) of CDFW jurisdiction was mapped within boundaries of the project site. Refer to Exhibit 5, *Jurisdictional Areas*, for an illustration of impacts to CDFW jurisdictional areas.

Table 2: CDFW Jurisdictional Areas

Jurisdictional Features	CDFW Jurisdictional Streambed	
	On-Site Jurisdiction acreage (linear feet)	**Impacts** acreage (linear feet)
Drainage 1	0.40	2,663
Drainage 2	0.20	1,247
TOTALS	**0.60**	**3,910**

Section 7 Regulatory Approval Process

The following is a summary of the various permits, certifications, and agreements that may be necessary prior to construction and/or alteration within jurisdictional areas. Ultimately the regulatory agencies make the final determination of jurisdictional boundaries and permitting requirements.

7.1 UNITED STATES ARMY CORPS OF ENGINEERS

The Corps regulates discharges of dredged or fill materials into waters of the United States and wetlands pursuant to Section 404 of the CWA. No Corps jurisdictional areas were identified within the project site and a CWA Section 404 permit would not be required for the proposed project.

7.2 REGIONAL WATER QUALITY CONTROL BOARD

The Regional Board regulates discharges to surface waters pursuant to Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act. Regional Board jurisdictional areas were identified within the project site and a Report of Waste Discharge will be required for the proposed project for impacts to the onsite drainage features.

7.3 CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

Pursuant to Section 1602 of the California Fish and Game Code, the CDFW regulates any activity that will divert or obstruct the natural flow or alter the bed, channel, or bank (which may include associated biological resources) of a river or stream. CDFW jurisdictional areas were observed within the project site at the time of the investigation. Therefore, a Section 1602 Streambed Alteration Agreement from the CDFW will be required prior to project implementation.

Section 8 References

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Vyverberg, Kris. 2010. *A Review of Stream Processes and Forms in Dryland Watersheds*. California Department of Fish and Game. December 2010.

Appendix A Site Photographs

Photograph 1: From the northeastern corner along the eastern boundary of the site looking west where Drainage 1 enters the project site.

Photograph 2: From the southwestern corner of the site looking east along Drainage 1 looking east where it exits the site.

Photograph 3: From the central portion of the site looking east along Drainage 1.

Photograph 4: From the central portion of the site looking east along Drainage 1.

Photograph 5: From the southern portion of the site looking along Drainage 2.

Photograph 6: From the central portion of the site looking west along Drainage 2.

Photograph 7: From the central portion of the site looking northwest along Drainage 2.

