DRAFT INITIAL STUDY / MITIGATED NEGATIVE DECLARATION
FONTANA FIRE STATION 80 PROJECT
APN 0228-021-46
FONTANA, CALIFORNIA

Prepared for:

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TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF FIGURES

SECTION 1.0 – PROJECT DESCRIPTION AND ENVIRONMENTAL SETTING

1.1 PROJECT PURPOSE AND BACKGROUND

The City of Fontana (City) is proposing to construct a new fire station and training facility (Fire Station No. 80) on a vacant 3.6-acre site at the northeast corner of Cherry Avenue and South Highland Avenue in Fontana, California (Project or Proposed Project). The Proposed Project is identified in the City's adopted Capital Improvement Program as a means to provide effective and efficient delivery of services for fire protection and emergency response to the residents and landowners of the City and adjacent areas of unincorporated San Bernardino County.

Following the construction of the Project, the City would turn over the operation and maintenance of the new fire station to the Fontana Fire Protection District, which contracts with the County of San Bernardino (County) Fire Department. The new Fire Station 80 and training facility will be added to the eight existing fire stations, including one currently under construction, under the Fontana Fire Protection District (FFPD) in order to maintain the appropriate levels of response times to calls for service within its service area: 6 minutes or less for a 1st unit; 8 minutes or less for a 2nd unit; 12 minutes or less for full assignments. A full assignment for a residential structure fire consists of four engines, one ladder truck, one medic squad and one battalion chief.

The FFPD provides emergency response services for fires, medical assistance, hazardous materials, rescues, public assistance, and other responses, such as natural disasters or acts of terrorism. FFPD is staffed with full-time personnel, safety employees and non-safety employees (City 2023).

1.2 PROJECT LOCATION AND SITE CHARACTERISTICS

1.2.1 Project Site Location

The Project site is located in the northwestern portion of the City of Fontana, San Bernardino County, California. The triangular parcel is designated Assessor's Parcel Number 0228021460000 and is situated at the northeastern corner of Cherry Avenue and South Highland Avenue. Cherry Avenue borders the site to the west and South Highland Avenue borders the site to the south. A utility easement owned by the Metropolitan Water District (MWD) is adjacent to the southeastern edge of the Project site. Flood control channels managed by the San Bernardino County Flood Control District are located along the northern edge of the Project site.

1.2.2 Project Site Access and Circulation

Project site access would be via two proposed driveways along Cherry Avenue. Traveling north from the Project site, Cherry Avenue leads to on-ramps for State Route (SR) 210 East and West. SR-210 offers a connection to I-215 to the east. Traveling south from the Project site, Cherry Avenue leads to Baseline Avenue and eventually to downtown Fontana.

1.2.3 General Plan/Zoning

The Project site is located within the Westgate Specific Plan Area and is therefore zoned Specific Plan (SP) by the City (City 2021b). The City's General Plan designates land uses within the Project site as Regional Mixed Use (RMU), and the Westgate Specific Plan designates the Project site for Mixed Use – 1 (MU-1) land uses (City 2021a). The MU-1 designation provides for a broad range of business, commercial retail, medical, educational, entertainment, commercial services, and other complementary uses, including the Proposed Project (City 2017a). All areas surrounding the Project site are also within the Westgate Specific Plan Area and are zoned SP.

1.3 PROJECT DESCRIPTION

The Proposed Project includes Fire Station 80 and Training Center, which will be a new facility built by the City of Fontana in coordination with the San Bernardino County Fire Department. The Project proposes to construct an approximately 14,663-square-foot fire station, 4,203-square-foot training center, 7,019-square-foot training tower, and an equipment storage area. Site improvements proposed include a a parking lot, outdoor training grounds, security fencing, concrete masonry wall, and landscaping. The Proposed Project will be a one-unit station. The unit would consists of an engine, staffed with three captains, an engineer, and a firefighter/paramedic.

1.3.1 Fire Station and Training Facilities

The training facilities include a training tower equipped with gas props and smaller Class A burning rooms. The facilities will include a 50-seat training classroom, lobby, electrical closet, two offices, three storage rooms, and four restrooms. Two restrooms would be accessed from inside the building and two restrooms with showers would be accessed from the back of the building. One underground water storage tank with 30,000 gallons capacity would be installed to support the training facility.

A portion of the fire station would be built at the same time as the training facilities during Phase 1, and will include the administrative office, the training classroom, shower and locker facilities, and an outside patio. The remainder of the fire station would be completed during Phase 2 and includes a 2-bay, double-deep apparatus room, individual dormitories, kitchen, dining room, day room, physical training room, and the various support spaces required for a facility of this type. The proposed fire station will house approximately three employees during each of the three shifts, for a total of nine fire personnel. The station will include one Captain, one Engineer, and one Firefighter Paramedic.

1.3.2 Parking and Hardscape

Two driveways from Cherry Avenue would be constructed on the western side of the Project site. The northern driveway would allow access to the fire station, and its dimensions would be designed specifically for fire truck access. The southern driveway would allow access to the proposed parking lot, and its dimensions would be designed for passenger vehicle access. Six parking spots would be available for visitors, and 26 secured parking stalls would be located behind a 26-foot-wide sliding security gate for fire station employees. A second 36-foot-wide gate would be installed behind the fire station. Both gates would provide entrance to the Project’s training facilities, which would be fenced-off to prevent public access using automated fencing.

1.3.3 Operations

The training facilities will be in operation up to five days per week and would consist of classroom and drill ground training for 14 firefighters and two instructors. Large training events would be conducted three times per week, with large training events using two instructors and 17 firefighters. Typical training activities would include engine and truck company operations, laying hose, throwing ladders, flowing water, active fire training, ventilation, rescue operations, and confined space rescue training. Training activities would occur from 8:00 a.m. to 4:30 p.m.

A water recovery system would be incorporated into the Project's design to reduce overall water needs required for training. The station would connect to existing utilities located in Cherry Avenue. During training exercises, propane props would be used for pyrotechnic effects and would consist of nine propane tanks. Training will include high volumes of water for short periods of time. A water reclamation system and hydrants will be placed on site.

The fire station operation would provide emergency response services for fires, medical aids, hazardous materials, rescue, public assistance, and other responses such as natural disasters or acts of terrorism. Fire Station No. 80 will be in operation 24/7, will primarily serve the western areas of the FFPD boundary, and will provide support to the other fire stations, as needed.

The Project's Fire Station No. 80 will house 4 engines, 1 ladder truck, 1 medic squad, and one battalion chief.

A backup power generator would be installed onsite for any loss of power. Requirements for the generator would be decided later in the design process, however, it is assumed that a generator comparable to a Cat C9 with a rating of 180ekW to 300ekW would be used.

1.3.4 Landscaping

The Project's landscaping would be designed in conformance with the City's Landscaping and Water Conservation Standards, Article IV of the Municipal Code. Water Efficiency and Landscaping Standards.

1.3.5 Construction

Construction of the Proposed Project would include operators, grade checker, and laborers (an estimate of one per 11,000 cubic feet). Equipment to be used include loaders, pick-up trucks, backhoes, water trucks for dust suppression, cranes, asphalt pavers, and excavators. Project materials will be staged within the existing vacant parcels currently managed by the MWD. Approximately 11,000 cubic feet of soil would be exported as part of the grading (preliminary estimate). The training tower will be constructed off-site and be transferred into the Project site through the use of a crane and large flatbed for transport. All other portions of the Project, including the training classrooms and fire station, would be constructed on-site.

Construction would be completed in two phases. Phase 1 would include the training center and tower, and a portion of the fire station facilities described above in Section 1.3.2. Phase 2 of construction would include a 2-bay, double-deep apparatus room, individual dormitories, kitchen, dining room, day room, physical training room, and other support spaces.

Construction Schedule

Phase 1 of the Project is expected to break ground in Summer 2023 and be completed by January 2025; with Phase 2 anticipated to begin in June 2027. Phase 1 of the Project will involve construction of the proposed training facility and site improvements. Phase 2 of the Project will involve construction of the new Fire Station 80. Construction activities will take place from 7:00 a.m. to 6:00 p.m. on weekdays and 8:00 a.m. to 5:00 p.m. on Saturdays, in accordance with the City's Noise Ordinance.

1.4 REQUIRED PERMITS AND APPROVALS

Reviewing Agencies include those agencies that do not have discretionary powers but may review the Mitigated Negative Declaration for adequacy and accuracy. Responsible Agencies have discretionary approval authority for a project. Potential Reviewing Agencies and Responsible Agencies include the following:

Responsible Agencies

- City of Fontana Planning
- City of Fontana Fire Protection District
- County of San Bernardino Fire Department

Reviewing Agencies

- South Coast Air Quality Management District (SCAQMD)
- Metropolitan Water District
- Native American Heritage Commission (NAHC), and tribes requesting consultation

1.4.1 Permits and Approvals

The following permits and approvals may be required prior to construction of the Project:

- Site Plan review
- Demolition Permit
- Grading Permit
- Building Permit
- Compliance with National Pollutant Discharge Elimination System (NPDES) Construction General Permit by the Regional Water Quality Control Board (RWQCB)

Figure 1: Project Vicinity

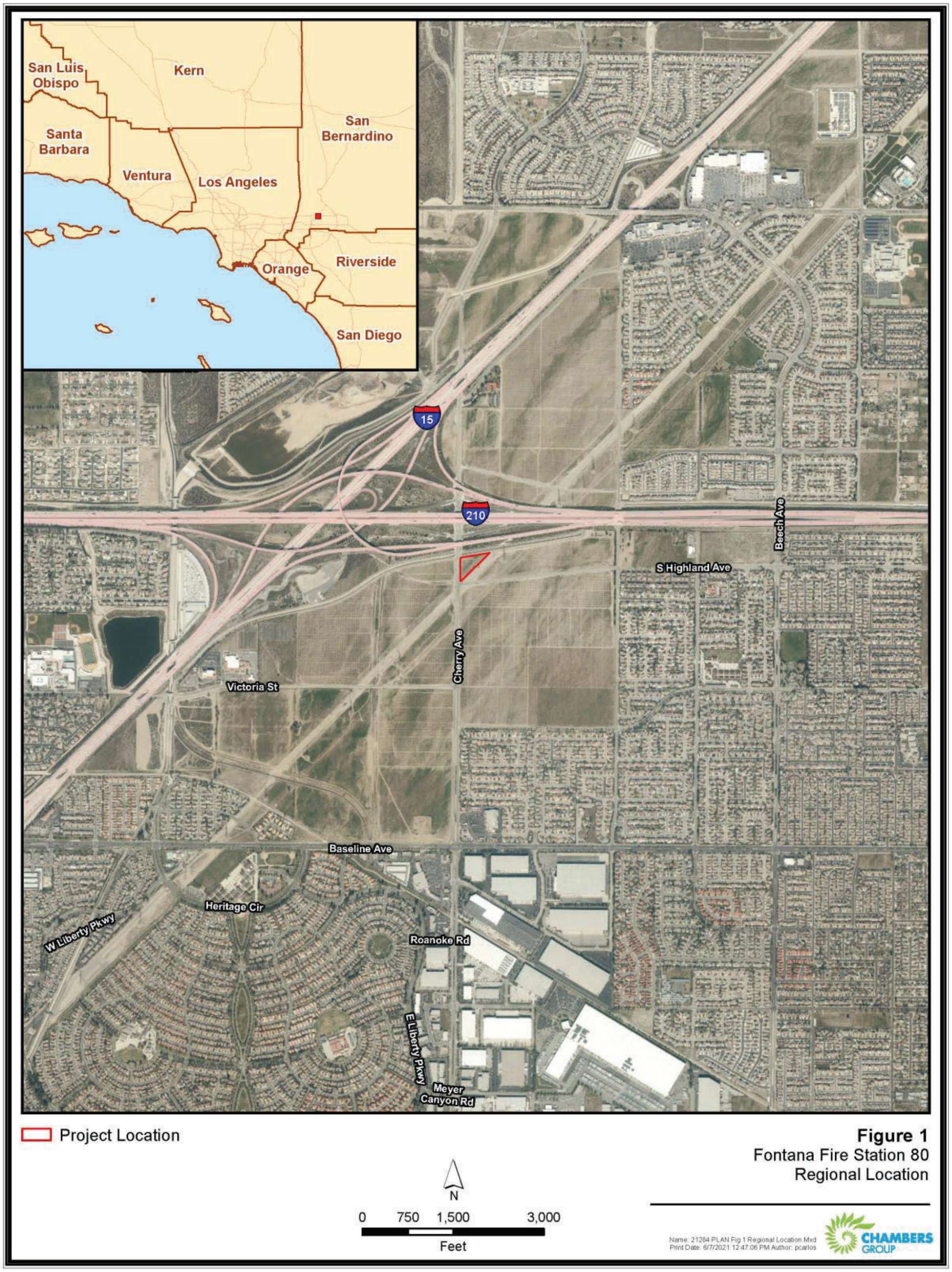
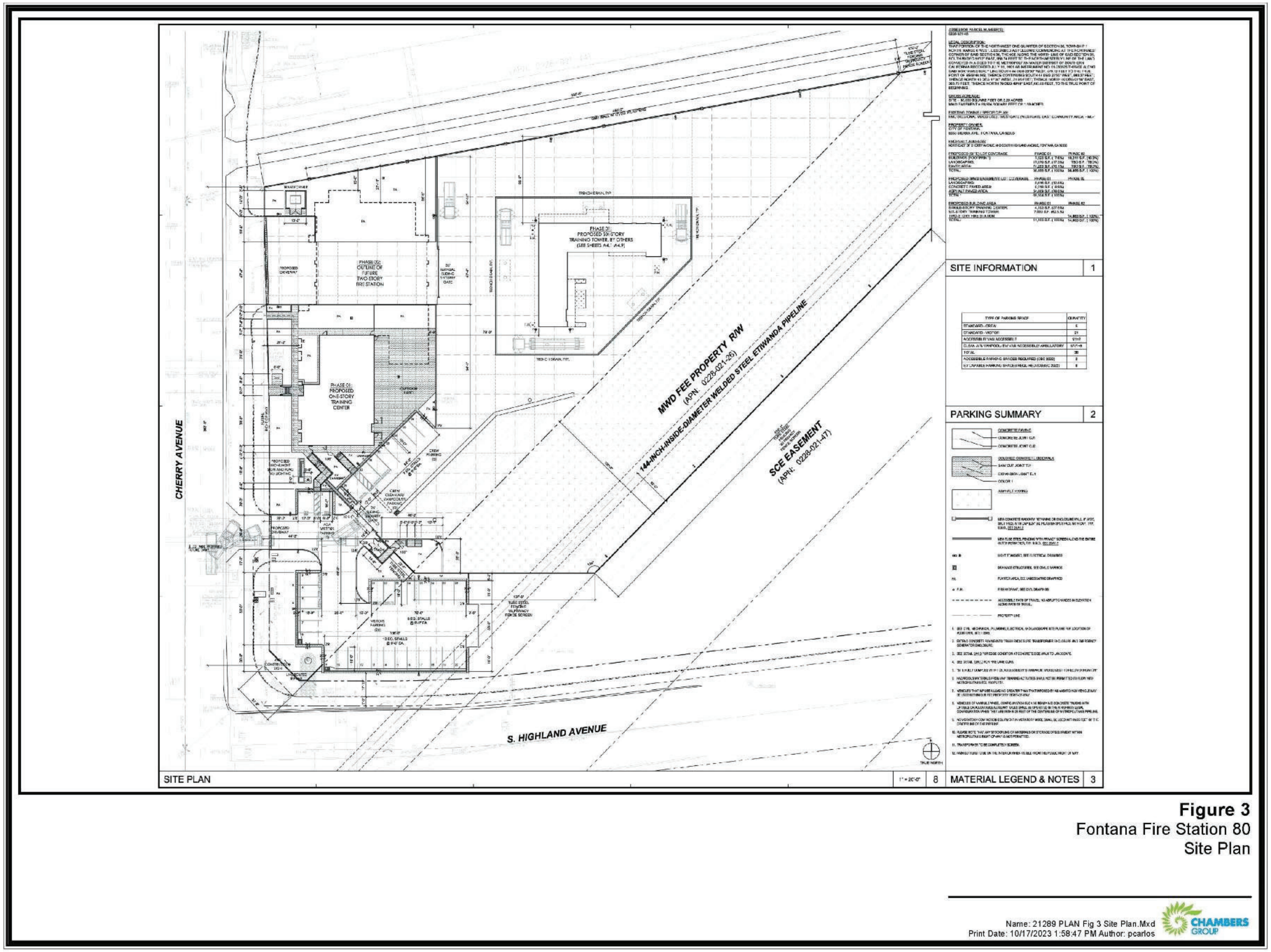


Figure 2: Project Location

Figure 3: Preliminary Site Plan



SECTION 2.0 – ENVIRONMENTAL DETERMINATION

2.1 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would potentially be affected by this project, involving at least one impact that is a "Potentially Significant Impact," as indicated by the checklists on the following pages. For each of the potentially affected factors, mitigation measures are recommended that would reduce the impacts to less than significant levels.

☐ *Aesthetics*	☐ *Agriculture and 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*	☐ *Tribal Cultural Resources*
☐ *Utilities /Service Systems*	☐ *Wildfire*	☐ *Mandatory Findings of Significance*

2.2 DETERMINATION

On the basis of this initial evaluation:

1. I find that the project **could not** have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared. ☐
2. I find that although the Proposed Project could have a significant effect on the environment, there will 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** will be prepared. ☐
3. I find the Proposed Project **may have a significant effect** on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required. ☐
4. I find that 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. ☐
5. I find that 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
______________________ Name	Title

SECTION 3.0 – EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2. All answers must take account of the whole action involved, including offsite as well as onsite, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if substantial evidence exists that an effect may be significant. If one or more "Potentially Significant Impact" entries are marked when the determination is made, an EIR is required.

4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures and briefly explain how they reduce the effect to a less than significant level (mitigation measures from earlier analyses may be cross-referenced).

5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other California Environmental Quality Act (CEQA) process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

    a. Earlier Analysis Used. Identify and state where they are available for review.

    b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

    c. Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8. The explanation of each issue should identify:

   a. the significance criteria or threshold, if any, used to evaluate each question; and

   b. the mitigation measure identified, if any, to reduce the impact to less than significant.

   *Note: Instructions may be omitted from final document.

SECTION 4.0 – CHECKLIST OF ENVIRONMENTAL ISSUES

4.1 AESTHETICS

1.	AESTHETICS. Except as provided in Public Resources Code Section 21099, would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
(b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
(c)	Substantially degrade the existing visual character or quality of 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)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

4.1.1 Impact Analysis

a) *Would the project have a substantial adverse effect on a scenic vista?*

Less than Significant Impact. The City of Fontana has direct site lines to the San Gabriel Mountains and Jurupa Hills, which are considered scenic resources (City 2018a). The area immediately surrounding the Project is undeveloped providing minimal-to-no scenic or visual value. Existing views from the site include both the San Gabriel Mountains to the north and Jurupa Hills to the south. Vacant lands and tower lines are viewed to the east and west. Once developed, the Project would not result in substantial adverse impact on a scenic vista because it would not be blocking views of a scenic vista, and the Proposed Project is not located within or nearby a scenic vista or resource. The buildings proposed would maintain a maximum height of 60 feet and would not exceed the City's height requirements. The Project would not create a significant visual disturbance to the area. Thus, less than significant impacts to any scenic vistas are anticipated due to the construction and operation of the Proposed Project.

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. There are no scenic highways officially designated by the California Department of Transportation (Caltrans) within or adjacent to the Project area, and no roadways within the Project area are currently eligible for scenic highway designation (Caltrans 2022). The Conservation, Open Space, Parks and Trails Element (Chapter 7 of the General Plan Update) proposes policies and actions to support tree conservation and planting, and expand the City's tree canopy, in order to preserve and expand the city's urban forest with drought-resistant trees. However, no trees exist onsite or surrounding the Project area. Therefore, no impact would occur.

c) *Would the project 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?*

Less than Significant Impact. As discussed in response 4.1.1(a), the Proposed Project site is located in an undeveloped part of the City of Fontana, with existing views of both the San Gabriel Mountains and the Jurupa Hills. Currently, the Project site is vacant and located south of the SR-210 and north of Southern California Edison transmission lines. As discussed, the Project would have a maximum height of 60 feet, which would not impact views of the San Gabriel Mountains. Therefore, a less than significant impact would occur.

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

Less than Significant Impact. Main light sources around the Proposed Project come from vehicles along the existing roadways and from SR-210. Additional lighting sources include roadway lights and spill over lights from the freeway structure. Outside of sidewalk and roadway lights, no other lighting is currently located within the Project site. During construction, the Proposed Project would generate light and glare from the presence and operation of vehicles and equipment. Construction would be scheduled between the hours of 7:00 a.m. and 8:00 p.m. on any day except for Sunday or a Federal holiday, or between the hours of 9:00 a.m. and 8:00 p.m. on Sunday or a Federal holiday; no construction activities would occur during nighttime hours.

Once operational, the Proposed Project would include new permanent lighting from outdoor building lights and security lighting for the parking area. While the Proposed Project would include installation of new permanent lighting, this type of lighting would be consistent with lighting requirements for the area. The Proposed Project would comply with Fontana Municipal Code, Section 30.15.311 (see below), which addresses general lighting guidelines for day and nighttime uses of buildings of all the districts and would include any shielding or barriers to minimize spill over into other businesses and residences. Impacts would be less than significant.

4.2 AGRICULTURE & FORESTRY RESOURCES

2.	**AGRICULTURE & FOREST RESOURCES. (In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:**	**Potentially Significant Impact**	**Less than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
(a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?	☐	☐	☒	☐
(b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
(c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
(d)	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
(e)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to nonagricultural use or the conversion of forest land to non-forest use?	☐	☐	☐	☒

4.2.1 Impact Analysis

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 nonagricultural use?*

Less than Significant. The Farmland Mapping and Monitoring Program (FMMP) administered by the California Department of Conservation (DOC) produces maps and statistical data to analyze impacts on California's agricultural resources. Agricultural land is rated according to soil quality and irrigation status. The Proposed Project site is categorized as 'Unique Farmland' as part of the FMMP due to its location in an undeveloped portion within the City of Fontana (DOC 2022a). The California Department of Conservation defines 'Unique Farmland' as farmland with lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date. The Project is approximately 2.25 acres in size and is designated as Regional Mixed Use (City 2021b). While the Project site was historically used for agricultural operations for cultivating wine grapes, there is no current agricultural use of the site. Further, the current zoning and land use permits governmental facilities to operate on the Project site. The Project does not involve converting the land uses, and therefore, the Project would have a less than significant impact.

b) *Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?*

No Impact. The Project site is zoned as the Westgate Specific Plan (SP). Neither the Project site, nor any other property within the immediate vicinity, is in a Williamson Act contract or conflict with any existing agricultural use (County 2021). The Proposed Project does not include activities related to agricultural operations nor does it involve any rezoning to agricultural use. No impact 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 site is located within the Westgate Specific Plan. The City's General Plan designates land uses within the Project site as Regional Mixed Use (RMU) and the Westgate Specific Plan designates the Project site for Mixed Use – 1 (MU-1) land uses (City 2021a). The MU-1 designation provides for a broad range of business, commercial retail, medical, educational, entertainment, commercial services, and other complementary uses including the Proposed Project (City 2017a). The Proposed Project would not conflict with the existing zoning and there are no forested lands within the area. No impact would occur.

d) *Would the project result in the loss of forest land or conversion of forest land to non-forest use?*

No Impact. As discussed above in threshold (c), the Project is located in an undeveloped portion of the City within the Westgate Specific Plan and is designated as Mixed Use. The Specific Plan does not account for any forest land or timberland. No forest land would be lost or converted to non-forest uses for the purpose of the Proposed Project. No impact 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 nonagricultural use or the conversion of forest land to non-forest use?*

No Impact. The Proposed Project will include a parking lot, training facility and storage building to operate a fire station. The proposed buildings are sited on a currently vacant and graded City-owned lot. No changes are anticipated in the existing environment during construction or operation, which could result in conversion of Farmland, to nonagricultural use or the conversion of forest land to non-forest use. The Proposed Project does not include activities related to agricultural operations nor would it involve conversion of any agricultural properties. No impact would occur.

4.3 AIR QUALITY

3.	**AIR QUALITY. Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:**	**Potentially Significant Impact**	**Less than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
(a)	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
(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?	☐	☐	☒	☐
(c)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
(d)	Result in other emissions (such as those leading to odors adversely affecting a substantial number of people?	☐	☐	☒	☐

4.3.1 Impact Analysis

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

Less than Significant Impact. Vista Environmental prepared an Air Quality, Energy, and Greenhouse Gas Emissions Impact Analysis (Appendix A) for the Proposed Project to determine the potential air quality, energy, and greenhouse gas (GHG) emissions impacts associated with the proposed fire station and training center.

Regulatory Summary

The Proposed Project will be required to comply with Federal (U.S. Environmental Protection Agency, Clean Air Act), State (SCAQMD, California Code of Regulations [CCR]) and local regulations (City). Full discussion of the regulatory background is provided in Appendix A.

Modeling Results

The criteria air pollution and GHG emissions impacts created by the Proposed Project have been analyzed through use of CalEEMod Version 2020.4.0. CalEEMod is a computer model published by the SCAQMD for estimating air pollutant emissions. The project characteristics in the CalEEMod model were set to a project location of the South Coast Air Basin portion of San Bernardino County, a Climate Zone of 10, utility company of Southern California Edison, and project opening year of 2025. Land use parameters and construction parameters were included to obtain the necessary outputs to determine construction and operational related emissions. Detailed modeling and descriptions are provided in Appendix A with the summarized results below.

Table 1. Construction-Related Regional Criteria Pollutant Emissions

Activity	Pollutant Emissions (pounds/day)					
	VOC	NOx	CO	SO_2	PM10	PM2.5
Site Preparation[1]						
Onsite[2]	2.66	27.18	18.34	0.04	8.90	5.07
Offsite[3]	0.07	0.26	0.72	<0.01	0.24	0.07
Total	**2.73**	**27.44**	**19.05**	**0.04**	**9.14**	**5.14**
Grading[1]						
Onsite[2]	1.66	17.03	14.76	0.03	3.49	2.00
Offsite[3]	0.06	0.26	0.61	<0.01	0.21	0.06
Total	**1.72**	**17.29**	**15.37**	**0.03**	**3.69**	**2.06**
Building Construction						
Onsite[2]	1.47	13.44	16.17	0.03	0.61	0.58
Offsite[3]	0.27	1.11	2.68	0.01	0.90	0.25
Total	**1.74**	**14.56**	**18.85**	**0.04**	**1.52**	**0.83**
Paving						
Onsite	1.27	7.53	12.18	0.02	0.35	0.33
Offsite	0.07	0.04	0.65	<0.01	0.22	0.06
Total	**1.34**	**7.57**	**12.83**	**0.02**	**0.58**	**0.39**
Architectural Coatings						
Onsite	14.91	1.15	1.81	<0.01	0.06	0.06
Offsite	0.04	0.03	0.42	<0.01	0.15	0.04
Total	**14.96**	**1.17**	**2.23**	**<0.01**	**0.21**	**0.10**
Maximum Daily Construction Emissions	**14.96**	**27.44**	**19.05**	**0.04**	**9.14**	**5.14**
SCAQMD Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
Exceeds Threshold?	No	No	No	No	No	No

Notes:
[1] Site Preparation and Grading based on adherence to fugitive dust suppression requirements from SCAQMD Rule 403.
[2] Onsite emissions from equipment not operated on public roads.
[3] Offsite emissions from vehicles operating on public roads.
Source: CalEEMod Version 2020.4.0.

Table 2. Construction-Related Local Criteria Pollutant Emissions

Construction Phase	Pollutant Emissions (pounds/day)[1]			
	NOx	CO	PM10	PM2.5
Site Preparation[2]	27.21	18.42	8.93	5.08
Grading[2]	17.06	14.84	3.51	2.01
Building Construction	13.58	16.50	0.73	0.61
Paving	7.54	12.26	0.38	0.33
Architectural Coatings	1.15	1.86	0.07	0.06
Maximum Daily Construction Emissions	**27.21**	**18.42**	**8.93**	**5.08**

SCAQMD Local Construction Thresholds[3]	**737**	**25,755**	**218**	**113**
Exceeds Threshold?	No	No	No	No

Notes:
[1] The Pollutant Emissions include 100% of the On-Site emissions (off-road equipment and fugitive dust) and 1/8 of the Off-Site emissions (on road trucks and worker vehicles), in order to account for the on-road emissions that occur within a ¼ mile of the project site
[2] Site Preparation and Grading phases based on adherence to fugitive dust suppression requirements from SCAQMD Rule 403.
[3] The nearest offsite sensitive receptors to the project site are homes located as near as 2,200 feet (670 meters) east of the project site. In order to provide a conservative analysis, the 500-meter thresholds were utilized.
Source: Calculated from SCAQMD's Mass Rate Look-up Tables for two and five acres in Air Monitoring Area 34, Central San Bernardino Valley.

Table 3. Operational Regional Criteria Pollutant Emissions

Activity	Pollutant Emissions (pounds/day)					
	VOC	**NOx**	**CO**	**SO_2**	**PM10**	**PM2.5**
Area Sources[1]	0.61	<0.01	<0.01	0.00	<0.01	<0.01
Energy Usage[2]	<0.01	0.02	0.02	<0.01	<0.01	<0.01
Mobile Sources[3]	0.12	0.84	1.11	<0.01	0.27	0.08
Backup Generator[4]	0.38	1.07	0.98	<0.01	0.06	0.06
Total Emissions	**1.11**	**1.94**	**2.11**	**<0.01**	**0.33**	**0.14**
SCAQMD Operational Thresholds	**55**	**55**	**550**	**150**	**150**	**55**
Exceeds Threshold?	No	No	No	No	No	No

Notes:
[1] Area sources consist of emissions from consumer products, architectural coatings, and landscaping equipment.
[2] Energy usage consist of emissions from electricity and natural gas usage.
[3] Mobile sources consist of emissions from vehicles and road dust.
[4] Backup Generator based on a 300 ekW (467 Horsepower) diesel generator that has a cycling schedule of 30 minutes per week.
Source: Calculated from CalEEMod Version 2020.4.0.

Table 4. Operations-Related Local Criteria Pollutant Emissions

Onsite Emission Source	Pollutant Emissions (pounds/day)			
	NOx	CO	PM10	PM2.5
Area Sources	<0.01	<0.01	<0.01	<0.01
Energy Usage	0.02	0.02	<0.01	<0.01
Mobile Sources[1]	0.11	0.14	0.03	0.01
Backup Generator[2]	1.07	0.98	0.06	0.06
Total Emissions	**1.20**	**1.14**	**0.09**	**0.07**
SCAQMD Local Operational Thresholds[3]	**737**	**25,755**	**53**	**27**
Exceeds Threshold?	No	No	No	No

Notes:
[1] Mobile sources based on 1/8 of the gross vehicular emissions, which are the estimated portion of vehicle emissions occurring within a quarter mile of the project site.
[2] Backup Generator based on a 300 ekW (467 Horsepower) diesel generator that has a cycling schedule of 30 minutes per week.
[3] The nearest offsite sensitive receptors to the project site are homes located as near as 2,200 feet (670 meters) east of the project site. In order to provide a conservative analysis, the 500-meter thresholds were utilized.
Source: Calculated from SCAQMD's Mass Rate Look-up Tables for two and five acres in Air Monitoring Area 34, Central San Bernardino Valley.

CEQA requires a discussion of any inconsistencies between a proposed project and applicable General Plans and regional plans (CEQA Guidelines Section 15125). The regional plan that applies to the Proposed Project includes the SCAQMD Air Quality Management Plan (AQMP). Therefore, the Air Quality Analysis discusses in detail any potential inconsistencies with the AQMP but is summarized below.

The SCAQMD CEQA Handbook states that "New or amended [General Plan] Elements (including land use zoning and density amendments), Specific Plans, and significant projects must be analyzed for consistency with the AQMP." Strict consistency with all aspects of the plan is usually not required. A proposed project should be considered to be consistent with the AQMP if it furthers one or more policies and does not obstruct other policies. The SCAQMD CEQA Handbook identifies two key indicators of consistency:

(1) Whether the project will result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP.

(2) Whether the project will exceed the assumptions in the AQMP or increments based on the year of project buildout and phase.

Based on the results of the modeling in the Air Quality Analysis and summarized tables above, short-term regional construction air emissions and ongoing operations would not result in significant impacts based on SCAQMD regional thresholds. Long-term local air quality impacts showed that local pollutant concentrations would not exceed the air quality standards (Appendix A).

The Project site is located within the Westgate Specific Plan Area as MU-1. This designation provides for a broad range of business, commercial retail, medical, educational, entertainment, commercial services, and other complementary uses including the Proposed Project. As such, the

Proposed Project is consistent with the current land use designation with respect to the regional forecasts utilized by the AQMPs. Therefore, the Proposed Project is not anticipated to exceed the AQMP assumptions for the Project site and is found to be consistent with the AQMP for the second criterion. Furthermore, based on the results of the emissions modeling, the Proposed Project will not exceed the regional thresholds, nor would it be inconsistent with the AQMP. Impacts would be less than significant.

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?*

Less than Significant Impact. The Proposed Project would not 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 SCAQMD has published a report on how to address cumulative impacts from air pollution: White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution. Therefore, this analysis assumes that individual projects that do not generate operational or construction emissions that exceed the SCAQMD's recommended daily thresholds for project- specific impacts would also not cause a cumulatively considerable increase in emissions for those pollutants for which the Air Basin is in nonattainment, and, therefore, would not be considered to have a significant, adverse air quality impact. Alternatively, individual project-related construction and operational emissions that exceed SCAQMD thresholds for project-specific impacts would be considered cumulatively considerable.

<u>Construction Emissions</u>
The construction activities for the Proposed Project are anticipated to include site preparation and grading of approximately 3.68 acres; construction of the proposed training center and fire station; paving of onsite driveways, paved training area, and parking lots; and application of architectural coatings.

Construction would be completed in two phases. Phase 1 of the Proposed Project is expected to break ground in June 2024 and be completed by January 2025; with Phase 2 anticipated to begin in June 2027. In order to provide a worst-case analysis, however, construction activities from both phases were modeled as occurring at the same time, starting June 2024 and ending by June 2025. The construction emissions have been analyzed for both regional and local air quality impacts.

The results of the modeling data above in Section a) show that none of the analyzed criteria pollutants would exceed the regional or local emission thresholds during either the site preparation, grading, building construction, paving, or architectural coatings phases.

<u>Operational Emissions</u>

The ongoing operation of the Proposed Project would result in a long-term increase in air quality emissions. This increase would be due to emissions from the project-generated vehicle trips, emissions from energy usage, onsite area source emissions, and backup generator emissions created from the on-going use of the Proposed Project.

The operations-related regional criteria air quality impacts created by the Proposed Project have been analyzed through use of the CalEEMod model with worst-case summer emissions for long-term operations. Based on the model data, none of the analyzed criteria pollutants would exceed the regional emissions thresholds. In addition, the Proposed Project would not be expected to exceed the most stringent applicable federal or state ambient air quality standards for emissions of carbon monoxide (CO), nitrogen oxide (NOX), PM10, and PM2.5.

The Proposed Project has been analyzed for potential local CO emission impacts from the project-generated vehicular trips and on-site operations. CO is the pollutant of major concern along roadways because the most notable source of CO is motor vehicles. For this reason, CO concentrations are usually indicative of the local air quality generated by a roadway network and are used as an indicator of potential local air quality impacts. Local air quality impacts can be assessed by comparing future without and with project CO levels to the State and Federal CO standards of 20 ppm over one hour or 9 ppm over eight hours. As discussed in further detail in Appendix A, all intersections near the Proposed Project are much smaller with less traffic than intersections the SCAQMD has modeled. Therefore, it is determined that it would not exceed either the one hour or eight hour CO standard. Accordingly, no local CO hotspots are anticipated to be created from the Proposed Project and no CO Hotspot modeling was performed.

Therefore, impacts related to criteria pollutant for construction and operations and with regional and local air quality requirements would be less than significant.

c) *Would the project expose sensitive receptors to substantial pollutant concentrations?*

Less than Significant Impact. Construction activities may expose sensitive receptors to substantial pollutant concentrations of localized criteria pollutant concentrations and from toxic air contaminant emissions created from onsite construction equipment. Refer to Section b) and in Appendix A for criteria pollutant data.

The greatest potential for toxic air contaminant emissions would be related to diesel particulate matter emissions associated with heavy equipment operations during construction of the Proposed Project. According to SCAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of "individual cancer risk." "Individual Cancer Risk" is the likelihood that a person exposed to concentrations of toxic air contaminants over a 70-year lifetime will contract cancer, based on the use of standard risk-assessment methodology.

Given the relatively limited number of heavy-duty construction equipment, the varying distances that construction equipment would operate to the nearby sensitive receptors, and the short-term construction schedule, the Proposed Project would not result in a long-term (i.e., 30 or 70 years) substantial source of toxic air contaminant emissions and corresponding individual cancer risk. The California Code of Regulations Title 13, Article 4.8, Chapter 9, Section 2449 regulates emissions from off-road diesel equipment in California, including by regulating equipment and vehicle idling, requiring upgrading of the emission level of equipment, and requiring the provision of annual reports to California Air Resources Board regarding fleet usage and emissions. Due to limitations in off-road construction equipment, a less than significant short-term impact would occur during construction.

The on-going operations of the Proposed Project may expose sensitive receptors to substantial pollutant concentrations of local CO emission impacts from the project-generated vehicular trips and from the potential local air quality impacts from onsite operations. CO is the pollutant of major concern along roadways because the most notable source of CO is motor vehicles. For this reason, CO concentrations are usually indicative of the local air quality generated by a roadway network and are used as an indicator of potential impacts to sensitive receptors. As discussed in the previous Section b), no local CO Hotspot are anticipated to be created from the Proposed Project and no CO Hotspot modeling was performed.

The local air quality impacts from the operation of the Proposed Project would occur from onsite sources such as architectural coatings, landscaping equipment, onsite usage of natural gas appliances, backup generator and from vehicles operating onsite and immediate vicinity of the project site. The results indicated in Appendix A, and above in Section b) show that the Proposed Project would not exceed the local NOx, CO, PM10 and PM2.5 thresholds of significance. Risk to sensitive receptors from toxic air contaminant (TAC) emissions would be negligible with adherence to operating time limit per SCAQMD limits.

Therefore, because the construction and operational emissions would not exceed local and regional levels, and the Proposed Project would not expose sensitive receptors to substantial pollutant concentrations. 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 Proposed Project would not result in other emissions, such as those leading to odors that would adversely affect a substantial number of people. The local concentrations of criteria pollutant emissions, and TAC emissions that may adversely impact a substantial number of people have been analyzed in Appendix A which were found that these emissions would create less than significant impacts.

Individual responses to odors are highly variable and can result in a variety of effects. Generally, the impact of an odor results from a variety of factors such as frequency, duration, offensiveness, location, and sensory perception. The frequency is a measure of how often an individual is exposed to an odor in the ambient environment. The intensity refers to an individual's or group's perception of the odor strength or concentration. The duration of an odor refers to the elapsed time over which an odor is experienced. The offensiveness of the odor is the subjective rating of the pleasantness or unpleasantness of an odor. The location accounts for the type of area in which a potentially affected person lives, works, or visits; the type of activity in which he or she is engaged; and the sensitivity of the impacted receptor.

Construction-Related Odor Impacts

Potential sources that may emit odors during construction activities include the application of coatings such as asphalt pavement, paints, and solvents and from emissions from diesel equipment. Standard construction requirements that limit the time of day when construction may occur as well as SCAQMD Rule 1108 that limits Volatile Organic Compound (VOC) content in asphalt and Rule 1113 that limits the VOC content in paints and solvents would minimize odor impacts from construction. Further, the objectionable odors that may be produced during the construction process would be temporary and would not likely be noticeable for extended periods of time beyond the Project site's boundaries. Through compliance with the applicable regulations that reduce odors and due to the transitory nature of construction odors, a less than significant odor impact would occur, and no mitigation would be required.

Operations-Related Odor Impacts

Potential sources of odor emission during operation of the Proposed Project would include diesel emissions from the fire trucks and backup generator as well as odors from trash storage areas. All fire trucks that operate on the project site will be required to meet State emissions standards that require the use of diesel particulate filters that would minimize odors created from the fire trucks. The operation of the backup diesel generator would be limited to 200 hours or less per year and would include an exhaust stack with a diesel particulate filter that would limit the exhaust and associated odors created from the generator to negligible levels. Pursuant to City regulations, permanent trash enclosures that protect trash bins from rain as well as limit air circulation would be required for the trash storage areas. Due to the distance of the nearest sensitive receptor from the Project site and through compliance with SCAQMD's rules that include Rule 402 (odor regulations) and Rule 1110.2 (backup generator regulations) and the City's trash storage regulations, a less than significant impact related to odors would occur during the on-going operations of the Proposed Project. Operational-related odor impacts would be less than significant.

4.4 BIOLOGICAL RESOURCES

4.	**BIOLOGICAL RESOURCES. Would the project:**	**Potentially Significant Impact**	**Less than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
(a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
(b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
(c)	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?	☐	☐	☐	☒

4.	BIOLOGICAL RESOURCES. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
(e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
(f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

4.4.1 Impact Analysis

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

Less than Significant with Mitigation Incorporated. Chambers Group conducted a literature review and biological reconnaissance-level survey of the Project site to document existing vegetation communities, identify special status species with a potential for occurrence, and map habitats that could support special status wildlife species, as well as evaluate potential impacts of the Project to these resources (Appendix B).

A literature review was conducted for soils, jurisdictional water features that contribute to hydrology, and special status species known to occur within the Project's vicinity (approximately 5 miles), known as the survey area. The biological reconnaissance survey was conducted on foot with site photographs taken depicting current site conditions. The survey was conducted between 0800 and 1200 hours on June 15, 2022.

Following the literature review and assessment of the various habitat types in the Survey Area, it was determined that of the seven special status plant species known to historically occur within the Survey Area, all seven species are considered absent within the Survey Area due to a lack of suitable habitat for these species. No special status species were observed during the field survey.

In addition, it was determined that all 30 special status wildlife species known to occur within the Project site are considered absent due to a lack of suitable habitat for these species. No sensitive wildlife species were observed during the field survey.

Although there are no trees onsite, to minimize potential impacts to nesting birds protected under the Migratory Bird Treaty Act (MBTA), construction activities should take place outside nesting season (February 1 to August 31) to the greatest extent practicable.

If construction activities must occur during nesting season, the following mitigation measures shall be implemented to address potential impacts to nesting birds. In addition, to the maximum extent practicable, a minimum buffer zone around occupied nests should be determined by a qualified biologist to avoid impacts to the active nest. The buffer should be maintained during physical ground-disturbing activities. Once nesting has ceased, the buffer may be removed.

Because the Project site does not contain any sensitive plant species, lacks any sensitive habitat, and has not been found to house sensitive wildlife species, impacts would be less than significant. While there are no sensitive species that are expected to occur, MBTA applies to bird species native to the U.S. To address potential impacts to nesting birds, mitigation measure MM BIO-1 would be implemented and result in impacts to nesting birds to be less than significant.

MM BIO-1: Should construction occur during the nesting bird season (February 1 to August 31), a pre-construction nesting bird survey shall be conducted approximately 3 days prior to ground-disturbing activities by a qualified biologist retained by the Applicant. If nests are found during surveys, they shall be flagged and a 250-foot buffer to a 500-foot buffer (for raptors) shall be fenced around the nests. The buffer area shall be kept in place until the young have fledged and leave the nest. To the maximum extent practicable, a minimum buffer zone around occupied nests should be determined by a qualified biologist to avoid impacts to the active nest. The buffer should be maintained during physical ground-disturbing activities. Once nesting has ceased, the buffer may be removed.

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 or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?*

No Impact. The Project site does not contain any riparian or other sensitive habitat, nor is it located near any such habitats. The Project site is undeveloped and is located adjacent to SR-210 including off- and on-ramps. While there is a cement-lined channel that runs parallel to the north of the Project site, no work will occur within or adjacent to the channel. The Project will not involve any habitat modifications or uses that may involve sensitive natural communities. No impact would occur.

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?*

No Impact. The Project site is undeveloped land with no wetlands or other hydrological feature. The nearest major hydrological features are located to the north near the San Sevaine Flood Control Basin approximately 1 mile driving distance to the north. The Project site does not contain any habitats and is undeveloped. The Project site is adjacent to a high traffic freeway including off- and on-ramps. The cement-lined channel that runs parallel to the north of the Project site will be avoided and no work would occur that could result in impacts to the channel. No impact would occur.

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?*

No Impact. According to the San Bernardino County General Plan Open Space Element, the City of Fontana does not contain any wildlife corridors, greenbelts, areas of critical concern or designated wilderness areas. The Project site, while undeveloped, does not contain any habitats or sensitive communities (Appendix B) on the Project site or adjacent to the site. The Project involves construction of a training facility that includes a 6-story building. The presence of the Project would not interfere with the movement of any wildlife, nor would it impede the use of native wildlife nursery sites. No impact would occur.

e) *Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

No Impact. The City of Fontana considers trees as a valuable asset. The Public Services Department published a Tree Policy Manual to provide guidance on the preservation, maintenance, and continued growth of the City's urban forest. The Project site is vacant and does not have any trees or other sensitive vegetation. The Proposed Project will include landscaping throughout the property consisting of a variety of trees, shrubs, grasses, groundcovers, and vines. Therefore, construction of the Project would not result in conflicting with any policy or ordinance related to trees. No impact would occur.

f) *Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservancy Conservation Plan, or other approved local, regional, or state habitat conservation plan?*

No Impact. According to the City's Conservation Open Space Element, the Proposed Project will not be located within its habitat conservation areas or Forest Service lands. The majority the City's designated open spaces, forests and habitat conservation areas are located north of the Project site along Summit Avenue, south of the San Gabriel Mountains. The Project site is undeveloped with no areas for potential habitats. No impact would occur.

4.5 CULTURAL RESOURCES

5.	CULTURAL RESOURCES. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☐	☒
(b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
(c)	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

4.5.1 Impact Analysis

a) *Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?*

No Impact. A Cultural Resources Survey Report was prepared by Chambers Group for the Proposed Project (Appendix C). The report summarizes the results of the record search, literature review and field survey that was conducted on February 18, 2022, of the entire Project site. The report gathered and analyzed information needed to assess the potential for impacts to cultural resources.

A record search review was completed to determine if any additional historic properties, landmarks, bridges, or other potentially significant or listed properties are located within the Project footprint or 1 mile from the Project site. This background research included, but was not limited to, the National Register of Historic Places, California State Historic Property Data Files, California State Historical Landmarks, California Points of Historical Interest, Office of Historic Preservation Archaeological Determinations of Eligibility, historical aerial imagery accessed via NETR Online, historical U.S. Geological Survey topographic maps, Built Environment Resource Directory, and California Department of Transportation State and Local Bridge Surveys. As a result of the archival research, in addition to the resource indicated in the South Central Coastal Information Center (SCCIC) record search results, no previously recorded resources or any other listed or potentially significant properties were identified within the Project site. Because there are no existing structures in the Project site, and the results of the record search provided no evidence of any recorded resources or properties within a one-mile vicinity, no impact would occur.

b) *Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?*

Less than Significant With Mitigation Incorporated. The record search resulted in negative results for the presence of recorded resources or historic properties. Historic maps and aerial imagery indicate that the Project site has remained largely undeveloped from 1938 to present. The historical aerial imagery and topographic maps indicate that the earliest alignment of Highland Avenue was established sometime before 1896. Historic aerial imagery shows that the overall area, including the Project site, was developed for agricultural use by 1938 and continued to be utilized for agriculture through the 1980's. The Project site appears to have been subject to minimal agriculture or re-vegetation efforts between 2002 and present. The Project site was surveyed to confirm of any evidence of resources that could be onsite. The results of the survey of the Project site showed no surface evidence of prehistoric or historic archaeological resources or paleontological resources was identified within the Project site.

However, given the largely undisturbed nature of the Project site with no previous development beyond historic agricultural activity within the site, there remains potential that the current Project's ground disturbing activity could impact intact native soil formations or intact geologic units known to be fossil bearing in the region. Therefore, to mitigate impacts to undiscovered cultural resources, the following mitigations measures would be implemented to ensure impacts to be less than significant.

MM CUL-1 The Applicant shall retain the services of a Qualified Archaeologist, meeting the Secretary of the Interior Standards or County standards, whichever is greater, and require that all initial ground-disturbing work be monitored by archaeological specialist (monitor) proficient in artifact and feature identification in monitoring contexts. The Consultant (Qualified Archaeologist and/or monitor) shall be present at the Project construction phase kickoff meeting.

MM CUL-2 Prior to commencing construction activities and thus prior to any ground disturbance in the Proposed Project site, the Consultant shall conduct initial Worker Environmental Awareness Program (WEAP) training to all construction personnel, including supervisors, present at the outset of the Project construction work phase, for which the Lead Contractor and all subcontractors shall make their personnel available. A tribal monitor shall be provided an opportunity to attend the pre-construction briefing, if requested. This WEAP training will educate construction personnel on how to work with the monitor(s) to identify and minimize impacts to archaeological resources and maintain environmental compliance. This WEAP training will educate the monitor(s) of construction procedures to avoid construction-related injury or harm. This training may be performed periodically, such as for new personnel coming on to the Project as needed.

MM CUL-3 The Contractor shall provide the Consultant with a schedule of initial potential ground-disturbing activities. A minimum of 48 hours will be provided to the Consultant of commencement of any initial ground-disturbing activities such as vegetation grubbing or clearing, grading, trenching, or mass excavation.

A monitor shall be present on-site at the commencement of ground-disturbing activities related to the Project. The monitor, in consultation with the Qualified Archaeologist, shall observe initial ground-disturbing activities and, as they proceed, adjust the number of monitors as needed to provide adequate observation and oversight. All monitors will have stop-work authority to allow for recordation and evaluation of finds during construction. The monitor will maintain a daily record of observations to serve as an ongoing reference resource and to provide a resource for final reporting upon completion of the Project.

The Consultant and the Lead Contractor and subcontractors shall maintain a line of communication regarding schedule and activity such that the monitor is aware of all ground-disturbing activities in advance in order to provide appropriate oversight.

MM CUL-4 In the event of the discovery of previously unidentified archaeological materials, the Contractor shall immediately cease all work activities within an area of no less than 60 feet (approximately 18 meters) of the discovery. After cessation of excavation, the Contractor shall immediately contact the City. Except in the case of cultural items that fall within the scope of the Native American Grave Protection and Repatriation Act, the California Health and Safety Code 7050.5, CEQA Section 15064.5, or California Public Resources Code Section 5097.98, the discovery of any cultural resource within the Project area shall not be grounds for a project-wide “stop work” notice or otherwise interfere with the Project’s continuation except as set forth in this paragraph. Additionally, all consulting Native American Tribal groups that requested notification of any unanticipated discovery of archaeological resources on the Project shall be notified appropriately. If a discovery results in the identification of cultural items that fall within the scope of the Native American Grave Protection and Repatriation Act, the Contractor shall immediately cease all work activities within an area of no less than 100 feet (30 meters) of the discovery. In the event of an unanticipated discovery of archaeological materials during construction, the Applicant retained Qualified Archaeologist shall be contacted to evaluate the significance of the materials prior to resuming any construction-related activities in the vicinity of the find. If the Qualified Archaeologist determines that the discovery constitutes a significant resource under CEQA and it cannot be avoided, the Applicant shall implement an archaeological data recovery program.

MM CUL-5 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 the Qualified Archaeologist shall 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 and/or historic-era 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.

If significant pre-contact and/or historic-era 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.

MM CUL-6 At the completion of all ground-disturbing activities, the Consultant shall prepare an Archaeological Resources Monitoring Report summarizing all monitoring efforts and observations, as performed, and any and all prehistoric or historic archaeological finds as well as providing follow-up reports of any finds to the SCCIC, as required.

c) *Would the project disturb any human remains, including those interred outside of formal cemeteries?*

Less than Significant Impact. The results of the record search and survey summarized that the Project site does not have any recorded sites of prehistoric or historic resources, and it is not anticipated that significant archaeological, historical resources, or burial resources are onsite. While there are currently no identified Native American cultural resources and low likelihood to encounter previously unknown and unrecorded human remains, in the unlikely event that human remains or other buried materials including funerary objects are encountered during any activities associated with the Project, the following measure shall be implemented.

MM CUL-7 In the unlikely event that human remains or other buried materials including funerary objects are encountered during any activities associated with the Project, work in the immediate vicinity (within a 100-foot buffer of the find) the Proposed Project would be subject to California Health and Safety Code 7050.5, CEQA Section 15064.5, and California Public Resources Code Section 5097.98.

As required by state law, the County Coroner shall be notified immediately should humans remains are encountered. If the human remains are determined to be prehistoric, the County Coroner shall notify the NAHC, which shall notify a most likely descendant (MLD). The MLD shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials (Appendix C). Compliance with the regulatory standard would result in impacts to be less than significant.

4.6 ENERGY

6.	ENERGY Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
(b)	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

4.6.1 <u>Impact Analysis</u>

a) *Would the project result in 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 utilize energy resources during construction and operation. Energy resources that would be potentially utilized include electricity, natural gas, and petroleum-based fuel supplies and distribution systems. Appendix A calculates the potential energy consumption associated with the construction and operations of the Proposed Project and provides a determination if any energy utilized by the Proposed Project is wasteful, inefficient, or unnecessary consumption of energy resources. Discussion with construction- and operations-related electricity, construction-related natural gas, and construction-related petroleum fuel use are provided in Appendix A.

Construction activities associated with the Proposed Project would be required to adhere to all State and SCAQMD regulations for off-road equipment and on-road trucks, which provide minimum fuel efficiency standards. As such, construction activities for the Proposed Project would not result in the wasteful, inefficient, and unnecessary consumption of energy resources. Development of the Project would not result in the need to manufacture construction materials or create new building material facilities specifically to supply the Proposed Project. It is difficult to measure the energy used in the production of construction materials such as asphalt, steel, and concrete, it is reasonable to assume that the production of building materials such as concrete, steel, etc., would employ all reasonable energy conservation practices in the interest of minimizing the cost of doing business.

The Proposed Project would comply with all Federal, State, and City requirements related to the consumption of transportation energy that includes California Code of Regulations Title 24, Part 11

California Green Building Standards that require the Proposed Project to provide both long-term and short-term bicycle parking spaces that will promote the use of alternative transportation. Therefore, it is anticipated the Proposed Project will be designed and built to minimize transportation energy through the promotion of the use of clean air vehicles, including electric-powered vehicles and it is anticipated that existing and planned capacity and supplies of transportation fuels would be sufficient to support the Proposed Project's demand. Thus, impacts with regard transportation energy supply and infrastructure capacity would be less than significant and no mitigation measures would be required.

Operation of the Proposed Project would result in increased consumption of propane, related to the use of propane props in the training tower for approximately 100 pyrotechnic training events per year. As detailed in the Air Quality Analysis (Appendix A), the Project will consume approximately 1,800 gallons of propane per year, which equates to 0.0003 percent of the propane consumed annually in California. As such, the operations-related propane use would be nominal, when compared to current propane usage rates. It should be noted that each pyrotechnic training event will be required to obtain a permit from SCAQMD and will be required to meet the requirements from SCAQMD Rules 208 and 444 that limits the duration of the use of the propane props as well as other measure that will minimize the wasteful, inefficient, or unnecessary consumption of propane. Thus, impacts with regard propane fuel use would be less than significant and no mitigation measures would be required.

In conclusion, the Proposed Project would comply with regulatory compliance measures outlined by the State and City related to Air Quality, GHG, Transportation/Circulation, and Water Supply. Additionally, the Proposed Project would be constructed in accordance with all applicable City Building and Fire Codes. Therefore, the Proposed Project would not result in the wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation. 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 Proposed Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. The applicable energy plan for the Proposed Project is the Fontana Forward General Plan Update 2015-2035 (General Plan), adopted November 18, 2018. The Proposed Project would be consistent with the policy below:

Goal 2.2 Government facilities and operations are models of resource efficiency.
Continue organizational and operational improvements to maximize energy and resource efficiency and reduce waste.

The Project would be consistent with Goal 2.2 as it will be designed to meet the most current Title 24 Part 11 CalGreen standards that require that new non-residential buildings to maximize resource efficiency and reduce waste.

The Proposed Project would be consistent with all applicable energy-related policies from the General Plan. Therefore, the Proposed Project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Impacts would be less than significant.

4.7 GEOLOGY AND SOILS

7.	GEOLOGY AND SOILS. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
	i) 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) Strong seismic ground shaking?	☐	☐	☒	☐
	iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
	iv) Landslides?	☐	☐	☐	☒
(b)	Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
(c)	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
(d)	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
(e)	Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☒	☐
(f)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

4.7.1 Impact Analysis

a) *i) Would the project 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.*

Less than Significant Impact. A Geotechnical Exploration Report was prepared for the Proposed Project by Leighton Consulting, Inc. on May 2022 (Appendix D). The report evaluated the geologic hazards and geotechnical conditions of the Project site with respect to the proposed development. The Project site is located in Southern California is which a seismically active area. As such, many areas in Southern California could be subject to some seismic activity. The Project site approximately 2.3

miles south of the Cucamonga fault zone. The Project site is not located within a designated State of California Earthquake Fault Zone, nor a fault zone identified by the County of San Bernardino. No active faults have been mapped within or trending towards the Project site and it is not within a designated Alquist-Priolo Earthquake Fault Zone. Impacts would be less than significant.

ii) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

Less than Significant Impact. Ground shaking is a potential hazard resulting from earthquakes along major active or potentially active faults. According to the Geotechnical Exploration Report, the Project site has been exposed to relatively significant seismic events; however, the Project site does not appear to have experienced more severe seismicity compared to much of Southern California. There are no documented events to show that earthquake damage in the vicinity of the Project would be worse than the majority of Southern California (Appendix D).

Because of the Project site's location, it is not expected that it would cause substantial adverse effects involving strong seismic ground shaking. Furthermore, the Project would not involve any excavation or ground disturbing activities that could exacerbate any nearby fault zones. The Proposed Project will be constructed to comply with the 2019 California Building Code that includes minimum standards to protect life safety and prevent collapse. Impacts would be less than significant.

iii) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

Less than Significant Impact. Secondary seismic hazards for the region include liquefaction, slope instability, earthquake-induced seiches, tsunami flooding and slope instability. Liquefaction occurs when loosely packed, water saturated sediments that are near or at ground surface lose their strength due to ground shaking, which in turn, causes the sediment to act like a fluid. For liquefaction to occur, the area has to have loose, clean granular soils, be shallow groundwater, and have strong, long durations of ground shaking.

The Geotechnical Exploration Report states that no groundwater was encountered during the site exploration and that Project site is outside the zone of liquefaction potential. Groundwater at the site has been historically greater than approximately 289 feet deep beneath the site. Due to the lack of groundwater and dense condition of the native soils, liquefaction is unlikely to occur (Appendix D). Impacts would be less than significant.

iv) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

No Impact. Landslides occur when there is a disturbance in the stability of a sloped area which can be initiated by rainfall, snowmelt, change in water levels, erosion, groundwater changes, earthquakes, volcanic activity, disturbance through human activities, or a combination of these factors. Seismically induced landslides and other similar slope failures are a common occurrence during or after earthquakes, particularly within the region. The County of San Bernardino for the Devore Quadrangle have mapped the area and it is found that the Project site is outside a zone of landslide potential (Appendix D). The Project site and its vicinity are gently sloping and is not located along or nearby any sloped hills. Therefore, the potential for landslide activity has been determined to be negligible due to the lack of significant slopes. No impact would occur.

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

Less than Significant Impact. Topsoil is the top layer of soil that usually holds high concentrations of organic matter, which are typically found in fields and other vegetated areas. Loss of topsoil or any type of soil erosion occurs when dirt is left exposed to physical factors such as strong winds, rain, and flowing water.

The Project site is currently undeveloped and vacant. While the Project site was historically used for agricultural operations for cultivating wine grapes, the existing site is devoid of any vegetation or signs of existing agricultural operations. Any topsoil that may have been historically onsite is likely to have eroded over the decades. Therefore, the Proposed Project would not result in loss of topsoil.

The vacant lot is currently subjected to winds and rain. Once construction of the Proposed Project begins, the site will be excavated and graded, thereby disturbing the existing dirt/soils which could be subject to erosion. As part of the Rule 403 of AQMD to address fugitive dust, implementation of these dust control methods would minimize any potential soil erosion. Other general construction methods that would be implemented include use of barriers covers. Best management practices for erosion control are required under National Pollution Discharge Elimination System (NPDES) regulations pursuant to the federal Clean Water Act. NPDES requirements for construction projects disturbing 1 acre or more in area are set forth in the San Bernardino County MS4 permit issued by the State Water Resources Control Board (SWRCB; State Water Board Order No. R8-2010-0036/NPDES No. CAS618036) (RWQCB 2010). Once the Project site has been constructed, all dirt areas would be covered in concrete, asphalt, or landscaping. With implementation of general construction methods and with the Project site being covered, 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. Landslides and liquefaction areas are discussed in section a)iii and a)iv.

Lateral spreading is the lateral movement, usually soils, that are caused by earthquake-induced liquefaction. The shaking reduces the stiffness and strength of the soil thereby causing ground movement ranging from a few centimeters to several meters. Lateral spreading often occurs along shorelines and riverbanks where there are loose, saturated sandy soils that are at shallow depths.

Subsidence on land is the downward shift (gradual or sudden) of the land surface that can be caused by natural or human-induced activities through the moving of earth materials such as soils. Main causes of land subsidence include but are not limited to drainage of organic soils, underground mining, sinkholes, compaction, or removal of underground water.

The Project site is not located along any riverbank or waterbody. The Project site is located south of a flood control channel; however, the channel is a cement-lined and its waters are not anticipated to intrude into the soils of the Project site. The Proposed Project construction and operational activities will not include removal of groundwater, nor would any grading or excavation occur along sloped areas as the site is gently sloped. Therefore, lateral spreading and subsidence is unlikely to occur at the Project site due to the lack of liquefaction potential, lack of groundwater, and lack of sloped areas. Therefore, 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 soils, clay, and other fine viscous particles that are prone to expansion or shrinkage due to a direct variation in water content/volume. Swelling would occur when there is a large amount of water present and shrink when water evaporates. The continued cycle of swelling and shrinking causes soil to move which can cause structures built on expansive soil to sink or rise unevenly, thereby requiring foundation repairs.

The City of Fontana is identified to have a relatively stable geology and soils. It is unlikely that there would be a potential risk that represents a significant change or increase from the conditions that are currently present (City 2018b). Given the stability of the soils and negligible risk of soil instability as previously discussed, impacts due to expansive soils would be less than significant.

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

Less than Significant Impact. The Proposed Project will utilize existing utilities that are available on site including an existing sewer system. As such, the Proposed Project will not utilize septic tanks for its operations Therefore, impacts would be less than significant.

f) *Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

Less than Significant Impact. As discussed in Section 4.5, a record search and survey were conducted for the Project site. The record search showed that no fossil localities have been identified within the Project site or within a one-mile radius of the Project site. Based on these results, the paleontological sensitivity is considered low to moderate in the overall area considering the lack of known fossil localities within the one-mile radius. The paleontological records search did not identify any previously recorded paleontological fossil localities within the Project site and surrounding study area, and no evidence of paleontological resources was observed on the surface during the pedestrian survey (Appendix C). Impacts would be less than significant.

4.8 GREENHOUSE GAS EMISSIONS

8.	GREENHOUSE GAS EMISSIONS. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
(b)	Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

4.8.1 Impact Analysis

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 is anticipated to generate GHG emissions from area sources, energy usage, mobile sources, waste disposal, water usage, backup generator, and construction equipment. The project's GHG emissions have been calculated with the CalEEMod model based on the construction and operational parameters detailed in Appendix A (and provided in the table below). A summary of the results is shown in Appendix A and in the CalEEMod model. The data resulted with the Proposed Project would create 183.51 MTCO2e per year. Based on the threshold of significance used to evaluate such emissions, which is based on a proposed threshold developed by the SCAQMD, a cumulative global climate change impact would occur if the GHG emissions created from the on-going operations would exceed 3,000 MTCO2e per year. Therefore, a less than significant generation of greenhouse gas emissions would occur from development of the Proposed Project. Impacts would be less than significant.

Table 5. Project Related Greenhouse Gas Annual Emissions

Category	Greenhouse Gas Emissions (Metric Tons per Year)			
	CO_2	CH_4	N_2O	CO_2e
Area Sources[1]	<0.01	0.00	0.00	<0.01
Energy Usage[2]	52.93	<0.01	<0.01	53.21
Mobile Sources[3]	76.51	<0.01	<0.01	79.44
Backup Generator[4]	4.62	<0.01	0.00	4.64
Solid Waste[5]	4.71	0.28	0.00	11.68
Water and Wastewater[6]	15.24	0.16	<0.01	20.41
Construction[7]	13.98	<0.01	<0.01	14.14
Total GHG Emissions	**168.00**	**0.45**	**0.01**	**183.51**
Threshold of Significance				**3,000**
Exceed Thresholds?				**No**

Notes:
[1] Area sources consist of GHG emissions from consumer products, architectural coatings, and landscaping equipment.
[2] Energy usage consists of GHG emissions from electricity and natural gas usage.
[3] Mobile sources consist of GHG emissions from vehicles.
[4] Backup Generator based on a 300 ekW (467 Horsepower) diesel generator that has a cycling schedule of 30 minutes per week.[5] Waste includes the CO_2 and CH_4 emissions created from the solid waste placed in landfills.
[6] Water includes GHG emissions from electricity used for transport of water and processing of wastewater.
[7] Construction emissions amortized over 30 years as recommended in the SCAQMD GHG Working Group on November 19, 2009.
Source: CalEEMod Version 2020.4.0

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

Less than Significant Impact. The Proposed Project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing GHG emissions. The Proposed Project consists of the development of the proposed fire station and training center. The Proposed Project is anticipated to create 183.51 MTCO2e per year, which is well below the threshold of significance of 3,000 MTCO2e per year. The SCAQMD developed this threshold through a Working Group, which also developed detailed methodology for evaluating significance under CEQA. At the September 28, 2010 Working Group meeting, the SCAQMD released its most current version of the draft GHG emissions thresholds, which recommends a tiered approach that includes a quantitative annual threshold of 3,000 MTCO2e for all land use type projects, which was based on substantial evidence supporting the use of the recommended thresholds. In addition, the proposed structures would be required to comply with the most current State and City energy efficiency requirements that includes CCR Title 24, Part 6 Building Energy Efficiency Standards and CCR Title 24, Part 11: California Green Building Standards. The CCR Title 24, Part 6 and Part 11 standards require numerous energy efficiency measures to be incorporated into the proposed structures. Therefore, the Proposed Project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

4.9 HAZARDS AND HAZARDOUS MATERIALS

9.	HAZARDS AND HAZARDOUS MATERIALS. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
(b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
(c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
(d)	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 had not been adopted, within 2 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)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
(g)	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☒	☐

4.9.1 Impact Analysis

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. According to the City's hazard screening maps, SR-210 and Cherry Avenue (designated as a Major Highway under the Community Mobility and Circulation Element) have been identified as hazardous material transportation routes due to their capacity of high volumes of traffic (City 2017a, 2018a). While these roadways/highways would be likely used for hazardous materials transport from other businesses throughout the City, the Proposed Project does not involve routine transport of large quantities of hazardous materials like other industrial facilities. The Proposed Project is the construction of a new fire station and training center.

Construction of the Proposed Project would result in the generation, transport and use of various waste materials that would require recycling and/or disposal. Some of the waste generate could be classified as hazardous wastes/hazardous materials. Hazardous materials typically consist of chemicals that may be categorized as toxic, corrosive, flammable, reactive, an irritant, or strong sensitizer. During construction, the Proposed Project will use potentially hazardous materials from petroleum-based fuels, lubricants, cleaning products and other similar materials. The quantities of the used chemicals that will be present at the Project site would be limited and temporary.

Operations of the Project will include use of potentially hazardous materials such as grease, oils, cleaning products, fuel and other similar materials. However, the use of such materials will not create a significant hazard to the public or the environment because the handling, storage and disposal of these materials during construction and operations will be done in compliance with the manufacturer's standards for storage and spill procedures, and with existing regulations such as the California Health and Safety Code, Hazardous Materials Transportation Act, and Resource Conservation and Recovery Act. 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. According to the Department of Toxic Substances Control (DTSC) databases, the Project site is not located within 1000 feet of any listed site in the Geotracker (SWRCB 2022) and Envirostor database (DTSC 2022). The Proposed Project will not result in the accidental release of hazardous materials to the environment.

As discussed in part a), the Proposed Project will utilize potentially hazardous chemicals during construction and operations. While hazardous materials will be present onsite, the quantities will be limited, and the materials will be handled and stored according to the manufacturer's guidelines and be disposed according to local, State, and federal guidelines. Impacts would be less than significant.

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 Proposed Project is Cecilia Lucero Solorio Elementary School, 15172 Walnut St, Fontana, CA 92336. It is located approximately 1.4 miles driving distance (or approximately 0.8 miles direct distance) to the east. The Proposed Project would not emit hazardous emissions or handle hazardous substances within one-quarter mile of an existing or proposed school. No impact 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?*

Less than Significant Impact. As discussed in part b), the Proposed Project is not located within 1000 feet of any listed site in the DTSC databases nor is the Project site, or any location in its immediate vicinity, listed on the Hazardous Waste and Substances Sites List (Cortese List). Because the Project site will not be located at or adjacent to a hazardous materials site, its construction or operation would not result in a significant hazard to the public or environment. Impacts would be less than significant.

e) *For a project located within an airport land use plan or, where such a plan had not been adopted, within 2 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?*

No Impact. The Project site is not located within 2 miles of a public airport or public use airport. The nearest airport to the Project is Ontario International Airport (ONT-IAC), which is approximately 6 miles southwest from the Project site (ONT-IAC 2018). Furthermore, according to the Ontario International Airport Land Use Compatibility Plan, the Project site is not within its airport influence areas and therefore, is not subject to specific operational criteria including but not limited to noise, safety or air protection. No impact 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. The City of Fontana has prepared and adopted a Local Hazard Mitigation Plan as an update to the City's Hazard Mitigation Plan (City 2017b). The intent and purpose of the plan is to reduce and/or eliminate loss of life and property and to demonstrate reducing or eliminating risks in the City based on regionally specific disasters.

The Proposed Project would involve the construction of a fire station at the northwest corner of Highland Avenue and Cherry Avenue. The construction may result in temporary traffic delays with the presence of construction equipment in the area which could affect the utilization of Cherry Avenue, Highland Avenue and SR-210 in the event of an emergency. However, this would be a temporary occurrence and there are several roads in the vicinity of the Project that will allow access to the freeways and other areas of the City. During operations, the Proposed Project is to provide a training center for the City's fire department and include a future fire station. The addition of the fire station would provide additional emergency response services to the area. The Proposed Project is not anticipated to impair or physically interfere an adopted emergency response plan because the proposed construction and operational activities will occur within the Project site. Furthermore, the Proposed Project will be a benefit to the community as it is providing additional emergency services to the area and will provide training facilities to local fire fighters and other safety personnel. 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. The California Department of Forestry and Fire Protection's Fire and Resource Assessment Program provides a Fire Hazards Severity Zone Viewer (FHSZ) to provide a visual reference to locate fire hazards areas in California. The maps were developed utilizing science and field-tested models that assigns a hazard score based on factors that influence fire likelihood and behavior. Factors include but are not limited to fire history, existing and potential fuel (natural vegetation), predicted flame length, embers, terrain, and typical fire weather in the area.

The Project site is not located within a FHSZ area (CAL FIRE 2011). The area north of SR-210 and west of the Interstate 15 are designated as Very FHSZ due to its proximity to the San Gabriel and San Bernardino Mountains. The Project site is relatively flat and does not include a significant amount of brush or vegetation that could be a fuel source for wildland fires. During training sessions, materials may be set on fire for educational purposes to show how to extinguish a fire properly. However, these are training simulations and be limited to designated areas on the Project site away from public right-of-way or other landscaped areas. Fire suppression systems will be installed onsite, and experience fire personnel will be present during the training sessions. Therefore, because of the Project location, and with implementation of fire safety procedures during operations and training, the Project would not expose people or structures to wildland fires. Furthermore, the addition of a fire station in this area would provide additional response to the community in the event of a fire. Impacts would be less than significant.

4.10 HYDROLOGY AND WATER QUALITY

10.	**HYDROLOGY AND WATER QUALITY. Would the project:**	**Potentially Significant Impact**	**Less than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
(a)	Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
(b)	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
(c)	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:	☐	☐	☒	☐
	i) Result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
	ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flood on- or off-site;	☐	☐	☒	☐
	iii) 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) Impede or redirect flood flows?	☐	☐	☒	☐
(d)	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
(e)	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

4.10.1 Impact Analysis

a) *Would the project violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or ground water quality?*

Less than Significant Impact. Impacts related to water quality would be categorized under short-term construction related impacts and long-term operational impacts. Construction related activities have the potential to degrade surface and groundwater quality by exposing soils to surface runoff from debris and other materials, including runoff from various construction equipment. Pollutants of concern during typical construction activities include sediments, dry and wet solid wastes, petroleum products, solvents, cleaning agents and other similar chemicals. During ground disturbing activities, excavated soil would be exposed thereby creating a potential for soil erosion. During a storm event or water spill, these pollutants and soils could be spilled, leaked, or transported as runoff into drainages or downstream waters, and potentially into receiving waters.

The Proposed Project will disturb greater than 1 acre of land to construct a fire station and associated training center. Per the City's Water Quality Management Plan (WQMP) Handbook, new development creating over 10,000 square feet or more of impervious surfaces will require the preparation of a Project WQMP, a Stormwater Water Pollution Prevention Plan (SWPPP), Erosion Control and Grading Plan, and implement construction and post-construction best management practices to ensure that the Project does not violate water quality standards or waste discharge requirements. Stormwater runoff would be contained for the WQMP treatment event and infiltrated within a new underground infiltration system provided in the grading/drainage and storm drain plans. Runoff in excess of the WQMP event would overflow and bubble out onto a riprap area in the southwest corner of the Project site and continue offsite.

Furthermore, construction of the Project site would implement surface drainage designs noted in the Geotechnical Investigation Report which provides setback requirements for drainage area and location of pad drainages and drainpipes to ensure that runoff would be contained to the site.

Therefore, mandatory compliance with the WQMP BMPs would result in less than significant impacts by complying with the discharge requirements during short-term construction and long-term operational activities.

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. The Fontana Water Company (FWC) provides water services such as producing, treating, storing, and delivering drinking water to the City of Fontana (FWC 2018). According to the Urban Water Management Plan prepared for FWC and the San Gabriel Valley Water Company, the FWC's water supplies include sources from local surface waters, groundwater basins, Inland Empire Utilities Agency and San Bernardino Valley Municipal Water District and from recycled water (FWC 2020). The City of Fontana is also serviced by the Chino Basin Water Conservation District which protects and preserves the Chino Groundwater Basin which is within the City's boundary (FWC 2018).

Site testing from the Geotechnical Exploration Report show that no groundwater was encountered during the site exploration. Groundwater at the site have been historically greater than approximately 289 feet deep beneath the site.

During construction, the Proposed Project would not require excavation to a depth that would encounter groundwater and thereby affect the rate of recharge or involve the extraction of groundwater. The Proposed Project's construction-related activities are not expected to have a significant impact on groundwater supplies, because these activities would be short term and will not require intensive activities of water use outside of site watering for erosion control or for site cleaning.

Furthermore, as discussed above, the Project would comply with the requirements of the City's WQMP and NPDES permits and would implement BMPs and other water quality features on the Project site.

During Project operations, the facilities will tie in to existing water services at the Project site. The Proposed Project will include the installation of a 30,000-gallon water tank with small pump to use and recirculate water for training exercises. The Proposed Project will utilize water for training, onsite residence, office and maintenance purposes. The water will be reused on site and will not require dewatering or require groundwater extraction. While the Proposed Project will increase the amount of impervious surfaces at the Project site, its construction and operations do not involve groundwater extraction, nor would it affect any groundwater management plans. The Project site is currently vacant and undeveloped and has not been used as a groundwater extraction site. 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, in a manner which would:*
   i) *result in substantial erosion or siltation on- or off-site;*
   ii) *substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;*
   iii) *create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources or polluted runoff; or*
   iv) *impede or redirect flood flows?*

   Less than Significant Impact. Drainage patterns are typically formed by the streams, rivers, lakes, or other bodies of water. Over time, the system is formed via a network of channels and tributaries that are determined the type of geologic features of a particular landscape. The Project site has no natural drainage courses, rivers, or streams. The construction activities have potential to degrade water quality through exposure of surface runoff to exposed soils, dust, and other site debris. However, as discussed, the Project will implement an Erosion Control and Grading Plan, SWPPP and WQMP in compliance with the MS4 permit and City's guidelines to address site erosion and runoff during construction and operations and implement stormwater management as noted in the City's Municipal Code Section 28-111. Additionally, as discussed in the previous section, stormwater runoff would be contained for the WQMP treatment event and infiltrated within a new underground infiltration system provided in the grading/drainage and storm drain plans. Runoff in excess of the WQMP event would overflow and bubble out onto a riprap area in the southwest corner of the Project site and continue office. Impacts would be less than significant.

d) *Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?*

No Impact. Tsunamis are high sea waves typically caused by earthquakes and underwater landslides. Seiche occurs in bodies of water (semi or full-enclosed) and are caused by strong winds or rapid changes in the atmosphere that pushes water from one end to another and typically acts as a standing wave/oscillating body of water. Floods are an overflow of large bodies of water beyond its normal capacity.

The Project site is not in coastal area and is not located nearby any rivers, streams, or other large body of water. According to the Federal Emergency Management Agency (FEMA), the Project site is not located within a special flood hazard area. According to the Flood Insurance Rate Map, the Project is located in Zone X, which is an area determined to be outside the 0.2% annual chance flood plain (FEMA 2008, 2022). Therefore, the Proposed Project would not release pollutants due to inundation from a flood. No impact would occur.

e) *Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?*

Less than Significant Impact. The Project site is located within the jurisdiction of the Santa Ana Regional Water Quality Control Board (RWQCB). The RWQCB has implemented a water quality control plan for the Santa Ana River Basin (Basin Plan) that contains the policies for managing the water quality of the region. The Basin Plan includes water quality standards and objectives, management, improvement initiatives, policies and practices for quality standards and implementation plans (RWQCB 2019). To comply with the Basin Plan, the Project shall develop and implement an Erosion Control and Grading Plan, SWPPP and WQMP to manage runoff from the construction of the Proposed Project. In addition, the Proposed Project shall comply with the MS4 Permit to manage and minimize pollutant discharges into the stormwater.

The Proposed Project will not result in the obstruction or conflict with a groundwater management plan as there are no proposed activities that require groundwater extraction. While the Proposed Project would introduce additional impervious surfaces to the Project site, it would not interfere with any recharge plans as the stormwater would be directed into the storm drains. Therefore, impacts to any water quality or groundwater management plan would be less than significant.

4.11 LAND USE AND PLANNING

11.	LAND USE/PLANNING Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Physically divide an established community?	☐	☐	☐	☒
(b)	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?	☐	☐	☐	☒

4.11.1 Impact Analysis

a) *Would the project physically divide an established community?*

No Impact. The Proposed Project includes construction of the Fontana Fire Protection District Station 80, Fire Training Facilities, and storage facility. The site is owned by the City of Fontana and in an underdeveloped portion of the City. The nearest developed portion of the area surrounding the Project includes the I-15 and SR-210, with the nearest residences being located 0.5 mile east of the Project site. No impact would occur.

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 Proposed Project, as noted above, is located in an area within minimal development surrounding the Project. As discussed in 4.2, the area is part of the Westgate Specific Plan and zoned for Mixed Use. The MU-1 designation provides for a broad range of business, commercial retail, medical, educational, entertainment, commercial services, and other complementary uses including the Proposed Project (City 2017a). No impact would occur because the Proposed Project is consistent with the existing land uses and would not require any changes to the land use or zoning of the area.

4.12 MINERAL RESOURCES

12.	MINERAL RESOURCES Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☒	☐
(b)	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

4.12.1 Impact Analysis

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?*

Less than Significant. The Proposed Project is located on land within a Mineral Resource Zone (MRZ) 2, within a significant mineral resource zone in the California Department of Conservation's Mineral Land Classification Map (DOC 1986). MRZ-2 zones are areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood for their presence exists. This zone shall be applied to known mineral deposits or areas where well-developed lines of reasoning, based upon economic geologic principles and adequate data, demonstrate that the likelihood for occurrence of significant mineral deposits is high. However, the Project site is not designated as a mining area, nor was the Project site previously used for mining operations. While the site may be shown to have mineral resources available, the existing zoning and land uses do not permit mining uses. Furthermore, there are no active mines are in the City of Fontana (DOC 2022b). A less than significant impact would 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. The City of Fontana General Plan does not identify any nearby significant mineral resource deposits. Further, as noted above, the City does not have any active mines within the City. No impact would occur.

4.13 NOISE

13.	NOISE Would the project result in:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
(b)	Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
(c)	For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

4.13.1 Impact Analysis

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. A Noise Impact Analysis (Appendix E) was prepared by Vista Environmental to determine the noise impacts associated with the Proposed Project. The noise impacts from construction of the Proposed Project have been analyzed through use of the Federal Highway Administration (FHWA)'s Roadway Construction Noise Model (RCNM). The FHWA compiled noise measurement data regarding the noise generating characteristics of several different types of construction equipment used during the Central Artery/Tunnel project in Boston.

Construction noise impacts to the nearby sensitive receptors have been calculated according to the equipment noise levels and usage factors listed in the Noise Impact Analysis and through use of the RCNM. For each phase of construction, all construction equipment was analyzed based on being placed in the middle of the Project site, which is based on the analysis methodology detailed in Federal Transit Authority (FTA) Manual for a General Assessment. However, in order to provide a conservative analysis, all equipment was analyzed, instead of just the two nosiest pieces of equipment as detailed in the FTA Manual. The RCNM model printouts are provided in Appendix E.

<u>Construction Related Noise</u>

Construction activity can result in varying degrees of ground vibration, depending on the equipment used on the site. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings in the vicinity of the construction site respond to these vibrations with varying results ranging from no perceptible effects at the low levels to slight damage at the highest levels.

The construction activities for the Proposed Project are anticipated to include site preparation and grading of approximately 3.68 acres, building construction of the proposed training center and fire station, paving of onsite driveways, paved training area, and parking lots, and application of architectural coatings.

Noise impacts from construction activities associated with the Proposed Project would be a function of the noise generated by construction equipment, equipment location, sensitivity of nearby land uses, and the timing and duration of the construction activities. The nearest sensitive receptors to the project site are homes located as near as 2,200 feet to the east of the project site and as near as 2,500 feet to the south of the Project site.

The City's the Municipal Code does not limit construction noise between the hours of 7:00 a.m. and 6:00 p.m. on weekdays and between the hours of 8:00 a.m. and 5:00 p.m. on Saturdays, and construction of the Project will be limited to those hours. Nonetheless, in order to determine if the proposed construction activities would create a significant substantial temporary noise increase, the FTA construction noise criteria thresholds have been utilized. Under such thresholds, a significant construction noise impact would occur if construction noise exceeds 80 dBA at any of the nearby homes.

Table 6. Construction Noise Levels at the Nearby Sensitive Receptors

Construction Phase	Construction Noise Level (dBA Leq) at:	
	Nearest Homes to East[1]	Nearest Homes to South[2]
Site Preparation	54	52
Grading	53	52
Building Construction	54	53
Paving	52	51
Painting	41	40
FTA Construction Noise Threshold[3]	**80**	**80**
Exceed Thresholds?	**No**	**No**

Notes:
[1] The nearest homes to the east are located as near as 2,200 feet from the project site.
[2] The nearest homes to the south are located as near as 2,500 feet from the project site.
[3] The FTA Construction noise thresholds are detailed above in **Error! Reference source not found.**.
Source: RCNM, Federal Highway Administration, 2006

The Table 6 shows that greatest construction noise impacts would be as high as 54 dBA Leq during the site preparation and building construction phases at the nearest homes, located east of the project site. All calculated construction noise levels shown are within the FTA daytime construction noise standard of 80 dBA averaged over eight hours. Therefore, with adherence to the limitation of allowable construction times provided in Section 18-63(b)(7) of the Municipal Code, construction-related noise levels would not exceed any standards established in the General Plan or Noise Ordinance, nor would construction activities create a substantial temporary increase in ambient noise levels. Impacts would be less than significant.

Operational-Related Noise

Vehicle noise is a combination of the noise produced by the engine, exhaust, and tires. The level of traffic noise depends on three primary factors (1) the volume of traffic, (2) the speed of traffic, and (3) the number of trucks in the flow of traffic. Operational noise levels are provided in Table 7. Operational Noise Levels at the Nearby Homes to South and West of Project Site that includes fire station activities, rooftop equipment, parking lot and generator uses.

Table 7. Operational Noise Levels at the Nearby Homes to South and West of Project Site

	Homes East of Project Site		Homes South of Project Site	
Noise Source	Distance - Source to Property Line (feet)	Noise Level[1] (dBA Leq)	Distance - Source to Property Line (feet)	Noise Level[1] (dBA Leq)
Fire Station Activities (including siren use)[2]	2,200	18	2,500	17
Rooftop Equipment[3]	2,200	20	2,500	19
Parking Lot[4]	2,200	10	2,500	9
Backup Generator[5]	2,200	42	2,500	41
Combined Noise Levels		**42**		**41**
City Noise Standard[6] (day/night)		**70/65**		**70/65**
Exceed City Noise Standard?		**No/No**		**No/No**

Notes:
[1] The noise levels were calculated through use of standard geometric spreading of noise from a point source with a drop-off rate of 6.0 dB for each doubling of the distance between the source and receiver.
[2] Fire Station Activities is based on a reference noise measurement of 55.7 dBA at 30 feet.
[3] Rooftop equipment is based on a reference noise measurement of 66.6 dBA at 10 feet.
[4] Parking lot is based on a reference noise measurement of 63.1 dBA at 5 feet.
[5] Backup Generator is based on a reference noise measurement of 82 dBA at 23 feet.
[6] City Noise Standard obtained from Section 30-543(d) of the City's Municipal Code

The Proposed Project does not propose any uses that would require a substantial number of truck trips and the Proposed Project would not alter the speed limit on any existing roadway so the Proposed Project's potential offsite noise impacts have been focused on the noise impacts associated with the change of volume of traffic that would occur with development of the Proposed Project.

The General Plan Noise Element Goal 8 and associated policies, requires the protection of noise sensitive land uses through diligent planning that includes a prohibition of new sensitive land uses in incompatible areas and noise-tolerant uses shall be located in noise-producing areas such as near transportation corridors. However, neither the General Plan nor the CEQA Guidelines define what constitutes a "substantial permanent increase to ambient noise levels." As such, this impact analysis has utilized guidance from the FTA for a moderate impact that has been detailed in the Noise Impact Analysis. Project contribution to the noise environment can range between 0 and 7 dB, which is dependent on the existing noise levels.

The Transportation Assessment for the City of Fontana's Fire Station No. 80 and Training Center (Appendix F) found that the Training Center would generate 18 average daily trips (ADT) per day and the fire station would also generate 18 ADT per day. In addition to the automobile daily trips, there would also be an average of six times per day when emergency vehicles would leave the fire station, which would generate 12 trips per day (leaving and returning to fire station). As such, the entire Project would generate a total of 48 ADT. Most of these trips would travel north on Cherry Avenue to Interstate 210 and not pass any sensitive receptors in the vicinity of the Project site.

The Fontana Forward General Plan Update 2015-2035 Draft Environmental Impact Report, June 8, 2018, shows that for the year 2017, Cherry Avenue in the vicinity of the Project site had an average of 20,800 daily vehicle trips. In order for Project-generated vehicular traffic to increase the noise level of Cherry Avenue in the vicinity of the Project site, by 3 dB, the roadway traffic would have to double, and for the roadway noise levels to increase by 1.5 dB, the roadway traffic would have to increase by 50 percent. Since the Proposed Project would only result in a maximum of a 0.2 percent increase in traffic volumes on Cherry Avenue, the Project-related roadway noise increase is anticipated to be negligible. Impacts would be less than significant.

<u>Onsite Noise Sources</u>

The operation of the proposed fire station and training center may create an increase in noise levels created onsite from fire station activities, rooftop mechanical equipment, backup generator, and parking lot activities. Section 30-543(d) of the City's Municipal Code limits the noise created onsite at the property lines of the nearby residential properties to 70 dBA between 7:00 a.m. and 10:00 p.m. and 65 dBA between 10:00 p.m. and 7:00 a.m. In order to determine the noise impacts from the operation of fire station activities, including noise related to siren use at the fire station, rooftop mechanical equipment, the backup generator, and parking lot activities, reference noise measurements were taken of each noise source.

The results of the operational noise show that the Proposed Project's worst-case operational noise from the simultaneous operation of all noise sources on the Project site would create a noise level of 42 dBA at the homes to the east and 41 dBA at the homes to the south of the Project site. The worst-case operational noise level of 64 dBA at the nearby homes would be within both the City's daytime noise standard of 70 dBA and nighttime noise standard of 65 dBA. Therefore, operational onsite noise impacts would be less than significant.

b) *Would the project result in generation of excessive groundborne vibration or groundborne noise levels?*

Less than Significant Impact.

<u>Construction-Related Vibration Impacts</u>

The construction activities for the Proposed Project are anticipated to include site preparation and grading of approximately 3.68 acres, building construction of the proposed training center and fire station; paving of onsite driveways, paved training area, and parking lots; and application of architectural coatings. Vibration impacts from construction activities associated with the Proposed

Project would typically be created from the operation of heavy off-road equipment. The nearest sensitive receptors to the Project site are homes located as near as 2,200 feet to the east of the Project site.

Section 30-543(c) of the City's Municipal Code restricts the creation of vibration which can be felt beyond the property line. However, since neither the Municipal Code nor the General Plan provide a quantifiable vibration threshold level, Caltrans guidance has been utilized, which defines the threshold of perception from transient sources at 0.25 inch per second peak particle velocity (PPV).

The primary source of vibration during construction would be from the operation of a bulldozer. A large bulldozer would create a vibration level of 0.089 inch per second PPV at 25 feet. Based on typical propagation rates, the vibration level at the nearest homes (2,200 feet away) would be 0.001 inch per second PPV. The vibration level at the nearest homes would be well below the 0.25 inch per second PPV threshold detailed above. Impacts would be less than significant.

<u>Operations-Related Vibration Impacts</u>

The Proposed Project would consist of the development of a fire station and training center. The Proposed Project would result in the operation of fire trucks on the Project site, which are a known source of vibration. The nearest sensitive receptors to the project site are homes located as near as 2,200 feet to the east of the Project site.

Caltrans has done extensive research on vibration level created along freeways and State Routes and their vibration measurements of roads have never exceeded 0.08 inches per second PPV at 15 feet from the center of the nearest lane, with the worst combinations of heavy trucks. Based on typical propagation rates, the vibration level at the nearest homes would by 0.0003 inch per second PPV. Therefore, vibration created from operation of the Proposed Project would be well below the 0.25 inch per second threshold detailed above. Impacts would 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 us airport, would the project expose people residing or working in the project area to excessive noise levels?*

No Impact. The Proposed Project would not expose people residing or working in the Project area to excessive noise levels from aircraft. The nearest airport is Ontario International Airport, which is located approximately seven miles southwest of the Project site. The Project site is located outside of the 60 dBA Community Noise Equivalence Levels (CNEL) noise contours of Ontario International Airport. No impacts would occur from aircraft noise.

4.14 POPULATION AND HOUSING

14.	POPULATION AND HOUSING. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	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)	Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

4.14.1 Impact Analysis

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 does not provide permanent housing or include operations that could result in unplanned growth such as extension or roadways or expansion of existing infrastructure. Although the fire station would include dormitory facilities, these are temporary facilities to account for the nature of fire-fighting operations and the need to provide living facilities. The Proposed Project would not induce population growth as the Project would be a new facility that would pull from the local working population. No impacts would occur.

b) *Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?*

No Impact. The Proposed Project would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere. There are no residences at the Project site or surrounding the Project site. No impact would occur.

4.15 PUBLIC SERVICES

15.	PUBLIC SERVICES.	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	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 could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				

	i) Fire Protection?	☐	☐	☐	☒
	ii) Police Protection?	☐	☐	☐	☒
	iii) Schools?	☐	☐	☐	☒
	iv) Parks?	☐	☐	☐	☒
	v) Other public facilities?	☐	☐	☐	☒

4.15.1 Impact Analysis

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 could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection?*

No Impact. The Proposed Project includes construction of a new fire station, training facility, and storage shed. Implementation of the Project would involve an expansion of service; however, this would support the population growth already planned for by the City of Fontana. The new facility will be an expansion of the San Bernardino Fire Department, Fontana Fire Protection District and will be located approximately 2 miles north of Fontana Station 73, and 2 miles west of Station 78. The Proposed Project would not increase the demand for fire protection or require new facilities; it is projected to maintain the service ratio goals set forth by the department. No impacts are expected.

b) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered 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 police protection?*

No Impact. The Proposed Project accounts for a new fire station, training facility, and storage shed, and would maintain service standards. The Proposed Project site is located approximately 3.8 miles northwest of the City of Fontana Police Department (Google 2022). The Proposed Project would not induce growth requiring the extension of existing services or creation of new services; there would not be any increase in the demand for police protection or requirement of new facilities. The area is currently being serviced by the Fontana Police Department and would continue to receive the same services as nearby businesses. No impacts would occur.

c) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered 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 schools?*

No Impact. As described above in 4.15.1 (i and ii), the Proposed Project includes construction of a new fire station, training facility and storage facility for the Fontana Fire Protection District and does not involve the expansion of services however this would support the planned population growth already planned for by the City of Fontana. The Project site is approximately 1.3 miles northeast of the Heritage Intermediate School. The Proposed Project would not induce growth requiring the extension of existing educational services or creation of new services. The Proposed Project would not increase the demand for schools in the City. No impacts would occur.

d) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered 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 parks?*

No Impact. The Proposed Project includes the construction of new facilities for the Fire Department but would not induce growth requiring the extension of existing or creation of new park services. The Proposed Project would not increase the demand for parks. No impacts are expected.

e) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered 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 other public facilities?*

No Impact. The Proposed Project would not induce growth requiring the extension of existing or creation of new services. While the Fire Department would have a new fire station and training facility, it would not induce expansion or addition of new service areas. The Proposed Project would not increase the demand for other public facilities. No impacts would occur.

4.16 RECREATION

16.	**RECREATION. Would the project:**	**Potentially Significant Impact**	**Less than Significant With Mitigation Incorporated**	**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)	Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

4.16.1 Impact Analysis

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 does not include features that would contribute to the increased use of existing neighborhood, regional parks or other recreational facilities or would cause substantial deterioration of the facility. The Proposed Project would not induce population growth as it would construct a new fire station to provide additional public services to the existing neighborhood. No impacts are expected.

b) *Does 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. The Proposed Project does not include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. The Proposed Project does not involve the addition of a substantial number of new jobs that may result in increased population and increased demands on recreational resources. No impacts are anticipated.

4.17 TRANSPORTATION

17.	TRANSPORTATION. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadways, bicycle and pedestrian facilities?	☐	☐	☒	☐
(b)	Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
(c)	Substantially increase hazards due to a geometric design feature (e. g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
(d)	Result in inadequate emergency access?	☐	☐	☒	☐

4.17.1 Impact Analysis

a) *Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadways, bicycle and pedestrian facilities?*

Less than Significant Impact. The City prepared a General Plan Update and Community Mobility and Circulation Element (City 2018a) outlining the goals and policies within the City, with a focus on connectivity between the neighborhoods and City destinations. The goals include expanding active transportation choices, particularly for pedestrian and bicycle mobility within the City.

According to the General Plan's Existing Transportation Network map, there are several bike networks located throughout the City ranging from Class I to Class III facilities. Within the City, Class I consists of 9 miles of shared-use pathways, Class II at 37 miles, and Class III with 18 miles of bike routes/neighborhood greenways.

Cherry Avenue and Highland Avenue, which that border the Project site, are not included in the bike networks and therefore, the Proposed Project would not interfere with the existing bikeways network. The Project site is currently unimproved with no sidewalks and does not have any transit stops. There would be no impact to existing transit systems (City 2018a).

A Transportation Assessment was prepared for the Project by David Evans and Associates, Inc. (Appendix F). The assessment evaluated if the Project would require the preparation of a traffic impact study to determine if the Project would cause a deficiency in the City's level of service policies, affect site access and safety, and assesses if the Project may be exempted from a Vehicle Miles Traveled (VMT) analysis. The assessment follows the procedures and thresholds in the City's Traffic Impact Analysis (TIA) Guidelines for VMT and Level of Service Assessments (hereby referred to as TIA).