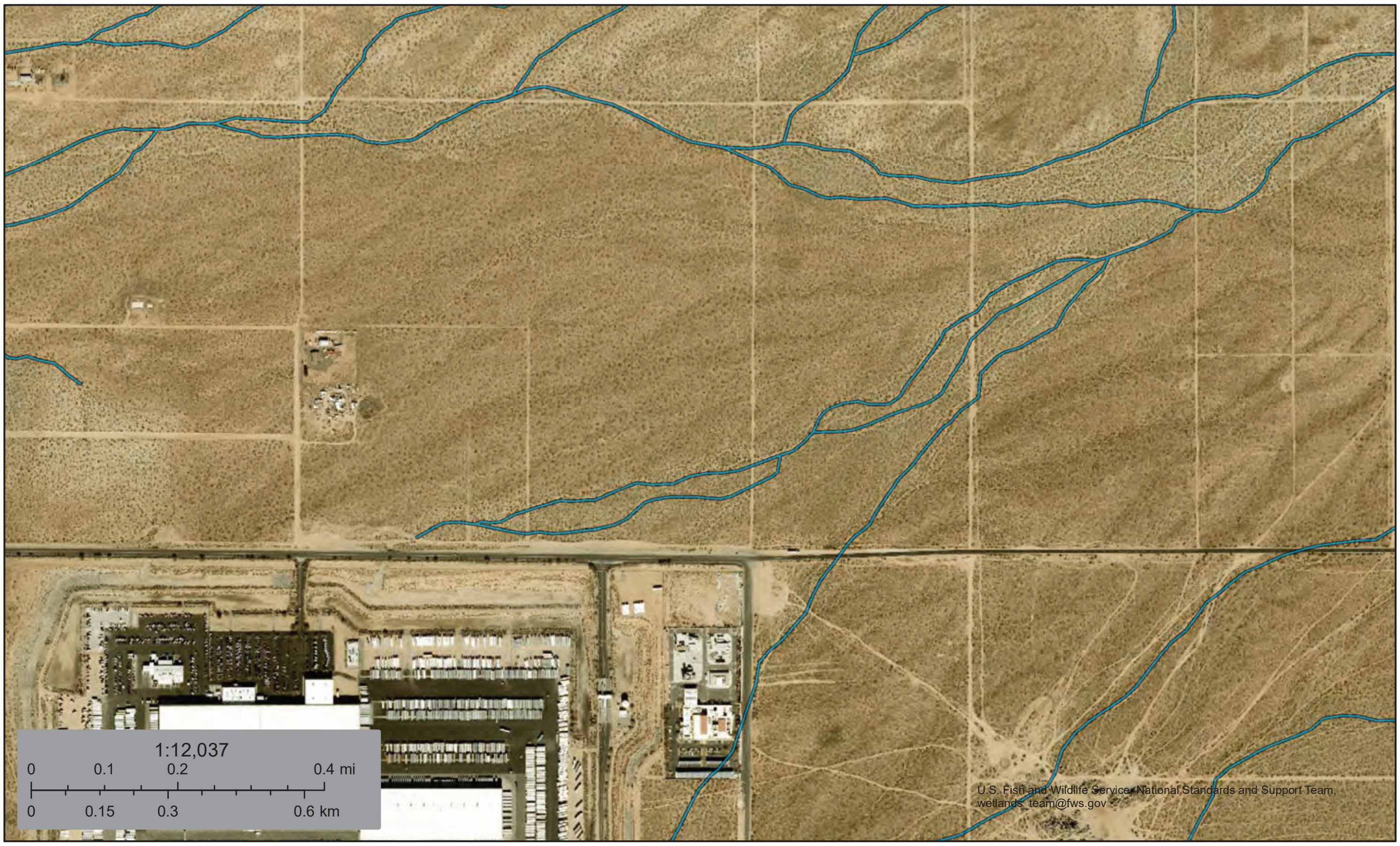
Photograph 8: From the central portion of the site looking north along Drainage 2.

Photograph 9: Looking at an offsite culvert to the east of the site where Drainage 1 and 2 flow into and under Johnson Road.

Appendix B Documentation

U.S. Fish and Wildlife Service
National Wetlands Inventory

Johnson Road Warehouse Project



September 23, 2024

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.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Appendix C Methodology

WATERS OF THE UNITED STATES

Section 404 of the Clean Water Act

In accordance with the Revised Definition of "Waters of the United States"; Conforming (September 8, 2023), "waters of the United Sates" are defined as follows:

(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

(b) The following are not "waters of the United States" even where they otherwise meet the terms of paragraphs (a)(2) through (5) of this section:

(1) Waste treatment systems, including treatment ponds or lagoons, designed to meet the requirements of the Clean Water Act;

(2) Prior converted cropland designated by the Secretary of Agriculture. The exclusion would cease upon a change of use, which means that the area is no longer available for the production of agricultural commodities. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA;

(3) Ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water;

(4) Artificially irrigated areas that would revert to dry land if the irrigation ceased;
(5) Artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;
(6) Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons;

(7) Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States; and

(8) Swales and erosional features (*e.g.,* gullies, small washes) characterized by low volume, infrequent, or short duration flow.

(c) In this section, the following definitions apply:

(1) ***Wetlands*** means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

(2) ***Adjacent*** means having a continuous surface connection

(3) ***High tide line*** means the line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

(4) ***Ordinary high water mark*** means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as 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.

(5) ***Tidal waters*** means those waters that rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by hydrologic, wind, or other effects.

WETLANDS

For this project location, Corps jurisdictional wetlands are delineated using the methods outlined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0* (Corps 2008). This document is one of a series of Regional Supplements to the Corps Wetland Delineation Manual (Corps 1987). The identification of wetlands is based on a three-parameter approach involving indicators of hydrophytic vegetation, hydric soil, and wetland hydrology. In order to be considered a wetland, an area must exhibit at least minimal characteristics within these three (3) parameters. The Regional Supplement presents wetland indicators, delineation guidance, and other information that is specific to the Arid West Region. In the field, vegetation, soils, and evidence of hydrology are examined using the methodology listed below and documented on Corps wetland data sheets, when applicable. It should be noted that both the Regional Board and the CDFW jurisdictional wetlands encompass those of the Corps.