A trip generation estimated was prepared based on the proposed operations of the site. Combined, the training center and fire station would generate about 16 trips in the morning peak hours and 6 trips in the afternoon peak hours, or approximately 36 total trips per day. The City's TIA guidelines provided the following guidance regarding preparation of a traffic impact analysis:

- A Traffic Impact Analysis must be prepared when a proposed change in land use, development project, or at local discretion, a group of projects are forecast to equal or exceed the CMP threshold of 250 two-way peak hour trips generated, based on trip generation rates published for the applicable use or uses in the Institute of Transportation Engineers' Trip Generation Manual or other approved data source.
- Any project meeting the CMP threshold of 250 two-way peak hour trips that expects to add at least 50 two-way peak hour trips to a State highway facility is required to prepare a TIA report for City and Caltrans' review.
- If a project is forecast to generate between 100 and 249 two-way peak hour trips, a traffic impact analysis will be required, but the extent of the analysis will be lesser.
- If a project generates between 50 and 100 two-way peak hour trips, a focused traffic analysis will be required.
- If a project generates less than 50 peak hour trips, a traffic analysis shall not be required, and a trip generation memo will be considered sufficient unless the City has specific concerns related to project access and interaction with adjacent intersections.

Given the combined traffic counts is less than 50 two-way peak hour trips on a typical weekday, a traffic impact analysis is not required.

The TIA includes site access and safety analysis guidelines specific for project access driveways related to safety. The safety analysis of the Project's driveways needs to reflect any future roadway and traffic control improvements that would affect the outcome of the analysis.

The City received a grant from the US Department of Transportation for infrastructure improvements and the City received an award in 2022 for the "Building a Better-Connected Inland Empire – A Complete Streets Solution" project. The project included street, bike, sidewalk, and improvements for Cherry Avenue and Victoria Street. The projects on Cherry Avenue include improving the existing rural area without sidewalks, curbs, or gutters to a six-lane major highway with raised landscaped median, sidewalks and curb and gutter. The grant also included installing traffic signals at South Highland Avenue. Based on the construction schedule of the Proposed Project, and the scheduled improvements listed in the grant, while there may be an overlap of the proposed work, it would not interfere with the proposed improvements, and the completed Cherry Avenue improvements will improve site access safety conditions.

The Proposed Project would not cause a conflict with the City's program, plans or policies related to the circulation of the area, including bicycle access and pedestrian facilities. The Proposed Project involves the construction of a new fire station and fire training facility within an undeveloped parcel. The operation of a fire station would be a consistent use of the area and therefore, would not conflict with the permitted uses onsite or the existing and proposed circulation of the area. 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. The City's VMT guidelines identify four types of project screening that can be applied to screen out projects from requiring a project-level VMT assessment. The screening criteria is consistent with other agency's screening criteria in San Bernardino County. The screening criteria, which if met, are presumed to have a less than significant impact. The screening criteria is listed below and discussed in Appendix F.

1. Projects located in a Transit Priority Area may be presumed to have a less than significant impact absent substantial evidence to the contrary.

2. Projects located within a Low-VMT Generating Area. Projects located within these areas may be presumed to have a less than significant impact absent substantial evidence to the contrary. Projects screened from requiring a VMT analysis need to be shown to generate VMT per resident, per worker, or per service population that is like the existing land uses in the low VMT area. The San Bernardino County Transportation Authority provides a web-based tool that can be used to identify whether individual parcels are located within a low-VMT generating area.

3. The Low Project Type screening criterion identifies local serving retail projects (having less than 50,000 square feet) that may be presumed to have a less than significant impact absent substantial evidence to the contrary. Local serving retail generally improves the convenience of shopping close to home and has the effect of reducing vehicle miles of travel.

Non-retail land uses can also be local serving uses and be presumed to have a less than significant impact absent substantial evidence to the contrary. This includes local serving community institutions such as public libraries, fire stations and other local government facilities.

4. Projects generating net daily trips of less than 500 vehicular trips / day. Projects that generate fewer than 500 average daily trips (ADT) would not cause a substantial increase in the total citywide or regional VMT. The Traffic analysis determined the project would generate less than 500 trips per day.

In summary, the Proposed Project is a fire station to be located within a low VMT Generating Area which is a necessary local serving community institution, and would generate fewer than 500 average daily trips. Thus, the project does not require further VMT analysis. The Proposed Project would be consistent with the CEQA guidelines for traffic analysis resulting in a less than significant impact.

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. The Transportation Assessment included analysis on site access and safety which cover deceleration or turning lanes, intersection sight distance, and corner clearances.

At side-street stop-controlled intersections and driveways a substantially clear line of sight should be maintained between the driver of a vehicle, bicyclist or pedestrian stopped on the minor road/driveway and the driver of an approaching vehicle on the major road that has no stop. Gaps in both directions of the flow of traffic on the major street need to provide adequate time for the stopped vehicle on the minor road to either cross all lanes of through traffic, cross the near lanes and turn left, or turn right, without requiring through traffic to radically alter their speed. The visibility required for these maneuvers form a "sight triangle." There should be no sight obstructions within an intersection's sight triangles (Appendix F).

The Transportation Assessment illustrates the extent of the required minimum clear sight distance triangles at each of the Project's driveway with Cherry Avenue under the current configuration and width and under future configuration and width. Phase 1's corner sight distances of 700 and 830 feet (based on 45 mph) are theoretically achievable due to Cherry Avenue's flat horizontal and vertical alignment and lack of obstructions. Practically, however, the 830-foot clear sight distance triangle required for turning left may occasionally be challenging for drivers because part of the triangle passes through the shadow created by the I-210 overcrossing and the multi-lane configuration may obscure vehicles in the outside lane. However, as previously discussed, the completed Cherry Avenue improvements would dramatically improve site access safety conditions.

Driveways should be located sufficiently distant from the functional area of an adjacent intersection so that right turns exiting a Project driveway do not interfere with the right turn queuing at the intersection and provide enough maneuvering distance so the egressing vehicles can safely enter the adjacent intersection's left-turn lanes. A minimum corner clearance would not be applicable to the Project's phase driveways because the driveways are located "downstream" of the functional area (or departure area) of the Cherry Avenue / South Highland Avenue intersection. In addition the driveways would not interfere with queues that form, or lane change maneuvering at the approaches to intersections. The estimated peak hour traffic volumes the Project do not exceed 50 vehicles for all movements combined, and do not trigger the threshold for considering right turn deceleration lanes. Therefore, because improvements would improve site access safety and would not trigger for deceleration lane, and because there would not be any site obstructions, impacts would be less than significant.

d) *Would the project result in inadequate emergency access?*

Less than Significant Impact. As previously discussed, SR-210 and Cherry Avenue are designated as a Major Highway under the Community Mobility and Circulation Element. According to the General Plan Update EIR, numerous alternative routes, secondary points of access, cul-de-sac turnarounds, and other features that improve traffic circulation are planned into new development and redevelopment during the City's internal review process of the Project applications and site plans by City staff and engineers.

The Project site would be accessible to emergency responders during construction and operation activities. Construction is not anticipated to require any full road closures. As such, adequate emergency access to the Project site and vicinity would be maintained during construction activities.

The Project would provide additional emergency services to the existing neighborhood. As discussed in the Transportation Impact Assessment, street improvements unrelated to the Proposed Project would improve the existing conditions. The proposed driveways would be designed and constructed to City and County standards and comply with the width, clearance, and turning-radius requirements. Driveway designs and compliance with all applicable local requirements related to emergency vehicle access and circulation would ensure the Project would not result in inadequate emergency access. Impacts would be less than significant.

4.18 TRIBAL CULTURAL RESOURCES

18.	**TRIBAL CULTURAL RESOURCES. 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:**	**Potentially Significant Impact**	**Less than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
(a)	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	☐	☒	☐	☐
(b)	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.	☐	☒	☐	☐

4.18.1 Impact Analysis

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 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)?*

b) *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 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?*

The City transmitted letters of notification to the California Native American tribes traditionally and culturally affiliated with the Project area on March 2, 2023. The City transmitted letters of notification to the following tribes:

Yuhaaviatam of San Manuel Nation, Torres Martinez Desert Cahuilla Indians, San Gabriel Band of Mission Indians, Soboba Band of Luiseno Indians, and Gabrieleno Band of Mission Indians-Kizh Nation. Yuhaaviatam of San Manuel Nation has elected to be a consulting party under CEQA and requests specific mitigation measures to be included as part of the Project/permit/plan conditions.

Implementation of these mitigation measures would result in less than significant impact to tribal cultural resources that may be uncovered within the Project area.

MM TCR-1 The Yuhaaviatam of San Manuel Nation Cultural Resources Department (YSMN) shall be contacted, as detailed in CUL-1, of any pre-contact and/or historic-era 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.

MM TCR-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.

4.19 UTILITIES AND SERVICE SYSTEMS

19.	UTILITIES/SERVICE SYSTEMS. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	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)	Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
(c)	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?	☐	☐	☒	☐
(d)	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)	Comply with federal, state, and local management and reduction statutes and regulations related to solid wastes?	☐	☐	☒	☐

4.19.1 Impact Analysis

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 expansion of which could cause significant environmental effects?*

Less than Significant Impact. There are residential developments located towards the south, east and north east of the Project site along Walnut Street and San Sevaine Road. All other undeveloped parcels surrounding the Project site consists of a variety of mixed use and residential land uses.

The following utilities are available to the Proposed Project and future developments to the area:

- Water: Fontana Water Company
- Sewer: City of Fontana/Inland Empire Utility Agency (IEUA)
- Stormwater: City of Fontana
- Electricity: Southern California Edison
- Natural Gas: Southern California Gas Company (SoCalGas)
- Telephone/Internet: Several service providers in the area

Electric power, natural gas, and telecommunication facilities will be available to the Project due to its proximity to existing and future development in the area. The Proposed Project would not require expansion of new utilities. Impacts to electricity, natural gas and telecommunication would be less than significant.

Construction activities will result in the use of water for dust control during ground disturbing activities. Such activities would be temporary and limited and therefore, not consume large amounts of water. Operations of the Proposed Project will require water use for general onsite maintenance, dormitory facilities, landscaping, and training purposes. The Proposed Project will tie in to existing water lines available to the site by FWC. the nearest water main is approximately 3,100 feet east on South Highland Avenue and San Sevaine Road. Therefore, impacts to water would be less than significant.

Wastewater treatment is provided by IEUA in partnership with the City of Fontana. There are four regional wastewater treatment facilities operated by IEUA with a treatment capacity of approximately 86 million gallons per day (MGD). RP-4 is responsible for treating local wastewater generated by the City of Fontana and treats and average flow of 10 MGD and expanded to 14 MGD in 2009. The Proposed Project will operate a fire station and training facility. It is estimated to generate approximately 810 gallons of wastewater per day and utilize 1,080 gallons per day. However, the Project site will install a 30,000-gallon water tank for training purposes which will include a pump to recirculate and reuse for training purposes. Therefore, impacts to wastewater would be less than significant.

The Proposed Project will implement an Erosion Control and Grading Plan and WQMP to manage construction activities which would maintain the hydrology of the Project site. During operations, the Project would result in the increase of impermeable surfaces that would result in an increase in stormwater runoff. The Project would be required to adhere to the MS4 Permit requirements which state, that the project must infiltrate, harvest and use, evapotranspire, or bio-treat the runoff from a two year, 24 hour storm event. In compliance with the MS4 Permit, the Project would include a retention basin with an underground infiltration system to capture and infiltrate stormwater runoff from a 24 hour storm event. Therefore, impacts to stormwater would 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. Construction activities would require temporary water use for dust control and site maintenance. During Project operations, the Proposed Project will require water use for general onsite maintenance, dormitory facilities, landscaping, and training purposes.

The FWC would provide water to the Project site. The FWC provides water services such as producing, treating, storing, and delivering drinking water to the City of Fontana. The Proposed Project would be categorized as an institutional/governmental use type per the categories in the Urban Water Management Plan. The proposed demands for institutional/governmental uses are estimated to be 1,737 acre-feet in 2025 and 1,867 acre-feet in 2040. Deficits between the water supplies and demand after utilization of previous supplies will be met using the Chino Basin groundwater. The Chino Basin is expected to provide sufficient water supplies to serve the balance of future projected demands in normal, single-dry, and multiple-dry year scenarios. The Proposed Project will be adequately served by FWC. Furthermore, the water used onsite for training purposes will be reused by storing and pump into the underground water tank. Impacts would 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. Wastewater from the Proposed Project would be conveyed by the City's collection system and treated by IEUA which will be processed into recycled water at the RP-4 facility which has an expanded capacity of 14 MGD. The Proposed Project is estimated to generate 1080 gallons per day which would be from general onsite uses, maintenance, and dormitory uses. Water use for fire fighter training would be sourced from the 30,000-gallon water tank with pump installed for water reuse. The generated wastewater amounts to 95 percent of the RP-4's capacity. This would be a nominal increase of wastewater treated daily. Therefore, the City and IEUA would have capacity to serve the Proposed Project. Impacts would be less than significant.

d) *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 City is mandated by the State of California to implement programs to reduce the amount of waste sent to landfills. To comply with the State mandate, the City requires contractors or homeowners to provide a Construction Waste Management plan (CWMP). The plan shall outline how materials will be diverted from the landfill. The City contracts with Burrtec Waste Industries to provide trash and recycling services in the City with solid waste being disposed at the Mid-Valley Sanitary Landfill with a remaining capacity of 61,219,377 cubic yards (CalRecycle 2022a). The Proposed Project would generate construction and operational wastes. Construction wastes could include insulation materials, metals, wood, cement, paints and varnishes, and other similar materials. The Proposed Project would apply and prepare a CWMP to document compliance with the CalGreen Code Section 4.408 and 5.408 for waste reduction.

Wastes generated during operations include typical commercial refuse such as paper products, and potentially hazardous chemicals such as cleaning materials. According to CalRecycle, government facilities generate approximately 0.59 tons (approximately 1,180 pounds) of waste per employee per year (CalRecycle 2022b). At an estimated 9 employees onsite per day, this would equate to approximately 1,939 tons per year. The Mid-Valley Sanitary Landfill currently accepts 7,500 tons per day. The estimated wastes generated per day for 9 employees is approximately 5.31 tons, which is 0.09% of the daily maximum and therefore, would not generate wastes in excess of the existing capacities. In addition, the Proposed Project would implement waste reduction practices, including recycling of waste products to comply with the California Integrated Waste Management Act to implement programs to divert solid wastes. Because the Proposed Project is not expected to generate wastes beyond the existing facility capacities and will implement waste reduction practices, impacts would be less than significant.

e) *Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?*

Less than Significant Impact. The Proposed Project would generate construction and operation-related wastes. The Proposed Project will comply with federal, State, and local regulations related to solid waste including the preparation of a CWMP to outline how recoverable materials will be diverted. The final CWMP shall be completed after the completion of the Project and be submitted to the Building and Safety Department prior to final inspection. The Proposed Project will also comply with the solid waste diversion, reduction, and recycling goals of the City such as Goal 8 of the Stewardship and Implementation of the General Plan:

Goal 8: All residences, businesses, and institutions have a dependable, environmentally safe means to dispose of solid waste.

- Continue to maximize landfill capacity by supporting recycling innovations, such as organic waste recycling for compost.
    - Continue recycling and green programs.
    - Continue to work with San Bernardino County to minimize impacts from the landfill.

With compliance with City requirements and State mandates, impacts would be less than significant.

4.20 WILDFIRE

20.	WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
(b)	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?	☐	☐	☐	☒

20.	**WILDFIRE.** **If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:**	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(c)	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)	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?	☐	☐	☐	☒

4.20.1 Impact Analysis

a) *Would the project impair an adopted emergency response plan or emergency evacuation plan?*

No Impact. The Proposed Project site is not located within a very high fire hazard severity zone of State or Local responsibility (CAL FIRE 2011). There are no actions that would interfere with an evacuation or emergency plan. The Project helps meet the service goals of the San Bernardino Fire Protection District. No impact would 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 Proposed Project site is not located within a very high fire hazard severity zone of State or Local responsibility (CAL FIRE 2011). Additionally, the Project site is located in a low-lying and underdeveloped area and not within or adjacent to any open spaces which are identified as a very high fire hazard severity zone. The lack of wildland-urban interface in or near the Proposed Project site reduce any risk associated with exacerbation of wildfire risks. Additionally, the Project supports wildland fire suppression. No impact would 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. As noted in Response 4.20.1(a), the Proposed Project site is not in an area at risk of wildfire. The Proposed Project would not require infrastructure that would exacerbate fire risk. No impact would occur.

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. The Proposed Project site is not in an area prone to wildfire or in close proximity to any waterbodies. Additionally, the topography of the area is relatively flat and does not pose a risk of downstream flooding. No impact would occur.

4.21 MANDATORY FINDINGS OF SIGNIFICANCE

21.	MANDATORY FINDINGS OF SIGNIFICANCE.	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	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?	☐	☒	☐	☐

4.21.1 Impact Analysis

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?*

Less than Significant Impact with Mitigation Incorporated. Based on the literature review and biological reconnaissance survey, it was identified that the Project site does not contain any riparian or other sensitive habitat or communities. The Project site is underdeveloped, and it was not found that any special status species were found onsite. Although the Project site is found to not have any sensitive communities or habitats that could house special status species, the Proposed Project could result impacts to nesting birds if construction activities were to be scheduled during the nesting season. Therefore, implementing mitigation measure BIO-1 would result in less than significant to nesting birds.

Based on the results of the record search and survey of the Project site, there were no records showing that the Proposed Project contains evidence of paleontological resources, sacred lands, new, or previously recoded cultural resources. Given that the Project site is undeveloped, here remains potential that the current Project's ground disturbing activity could impact intact native soil formations or intact geologic units known to be fossil bearing in the region. Therefore, the Project would implement mitigation measures CUL-1, through CUL-7, PAL-1, PAL-2 and TCR-1 and TCR-2 to result in less than significant impacts.

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?)*

Less than Significant Impact. According to the adopted Capital Improvement Program Seven-Year Budget, the following future projects have been listed which would occur within the vicinity of the Project site.

Street Improvement – Future Project List

- FUTURE PROJECT F3600012 36EN/360ENG 4 - CHERRY: S HIGHLAND TO I-15 / Cherry Avenue from S. Highland Avenue to I-15 Freeway

- FUTURE PROJECT F3600032 36EN/360ENG 4 - SO HIGHLAND: CHERRY-CITRUS / So. Highland Avenue from Cherry Avenue to Citrus Avenue

- FUTURE PROJECT F3600053 36EN/360ENG 4 - CHERRY: BASELINE TO SO. HIGHLAND / Cherry Avenue from Baseline Road to So. Highland Avenue

- FUTURE PROJECT F3600012 36EN/360ENG 4 - CHERRY: S HIGHLAND TO I-15 / Cherry Avenue from S. Highland Avenue to I-15 Freeway

Tentative Parcel Maps

- TPM NO. 20391: Parcel Subdivision along Hemlock Avenue and Blue Spruce Lane.

Currently there have been no assigned construction schedules for these projects and is therefore not expected to impact the Proposed Project. Additionally, the Proposed Project would not result in cumulative net increase of criteria pollutants. Impacts would be less than significant.

c) *Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?*

Less than Significant Impact with Mitigation Incorporated. Environmental effects that may cause substantial adverse effects on humans typically result from impacts to air quality and greenhouse gas, noise, hazardous materials, ground shaking, hazardous design features regarding transportation and roadway designs and wildfire. The analysis of this document indicates that impacts would be less than significant to the environmental areas mentioned above. and, therefore, would not cause substantial adverse impacts to human beings.

SECTION 5.0 – REFERENCES

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APPENDIX A – Air Quality, Energy and Greenhouse Gas Impact Analysis

Air Quality, Energy, and Greenhouse Gas Emissions Impact Analysis

Fire Station No. 80 and Training Center Project

City of Fontana

Lead Agency:

City of Fontana
Planning Department
8353 Sierra Avenue
Fontana, CA 92335

Prepared by:

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Project No. 20115

December 12, 2022

TABLE OF CONTENTS

TABLE OF CONTENTS CONTINUED

LIST OF FIGURES

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
AQMP	Air Quality Management Plan
BACT	Best Available Control Technology
BSFC	Brake Specific Fuel Consumption
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFCs	chlorofluorocarbons
Cf_4	tetrafluoromethane
C_2F_6	hexafluoroethane
CH_4	Methane
City	City of Fontana
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DPM	Diesel particulate matter
EPA	Environmental Protection Agency
ºF	Fahrenheit
FTIP	Federal Transportation Improvement Program
GHG	Greenhouse gas
GWP	Global warming potential
HAP	Hazardous Air Pollutants
HFCs	Hydrofluorocarbons
IPCC	International Panel on Climate Change
kWhr	kilowatt-hour
LCFS	Low Carbon Fuel Standard
LST	Localized Significant Thresholds

MATES	Multiple Air Toxics Exposure Study
$MMTCO_2e$	Million metric tons of carbon dioxide equivalent
MPO	Metropolitan Planning Organization
MWh	Megawatt-hour
NAAQS	National Ambient Air Quality Standards
NO_x	Nitrogen oxides
NO_2	Nitrogen dioxide
OPR	Office of Planning and Research
Pfc	Perfluorocarbons
PM	Particle matter
PM10	Particles that are less than 10 micrometers in diameter
PM2.5	Particles that are less than 2.5 micrometers in diameter
PPM	Parts per million
PPB	Parts per billion
PPT	Parts per trillion
RSP	Renaissance Specific Plan
RTIP	Regional Transportation Improvement Plan
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SB	Senate Bill
SBCOG	San Bernardino Council of Governments
SCAQMD	South Coast Air Quality Management District
SCAG	Southern California Association of Governments
SF_6	Sulfur Hexafluoride
SIP	State Implementation Plan
SO_x	Sulfur oxides
TAC	Toxic air contaminants
UNFCCC	United Nations' Framework Convention on Climate Change
VOC	Volatile organic compounds

1.0 INTRODUCTION

1.1 Purpose of Analysis and Study Objectives

This Air Quality, Energy, and Greenhouse Gas (GHG) Emissions Impact Analysis has been completed to determine the air quality, energy, and GHG emissions impacts associated with the proposed Fire Station No. 80 and Training Center project (proposed project). The following is provided in this report:

- A description of the proposed project;
- A description of the atmospheric setting;
- A description of the criteria pollutants and GHGs;
- A description of the air quality regulatory framework;
- A description of the energy conservation regulatory framework;
- A description of the GHG emissions regulatory framework;
- A description of the air quality, energy, and GHG emissions thresholds including the California Environmental Quality Act (CEQA) significance thresholds;
- An analysis of the conformity of the proposed project with the South Coast Air Quality Management District (SCAQMD) Air Quality Management Plan (AQMP);
- An analysis of the short-term construction related and long-term operational air quality, energy, and GHG emissions impacts; and
- An analysis of the conformity of the proposed project with all applicable energy and GHG emissions reduction plans and policies.

1.2 Site Location and Study Area

The project site is located in the northwestern portion of the City of Fontana (City). The project site consists of an approximately 2.3-acre triangular shaped lot and a 100 foot wide Metropolitan Water District (MWD) easement area that approximately 1.41 acres of the easement area will be disturbed as part of the proposed project. As such, the project site covers approximately 3.68 acres, which is currently vacant and is bounded by a flood control channel and Interstate 210 to the north, a 100 foot Southern California Edison (SCE) easement and vacant land to the southeast, Highland Avenue and vacant land to the south, Cherry Avenue and vacant land to the west. The project local study area is shown in Figure 1.

Sensitive Receptors in Project Vicinity

The nearest sensitive receptors to the project site are homes located as near as 2,200 feet (0.4 mile) to the east of the project site. The nearest school is East Heritage Elementary School, which is located as near as 1.4 mile south of the project site.

1.3 Proposed Project Description

The proposed project consists of development of Fire Station 80 and Training Center, which will be a new facility built by the City of Fontana in coordination with the San Bernardino County Fire Department. The proposed project would include a 14,663 square foot fire station, a 4,193 square foot training center, a

5,721 square foot six story training tower, and an outdoor equipment storage area. The proposed Site Plan is shown in Figure 2.

Construction would be completed in two phases, with Phase 1 including the training center and tower, along with a portion of the fire station facilities described below. Phase 2 of construction would include a 2-bay double deep apparatus room, individual dormitories, kitchen, dining room, day room, physical training room, and other support spaces. Phase 1 of the proposed project is expected to break ground in June 2024 and be completed by January 2025; with Phase 2 anticipated to begin in June 2027. Construction activities will take place between the hours of 7:00 a.m. and 6:00 p.m. on weekdays and between the hours of 8:00 a.m. and 5:00 p.m. on Saturdays, in accordance with the City's Noise Ordinance.

Training Facilities

Training facilities associated with the proposed project would include a training classroom and training tower. The approximately 4,193 square-foot training classroom that would be connected to the fire station and located near the middle of the project site. The training classroom would include a lobby, a 50-seat classroom, an electrical closet, two offices, three storage rooms, and four restrooms. Two restrooms would be accessed from inside the building and two restrooms, with showers, would be accessed from outside the back of the building.

The proposed 5,721 square-foot six story pre-manufactured training tower would be located on the eastern portion of the project site. A water recovery system would be incorporated into the project design of the training tower area to reduce overall water needs required for training that would include underground water storage tanks. During training exercises, propane props would be used for pyrotechnic effects using propane tanks on site. It is anticipated that there will be approximately 100 exercises per year that would utilize the pyrotechnic effects.

The training facilities will be in operation up to 5 days per week consisting of classroom and drill ground training for 14 firefighters and 2 instructors. Large training events would be conducted 3 times a week, with large training events using 2 instructors, and 17 firefighters. Typical training activities would include engine and truck company operations, laying hose, throwing ladders, flowing water, active fire training, ventilation, rescue operations, confined space rescue training. Training activities would occur from 8:00 a.m. To 4:30 p.m.

Fire Station

A portion of the fire station will be built at the same time as the training facilities, during Phase 1, and will include the administrative office, the training classroom, shower/locker facilities, and an outside patio. The remainder of the fire station will be completed during Phase 2, and includes a 2-bay, double-deep apparatus room, individual dormitories, kitchen, dining room, day room, physical training room, and the various support spaces required for a facility of this type. The proposed fire station will house approximately 3 employees per shift. The station will include one Captain, one Engineer, and one Firefighter paramedic. The proposed fire station will house 4 engines, 1 ladder truck, 1 breathing support vehicle, and a hazmat truck.

The fire station operation would provide emergency response services for fires, medical aids, hazardous materials, rescue, public assistance and other responses such as natural disasters or acts of terrorism. Fire Station No. 80 will be in operation 24 hours a day and will primarily serve the western areas of the FFPD boundary and will provide support to the other eight fire stations as needed.

A backup generator would be provided onsite for any loss of power, requirements for the generator would be decided further in the design process but an assumption of a generator comparable to a Cat C9 with a rating of 300ekW is assumed in this analysis.

Parking and Hardscape

Two driveways from Cherry Avenue would be constructed on the western side of the project site. The northern driveway would allow access to the fire station and its dimensions would be designed specifically for fire truck access. The southern driveway would allow access to the proposed parking lot and its dimensions would be designed for passenger vehicle access. Six parking spots would be available for visitors, and 26 secured parking stalls would be located behind a 26-foot wide sliding security gate for Fire Station employees. A second 36-foot wide gate would be installed behind the fire station. Both gates would provide entrance to the Project's training facilities, which would be fenced-off to prevent public access using automated fencing.

1.4 Executive Summary

Standard Air Quality, Energy, and GHG Regulatory Conditions

The proposed project will be required to comply with the following regulatory conditions from the SCAQMD and State of California (State).

South Coast Air Quality Management District Rules

The following lists the SCAQMD rules that are applicable, but not limited to the proposed project.

- Rules 208 and 444 – Controls open fires, including pyrotechnic events at training tower;
- Rule 402 Nuisance – Controls the emissions of odors and other air contaminants;
- Rule 403 Fugitive Dust – Controls the emissions of fugitive dust;
- Rules 1108 and 1108.1 Cutback and Emulsified Asphalt – Controls the VOC content in asphalt;
- Rule 1113 Architectural Coatings – Controls the VOC content in paints and solvents; and
- Rule 1143 Paint Thinners – Controls the VOC content in paint thinners.

State of California Rules

The following lists the State of California Code of Regulations (CCR) air quality emission rules that are applicable, but not limited to the proposed project.

- CCR Title 13, Article 4.8, Chapter 9, Section 2449 – In use Off-Road Diesel Vehicles;
- CCR Title 13, Section 2025 – On-Road Diesel Truck Fleets;
- CCR Title 24 Part 6 – California Building Energy Standards; and
- CCR Title 24 Part 11 – California Green Building Standards.

Summary of Analysis Results

The following is a summary of the proposed project's impacts with regard to the State CEQA Guidelines air quality, energy, and GHG emissions checklist questions.

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

Less than significant impact.

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.

Expose sensitive receptors to substantial pollutant concentrations?

Less than significant impact.

Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less than significant impact.

Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation;

Less than significant impact.

Conflict with or obstruct a state or local plan for renewable energy;

Less than significant impact.

Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

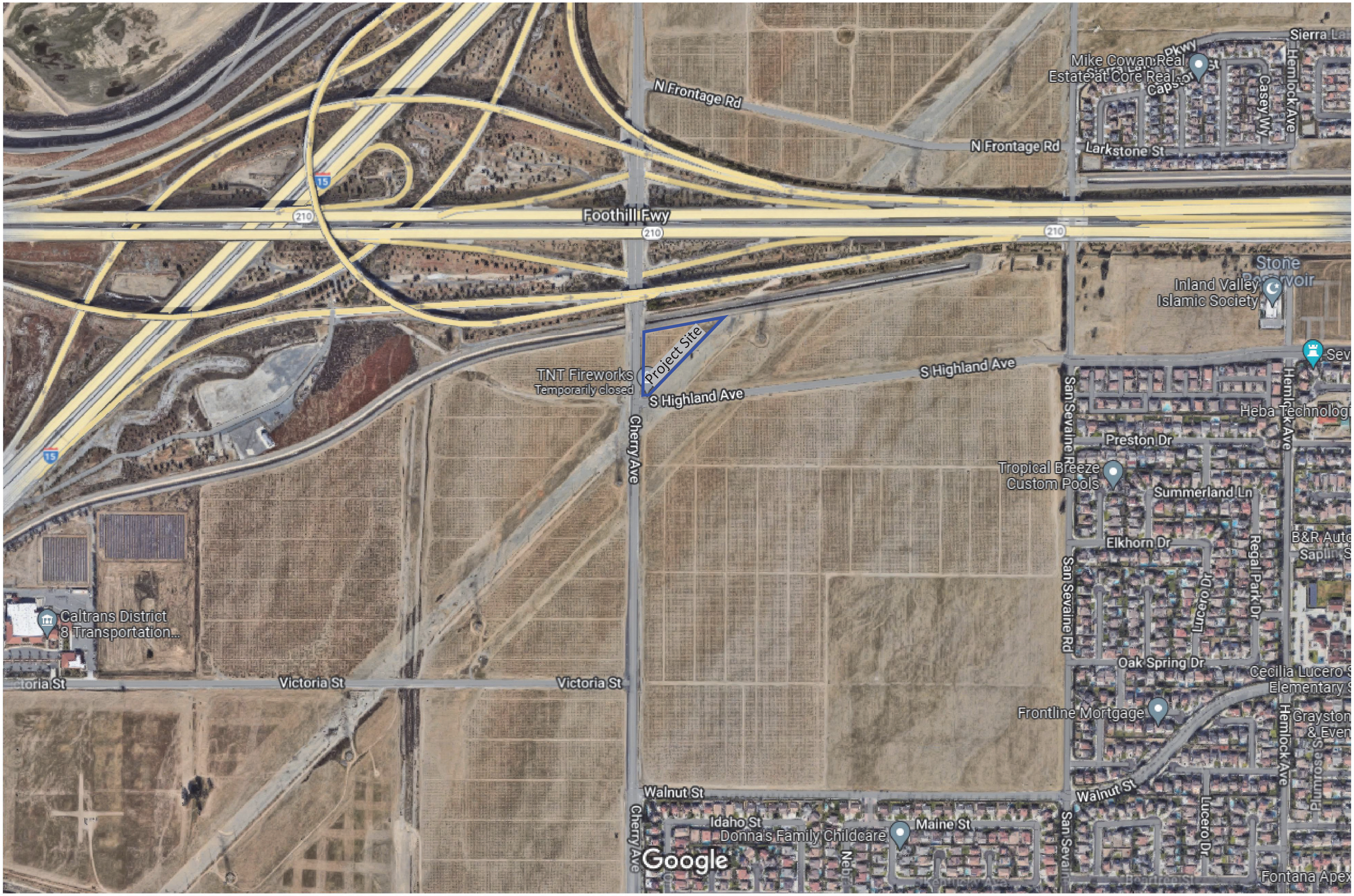
Less than significant impact.

Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs?

Less than significant impact.

1.5 Mitigation Measures for the Proposed Project

This analysis found that implementation of the State and SCAQMD air quality, energy, and GHG emissions reductions regulations were adequate to limit criteria pollutants, toxic air contaminants, odors, and GHG emissions from the proposed project to less than significant levels. No mitigation measures are required for the proposed project with respect to air quality, energy, and GHG emissions.



Imagery ©2022 Google, Imagery ©2022 County of San Bernardino, Maxar Technologies, U.S. Geological Survey, USDA/FPAC/GEO, Map data ©2022 500 ft

SOURCE: Google Maps.

VISTA ENVIRONMENTAL

Figure 1
Project Local Study Area

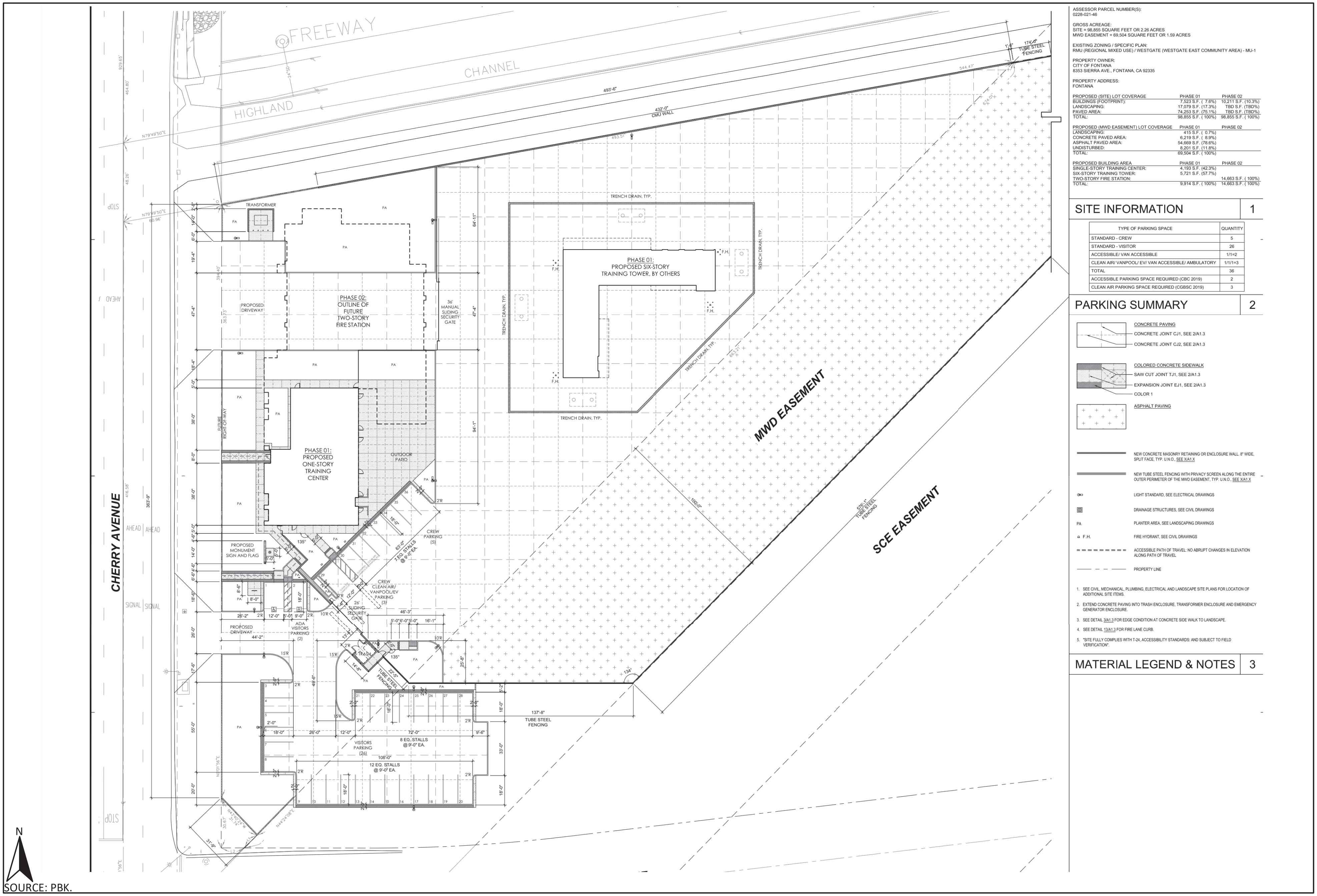


Figure 2
Proposed Site Plan

2.0 AIR POLLUTANTS

Air pollutants are generally classified as either criteria pollutants or non-criteria pollutants. Federal ambient air quality standards have been established for criteria pollutants, whereas no ambient standards have been established for non-criteria pollutants. For some criteria pollutants, separate standards have been set for different periods. Most standards have been set to protect public health. For some pollutants, standards have been based on other values (such as protection of crops, protection of materials, or avoidance of nuisance conditions). A summary of federal and state ambient air quality standards is provided in the Regulatory Framework section.

2.1 Criteria Pollutants and Ozone Precursors

The criteria pollutants consist of: ozone, nitrogen oxides (NOx), CO, sulfur oxides (SOx), lead, and particulate matter (PM). The ozone precursors consist of NO_x and VOC. These pollutants can harm your health and the environment, and cause property damage. The Environmental Protection Agency (EPA) calls these pollutants "criteria" air pollutants because it regulates them by developing human health-based and/or environmentally-based criteria for setting permissible levels. The following provides descriptions of each of the criteria pollutants and ozone precursors.

Nitrogen Oxides

NOx is the generic term for a group of highly reactive gases which contain nitrogen and oxygen. While most NOx are colorless and odorless, concentrations of nitrogen dioxide (NO_2) can often be seen as a reddish-brown layer over many urban areas. NOx form when fuel is burned at high temperatures, as in a combustion process. The primary manmade sources of NO_x are motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuel. NOx reacts with other pollutants to form, ground-level ozone, nitrate particles, acid aerosols, as well as NO_2, which cause respiratory problems. NO_x and the pollutants formed from NO_x can be transported over long distances, following the patterns of prevailing winds. Therefore, controlling NOx is often most effective if done from a regional perspective, rather than focusing on the nearest sources.

Ozone

Ozone is not usually emitted directly into the air, instead it is created by a chemical reaction between NOx and VOC in the presence of sunlight. Motor vehicle exhaust, industrial emissions, gasoline vapors, chemical solvents as well as natural sources emit NOx and VOC that help form ozone. Ground-level ozone is the primary constituent of smog. Sunlight and hot weather cause ground-level ozone to form with the greatest concentrations usually occurring downwind from urban areas. Ozone is subsequently considered a regional pollutant. Ground-level ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials. Because NOx and VOC are ozone precursors, the health effects associated with ozone are also indirect health effects associated with significant levels of NOx and VOC emissions.

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless gas that is formed when carbon in fuel is not burned completely. It is a component of motor vehicle exhaust, which contributes approximately 56 percent of all CO emissions nationwide. In cities, 85 to 95 percent of all CO emissions may come from motor vehicle exhaust. Other sources of CO emissions include industrial processes (such as metals processing and chemical manufacturing), residential wood burning, and natural sources such as forest fires. Woodstoves, gas stoves, cigarette smoke, and unvented gas and kerosene space heaters are indoor sources of CO. The highest levels of CO in the outside air typically occur during the colder months of the year when inversion conditions are more frequent. The air pollution becomes trapped near the ground beneath a layer of warm air. CO is described as having only a local influence because it dissipates quickly. Since CO concentrations are strongly associated with motor vehicle emissions, high CO concentrations generally occur in the immediate vicinity of roadways with high traffic volumes and traffic congestion, active parking lots, and in automobile tunnels. Areas adjacent to heavily traveled and congested intersections are particularly susceptible to high CO concentrations.

CO is a public health concern because it combines readily with hemoglobin and thus reduces the amount of oxygen transported in the bloodstream. The health threat from lower levels of CO is most serious for those who suffer from heart disease such as angina, clogged arteries, or congestive heart failure. For a person with heart disease, a single exposure to CO at low levels may cause chest pain and reduce that person's ability to exercise; repeated exposures may contribute to other cardiovascular effects. High levels of CO can affect even healthy people. People who breathe high levels of CO can develop vision problems, reduced ability to work or learn, reduced manual dexterity, and difficulty performing complex tasks. At extremely high levels, CO is poisonous and can cause death.

Sulfur Oxides

SOx gases are formed when fuel containing sulfur, such as coal and oil is burned, as well as from the refining of gasoline. SOx dissolves easily in water vapor to form acid and interacts with other gases and particles in the air to form sulfates and other products that can be harmful to people and the environment.

Lead

Lead is a metal found naturally in the environment as well as manufactured products. The major sources of lead emissions have historically been motor vehicles and industrial sources. Due to the phase out of leaded gasoline, metal processing is now the primary source of lead emissions to the air. High levels of lead in the air are typically only found near lead smelters, waste incinerators, utilities, and lead-acid battery manufacturers. Exposure of fetuses, infants and children to low levels of lead can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased lead levels are associated with increased blood pressure.

Particulate Matter

PM is the term for a mixture of solid particles and liquid droplets found in the air. PM is made up of a number of components including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. The size of particles is directly linked to their potential for causing health problems. Particles that are less than 10 micrometers in diameter (PM10) that are also known as *Respirable Particulate Matter* are the particles that generally pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. Particles that are less than 2.5 micrometers in diameter (PM2.5) that are also known as *Fine Particulate Matter* have been designated as a subset of PM10 due to their increased negative health impacts and its ability to remain suspended in the air longer and travel further.

Volatile Organic Compounds

Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to formation of ozone are referred to and regulated as VOCs (also referred to as reactive organic gases). Combustion engine exhaust, oil refineries, and fossil-fueled power plants are the sources of hydrocarbons. Other sources of hydrocarbons include evaporation from petroleum fuels, solvents, dry cleaning solutions, and paint.

VOC is not classified as a criteria pollutant, since VOCs by themselves are not a known source of adverse health effects. The primary health effects of VOCs result from the formation of ozone and its related health effects. High levels of VOCs in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of hydrocarbons, such as benzene, are considered TACs. There are no separate health standards for VOCs as a group.

2.2 Other Pollutants of Concern

Toxic Air Contaminants

In addition to the above-listed criteria pollutants, TACs are another group of pollutants of concern. TACs is a term that is defined under the California Clean Air Act and consists of the same substances that are defined as Hazardous Air Pollutants (HAPs) in the Federal Clean Air Act. There are over 700 hundred different types of TACs with varying degrees of toxicity. Sources of TACs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Cars and trucks release at least 40 different toxic air contaminants. The most important of these TACs, in terms of health risk, are diesel particulates, benzene, formaldehyde, 1,3-butadiene, and acetaldehyde. Public exposure to TACs can result from emissions from normal operations as well as from accidental releases. Health effects of TACs include cancer, birth defects, neurological damage, and death.

TACs are less pervasive in the urban atmosphere than criteria air pollutants, however they are linked to short-term (acute) or long-term (chronic or carcinogenic) adverse human health effects. There are hundreds of different types of TACs with varying degrees of toxicity. Sources of TACs include industrial processes, commercial operations (e.g., gasoline stations and dry cleaners), and motor vehicle exhaust.

According to *The California Almanac of Emissions and Air Quality 2013 Edition*, the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important of which is DPM. DPM is a subset of PM2.5 because the size of diesel particles are typically 2.5 microns and smaller. The identification of DPM as a TAC in 1998 led the California Air Resources Board (CARB) to adopt the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-fueled Engines and Vehicles in September 2000. The plan's goals are a 75-percent reduction in DPM by 2010 and an 85-percent reduction by 2020 from the 2000 baseline. Diesel engines emit a complex mixture of air pollutants, composed of gaseous and solid material. The visible emissions in diesel exhaust are known as particulate matter or PM, which includes carbon particles or "soot." Diesel exhaust also contains a variety of harmful gases and over 40 other cancer-causing substances. California's identification of DPM as a toxic air contaminant was based on its potential to cause cancer, premature deaths, and other health problems. Exposure to DPM is a health hazard, particularly to children whose lungs are still developing and the elderly who may have other serious health problems. Overall, diesel engine emissions are responsible for the majority of California's potential airborne cancer risk from combustion sources.

Asbestos

Asbestos is listed as a TAC by CARB and as a HAP by the EPA. Asbestos occurs naturally in mineral formations and crushing or breaking these rocks, through construction or other means, can release asbestiform fibers into the air. Asbestos emissions can result from the sale or use of asbestos-containing materials, road surfacing with such materials, grading activities, and surface mining. The risk of disease is dependent upon the intensity and duration of exposure. When inhaled, asbestos fibers may remain in the lungs and with time may be linked to such diseases as asbestosis, lung cancer, and mesothelioma. The nearest likely locations of naturally occurring asbestos, as identified in the *General Location Guide for Ultramafic Rocks in California*, prepared by the California Division of Mines and Geology, is located in Santa Barbara County. The nearest historic asbestos mine to the project site, as identified in the *Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California,* prepared by U.S. Geological Survey, is located at Asbestos Mountain, which is approximately 60 miles southeast of the project site in the San Jacinto Mountains. Due to the distance to the nearest natural occurrences of asbestos, the project site is not likely to contain asbestos.

3.0 GREENHOUSE GASES

3.1 Greenhouse Gases

Constituent gases of the Earth's atmosphere, called atmospheric GHGs, play a critical role in the Earth's radiation amount by trapping infrared radiation from the Earth's surface, which otherwise would have escaped to space. Prominent greenhouse gases contributing to this process include carbon dioxide (CO_2), methane (CH_4), ozone, water vapor, nitrous oxide (N_2O), and chlorofluorocarbons (CFCs). This phenomenon, known as the Greenhouse Effect, is responsible for maintaining a habitable climate. Anthropogenic (caused or produced by humans) emissions of these greenhouse gases in excess of natural ambient concentrations are responsible for the enhancement of the Greenhouse Effect and have led to a trend of unnatural warming of the Earth's natural climate, known as global warming or climate change. Emissions of gases that induce global warming are attributable to human activities associated with industrial/manufacturing, agriculture, utilities, transportation, and residential land uses. Emissions of CO_2 and N_2O are byproducts of fossil fuel combustion. Methane, a potent greenhouse gas, results from off-gassing associated with agricultural practices and landfills. Sinks of CO_2, where CO_2 is stored outside of the atmosphere, include uptake by vegetation and dissolution into the ocean. The following provides a description of each of the greenhouse gases and their global warming potential.

Water Vapor

Water vapor is the most abundant, important, and variable GHG in the atmosphere. Water vapor is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. Changes in its concentration are primarily considered a result of climate feedbacks related to the warming of the atmosphere rather than a direct result of industrialization. The feedback loop in which water is involved is critically important to projecting future climate change. 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. The warmer atmosphere can then hold more water vapor and so on and so on. This is referred to as a "positive feedback loop." The extent to which this positive feedback loop will continue is unknown as there is also dynamics that put the positive feedback loop in check. As an example, 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 (thus allowing less energy to reach the Earth's surface and heat it up).

Carbon Dioxide

The natural production and absorption of CO_2 is achieved through the terrestrial biosphere and the ocean. However, humankind has altered the natural carbon cycle by burning coal, oil, natural gas, and wood. Since the industrial revolution began in the mid-1700s, each of these activities has increased in scale and distribution. CO_2 was the first GHG demonstrated to be increasing in atmospheric concentration with the first conclusive measurements being made in the last half of the 20th century. Prior to the industrial revolution, concentrations were fairly stable at 280 parts per million (ppm). The International Panel on Climate Change (IPCC) indicates that concentrations were 379 ppm in 2005, an increase of more than 30 percent. Left unchecked, the IPCC projects that concentration of carbon dioxide in the atmosphere is projected to increase to a minimum of 540 ppm by 2100 as a direct result of anthropogenic sources. This could result in an average global temperature rise of at least two degrees Celsius or 3.6 degrees Fahrenheit.

Methane

CH_4 is an extremely effective absorber of radiation, although its atmospheric concentration is less than that of CO_2. Its lifetime in the atmosphere is brief (10 to 12 years), compared to some other GHGs (such as CO_2, N_2O, and 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 anthropocentric sources include fossil-fuel combustion and biomass burning.

Nitrous Oxide

Concentrations of N_2O also began to rise 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. N_2O is also commonly used as an aerosol spray propellant (i.e., in whipped cream bottles, in potato chip bags to keep chips fresh, and in rocket engines and race cars).

Chlorofluorocarbons

CFCs are gases formed synthetically by replacing all hydrogen atoms in methane or ethane 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. They were 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

Hydrofluorocarbons (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 for applications such as automobile air conditioners and refrigerants.

Perfluorocarbons

Perfluorocarbons (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

Sulfur Hexafluoride (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 were 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.

Aerosols

Aerosols are particles emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light. Cloud formation can also be affected by aerosols. Sulfate aerosols are emitted when fuel containing sulfur is burned. Black carbon (or soot) is emitted during biomass burning due to the incomplete combustion of fossil fuels. Particulate matter regulation has been lowering aerosol concentrations in the United States; however, global concentrations are likely increasing.

3.2 Global Warming Potential

GHGs have varying global warming potential (GWP). The GWP is the potential of a gas or aerosol to trap heat in the atmosphere; it is the cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to the reference gas, CO_2. The GHGs listed by the IPCC and the CEQA Guidelines are discussed in this section in order of abundance in the atmosphere. Water vapor, the most abundant GHG, is not included in this list because its natural concentrations and fluctuations far outweigh its anthropogenic (human-made) sources. To simplify reporting and analysis, GHGs are commonly defined in terms of their GWP. The IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of CO_2 equivalent (CO_2e). As such, the GWP of CO_2 is equal to 1. The GWP values used in this analysis are based on the 2007 IPCC Fourth Assessment Report, which are used in CARB's 2014 Scoping Plan Update and the CalEEMod Model Version 2020.4.0 and are detailed in Table A. The IPCC has updated the Global Warming Potentials of some gases in their Fifth Assessment Report, however the new values have not yet been incorporated into the CalEEMod model that has been utilized in this analysis.

Table A – Global Warming Potentials, Atmospheric Lifetimes and Abundances of GHGs

Gas	Atmospheric Lifetime (years)[1]	Global Warming Potential (100 Year Horizon)[2]	Atmospheric Abundance
Carbon Dioxide (CO_2)	50-200	1	379 ppm
Methane (CH_4)	9-15	25	1,774 ppb
Nitrous Oxide (N_2O)	114	298	319 ppb
HFC-23	270	14,800	18 ppt
HFC-134a	14	1,430	35 ppt
HFC-152a	1.4	124	3.9 ppt
PFC: Tetrafluoromethane (CF_4)	50,000	7,390	74 ppt
PFC: Hexafluoroethane (C_2F_6)	10,000	12,200	2.9 ppt
Sulfur Hexafluoride (SF_6)	3,200	22,800	5.6 ppt

Notes:

[1] Defined as the half-life of the gas.
[2] Compared to the same quantity of CO_2 emissions and is based on the Intergovernmental Panel On Climate Change (IPCC) 2007 standard, which is utilized in CalEEMod (Version 2020.4.0),that is used in this report (CalEEMod User Guide, May 2021).
Definitions: ppm = parts per million; ppb = parts per billion; ppt = parts per trillion
Source: IPCC 2007, EPA 2015

3.3 Greenhouse Gas Emissions Inventory

According to the Carbon Dioxide Information Analysis Center[1], 9,855 million metric tons (MMT) of CO_2e emissions were created globally in the year 2014. According to the Environmental Protection Agency (EPA), the breakdown of global GHG emissions by sector consists of: 25 percent from electricity and heat production; 21 percent from industry; 24 percent from agriculture, forestry and other land use activities; 14 percent from transportation; 6 percent from building energy use; and 10 percent from all other sources of energy use[2].

According to *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2020,* prepared by EPA, in 2020 total U.S. GHG emissions were 5,981.4 million metric tons (MMT) of CO_2e emissions. Total U.S. emissions have decreased by 7.3 percent between 1990 and 2020, which is down from a high of 15.7 percent above 1990 levels in 2007. Emissions decreased from 2019 to 2020 by 9.0 percent. The sharp decline in emissions from 2019 to 2020 is largely due to the impacts of the coronavirus pandemic on travel and economic activity.

According to *California Greenhouse Gas Emissions for 2000 to 2019 Trends of Emissions and Other Indicators*, prepared by CARB, July 28, 2021, the State of California created 418.2 million metric tons of carbon dioxide equivalent (MMTCO_2e) in 2019. The 2019 emissions were 7.2 MMTCO_2e lower than 2018 levels and almost 13 MMTCO_2e below the State adopted year 2020 GHG limit of 431 MMTCO_2e. The breakdown of California GHG emissions by sector consists of: 39.7 percent from transportation; 21.1 percent from industrial; 14.1 percent from electricity generation; 7.6 percent from agriculture; 10.5 percent from residential and commercial buildings; 4.9 percent from high global warming potential sources, and 2.1 percent from waste.

1 Obtained from: https://cdiac.ess-dive.lbl.gov/trends/emis/tre_glob_2014.html
2 Obtained from: https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data

4.0 AIR QUALITY MANAGEMENT

The air quality at the project site is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for improving the air quality are discussed below.

4.1 Federal – United States Environmental Protection Agency

The Clean Air Act, first passed in 1963 with major amendments in 1970, 1977 and 1990, is the overarching legislation covering regulation of air pollution in the United States. The Clean Air Act has established the mandate for requiring regulation of both mobile and stationary sources of air pollution at the state and federal level. The EPA was created in 1970 in order to consolidate research, monitoring, standard-setting and enforcement authority into a single agency.

The EPA is responsible for setting and enforcing the National Ambient Air Quality Standards (NAAQS) for atmospheric pollutants. It regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain locomotives. NAAQS pollutants were identified using medical evidence and are shown below in Table B.

Table B – State and Federal Criteria Pollutant Standards

Air Pollutant	Concentration / Averaging Time		Most Relevant Effects
	California Standards	Federal Primary Standards	
Ozone (O_3)	0.09 ppm / 1-hour 0.07 ppm / 8-hour	0.070 ppm, / 8-hour	a) Pulmonary function decrements and localized lung injury in humans and animals; (b) asthma exacerbation; (c) chronic obstructive pulmonary disease (COPD) exacerbation; (d) respiratory infection; (e) increased school absences, and hospital admissions and emergency department (ED) visits for combined respiratory diseases; (e) increased mortality; (f) possible metabolic effects. Vegetation damage; property damage
Carbon Monoxide (CO)	20.0 ppm / 1-hour 9.0 ppm / 8-hour	35.0 ppm / 1-hour 9.0 ppm / 8-hour	Visibility reduction (a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) possible impairment of central nervous system functions; (d) possible increased risk to fetuses; (f) possible increased risk of pulmonary disease; (g) possible emergency department visits for respiratory diseases overall and visits for asthma.
Nitrogen Dioxide (NO_2)	0.18 ppm / 1-hour 0.030 ppm / annual	100 ppb / 1-hour 0.053 ppm / annual	Short-term (a) asthma exacerbations (“asthma attacks”) Long-term (a) asthma development; (b) higher risk of all-cause, cardiovascular, and respiratory mortality. Both short and long term NO2 exposure is also associated with chronic obstructive pulmonary disease (COPD) risk. Potential impacts on cardiovascular health, mortality and cancer, aggravate chronic respiratory disease. Contribution to atmospheric discoloration

Air Pollutant	Concentration / Averaging Time		Most Relevant Effects
	California Standards	Federal Primary Standards	
Sulfur Dioxide (SO_2)	0.25 ppm / 1-hour 0.04 ppm / 24-hour	75 ppb / 1-hour	Respiratory symptoms (bronchoconstriction, possible wheezing or shortness of breath) during exercise or physical activity in persons with asthma. Possible allergic sensitization, airway inflammation, asthma development.
Respirable Particulate Matter (PM_{10})	50 µg/m^3 / 24-hour 20 µg/m^3 / annual	150 µg/m^3 / 24-hour	Short -term (a) increase in mortality rates; (b) increase in respiratory infections; (c) increase in number and severity of asthma attacks; (d) COPD exacerbation; (e) increase in combined respiratory-diseases and number of hospital admissions; (f) increased mortality due to cardiovascular or respiratory diseases; (g) increase in hospital admissions for acute respiratory conditions; (h) increase in school absences; (i) increase in lost work days; (j) decrease in respiratory function in children; (k) increase medication use in children and adults with asthma. Long-term (a) reduced lung function growth in children; (b) changes in lung development; (c) development of asthma in children; (d) increased risk of cardiovascular diseases; (e) increased total mortality from lung cancer; (f) increased risk of premature death. Possible link to metabolic, nervous system, and reproductive and developmental effects for short-term and long-term exposure to PM2.5.
Suspended Particulate Matter ($PM_{2.5}$)	12 µg/m^3 / annual	35 µg/m^3 / 24-hour 12 µg/m^3 / annual	
Sulfates	25 µg/m^3 / 24-hour	No Federal Standards	(a) Decrease in lung function; (b) aggravation of asthmatic symptoms; (c) vegetation damage; (d) Degradation of visibility; (e) property damage
Lead	1.5 µg/m^3 / 30-day	0.15 µg/m^3 /3-month rolling	(a) Learning disabilities; (b) impairment of blood formation and nerve function; (c) cardiovascular effects, including coronary heart disease and hypertension Possible male reproductive system effects
Hydrogen Sulfide	0.03 ppm / 1-hour	No Federal Standards	Exposure to lower ambient concentrations above the standard may result in objectionable odor and may be accompanied by symptoms such as headaches, nausea, dizziness, nasal irritation, cough, and shortness of breath

Source: Draft 2022 AQMP, SCAQMD, 2022.

As part of its enforcement responsibilities, the EPA requires each state with federal nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the national standards. The SIP must integrate federal, state, and local components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs within the timeframe identified in the SIP. The CARB defines attainment as the category given to an area with no violations in the past three years. As indicated below in Table C, the Air Basin has been designated by EPA for the national standards as a non-attainment area for ozone and PM2.5 and partial non-attainment for lead. Currently, the Air Basin is in attainment with the national ambient air quality standards for CO, PM10, SO_2, and NO_2.

Table C – National Air Quality Standards Attainment Status – South Coast Air Basin

Criteria Pollutant	Averaging Time	Designation[a]	Attainment Date[b]
Ozone	1979 1-Hour (0.12 ppm)	Nonattainment (Extreme)	2/6/2023 (revised deadline)
	2015 8-Hour (0.07 ppm)[d]	Nonattainment (Extreme)	8/3/2038
	2008 8-Hour (0.075 ppm)[d]	Nonattainment (Extreme)	7/20/2032
	1997 8-Hour (0.08 ppm)[d]	Nonattainment (Extreme)	6/15/2024
PM2.5[e]	2006 24-Hour (35 µg/m^3)	Nonattainment (Serious)	12/31/2019
	2012 Annual (12 µg/m^3)	Nonattainment (Serious)	12/31/2021
	1997 Annual (15 µg/m^3)	Attainment (final determination pending)	4/5/2015 (attained 2013)
PM10[f]	1987 24-Hour (150 µg/m^3)	Attainment (Maintenance)	7/26/2013 (attained)
Lead[g]	2008 3-Months Rolling (0.15 µg/m^3)	Nonattainment (Partial) (Attainment determination requested)	12/31/2015
CO	1971 1-Hour (35 ppm)	Attainment (Maintenance)	6/11/2007
	1971 8-Hour (9 ppm)	Attainment (Maintenance)	6/11/2007
NO_2[h]	2010 1-Hour (100 ppb)	Unclassifiable/Attainment	N/A (attained)
	1971 Annual (0.053 ppm)	Attainment (Maintenance)	9/22/1998 (attained)
SO_2[i]	2010 1-Hour (75 ppb)	Unclassifiable/Attainment	1/9/2018
	1971 24-Hour (0.14 ppm)	Unclassifiable/Attainment	3/19/1979

Source: SCAQMD, May 2022

Notes:

a) U.S. EPA often only declares Nonattainment areas; everywhere else is listed as Unclassifiable/Attainment or Unclassifiable.

b) A design value below the NAAQS for data through the full year or smog season prior to the attainment date is typically required for attainment demonstration.

c) The 1979 1-hour ozone NAAQS (0.12 ppm) was revoked, effective June 15, 2005; however, the Basin has not attained this standard and therefore has some continuing obligations with respect to the revoked standard; original attainment date was 11/15/2010; the revised attainment date is 2/6/2023.

d) The 2008 8-hour ozone NAAQS (0.075 ppm) was revised to 0.070 ppm, effective 12/28/20115 with classifications and implementation goals to be finalized by 10/1/2017; the 1997 8-hour ozone NAAQS (0.08 ppm) was revoked in the 2008 ozone implementation rule, effective 4/6/2015; there are continuing obligations under the revoked 1997 and revised 2008 ozone NAAQS until they are attained.

e) The attainment deadline for the 2006 24-Hour PM2.5 NAAQS was 12/31/15 for the former "moderate" classification; the EPA approved reclassification to "serious", effective 2/12/16 with an attainment deadline of 12/31/2019; the 2012 (proposal year) annual PM2.5 NAAQS was revised on 1/15/2013, effective 3/18/2013, from 15 to 12 µg/m^3; new annual designations were final 1/15/2015, effective 4/15/2015; on 7/25/2016 the EPA finalized a determination that the Basin attained the 1997 annual (15.0 µg/m^3) and 24-hour PM2.5 (65 µg/m^3) NAAQS, effective 8/24/2016.

f) The annual PM10 standard was revoked, effective 12/18/2006; the 24-hour PM10 NAAQS deadline was 12/31/2006; the Basin's Attainment Re-designation Request and PM10 Maintenance Plan was approved by the EPA on 6/26/2103, effective 7/26/2013.

g) Partial Nonattainment designation – Los Angeles County portion of the Basin only for near-source monitors; expect to remain in attainment based on current monitoring data; attainment re-designation request pending.

h) New 1-hour NO_2 NAAQS became effective 8/2/2010, with attainment designations 1/20/2012; annual NO_2 NAAQS retained.

i) The 1971 annual and 24-hour SO_2 NAAQS were revoked, effective 8/23/2010.

Despite substantial improvements in air quality over the past few decades, some air monitoring stations in the Air Basin still exceed the NAAQS and frequently record the highest ozone levels in the United States. In 2020, monitoring stations in the Air Basin exceeded the most current federal standards on a total of 181 days (49 percent of the year), including: 8-hour ozone (157 days over the 2015 ozone NAAQS), 24-hour PM2.5 (39 days), PM10 (3 days), and NO_2 (1 day). Nine of the top 10 stations in the nation most frequently exceeding the 2015 8-hour ozone NAAQS in 2020 were located within the Air Basin, including stations in San Bernardino, Riverside, and Los Angeles Counties (SCAQMD, 2022).

PM2.5 levels in the Air Basin have improved significantly in recent years. Since 2015, none of the monitoring stations in the Air Basin have recorded violations of the former 1997 annual PM2.5 NAAQS (15.0 μg/m^3). On July 25, 2016 the U.S. EPA finalized a determination that the Air Basin attained the 1997 annual (15.0 μg/m^3) and 24-hour PM2.5 (65 μg/m^3) NAAQS, effective August 24, 2016. However, the Air Basin does not meet the 2012 annual PM2.5 NAAQS (12.0 μg/m^3), with six monitoring stations having design values above the standard for the 2018-2020 period (SCAQMD, 2022).

4.2 State – California Air Resources Board

The CARB, which is a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, the CARB conducts research, sets the California Ambient Air Quality Standards (CAAQS), compiles emission inventories, develops suggested control measures, provides oversight of local programs, and prepares the SIP. The CAAQS for criteria pollutants in the Air Basin are shown in Table D. In addition, the CARB establishes emission standards for motor vehicles sold in California, consumer products (e.g. hairspray, aerosol paints, and barbeque lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions.

Table D – California Ambient Air Quality Standards Attainment Status – South Coast Air Basin

Criteria Pollutant	Averaging Time	Level[a]	Designation[b]
Ozone	1-Hour	0.09 ppm	Nonattainment
	8-Hour	0.070 ppm	Nonattainment
PM2.5	Annual	12 μg/m^3	Nonattainment
PM10	24-Hour	50 μg/m^3	Nonattainment
	Annual	20 μg/m^3	Nonattainment
Lead	30-Day Average	1.5 μg/m^3	Attainment
CO	1-Hour	20 ppm	Attainment
	8-Hour	9.0 ppm	Attainment
NO_2	1-Hour	0.18 ppm	Attainment
	Annual	0.030	Nonattainment[c] (CA 60 Near-road portion of San Bernardino, Riverside and Los Angeles Counties) Attainment (remainder of Basin)
SO_2	1-Hour	0.25 ppm	Attainment
	24-Hour	0.04 ppm	Attainment
Sulfates	24-Hour	25 μg/m^3	Attainment
Hydrogen Sulfide	1-Hour	0.03 ppm	Unclassified

Source: SCAQMD, May 2022

Notes:

a) CA State standards, or CAAQS, for ozone, SO_2, NO_2, PM10 and PM2.5 are values not to be exceeded; lead, sulfates and H_2S standards are values not to be equaled or exceeded; CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

b) CA State designations shown were updated by CARB in 2019, based on the 2016-2018 3-year period; stated designations are based on a 3-year data period after consideration of outliers and exceptional events.

c) While this region is currently in Nonattainment, the CARB approved a redesignation to attainment to attainment based on 2018-2020 data on February 24, 2022.

As shown in Table D, the Air Basin has been designated by the CARB as a non-attainment area for ozone, PM10 and PM2.5 and partial nonattainment for NO_2. Currently, the Air Basin is in attainment with the ambient air quality standards for lead, CO, SO_2 and sulfates, and is unclassified for Hydrogen Sulfide.

The following lists the State of California Code of Regulations (CCR) air quality emission rules that are applicable, but not limited to commercial retail projects in the State.

Assembly Bill 2588

The Air Toxics "Hot Spots" Information and Assessment Act (Assembly Bill [AB] 2588, 1987, Connelly) was enacted in 1987 as a means to establish a formal air toxics emission inventory risk quantification program. AB 2588, as amended, establishes a process that requires stationary sources to report the type and quantities of certain substances their facilities routinely release in California. The data is ranked by high, intermediate, and low categories, which are determined by: the potency, toxicity, quantity, volume, and proximity of the facility to nearby receptors.

CARB Regulation for In-Use Off-Road Diesel Vehicles

On July 26, 2007, the CARB adopted California Code of Regulations Title 13, Article 4.8, Chapter 9, Section 2449 to reduce DPM and NOx emissions from in-use off-road heavy-duty diesel vehicles in California. Such vehicles are used in construction, mining, and industrial operations. The regulation limits idling to no more than five consecutive minutes, requires reporting and labeling, and requires disclosure of the regulation upon vehicle sale. Performance requirements of the rule are based on a fleet's average NOx emissions, which can be met by replacing older vehicles with newer, cleaner vehicles or by applying exhaust retrofits. The regulation was amended in 2010 to delay the original timeline of the performance requirement making the first compliance deadline January 1, 2014 for large fleets (over 5,000 horsepower), 2017 for medium fleets (2,501-5,000 horsepower), and 2019 for small fleets (2,500 horsepower or less). Currently, no commercial operation in California may add any equipment to their fleet that has a Tier 0 or Tier 1 engine. By January 1, 2018 medium and large fleets will be restricted from adding Tier 2 engines to their fleets and by January 2023, no commercial operation will be allowed to add Tier 2 engines to their fleets. It should be noted that commercial fleets may continue to use their existing Tier 0 and 1 equipment, if they can demonstrate that the average emissions from their entire fleet emissions meet the NOx emissions targets.

CARB Resolution 08-43 for On-Road Diesel Truck Fleets

On December 12, 2008 the CARB adopted Resolution 08-43, which limits NOx, PM10 and PM2.5 emissions from on-road diesel truck fleets that operate in California. On October 12, 2009 Executive Order R-09-010 was adopted that codified Resolution 08-43 into Section 2025, title 13 of the California Code of Regulations. This regulation requires that by the year 2023 all commercial diesel trucks that operate in California shall meet model year 2010 (Tier 4 Final) or latter emission standards. In the interim period, this regulation provides annual interim targets for fleet owners to meet. By January 1, 2014, 50 percent of a truck fleet is required to have installed Best Available Control Technology (BACT) for NOx emissions and 100 percent of a truck fleet installed BACT for PM10 emissions. This regulation also provides a few exemptions including a onetime per year 3-day pass for trucks registered outside of California. All on-road diesel trucks utilized during construction of the proposed project will be required to comply with Resolution 08-43.

4.3 Regional – Southern California

The SCAQMD is the agency principally responsible for comprehensive air pollution control in the South Coast Air Basin. To that end, as a regional agency, the SCAQMD works directly with the Southern California Association of Governments (SCAG), county transportation commissions, and local governments and cooperates actively with all federal and state agencies.

South Coast Air Quality Management District

SCAQMD develops rules and regulations, establishes permitting requirements for stationary sources, inspects emission sources, and enforces such measures through educational programs or fines, when necessary. SCAQMD is directly responsible for reducing emissions from stationary, mobile, and indirect sources. It has responded to this requirement by preparing a sequence of AQMPs. The *Draft 2022 Air Quality Management Plan*, was prepared May 2022, is currently in the public comment period, and has not yet been adopted. As such the current applicable AQMP is the *Final 2016 Air Quality Management Plan* (2016 AQMP) that was adopted by the SCAQMD Board on March 3, 2016 and was adopted by CARB on March 23, 2017 for inclusion into the SIP. The 2016 AQMP was prepared in order to meet the following standards:

- 8-hour Ozone (75 ppb) by 2032
- Annual PM2.5 (12 µg/m3) by 2021-2025
- 8-hour Ozone (80 ppb) by 2024 (updated from the 2007 and 2012 AQMPs)
- 1-hour Ozone (120 ppb) by 2023 (updated from the 2012 AQMP)
- 24-hour PM2.5 (35 µg/m^3) by 2019 (updated from the 2012 AQMP)

In addition to meeting the above standards, the 2016 AQMP also includes revisions to the attainment demonstrations for the 1997 8-hour ozone NAAQS and the 1979 1-hour ozone NAAQS. The prior 2012 AQMP was prepared in order to demonstrate attainment with the 24-hour PM2.5 standard by 2014 through adoption of all feasible measures. The prior 2007 AQMP demonstrated attainment with the 1997 8-hour ozone (80 ppb) standard by 2023, through implementation of future improvements in control techniques and technologies. These "black box" emissions reductions represent 65 percent of the remaining NOx emission reductions by 2023 in order to show attainment with the 1997 8-hour ozone NAAQS. Given the magnitude of these needed emissions reductions, additional NOx control measures have been provided in the 2012 AQMP even though the primary purpose was to show compliance with 24-hour PM2.5 emissions standards.

The 2016 AQMP provides a new approach that focuses on available, proven and cost effective alternatives to traditional strategies, while seeking to achieve multiple goals in partnership with other entities to promote reductions in GHG emissions and TAC emissions as well as efficiencies in energy use, transportation, and goods movement. The 2016 AQMP recognizes the critical importance of working with other agencies to develop funding and other incentives that encourage the accelerated transition of vehicles, buildings and industrial facilities to cleaner technologies in a manner that benefits not only air quality, but also local businesses and the regional economy.

Although SCAQMD is responsible for regional air quality planning efforts, it does not have the authority to directly regulate air quality issues associated with plans and new development projects throughout the Air Basin. Instead, this is controlled through local jurisdictions in accordance to CEQA. In order to assist local jurisdictions with air quality compliance issues the *CEQA Air Quality Handbook* (SCAQMD CEQA Handbook), prepared by SCAQMD, 1993, with the most current updates found at http://www.aqmd.gov/ceqa/hdbk.html, was developed in accordance with the projections and programs detailed in the AQMPs. The purpose of the SCAQMD CEQA Handbook is to assist Lead Agencies, as well as consultants, project proponents, and other interested parties in evaluating a proposed project's potential air quality impacts. Specifically, the SCAQMD CEQA Handbook explains the procedures that SCAQMD recommends be followed for the environmental review process required by CEQA. The SCAQMD CEQA Handbook provides direction on how to evaluate potential air quality impacts, how to determine whether these impacts are significant, and how to mitigate these impacts. The SCAQMD intends that by providing this guidance, the air quality impacts of plans and development proposals will be analyzed accurately and consistently throughout the Air Basin, and adverse impacts will be minimized.

The following lists the SCAQMD rules that are applicable but not limited to fire station and training center projects in the Air Basin.

Rules 208 and 444 – Open Burning

Rules 208 and 444 requires that a permit is obtained for open burns that includes the proposed propane props would be used for pyrotechnic effects in the training tower. Rules 208 and 444 restrict open burning within 1,000 feet of a sensitive receptor, and when the Air Quality Index (AQI) at the project site is 100 or less, and the inversion base is 1,500 feet or higher. Rule 444 also provides specific rules for fire training exercises that limits each training fire to no more than 30 minutes and no more than four hours of fire in a 24 hour period. According to *Notice of Exemption from the California Environmental Quality Act Proposed Amended Rule 208 – Permit and Burn Authorization for Open Burning, and Proposed Amended Rule 444 – Open Burning,* prepared by SCAQMD October 31, 2008, any open burn where a permit is obtained and all requirements from Rules 208 and 444 are met, the air emissions created from the open burn is exempt from CEQA.

Rule 402 - Nuisance

Rule 402 prohibits a person from discharging from any source whatsoever such quantities of air contaminants or other material which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. Compliance with Rule 402 will reduce local air quality and odor impacts to nearby sensitive receptors.

Rule 403- Fugitive Dust

Rule 403 governs emissions of fugitive dust during construction activities and requires that no person shall cause or allow the emissions of fugitive dust such that dust remains visible in the atmosphere beyond the property line or the dust emission exceeds 20 percent opacity, if the dust is from the operation of a motorized vehicle. Compliance with this rule is achieved through application of standard Best Available Control Measures, which include but are not limited to the measures below. Compliance with these rules would reduce local air quality impacts to nearby sensitive receptors.

- Utilize either a pad of washed gravel 50 feet long, 100 feet of paved surface, a wheel shaker, or a wheel washing device to remove material from vehicle tires and undercarriages before leaving project site.
- Do not allow any track out of material to extend more than 25 feet onto a public roadway and remove all track out at the end of each workday.
- Water all exposed areas on active sites at least three times per day and pre-water all areas prior to clearing and soil moving activities.
- Apply nontoxic chemical stabilizers according to manufacturer specifications to all construction areas that will remain inactive for 10 days or longer.

- Pre-water all material to be exported prior to loading, and either cover all loads or maintain at least 2 feet of freeboard in accordance with the requirements of California Vehicle Code Section 23114.
- Replant all disturbed area as soon as practical.
- Suspend all grading activities when wind speeds (including wind gusts) exceed 25 miles per hour.
- Restrict traffic speeds on all unpaved roads to 15 miles per hour or less.

Rules 1108 and 1108.1 – Cutback and Emulsified Asphalt

Rules 1108 and 1108.1 govern the sale, use, and manufacturing of asphalt and limits the VOC content in asphalt. This rule regulates the VOC contents of asphalt used during construction as well as any on-going maintenance during operations. Therefore, all asphalt used during construction and operation of the proposed project must comply with SCAQMD Rules 1108 and 1108.1.

Rule 1113 – Architectural Coatings

Rule 1113 governs the sale, use, and manufacturing of architectural coatings and limits the VOC content in sealers, coatings, paints and solvents. This rule regulates the VOC contents of paints available during construction. Therefore, all paints and solvents used during construction and operation of the proposed project must comply with SCAQMD Rule 1113.

Rule 1143 – Paint Thinners

Rule 1143 governs the sale, use, and manufacturing of paint thinners and multi-purpose solvents that are used in thinning of coating materials, cleaning of coating application equipment, and other solvent cleaning operations. This rule regulates the VOC content of solvents used during construction. Solvents used during construction and operation of the proposed project must comply with SCAQMD Rule 1143.

Southern California Association of Governments

The SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties and addresses regional issues relating to transportation, the economy, community development and the environment. SCAG is the federally designated Metropolitan Planning Organization (MPO) for the majority of the southern California region and is the largest MPO in the nation. With respect to air quality planning, SCAG has prepared the *2020-2045 Regional Transportation Plan/Sustainable Communities Strategy* (Connect SoCal), adopted September 3, 2020 and the *2019 Federal Transportation Improvement* Program (2019 FTIP), adopted September 2018, which addresses regional development and growth forecasts. Although the Connect SoCal and 2019 FTIP are primarily planning documents for future transportation projects a key component of these plans are to integrate land use planning with transportation planning that promotes higher density infill development in close proximity to existing transit service. These plans form the basis for the land use and transportation components of the AQMP, which are utilized in the preparation of air quality forecasts and in the consistency analysis included in the AQMP. The Connect SoCal, 2019 FTIP, and AQMP are based on projections originating within the City and County General Plans.

4.4 Local – City of Fontana

Local jurisdictions, such as the City of Fontana, have the authority and responsibility to reduce air pollution through its police power and decision-making authority. Specifically, the City is responsible for the assessment and mitigation of air emissions resulting from its land use decisions. The City is also responsible for the implementation of transportation control measures as outlined in the 2016 AQMP and 2020 AQMP, when adopted. Examples of such measures include bus turnouts, energy-efficient streetlights, and synchronized traffic signals. In accordance with CEQA requirements and the CEQA review process, the City assesses the air quality impacts of new development projects, requires mitigation of potentially significant air quality impacts by conditioning discretionary permits, and monitors and enforces implementation of such mitigation.

In accordance with the CEQA requirements, the City does not, however, have the expertise to develop plans, programs, procedures, and methodologies to ensure that air quality within the City and region will meet federal and state standards. Instead, the City relies on the expertise of the SCAQMD and utilizes the SCAQMD CEQA Handbook as the guidance document for the environmental review of plans and development proposals within its jurisdiction.

5.0 ENERGY CONSERVATION MANAGEMENT

The regulatory setting related to energy conservation is primarily addressed through State and City regulations, which are discussed below.

5.1 State

Energy conservation management in the State was initiated by the 1974 Warren-Alquist State Energy Resources Conservation and Development Act that created the California Energy Resource Conservation and Development Commission (currently named California Energy Commission [CEC]), which was originally tasked with certifying new electric generating plants based on the need for the plant and the suitability of the site of the plant. In 1976 the Warren-Alquist Act was expanded to include new restrictions on nuclear generating plants, that effectively resulted in a moratorium of any new nuclear generating plants in the State. The following details specific regulations adopted by the State in order to reduce the consumption of energy.

California Code of Regulations (CCR) Title 20

On November 3, 1976 the CEC adopted the *Regulations for Appliance Efficiency Standards Relating to Refrigerators, Refrigerator-Freezers and Freezers and Air Conditioners,* which were the first energy-efficiency standards for appliances. The appliance efficiency regulations have been updated several times by the Commission and the most current version is the *2016 Appliance Efficiency Regulations*, adopted January 2017 and now includes almost all types of appliances and lamps that use electricity, natural gas as well as plumbing fixtures. The authority for the CEC to control the energy-efficiency of appliances is detailed in California Code of Regulations (CCR), Title 20, Division 2, Chapter 4, Article 4, Sections 1601-1609.

California Code of Regulations (CCR) Title 24, Part 6

CCR Title 24, Part 6: *California's Energy Efficiency Standards for Residential and Nonresidential Buildings* (Title 24) were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The California Energy Commission (CEC) is the agency responsible for the standards that are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. In 2008 the State set an energy-use reduction goal of zero-net-energy use of all new homes by 2020 and the CEC was mandated to meet this goal through revisions to the Title 24, Part 6 regulations.

The Title 24 standards are updated on a three-year schedule and since 2008 the standards have been incrementally moving to the 2020 goal of the zero-net-energy use. The 2019 Title 24 standards are the current standards in effect and on January 1, 2023 the 2022 Title 24 standards will be the required standards for new projects in California. As such, the proposed project will be required to be designed to meet the 2022 Title 24 standards.

According to the Title 24 Part 6 Fact Sheet, the CEC estimates that over 30 years the 2022 Title 24 standards will reduce 10 $MMTCO_2e$ of GHG emissions, which is equivalent to taking nearly 2.2 million cars off the road for a year. For single-family homes, the CEC estimates that the 2022 Title 24 changes from using natural gas furnaces to electric heat pumps to heat new homes and would reduce net CO_2 emissions by 16,230 $MTCO_2e$ per year, when compared to the 2019 Title 24 standards, which is equivalent of taking 3,641 gas cars off the road each year. The 2022 Title 24 standards will: (1) Increase onsite renewable energy generation; (2) Increases electric load flexibility to support grid reliability; (3) Reduces emissions from newly constructed buildings; (4) Reduces air pollution for improved public health; and (5) Encourages adoption of environmentally beneficial efficient electric technologies.

California Code of Regulations (CCR) Title 24, Part 11

CCR Title 24, Part 11: *California Green Building Standards* (CalGreen Code) was developed in response to continued efforts to reduce GHG emissions associated with energy consumption. The CalGreen Code is also updated every three years and the current version is the 2019 CalGreen Code and the 2022 CalGreen Code will go into effect on January 1, 2023.

The CalGreen Code contains requirements for construction site selection; storm water control during construction; construction waste reduction; indoor water use reduction; material selection; natural resource conservation; site irrigation conservation; and more. The code provides for design options allowing the designer to determine how best to achieve compliance for a given site or building condition. The code also requires building commissioning, which is a process for verifying that all building systems (e.g., heating and cooling equipment and lighting systems) are functioning at their maximum efficiency.

The CalGreen Code provides standards for bicycle parking, carpool/vanpool/electric vehicle spaces, light and glare reduction, grading and paving, energy efficient appliances, renewable energy, graywater systems, water efficient plumbing fixtures, recycling and recycled materials, pollutant controls (including moisture control and indoor air quality), acoustical controls, storm water management, building design, insulation, flooring, and framing, among others. Implementation of the CalGreen Code measures reduces energy consumption and vehicle trips and encourages the use of alternative-fuel vehicles, which reduces pollutant emissions.

Some of the notable changes in the 2022 CalGreen Code over the prior 2019 CalGreen Code for nonresidential development mandatory requirements include repeal of the designated parking spaces for clean air vehicles, an increase in the number of electric vehicle (EV) ready parking spaces and a new requirement for installed Level 2 or DCFC EV charging stations for autos and added EV charging readiness requirements to loading docks, enhanced thermal insulation requirements, and acoustical ceilings are now required.

Executive Order N-79-20

The California Governor issued Executive Order N-79-20 on September 23, 2020 that requires all new passenger cars and trucks and commercial drayage trucks sold in California to be zero-emissions by the year 2035 and all medium- heavy-duty vehicles (commercial trucks) sold in the state to be zero-emission by 2045 for all operations where feasible. Executive Order N-79-20 also requires all off-road vehicles and equipment to transition to 100 percent zero-emission equipment, where feasible by 2035.

Senate Bill 100 and Executive Order B-55-18

Senate Bill 100 (SB 100) was adopted September 2018 and the California Governor issued Executive Order B-55-18 in September 2018, shortly before the Global Climate Action Summit started in San Francisco. SB 100 and Executive Order B-55-18 requires that by December 1, 2045 that 100 percent of retail sales of electricity to be generated from renewable or zero-carbon emission sources of electricity. SB 100 supersedes the renewable energy requirements set by SB 350, SB 1078, SB 107, and SB X1-2. However, the interim renewable energy thresholds from the prior Bills of 44 percent by December 31, 2024, 52 percent by December 31, 2027, and 60 percent by December 31, 2030, will remain in effect.

Executive Order B-48-18 and Assembly Bill 2127

The California Governor issued Executive Order B-48-18 on January 26, 2018 that orders all state entities to work with the private sector to put at least five million zero-emission vehicles on California roads by 2030 and to install 200 hydrogen fueling stations and 250,000 electric vehicle chargers by 2025. Currently there are approximately 350,000 electric vehicles operating in California, which represents approximately 1.5 percent of the 24 million vehicles total currently operating in California. Implementation of Executive Order B-48-18 would result in approximately 20 percent of all vehicles in California to be zero emission electric vehicles. Assembly Bill 2127 (AB 2127) was codified into statute on September 13, 2018 and requires that the California Energy Commission working with the State Air Resources Board prepare biannual assessments of the statewide electric vehicle charging infrastructure needed to support the levels of zero emission vehicle adoption required for the State to meet its goals of putting at least 5 million zero-emission vehicles on California roads by 2030.

Assembly Bill 1109

California Assembly Bill 1109 (AB 1109) was adopted October 2007, also known as the Lighting Efficiency and Toxics Reduction Act, prohibits the manufacturing of lights after January 1, 2010 that contain levels of hazardous substances prohibited by the European Union pursuant to the RoHS Directive. AB 1109 also requires reductions in energy usage for lighting and is structured to reduce lighting electrical consumption by: (1) At least 50 percent reduction from 2007 levels for indoor residential lighting; and (2) At least 25 percent reduction from 2007 levels for indoor commercial and all outdoor lighting by 2018. AB 1109 would reduce GHG emissions through reducing the amount of electricity required to be generated by fossil fuels in California.

Assembly Bill 1493

California Assembly Bill 1493 (also known as the Pavley Bill, in reference to its author Fran Pavley) was enacted on July 22, 2002 and required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. In 2004, CARB approved the "Pavley I" regulations limiting the amount of GHGs that may be released from new passenger automobiles that are being phased in between model years 2009 through 2016. These regulations will reduce GHG emissions by 30 percent from 2002 levels by 2016. In June 2009, the EPA granted California the authority to implement GHG emission reduction standards for light duty vehicles, in September 2009, amendments to the Pavley I regulations were adopted by CARB and implementation of the "Pavley I" regulations started in 2009.

The second set of regulations "Pavley II" was developed in 2010, and is being phased in between model years 2017 through 2025 with the goal of reducing GHG emissions by 45 percent by the year 2020 as compared to the 2002 fleet. The Pavley II standards were developed by linking the GHG emissions and formerly separate toxic tailpipe emissions standards previously known as the "LEV III" (third stage of the Low Emission Vehicle standards) into a single regulatory framework. The new rules reduce emissions from gasoline-powered cars as well as promote zero-emissions auto technologies such as electricity and hydrogen, and through increasing the infrastructure for fueling hydrogen vehicles. In 2009, the U.S. EPA granted California the authority to implement the GHG standards for passenger cars, pickup trucks and sport utility vehicles and these GHG emissions standards are currently being implemented nationwide. However, EPA has performed a midterm evaluation of the longer-term standards for model years 2022-2025, and based on the findings of this midterm evaluation, the EPA proposed The Safer Affordable Fuel Efficient (SAFE) Vehicles Proposed Rule for Model Years 2021-2026 that amends the corporate average fuel economy (CAFE) and GHG emissions standards for light vehicles for model years 2021 through 2026. The EPA's proposed amendments do not include any extension of the legal waiver granted to California by the 1970 Clean Air Act and which has allowed the State to set tighter standards for vehicle pipe emissions than the EPA standards. On September 20, 2019, California filed suit over the EPA decision to revoke California's legal waiver that has been joined by 22 other states.

5.2 Local – City of Fontana

The applicable energy plan for the proposed project is the *Fontana Forward General Plan Update 2015-2035* (General Plan), adopted November 18, 2018 provides the following Goals and Policies that are designed to help the City improve its resource efficiency and help the City pursue sustainability and resilience by making resource-efficient choices to conserve water, energy, and materials. The applicable energy-related goals and policies from the General Plan in the Sustainability and Resilience Element for the proposed project are shown below.

Goal 2: Government facilities and operations are models of resource efficiency.

Policy 2.2: Continue organizational and operational improvements to maximize energy and resource efficiency and reduce waste.

Goal 5: Green building techniques are used in new development and retrofits.

Policy 5.1: Promote green building through guidelines, awards and nonfinancial incentives.

Goal 6: Fontana is a leader energy-efficient development and retrofits.

Policy 6.1: Promote energy-efficient development in Fontana.

Policy 6.2: Meet or exceed state goals for energy-efficient new construction.

6.0 GLOBAL CLIMATE CHANGE MANAGEMENT

The regulatory setting related to global climate change is addressed through the efforts of various international, federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to reduce GHG emissions through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for global climate change regulations are discussed below.

6.1 International

In 1988, the United Nations established the IPCC to evaluate the impacts of global climate change and to develop strategies that nations could implement to curtail global climate change. In 1992, the United States joined other countries around the world in signing the United Nations' Framework Convention on Climate Change (UNFCCC) agreement with the goal of controlling GHG emissions. The parties of the UNFCCC adopted the Kyoto Protocol, which set binding GHG reduction targets for 37 industrialized countries, the objective of reducing their collective GHG emissions by five percent below 1990 levels by 2012. The Kyoto Protocol has been ratified by 182 countries, but has not been ratified by the United States. It should be noted that Japan and Canada opted out of the Kyoto Protocol and the remaining developed countries that ratified the Kyoto Protocol have not met their Kyoto targets. The Kyoto Protocol expired in 2012 and the amendment for the second commitment period from 2013 to 2020 has not yet entered into legal force. The Parties to the Kyoto Protocol negotiated the Paris Agreement in December 2015, agreeing to set a goal of limiting global warming to less than 2 degrees Celsius compared with pre-industrial levels. The Paris Agreement has been adopted by 195 nations with 147 ratifying it, including the United States by President Obama, who ratified it by Executive Order on September 3, 2016. On June 1, 2017, President Trump announced that the United States is withdrawing from the Paris Agreement and on January 21, 2021 President Biden signed an executive order rejoining the Paris Agreement.

Additionally, the Montreal Protocol was originally signed in 1987 and substantially amended in 1990 and 1992. The Montreal Protocol stipulates that the production and consumption of compounds that deplete ozone in the stratosphere—CFCs, halons, carbon tetrachloride, and methyl chloroform—were to be phased out, with the first three by the year 2000 and methyl chloroform by 2005.

6.2 Federal – United States Environmental Protection Agency

The United States Environmental Protection Agency (EPA) is responsible for implementing federal policy to address global climate change. The Federal government administers a wide array of public-private partnerships to reduce U.S. GHG intensity. These programs focus on energy efficiency, renewable energy, methane, and other non-CO_2 gases, agricultural practices and implementation of technologies to achieve GHG reductions. EPA implements several voluntary programs that substantially contribute to the reduction of GHG emissions.

In Massachusetts v. Environmental Protection Agency (Docket No. 05–1120), argued November 29, 2006 and decided April 2, 2007, the U.S. Supreme Court held that not only did the EPA have authority to regulate greenhouse gases, but the EPA's reasons for not regulating this area did not fit the statutory requirements. As such, the U.S. Supreme Court ruled that the EPA should be required to regulate CO2 and other greenhouse gases as pollutants under the federal Clean Air Act (CAA).

In response to the FY2008 Consolidations Appropriations Act (H.R. 2764; Public Law 110-161), EPA proposed a rule on March 10, 2009 that requires mandatory reporting of GHG emissions from large sources in the United States. On September 22, 2009, the Final Mandatory Reporting of GHG Rule was signed and published in the Federal Register on October 30, 2009. The rule became effective on December 29, 2009. This rule requires suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions to submit annual reports to EPA.

On December 7, 2009, the EPA Administrator signed two distinct findings under section 202(a) of the Clean Air Act. One is an endangerment finding that finds concentrations of the six GHGs in the atmosphere threaten the public health and welfare of current and future generations. The other is a cause or contribute finding, that finds emissions from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare. These actions did not impose any requirements on industry or other entities, however, since 2009 the EPA has been providing GHG emission standards for vehicles and other stationary sources of GHG emissions that are regulated by the EPA. On September 13, 2013 the EPA Administrator signed 40 CFR Part 60, that limits emissions from new sources to 1,100 pounds of CO_2 per mega-watt hour (MWh) for fossil fuel-fired utility boilers and 1,000 pounds of CO_2 per MWh for large natural gas-fired combustion units.

On August 3, 2015, the EPA announced the Clean Power Plan, emissions guidelines for U.S. states to follow in developing plans to reduce GHG emissions from existing fossil fuel-fired power plants (Federal Register Vol. 80, No. 205, October 23 2015). On October 11, 2017, the EPA issued a formal proposal to repeal the Clean Power Plan and on June 19, 2019 the EPA replaced the Clean Power Plan with the Affordable Clean Energy rule that is anticipated to lower power sector GHG emissions by 11 million tons by the year 2030.

On April 30, 2020, the EPA and the National Highway Safety Administration published the Final Rule for the *Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks* (SAFE Vehicles Rule). Part One of the Rule revokes California's authority to set its own GHG emissions standards and zero-emission vehicle mandates in California, which results in one emission standard to be used nationally for all passenger cars and light trucks that is set by the EPA.

6.3 State

The CARB has the primary responsible for implementing state policy to address global climate change, however there are State regulations related to global climate change that affect a variety of State agencies. CARB, which is a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both the federal and state air pollution control programs within California. In this capacity, the CARB conducts research, sets California Ambient Air Quality Standards (CAAQS), compiles emission inventories, develops suggested control measures, provides oversight of local programs, and prepares the SIP. In addition, the CARB establishes emission standards for motor vehicles sold in California, consumer products (e.g. hairspray, aerosol paints, and barbeque lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions.

In 2008, CARB approved a Climate Change Scoping Plan that proposes a "comprehensive set of actions designed to reduce overall carbon GHG emissions in California, improve our environment, reduce our dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health" (CARB 2008). The Climate Change Scoping Plan has a range of GHG reduction actions which include direct regulations; alternative compliance mechanisms; monetary and non-monetary incentives; voluntary actions; market-based mechanisms such as a cap-and-trade system. In 2014, CARB approved the First Update to the Climate Change Scoping Plan (CARB, 2014) that identifies additional strategies moving beyond the 2020 targets to the year 2050. On December 14, 2017 CARB adopted the California's 2017 Climate Change Scoping Plan, November 2017 (CARB, 2017) that provides specific statewide policies and measures to achieve the 2030 GHG reduction target of 40 percent below 1990 levels by 2030 and the aspirational 2050 GHG reduction target of 80 percent below 1990 levels by 2050. In addition, the State has passed the following laws directing CARB to develop actions to reduce GHG emissions, which are listed below in chronological order, with the most current first.

Executive Order B-55-18 and Assembly Bill 1279

The California Governor issued Executive Order B-55-18 in September 2018 that establishes a new statewide goal to achieve carbon neutrality as soon as possible, but no later than 2045. This executive order directs CARB to work with relevant State agencies to develop a framework for implementation and accounting that tracks progress toward this goal as well as ensuring future scoping plans identify and recommend measures to achieve this carbon neutrality goal. Assembly Bill 1279 was passed by the legislature in September 2022 that codifies the carbon neutrality targets provided in Executive Order B-55-18. The *2022 Scoping Plan for Achieving Carbon Neutrality,* prepared by CARB, November 16, 2022 that will be considered for adoption at CARB's December Board meeting, was prepared in order to meet the carbon neutrality goal targets developed in Executive Order B-55-18 and codified in Assembly Bill 1279.

Executive Order N-79-20

EO N-79-20 establish targets for when all new vehicles and equipment are zero-emission and is described in more detail above in Section 5.1 under Energy Conservation Management.

California Code of Regulations (CCR) Title 24, Part 6

The Title 24 Part 6 standards have been developed by the CEC primarily for energy conservation and is described in more detail above in Section 5.1 under Energy Conservation Management. It should be noted that implementation of the Title 24 Part 6 building standards would also reduce GHG emissions, since as detailed above in Section 3.3 Greenhouse Gas Emissions Inventory, energy use for residential and commercial buildings creates 9.7 percent of the GHG emissions in the State.

California Code of Regulations (CCR) Title 24, Part 11

The CalGreen Building standards have been developed by the CEC primarily for energy conservation and is described in more detail above in Section 5.1 under Energy Conservation Management. It should be noted that implementation of the CalGreen Building standards would also reduce GHG emissions, since as detailed above under Title 24, Part 6, energy usage from buildings creates 9.7 percent of GHG emissions in the State.

Senate Bill 100

SB 100 requires that by December 1, 2045 that 100 percent of retail sales of electricity to be generated from renewable or zero-carbon emission sources of electricity and is described in more detail above in Section 5.1 under Energy Conservation Management.