Vegetation

Nearly 5,000 plant types in the United States may occur in wetlands. These plants, often referred to as hydrophytic vegetation, are listed in regional publications by the U.S. Fish and Wildlife Service (USFWS). In general, hydrophytic vegetation is present when the plant community is dominated by species that can tolerate prolonged inundation or soil saturation during growing season. Hydrophytic vegetation decisions are based on the assemblage of plant species growing on a site, rather than the presence or absence of particular indicator species. Vegetation strata are sampled separately when evaluating indicators of hydrophytic vegetation. A stratum for sampling purposes is defined as having 5 percent or more total plant cover. The following vegetation strata are recommended for use across the Arid West:

- *Tree Stratum:* Consists of woody plants 3 inches or more in diameter at breast height (DBH), regardless of height;

- *Sapling/shrub stratum:* Consists of woody plants less than 3 inches DBH, regardless of height;

- *Herb stratum:* Consists of all herbaceous (non-woody) plants, including herbaceous vines, regardless of size; and,

- *Woody vines:* Consists of all woody vines, regardless of size.

The following indicator is applied per the test method below.[1] Hydrophytic vegetation is present if any of the indicators are satisfied.

[1] Although the Dominance Test is utilized in the majority of wetland delineations, other indicator tests may be employed. If one indicator of hydric soil and one primary or two secondary indicators of wetland hydrology are present, then the Prevalence Test (Indicator 2) may be performed. If the plant community satisfies the Prevalence Test, then the vegetation is hydric. If the Prevalence Test fails, then the Morphological Adaptation Test may be performed, where the delineator analyzes the vegetation for potential morphological features.

Indicator 1 – Dominance Test

Cover of vegetation is estimated and is ranked according to their dominance. Species that contribute to a cumulative total of 50% of the total dominant coverage, plus any species that comprise at least 20% (also known as the "50/20 rule") of the total dominant coverage, are recorded on a wetland data sheet. Wetland indicator status in California (Region 0) is assigned to each species using the *National Wetland Plant List, version 2.4.0* (Corps 2012). If greater than 50% of the dominant species from all strata were Obligate, Facultative-wetland, or Facultative species, the criteria for wetland vegetation is considered to be met. Plant indicator status categories are described below:

- *Obligate Wetland (OBL):* Plants that almost always occur in wetlands;
- *Facultative Wetland (FACW):* Plants that usually occur in wetlands, but may occur in non-wetlands;
- *Facultative (FAC):* Plants that occur in wetlands and non-wetlands;
- *Facultative Upland (FACU):* Plants that usually occur in non-wetlands, but may occur in wetlands; and,
- *Obligate Upland (UPL):* Plants that almost never occur in wetlands.
- No Indicator (*NI):* Plant not listed on the Corps Wetland Plant List for the Arid West.

Hydrology

Wetland hydrology indicators are presented in four (4) groups, which include:

Group A – Observation of Surface Water or Saturated Soils

Group A is based on the direct observation of surface water or groundwater during the site visit.

Group B – Evidence of Recent Inundation

Group B consists of evidence that the site is subject to flooding or ponding, although it may not be inundated currently. These indicators include water marks, drift deposits, sediment deposits, and similar features.

Group C – Evidence of Recent Soil Saturation

Group C consists of indirect evidence that the soil was saturated recently. Some of these indicators, such as oxidized rhizospheres surrounding living roots and the presence of reduced iron or sulfur in the soil profile, indicate that the soil has been saturated for an extended period.

Group D – Evidence from Other Site Conditions or Data

Group D consists of vegetation and soil features that indicate contemporary rather than historical wet conditions, and include shallow aquitard and the FAC-neutral test.

If wetland vegetation criteria is met, the presence of wetland hydrology is evaluated at each transect by recording the extent of observed surface flows, depth of inundation, depth to saturated soils, and depth to free water in the soil test pits. The lateral extent of the hydrology indicators are used as a guide for locating soil pits for evaluation of hydric soils and jurisdictional areas. In portions of the stream where the flow is divided by multiple channels with intermediate sand bars, the entire area between the channels is considered within the OHWM and the wetland hydrology indicator is considered met for the entire area.

Soils

A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper 16-20 inches.[2] The concept of hydric soils includes soils developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation. Soils that are sufficiently wet because of artificial measures are included in the concept of hydric soils. It should also be noted that the limits of wetland hydrology indicators are used as a guide for locating soil pits. If any hydric soil features are located, progressive pits are dug moving laterally away from the active channel until hydric features are no longer present within the top 20 inches of the soil profile.