Executive Order B-48-18 and Assembly Bill 2127

Executive Order B-48-18 and AB 2127 provides measures to put at least five million zero-emission vehicles on California roads by 2030 and to install 200 hydrogen fueling stations and 250,000 electric vehicle chargers by 2025 and is described in more detail above in Section 5.1 under Energy Conservation Management.

Executive Order B-30-15, Senate Bill 32 and Assembly Bill 197

The California Governor issued Executive Order B-30-15 on April 29, 2015 that aims to reduce California's GHG emissions 40 percent below 1990 levels by 2030. This executive order aligns California's GHG reduction targets with those of other international governments, such as the European Union that set the same target for 2030 in October, 2014. This target will make it possible to reach the ultimate goal of reducing GHG emissions 80 percent under 1990 levels by 2050 that is based on scientifically established levels needed in the U.S.A to limit global warming below 2 degrees Celsius – the warming threshold at which scientists say there will likely be major climate disruptions such as super droughts and rising sea levels. Assembly Bill 197 (AB 197) (September 8, 2016) and Senate Bill 32 (SB 32) (September 8, 2016) codified into statute the GHG emissions reduction targets of at least 40 percent below 1990 levels by 2030 as detailed in Executive Order B-30-15. AB 197 also requires additional GHG emissions reporting that is broken down to sub-county levels and requires CARB to consider the social costs of emissions impacting disadvantaged communities.

Executive Order B-29-15

The California Governor issued Executive Order B-29-15 on April 1, 2015 and directed the State Water Resources Control Board to impose restrictions to achieve a statewide 25% reduction in urban water usage and directed the Department of Water Resources to replace 50 million square feet of lawn with drought tolerant landscaping through an update to the State's Model Water Efficient Landscape Ordinance. The Ordinance also requires installation of more efficient irrigation systems, promotion of greywater usage and onsite stormwater capture, and limits the turf planted in new residential landscapes to 25 percent of the total area and restricts turf from being planted in median strips or in parkways unless the parkway is next to a parking strip and a flat surface is required to enter and exit vehicles. Executive Order B-29-15 would reduce GHG emissions associated with the energy used to transport and filter water.

Assembly Bill 341 and Senate Bills 939 and 1374

Senate Bill 939 (SB 939) requires that each jurisdiction in California to divert at least 50 percent of its waste away from landfills, whether through waste reduction, recycling or other means. Senate Bill 1374 (SB 1374) requires the California Integrated Waste Management Board to adopt a model ordinance by March 1, 2004 suitable for adoption by any local agency to require 50 to 75 percent diversion of construction and demolition of waste materials from landfills. Assembly Bill 341 (AB 341) was adopted in 2011 and builds upon the waste reduction measures of SB 939 and 1374, and set a new target of a 75 percent reduction in solid waste generated by the year 2020.

Senate Bill 375

Senate Bill 375 (SB 375) was adopted September 2008 in order to support the State's climate action goals to reduce GHG emissions from transportation sources through coordinated regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires CARB to set regional targets for GHG emissions reductions from passenger vehicle use. In 2010, CARB established targets for 2020 and 2035 for each Metropolitan Planning Organizations (MPO) within the State. It was up to each MPO to adopt a sustainable communities strategy (SCS) that will prescribe land use allocation in that MPOs Regional Transportation Plan (RTP) to meet CARB's 2020 and 2035 GHG emission reduction targets. These reduction targets are required to be updated every eight years and the most current targets are detailed at: https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/regional-plan-targets, which provides GHG emissions reduction targets for SCAG of 8 percent by 2020 and 19 percent by 2035.

The Connect SoCal (SCAG, 2020) provides a 2035 GHG emission reduction target of 19 percent reduction over the 2005 per capita emissions levels. The Connect SoCal include new initiatives of land use, transportation and technology to meet the 2035 new 19 percent GHG emission reduction target for 2035. CARB is also charged with reviewing SCAG's RTP/SCS for consistency with its assigned targets.

City and County land use policies, including General Plans, are not required to be consistent with the RTP and associated SCS. However, new provisions of CEQA incentivize, through streamlining and other provisions, qualified projects that are consistent with an approved SCS and categorized as "transit priority projects."

Assembly Bill 1109

AB 1109 requires reductions in energy usage for lighting and is described in more detail above in Section 5.1 under Energy Conservation Management.

Executive Order S-1-07

Executive Order S-1-07 was issued in 2007 and proclaims that the transportation sector is the main source of GHG emissions in the State, since it generates more than 40 percent of the State's GHG emissions. It establishes a goal to reduce the carbon intensity of transportation fuels sold in the State by at least ten percent by 2020. This Executive Order also directs CARB to determine whether this Low Carbon Fuel Standard (LCFS) could be adopted as a discrete early-action measure as part of the effort to meet the mandates in AB 32.

In 2009 CARB approved the proposed regulation to implement the LCFS. The standard was challenged in the courts, but has been in effect since 2011 and was re-approved by the CARB in 2015. The LCFS is anticipated to reduce GHG emissions by about 16 MMT per year by 2020. The LCFS is designed to provide a framework that uses market mechanisms to spur the steady introduction of lower carbon fuels. The framework establishes performance standards that fuel producers and importers must meet annually. Reformulated gasoline mixed with corn-derived ethanol and low-sulfur diesel fuel represent the baseline fuels. Lower carbon fuels may be ethanol, biodiesel, renewable diesel, or blends of these fuels with gasoline or diesel. Compressed natural gas and liquefied natural gas also may be low-carbon fuels. Hydrogen and electricity, when used in fuel cells or electric vehicles, are also considered as low-carbon fuels.

Senate Bill 97

Senate Bill 97 (SB 97) was adopted August 2007 and acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. SB 97 directed the Governor's Office of Planning and Research (OPR), which is part of the State Natural Resources Agency, to prepare, develop, and transmit to CARB guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, by July 1, 2009. The Natural Resources Agency was required to certify and adopt those guidelines by January 1, 2010.

Pursuant to the requirements of SB 97 as stated above, on December 30, 2009 the Natural Resources Agency adopted amendments to the State CEQA guidelines that addresses GHG emissions. The CEQA Guidelines Amendments changed 14 sections of the CEQA Guidelines and incorporated GHG language throughout the Guidelines. However, no GHG emissions thresholds of significance were provided and no specific mitigation measures were identified. The GHG emission reduction amendments went into effect on March 18, 2010 and are summarized below:

- Climate Action Plans and other greenhouse gas reduction plans can be used to determine whether a project has significant impacts, based upon its compliance with the plan.
- Local governments are encouraged to quantify the GHG emissions of proposed projects, noting that they have the freedom to select the models and methodologies that best meet their needs and circumstances. The section also recommends consideration of several qualitative factors that may be used in the determination of significance, such as the extent to which the given project complies with state, regional, or local GHG reduction plans and policies. OPR does not set or dictate specific thresholds of significance. Consistent with existing CEQA Guidelines, OPR encourages local governments to develop and publish their own thresholds of significance for GHG impacts assessment.
- When creating their own thresholds of significance, local governments may consider the thresholds of significance adopted or recommended by other public agencies, or recommended by experts.
- New amendments include guidelines for determining methods to mitigate the effects of GHG emissions in Appendix F of the CEQA Guidelines.
- OPR is clear to state that "to qualify as mitigation, specific measures from an existing plan must be identified and incorporated into the project; general compliance with a plan, by itself, is not mitigation."
- OPR's emphasizes the advantages of analyzing GHG impacts on an institutional, programmatic level. OPR therefore approves tiering of environmental analyses and highlights some benefits of such an approach.
- Environmental impact reports must specifically consider a project's energy use and energy efficiency potential.

Assembly Bill 32

In 2006, the California State Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. AB 32 requires CARB, to adopt rules and regulations that would achieve GHG emissions equivalent to statewide levels in 1990 by 2020 through an enforceable statewide emission cap which will be phased in starting in 2012. Emission reductions shall include carbon sequestration projects that would remove carbon from the atmosphere and utilize best management practices that are technologically feasible and cost effective.

In 2007 CARB released the calculated Year 1990 GHG emissions of 431 $MMTCO_2e$. The 2020 target of 431 $MMTCO_2e$ requires the reduction of 78 $MMTCO_2e$, or approximately 16 percent from the State's projected 2020 business as usual emissions of 509 $MMTCO_2e$ (CARB, 2014). Under AB 32, CARB was required to adopt regulations by January 1, 2011 to achieve reductions in GHGs to meet the 1990 cap by 2020. Early measures CARB took to lower GHG emissions included requiring operators of the largest industrial facilities that emit 25,000 metric tons of CO_2 in a calendar year to submit verification of GHG emissions by

December 1, 2010. The CARB Board also approved nine discrete early action measures that include regulations affecting landfills, motor vehicle fuels, refrigerants in cars, port operations and other sources, all of which became enforceable on or before January 1, 2010.

CARB's Scoping Plan that was adopted in 2009, proposes a variety of measures including: strengthening energy efficiency and building standards; targeted fees on water and energy use; a market-based cap-and-trade system; achieving a 33 percent renewable energy mix; and a fee regulation to fund the program. The 2014 update to the Scoping Plan identifies strategies moving beyond the 2020 targets to the year 2050.

The Cap-and-Trade Program established under the Scoping Plan sets a statewide limit on sources responsible for 85 percent of California's GHG emissions, and has established a market for long-term investment in energy efficiency and cleaner fuels since 2012.

Executive Order S-3-05

In 2005 the California Governor issued Executive Order S 3-05, GHG Emission, which established the following reduction targets:

- 2010: Reduce greenhouse gas emissions to 2000 levels;
- 2020: Reduce greenhouse gas emissions to 1990 levels;
- 2050: Reduce greenhouse gas emissions to 80 percent below 1990 levels.

The Executive Order directed the secretary of the California Environmental Protection Agency (CalEPA) to coordinate a multi-agency effort to reduce GHG emissions to the target levels. To comply with the Executive Order, the secretary of CalEPA created the California Climate Action Team (CAT), made up of members from various state agencies and commissions. The team released its first report in March 2006. The report proposed to achieve the targets by building on the voluntary actions of businesses, local governments, and communities and through State incentive and regulatory programs. The State achieved its first goal of reducing GHG emissions to 2000 levels by 2010.

Assembly Bill 1493

AB 1493 or the Pavley Bill sets tailpipe GHG emissions limits for passenger vehicles in California as well as fuel economy standards and is described in more detail above in Section 5.1 under Energy Conservation Management.

6.4 Regional – Southern California

The SCAQMD is the agency principally responsible for comprehensive air pollution control in the Air Basin. To that end, as a regional agency, the SCAQMD works directly with SCAG, county transportation commissions, and local governments and cooperates actively with all federal and state agencies.

South Coast Air Quality Management District

SCAQMD develops rules and regulations, establishes permitting requirements for stationary sources, inspects emission sources, and enforces such measures through educational programs or fines, when necessary. SCAQMD is directly responsible for reducing emissions from stationary, mobile, and indirect sources. The SCAQMD is also responsible for GHG emissions for projects where it is the lead agency. However, for other projects in the Air Basin where it is not the lead agency, it is limited to providing resources to other lead agencies in order to assist them in determining GHG emission thresholds and GHG reduction measures. In order to assist local agencies with direction on GHG emissions, the SCAQMD organized a Working Group, which is described below.

SCAQMD Working Group

Since neither CARB nor the OPR has developed GHG emissions threshold, the SCAQMD formed a Working Group to develop significance thresholds related to GHG emissions. At the September 28, 2010 Working Group meeting, the SCAQMD released its most current version of the draft GHG emissions thresholds, which recommends a tiered approach that either provides a quantitative annual thresholds of 3,500 $MTCO_2e$ for residential uses, 1,400 $MTCO_2e$ for commercial uses, 3,000 $MTCO_2e$ for mixed uses, and 10,000 $MTCO_2e$ for industrial uses.

Southern California Association of Governments

The SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties and addresses regional issues relating to transportation, the economy, community development and the environment. SCAG is the federally designated Metropolitan Planning Organization (MPO) for the majority of the southern California region and is the largest MPO in the nation. With respect to air quality planning, SCAG has prepared the Connect SoCal and 2019 FTIP addresses regional development and growth forecasts. Although the Connect SoCal and 2019 FTIP are primarily planning documents for future transportation projects a key component of these plans are to integrate land use planning with transportation planning that promotes higher density infill development in close proximity to existing transit service. These plans form the basis for the land use and transportation components of the AQMP, which are utilized in the preparation of air quality forecasts and in the consistency analysis included in the AQMP. The Connect SoCal, 2019 FTIP, and AQMP are based on projections originating within the City and County General Plans.

6.5 Local – City of Fontana

Local jurisdictions, such as the City of Fontana, have the authority and responsibility to reduce GHG emissions through their police power and decision-making authority. Specifically, the City is responsible for the assessment and mitigation of GHG emissions resulting from its land use decisions. In accordance with CEQA requirements and the CEQA review process, the City assesses the global climate change potential of new development projects, requires mitigation of potentially significant global climate change impacts by conditioning discretionary permits, and monitors and enforces implementation of such mitigation.

The *Fontana Forward General Plan Update 2015-2035* (General Plan), adopted November 18, 2018 provides the following Goals, Policies, and Actions that are designed to reduce greenhouse gas emissions. These goals and policies are in the Community Mobility and Circulation Element, and the Sustainability and Resilience Element.

Chapter 9 - Community Mobility and Circulation

Goal 7: The City of Fontana participates in shaping regional transportation policies to reduce traffic congestion and greenhouse gas emissions.

Policy 7.3: Participate in the efforts of Southern California Association of Governments (SCAG) to coordinate transportation planning and services that support greenhouse gas reductions.

Action E: Reduce greenhouse gas emissions associated with transportation by reducing vehicle miles traveled and per-mile emissions through use of vehicle technologies to meet the City's goals of greenhouse gas reductions by 2035.

Chapter 12 - Sustainability and Resilience

Goal 2: Government facilities and operations are models or resource efficiency.

Policy 2.2: Continue organizational and operational improvements to maximize energy and resource efficiency and reduce waste.

Goal 4: Fontana meets the greenhouse gas reduction goals for 2030 and subsequent goals set by the state.

Policy 4.1: Continue to collaborate with the San Bernardino County Transportation Authority, infrastructure agencies, and utilities on greenhouse gas reduction studies and goals.

Action A: Build on baseline research completed for greenhouse gas reduction to set local goals and meet state goals.

Action B: Work with regional agencies to meet any future state goals for GHG reductions.

7.0 ATMOSPHERIC SETTING

7.1 South Coast Air Basin

The project site is located within western San Bernardino County, which is part of the South Coast Air Basin (Air Basin) that includes the non-desert portions of Riverside, San Bernardino, and Los Angeles Counties and all of Orange County. The Air Basin is located on a coastal plain with connecting broad valleys and low hills to the east. Regionally, the Air Basin is bounded by the Pacific Ocean to the southwest and high mountains to the east forming the inland perimeter.

7.2 Local Climate

The climate of western San Bernardino County, technically called an interior valley subclimate of the Southern California's Mediterranean-type climate, is characterized by hot dry summers, mild moist winters with infrequent rainfall, moderate afternoon breezes, and generally fair weather. Occasional periods of strong Santa Ana winds and winter storms interrupt the otherwise mild weather pattern. The clouds and fog that form along the area's coastline rarely extend as far inland as western San Bernardino County. When morning clouds and fog form, they typically burn off quickly after sunrise. The most important weather pattern from an air quality perspective is associated with the warm season airflow across the densely populated areas located west of the project site. This airflow brings polluted air into western San Bernardino County late in the afternoon. This transport pattern creates unhealthful air quality that may extend to the project site particularly during the summer months.

Winds are an important parameter in characterizing the air quality environment of a project site because they both determine the regional pattern of air pollution transport and control the rate of dispersion near a source. Daytime winds in western San Bernardino County are usually light breezes from off the coast as air moves regionally onshore from the cool Pacific Ocean to the warm Mojave Desert interior of Southern California. These winds allow for good local mixing, but as discussed above, these coastal winds carry significant amounts of industrial and automobile air pollutants from the densely urbanized western portion of the Air Basin into the interior valleys which become trapped by the mountains that border the eastern and northern edges of the Air Basin.

In the summer, strong temperature inversions may occur that limit the vertical depth through which air pollution can be dispersed. Air pollutants concentrate because they cannot rise through the inversion layer and disperse. These inversions are more common and persistent during the summer months. Over time, sunlight produces photochemical reactions within this inversion layer that creates ozone, a particularly harmful air pollutant. Occasionally, strong thermal convections occur which allows the air pollutants to rise high enough to pass over the mountains and ultimately dilute the smog cloud.

In the winter, light nocturnal winds result mainly from the drainage of cool air off of the mountains toward the valley floor while the air aloft over the valley remains warm. This forms a type of inversion known as a radiation inversion. Such winds are characterized by stagnation and poor local mixing and trap pollutants such as automobile exhaust near their source. While these inversions may lead to air pollution "hot spots" in heavily developed coastal areas of the Air Basin, there is not enough traffic in inland valleys to cause any winter air pollution problems. Despite light wind conditions, especially at night and in the early morning, winter is generally a period of good air quality in the project vicinity.

The temperature and precipitation levels for the Fontana Kaiser Station, which is the nearest weather station to the project site with historical data is shown below in Table E. Table E shows that July is typically the warmest month and January is typically the coolest month. Rainfall in the project area varies considerably in both time and space. Almost all the annual rainfall comes from the fringes of mid-latitude storms from late November to early April, with summers being almost completely dry.

Table E – Monthly Climate Data

Month	Average Maximum Temperature (°F)	Average Minimum Temperature (°F)	Average Total Precipitation (inches)
January	66.8	44.0	3.65
February	69.4	45.0	2.85
March	70.1	46.3	2.80
April	74.5	48.4	1.13
May	79.9	52.6	0.26
June	86.7	56.6	0.04
July	95.0	62.2	0.01
August	94.4	62.9	0.11
September	91.3	61.3	0.34
October	83.0	55.4	0.34
November	73.6	48.5	1.72
December	68.3	44.4	2.07
Annual	**79.4**	**52.3**	**15.32**

Source: https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca3120

7.3 Monitored Local Air Quality

The air quality at any site is dependent on the regional air quality and local pollutant sources. Regional air quality is determined by the release of pollutants throughout the Air Basin. Estimates of the existing emissions in the Air Basin provided in the 2012 AQMP, indicate that collectively, mobile sources account for 59 percent of the VOC, 88 percent of the NOx emissions and 40 percent of directly emitted PM2.5, with another 10 percent of PM2.5 from road dust. The 2016 AQMP found that since 2012 AQMP projections were made stationary source VOC emissions have decreased by approximately 12 percent, but mobile VOC emissions have increased by 5 percent. The percentage of NOx emissions remain unchanged between the 2012 and 2016 projections.

SCAQMD has divided the Air Basin into 38 air-monitoring areas with a designated ambient air monitoring station representative of each area. The project site is located in Air Monitoring Area 34, Central San Bernardino Valley, which covers the area from Fontana to the base of the San Bernardino Mountains. The nearest air monitoring station to the project site is the Fontana-Arrow Highway Monitoring Station (Fontana Station) that is located approximately 2,4 miles south of the project site at 14360 Arrow Boulevard, Fontana. It should be noted that due to the air monitoring station's distance from the project site, recorded air pollution levels at the Fontana Station reflect with varying degrees of accuracy, local air quality conditions at the project site. The monitoring data is presented in Table F and shows the most recent three years of monitoring data available from CARB. CO measurements have not been provided, since CO is currently in attainment in the Air Basin and monitoring of CO within the Air Basin ended on March 31, 2013.

Table F – Local Area Air Quality Monitoring Summary

Pollutant (Standard)	Year[1]		
	2019	2020	2021
Ozone:			
Maximum 1-Hour Concentration (ppm)	0.124	0.151	0.125
Days > CAAQS (0.09 ppm)	**41**	**56**	**44**
Maximum 8-Hour Concentration (ppm)	0.109	0.111	0.103
Days > NAAQS (0.070 ppm)	**67**	**89**	**81**
Days > CAAQs (0.070 ppm)	**71**	**91**	**83**
Nitrogen Dioxide:			
Maximum 1-Hour Concentration (ppb)	76.1	66.4	67.2
Days > NAAQS (100 ppb)	0	0	0
Days > CAAQS (180 ppb)	0	0	0
Inhalable Particulates (PM10):			
Maximum 24-Hour National Measurement (ug/m^3)	88.8	76.8	73.8
Days > NAAQS (150 ug/m^3)	0	0	0
Days > CAAQS (50 ug/m^3)	**11**	**6**	**3**
Annual Arithmetic Mean (AAM) (ug/m^3)	35.3	37.2	30.1
Annual > NAAQS (50 ug/m^3)	No	No	No
Annual > CAAQS (20 ug/m^3)	**Yes**	**Yes**	**Yes**
Ultra-Fine Particulates (PM2.5):			
Maximum 24-Hour California Measurement (ug/m^3)	81.3	57.6	55.1
Days > NAAQS (35 ug/m^3)	**3**	**4**	**2**
Annual Arithmetic Mean (AAM) (ug/m^3)	11.3	12.7	12.0
Annual > NAAQS and CAAQS (12 ug/m^3)	No	**Yes**	**Yes**

Notes: Exceedances are listed in **bold.** CAAQS = California Ambient Air Quality Standard; NAAQS = National Ambient Air Quality Standard; ppm = parts per million; ppb = parts per billion; ND = no data available.

[1] Data obtained from the Fontana Station.

Source: http://www.arb.ca.gov/adam/

Ozone

During the last three years, the State 1-hour concentration standard for ozone has been exceeded between 38 and 56 days each year at the Fontana Station. The State 8-hour ozone standard has been exceeded between 71 and 91 days each year over the last three years at the Fontana Station. The Federal 8-hour ozone standard has been exceeded between 67 and 89 days each year over the last three years at the Fontana Station. Ozone is a secondary pollutant as it is not directly emitted. Ozone is the result of chemical reactions between other pollutants, most importantly hydrocarbons and NO_2, which occur only in the presence of bright sunlight. Pollutants emitted from upwind cities react during transport downwind to produce the oxidant concentrations experienced in the area. Many areas of Southern California contribute to the ozone levels experienced at this monitoring station, with the more significant areas being those directly upwind.

Nitrogen Dioxide

The Fontana Station did not record an exceedance of either the Federal or State 1-hour NO_2 standards for the last three years.

Particulate Matter

The State 24-hour concentration standard for PM10 has been exceeded between 3 and 11 days each year over the past three years at the Fontana Station. Over the past three years the Federal 24-hour standard for PM10 has not been exceeded at the Fontana Station. The annual PM10 concentration at the Fontana Station has exceeded the State standard for the past three years and has not exceeded the Federal standard for the past three years.

Over the past three years the federal 24-hour concentration standard for PM2.5 has been exceeded between 2 and 4 days each year over the past three years at the Fontana Station. The annual PM2.5 concentrations at the Fontana Station has exceeded the State and Federal standards in two of the past three years. There does not appear to be a noticeable trend for PM10 or PM2.5 in either maximum particulate concentrations or days of exceedances in the area. Particulate levels in the area are due to natural sources, grading operations, and motor vehicles.

According to the EPA, some people are much more sensitive than others to breathing fine particles (PM10 and PM2.5). People with influenza, chronic respiratory and cardiovascular diseases, and the elderly may suffer worsening illness and premature death due to breathing these fine particles. People with bronchitis can expect aggravated symptoms from breathing in fine particles. Children may experience decline in lung function due to breathing in PM10 and PM2.5. Other groups considered sensitive are smokers and people who cannot breathe well through their noses. Exercising athletes are also considered sensitive, because many breathe through their mouths during exercise.

7.4 Toxic Air Contaminant Levels in the Air Basin

In order to determine the Air Basin-wide risks associated with major airborne carcinogens, the SCAQMD conducted the Multiple Air Toxics Exposure Study (MATES) studies. According to the MATES V study (SCAQMD, 2021), the project site has an estimated cancer risk of 520 per million persons chance of cancer in the vicinity of the project site. In comparison, the average cancer risk for the Air Basin is 455 per million persons. The MATES V study that monitored air toxins between May 1, 2018 to April 30, 2019 found that cancer risk from air toxics has declined significantly in the Air Basin with a 40 percent decrease in cancer risk since the monitoring for the MATES IV study that occurred between July 1, 2012 and June 30, 2013 and an 84 percent decrease in cancer risk since the monitoring for the MATES II study that occurred between April 1, 1998 and March 31, 1999.

The MATES V study also analyzed impacts specific to the communities experiencing environmental injustices (EJ communities) that were evaluated using the Senate Bill 535 definition of disadvantaged communities, which found that between MATES IV and MATES V, the cancer risk from air toxics decreased by 57 percent in EJ communities overall, compared to a 53 percent reduction in non-EJ communities. In order to provide a perspective of risk, it is often estimated that the incidence in cancer over a lifetime for the U.S. population ranges around 1 in 3, or a risk of about 300,000 per million persons. The MATES-III study referenced a Harvard Report on Cancer Prevention, which estimated that of cancers associated with known risk factors, about 30 percent were related to tobacco, about 30 percent were related to diet and obesity, and about 2 percent were associated with environmental pollution related exposures that includes hazardous air pollutants.

8.0 MODELING PARAMETERS AND ASSUMPTIONS

8.1 CalEEMod Model Input Parameters

The criteria air pollution and GHG emissions impacts created by the proposed project have been analyzed through use of CalEEMod Version 2020.4.0. CalEEMod is a computer model published by the SCAQMD for estimating air pollutant emissions. The CalEEMod program uses the EMFAC2017 computer program to calculate the emission rates specific for the South Coast Air Basin portion of San Bernardino County for employee, vendor and haul truck vehicle trips and the OFFROAD2011 computer program to calculate emission rates for heavy equipment operations. EMFAC2017 and OFFROAD2011 are computer programs generated by CARB that calculates composite emission rates for vehicles. Emission rates are reported by the program in grams per trip and grams per mile or grams per running hour.

The project characteristics in the CalEEMod model were set to a project location of the South Coast Air Basin portion of San Bernardino County, a Climate Zone of 10, utility company of Southern California Edison, and project opening year of 2025. In addition, the EMFAC off-model adjustment factors for gasoline light duty vehicle to account for the SAFE Vehicle rule was selected in the CalEEMod model run.

Land Use Parameters

The proposed project would consist of development of a 14,663 square foot fire station, a 4,193 square foot training center, a 5,721 square foot six story training tower, and approximately 3.10 acres of paved parking, outdoor storage and activity areas on an approximately 3.68 acre project area. The proposed project's land use parameters that were entered into the CalEEMod model are shown in Table G.

Table G – CalEEMod Land Use Parameters

Proposed Land Use	Land Use Subtype in CalEEMod	Land Use Size[1]	Lot Acreage[2]	Building/Paving[3] (square feet)
Fire Station No. 80	User Defined Commercial	14.663 TSF	0.20	14,663
Training Center	Government Office Building	9.91 TSF	0.38	9,910
Paved Areas	Parking Lot	3.1 AC	3.10	135,036

Notes:
[1] TSF = Thousand Square Feet; AC = Acres
[2] Lot acreage calculated based on the total disturbed area of 3.68-acres.
[3] Building/Paving square feet represent area where architectural coatings will be applied.

Construction Parameters

According to the project applicant, construction would be completed in two phases. Phase 1 of the proposed project is expected to break ground in June 2024 and be completed by January 2025; with Phase 2 anticipated to begin in June 2027. In order to provide a worst-case analysis, construction activities from both phases were modeled as occurring at the same time, starting June 2024 and would be completed by June 2025, which is based on the CalEEMod default timing for a project of this size. The construction-related GHG emissions were based on a 30-year amortization rate as recommended in the SCAQMD GHG Working Group meeting on November 19, 2009. The phases of construction activities that have been analyzed are detailed below and include: 1) Site Preparation; 2) Grading, 3) Building construction, 4) Paving; and 5) Application of architectural coatings.

The CalEEMod model provides the selection of "mitigation" to account for project conditions that would result in less emissions than a project without these conditions, however it should be noted that this "mitigation" may represent regulatory requirements. This includes the required to adherence to SCAQMD Rule 403, which requires that the Best Available Control Measures be utilized to reduce fugitive dust emissions.

Site Preparation

The site preparation phase would consist of removing any vegetation, tree stumps, and stones onsite prior to grading. The site preparation phase been modeled as starting in June 2024 and would be completed in a week, which is based on the CalEEMod model default timing. The site preparation activities would require 18 worker trips per day. The onsite equipment would consist of three rubber-tired dozers, and four of either tractors, loaders, or backhoes, which is based on the CalEEMod default equipment mix. The mitigation of water all exposed areas three times per day was chosen in order to account for the fugitive dust reduction that would occur through adhering to SCAQMD Rule 403, which requires that the Best Available Control Measures be utilized to reduce fugitive dust emissions.

Grading

The grading phase was modeled as starting after completion of the site preparation phase and was modeled as occurring over eight workdays, which is based on the CalEEMod default timing. It is anticipated that the grading would likely be balanced, which would result in no dirt being imported or exported from the project site. The onsite equipment would consist of one excavator, one grader, one rubber-tired dozer, and three of either tractors, loaders, or backhoes, which is based on the CalEEMod default equipment mix. The grading activities would generate 15 worker trips per day. The mitigation of water all exposed areas three times per day was chosen in order to account for the fugitive dust reduction that would occur through adhering to SCAQMD Rule 403, which requires that the Best Available Control Measures be utilized to reduce fugitive dust emissions.

Building Construction

The building construction would occur after the completion of the grading phase and was modeled as occurring over 230 workdays (11 months), which is based on the CalEEMod default timing. The building construction phase would generate 65 worker trips and 23 vendor trips per day. The onsite equipment would consist of the simultaneous operation of one crane, three forklifts, one generator, one welder, and three of either tractors, loaders, or backhoes, which is based on the CalEEMod default equipment mix.

Paving

The paving phase would consist of paving the onsite driveways, paved training area, and parking lots. The paving phase would occur after the completion of the building construction phase and was modeled as occurring over 18 workdays, which is based on the CalEEMod default timing. The paving phase would generate 20 worker trips per day. The onsite equipment would consist of the simultaneous operation of two cement and mortar mixers, one paver, two paving equipment, two rollers, and one of either a tractor, loader, or backhoe, which is based on the CalEEMod default equipment mix.

Architectural Coating

The application of architectural coatings would occur after the completion of the paving phase and was modeled as occurring over 18 workdays, which is based on the CalEEMod default timing. The architectural coating phase was modeled based on covering 36,860 square feet of non-residential interior area, 12,287 square feet of non-residential exterior area, and 8,102 square feet of parking area. The architectural coating phase would generate 13 worker trips per day. The onsite equipment would consist of one air compressor, which is based on the CalEEMod default equipment mix

Operational Emissions Modeling

The operations-related criteria air pollutant emissions and GHG emissions created by the proposed project have been analyzed through use of the CalEEMod model. The proposed project was analyzed in the CalEEMod model based on the land use parameters provided above and the parameters entered for each operational emission source is described below

Mobile Sources

Mobile sources include emissions the additional vehicle miles generated from the proposed project. The daily vehicle trip rates associated with the employees and guests from the proposed project have been obtained from the *Transportation Assessment for the City of Fontana's Fire Station No. 80 and Training Center* (Traffic Analysis), prepared by David Evans and Associates, November 29, 2022, that found that the Training Center would generate 18 average daily trips (ADT) per day and the fire station would also generate 18 ADT per day. Since the Training Center would only operate five days per week, the weekday trips for the Training Center were set to 18 ADT and the Saturday and Sunday trips were set to zero in CalEEMod. The Fire Station land use was set to 18 ADT for every day of the week.

According to the project applicant, in addition to the automobile daily trips there would also be an average of six times per day when emergency vehicles would leave the fire station, which would generate 12 trips per day (leaving and returning to fire station). Since the Other Asphalt Surfaces land use in CalEEMod does not have any trips associated with this land use, it was utilized to analyze the 12 ADT from emergency vehicles, where 100 percent of the trips were set to primary trips as Commercial to Commercial trip type and the fleet mix was changed to 100 percent Heavy-Heavy Duty (HHD) Truck type. No other changes were made to the default mobile source parameters in the CalEEMod model.

Area Sources

Area sources include emissions from consumer products, landscape equipment, and architectural coatings. The area source emissions were based on the on-going use of the proposed project in the CalEEMod model. No changes were made to the default area source parameters in the CalEEMod model.

Energy Usage

Energy usage includes emissions from electricity and natural gas used onsite. Since the User Defined Commercial land use that was utilized to model the proposed fire station in CalEEMod does not have any default energy intensity factors associated with the use, the CalEEMod default energy intensity factors for Government Office Building was entered into the CalEEMod model for this land use. No other changes were made to the default energy usage parameters in the CalEEMod model.

Solid Waste

Waste includes the GHG emissions associated with the processing of waste from the proposed project as well as the GHG emissions from the waste once it is interred into a landfill. Since the User Defined Commercial land use that was utilized to model the proposed fire station in CalEEMod does not have any default solid waste factors associated with the use, the CalEEMod default solid waste factors for

Government Office Building was entered into the CalEEMod model for this land use. This resulted in the proposed project generating 23 tons of solid waste per year. No other changes were made to the default solid waste parameters in the CalEEMod model.

Water and Wastewater

Water includes the water used for the interior of the buildings as well as for landscaping and is based on the GHG emissions associated with the energy used to transport and filter the water. Since the User Defined Commercial land use that was utilized to model the proposed fire station in CalEEMod does not have any default water usage rates associated with the use, the CalEEMod default water use rate for Government Office Building was entered into the CalEEMod model for this land use. This resulted in the proposed project consuming 4,880,489 gallons of indoor water use and 2,991,268 gallons of outdoor water use per year. No other changes were made to the default water and wastewater parameters in the CalEEMod model.

Backup Diesel Generator

The proposed project would include the installation of up to a 300 kW 467 horsepower backup diesel-powered generator. Backup generators typically cycle on for 30 minutes on a weekly basis in order to keep the engine lubricated and ready to use in case of a power outage. The typical cycling of a backup generator would operate for approximately 26 hours per year. The backup diesel generator was modeled in CalEEMod based on a 467 horsepower engine, a 0.73 load factor, 0.5 hour per day, and 26 hours per year.

Pyrotechnic Effects at Training Tower

During training exercises, propane props would be used for pyrotechnic effects within the proposed six story training tower. It is anticipated that there will be approximately 100 exercises per year that would utilize the pyrotechnic effects. The use of pyrotechnics are regulated under SCAQMD Rules 208 and 444 that require each pyrotechnic event to obtain a permit that will only be issued when favorable atmospheric conditions exist. According to *Notice of Exemption from the California Environmental Quality Act Proposed Amended Rule 208 – Permit and Burn Authorization for Open Burning, and Proposed Amended Rule 444 – Open Burning,* prepared by SCAQMD October 31, 2008, any open burn where a permit is obtained and all requirements from Rules 208 and 444 are met, the air emissions created from the open burn is exempt from CEQA. As such, the criteria pollutant and GHG emissions created from the pyrotechnic effects utilized in the training tower have not been quantified as part of this analysis.

8.2 Energy Use Calculations

The proposed project is anticipated to consume energy during both construction and operation of the proposed project and the parameters utilized to calculate energy use from construction and operation of the proposed project are detailed separately below.

Construction-Related Energy Use

Construction of the proposed project is anticipated to use energy in the forms of petroleum fuel for both off-road equipment as well as from the transport of workers and materials to and from the project site and the calculations for each source are described below.

Off-Road Construction Equipment

The off-road construction equipment fuel usage was calculated through use of the CalEEMod model's default off-road equipment assumptions detailed above in Section 8.1. For each piece of off-road equipment, the fuel usage was calculated through use of the *2017 Off-road Diesel Emission Factors* spreadsheet, prepared by CARB (https://ww3.arb.ca.gov/msei/ordiesel.htm). The Spreadsheet provides the following formula to calculate fuel usage from off-road equipment:

Fuel Used = Load Factor x Horsepower x Total Operational Hours x BSFC / Unit Conversion

Where:

Load Factor - Obtained from CalEEMod default values

Horsepower – Obtained from CalEEMod default values

Total Operational Hours – Calculated by multiplying CalEEMod default daily hours by CalEEMod default number of working days for each phase of construction

BSFC – Brake Specific Fuel Consumption (pounds per horsepower-hour) – If less than 100 Horsepower = 0.408, if greater than 100 Horsepower = 0.367

Unit Conversion – Converts pounds to gallons = 7.109

Table H shows the off-road construction equipment fuel calculations based on the above formula. Table H shows that the off-road equipment utilized during construction of the proposed project would consume 33,925 gallons of diesel fuel.

Table H – Off-Road Equipment and Fuel Consumption from Construction of the Proposed Project

Equipment Type	Equipment Quantity	Horse-power	Load Factor	Operating Hours per Day	Total Operational Hours[1]	Fuel Used (gallons)
Site Preparation						
Rubber Tired Dozers	3	247	0.40	8	120	612
Tractors/Loaders/Backhoes	4	97	0.37	8	160	330
Grading						
Excavators	1	158	0.38	8	64	198
Grader	1	187	0.41	8	64	253
Rubber Tired Dozer	1	247	0.40	8	64	326
Tractors/Loaders/Backhoes	3	97	0.37	8	192	395
Building Construction						
Crane	1	231	0.29	7	1,610	5,568
Forklifts	3	89	0.20	8	5,520	5,639
Generator Set	1	84	0.74	8	1,840	6,564
Tractors/Loaders/Backhoes	3	97	0.37	7	4,830	9,940
Welder	1	46	0.45	8	1,840	2,186
Paving						
Cement and Mortar Mixers	2	9	0.56	6	216	62
Paver	1	130	0.42	8	144	406
Paving Equipment	2	132	0.36	6	216	530
Rollers	2	80	0.38	6	216	377
Tractors/Loaders/Backhoes	1	97	0.37	8	144	297
Architectural Coating						

Equipment Type	Equipment Quantity	Horse-power	Load Factor	Operating Hours per Day	Total Operational Hours[1]	Fuel Used (gallons)
Air Compressor	1	78	0.48	6	108	232
Total Off-Road Equipment Diesel Fuel Used during Construction (gallons)						**33,925**

Notes:
[1] Based on: 5 days for Site Preparation, 8 days for Grading; 230 days for Building Construction; 18 days for Paving; and 18 days for Architectural Coating.
Source: CalEEMod Version 2020.4.0 (see Appendix A); CARB, 2017.

On-Road Construction-Related Vehicle Trips

The on-road construction-related vehicle trips fuel usage was calculated through use of the construction vehicle trip assumptions from the CalEEMod model run as detailed above in Section 8.1. The calculated total construction miles was then divided by the fleet average for all of Southern California miles per gallon rates for the year 2024 calculated through use of the EMFAC2017 model (https://www.arb.ca.gov/emfac/2017/) and the EMFAC2017 model printouts are shown in Appendix B. The worker trips were based on the entire fleet average miles per gallon rate for gasoline powered vehicles and the vendor trips were based on the Heavy-Heavy Duty Truck (HHDT), Medium Duty Vehicle (MDV), and Medium Heavy-Duty Vehicle (MHDV) fleet average miles per gallon rate for diesel-powered vehicles. Table I shows the on-road construction vehicle trips modeled in CalEEMod and the fuel usage calculations.

Table I – On-Road Vehicle Trips and Fuel Consumption from Construction of the Proposed Project

Vehicle Trip Types/ Fuel Type	Daily Trips	Trip Length (miles)	Total Miles per Day	Total Miles per Phase[1]	Fleet Average Miles per Gallon[2]	Fuel Used (gallons)
Site Preparation						
Worker (Gasoline)	18	14.7	265	1,323	27.5	48
Vendor Truck (Diesel)	6	6.9	41	207	8.8	23
Grading						
Worker (Gasoline)	15	14.7	221	1,764	27.5	64
Vendor Truck (Diesel)	6	6.9	41	331	8.8	38
Building Construction						
Worker (Gasoline)	65	14.7	956	219,765	27.5	7,999
Vendor Truck (Diesel)	26	6.9	179	41,262	8.8	4,673
Paving						
Worker (Gasoline)	20	14.7	294	5,292	27.5	193
Architectural Coatings						
Worker (Gasoline)	13	14.7	191	3,440	27.5	125
Total Gasoline Fuel Used from On-Road Construction Vehicles (gallons)						**8,429**
Total Diesel Fuel Used from On-Road Construction Vehicles (gallons)						**4,734**

Notes:
[1] Based on: 5 days for Site Preparation, 8 days for Grading; 230 days for Building Construction; 18 days for Paving; and 18 days for Architectural Coating.
[2] From EMFAC 2017 model (see Appendix B). Worker Trips based on entire fleet of gasoline vehicles and Vendor Trips based on only truck fleet of diesel vehicles.
Source: CalEEMod Version 2020.4.0; CARB, 2018.

Table I shows that the on-road construction-related vehicle trips would consume 8,429 gallons of gasoline and 4,734 gallons of diesel fuel. As detailed above, Table H shows that the off-road construction equipment would consume 33,925 gallons of diesel fuel. This would result in the total consumption of 8,429 gallons of gasoline and 38,659 gallons of diesel fuel from construction of the proposed project.

Operations-Related Energy Use

The operation of the proposed project is anticipated to use energy in the forms of petroleum fuel, electricity, natural gas, and propane, and the calculations for each source are described below.

<u>Operational Petroleum Fuel</u>

The on-road operations-related vehicle trips fuel usage was calculated through use of the total annual vehicle miles traveled assumptions from the CalEEMod model run as detailed above in Section 8.1, which found that operation of the proposed project would generate 72,797 vehicle miles traveled per year from autos and would generate 36,682 vehicle miles traveled per year from diesel-powered emergency vehicles. The calculated total operational miles were then divided by the Southern California fleet average rate of 27.5 miles per gallon of gasoline for automobiles and the fleet average rate of 8.8 miles per gallon of diesel for trucks, which was calculated through use of the EMFAC2017 model and based on the year 2024. The EMFAC2017 model printouts are shown in Appendix B. Based on the above calculation methodology, the operation of automobiles would consume 2,650 gallons of gasoline per year and from emergency vehicles would consume 4,154 gallons of diesel per year.

Operation of the proposed project would also consume diesel fuel from the operation of the backup generator. According to the Cat C9 Diesel Generator Sets 200 ekW – 300 ekW Data Sheet, a 300 ekW generator consumes 11.5 gallons per hour with a 50 percent load. As detailed above in Section 8.1, the typical maintenance cycling of the proposed diesel generator is anticipated to run 26 hours per year. This would result in the consumption of 299 gallons of diesel per year.

<u>Operational Electricity Use</u>

The operations-related electricity usage was calculated in the CalEEMod model run that depicts the electricity use from each land use that are shown below in kilo-watt hours (kWh) per year:

- Parking Lot (onsite driveways, paved training area, and parking lots) – 47,263 kWh/year
- Government Office Building (Training Center) – 91,073 kWh/year
- User Defined Commercial (Fire Station) – 134,753 kWh/year

Based on the above, it is anticipated that the proposed project would utilize 273,089 kWh per year of electricity.

<u>Operational Natural Gas Use</u>

The operations-related natural gas usage was calculated in the CalEEMod model run that depicts the natural gas use from each land use that are shown below in kilo British Thermal Units (kBTU) per year:

- Parking Lot (onsite driveways, paved training area, and parking lots) – 0 kBTU/year
- Government Office Building (Training Center) – 33,991 kBTU/year
- User Defined Commercial (Fire Station) – 50,294 kBTU/year

Based on the above, it is anticipated that the proposed project will use 84,285 kBTU per year, which is equivalent to 84 mega-British Thermal units (MBTU) per year of natural gas.

Operational Propane Use

During training exercises, propane props would be used for pyrotechnic effects within the proposed six story training tower. It is anticipated that there will be approximately 100 exercises per year that would utilize the pyrotechnic effects. The use of pyrotechnics are regulated under SCAQMD Rules 208 and 444 that require each pyrotechnic event to obtain a permit that will only be issued when favorable atmospheric conditions exist. Rule 444 also provides specific rules for fire training exercises that limits each training fire to no more than 30 minutes. Since it is unknown at this time the propane consumption rates of the propane props that will be utilized in the training tower, a high BTU fire pit consumption rate of 6 gallons per hour[3] has been utilized to provide an estimate of the propane usage from each propane prop in the training tower. Since the training tower will be six stories high, it is anticipated that there will be a propane prop on each floor, or six total that will operate for the maximum allowed of 30 minutes per event and 100 events per year. This would result in the consumption of 1,800 gallons of propane per year.

3 Obtained from: https://support.celestialfireglass.com/faqs/how-long-does-a-propane-tank-last-on-a-fire-pit/

9.0 THRESHOLDS OF SIGNIFICANCE

9.1 Regional Air Quality

Many air quality impacts that derive from dispersed mobile sources, which are the dominate pollution generators in the Air Basin, often occurs hours later and miles away after photochemical processes have converted primary exhaust pollutants into secondary contaminants such as ozone. The incremental regional air quality impact of an individual project is generally very small and difficult to measure. Therefore, SCAQMD has developed significance thresholds based on the volume of pollution emitted rather than on actual ambient air quality because the direct air quality impact of a project is not quantifiable on a regional scale. The SCAQMD CEQA Handbook states that any project in the Air Basin with daily emissions that exceed any of the identified significance thresholds should be considered as having an individually and cumulatively significant air quality impact. For the purposes to this air quality impact analysis, a regional air quality impact would be considered significant if emissions exceed the SCAQMD significance thresholds identified in Table J.

Table J – SCAQMD Regional Criteria Pollutant Emission Thresholds of Significance

	Pollutant Emissions (pounds/day)						
	VOC	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**Lead**
Construction	75	100	550	150	150	55	3
Operation	55	55	550	150	150	55	3

Source: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2

9.2 Local Air Quality

Project-related construction air emissions may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the Air Basin. In order to assess local air quality impacts the SCAQMD has developed Localized Significant Thresholds (LSTs) to assess the project-related air emissions in the project vicinity. SCAQMD has also provided *Final Localized Significance Threshold Methodology* (LST Methodology), July 2008, which details the methodology to analyze local air emission impacts. The LST Methodology found that the primary emissions of concern are NO_2, CO, PM10, and PM2.5.

The LST Methodology provides Look-Up Tables with different thresholds based on the location and size of the project site and distance to the nearest sensitive receptors. As detailed above in Section 7.3, the project site is located in Air Monitoring Area 34, Central San Bernardino Valley, which covers the area from Fontana to the base of the San Bernardino Mountains. The Look-Up Tables provided in the LST Methodology include project site acreage sizes of 1-acre, 2-acres and 5-acres. Since the 3.68 acre area that would be disturbed as part of the proposed project is between the 2-acre and 5-acre sizes, the 2-acre and 5-acre thresholds were interpolated in order to develop the threshold for a 3.68-acre project site.

The nearest sensitive receptors to the project site are homes located as near as 2,200 feet (670 meters) to the east of the project site. In order to provide a conservative analysis, the 500 meter thresholds have been utilized. Table K below shows the LSTs for NOx, CO, PM10 and PM2.5 for both construction and operational activities.

Table K – SCAQMD Local Air Quality Thresholds of Significance

Activity	Allowable Emissions (pounds/day)[1]			
	NOx	CO	PM10	PM2.5
Construction	737	25,755	218	113
Operation	737	25,755	53	27

Notes:
[1] The nearest offsite sensitive receptors to the project site are homes located as near as 2,200 feet (670 meters) east of the project site. In order to provide a conservative analysis the 500-meter thresholds were utilized.
Source: Calculated from SCAQMD's Mass Rate Look-up Tables for two and five acres in Air Monitoring Area 34, Central San Bernardino Valley.

9.3 Toxic Air Contaminants

According to the SCAQMD CEQA Handbook, any project that has the potential to expose the public to toxic air contaminants in excess of the following thresholds would be considered to have a significant air quality impact:

- If the Maximum Incremental Cancer Risk is 10 in one million or greater; or
- Toxic air contaminants from the proposed project would result in a Hazard Index increase of 1 or greater.

In order to determine if the proposed project may have a significant impact related to toxic air contaminants (TACs), the *Health Risk Assessment Guidance for analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis*, (Diesel Analysis) prepared by SCAQMD, August 2003, recommends that if the proposed project is anticipated to create TACs through stationary sources or regular operations of diesel trucks on the project site, then the proximity of the nearest receptors to the source of the TAC and the toxicity of the HAP should be analyzed through a comprehensive facility-wide health risk assessment (HRA).

The comprehensive HRA for both construction and operation of the proposed project can be found below in Section 10.4.