Once in the field, soil characteristics are verified by digging soil pits along each transect to an excavation depth of 20 inches; in areas of high sediment deposition, soil pit depth may be increased. Soil pit locations are usually placed within the drainage invert or within adjoining vegetation. At each soil pit, the soil texture and color are recorded by comparison with standard plates within a *Munsell Soil Chart* (2009). Munsell Soil Charts aid in designating color labels to soils, based by degrees of three simple variables – hue, value, and chroma. Any indicators of hydric soils, such as organic accumulation, iron reduction, translocation, and accumulation, and sulfate reduction, are also recorded.

Hydric soil indicators are present in three groups, which include:

All Soils

"All soils" refers to soils with any United States Department of Agriculture (USDA) soil texture. Hydric soil indicators within this group include histosol, histic epipedon, black histic, hydrogen sulfide, stratified layers, 1 cm muck, depleted below dark surface, and thick dark surface.

[2] According to the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0 (Corps 2008), growing season dates are determined through on-site observations of the following indicators of biological activity in a given year: (1) above-ground growth and development of vascular plants, and/or (2) soil temperature.

Sandy Soils

"Sandy soils" refers to soil materials with a USDA soil texture of loamy fine sand and coarser. Hydric soil indicators within this group include sandy mucky mineral, sandy gleyed matrix, sandy redox, and stripped matrix.

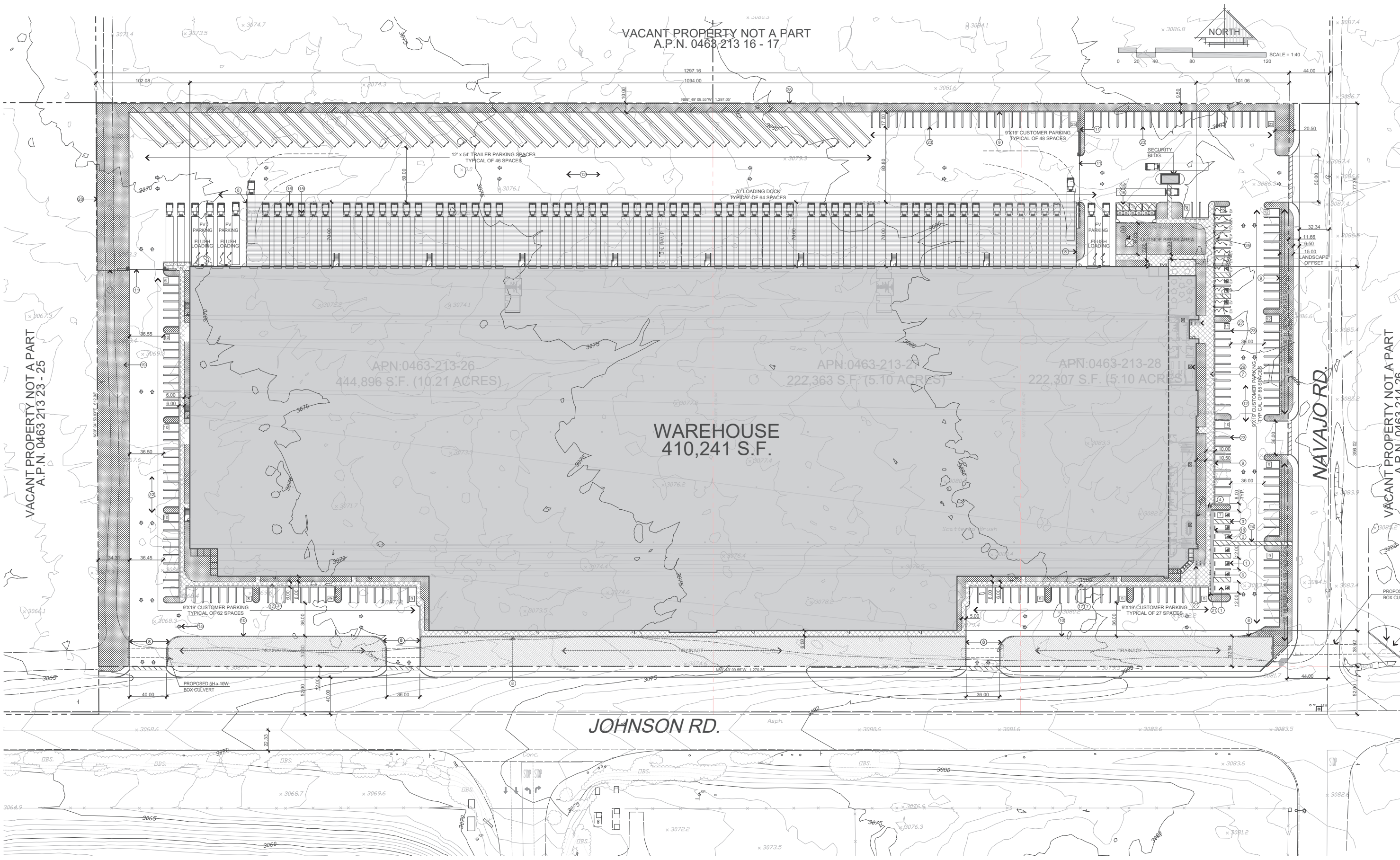
Loamy and Clayey Soils

"Loamy and clayey soils" refers to soil materials with a USDA soil texture of loamy very fine sand and finer. Hydric soil indicators within this group include loamy mucky mineral, loamy gleyed matrix, depleted matrix, redox dark surface, depleted dark surface, redox depressions, and vernal pools.

SWANCC WATERS

The term "isolated waters" is generally applied to waters/wetlands that are not connected by surface water to a river, lake, ocean, or other body of water. In the presence of isolated conditions, the Regional Board and CDFW take jurisdiction through the application of the OHWM/streambed and/or the 3 parameter wetland methodology utilized by the Corps.

Appendix D Site Plan



# SITE PLAN
SCALE = 1:40

KEYED NOTES

1. VAN ACCESSIBLE PARKING SPACE
2. ACCESSIBILITY STALL EMBLEM PAINTED AS SHOWN
3. 5' WIDE ACCESSIBILITY ACCESS W/ BLUE STRIPES
4. A.D.A. RAMP NOT TO EXCEED 8.33% MAX. SLOPE IN DIRECTION OF RUN.
5. WARNING SIGNAGE REGARDING UNAUTHORIZED USE OF DISABLED PARKING SPACES
6. TRUNCATED DOMES, 36" DEPTH MIN. x 60" WIDE
7. 4" NOMINAL THICK CONCRETE WALKWAYS
8. RETAINING WALL, SEE CIVIL PLANS
9. 6" WIDE CONCRETE CURB. W/ 2.5' PARKING NOSE OVER
10. 6" WIDE CONCRETE 'A' CURB.
11. 8' HIGH WROUGHT IRON FENCE AND WROUGHT IRON ROLLING GATE COLOR BLACK W/ VISION BLOCK - FACING NAVAJO RD. & JOHNSON RD.
12. PROPOSED A.C. PAVING - 4" OVER 4" CLASS II BASE OVER 12" OF COMPACTED SOIL.
13. 23' SITE LIGHT POLE STANDARD W/ 24" HIGH CONC. BASE W/ SHOE BOX STYLE FIXTURES & LIGHT SHIELD TO MEET 0.5 FOOTCANDLE LEVELS AT ALL PROPERTY LINE.
14. TRAFFIC FLOW DIRECTIONAL ARROWS PAINTED ON PAVING AS SHOWN ON PLAN
15. 6'-0" HIGH TRASH ENCLOSURE w/ 49' x 40' LOADING ZONE IN FRONT PER CITY STANDARDS. SEE SHEET TE-1 FOR DETAILS
16. 8" THK. REINFORCED CONCRETE PAD W/ 2% MAXIMUM SLOPE AWAY FROM T/E
17. CONCRETE SCREED LINES IN A 5' SQUARE GRID PATTERN
18. CONCRETE WHEEL STOP PER CITY STANDARD
19. LANDSCAPED AREA, SEE LANDSCAPING PLANS.
20. ELECTRICAL TRANSFORMER BY EDISON.
21. 12" Ø CONCRETE FILLED BOLLARDS
22. 12" WIDE STEPPING STRIP COMBINE W/ 6" CURB (18" WD. MONO POUR)
23. PAINTED PARKING HAIRPIN STRIPE.
24. 4' WIDE A.D.A. PATH OF TRAVEL
25. EV CHARGING STATION EQUIPMENT (TYP. 8)
26. "CLEAN AIR / VANPOOL / EV" PARKING IDENTIFICATION. CGBSC 5.105.5.2, TYP. OF 3
27. SHORT TERM PARKING BIKE RACKS TO ACCOMODATE 5% OF TOTAL VISITOR PARKING SPACES
28. 8' METAL CHAINLINK FENCE
29. A/C UNITS, SEE MECHANICAL PLANS