9.4 Odor Impacts

The SCAQMD CEQA Handbook states that an odor impact would occur if the proposed project creates an odor nuisance pursuant to SCAQMD Rule 402, which states:

> "A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.
>
> The provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals."

If the proposed project results in a violation of Rule 402 with regards to odor impacts, then the proposed project would create a significant odor impact.

9.5 Energy Conservation

The *2020 CEQA California Environmental Quality Act Statutes & Guidelines* (2020 CEQA Guidelines) include an Energy Section that analyzes the proposed project's energy consumption in order to avoid or reduce inefficient, wasteful or unnecessary consumption of energy. Appendix F of the 2020 CEQA Statute and Guidelines, states the following:

> The goal of conserving energy implies the wise and efficient use of energy. The means of achieving this goal include:
>
> (1) Decreasing overall per capita energy consumption,
>
> (2) Decreasing reliance on fossil fuels such as coal, natural gas and oil, and
>
> (3) Increasing reliance on renewable energy sources.

Since the Energy Section was recently added, no state or local agencies have adopted specific criteria or thresholds to be utilized in an energy impact analysis. However, Appendix F, Subsection II.C of the 2018 CEQA Guidelines provides the following criteria for determining significance.

1. The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project life cycle including construction, operation, maintenance and/or removal. If appropriate, the energy intensiveness of materials may be discussed.
2. The effects of the project on local and regional energy supplies and on requirement for additional capacity.
3. The effects of the project on peak and base period demands for electricity and other forms of energy.
4. The degree to which the project complies with existing energy standards.
5. The effects of the project on energy resources.
6. The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

If the proposed project creates inefficient, wasteful or unnecessary consumption of energy during construction or operation activities or conflicts with a state or local plan for renewable energy or energy efficiency, then the proposed project would create a significant energy impact.

9.6 Greenhouse Gas Emissions

The proposed project is located within the jurisdiction of the SCAQMD. In order to identify significance criteria under CEQA for development projects, SCAQMD initiated a Working Group, which provided detailed methodology for evaluating significance under CEQA. At the September 28, 2010 Working Group meeting, the SCAQMD released its most current version of the draft GHG emissions thresholds, which recommends a tiered approach that provides a quantitative annual threshold of 3,000 $MTCO_2e$ for all land use projects. Although the SCAQMD provided substantial evidence supporting the use of the above threshold, the SCAQMD Board has not yet considered or approved the Working Group's thresholds.

It should be noted that SCAQMD's Working Group's thresholds were prepared prior to the issuance of Executive Order B-30-15 on April 29, 2015 that provided a reduction goal of 40 percent below 1990 levels by 2030. This target was codified into statute through passage of AB 197 and SB 32 in September 2016.

However it should be noted that the California Supreme Court's ruling on *Cleveland National Forest Foundation v. San Diego Association of Governments* (Cleveland v. SANDAG), Filed July 13, 2017 stated:

> SANDAG did not abuse its discretion in declining to adopt the 2050 goal as a measure of significance in light of the fact that the Executive Order does not specify any plan or implementation measures to achieve its goal. In its response to comments, the EIR said: "It is uncertain what role regional land use and transportation strategies can or should play in achieving the EO's 2050 emissions reduction target. A recent California Energy Commission report concludes, however, that the primary strategies to achieve this target should be major 'decarbonization' of electricity supplies and fuels, and major improvements in energy efficiency [citation].

Although, the above court case was referencing California's GHG emission targets for the year 2050, at this time it is also unclear what role land use strategies can or should play in achieving the AB 197 and SB 32 reduction goal of 40 percent below 1990 levels by 2030. As such this analysis has relied on the SCAQMD Working Group's recommended thresholds. Therefore, the proposed project would be considered to create a significant cumulative GHG impact if the proposed project would exceed the annual threshold of 3,000 $MTCO_2e$.

The GHG emissions analysis for both construction and operation of the proposed project can be found below in Sections 10.8 and 10.9.

10.0 IMPACT ANALYSIS

10.1 CEQA Thresholds of Significance

Consistent with CEQA and the State CEQA Guidelines, a significant impact related to air quality, energy, and GHG emissions would occur if the proposed project is determined to:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations;
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people;
- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation;
- Conflict with or obstruct a state or local plan for renewable energy;
- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

10.2 Air Quality Compliance

The proposed project would not conflict with or obstruct implementation of the SCAQMD Air Quality Management Plan (AQMP). The following section discusses the proposed project's consistency with the SCAQMD AQMP.

SCAQMD Air Quality Management Plan

The California Environmental Quality Act (CEQA) requires a discussion of any inconsistencies between a proposed project and applicable General Plans and regional plans (CEQA Guidelines Section 15125). The regional plan that applies to the proposed project includes the SCAQMD AQMP. Therefore, this section discusses any potential inconsistencies of the proposed project with the AQMP.

The purpose of this discussion is to set forth the issues regarding consistency with the assumptions and objectives of the AQMP and discuss whether the proposed project would interfere with the region's ability to comply with Federal and State air quality standards. If the decision-makers determine that the proposed project is inconsistent, the lead agency may consider project modifications or inclusion of mitigation to eliminate the inconsistency.

The SCAQMD CEQA Handbook states that "New or amended GP Elements (including land use zoning and density amendments), Specific Plans, and significant projects must be analyzed for consistency with the AQMP." Strict consistency with all aspects of the plan is usually not required. A proposed project should be considered to be consistent with the AQMP if it furthers one or more policies and does not obstruct other policies. The SCAQMD CEQA Handbook identifies two key indicators of consistency:

(1) Whether the project will result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP.

(2) Whether the project will exceed the assumptions in the AQMP or increments based on the year of project buildout and phase.

Both of these criteria are evaluated in the following sections.

Criterion 1 - Increase in the Frequency or Severity of Violations?

Based on the air quality modeling analysis contained in this report, short-term regional construction air emissions would not result in significant impacts based on SCAQMD regional thresholds of significance discussed above in Section 9.1 or local thresholds of significance discussed above in Section 9.2. The ongoing operation of the proposed project would generate air pollutant emissions that are inconsequential on a regional basis and would not result in significant impacts based on SCAQMD thresholds of significance discussed above in Section 9.1. The analysis for long-term local air quality impacts showed that local pollutant concentrations would not exceed the air quality standards. Therefore, a less than significant long-term impact would occur and no mitigation would be required.

Therefore, based on the information provided above, the proposed project would be consistent with the first criterion.

Criterion 2 - Exceed Assumptions in the AQMP?

Consistency with the AQMP assumptions is determined by performing an analysis of the proposed project with the assumptions in the 2016 AQMP, which is the most current adopted AQMP. The emphasis of this criterion is to ensure that the analyses conducted for the proposed project are based on the same forecasts as the AQMP. The 2016 AQMP was developed through use of the planning forecasts provided in the2016 RTP/SCS and 2015 FTIP. The 2016 RTP/SCS is a major planning document for the regional transportation and land use network within Southern California. The 2016 RTP/SCS is a long-range plan that is required by federal and state requirements placed on SCAG and is updated every four years. The 2015 FTIP provides long-range planning for future transportation improvement projects that are constructed with state and/or federal funds within Southern California. Local governments are required to use these plans as the basis of their plans for the purpose of consistency with applicable regional plans under CEQA. For this project, the City of Fontana Land Use Plan and more specifically the Westgate Specific Plan Land Use Plan defines the assumptions that are represented in AQMP.

The project site is located within the Westgate Specific Plan Area and is designated as Mixed Use – 1(MU-1) in the Specific Plan. The MU-1 designation provides for a broad range of business, commercial retail, medical, educational, entertainment, commercial services, and other complementary uses including the proposed Project. As such, the proposed project is consistent with the current land use designation with respect to the regional forecasts utilized by the AQMPs. Therefore, the proposed project is not anticipated to exceed the AQMP assumptions for the project site and is found to be consistent with the AQMP for the second criterion.

Based on the above, the proposed project will not result in an inconsistency with the SCAQMD AQMP. Therefore, a less than significant impact will occur in relation to implementation of the AQMP.

Level of Significance

Less than significant impact.

10.3 Cumulative Net Increase in Non-Attainment Pollution

The proposed project would not 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 SCAQMD has published a report on how to address cumulative impacts from air pollution: White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution (http://www.aqmd.gov/docs/default-source/Agendas/Environmental-Justice/cumulative-impacts-working-group/cumulative-impacts-white-paper.pdf). In this report the AQMD clearly states (Page D-3):

> "*…the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or Environmental Impact Report (EIR). The only case where the significance thresholds for project specific and cumulative impacts differ is the Hazard Index (HI) significance threshold for TAC emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility- wide) is HI > 3.0. It should be noted that the HI is only one of three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts. Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant.*"

Therefore, this analysis assumes that individual projects that do not generate operational or construction emissions that exceed the SCAQMD's recommended daily thresholds for project- specific impacts would also not cause a cumulatively considerable increase in emissions for those pollutants for which the Air Basin is in nonattainment, and, therefore, would not be considered to have a significant, adverse air quality impact. Alternatively, individual project-related construction and operational emissions that exceed SCAQMD thresholds for project-specific impacts would be considered cumulatively considerable. The following section calculates the potential air emissions associated with the construction and operations of the proposed project and compares the emissions to the SCAQMD standards.

Construction Emissions

The construction activities for the proposed project are anticipated to include site preparation and grading of approximately 3.68 acres, building construction of the proposed training center and fire station, paving of onsite driveways, paved training area, and parking lots, and application of architectural coatings. According to the project applicant, construction would be completed in two phases. Phase 1 of the proposed project is expected to break ground in June 2024 and be completed by January 2025; with Phase 2 anticipated to begin in June 2027. In order to provide a worst-case analysis, construction activities from both phases were modeled as occurring at the same time, starting June 2024 and would be completed by June 2025. The construction emissions have been analyzed for both regional and local air quality impacts.

Construction-Related Regional Impacts

The CalEEMod model has been utilized to calculate the construction-related regional emissions from the proposed project and the input parameters utilized in this analysis have been detailed in Section 7.1. The worst-case summer or winter daily construction-related criteria pollutant emissions from the proposed project for each phase of construction activities are shown below in Table L and the CalEEMod daily printouts are shown in Appendix A.

Table L – Construction-Related Regional Criteria Pollutant Emissions

Activity	Pollutant Emissions (pounds/day)					
	VOC	NOx	CO	SO_2	PM10	PM2.5
Site Preparation[1]						
Onsite[2]	2.66	27.18	18.34	0.04	8.90	5.07
Offsite[3]	0.07	0.26	0.72	<0.01	0.24	0.07
Total	**2.73**	**27.44**	**19.05**	**0.04**	**9.14**	**5.14**
Grading[1]						
Onsite[2]	1.66	17.03	14.76	0.03	3.49	2.00
Offsite[3]	0.06	0.26	0.61	<0.01	0.21	0.06
Total	**1.72**	**17.29**	**15.37**	**0.03**	**3.69**	**2.06**
Building Construction						
Onsite[2]	1.47	13.44	16.17	0.03	0.61	0.58
Offsite[3]	0.27	1.11	2.68	0.01	0.90	0.25
Total	**1.74**	**14.56**	**18.85**	**0.04**	**1.52**	**0.83**
Paving						
Onsite	1.27	7.53	12.18	0.02	0.35	0.33
Offsite	0.07	0.04	0.65	<0.01	0.22	0.06
Total	**1.34**	**7.57**	**12.83**	**0.02**	**0.58**	**0.39**
Architectural Coatings						
Onsite	14.91	1.15	1.81	<0.01	0.06	0.06
Offsite	0.04	0.03	0.42	<0.01	0.15	0.04
Total	**14.96**	**1.17**	**2.23**	**<0.01**	**0.21**	**0.10**
Maximum Daily Construction Emissions	**14.96**	**27.44**	**19.05**	**0.04**	**9.14**	**5.14**
SCQAMD Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
Exceeds Threshold?	No	No	No	No	No	No

Notes:
[1] Site Preparation and Grading based on adherence to fugitive dust suppression requirements from SCAQMD Rule 403.
[2] Onsite emissions from equipment not operated on public roads.
[3] Offsite emissions from vehicles operating on public roads.
Source: CalEEMod Version 2020.4.0.

Table L shows that none of the analyzed criteria pollutants would exceed the regional emissions thresholds during either site preparation, grading, building construction, paving, or architectural coatings phases. Therefore, a less than significant regional air quality impact would occur from construction of the proposed project.

Construction-Related Local Impacts

Construction-related air emissions may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the Air Basin.

The local air quality emissions from construction were analyzed through utilizing the methodology described in *Localized Significance Threshold Methodology* (LST Methodology), prepared by SCAQMD, revised October 2009. The LST Methodology found the primary criteria pollutant emissions of concern are NOx, CO, PM10, and PM2.5. In order to determine if any of these pollutants require a detailed analysis of the local air quality impacts, each phase of construction was screened using the SCAQMD's Mass Rate LST Look-up Tables. The Look-up Tables were developed by the SCAQMD in order to readily determine if the daily onsite emissions of CO, NOx, PM10, and PM2.5 from the proposed project could result in a significant impact to the local air quality. Table M shows the onsite emissions from the CalEEMod model for the different construction phases and the calculated localized emissions thresholds that have been detailed above in Section 9.2.

Table M – Construction-Related Local Criteria Pollutant Emissions

Construction Phase	Pollutant Emissions (pounds/day)[1]			
	NOx	CO	PM10	PM2.5
Site Preparation[2]	27.21	18.42	8.93	5.08
Grading[2]	17.06	14.84	3.51	2.01
Building Construction	13.58	16.50	0.73	0.61
Paving	7.54	12.26	0.38	0.33
Architectural Coatings	1.15	1.86	0.07	0.06
Maximum Daily Construction Emissions	**27.21**	**18.42**	**8.93**	**5.08**
SCAQMD Local Construction Thresholds[3]	**737**	**25,755**	**218**	**113**
Exceeds Threshold?	No	No	No	No

Notes:
[1] The Pollutant Emissions include 100% of the On-Site emissions (off-road equipment and fugitive dust) and 1/8 of the Off-Site emissions (on road trucks and worker vehicles), in order to account for the on-road emissions that occur within a ¼ mile of the project site
[2] Site Preparation and Grading phases based on adherence to fugitive dust suppression requirements from SCAQMD Rule 403.
[3] The nearest offsite sensitive receptors to the project site are homes located as near as 2,200 feet (670 meters) east of the project site. In order to provide a conservative analysis the 500-meter thresholds were utilized.
Source: Calculated from SCAQMD's Mass Rate Look-up Tables for two and five acres in Air Monitoring Area 34, Central San Bernardino Valley.

The data provided in Table M shows that none of the analyzed criteria pollutants would exceed the local emissions thresholds during either site preparation, grading, building construction, paving or architectural coatings phases. Therefore, a less than significant local air quality impact would occur from construction of the proposed project.

Operational Emissions

The ongoing operation of the proposed project would result in a long-term increase in air quality emissions. This increase would be due to emissions from the project-generated vehicle trips, emissions from energy usage, onsite area source emissions, and backup generator emissions created from the on-going use of the proposed project. The following section provides an analysis of potential long-term air quality impacts due to regional air quality and local air quality impacts with the on-going operations of the proposed project.

Operations-Related Regional Criteria Pollutant Analysis

The operations-related regional criteria air quality impacts created by the proposed project have been analyzed through use of the CalEEMod model and the input parameters utilized in this analysis have been detailed in Section 7.1. The worst-case summer or winter VOC, NOx, CO, SO_2, PM10, and PM2.5 daily emissions created from the proposed project's long-term operations have been calculated and are summarized below in Table N and the CalEEMod daily emissions printouts are shown in Appendix A.

Table N – Operational Regional Criteria Pollutant Emissions

	Pollutant Emissions (pounds/day)					
Activity	**VOC**	**NOx**	**CO**	**SO_2**	**PM10**	**PM2.5**
Area Sources[1]	0.61	<0.01	<0.01	0.00	<0.01	<0.01
Energy Usage[2]	<0.01	0.02	0.02	<0.01	<0.01	<0.01
Mobile Sources[3]	0.12	0.84	1.11	<0.01	0.27	0.08
Backup Generator[4]	0.38	1.07	0.98	<0.01	0.06	0.06
Total Emissions	**1.11**	**1.94**	**2.11**	**<0.01**	**0.33**	**0.14**
SCQAMD Operational Thresholds	**55**	**55**	**550**	**150**	**150**	**55**
Exceeds Threshold?	No	No	No	No	No	No

Notes:
[1] Area sources consist of emissions from consumer products, architectural coatings, and landscaping equipment.
[2] Energy usage consist of emissions from electricity and natural gas usage.
[3] Mobile sources consist of emissions from vehicles and road dust.
[4] Backup Generator based on a 300 ekW (467 Horsepower) diesel generator that has a cycling schedule of 30 minutes per week.
Source: Calculated from CalEEMod Version 2020.4.0.

The data provided in Table N shows that none of the analyzed criteria pollutants would exceed the regional emissions thresholds. Therefore, a less than significant regional air quality impact would occur from operation of the proposed project.

Friant Ranch Case

The operations-related regional criteria air quality impacts In *Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502 (also referred to as "*Friant Ranch*"), the California Supreme Court held that when an EIR concluded that when a project would have significant impacts to air quality impacts, an EIR should "make a reasonable effort to substantively connect a project's air quality impacts to likely health consequences." In order to determine compliance with this Case, the Court developed a multi-part test that includes the following:

1) The air quality discussion shall describe the specific health risks created from each criteria pollutant, including diesel particulate matter.

This Analysis details the specific health risks created from each criteria pollutant above in Section 4.1 and specifically in Table B. In addition, the specific health risks created from diesel particulate matter is detailed above in Section 2.2 of this analysis. As such, this analysis meets the part 1 requirements of the Friant Ranch Case.

2) The analysis shall identify the magnitude of the health risks created from the Project. The Ruling details how to identify the magnitude of the health risks. Specifically, on page 24 of the ruling it states "The Court of Appeal identified several ways in which the EIR could have framed the

analysis so as to adequately inform the public and decision makers of possible adverse health effects. The County could have, for example, identified the Project's impact on the days of nonattainment per year."

The Friant Ranch Case found that an EIR's air quality analysis must meaningfully connect the identified air quality impacts to the human health consequences of those impacts, or meaningfully explain why that analysis cannot be provided. As noted in the Brief of Amicus Curiae by the SCAQMD in the Friant Ranch case (https://www.courts.ca.gov/documents/9-s219783-ac-south-coast-air-quality-mgt-dist-041315.pdf) (Brief), SCAQMD has among the most sophisticated air quality modeling and health impact evaluation capability of any of the air districts in the State, and thus it is uniquely situated to express an opinion on how lead agencies should correlate air quality impacts with specific health outcomes. The SCAQMD discusses that it may be infeasible to quantify health risks caused by projects similar to the proposed Project, due to many factors. It is necessary to have data regarding the sources and types of air toxic contaminants, location of emission points, velocity of emissions, the meteorology and topography of the area, and the location of receptors (worker and residence). The Brief states that it may not be feasible to perform a health risk assessment for airborne toxics that will be emitted by a generic industrial building that was built on "speculation" (i.e., without knowing the future tenant(s)). Even where a health risk assessment can be prepared, however, the resulting maximum health risk value is only a calculation of risk, it does not necessarily mean anyone will contract cancer as a result of the Project. The Brief also cites the author of the CARB methodology, which reported that a PM2.5 methodology is not suited for small projects and may yield unreliable results. Similarly, SCAQMD staff does not currently know of a way to accurately quantify ozone-related health impacts caused by NOX or VOC emissions from relatively small projects, due to photochemistry and regional model limitations. The Brief concludes, with respect to the Friant Ranch EIR, that although it may have been technically possible to plug the data into a methodology, the results would not have been reliable or meaningful.

On the other hand, for extremely large regional projects (unlike the proposed project), the SCAQMD states that it has been able to correlate potential health outcomes for very large emissions sources – as part of their rulemaking activity, specifically 6,620 pounds per day of NOx and 89,180 pounds per day of VOC were expected to result in approximately 20 premature deaths per year and 89,947 school absences due to ozone. As shown above in Table L, project-related construction activities would generate a maximum of 14.96 pounds per day of VOC and 27.44 pounds per day of NOx and as shown above in Table N, operation of the proposed project would generate 1.11 pounds per day of VOC and 1.94 pounds per day NOx. The proposed project would not generate anywhere near these levels of 6,620 pounds per day of NOx or 89,190 pounds per day of VOC emissions. Therefore, the proposed project's emissions are not sufficiently high enough to use a regional modeling program to correlate health effects on a basin-wide level.

Notwithstanding, this analysis does evaluate the proposed project's localized impact to air quality for emissions of CO, NOX, PM10, and PM2.5 by comparing the proposed project's onsite emissions to the SCAQMD's applicable LST thresholds. As evaluated in this analysis, the proposed project would not result in emissions that exceeded the SCAQMD's LSTs. Therefore, the proposed project would not be expected to exceed the most stringent applicable federal or state ambient air quality standards for emissions of CO, NOX, PM10, and PM2.5.

Operations-Related Local Air Quality Impacts

Project-related air emissions may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the Air Basin. The proposed project has been analyzed for the potential local CO emission impacts from the project-generated vehicular trips and from the potential local air quality impacts from on-site operations.

Local CO Hotspot Impacts from Project-Generated Vehicular Trips

CO is the pollutant of major concern along roadways because the most notable source of CO is motor vehicles. For this reason, CO concentrations are usually indicative of the local air quality generated by a roadway network and are used as an indicator of potential local air quality impacts. Local air quality impacts can be assessed by comparing future without and with project CO levels to the State and Federal CO standards of 20 ppm over one hour or 9 ppm over eight hours.

At the time of the 1993 Handbook, the Air Basin was designated nonattainment under the CAAQS and NAAQS for CO. With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology on industrial facilities, CO concentrations in the Air Basin and in the state have steadily declined. In 2007, the Air Basin was designated in attainment for CO under both the CAAQS and NAAQS. SCAQMD conducted a CO hot spot analysis for attainment at the busiest intersections in Los Angeles during the peak morning and afternoon periods and did not predict a violation of CO standards[4]. Since the nearby intersections to the proposed project are much smaller with less traffic than what was analyzed by the SCAQMD, no local CO Hotspot are anticipated to be created from the proposed project and no CO Hotspot modeling was performed. Therefore, a less than significant long-term air quality impact is anticipated to local air quality with the on-going use of the proposed project.

Local Criteria Pollutant Impacts from Onsite Operations

Project-related air emissions from onsite sources such as architectural coatings, landscaping equipment, and onsite usage of natural gas appliances may have the potential to create emissions areas that exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the Air Basin.

The local air quality emissions from onsite operations were analyzed using the SCAQMD's Mass Rate LST Look-up Tables and the methodology described in LST Methodology. The Look-up Tables were developed by the SCAQMD in order to readily determine if the daily emissions of CO, NOx, PM10, and PM2.5 from the proposed project could result in a significant impact to the local air quality. Table N shows the onsite emissions from the CalEEMod model that includes area sources, energy usage, backup generator, and vehicles operating in the immediate vicinity of the project site and the calculated emissions thresholds.

[4] The four intersections analyzed by the SCAQMD were: Long Beach Boulevard and Imperial Highway; Wilshire Boulevard and Veteran Avenue; Sunset Boulevard and Highland Avenue; and La Cienega Boulevard and Century Boulevard. The busiest intersection evaluated (Wilshire and Veteran) had a daily traffic volume of approximately 100,000 vehicles per day with LOS E in the morning and LOS F in the evening peak hour.

Table O – Operations-Related Local Criteria Pollutant Emissions

Onsite Emission Source	Pollutant Emissions (pounds/day)			
	NOx	CO	PM10	PM2.5
Area Sources	<0.01	<0.01	<0.01	<0.01
Energy Usage	0.02	0.02	<0.01	<0.01
Mobile Sources[1]	0.11	0.14	0.03	0.01
Backup Generator[2]	1.07	0.98	0.06	0.06
Total Emissions	**1.20**	**1.14**	**0.09**	**0.07**
SCAQMD Local Operational Thresholds[3]	**737**	**25,755**	**53**	**27**
Exceeds Threshold?	No	No	No	No

Notes:
[1] Mobile sources based on 1/8 of the gross vehicular emissions, which are the estimated portion of vehicle emissions occurring within a quarter mile of the project site.
[2] Backup Generator based on a 300 ekW (467 Horsepower) diesel generator that has a cycling schedule of 30 minutes per week.
[3] The nearest offsite sensitive receptors to the project site are homes located as near as 2,200 feet (670 meters) east of the project site. In order to provide a conservative analysis the 500-meter thresholds were utilized.
Source: Calculated from SCAQMD's Mass Rate Look-up Tables for two and five acres in Air Monitoring Area 34, Central San Bernardino Valley.

The data provided in Table N shows that the on-going operations of the proposed project would not exceed the local NOx, CO, PM10 and PM2.5 thresholds of significance discussed above in Section 8.2. Therefore, the on-going operations of the proposed project would create a less than significant operations-related impact to local air quality due to onsite emissions and no mitigation would be required.

Therefore, the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant.

Level of Significance

Less than significant impact.

10.4 Sensitive Receptors

The proposed project would not expose sensitive receptors to substantial pollutant concentrations. The local concentrations of criteria pollutant emissions produced in the nearby vicinity of the proposed project, which may expose sensitive receptors to substantial concentrations have been calculated above in Section 9.3 for both construction and operations, which are discussed separately below. The discussion below also includes an analysis of the potential impacts from local criteria pollutant and toxic air contaminant emissions.

Construction-Related Sensitive Receptor Impacts

Construction activities may expose sensitive receptors to substantial pollutant concentrations of localized criteria pollutant concentrations and from toxic air contaminant emissions created from onsite construction equipment, which are described below.

<u>Local Criteria Pollutant Impacts from Construction</u>

The local air quality impacts from construction of the proposed project have been analyzed above in Section 10.3 and found that the construction of the proposed project would not exceed the local NOx, CO, PM10 and PM2.5 thresholds of significance discussed above in Section 9.2. Therefore, construction of the proposed project would create a less than significant construction-related impact to local air quality and no mitigation would be required.

Toxic Air Contaminants Impacts from Construction

The greatest potential for toxic air contaminant emissions would be related to diesel particulate matter (DPM) emissions associated with heavy equipment operations during construction of the proposed project. According to SCAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of "individual cancer risk". "Individual Cancer Risk" is the likelihood that a person exposed to concentrations of toxic air contaminants over a 70-year lifetime will contract cancer, based on the use of standard risk-assessment methodology. It should be noted that the most current cancer risk assessment methodology recommends analyzing a 30 year exposure period for the nearby sensitive receptors (OEHHA, 2015).

Given the relatively limited number of heavy-duty construction equipment, the varying distances that construction equipment would operate to the nearby sensitive receptors, and the short-term construction schedule, the proposed project would not result in a long-term (i.e., 30 or 70 years) substantial source of toxic air contaminant emissions and corresponding individual cancer risk. In addition, California Code of Regulations Title 13, Article 4.8, Chapter 9, Section 2449 regulates emissions from off-road diesel equipment in California. This regulation limits idling of equipment to no more than five minutes, requires equipment operators to label each piece of equipment and provide annual reports to CARB of their fleet's usage and emissions. This regulation also requires systematic upgrading of the emission Tier level of each fleet, and currently no commercial operator is allowed to purchase Tier 0 or Tier 1 equipment and by January 2023 no commercial operator is allowed to purchase Tier 2 equipment. In addition to the purchase restrictions, equipment operators need to meet fleet average emissions targets that become more stringent each year between years 2014 and 2023. Therefore, due to the limitations in off-road construction equipment DPM emissions from implementation of Section 2448, a less than significant short-term TAC impacts would occur during construction of the proposed project from DPM emissions. As such, construction of the proposed project would result in a less than significant exposure of sensitive receptors to substantial pollutant concentrations.

Operations-Related Sensitive Receptor Impacts

The on-going operations of the proposed project may expose sensitive receptors to substantial pollutant concentrations of local CO emission impacts from the project-generated vehicular trips and from the potential local air quality impacts from onsite operations. The following analyzes Local criteria pollutant impacts from onsite operations, and toxic air contaminant impacts.

Local CO Hotspot Impacts from Project-Generated Vehicle Trips

CO is the pollutant of major concern along roadways because the most notable source of CO is motor vehicles. For this reason, CO concentrations are usually indicative of the local air quality generated by a roadway network and are used as an indicator of potential impacts to sensitive receptors. The analysis provided above in Section 9.3 shows that no local CO Hotspots are anticipated to be created at any nearby intersections from the vehicle traffic generated by the proposed project. Therefore, operation of the proposed project would result in a less than significant exposure of offsite sensitive receptors to substantial pollutant concentrations.

Local Criteria Pollutant Impacts from Onsite Operations

The local air quality impacts from the operation of the proposed project would occur from onsite sources such as architectural coatings, landscaping equipment, onsite usage of natural gas appliances, backup generator and from vehicles operating onsite and immediate vicinity of the project site. The analysis provided above in Section 10.3 found that the operation of the proposed project would not exceed the local NOx, CO, PM10 and PM2.5 thresholds of significance discussed above in Section 9.2. Therefore, the on-going operations of the proposed project would create a less than significant operations-related impact to local air quality due to on-site emissions and no mitigation would be required.

Operations-Related Toxic Air Contaminant Impacts

Particulate matter (PM) from diesel exhaust is the predominant TAC in most areas and according to *The California Almanac of Emissions and Air Quality 2013 Edition*, prepared by CARB, about 80 percent of the outdoor TAC cancer risk is from diesel exhaust. Some chemicals in diesel exhaust, such as benzene and formaldehyde have been listed as carcinogens by State Proposition 65 and the Federal Hazardous Air Pollutants program. Due to the nominal number of diesel truck trips that are anticipated to be generated by the proposed project, a less than significant TAC impact would occur during the on-going operations of the proposed project and no mitigation would be required.

Operation of the proposed project would create TAC emissions from operation of up to a 300 kilowatt (467 horsepower) backup diesel generator equipped with a diesel particulate filter (DPF) that will limit DPM created from the backup generator. Backup generators typically cycle on for 30 minutes on a weekly basis in order to keep the engine lubricated and ready to use in case of a power outage. The typical cycling of a backup generator would operate for approximately 26 hours per year. SCAQMD Rule 1110.2 exempts emergency standby generators that operate less than 200 hours per year from obtaining an air permit. The SCAQMD has developed the operating hour exemption limits based on levels that were determined to result in the generation of inconsequential emissions from backup generators. As such, the cancer risk created from the backup generator's TAC emissions to the nearby sensitive receptors is anticipated to be negligible. Therefore, through adherence to the backup generator operating time limits detailed in Rule 1110.2, less than significant long-term toxic air contaminant impacts would occur during operation of the Proposed Project

Therefore, operation of the proposed project would result in a less than significant exposure of sensitive receptors to substantial pollutant concentrations.

Level of Significance

Less than significant impact.

10.5 Odor Emissions

The proposed project would not result in other emissions, such as those leading to odors that would adversely affect a substantial number of people. The local concentrations of criteria pollutant emissions, and TAC emissions that may adversely impact a substantial number of people have been analyzed above in Section 10.4 for both construction and operations, which found that these types of emissions would create less than significant impacts. As such, the following analysis is limited to odors that would have the potential to adversely affect a substantial number of people.

Individual responses to odors are highly variable and can result in a variety of effects. Generally, the impact of an odor results from a variety of factors such as frequency, duration, offensiveness, location, and sensory perception. The frequency is a measure of how often an individual is exposed to an odor in the ambient environment. The intensity refers to an individual's or group's perception of the odor strength or concentration. The duration of an odor refers to the elapsed time over which an odor is experienced. The offensiveness of the odor is the subjective rating of the pleasantness or unpleasantness of an odor. The location accounts for the type of area in which a potentially affected person lives, works, or visits; the type of activity in which he or she is engaged; and the sensitivity of the impacted receptor.

Sensory perception has four major components: detectability, intensity, character, and hedonic tone. The detection (or threshold) of an odor is based on a panel of responses to the odor. There are two types of thresholds: the odor detection threshold and the recognition threshold. The detection threshold is the lowest concentration of an odor that will elicit a response in a percentage of the people that live and work in the immediate vicinity of the project site and is typically presented as the mean (or 50 percent of the population). The recognition threshold is the minimum concentration that is recognized as having a characteristic odor quality, this is typically represented by recognition by 50 percent of the population. The intensity refers to the perceived strength of the odor. The odor character is what the substance smells like. The hedonic tone is a judgment of the pleasantness or unpleasantness of the odor. The hedonic tone varies in subjective experience, frequency, odor character, odor intensity, and duration. Potential odor impacts have been analyzed separately for construction and operations below.

Construction-Related Odor Impacts

Potential sources that may emit odors during construction activities include the application of coatings such as asphalt pavement, paints and solvents and from emissions from diesel equipment. Standard construction requirements that limit the time of day when construction may occur as well as SCAQMD Rule 1108 that limits VOC content in asphalt and Rule 1113 that limits the VOC content in paints and solvents would minimize odor impacts from construction. As such, the objectionable odors that may be produced during the construction process would be temporary and would not likely be noticeable for extended periods of time beyond the project site's boundaries. Through compliance with the applicable regulations that reduce odors and due to the transitory nature of construction odors, a less than significant odor impact would occur and no mitigation would be required.

Operations-Related Odor Impacts

Potential sources of odor emission during operation of the proposed project would include diesel emissions from the fire trucks and backup generator as well as odors from trash storage areas. All fire trucks that operate on the project site will be required to meet State emissions standards that require the use of diesel particulate filters that would minimize odors created from the fire trucks. The operation of the backup diesel generator would be limited to 200 hours or less per year and would include an exhaust stack with a diesel particulate filter that would limit the exhaust and associated odors created from the generator to negligible levels. Pursuant to City regulations, permanent trash enclosures that protect trash bins from rain as well as limit air circulation would be required for the trash storage areas. Due to the distance of the nearest sensitive receptor from the project site and through compliance with SCAQMD's rules that include Rule 402 (odor regulations) and Rule 1110.2 (backup generator regulations) and the City's trash storage regulations, a less than significant impact related to odors would occur during the on-going operations of the proposed project. Operational-related odor impacts would be less than significant and no mitigation would be required. Therefore, a less than significant odor impact would occur and no mitigation would be required.

Level of Significance

Less than significant impact

10.6 Energy Consumption

The proposed project would impact energy resources during construction and operation. Energy resources that would be potentially impacted include electricity, natural gas, and petroleum based fuel supplies and distribution systems. This analysis includes a discussion of the potential energy impacts of the proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. A general definition of each of these energy resources are provided below.

Electricity, a consumptive utility, is a man-made resource. The production of electricity requires the consumption or conversion of energy resources, including water, wind, oil, gas, coal, solar, geothermal, and nuclear resources, into energy. The delivery of electricity involves a number of system components, including substations and transformers that lower transmission line power (voltage) to a level appropriate for on-site distribution and use. The electricity generated is distributed through a network of transmission and distribution lines commonly called a power grid. Conveyance of electricity through transmission lines is typically responsive to market demands. In 2021, San Bernardino County consumed 16,180.8 Gigawatt-hours per year of electricity[5].

Natural gas is a combustible mixture of simple hydrocarbon compounds (primarily methane) that is used as a fuel source. Natural gas consumed in California is obtained from naturally occurring reservoirs, mainly located outside the State, and delivered through high-pressure transmission pipelines. The natural gas transportation system is a nationwide network and, therefore, resource availability is typically not an issue. Natural gas satisfies almost one-third of the State's total energy requirements and is used in electricity generation, space heating, cooking, water heating, industrial processes, and as a transportation fuel. Natural gas is measured in terms of cubic feet. In 2021, San Bernardino County consumed 561.36 Million Therms of natural gas[6].

Petroleum-based fuels currently account for a majority of the California's transportation energy sources and primarily consist of diesel and gasoline types of fuels. However, the state has been working on developing strategies to reduce petroleum use. Over the last decade California has implemented several policies, rules, and regulations to improve vehicle efficiency, increase the development and use of alternative fuels, reduce air pollutants and GHG emissions from the transportation sector, and reduce vehicle miles traveled (VMT). Accordingly, petroleum-based fuel consumption in California has declined. In 2017, which is the most current available data segmented by County, 993 million gallons of gasoline and 265 million gallons of diesel was sold in San Bernardino County[7]. In 2018 California consumed 566,496,000 gallons of propane.[8]

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5 Obtained from: http://www.ecdms.energy.ca.gov/elecbycounty.aspx

6 Obtained from: http://www.ecdms.energy.ca.gov/gasbycounty.aspx

7 Obtained from: https://ww2.energy.ca.gov/almanac/transportation_data/gasoline/

8 Obtained from: https://greet.es.anl.gov/files/propane_ca

The following section calculates the potential energy consumption associated with the construction and operations of the proposed project and provides a determination if any energy utilized by the proposed project is wasteful, inefficient, or unnecessary consumption of energy resources.

Construction Energy

The construction activities for the proposed project are anticipated to include site preparation and grading of approximately 3.68 acres, building construction of the proposed training center and fire station, paving of onsite driveways, paved training area, and parking lots, and application of architectural coatings. The proposed project would consume energy resources during construction in three (3) general forms:

1. Petroleum-based fuels used to power off-road construction vehicles and equipment on the project site, construction worker travel to and from the project site, as well as delivery and haul truck trips (e.g. hauling of material to disposal facilities);
2. Electricity associated with the conveyance of water that would be used during project construction for dust control (supply and conveyance) and electricity to power any necessary lighting during construction, electronic equipment, or other construction activities necessitating electrical power; and,
3. Energy used in the production of construction materials, such as asphalt, steel, concrete, pipes, and manufactured or processed materials such as lumber and glass.

<u>Construction-Related Electricity</u>

During construction the proposed project would consume electricity to construct the proposed warehouse and infrastructure. Electricity would be supplied to the project site by Southern California Edison and would be obtained from the existing electrical lines in the vicinity of the project site. The use of electricity from existing power lines rather than temporary diesel or gasoline powered generators would minimize impacts on fuel consumption. Electricity consumed during project construction would vary throughout the construction period based on the construction activities being performed. Various construction activities include electricity associated with the conveyance of water that would be used during project construction for dust control (supply and conveyance) and electricity to power any necessary lighting during construction, electronic equipment, or other construction activities necessitating electrical power. Such electricity demand would be temporary, nominal, and would cease upon the completion of construction. Overall, construction activities associated with the proposed project would require limited electricity consumption that would not be expected to have an adverse impact on available electricity supplies and infrastructure. Therefore, the use of electricity during project construction would not be wasteful, inefficient, or unnecessary.

Since there are currently power lines on the southeast and west sides of the project site, it is anticipated that only nominal improvements would be required to Southern California Edison distribution lines and equipment with development of the proposed project. Compliance with City's guidelines and requirements would ensure that the proposed project fulfills its responsibilities relative to infrastructure installation, coordinates any electrical infrastructure removals or relocations, and limits any impacts associated with construction of the project. Construction of the project's electrical infrastructure is not anticipated to adversely affect the electrical infrastructure serving the surrounding uses or utility system capacity.

Construction-Related Natural Gas

Construction of the proposed project typically would not involve the consumption of natural gas. Natural gas would not be supplied to support construction activities, thus there would be no demand generated by construction. Since there is currently natural gas service to of the project site, construction of the proposed project would be limited to installation of new natural gas connections within the project site. Development of the proposed project would likely not require extensive infrastructure improvements to serve the project site. Construction-related energy usage impacts associated with the installation of natural gas connections are expected to be confined to trenching in order to place the lines below surface. In addition, prior to ground disturbance, the proposed project would notify and coordinate with SoCalGas to identify the locations and depth of all existing gas lines and avoid disruption of gas service. Therefore, construction-related impacts to natural gas supply and infrastructure would be less than significant.

Construction-Related Petroleum Fuel Use

Petroleum-based fuel usage represents the highest amount of transportation energy potentially consumed during construction, which would be utilized by both off-road equipment operating on the project site and on-road automobiles transporting workers to and from the project site and on-road trucks transporting equipment and supplies to the project site.

The off-road construction equipment fuel usage was calculated through use of the off-road equipment assumptions and fuel use assumptions shown above in Section 8.2, which found that construction of the proposed project would consume 8,429 gallons of gasoline and 38,659 gallons of diesel fuel. This equates to 0.0008 percent of the gasoline and 0.01 percent of the diesel used annually in San Bernardino County. As such, the construction-related petroleum use would be nominal, when compared to current county-wide petroleum usage rates.

Construction activities associated with the proposed project would be required to adhere to all State and SCAQMD regulations for off-road equipment and on-road trucks, which provide minimum fuel efficiency standards. As such, construction activities for the proposed project would not result in the wasteful, inefficient, and unnecessary consumption of energy resources. Impacts regarding transportation energy would be less than significant. Development of the project would not result in the need to manufacture construction materials or create new building material facilities specifically to supply the proposed project. It is difficult to measure the energy used in the production of construction materials such as asphalt, steel, and concrete, it is reasonable to assume that the production of building materials such as concrete, steel, etc., would employ all reasonable energy conservation practices in the interest of minimizing the cost of doing business.

Operational Energy

The on-going operation of the proposed project would require the use of energy resources for multiple purposes including, but not limited to, heating/ventilating/air conditioning (HVAC), refrigeration, lighting, appliances, electronics, backup generator, and from propane props for pyrotechnic effects. Energy would also be consumed during operations related to water usage, solid waste disposal, landscape equipment, and vehicle trips.

Operations-Related Electricity

Operation of the proposed project would result in consumption of electricity at the project site. As detailed above in Section 8.3 the proposed project would consume 273,089 kilowatt-hours per year of electricity. It should be noted that, the proposed project would comply with all Federal, State, and City requirements related to the consumption of electricity, that includes CCR Title 24, Part 6 *Building Energy Efficiency Standards* and CCR Title 24, Part 11: *California Green Building Standards.* The CCR Title 24, Part 6 and Part 11 standards require numerous energy efficiency measures to be incorporated into the proposed buildings, including enhanced insulation, use of energy efficient lighting and appliances as well as requiring a variety of other energy-efficiency measures to be incorporated into all of the proposed structures. Therefore, it is anticipated the proposed project will be designed and built to minimize electricity use and that existing and planned electricity capacity and electricity supplies would be sufficient to support the proposed project's electricity demand. Thus, impacts with regard to electrical supply and infrastructure capacity would be less than significant and no mitigation measures would be required.

<u>Operations-Related Natural Gas</u>

Operation of the proposed project would result in increased consumption of natural gas at the project site. As detailed above in Section 8.3 the proposed project would consume 84 MBTU per year of natural gas. It should be noted that, the proposed project would comply with all Federal, State, and City requirements related to the consumption of natural gas, that includes CCR Title 24, Part 6 *Building Energy Efficiency Standards* and CCR Title 24, Part 11: *California Green Building Standards.* The CCR Title 24, Part 6 and Part 11 standards require numerous energy efficiency measures to be incorporated into the proposed structures, including enhanced insulation as well as use of efficient natural gas appliances and HVAC units. Therefore, it is anticipated the proposed project will be designed and built to minimize natural gas use and that existing and planned natural gas capacity and natural gas supplies would be sufficient to support the proposed project's natural gas demand. Thus, impacts with regard to natural gas supply and infrastructure capacity would be less than significant and no mitigation measures would be required.

<u>Operations-Related Petroleum Fuel Usage</u>

Operation of the proposed project would result in increased consumption of petroleum-based fuels related to vehicular travel to and from the project site as well as from the proposed backup generator. As detailed above in Section 8.3 the proposed project would consume 2,650 gallons of gasoline per year from automobile trips and 4,154 gallons of diesel per year from emergency vehicle trips and the backup generator would consume 299 gallons of diesel per year. This equates to 0.0003 percent of the gasoline and 0.002 percent of the diesel consumed annually in San Bernardino County. As such, the operations-related petroleum use would be nominal, when compared to current petroleum usage rates.

It should be noted that, the proposed project would comply with all Federal, State, and City requirements related to the consumption of transportation energy that includes California Code of Regulations Title 24, Part 11 California Green Building Standards that require the proposed project to provide both long-term and short-term bicycle parking spaces that will promote the use of alternative transportation. Therefore, it is anticipated the proposed project will be designed and built to minimize transportation energy through the promotion of the use of clean air vehicles, including electric-powered vehicles and it is anticipated that existing and planned capacity and supplies of transportation fuels would be sufficient to support the proposed project's demand. Thus, impacts with regard transportation energy supply and infrastructure capacity would be less than significant and no mitigation measures would be required.

Operations-Related Propane Fuel Usage

Operation of the proposed would result in increased consumption of propane, related to the use of the propane props in the training tower for approximately 100 pyrotechnic training events per year. As detailed above in Section 8.3 the proposed project would consume 1,800 gallons of propane per year, which equates to 0.0003 percent of the propane consumed annually in California. As such, the operations-related propane use would be nominal, when compared to current propane usage rates. It should be noted that each pyrotechnic training event will be required to obtain a permit from SCAQMD and will be required to meet the requirements from SCAQMD Rules 208 and 444 that limits the duration of the use of the propane props as well as other measure that will minimize the wasteful, inefficient, or unnecessary consumption of propane. Thus, impacts with regard propane fuel use would be less than significant and no mitigation measures would be required.

In conclusion, the proposed project would comply with regulatory compliance measures outlined by the State and City related to Air Quality, Greenhouse Gas Emissions (GHG), Transportation/Circulation, and Water Supply. Additionally, the proposed project would be constructed in accordance with all applicable City Building and Fire Codes. Therefore, the proposed project would not result in the wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation. Impacts would be less than significant.

Level of Significance

Less than significant impact.

10.7 Energy Plan Consistency

The proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. The applicable energy plan for the proposed project is the *Fontana Forward General Plan Update 2015-2035* (General Plan), adopted November 18, 2018. The proposed project's consistency with the applicable energy-related policies and programs in the General Plan are shown in Table P.

Table P – Proposed Project Compliance with Applicable General Plan Energy Policies

Policy No.	General Plan Policy	Proposed Project Implementation Actions
Goal 2: Government facilities and operations are models of resource efficiency.		
2.2	Continue organizational and operational improvements to maximize energy and resource efficiency and reduce waste.	**Consistent.** The proposed project will be designed to meet the most current Title 24 Part 11 CalGreen standards that require that new non-residential buildings to maximize resource efficiency and reduce waste.
Goal 5: Green building techniques are used in new development and retrofits.		
5.1	Promote green building through guidelines, awards and nonfinancial incentives.	**Not Applicable.** This Policy is for the City to implement, however the proposed structures will be designed to meet green building requirements provided in Title 24 parts 6 and 11 energy efficiency standards.
Goal 6: Fontana is a leader energy-efficient development and retrofits.		
6.1	Promote energy-efficient development in Fontana	**Not Applicable.** This Policy is for the City to implement, however the project will be designed to meet the most current Title 24 energy efficiency standards, that require installation of energy efficient lights, fixtures and appliances.

Policy No.	General Plan Policy	Proposed Project Implementation Actions
6.2	Meet or exceed state goals for energy-efficient new construction	**Not Applicable.** This Policy is for the City to implement, however the project will be designed to meet the most current Title 24 energy efficiency standards, that require installation of energy efficient lights, fixtures and appliances.

Source: City of Fontana, 2018.

As shown in Table P, the proposed project would be consistent with all applicable energy-related policies from the General Plan. Therefore, the proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Impacts would be less than significant.

Level of Significance

Less than significant impact.

10.8 Generation of Greenhouse Gas Emissions

The proposed project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. The proposed project would consist of development of a fire station and training center. The proposed project is anticipated to generate GHG emissions from area sources, energy usage, mobile sources, waste disposal, water usage, backup generator, and construction equipment. The project's GHG emissions have been calculated with the CalEEMod model based on the construction and operational parameters detailed above in Section 8.1. A summary of the results is shown below in Table Q and the CalEEMod model run is provided in Appendix C.