PARKING SUMMARY

REQUIRED PARKING PER G.F.A.:

AREA	RATIO	S.F.	# SPACES
WAREHOUSE (FIRST 40,000)	1:1000	40,000	40.0
(REMAINDER)	1:4000	349,823	87.4
OFFICE	3:1000	20,418	68.0
TOTAL REQUIRED PARKING SPACES			= 195 SPACES

PROVIDED PARKING:

STANDARD 9'X20' PARKING SPACES	= 203 SPACES
CAR EV PARKING SPACES (4 ADA EV. SPACES)	= 12 SPACES
ADA 9'X20' PARKING SPACES	= 7 SPACES
TOTAL PROVIDED VEHICLE PARKING SPACES	= 222 SPACES

TRUCK PARKING:

TRUCK EV PARKING SPACES (3 ARE ALSO LOADING DOCK SPACES)	= 6 SPACES
TRAILER PARKING SPACES	= 48 SPACES
LOADING DOCK SPACES	= 64 SPACES
TOTAL PROVIDED TRUCK PARKING	= 115 SPACES

SITE DATA

SITE AREA

AREA	SQ. FOOTAGE
NET LAND AREA (18.71 ACRES)	792,932 S.F.
GROSS LAND AREA (20 ACRES)	871,200 S.F.

PROPOSED LAND AREA & COVERAGE

AREA	SQ. FOOTAGE	% COVERAGE
BUILDING AREA	400,888	50.56%
A/C PAVING	280,320	35.35%
CONCRETE HARDSCAPE	20,755	2.62%
LANDSCAPED AREA	90,969	11.47%
TOTAL NET LAND AREA COVERAGE	792,932 S.F.	100%

SCOPE OF WORK

TO CONSTRUCT A 410,241 SQ.FT. INDUSTRIAL WAREHOUSE BUILDING WITH 13,195 SQ.FT. OFFICE SPACE (2 LEVELS), AND A 200 SQ.FT. SECURITY BUILDING ON A VACANT PARCEL.

PROJECT DATA

SITE ADDRESS:
T.B.D.

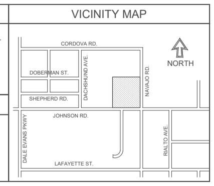
APPLICANT
55555 AMARGOSA LLC
CONTACT: SIMON BOUZAGLOU
PH: 323.721-2221
EMAIL: SIMON@PIXIOR.COM

ARCHITECT / REPRESENTATIVE:
STEENO DESIGN STUDIO, INC.
ARCHITECT: TOM STEENO
11774 HESPERIA RD. SUITE B-1
PH: 760.244.5001 FX: 760.244.1948

PARCEL DATA

A.P.N:	LEGAL DESCRIPTION:
A.P.N.# 0463-213-26	PARCEL MAP 14418, P.M. 181/84-85
A.P.N.# 0463-213-27	PARCEL MAP 14418, P.M. 181/84-85
A.P.N.# 0463-213-28	PARCEL MAP 14418, P.M. 181/84-85

VICINITY MAP



STEENO
DESIGN STUDIO INC.
ARCHITECTURE ◆ DESIGN ◆ PLANNING
11774 HESPERIA ROAD, SUITE B ◆ HESPERIA, CA 92345
PHONE (760) 244-5001 ◆ FAX (760) 244-1948
www.steenodesign.com

DATE FINISHED: SEPTEMBER 2023

REVISIONS: PLANNING_JANUARY 2024

THESE PLANS SHALL COMPLY WITH THE 2022 CALIFORNIA BUILDING CODE WHICH ADOPTS THE 2022 CMC, 2022 CPC, 2022 CEC, 2022 CGC, 2022 CRC AND THE 2022 ENERGY STANDARDS

LICENSED ARCHITECT THOMAS R. STEENO C-26448 REN. 2/28/25 STATE OF CALIFORNIA

PROJECT: INDUSTRIAL DEVELOPMENT

AMARGOSA LLC

PROJECT LOCATION:
JOHNSON RD.
APPLE VALLEY CA, 92307
A.P.N. 0463-213-26, 27 & 28

CONTACT INFO:
55555 AMARGOSA LLC
SIMON BOUZAGLOU
323-721-2221

JOB NO.: C22-A14

SHEET NAME: SITE PLAN

PAGE: A-0