Table Q – Project Related Greenhouse Gas Annual Emissions

	Greenhouse Gas Emissions (Metric Tons per Year)			
Category	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Area Sources[1]	<0.01	0.00	0.00	<0.01
Energy Usage[2]	52.93	<0.01	<0.01	53.21
Mobile Sources[3]	76.51	<0.01	<0.01	79.44
Backup Generator[4]	4.62	<0.01	0.00	4.64
Solid Waste[5]	4.71	0.28	0.00	11.68
Water and Wastewater[6]	15.24	0.16	<0.01	20.41
Construction[7]	13.98	<0.01	<0.01	14.14
Total GHG Emissions	**168.00**	**0.45**	**0.01**	**183.51**
SCAQMD Draft Threshold of Significance				**3,000**
Exceed Thresholds?				**No**

Notes:
[1] Area sources consist of GHG emissions from consumer products, architectural coatings, and landscaping equipment.
[2] Energy usage consists of GHG emissions from electricity and natural gas usage.
[3] Mobile sources consist of GHG emissions from vehicles.
[4] Backup Generator based on a 300 ekW (467 Horsepower) diesel generator that has a cycling schedule of 30 minutes per week.[5] Waste includes the CO_2 and CH_4 emissions created from the solid waste placed in landfills.
[6] Water includes GHG emissions from electricity used for transport of water and processing of wastewater.
[7] Construction emissions amortized over 30 years as recommended in the SCAQMD GHG Working Group on November 19, 2009.
Source: CalEEMod Version 2020.4.0

The data provided in Table Q shows that the proposed project would create 183.51 $MTCO_2e$ per year. According to the SCAQMD draft threshold of significance detailed above in Section 9.6, a cumulative global climate change impact would occur if the GHG emissions created from the on-going operations would exceed 3,000 $MTCO_2e$ per year. Therefore, a less than significant generation of greenhouse gas emissions would occur from development of the proposed project. Impacts would be less than significant.

Level of Significance

Less than significant impact.

10.9 Greenhouse Gas Plan Consistency

The proposed project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing GHG emissions. The proposed project consists of the development of the proposed fire station and training center. As detailed above in Section 10.8, the proposed project is anticipated to create 183.51 $MTCO_2e$ per year, which is well below the SCAQMD draft threshold of significance of 3,000 $MTCO_2e$ per year. The SCAQMD developed this threshold through a Working Group, which also developed detailed methodology for evaluating significance under CEQA. At the September 28, 2010 Working Group meeting, the SCAQMD released its most current version of the draft GHG emissions thresholds, which recommends a tiered approach that provides a quantitative annual threshold of 3,000 $MTCO_2e$ for all land use type projects, which was based on substantial evidence supporting the use of the recommended thresholds. In addition the proposed structures would be required to comply with the most current State and City energy efficiency requirements that includes CCR Title 24, Part 6 *Building Energy Efficiency Standards* and CCR Title 24, Part 11: *California Green Building Standards.* The CCR Title 24, Part 6 and Part 11 standards require numerous energy efficiency measures to be incorporated into the proposed structures. Therefore, the proposed project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

Level of Significance

Less than significant impact.

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APPENDIX A

CalEEMod Model Daily Printouts

Fire Station No. 80 and Training Center

San Bernardino-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Government Office Building	9.91	1000sqft	0.38	9,910.00	0
User Defined Commercial	14.66	User Defined Unit	0.20	14,663.00	0
Parking Lot	3.10	Acre	3.10	135,036.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Total area disturbed 3.68 acres

Construction Phase -

Trips and VMT - 6 vendor trucks per day added to Site Preparation and Grading Phases to account for water truck emissions

Vehicle Trips - Training Center 18 autos ADT 5 days per week. Fire Station 18 autos ADT 7 days per week and 12 fire trucks (under Other Asphalt)

Construction Off-road Equipment Mitigation - Water Exposed Area 3x per day selected in order to account for SCAQMD Rule 403

Operational Off-Road Equipment -

Fleet Mix - All Emergency vehicles analyzed as Heavy-Heavy Duty (HHD) Trucks

Stationary Sources - Emergency Generators and Fire Pumps - 1 Diesel Backup Generator 0.5 hour per day 26 hour per year

Stationary Sources - Process Boilers -

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Stationary Sources - User Defined -

Energy Use - The Government Office Building (Training Center) Energy Usage Rates were utilized for the User Defined Commercial Building (Fire Station)

Water And Wastewater - Same water usage rates utilized for Training Center were utilized for fire station (User Defined Commercial)

Solid Waste - Training Center Waste generation rate was utilized for Fire Station land use.

Table Name	Column Name	Default Value	New Value
tblEnergyUse	LightingElect	0.00	3.66
tblEnergyUse	NT24E	0.00	2.79
tblEnergyUse	T24E	0.00	2.74
tblEnergyUse	T24NG	0.00	3.43
tblFleetMix	HHD	0.02	1.00
tblFleetMix	LDA	0.54	0.00
tblFleetMix	LDT1	0.06	0.00
tblFleetMix	LDT2	0.17	0.00
tblFleetMix	LHD1	0.03	0.00
tblFleetMix	LHD2	7.0090e-003	0.00
tblFleetMix	MCY	0.02	0.00
tblFleetMix	MDV	0.13	0.00
tblFleetMix	MH	4.6060e-003	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	5.5200e-004	0.00
tblFleetMix	SBUS	9.5600e-004	0.00
tblFleetMix	UBUS	2.4800e-004	0.00
tblLandUse	LandUseSquareFeet	0.00	14,663.00
tblLandUse	LotAcreage	0.23	0.38
tblLandUse	LotAcreage	0.00	0.20
tblSolidWaste	SolidWasteGenerationRate	0.00	14.00
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	467.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.50

tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	26.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblVehicleTrips	CC_TTP	0.00	100.00
tblVehicleTrips	CC_TTP	0.00	62.00
tblVehicleTrips	CNW_TTP	0.00	5.00
tblVehicleTrips	CW_TTP	0.00	33.00
tblVehicleTrips	DV_TP	0.00	34.00
tblVehicleTrips	PB_TP	0.00	16.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	PR_TP	0.00	50.00
tblVehicleTrips	ST_TR	0.00	3.87
tblVehicleTrips	ST_TR	0.00	1.23
tblVehicleTrips	SU_TR	0.00	3.87
tblVehicleTrips	SU_TR	0.00	1.23
tblVehicleTrips	WD_TR	22.59	1.82
tblVehicleTrips	WD_TR	0.00	3.87
tblVehicleTrips	WD_TR	0.00	1.23
tblWater	IndoorWaterUseRate	0.00	2,911,772.00
tblWater	OutdoorWaterUseRate	0.00	24,342.00

2.0 Emissions Summary

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	2.7331	27.4260	19.0546	0.0409	19.8967	1.2319	21.1285	10.1669	1.1334	11.3003	0.0000	3,981.5295	3,981.5295	1.1997	0.0871	4,017.7128
2025	14.9564	13.5058	18.5740	0.0375	0.8931	0.5376	1.4307	0.2406	0.5057	0.7464	0.0000	3,672.8112	3,672.8112	0.6261	0.0847	3,713.7005
Maximum	**14.9564**	**27.4260**	**19.0546**	**0.0409**	**19.8967**	**1.2319**	**21.1285**	**10.1669**	**1.1334**	**11.3003**	**0.0000**	**3,981.5295**	**3,981.5295**	**1.1997**	**0.0871**	**4,017.7128**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	2.7331	27.4260	19.0546	0.0409	7.9059	1.2319	9.1377	4.0044	1.1334	5.1378	0.0000	3,981.5295	3,981.5295	1.1997	0.0871	4,017.7128
2025	14.9564	13.5058	18.5740	0.0375	0.8931	0.5376	1.4307	0.2406	0.5057	0.7464	0.0000	3,672.8112	3,672.8112	0.6261	0.0847	3,713.7005
Maximum	**14.9564**	**27.4260**	**19.0546**	**0.0409**	**7.9059**	**1.2319**	**9.1377**	**4.0044**	**1.1334**	**5.1378**	**0.0000**	**3,981.5295**	**3,981.5295**	**1.1997**	**0.0871**	**4,017.7128**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**57.68**	**0.00**	**53.15**	**59.21**	**0.00**	**51.16**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.6073	3.0000e-005	2.8200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.0600e-003	6.0600e-003	2.0000e-005		6.4500e-003
Energy	2.4900e-003	0.0226	0.0190	1.4000e-004		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003		27.1669	27.1669	5.2000e-004	5.0000e-004	27.3284
Mobile	0.1200	0.7959	1.1146	4.6500e-003	0.2675	7.0800e-003	0.2745	0.0720	6.7500e-003	0.0787		498.5217	498.5217	0.0230	0.0588	516.6090
Stationary	0.3832	1.0710	0.9771	1.8400e-003		0.0564	0.0564		0.0564	0.0564		196.0266	196.0266	0.0275		196.7136
Total	**1.1130**	**1.8896**	**2.1135**	**6.6300e-003**	**0.2675**	**0.0652**	**0.3326**	**0.0720**	**0.0649**	**0.1368**		**721.7212**	**721.7212**	**0.0510**	**0.0593**	**740.6575**

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.6073	3.0000e-005	2.8200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.0600e-003	6.0600e-003	2.0000e-005		6.4500e-003
Energy	2.4900e-003	0.0226	0.0190	1.4000e-004		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003		27.1669	27.1669	5.2000e-004	5.0000e-004	27.3284
Mobile	0.1200	0.7959	1.1146	4.6500e-003	0.2675	7.0800e-003	0.2745	0.0720	6.7500e-003	0.0787		498.5217	498.5217	0.0230	0.0588	516.6090
Stationary	0.3832	1.0710	0.9771	1.8400e-003		0.0564	0.0564		0.0564	0.0564		196.0266	196.0266	0.0275		196.7136
Total	**1.1130**	**1.8896**	**2.1135**	**6.6300e-003**	**0.2675**	**0.0652**	**0.3326**	**0.0720**	**0.0649**	**0.1368**		**721.7212**	**721.7212**	**0.0510**	**0.0593**	**740.6575**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/3/2024	6/7/2024	5	5	
2	Grading	Grading	6/8/2024	6/19/2024	5	8	
3	Building Construction	Building Construction	6/20/2024	5/7/2025	5	230	
4	Paving	Paving	5/8/2025	6/2/2025	5	18	

5	Architectural Coating	Architectural Coating	6/3/2025	6/26/2025		5	18	

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 8

Acres of Paving: 3.1

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 36,860; Non-Residential Outdoor: 12,287; Striped Parking Area: 8,102 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	65.00	26.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6609	27.1760	18.3356	0.0381		1.2294	1.2294		1.1310	1.1310		3,688.0100	3,688.0100	1.1928		3,717.8294
Total	**2.6609**	**27.1760**	**18.3356**	**0.0381**	**19.6570**	**1.2294**	**20.8864**	**10.1025**	**1.1310**	**11.2335**		**3,688.0100**	**3,688.0100**	**1.1928**		**3,717.8294**

3.2 Site Preparation - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.8600e-003	0.2123	0.0868	1.0600e-003	0.0384	1.5600e-003	0.0400	0.0111	1.4900e-003	0.0126		113.5646	113.5646	2.9200e-003	0.0168	118.6345
Worker	0.0654	0.0377	0.6321	1.7400e-003	0.2012	9.6000e-004	0.2022	0.0534	8.8000e-004	0.0542		179.9550	179.9550	3.9700e-003	4.0100e-003	181.2489
Total	**0.0722**	**0.2500**	**0.7190**	**2.8000e-003**	**0.2396**	**2.5200e-003**	**0.2422**	**0.0644**	**2.3700e-003**	**0.0668**		**293.5196**	**293.5196**	**6.8900e-003**	**0.0208**	**299.8834**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.6662	0.0000	7.6662	3.9400	0.0000	3.9400			0.0000			0.0000
Off-Road	2.6609	27.1760	18.3356	0.0381		1.2294	1.2294		1.1310	1.1310	0.0000	3,688.0100	3,688.0100	1.1928		3,717.8294
Total	**2.6609**	**27.1760**	**18.3356**	**0.0381**	**7.6662**	**1.2294**	**8.8956**	**3.9400**	**1.1310**	**5.0710**	**0.0000**	**3,688.0100**	**3,688.0100**	**1.1928**		**3,717.8294**

3.2 Site Preparation - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.8600e-003	0.2123	0.0868	1.0600e-003	0.0384	1.5600e-003	0.0400	0.0111	1.4900e-003	0.0126		113.5646	113.5646	2.9200e-003	0.0168	118.6345
Worker	0.0654	0.0377	0.6321	1.7400e-003	0.2012	9.6000e-004	0.2022	0.0534	8.8000e-004	0.0542		179.9550	179.9550	3.9700e-003	4.0100e-003	181.2489
Total	**0.0722**	**0.2500**	**0.7190**	**2.8000e-003**	**0.2396**	**2.5200e-003**	**0.2422**	**0.0644**	**2.3700e-003**	**0.0668**		**293.5196**	**293.5196**	**6.8900e-003**	**0.0208**	**299.8834**

3.3 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0826	0.0000	7.0826	3.4247	0.0000	3.4247			0.0000			0.0000
Off-Road	1.6617	17.0310	14.7594	0.0297		0.7244	0.7244		0.6665	0.6665		2,873.054 1	2,873.054 1	0.9292		2,896.284 2
Total	**1.6617**	**17.0310**	**14.7594**	**0.0297**	**7.0826**	**0.7244**	**7.8070**	**3.4247**	**0.6665**	**4.0912**		**2,873.054 1**	**2,873.054 1**	**0.9292**		**2,896.284 2**

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.8600e-003	0.2123	0.0868	1.0600e-003	0.0384	1.5600e-003	0.0400	0.0111	1.4900e-003	0.0126		113.5646	113.5646	2.9200e-003	0.0168	118.6345
Worker	0.0545	0.0314	0.5268	1.4500e-003	0.1677	8.0000e-004	0.1685	0.0445	7.3000e-004	0.0452		149.9625	149.9625	3.3100e-003	3.3400e-003	151.0408
Total	**0.0614**	**0.2438**	**0.6136**	**2.5100e-003**	**0.2061**	**2.3600e-003**	**0.2085**	**0.0555**	**2.2200e-003**	**0.0578**		**263.5271**	**263.5271**	**6.2300e-003**	**0.0201**	**269.6753**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7622	0.0000	2.7622	1.3357	0.0000	1.3357			0.0000			0.0000
Off-Road	1.6617	17.0310	14.7594	0.0297		0.7244	0.7244		0.6665	0.6665	0.0000	2,873.0541	2,873.0541	0.9292		2,896.2842
Total	**1.6617**	**17.0310**	**14.7594**	**0.0297**	**2.7622**	**0.7244**	**3.4866**	**1.3357**	**0.6665**	**2.0021**	**0.0000**	**2,873.0541**	**2,873.0541**	**0.9292**		**2,896.2842**

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Grading - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.8600e-003	0.2123	0.0868	1.0600e-003	0.0384	1.5600e-003	0.0400	0.0111	1.4900e-003	0.0126		113.5646	113.5646	2.9200e-003	0.0168	118.6345
Worker	0.0545	0.0314	0.5268	1.4500e-003	0.1677	8.0000e-004	0.1685	0.0445	7.3000e-004	0.0452		149.9625	149.9625	3.3100e-003	3.3400e-003	151.0408
Total	**0.0614**	**0.2438**	**0.6136**	**2.5100e-003**	**0.2061**	**2.3600e-003**	**0.2085**	**0.0555**	**2.2200e-003**	**0.0578**		**263.5271**	**263.5271**	**6.2300e-003**	**0.0201**	**269.6753**

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0297	0.9201	0.3763	4.5900e-003	0.1666	6.7500e-003	0.1733	0.0480	6.4500e-003	0.0544		492.1134	492.1134	0.0126	0.0727	514.0828
Worker	0.2361	0.1362	2.2827	6.3000e-003	0.7266	3.4500e-003	0.7300	0.1927	3.1700e-003	0.1959		649.8373	649.8373	0.0144	0.0145	654.5099
Total	**0.2658**	**1.0562**	**2.6590**	**0.0109**	**0.8931**	**0.0102**	**0.9033**	**0.2407**	**9.6200e-003**	**0.2503**		**1,141.950 7**	**1,141.950 7**	**0.0270**	**0.0871**	**1,168.592 7**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.698 9	2,555.698 9	0.6044		2,570.807 7
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.698 9**	**2,555.698 9**	**0.6044**		**2,570.807 7**

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0297	0.9201	0.3763	4.5900e-003	0.1666	6.7500e-003	0.1733	0.0480	6.4500e-003	0.0544		492.1134	492.1134	0.0126	0.0727	514.0828
Worker	0.2361	0.1362	2.2827	6.3000e-003	0.7266	3.4500e-003	0.7300	0.1927	3.1700e-003	0.1959		649.8373	649.8373	0.0144	0.0145	654.5099
Total	**0.2658**	**1.0562**	**2.6590**	**0.0109**	**0.8931**	**0.0102**	**0.9033**	**0.2407**	**9.6200e-003**	**0.2503**		**1,141.950 7**	**1,141.950 7**	**0.0270**	**0.0871**	**1,168.592 7**

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0292	0.9146	0.3704	4.5000e-003	0.1666	6.7400e-003	0.1733	0.0480	6.4500e-003	0.0544		482.5460	482.5460	0.0123	0.0712	504.0735
Worker	0.2198	0.1215	2.1189	6.0800e-003	0.7266	3.2800e-003	0.7298	0.1927	3.0200e-003	0.1957		633.7909	633.7909	0.0129	0.0135	638.1289
Total	**0.2489**	**1.0361**	**2.4893**	**0.0106**	**0.8931**	**0.0100**	**0.9031**	**0.2406**	**9.4700e-003**	**0.2501**		**1,116.3369**	**1,116.3369**	**0.0252**	**0.0847**	**1,142.2024**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.4 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0292	0.9146	0.3704	4.5000e-003	0.1666	6.7400e-003	0.1733	0.0480	6.4500e-003	0.0544		482.5460	482.5460	0.0123	0.0712	504.0735
Worker	0.2198	0.1215	2.1189	6.0800e-003	0.7266	3.2800e-003	0.7298	0.1927	3.0200e-003	0.1957		633.7909	633.7909	0.0129	0.0135	638.1289
Total	**0.2489**	**1.0361**	**2.4893**	**0.0106**	**0.8931**	**0.0100**	**0.9031**	**0.2406**	**9.4700e-003**	**0.2501**		**1,116.336 9**	**1,116.336 9**	**0.0252**	**0.0847**	**1,142.202 4**

3.5 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8197	7.5321	12.1778	0.0189		0.3524	0.3524		0.3259	0.3259		1,805.392 6	1,805.392 6	0.5673		1,819.574 1
Paving	0.4512					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2709**	**7.5321**	**12.1778**	**0.0189**		**0.3524**	**0.3524**		**0.3259**	**0.3259**		**1,805.392 6**	**1,805.392 6**	**0.5673**		**1,819.574 1**

3.5 Paving - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0676	0.0374	0.6520	1.8700e-003	0.2236	1.0100e-003	0.2246	0.0593	9.3000e-004	0.0602		195.0126	195.0126	3.9700e-003	4.1500e-003	196.3473
Total	**0.0676**	**0.0374**	**0.6520**	**1.8700e-003**	**0.2236**	**1.0100e-003**	**0.2246**	**0.0593**	**9.3000e-004**	**0.0602**		**195.0126**	**195.0126**	**3.9700e-003**	**4.1500e-003**	**196.3473**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8197	7.5321	12.1778	0.0189		0.3524	0.3524		0.3259	0.3259	0.0000	1,805.392 6	1,805.392 6	0.5673		1,819.574 1
Paving	0.4512					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2709**	**7.5321**	**12.1778**	**0.0189**		**0.3524**	**0.3524**		**0.3259**	**0.3259**	**0.0000**	**1,805.392 6**	**1,805.392 6**	**0.5673**		**1,819.574 1**

3.5 Paving - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0676	0.0374	0.6520	1.8700e-003	0.2236	1.0100e-003	0.2246	0.0593	9.3000e-004	0.0602		195.0126	195.0126	3.9700e-003	4.1500e-003	196.3473
Total	**0.0676**	**0.0374**	**0.6520**	**1.8700e-003**	**0.2236**	**1.0100e-003**	**0.2246**	**0.0593**	**9.3000e-004**	**0.0602**		**195.0126**	**195.0126**	**3.9700e-003**	**4.1500e-003**	**196.3473**

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	14.7416					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**14.9125**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0440	0.0243	0.4238	1.2200e-003	0.1453	6.6000e-004	0.1460	0.0385	6.0000e-004	0.0391		126.7582	126.7582	2.5800e-003	2.6900e-003	127.6258
Total	**0.0440**	**0.0243**	**0.4238**	**1.2200e-003**	**0.1453**	**6.6000e-004**	**0.1460**	**0.0385**	**6.0000e-004**	**0.0391**		**126.7582**	**126.7582**	**2.5800e-003**	**2.6900e-003**	**127.6258**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	14.7416					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**14.9125**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0440	0.0243	0.4238	1.2200e-003	0.1453	6.6000e-004	0.1460	0.0385	6.0000e-004	0.0391		126.7582	126.7582	2.5800e-003	2.6900e-003	127.6258
Total	**0.0440**	**0.0243**	**0.4238**	**1.2200e-003**	**0.1453**	**6.6000e-004**	**0.1460**	**0.0385**	**6.0000e-004**	**0.0391**		**126.7582**	**126.7582**	**2.5800e-003**	**2.6900e-003**	**127.6258**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1200	0.7959	1.1146	4.6500e-003	0.2675	7.0800e-003	0.2745	0.0720	6.7500e-003	0.0787		498.5217	498.5217	0.0230	0.0588	516.6090
Unmitigated	0.1200	0.7959	1.1146	4.6500e-003	0.2675	7.0800e-003	0.2745	0.0720	6.7500e-003	0.0787		498.5217	498.5217	0.0230	0.0588	516.6090

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Government Office Building	18.04	0.00	0.00	30,336	30,336
Parking Lot	12.00	12.00	12.00	36,682	36,682
User Defined Commercial	18.03	18.03	18.03	42,461	42,461
Total	48.07	30.03	30.03	109,479	109,479

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Government Office Building	16.60	8.40	6.90	33.00	62.00	5.00	50	34	16
Parking Lot	16.60	8.40	6.90	0.00	100.00	0.00	100	0	0
User Defined Commercial	16.60	8.40	6.90	33.00	62.00	5.00	50	34	16

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Government Office Building	0.543085	0.056300	0.173085	0.134258	0.025645	0.007009	0.011926	0.017481	0.000552	0.000248	0.024848	0.000956	0.004606
Parking Lot	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

User Defined Commercial	0.543085	0.056300	0.173085	0.134258	0.025645	0.007009	0.011926	0.017481	0.000552	0.000248	0.024848	0.000956	0.004606

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	2.4900e-003	0.0226	0.0190	1.4000e-004		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003		27.1669	27.1669	5.2000e-004	5.0000e-004	27.3284
NaturalGas Unmitigated	2.4900e-003	0.0226	0.0190	1.4000e-004		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003		27.1669	27.1669	5.2000e-004	5.0000e-004	27.3284

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Government Office Building	93.1268	1.0000e-003	9.1300e-003	7.6700e-003	5.0000e-005		6.9000e-004	6.9000e-004		6.9000e-004	6.9000e-004		10.9561	10.9561	2.1000e-004	2.0000e-004	11.0212
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	137.792	1.4900e-003	0.0135	0.0114	8.0000e-005		1.0300e-003	1.0300e-003		1.0300e-003	1.0300e-003		16.2108	16.2108	3.1000e-004	3.0000e-004	16.3072
Total		**2.4900e-003**	**0.0226**	**0.0190**	**1.3000e-004**		**1.7200e-003**	**1.7200e-003**		**1.7200e-003**	**1.7200e-003**		**27.1669**	**27.1669**	**5.2000e-004**	**5.0000e-004**	**27.3284**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Government Office Building	0.0931268	1.0000e-003	9.1300e-003	7.6700e-003	5.0000e-005		6.9000e-004	6.9000e-004		6.9000e-004	6.9000e-004		10.9561	10.9561	2.1000e-004	2.0000e-004	11.0212
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0.137792	1.4900e-003	0.0135	0.0114	8.0000e-005		1.0300e-003	1.0300e-003		1.0300e-003	1.0300e-003		16.2108	16.2108	3.1000e-004	3.0000e-004	16.3072
Total		**2.4900e-003**	**0.0226**	**0.0190**	**1.3000e-004**		**1.7200e-003**	**1.7200e-003**		**1.7200e-003**	**1.7200e-003**		**27.1669**	**27.1669**	**5.2000e-004**	**5.0000e-004**	**27.3284**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.6073	3.0000e-005	2.8200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.0600e-003	6.0600e-003	2.0000e-005		6.4500e-003
Unmitigated	0.6073	3.0000e-005	2.8200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.0600e-003	6.0600e-003	2.0000e-005		6.4500e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0727					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.5344					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.6000e-004	3.0000e-005	2.8200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.0600e-003	6.0600e-003	2.0000e-005		6.4500e-003
Total	**0.6073**	**3.0000e-005**	**2.8200e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**6.0600e-003**	**6.0600e-003**	**2.0000e-005**		**6.4500e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0727					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.5344					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.6000e-004	3.0000e-005	2.8200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.0600e-003	6.0600e-003	2.0000e-005		6.4500e-003
Total	**0.6073**	**3.0000e-005**	**2.8200e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**6.0600e-003**	**6.0600e-003**	**2.0000e-005**		**6.4500e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0.5	26	467	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	lb/day										lb/day					
Emergency Generator - Diesel (300 - 600 HP)	0.3832	1.0710	0.9771	1.8400e-003		0.0564	0.0564		0.0564	0.0564		196.0266	196.0266	0.0275		196.7136
Total	**0.3832**	**1.0710**	**0.9771**	**1.8400e-003**		**0.0564**	**0.0564**		**0.0564**	**0.0564**		**196.0266**	**196.0266**	**0.0275**		**196.7136**

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Fire Station No. 80 and Training Center

San Bernardino-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Government Office Building	9.91	1000sqft	0.38	9,910.00	0
User Defined Commercial	14.66	User Defined Unit	0.20	14,663.00	0
Parking Lot	3.10	Acre	3.10	135,036.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2025
Utility Company	Southern California Edison				
CO_2 Intensity (lb/MWhr)	390.98	**CH_4 Intensity (lb/MWhr)**	0.033	**N_2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Total area disturbed 3.68 acres

Construction Phase -

Trips and VMT - 6 vendor trucks per day added to Site Preparation and Grading Phases to account for water truck emissions

Vehicle Trips - Training Center 18 autos ADT 5 days per week. Fire Station 18 autos ADT 7 days per week and 12 fire trucks (under Other Asphalt)

Construction Off-road Equipment Mitigation - Water Exposed Area 3x per day selected in order to account for SCAQMD Rule 403

Operational Off-Road Equipment -

Fleet Mix - All Emergency vehicles analyzed as Heavy-Heavy Duty (HHD) Trucks

Stationary Sources - Emergency Generators and Fire Pumps - 1 Diesel Backup Generator 0.5 hour per day 26 hour per year

Stationary Sources - Process Boilers -

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Stationary Sources - User Defined -

Energy Use - The Government Office Building (Training Center) Energy Usage Rates were utilized for the User Defined Commercial Building (Fire Station)

Water And Wastewater - Same water usage rates utilized for Training Center were utilized for fire station (User Defined Commercial)

Solid Waste - Training Center Waste generation rate was utilized for Fire Station land use.

Table Name	Column Name	Default Value	New Value
tblEnergyUse	LightingElect	0.00	3.66
tblEnergyUse	NT24E	0.00	2.79
tblEnergyUse	T24E	0.00	2.74
tblEnergyUse	T24NG	0.00	3.43
tblFleetMix	HHD	0.02	1.00
tblFleetMix	LDA	0.54	0.00
tblFleetMix	LDT1	0.06	0.00
tblFleetMix	LDT2	0.17	0.00
tblFleetMix	LHD1	0.03	0.00
tblFleetMix	LHD2	7.0090e-003	0.00
tblFleetMix	MCY	0.02	0.00
tblFleetMix	MDV	0.13	0.00
tblFleetMix	MH	4.6060e-003	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	5.5200e-004	0.00
tblFleetMix	SBUS	9.5600e-004	0.00
tblFleetMix	UBUS	2.4800e-004	0.00
tblLandUse	LandUseSquareFeet	0.00	14,663.00
tblLandUse	LotAcreage	0.23	0.38
tblLandUse	LotAcreage	0.00	0.20
tblSolidWaste	SolidWasteGenerationRate	0.00	14.00
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	467.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.50

tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	26.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblVehicleTrips	CC_TTP	0.00	100.00
tblVehicleTrips	CC_TTP	0.00	62.00
tblVehicleTrips	CNW_TTP	0.00	5.00
tblVehicleTrips	CW_TTP	0.00	33.00
tblVehicleTrips	DV_TP	0.00	34.00
tblVehicleTrips	PB_TP	0.00	16.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	PR_TP	0.00	50.00
tblVehicleTrips	ST_TR	0.00	3.87
tblVehicleTrips	ST_TR	0.00	1.23
tblVehicleTrips	SU_TR	0.00	3.87
tblVehicleTrips	SU_TR	0.00	1.23
tblVehicleTrips	WD_TR	22.59	1.82
tblVehicleTrips	WD_TR	0.00	3.87
tblVehicleTrips	WD_TR	0.00	1.23
tblWater	IndoorWaterUseRate	0.00	2,911,772.00
tblWater	OutdoorWaterUseRate	0.00	24,342.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	2.7304	27.4399	18.9460	0.0407	19.8967	1.2319	21.1285	10.1669	1.1334	11.3003	0.0000	3,964.922 3	3,964.922 3	1.1997	0.0878	4,001.158 6
2025	14.9550	13.5634	18.2149	0.0370	0.8931	0.5376	1.4307	0.2406	0.5058	0.7464	0.0000	3,614.672 7	3,614.672 7	0.6261	0.0853	3,655.753 2
Maximum	**14.9550**	**27.4399**	**18.9460**	**0.0407**	**19.8967**	**1.2319**	**21.1285**	**10.1669**	**1.1334**	**11.3003**	**0.0000**	**3,964.922 3**	**3,964.922 3**	**1.1997**	**0.0878**	**4,001.158 6**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	2.7304	27.4399	18.9460	0.0407	7.9059	1.2319	9.1377	4.0044	1.1334	5.1378	0.0000	3,964.922 3	3,964.922 3	1.1997	0.0878	4,001.158 6
2025	14.9550	13.5634	18.2149	0.0370	0.8931	0.5376	1.4307	0.2406	0.5058	0.7464	0.0000	3,614.672 7	3,614.672 7	0.6261	0.0853	3,655.753 2
Maximum	**14.9550**	**27.4399**	**18.9460**	**0.0407**	**7.9059**	**1.2319**	**9.1377**	**4.0044**	**1.1334**	**5.1378**	**0.0000**	**3,964.922 3**	**3,964.922 3**	**1.1997**	**0.0878**	**4,001.158 6**

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**57.68**	**0.00**	**53.15**	**59.21**	**0.00**	**51.16**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.6073	3.0000e-005	2.8200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.0600e-003	6.0600e-003	2.0000e-005		6.4500e-003
Energy	2.4900e-003	0.0226	0.0190	1.4000e-004		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003		27.1669	27.1669	5.2000e-004	5.0000e-004	27.3284
Mobile	0.1034	0.8448	1.0494	4.5400e-003	0.2675	7.1000e-003	0.2746	0.0720	6.7700e-003	0.0788		486.6394	486.6394	0.0233	0.0592	504.8509
Stationary	0.3832	1.0710	0.9771	1.8400e-003		0.0564	0.0564		0.0564	0.0564		196.0266	196.0266	0.0275		196.7136
Total	**1.0964**	**1.9385**	**2.0483**	**6.5200e-003**	**0.2675**	**0.0652**	**0.3327**	**0.0720**	**0.0649**	**0.1369**		**709.8389**	**709.8389**	**0.0513**	**0.0597**	**728.8993**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.6073	3.0000e-005	2.8200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.0600e-003	6.0600e-003	2.0000e-005		6.4500e-003
Energy	2.4900e-003	0.0226	0.0190	1.4000e-004		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003		27.1669	27.1669	5.2000e-004	5.0000e-004	27.3284
Mobile	0.1034	0.8448	1.0494	4.5400e-003	0.2675	7.1000e-003	0.2746	0.0720	6.7700e-003	0.0788		486.6394	486.6394	0.0233	0.0592	504.8509
Stationary	0.3832	1.0710	0.9771	1.8400e-003		0.0564	0.0564		0.0564	0.0564		196.0266	196.0266	0.0275		196.7136
Total	**1.0964**	**1.9385**	**2.0483**	**6.5200e-003**	**0.2675**	**0.0652**	**0.3327**	**0.0720**	**0.0649**	**0.1369**		**709.8389**	**709.8389**	**0.0513**	**0.0597**	**728.8993**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/3/2024	6/7/2024	5	5	
2	Grading	Grading	6/8/2024	6/19/2024	5	8	
3	Building Construction	Building Construction	6/20/2024	5/7/2025	5	230	
4	Paving	Paving	5/8/2025	6/2/2025	5	18	

5	Architectural Coating	Architectural Coating	6/3/2025	6/26/2025		5	18	

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 8

Acres of Paving: 3.1

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 36,860; Non-Residential Outdoor: 12,287; Striped Parking Area: 8,102 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	65.00	26.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6609	27.1760	18.3356	0.0381		1.2294	1.2294		1.1310	1.1310		3,688.010 0	3,688.010 0	1.1928		3,717.829 4
Total	**2.6609**	**27.1760**	**18.3356**	**0.0381**	**19.6570**	**1.2294**	**20.8864**	**10.1025**	**1.1310**	**11.2335**		**3,688.010 0**	**3,688.010 0**	**1.1928**		**3,717.829 4**

3.2 Site Preparation - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.3700e-003	0.2242	0.0895	1.0600e-003	0.0384	1.5600e-003	0.0400	0.0111	1.5000e-003	0.0126		113.8422	113.8422	2.8900e-003	0.0168	118.9269
Worker	0.0631	0.0396	0.5209	1.5800e-003	0.2012	9.6000e-004	0.2022	0.0534	8.8000e-004	0.0542		163.0702	163.0702	3.9900e-003	4.1400e-003	164.4024
Total	**0.0695**	**0.2639**	**0.6104**	**2.6400e-003**	**0.2396**	**2.5200e-003**	**0.2422**	**0.0644**	**2.3800e-003**	**0.0668**		**276.9123**	**276.9123**	**6.8800e-003**	**0.0210**	**283.3293**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.6662	0.0000	7.6662	3.9400	0.0000	3.9400			0.0000			0.0000
Off-Road	2.6609	27.1760	18.3356	0.0381		1.2294	1.2294		1.1310	1.1310	0.0000	3,688.0100	3,688.0100	1.1928		3,717.8294
Total	**2.6609**	**27.1760**	**18.3356**	**0.0381**	**7.6662**	**1.2294**	**8.8956**	**3.9400**	**1.1310**	**5.0710**	**0.0000**	**3,688.0100**	**3,688.0100**	**1.1928**		**3,717.8294**

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.3700e-003	0.2242	0.0895	1.0600e-003	0.0384	1.5600e-003	0.0400	0.0111	1.5000e-003	0.0126		113.8422	113.8422	2.8900e-003	0.0168	118.9269
Worker	0.0631	0.0396	0.5209	1.5800e-003	0.2012	9.6000e-004	0.2022	0.0534	8.8000e-004	0.0542		163.0702	163.0702	3.9900e-003	4.1400e-003	164.4024
Total	**0.0695**	**0.2639**	**0.6104**	**2.6400e-003**	**0.2396**	**2.5200e-003**	**0.2422**	**0.0644**	**2.3800e-003**	**0.0668**		**276.9123**	**276.9123**	**6.8800e-003**	**0.0210**	**283.3293**

3.3 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0826	0.0000	7.0826	3.4247	0.0000	3.4247			0.0000			0.0000
Off-Road	1.6617	17.0310	14.7594	0.0297		0.7244	0.7244		0.6665	0.6665		2,873.054 1	2,873.054 1	0.9292		2,896.284 2
Total	**1.6617**	**17.0310**	**14.7594**	**0.0297**	**7.0826**	**0.7244**	**7.8070**	**3.4247**	**0.6665**	**4.0912**		**2,873.054 1**	**2,873.054 1**	**0.9292**		**2,896.284 2**

3.3 Grading - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.3700e-003	0.2242	0.0895	1.0600e-003	0.0384	1.5600e-003	0.0400	0.0111	1.5000e-003	0.0126		113.8422	113.8422	2.8900e-003	0.0168	118.9269
Worker	0.0526	0.0330	0.4340	1.3200e-003	0.1677	8.0000e-004	0.1685	0.0445	7.3000e-004	0.0452		135.8918	135.8918	3.3200e-003	3.4500e-003	137.0020
Total	**0.0590**	**0.2573**	**0.5236**	**2.3800e-003**	**0.2061**	**2.3600e-003**	**0.2085**	**0.0555**	**2.2300e-003**	**0.0578**		**249.7340**	**249.7340**	**6.2100e-003**	**0.0203**	**255.9289**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7622	0.0000	2.7622	1.3357	0.0000	1.3357			0.0000			0.0000
Off-Road	1.6617	17.0310	14.7594	0.0297		0.7244	0.7244		0.6665	0.6665	0.0000	2,873.0541	2,873.0541	0.9292		2,896.2842
Total	**1.6617**	**17.0310**	**14.7594**	**0.0297**	**2.7622**	**0.7244**	**3.4866**	**1.3357**	**0.6665**	**2.0021**	**0.0000**	**2,873.0541**	**2,873.0541**	**0.9292**		**2,896.2842**

3.3 Grading - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.3700e-003	0.2242	0.0895	1.0600e-003	0.0384	1.5600e-003	0.0400	0.0111	1.5000e-003	0.0126		113.8422	113.8422	2.8900e-003	0.0168	118.9269
Worker	0.0526	0.0330	0.4340	1.3200e-003	0.1677	8.0000e-004	0.1685	0.0445	7.3000e-004	0.0452		135.8918	135.8918	3.3200e-003	3.4500e-003	137.0020
Total	**0.0590**	**0.2573**	**0.5236**	**2.3800e-003**	**0.2061**	**2.3600e-003**	**0.2085**	**0.0555**	**2.2300e-003**	**0.0578**		**249.7340**	**249.7340**	**6.2100e-003**	**0.0203**	**255.9289**

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0276	0.9717	0.3880	4.6000e-003	0.1666	6.7700e-003	0.1734	0.0480	6.4800e-003	0.0545		493.3161	493.3161	0.0125	0.0729	515.3497
Worker	0.2280	0.1431	1.8809	5.7100e-003	0.7266	3.4500e-003	0.7300	0.1927	3.1700e-003	0.1959		588.8644	588.8644	0.0144	0.0149	593.6754
Total	**0.2556**	**1.1148**	**2.2689**	**0.0103**	**0.8931**	**0.0102**	**0.9034**	**0.2407**	**9.6500e-003**	**0.2503**		**1,082.1805**	**1,082.1805**	**0.0269**	**0.0878**	**1,109.0250**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

3.4 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0276	0.9717	0.3880	4.6000e-003	0.1666	6.7700e-003	0.1734	0.0480	6.4800e-003	0.0545		493.3161	493.3161	0.0125	0.0729	515.3497
Worker	0.2280	0.1431	1.8809	5.7100e-003	0.7266	3.4500e-003	0.7300	0.1927	3.1700e-003	0.1959		588.8644	588.8644	0.0144	0.0149	593.6754
Total	**0.2556**	**1.1148**	**2.2689**	**0.0103**	**0.8931**	**0.0102**	**0.9034**	**0.2407**	**9.6500e-003**	**0.2503**		**1,082.1805**	**1,082.1805**	**0.0269**	**0.0878**	**1,109.0250**

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0270	0.9660	0.3820	4.5100e-003	0.1666	6.7600e-003	0.1733	0.0480	6.4700e-003	0.0544		483.7366	483.7366	0.0122	0.0714	505.3268
Worker	0.2127	0.1277	1.7482	5.5100e-003	0.7266	3.2800e-003	0.7298	0.1927	3.0200e-003	0.1957		574.4617	574.4617	0.0130	0.0139	578.9283
Total	**0.2398**	**1.0937**	**2.1302**	**0.0100**	**0.8931**	**0.0100**	**0.9032**	**0.2406**	**9.4900e-003**	**0.2501**		**1,058.1983**	**1,058.1983**	**0.0252**	**0.0853**	**1,084.2551**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.4 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0270	0.9660	0.3820	4.5100e-003	0.1666	6.7600e-003	0.1733	0.0480	6.4700e-003	0.0544		483.7366	483.7366	0.0122	0.0714	505.3268
Worker	0.2127	0.1277	1.7482	5.5100e-003	0.7266	3.2800e-003	0.7298	0.1927	3.0200e-003	0.1957		574.4617	574.4617	0.0130	0.0139	578.9283
Total	**0.2398**	**1.0937**	**2.1302**	**0.0100**	**0.8931**	**0.0100**	**0.9032**	**0.2406**	**9.4900e-003**	**0.2501**		**1,058.1983**	**1,058.1983**	**0.0252**	**0.0853**	**1,084.2551**

3.5 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8197	7.5321	12.1778	0.0189		0.3524	0.3524		0.3259	0.3259		1,805.3926	1,805.3926	0.5673		1,819.5741
Paving	0.4512					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2709**	**7.5321**	**12.1778**	**0.0189**		**0.3524**	**0.3524**		**0.3259**	**0.3259**		**1,805.3926**	**1,805.3926**	**0.5673**		**1,819.5741**

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Paving - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0655	0.0393	0.5379	1.7000e-003	0.2236	1.0100e-003	0.2246	0.0593	9.3000e-004	0.0602		176.7574	176.7574	3.9900e-003	4.2800e-003	178.1318
Total	**0.0655**	**0.0393**	**0.5379**	**1.7000e-003**	**0.2236**	**1.0100e-003**	**0.2246**	**0.0593**	**9.3000e-004**	**0.0602**		**176.7574**	**176.7574**	**3.9900e-003**	**4.2800e-003**	**178.1318**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8197	7.5321	12.1778	0.0189		0.3524	0.3524		0.3259	0.3259	0.0000	1,805.392 6	1,805.392 6	0.5673		1,819.574 1
Paving	0.4512					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2709**	**7.5321**	**12.1778**	**0.0189**		**0.3524**	**0.3524**		**0.3259**	**0.3259**	**0.0000**	**1,805.392 6**	**1,805.392 6**	**0.5673**		**1,819.574 1**

3.5 Paving - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0655	0.0393	0.5379	1.7000e-003	0.2236	1.0100e-003	0.2246	0.0593	9.3000e-004	0.0602		176.7574	176.7574	3.9900e-003	4.2800e-003	178.1318
Total	**0.0655**	**0.0393**	**0.5379**	**1.7000e-003**	**0.2236**	**1.0100e-003**	**0.2246**	**0.0593**	**9.3000e-004**	**0.0602**		**176.7574**	**176.7574**	**3.9900e-003**	**4.2800e-003**	**178.1318**

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	14.7416					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**14.9125**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0425	0.0255	0.3496	1.1000e-003	0.1453	6.6000e-004	0.1460	0.0385	6.0000e-004	0.0391		114.8923	114.8923	2.6000e-003	2.7800e-003	115.7857
Total	**0.0425**	**0.0255**	**0.3496**	**1.1000e-003**	**0.1453**	**6.6000e-004**	**0.1460**	**0.0385**	**6.0000e-004**	**0.0391**		**114.8923**	**114.8923**	**2.6000e-003**	**2.7800e-003**	**115.7857**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	14.7416					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**14.9125**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0425	0.0255	0.3496	1.1000e-003	0.1453	6.6000e-004	0.1460	0.0385	6.0000e-004	0.0391		114.8923	114.8923	2.6000e-003	2.7800e-003	115.7857
Total	**0.0425**	**0.0255**	**0.3496**	**1.1000e-003**	**0.1453**	**6.6000e-004**	**0.1460**	**0.0385**	**6.0000e-004**	**0.0391**		**114.8923**	**114.8923**	**2.6000e-003**	**2.7800e-003**	**115.7857**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1034	0.8448	1.0494	4.5400e-003	0.2675	7.1000e-003	0.2746	0.0720	6.7700e-003	0.0788		486.6394	486.6394	0.0233	0.0592	504.8509
Unmitigated	0.1034	0.8448	1.0494	4.5400e-003	0.2675	7.1000e-003	0.2746	0.0720	6.7700e-003	0.0788		486.6394	486.6394	0.0233	0.0592	504.8509

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Government Office Building	18.04	0.00	0.00	30,336	30,336
Parking Lot	12.00	12.00	12.00	36,682	36,682
User Defined Commercial	18.03	18.03	18.03	42,461	42,461
Total	48.07	30.03	30.03	109,479	109,479

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Government Office Building	16.60	8.40	6.90	33.00	62.00	5.00	50	34	16
Parking Lot	16.60	8.40	6.90	0.00	100.00	0.00	100	0	0
User Defined Commercial	16.60	8.40	6.90	33.00	62.00	5.00	50	34	16

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Government Office Building	0.543085	0.056300	0.173085	0.134258	0.025645	0.007009	0.011926	0.017481	0.000552	0.000248	0.024848	0.000956	0.004606
Parking Lot	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

User Defined Commercial	0.543085	0.056300	0.173085	0.134258	0.025645	0.007009	0.011926	0.017481	0.000552	0.000248	0.024848	0.000956	0.004606

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	2.4900e-003	0.0226	0.0190	1.4000e-004		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003		27.1669	27.1669	5.2000e-004	5.0000e-004	27.3284
NaturalGas Unmitigated	2.4900e-003	0.0226	0.0190	1.4000e-004		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003		27.1669	27.1669	5.2000e-004	5.0000e-004	27.3284

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Government Office Building	93.1268	1.0000e-003	9.1300e-003	7.6700e-003	5.0000e-005		6.9000e-004	6.9000e-004		6.9000e-004	6.9000e-004		10.9561	10.9561	2.1000e-004	2.0000e-004	11.0212
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	137.792	1.4900e-003	0.0135	0.0114	8.0000e-005		1.0300e-003	1.0300e-003		1.0300e-003	1.0300e-003		16.2108	16.2108	3.1000e-004	3.0000e-004	16.3072
Total		**2.4900e-003**	**0.0226**	**0.0190**	**1.3000e-004**		**1.7200e-003**	**1.7200e-003**		**1.7200e-003**	**1.7200e-003**		**27.1669**	**27.1669**	**5.2000e-004**	**5.0000e-004**	**27.3284**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Government Office Building	0.0931268	1.0000e-003	9.1300e-003	7.6700e-003	5.0000e-005		6.9000e-004	6.9000e-004		6.9000e-004	6.9000e-004		10.9561	10.9561	2.1000e-004	2.0000e-004	11.0212
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0.137792	1.4900e-003	0.0135	0.0114	8.0000e-005		1.0300e-003	1.0300e-003		1.0300e-003	1.0300e-003		16.2108	16.2108	3.1000e-004	3.0000e-004	16.3072
Total		**2.4900e-003**	**0.0226**	**0.0190**	**1.3000e-004**		**1.7200e-003**	**1.7200e-003**		**1.7200e-003**	**1.7200e-003**		**27.1669**	**27.1669**	**5.2000e-004**	**5.0000e-004**	**27.3284**

6.0 Area Detail

6.1 Mitigation Measures Area

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.6073	3.0000e-005	2.8200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.0600e-003	6.0600e-003	2.0000e-005		6.4500e-003
Unmitigated	0.6073	3.0000e-005	2.8200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.0600e-003	6.0600e-003	2.0000e-005		6.4500e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0727					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.5344					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.6000e-004	3.0000e-005	2.8200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.0600e-003	6.0600e-003	2.0000e-005		6.4500e-003
Total	**0.6073**	**3.0000e-005**	**2.8200e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**6.0600e-003**	**6.0600e-003**	**2.0000e-005**		**6.4500e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0727					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.5344					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.6000e-004	3.0000e-005	2.8200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.0600e-003	6.0600e-003	2.0000e-005		6.4500e-003
Total	**0.6073**	**3.0000e-005**	**2.8200e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**6.0600e-003**	**6.0600e-003**	**2.0000e-005**		**6.4500e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0.5	26	467	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	lb/day										lb/day					
Emergency Generator - Diesel (300 - 600 HP)	0.3832	1.0710	0.9771	1.8400e-003		0.0564	0.0564		0.0564	0.0564		196.0266	196.0266	0.0275		196.7136
Total	**0.3832**	**1.0710**	**0.9771**	**1.8400e-003**		**0.0564**	**0.0564**		**0.0564**	**0.0564**		**196.0266**	**196.0266**	**0.0275**		**196.7136**

11.0 Vegetation

APPENDIX B

EMFAC2017 Model Printouts

EMFAC2017 (v1.0.2) Emissions Inventory
Region Type: Air Basin
Region: SOUTH COAST
Calendar Year: 2024
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption. Note 'day' in the unit is operation day.

Region	Calendar	Vehicle Cat	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
SOUTH CO/	2024	HHDT	Aggregated	Aggregatec	GAS	73	8361	1468	1.9
SOUTH CO/	2024	LDA	Aggregated	Aggregatec	GAS	6543322	247047080	30912773	7604.7
SOUTH CO/	2024	LDT1	Aggregated	Aggregatec	GAS	758038	27517267	3506784	990.1
SOUTH CO/	2024	LDT2	Aggregated	Aggregatec	GAS	2256847	83361536	10593017	3162.7
SOUTH CO/	2024	LHDT1	Aggregated	Aggregatec	GAS	169468	5984463	2524826	556.7
SOUTH CO/	2024	LHDT2	Aggregated	Aggregatec	GAS	29259	998729	435923	106.8
SOUTH CO/	2024	MCY	Aggregated	Aggregatec	GAS	306168	2050950	612337	56.8
SOUTH CO/	2024	MDV	Aggregated	Aggregatec	GAS	1550012	53715244	7176828	2521.8
SOUTH CO/	2024	MH	Aggregated	Aggregatec	GAS	33327	318279	3334	60.1
SOUTH CO/	2024	MHDT	Aggregated	Aggregatec	GAS	25072	1303434	501644	250.5
SOUTH CO/	2024	OBUS	Aggregated	Aggregatec	GAS	5824	231713	116530	44.8
SOUTH CO/	2024	SBUS	Aggregated	Aggregatec	GAS	2862	111917	11449	12.1
SOUTH CO/	2024	UBUS	Aggregated	Aggregatec	GAS	963	90309	3854	17.1

vehicle miles per day (All Categories)	422739281	15,386	1,000 gall per day
		15,386,053	gallons per day
Fleet Avg Miles per gallon	27.5		

EMFAC2017 (v1.0.2) Emissions Inventory
Region Type: Air Basin
Region: SOUTH COAST
Calendar Year: 2024
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption. Note 'day' in the unit is operation day.

Region	Calendar	Vehicle Cat	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
SOUTH COA	2024	HHDT	Aggregatec	Aggregated	DSL	102344	12300372	1038748	1709.32
SOUTH COA	2024	LDA	Aggregatec	Aggregated	DSL	63999	2508733	304607	49.13
SOUTH COA	2024	LDT1	Aggregatec	Aggregated	DSL	329	7658	1150	0.33
SOUTH COA	2024	LDT2	Aggregatec	Aggregated	DSL	16403	669970	80362	17.87
SOUTH COA	2024	LHDT1	Aggregatec	Aggregated	DSL	127721	5014850	1606565	225.94
SOUTH COA	2024	LHDT2	Aggregatec	Aggregated	DSL	51054	1946190	642191	97.16
SOUTH COA	2024	MDV	Aggregatec	Aggregated	DSL	37681	1454315	183502	50.53
SOUTH COA	2024	MH	Aggregatec	Aggregated	DSL	12907	121381	1291	11.24
SOUTH COA	2024	MHDT	Aggregatec	Aggregated	DSL	124153	8073272	1252041	712.06
SOUTH COA	2024	OBUS	Aggregatec	Aggregated	DSL	4310	331728	41803	37.72
SOUTH COA	2024	SBUS	Aggregatec	Aggregated	DSL	6430	203278	74205	26.12
SOUTH COA	2024	UBUS	Aggregatec	Aggregated	DSL	10	1205	42	0.21

Diesel Truck (HHDT, MDV, MHDT) vehicle miles per day	21,827,959	2,472	1,000 gall per day
		2471917	gallons per day
Diesel Truck Fleet Avg Miles per gallon	8.8		

APPENDIX C

CalEEMod Model Annual Printouts

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Fire Station No. 80 and Training Center

San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Government Office Building	9.91	1000sqft	0.38	9,910.00	0
User Defined Commercial	14.66	User Defined Unit	0.20	14,663.00	0
Parking Lot	3.10	Acre	3.10	135,036.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2025
Utility Company	Southern California Edison				
CO_2 Intensity (lb/MWhr)	390.98	**CH_4 Intensity (lb/MWhr)**	0.033	**N_2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Total area disturbed 3.68 acres

Construction Phase -

Trips and VMT - 6 vendor trucks per day added to Site Preparation and Grading Phases to account for water truck emissions

Vehicle Trips - Training Center 18 autos ADT 5 days per week. Fire Station 18 autos ADT 7 days per week and 12 fire trucks (under Other Asphalt)

Construction Off-road Equipment Mitigation - Water Exposed Area 3x per day selected in order to account for SCAQMD Rule 403

Operational Off-Road Equipment -

Fleet Mix - All Emergency vehicles analyzed as Heavy-Heavy Duty (HHD) Trucks

Stationary Sources - Emergency Generators and Fire Pumps - 1 Diesel Backup Generator 0.5 hour per day 26 hour per year

Stationary Sources - Process Boilers -

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Stationary Sources - User Defined -

Energy Use - The Government Office Building (Training Center) Energy Usage Rates were utilized for the User Defined Commercial Building (Fire Station)

Water And Wastewater - Same water usage rates utilized for Training Center were utilized for fire station (User Defined Commercial)

Solid Waste - Training Center Waste generation rate was utilized for Fire Station land use.

Table Name	Column Name	Default Value	New Value
tblEnergyUse	LightingElect	0.00	3.66
tblEnergyUse	NT24E	0.00	2.79
tblEnergyUse	T24E	0.00	2.74
tblEnergyUse	T24NG	0.00	3.43
tblFleetMix	HHD	0.02	1.00
tblFleetMix	LDA	0.54	0.00
tblFleetMix	LDT1	0.06	0.00
tblFleetMix	LDT2	0.17	0.00
tblFleetMix	LHD1	0.03	0.00
tblFleetMix	LHD2	7.0090e-003	0.00
tblFleetMix	MCY	0.02	0.00
tblFleetMix	MDV	0.13	0.00
tblFleetMix	MH	4.6060e-003	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	5.5200e-004	0.00
tblFleetMix	SBUS	9.5600e-004	0.00
tblFleetMix	UBUS	2.4800e-004	0.00
tblLandUse	LandUseSquareFeet	0.00	14,663.00
tblLandUse	LotAcreage	0.23	0.38
tblLandUse	LotAcreage	0.00	0.20
tblSolidWaste	SolidWasteGenerationRate	0.00	14.00
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	467.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.50

tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	26.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblVehicleTrips	CC_TTP	0.00	100.00
tblVehicleTrips	CC_TTP	0.00	62.00
tblVehicleTrips	CNW_TTP	0.00	5.00
tblVehicleTrips	CW_TTP	0.00	33.00
tblVehicleTrips	DV_TP	0.00	34.00
tblVehicleTrips	PB_TP	0.00	16.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	PR_TP	0.00	50.00
tblVehicleTrips	ST_TR	0.00	3.87
tblVehicleTrips	ST_TR	0.00	1.23
tblVehicleTrips	SU_TR	0.00	3.87
tblVehicleTrips	SU_TR	0.00	1.23
tblVehicleTrips	WD_TR	22.59	1.82
tblVehicleTrips	WD_TR	0.00	3.87
tblVehicleTrips	WD_TR	0.00	1.23
tblWater	IndoorWaterUseRate	0.00	2,911,772.00
tblWater	OutdoorWaterUseRate	0.00	24,342.00

2.0 Emissions Summary

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.1326	1.1498	1.3958	2.8300e-003	0.1398	0.0493	0.1891	0.0558	0.0463	0.1021	0.0000	250.3970	250.3970	0.0459	5.6800e-003	253.2390
2025	0.2190	0.6959	0.9666	1.9100e-003	0.0432	0.0281	0.0713	0.0116	0.0264	0.0381	0.0000	169.1087	169.1087	0.0307	3.6000e-003	170.9470
Maximum	**0.2190**	**1.1498**	**1.3958**	**2.8300e-003**	**0.1398**	**0.0493**	**0.1891**	**0.0558**	**0.0463**	**0.1021**	**0.0000**	**250.3970**	**250.3970**	**0.0459**	**5.6800e-003**	**253.2390**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.1326	1.1498	1.3958	2.8300e-003	0.0925	0.0493	0.1419	0.0320	0.0463	0.0783	0.0000	250.3968	250.3968	0.0459	5.6800e-003	253.2388
2025	0.2190	0.6959	0.9666	1.9100e-003	0.0432	0.0281	0.0713	0.0116	0.0264	0.0381	0.0000	169.1086	169.1086	0.0307	3.6000e-003	170.9468
Maximum	**0.2190**	**1.1498**	**1.3958**	**2.8300e-003**	**0.0925**	**0.0493**	**0.1419**	**0.0320**	**0.0463**	**0.0783**	**0.0000**	**250.3968**	**250.3968**	**0.0459**	**5.6800e-003**	**253.2388**

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	25.83	0.00	18.15	35.26	0.00	16.96	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	6-3-2024	9-2-2024	0.5702	0.5702
2	9-3-2024	12-2-2024	0.5288	0.5288
3	12-3-2024	3-2-2025	0.4992	0.4992
4	3-3-2025	6-2-2025	0.4397	0.4397
5	6-3-2025	9-2-2025	0.1382	0.1382
		Highest	0.5702	0.5702

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1108	0.0000	3.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6.9000e-004	6.9000e-004	0.0000	0.0000	7.3000e-004
Energy	4.5000e-004	4.1300e-003	3.4700e-003	2.0000e-005		3.1000e-004	3.1000e-004		3.1000e-004	3.1000e-004	0.0000	52.9288	52.9288	4.1700e-003	5.8000e-004	53.2054
Mobile	0.0167	0.1499	0.1754	7.9000e-004	0.0432	1.2500e-003	0.0445	0.0117	1.2000e-003	0.0129	0.0000	76.5064	76.5064	3.6200e-003	9.5500e-003	79.4418
Stationary	9.9600e-003	0.0279	0.0254	5.0000e-005		1.4700e-003	1.4700e-003		1.4700e-003	1.4700e-003	0.0000	4.6236	4.6236	6.5000e-004	0.0000	4.6399
Waste						0.0000	0.0000		0.0000	0.0000	4.7135	0.0000	4.7135	0.2786	0.0000	11.6774
Water						0.0000	0.0000		0.0000	0.0000	1.5484	13.6955	15.2439	0.1602	3.9000e-003	20.4093
Total	**0.1379**	**0.1819**	**0.2046**	**8.6000e-004**	**0.0432**	**3.0300e-003**	**0.0463**	**0.0117**	**2.9800e-003**	**0.0146**	**6.2618**	**147.7551**	**154.0169**	**0.4472**	**0.0140**	**169.3744**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1108	0.0000	3.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6.9000e-004	6.9000e-004	0.0000	0.0000	7.3000e-004
Energy	4.5000e-004	4.1300e-003	3.4700e-003	2.0000e-005		3.1000e-004	3.1000e-004		3.1000e-004	3.1000e-004	0.0000	52.9288	52.9288	4.1700e-003	5.8000e-004	53.2054
Mobile	0.0167	0.1499	0.1754	7.9000e-004	0.0432	1.2500e-003	0.0445	0.0117	1.2000e-003	0.0129	0.0000	76.5064	76.5064	3.6200e-003	9.5500e-003	79.4418
Stationary	9.9600e-003	0.0279	0.0254	5.0000e-005		1.4700e-003	1.4700e-003		1.4700e-003	1.4700e-003	0.0000	4.6236	4.6236	6.5000e-004	0.0000	4.6399
Waste						0.0000	0.0000		0.0000	0.0000	4.7135	0.0000	4.7135	0.2786	0.0000	11.6774
Water						0.0000	0.0000		0.0000	0.0000	1.5484	13.6955	15.2439	0.1602	3.9000e-003	20.4093
Total	**0.1379**	**0.1819**	**0.2046**	**8.6000e-004**	**0.0432**	**3.0300e-003**	**0.0463**	**0.0117**	**2.9800e-003**	**0.0146**	**6.2618**	**147.7551**	**154.0169**	**0.4472**	**0.0140**	**169.3744**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/3/2024	6/7/2024	5	5	
2	Grading	Grading	6/8/2024	6/19/2024	5	8	

3	Building Construction	Building Construction	6/20/2024	5/7/2025	5	230	
4	Paving	Paving	5/8/2025	6/2/2025	5	18	
5	Architectural Coating	Architectural Coating	6/3/2025	6/26/2025	5	18	

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 8

Acres of Paving: 3.1

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 36,860; Non-Residential Outdoor: 12,287; Striped Parking Area: 8,102 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	65.00	26.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0491	0.0000	0.0491	0.0253	0.0000	0.0253	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.6500e-003	0.0679	0.0458	1.0000e-004		3.0700e-003	3.0700e-003		2.8300e-003	2.8300e-003	0.0000	8.3643	8.3643	2.7100e-003	0.0000	8.4319
Total	**6.6500e-003**	**0.0679**	**0.0458**	**1.0000e-004**	**0.0491**	**3.0700e-003**	**0.0522**	**0.0253**	**2.8300e-003**	**0.0281**	**0.0000**	**8.3643**	**8.3643**	**2.7100e-003**	**0.0000**	**8.4319**

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	5.6000e-004	2.2000e-004	0.0000	9.0000e-005	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.2578	0.2578	1.0000e-005	4.0000e-005	0.2693
Worker	1.5000e-004	1.0000e-004	1.3600e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3772	0.3772	1.0000e-005	1.0000e-005	0.3803
Total	**1.7000e-004**	**6.6000e-004**	**1.5800e-003**	**0.0000**	**5.8000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.6350**	**0.6350**	**2.0000e-005**	**5.0000e-005**	**0.6496**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0192	0.0000	0.0192	9.8500e-003	0.0000	9.8500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.6500e-003	0.0679	0.0458	1.0000e-004		3.0700e-003	3.0700e-003		2.8300e-003	2.8300e-003	0.0000	8.3643	8.3643	2.7100e-003	0.0000	8.4319
Total	**6.6500e-003**	**0.0679**	**0.0458**	**1.0000e-004**	**0.0192**	**3.0700e-003**	**0.0222**	**9.8500e-003**	**2.8300e-003**	**0.0127**	**0.0000**	**8.3643**	**8.3643**	**2.7100e-003**	**0.0000**	**8.4319**

3.2 Site Preparation - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	5.6000e-004	2.2000e-004	0.0000	9.0000e-005	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.2578	0.2578	1.0000e-005	4.0000e-005	0.2693
Worker	1.5000e-004	1.0000e-004	1.3600e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3772	0.3772	1.0000e-005	1.0000e-005	0.3803
Total	**1.7000e-004**	**6.6000e-004**	**1.5800e-003**	**0.0000**	**5.8000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.6350**	**0.6350**	**2.0000e-005**	**5.0000e-005**	**0.6496**

3.3 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0283	0.0000	0.0283	0.0137	0.0000	0.0137	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.6500e-003	0.0681	0.0590	1.2000e-004		2.9000e-003	2.9000e-003		2.6700e-003	2.6700e-003	0.0000	10.4256	10.4256	3.3700e-003	0.0000	10.5099
Total	**6.6500e-003**	**0.0681**	**0.0590**	**1.2000e-004**	**0.0283**	**2.9000e-003**	**0.0312**	**0.0137**	**2.6700e-003**	**0.0164**	**0.0000**	**10.4256**	**10.4256**	**3.3700e-003**	**0.0000**	**10.5099**

3.3 Grading - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-005	8.9000e-004	3.5000e-004	0.0000	1.5000e-004	1.0000e-005	1.6000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4125	0.4125	1.0000e-005	6.0000e-005	0.4310
Worker	1.9000e-004	1.4000e-004	1.8200e-003	1.0000e-005	6.6000e-004	0.0000	6.6000e-004	1.7000e-004	0.0000	1.8000e-004	0.0000	0.5029	0.5029	1.0000e-005	1.0000e-005	0.5070
Total	**2.2000e-004**	**1.0300e-003**	**2.1700e-003**	**1.0000e-005**	**8.1000e-004**	**1.0000e-005**	**8.2000e-004**	**2.1000e-004**	**1.0000e-005**	**2.3000e-004**	**0.0000**	**0.9154**	**0.9154**	**2.0000e-005**	**7.0000e-005**	**0.9380**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0111	0.0000	0.0111	5.3400e-003	0.0000	5.3400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.6500e-003	0.0681	0.0590	1.2000e-004		2.9000e-003	2.9000e-003		2.6700e-003	2.6700e-003	0.0000	10.4256	10.4256	3.3700e-003	0.0000	10.5099
Total	**6.6500e-003**	**0.0681**	**0.0590**	**1.2000e-004**	**0.0111**	**2.9000e-003**	**0.0140**	**5.3400e-003**	**2.6700e-003**	**8.0100e-003**	**0.0000**	**10.4256**	**10.4256**	**3.3700e-003**	**0.0000**	**10.5099**

3.3 Grading - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-005	8.9000e-004	3.5000e-004	0.0000	1.5000e-004	1.0000e-005	1.6000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4125	0.4125	1.0000e-005	6.0000e-005	0.4310
Worker	1.9000e-004	1.4000e-004	1.8200e-003	1.0000e-005	6.6000e-004	0.0000	6.6000e-004	1.7000e-004	0.0000	1.8000e-004	0.0000	0.5029	0.5029	1.0000e-005	1.0000e-005	0.5070
Total	**2.2000e-004**	**1.0300e-003**	**2.1700e-003**	**1.0000e-005**	**8.1000e-004**	**1.0000e-005**	**8.2000e-004**	**2.1000e-004**	**1.0000e-005**	**2.3000e-004**	**0.0000**	**0.9154**	**0.9154**	**2.0000e-005**	**7.0000e-005**	**0.9380**

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1023	0.9343	1.1236	1.8700e-003		0.0426	0.0426		0.0401	0.0401	0.0000	161.1351	161.1351	0.0381	0.0000	162.0877
Total	**0.1023**	**0.9343**	**1.1236**	**1.8700e-003**		**0.0426**	**0.0426**		**0.0401**	**0.0401**	**0.0000**	**161.1351**	**161.1351**	**0.0381**	**0.0000**	**162.0877**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.9900e-003	0.0673	0.0265	3.2000e-004	0.0114	4.7000e-004	0.0119	3.2900e-003	4.5000e-004	3.7400e-003	0.0000	31.0594	31.0594	7.9000e-004	4.5900e-003	32.4468
Worker	0.0146	0.0104	0.1370	4.0000e-004	0.0495	2.4000e-004	0.0498	0.0132	2.2000e-004	0.0134	0.0000	37.8623	37.8623	9.2000e-004	9.7000e-004	38.1751
Total	**0.0166**	**0.0777**	**0.1636**	**7.2000e-004**	**0.0609**	**7.1000e-004**	**0.0616**	**0.0165**	**6.7000e-004**	**0.0171**	**0.0000**	**68.9217**	**68.9217**	**1.7100e-003**	**5.5600e-003**	**70.6219**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1023	0.9343	1.1236	1.8700e-003		0.0426	0.0426		0.0401	0.0401	0.0000	161.1349	161.1349	0.0381	0.0000	162.0875
Total	**0.1023**	**0.9343**	**1.1236**	**1.8700e-003**		**0.0426**	**0.0426**		**0.0401**	**0.0401**	**0.0000**	**161.1349**	**161.1349**	**0.0381**	**0.0000**	**162.0875**

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.9900e-003	0.0673	0.0265	3.2000e-004	0.0114	4.7000e-004	0.0119	3.2900e-003	4.5000e-004	3.7400e-003	0.0000	31.0594	31.0594	7.9000e-004	4.5900e-003	32.4468
Worker	0.0146	0.0104	0.1370	4.0000e-004	0.0495	2.4000e-004	0.0498	0.0132	2.2000e-004	0.0134	0.0000	37.8623	37.8623	9.2000e-004	9.7000e-004	38.1751
Total	**0.0166**	**0.0777**	**0.1636**	**7.2000e-004**	**0.0609**	**7.1000e-004**	**0.0616**	**0.0165**	**6.7000e-004**	**0.0171**	**0.0000**	**68.9217**	**68.9217**	**1.7100e-003**	**5.5600e-003**	**70.6219**

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0622	0.5674	0.7319	1.2300e-003		0.0240	0.0240		0.0226	0.0226	0.0000	105.5234	105.5234	0.0248	0.0000	106.1435
Total	**0.0622**	**0.5674**	**0.7319**	**1.2300e-003**		**0.0240**	**0.0240**		**0.0226**	**0.0226**	**0.0000**	**105.5234**	**105.5234**	**0.0248**	**0.0000**	**106.1435**

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2800e-003	0.0438	0.0171	2.0000e-004	7.4600e-003	3.1000e-004	7.7700e-003	2.1500e-003	2.9000e-004	2.4500e-003	0.0000	19.9387	19.9387	5.1000e-004	2.9400e-003	20.8287
Worker	8.9300e-003	6.0900e-003	0.0834	2.6000e-004	0.0324	1.5000e-004	0.0326	8.6100e-003	1.4000e-004	8.7500e-003	0.0000	24.1801	24.1801	5.4000e-004	5.9000e-004	24.3702
Total	**0.0102**	**0.0499**	**0.1005**	**4.6000e-004**	**0.0399**	**4.6000e-004**	**0.0404**	**0.0108**	**4.3000e-004**	**0.0112**	**0.0000**	**44.1188**	**44.1188**	**1.0500e-003**	**3.5300e-003**	**45.1989**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0622	0.5674	0.7319	1.2300e-003		0.0240	0.0240		0.0226	0.0226	0.0000	105.5232	105.5232	0.0248	0.0000	106.1434
Total	**0.0622**	**0.5674**	**0.7319**	**1.2300e-003**		**0.0240**	**0.0240**		**0.0226**	**0.0226**	**0.0000**	**105.5232**	**105.5232**	**0.0248**	**0.0000**	**106.1434**

3.4 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2800e-003	0.0438	0.0171	2.0000e-004	7.4600e-003	3.1000e-004	7.7700e-003	2.1500e-003	2.9000e-004	2.4500e-003	0.0000	19.9387	19.9387	5.1000e-004	2.9400e-003	20.8287
Worker	8.9300e-003	6.0900e-003	0.0834	2.6000e-004	0.0324	1.5000e-004	0.0326	8.6100e-003	1.4000e-004	8.7500e-003	0.0000	24.1801	24.1801	5.4000e-004	5.9000e-004	24.3702
Total	**0.0102**	**0.0499**	**0.1005**	**4.6000e-004**	**0.0399**	**4.6000e-004**	**0.0404**	**0.0108**	**4.3000e-004**	**0.0112**	**0.0000**	**44.1188**	**44.1188**	**1.0500e-003**	**3.5300e-003**	**45.1989**

3.5 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.3800e-003	0.0678	0.1096	1.7000e-004		3.1700e-003	3.1700e-003		2.9300e-003	2.9300e-003	0.0000	14.7404	14.7404	4.6300e-003	0.0000	14.8562
Paving	4.0600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0114**	**0.0678**	**0.1096**	**1.7000e-004**		**3.1700e-003**	**3.1700e-003**		**2.9300e-003**	**2.9300e-003**	**0.0000**	**14.7404**	**14.7404**	**4.6300e-003**	**0.0000**	**14.8562**

3.5 Paving - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.4000e-004	3.7000e-004	5.0700e-003	2.0000e-005	1.9700e-003	1.0000e-005	1.9800e-003	5.2000e-004	1.0000e-005	5.3000e-004	0.0000	1.4717	1.4717	3.0000e-005	4.0000e-005	1.4832
Total	**5.4000e-004**	**3.7000e-004**	**5.0700e-003**	**2.0000e-005**	**1.9700e-003**	**1.0000e-005**	**1.9800e-003**	**5.2000e-004**	**1.0000e-005**	**5.3000e-004**	**0.0000**	**1.4717**	**1.4717**	**3.0000e-005**	**4.0000e-005**	**1.4832**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.3800e-003	0.0678	0.1096	1.7000e-004		3.1700e-003	3.1700e-003		2.9300e-003	2.9300e-003	0.0000	14.7404	14.7404	4.6300e-003	0.0000	14.8562
Paving	4.0600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0114**	**0.0678**	**0.1096**	**1.7000e-004**		**3.1700e-003**	**3.1700e-003**		**2.9300e-003**	**2.9300e-003**	**0.0000**	**14.7404**	**14.7404**	**4.6300e-003**	**0.0000**	**14.8562**

3.5 Paving - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.4000e-004	3.7000e-004	5.0700e-003	2.0000e-005	1.9700e-003	1.0000e-005	1.9800e-003	5.2000e-004	1.0000e-005	5.3000e-004	0.0000	1.4717	1.4717	3.0000e-005	4.0000e-005	1.4832
Total	**5.4000e-004**	**3.7000e-004**	**5.0700e-003**	**2.0000e-005**	**1.9700e-003**	**1.0000e-005**	**1.9800e-003**	**5.2000e-004**	**1.0000e-005**	**5.3000e-004**	**0.0000**	**1.4717**	**1.4717**	**3.0000e-005**	**4.0000e-005**	**1.4832**

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1327					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5400e-003	0.0103	0.0163	3.0000e-005		4.6000e-004	4.6000e-004		4.6000e-004	4.6000e-004	0.0000	2.2979	2.2979	1.3000e-004	0.0000	2.3011
Total	**0.1342**	**0.0103**	**0.0163**	**3.0000e-005**		**4.6000e-004**	**4.6000e-004**		**4.6000e-004**	**4.6000e-004**	**0.0000**	**2.2979**	**2.2979**	**1.3000e-004**	**0.0000**	**2.3011**

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	3.3000e-003	1.0000e-005	1.2800e-003	1.0000e-005	1.2900e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	0.9566	0.9566	2.0000e-005	2.0000e-005	0.9641
Total	**3.5000e-004**	**2.4000e-004**	**3.3000e-003**	**1.0000e-005**	**1.2800e-003**	**1.0000e-005**	**1.2900e-003**	**3.4000e-004**	**1.0000e-005**	**3.5000e-004**	**0.0000**	**0.9566**	**0.9566**	**2.0000e-005**	**2.0000e-005**	**0.9641**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1327					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5400e-003	0.0103	0.0163	3.0000e-005		4.6000e-004	4.6000e-004		4.6000e-004	4.6000e-004	0.0000	2.2979	2.2979	1.3000e-004	0.0000	2.3011
Total	**0.1342**	**0.0103**	**0.0163**	**3.0000e-005**		**4.6000e-004**	**4.6000e-004**		**4.6000e-004**	**4.6000e-004**	**0.0000**	**2.2979**	**2.2979**	**1.3000e-004**	**0.0000**	**2.3011**

3.6 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	3.3000e-003	1.0000e-005	1.2800e-003	1.0000e-005	1.2900e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	0.9566	0.9566	2.0000e-005	2.0000e-005	0.9641
Total	**3.5000e-004**	**2.4000e-004**	**3.3000e-003**	**1.0000e-005**	**1.2800e-003**	**1.0000e-005**	**1.2900e-003**	**3.4000e-004**	**1.0000e-005**	**3.5000e-004**	**0.0000**	**0.9566**	**0.9566**	**2.0000e-005**	**2.0000e-005**	**0.9641**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Fire Station No. 80 and Training Center - San Bernardino-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0167	0.1499	0.1754	7.9000e-004	0.0432	1.2500e-003	0.0445	0.0117	1.2000e-003	0.0129	0.0000	76.5064	76.5064	3.6200e-003	9.5500e-003	79.4418
Unmitigated	0.0167	0.1499	0.1754	7.9000e-004	0.0432	1.2500e-003	0.0445	0.0117	1.2000e-003	0.0129	0.0000	76.5064	76.5064	3.6200e-003	9.5500e-003	79.4418

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Government Office Building	18.04	0.00	0.00	30,336	30,336
Parking Lot	12.00	12.00	12.00	36,682	36,682
User Defined Commercial	18.03	18.03	18.03	42,461	42,461
Total	48.07	30.03	30.03	109,479	109,479

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Government Office Building	16.60	8.40	6.90	33.00	62.00	5.00	50	34	16
Parking Lot	16.60	8.40	6.90	0.00	100.00	0.00	100	0	0
User Defined Commercial	16.60	8.40	6.90	33.00	62.00	5.00	50	34	16

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Government Office Building	0.543085	0.056300	0.173085	0.134258	0.025645	0.007009	0.011926	0.017481	0.000552	0.000248	0.024848	0.000956	0.004606
Parking Lot	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

User Defined Commercial	0.543085	0.056300	0.173085	0.134258	0.025645	0.007009	0.011926	0.017481	0.000552	0.000248	0.024848	0.000956	0.004606

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	48.4310	48.4310	4.0900e-003	5.0000e-004	48.6809
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	48.4310	48.4310	4.0900e-003	5.0000e-004	48.6809
NaturalGas Mitigated	4.5000e-004	4.1300e-003	3.4700e-003	2.0000e-005		3.1000e-004	3.1000e-004		3.1000e-004	3.1000e-004	0.0000	4.4978	4.4978	9.0000e-005	8.0000e-005	4.5245
NaturalGas Unmitigated	4.5000e-004	4.1300e-003	3.4700e-003	2.0000e-005		3.1000e-004	3.1000e-004		3.1000e-004	3.1000e-004	0.0000	4.4978	4.4978	9.0000e-005	8.0000e-005	4.5245

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Government Office Building	33991.3	1.8000e-004	1.6700e-003	1.4000e-003	1.0000e-005		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004	0.0000	1.8139	1.8139	3.0000e-005	3.0000e-005	1.8247
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	50294.1	2.7000e-004	2.4700e-003	2.0700e-003	1.0000e-005		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004	0.0000	2.6839	2.6839	5.0000e-005	5.0000e-005	2.6998
Total		**4.5000e-004**	**4.1400e-003**	**3.4700e-003**	**2.0000e-005**		**3.2000e-004**	**3.2000e-004**		**3.2000e-004**	**3.2000e-004**	**0.0000**	**4.4978**	**4.4978**	**8.0000e-005**	**8.0000e-005**	**4.5245**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Government Office Building	33991.3	1.8000e-004	1.6700e-003	1.4000e-003	1.0000e-005		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004	0.0000	1.8139	1.8139	3.0000e-005	3.0000e-005	1.8247
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	50294.1	2.7000e-004	2.4700e-003	2.0700e-003	1.0000e-005		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004	0.0000	2.6839	2.6839	5.0000e-005	5.0000e-005	2.6998
Total		**4.5000e-004**	**4.1400e-003**	**3.4700e-003**	**2.0000e-005**		**3.2000e-004**	**3.2000e-004**		**3.2000e-004**	**3.2000e-004**	**0.0000**	**4.4978**	**4.4978**	**8.0000e-005**	**8.0000e-005**	**4.5245**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Government Office Building	91072.9	16.1514	1.3600e-003	1.7000e-004	16.2347
Parking Lot	47262.6	8.3818	7.1000e-004	9.0000e-005	8.4251
User Defined Commercial	134753	23.8978	2.0200e-003	2.4000e-004	24.0211
Total		**48.4310**	**4.0900e-003**	**5.0000e-004**	**48.6809**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Government Office Building	91072.9	16.1514	1.3600e-003	1.7000e-004	16.2347
Parking Lot	47262.6	8.3818	7.1000e-004	9.0000e-005	8.4251
User Defined Commercial	134753	23.8978	2.0200e-003	2.4000e-004	24.0211
Total		**48.4310**	**4.0900e-003**	**5.0000e-004**	**48.6809**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1108	0.0000	3.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6.9000e-004	6.9000e-004	0.0000	0.0000	7.3000e-004
Unmitigated	0.1108	0.0000	3.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6.9000e-004	6.9000e-004	0.0000	0.0000	7.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0133					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0975					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0000e-005	0.0000	3.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6.9000e-004	6.9000e-004	0.0000	0.0000	7.3000e-004
Total	**0.1108**	**0.0000**	**3.5000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**6.9000e-004**	**6.9000e-004**	**0.0000**	**0.0000**	**7.3000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0133					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0975					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0000e-005	0.0000	3.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6.9000e-004	6.9000e-004	0.0000	0.0000	7.3000e-004
Total	**0.1108**	**0.0000**	**3.5000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**6.9000e-004**	**6.9000e-004**	**0.0000**	**0.0000**	**7.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	15.2439	0.1602	3.9000e-003	20.4093
Unmitigated	15.2439	0.1602	3.9000e-003	20.4093

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Government Office Building	1.96872 / 1.20663	7.5482	0.0647	1.5900e-003	9.6391
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	2.91177 / 0.024342	7.6956	0.0955	2.3100e-003	10.7702
Total		**15.2439**	**0.1602**	**3.9000e-003**	**20.4093**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Government Office Building	1.96872 / 1.20663	7.5482	0.0647	1.5900e-003	9.6391
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	2.91177 / 0.024342	7.6956	0.0955	2.3100e-003	10.7702
Total		**15.2439**	**0.1602**	**3.9000e-003**	**20.4093**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	4.7135	0.2786	0.0000	11.6774
Unmitigated	4.7135	0.2786	0.0000	11.6774

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Government Office Building	9.22	1.8716	0.1106	0.0000	4.6368
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	14	2.8419	0.1680	0.0000	7.0406
Total		**4.7135**	**0.2786**	**0.0000**	**11.6774**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Government Office Building	9.22	1.8716	0.1106	0.0000	4.6368
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	14	2.8419	0.1680	0.0000	7.0406
Total		**4.7135**	**0.2786**	**0.0000**	**11.6774**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0.5	26	467	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (300 - 600 HP)	9.9600e-003	0.0279	0.0254	5.0000e-005		1.4700e-003	1.4700e-003		1.4700e-003	1.4700e-003	0.0000	4.6236	4.6236	6.5000e-004	0.0000	4.6399
Total	**9.9600e-003**	**0.0279**	**0.0254**	**5.0000e-005**		**1.4700e-003**	**1.4700e-003**		**1.4700e-003**	**1.4700e-003**	**0.0000**	**4.6236**	**4.6236**	**6.5000e-004**	**0.0000**	**4.6399**

11.0 Vegetation

APPENDIX B – Biological Reconnaissance Assessment

Biological Reconnaissance Assessment for Fontana Fire Station No. 80 and Training Facility Project

PBK Architects

CHAMBERS GROUP

July 25, 2022
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Subject: Biological Reconnaissance Assessment for Fontana Fire Station No. 80 and Training Facility Project

Chambers Group, Inc. (Chambers Group) was retained by PBK Architects (PBK) to conduct a literature review and biological reconnaissance-level survey for the Fontana Fire Station (Project). The purpose of this survey was to document existing vegetation communities, identify special status species with a potential for occurrence, and map habitats that could support special status wildlife species, as well as evaluate potential impacts of the Project to these resources.

Project Site Location and Description

The approximately 2.2-acre Project site is located on the corner of Cherry Avenue and S. Highland Avenue, in the City of Fontana, San Bernardino County, California. The Project site is located on the north side of South Highland Avenue and the east side of Cherry Avenue. The site is directly south of the I-15 and I-210 interchange. The site is located within the United States Geological Survey (USGS) Devore quad California 7.5-minute topographic quadrangle. The Project site is an open lot with heavily disturbed non-native weeds and a small area planted with European wine grapes. The elevation at the Project site is approximately 1,395 feet above mean sea level (amsl). Maps of the Project location and Project vicinity are provided in Attachment 1: Figure 1.

Based on the February 15, 2022, City of Fontana Fire Station No. 80 and Training Center, Proposed Site Plan prepared by PBK Architects Inc., the approximate 2.2-acre site will accommodate an approximate 4,300-square-foot (SF) Training Classroom building, and approximately 3,750-SF, 5-story, Training Tower building, and an approximately 10,400-SF Fire Station building. The site layout also includes associated visitor and secured parking, drives, electrical equipment enclosure, outdoor patio, a monument sign and flag, trash enclosure, a sliding security gate, perimeter walls, confined space training facilities, and landscaping.

Literature Review

Prior to performing the biological reconnaissance survey, a literature review was conducted for soils, jurisdictional water features that contribute to hydrology, and special status species known to occur within the Project's vicinity (approximately 5 miles) of the Survey Area.

Soils

Prior to performing the biological reconnaissance survey, soil maps for the Survey Area were referenced in accordance with categories set forth by the U.S. Department of Agriculture (USDA) Soil Conservation Service and the USDA Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA 2022).

Hydrology

Prior to performing the field survey, a database review of the U.S. Fish and Wildlife Service's (USFWS) National Wetlands Inventory (NWI) and National Hydrography Database (NHD) blueline drainages was referenced (NHD 2022). A general assessment of waters potentially regulated by the U.S. Army Corps of Engineers (USACE), California Regional Water Quality Control Board (RWQCB), and California Department of Fish and Wildlife (CDFW) was conducted for the Survey Area. Pursuant to Section 404 of the Clean Water Act, USACE regulates the discharge of dredged and/or fill material into waters of the United States. The State of California (State) regulates discharge of material into waters of the State pursuant to Section 401 of the Clean Water Act and the California Porter-Cologne Water Quality Control Act (California Water Code, Division 7, §13000 et seq.). Pursuant to Division 2, Chapter 6, Sections 1600-1602 of the California Fish and Game Code, CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake which supports fish or wildlife. A desktop assessment was conducted of available data prior to the biological reconnaissance survey in the field.

Special Status Habitats and Species

The most recent records of the California Natural Diversity Database (CNDDB) managed by CDFW (2022) and the California Native Plant Society's Electronic Inventory (CNPSEI) of Rare and Endangered Vascular Plants of California (CNPS 2022) were reviewed for the following quadrangles containing and surrounding the Project: *Devore, Fontana, San Bernardino South, San Bernardino North, Silverwood Lake, Cajon, Telegraph Peak, Cucamonga Peak,* and *Guasti,* California U.S. Geological Survey (USGS) 7.5-minute quadrangles. These databases contain records of reported occurrences of federally or State listed endangered or threatened species, California Species of Concern (SSC), or otherwise special status species or habitats that may occur within or in the immediate vicinity of the Survey Area (Attachment 1: Figure 2 – CNDDB Occurrences Map).

Biological Reconnaissance Survey

The biological reconnaissance survey was conducted on foot within the Project site. During the survey, the biologists identified and mapped all vegetation communities found within the Survey Area onto aerial photographs (Attachment 1: Figure 3 – Vegetation Communities Map). Plant communities were determined in accordance with the *Manual of California Vegetation, Second Edition* (Sawyer et al. 2009). Plant nomenclature follows that of *The Jepson Manual, Vascular Plants of California, Second Edition* (Baldwin et al. 2012). Plant and wildlife species observed or detected within the Survey Area were recorded (Attachments 2 and 3). Site photographs were taken depicting current site conditions (Attachment 4).

Results

Chambers Group biologists Heather Franklin and Corey Jacobs conducted the biological reconnaissance survey within the Survey Area to identify vegetation communities, the potential for occurrence of special status species, and/or habitats that could support special status wildlife species. The survey was conducted on foot between 0800 and 1200 hours on June 15, 2022. Weather conditions during the survey included temperatures ranging from 68 to 85 degrees Fahrenheit, wind speeds between 0 and 1 miles per hour, with 0 percent cloud cover and 0 percent precipitation.

Biological Site Conditions

Soils

According to the results from the USDA NRCS Web Soil Survey (USDA 2022), the Project site is located in the San Bernardino County, CA659 part of the soil map. One soil type is known to occur within and/or adjacent to the site. The soil type is described below.

Hanford coarse sandy loam occurs throughout the entirety of the Survey Area. The parent material is alluvium derived dominantly from granite. The available water storage is classified as low (approximately 7.8 inches) with a depth to the water table of more than 80 inches (USDA 2022).

Hydrology

No jurisdictional features such as drainages or swales were observed within the Survey Area (Attachment 1: Figure 4 – Jurisdictional Waters Map). A cement-lined channel runs parallel to the northern boundary outside of the Project site. This feature is located outside of the Project boundary and no work will occur within or adjacent to the feature. Impacts to the channel can be avoided with the use of Best Management Practices (BMPs) during clearing and grading in the Project site. Therefore, no impacts to waters of the United States or waters of the State are anticipated to occur as a result of this Project.

Vegetation Communities and Other Areas

Two vegetation communities or land types were found within the Survey Area during the biological reconnaissance survey: Cultivated Agriculture, and Ruderal Vegetation.

Cultivated Agriculture

Cultivated Agriculture consists of annual crops, vineyards, orchards, dairies, and stockyards (Gray and Bramlet 1992). The northern portion of the Project site consists of cultivated wine grapes (Attachment 1 – Figure 3). Cultivated Agricultural areas account for approximately 0.62 acres of the Survey Area.

Bare Ground

A dirt road and cleared open areas occur in the eastern portion of the site. These areas are completely void of vegetation and will not support any sensitive species.

Ruderal Vegetation

Ruderal vegetation areas are present on the southern and eastern portions of the Survey Area.

Areas classified as Ruderal tend to be dominated by pioneering herbaceous species that readily colonize disturbed ground, and that are typically found in temporary, often frequently disturbed habitats (Barbour et al. 1999). The soils in Ruderal areas are typically characterized as heavily compacted or frequently disturbed. The vegetation in these areas is adapted to compact soils where water does not readily penetrate the soil. Ruderal areas are often dominated by species of the Centaurea, Brassica, Malva, Salsola, *Eremocarpus*, Amaranthus, and Atriplex genera.

Plant species identified within this community within the Project site included stork's-bill (*erodium malacoides),* shortpod mustdard *(hirschfeldia incana),* Foxtail chess *(bromus madritensis),* Mediterranean grass *(schismus barbatus),* wild oat *(avena fatua),* Bermuda grass *(cynodont dactylon).* There are 0.84 acres of Ruderal vegetation within the Survey Area.

General Plants

A total of 17 plant species were observed within the Survey Area during the biological reconnaissance survey (Attachment 2: Plant Species Observed). Plant species observed during the survey were representative of the existing Survey Area conditions. No special status plant species were observed during the survey.

General Wildlife

A total of 16 wildlife species were observed within the Survey Area during the biological reconnaissance survey. Wildlife species observed or detected during the survey were characteristic of the existing Survey Area conditions. A complete list of wildlife species observed or detected is provided in Attachment 3 – Wildlife Species Observed/Detected List.

Sensitive Species

Special Status Species

The following information is a list of abbreviations used to help determine special status biological resources potentially occurring in the Survey Area.

CNPS California Rare Plant Rank (CRPR)

1A = Plants presumed extinct in California.

1B	=	Plants rare and endangered in California and throughout their range.
2	=	Plants rare, threatened or endangered in California but more common elsewhere in their range.
3	=	Plants about which we need more information, a review list.
4	=	Plants of limited distribution; a watch list.

CRPR Extensions

0.1	=	Seriously endangered in California (greater than 80 percent of occurrences threatened/high degree and immediacy of threat).
0.2	=	Fairly endangered in California (20 to 80 percent occurrences threatened).
0.3	=	Not very endangered in California (less than 20 percent of occurrences threatened).

Federal

FE	=	Federally listed; Endangered
FT	=	Federally listed; Threatened

State

ST	=	State listed; Threatened
SE	=	State listed; Endangered
RARE	=	State listed; Rare (Listed “Rare” animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
SSC	=	State Species of Special Concern
WL	=	CDFW Watch List
FP	=	CDFW Fully Protected

The following information was used to determine biological resources potentially occurring within the Survey Area. The criteria used to evaluate the potential for special status species to occur within the Survey Area are outlined in Table 1.

Table 1: Criteria for Evaluating Special Status Species Potential for Occurrence (PFO)

PFO*	CRITERIA
Absent:	Species is restricted to habitats or environmental conditions that do not occur within the Survey Area.
Low:	Historical records for this species do not exist within the vicinity (approximately 5 miles) of the Survey Area, and/or habitats or environmental conditions needed to support the species are of poor quality.
Moderate:	Either a historical record exists of the species within the vicinity of the Survey Area (approximately 5 miles) and marginal habitat exists on the Survey Area, or the habitat requirements or environmental conditions associated with the species occur within the Survey Area, but no historical records exist within 5 miles of the Survey Area.
High:	Both a historical record exists of the species within the Survey Area or its immediate vicinity (approximately 1 mile), and the habitat requirements and environmental conditions associated with the species occur within the Survey Area.
Present:	Species was detected within the Survey Area at the time of the survey.

*PFO: Potential for Occurrence

Special Status Plant Species

Database searches (CDFW 2022; CNPS 2022) resulted in a list of seven federally and/or State listed threatened, endangered, or otherwise special status plant species documented to historically occur within the vicinity of the Survey Area. Of the seven plant species, it was determined that all seven plant species are considered absent from the Survey Area due to the lack of suitable habitat or the Project site is outside of the elevation range. No special status plant species were found during the biological reconnaissance survey.(

The following 7 plant species are considered **Absent** from the Survey Area due to lack of suitable habitat: Gambel's water cress (*nasturtium gambelii*) – **FE**, **ST**, CRPR 1B.1

- malt marsh bird's-bead (*chloropyron maritimum ssp. Maritimum*) – **FE**, **SE**, CRPR 1B.1
- marsh sandwort (*arenaria paludicola*) – **FE**, **SE**, CRPR 1B.1
- Nevin's barberry (*berberis nevinii*) – **FE**, **SE**, CRPR 1B.1
- Santa Ana river woollystar (*eriastrum densifolium ssp. Sanctorum*) – **FE**, **ST**, CRPR 1B.1
- Slender-horned spineflower (*dodecahema leptoceras*) – **FE**, **SE**, CRPR 1B.1
- Thread-leaved brodiaea (*brodiaea filifolia*) – **FT**, **SE**, CRPR 1B.1

Special Status Wildlife Species

Database searches (CDFW 2022; USFWS 2022) resulted in a list of 30 federally and/or State listed endangered or threatened, State SSC, or otherwise special status wildlife species documented to occur within the Survey Area. After a literature review and the assessment of the various habitat types within the Survey Area, it was determined that all 30 special status wildlife species are considered absent.

The following 30 wildlife species are considered **Absent** from the Survey Area due to the absence of suitable habitat present within the site:

- American badger (*taxidea taxus*)--SSC
- Arroyo toad (*anaxyrus californicus*)—**FE**, SSC
- California glossy snake (*Arizona elegans occidentalis*)—SSC
- Coastal California gnatchatcher (*polioptila californica californica*)—**FT**, SSC
- coastal whiptail (*aspidoscelis tigris stejnegeri*)—SSC
- Delhi sands flower-loving fly (*rhaphiomidas terminates abdominals*)—**FE**
- least bell's vireo (*vireo bellii pusillus*) –**FE, SE**
- long-eared owl (asio otus)—SSC
- Los Angeles pocket mouse (*perognathus longimembris brevinasus*)—SSC
- Mohave tui chub (*siphateles bicolor mohavensis*) – **FE, SE**
- Northwestern San Diego pocket mouse (*chaetodipus fallax fallax*)—SSC
- Pallid San Diego pocket mouse (*chaetodipus fallax pallidus*)—SSC
- Pocketed free-tailed bat (*nyctinomops femorosaccus*)—SSC
- Quino checkerspot butterfly (*euphydryas deitha quino*)—**FE**
- Red-diamond rattlesnake (*crotalus ruber*)—SSC
- San Bernardino flying squirrel (*glaucomys oregonensis*)—SSC
- San Bernardino kangaroo rat (*dipodomys merriami parvus*)—**FE, SE,** SSC
- San Diego banded gecko (*coleonyx variegatus abbotti*)—SSC
- San Diego desert woodrat (*Neotoma lepida intermedia*)—SSC
- Santa Ana sucker (*Catostomus santaanae*)—**FT**
- Southern California legless lizard (*anniella stebbinsi*)—SSC
- Southern grasshopper mouse (*onychomys torridus ramona*)—SSC
- Southern mountain yellow-legged frog (*rana muscosa*) – **FE, SE**
- Southwestern willow flycatcher (*empidonax traillii extimus*)–**FE**, **SE**
- Steelhead-southern California DPS (*Oncorhynchus mykiss irideus pop.10*)—**FE**, SSC
- Stephens' kangaroo rat (*dipodomys stephensi*)– **FT**, **SE**
- Western yellow bat (*Lasiurus xanthinus*)—SSC
- western yellow-billed cuckoo (*coccyzus americanus occidentalis*) – **FT, SE**
- Yellow warbler (*Setophaga petechia*)—SSC

United States Fish Wildlife Service Critical Habitat

Critical Habitat is defined as areas of land, water, and air space containing the physical and biological features essential for the survival and recovery of endangered and threatened species. Designated Critical Habitat includes sites for breeding and rearing, movement or migration, feeding, roosting, cover, and shelter. Designated Critical Habitats require special management and protection of existing resources, including water quality and quantity, host animals and plants, food availability, pollinators, sunlight, and specific soil types. Designated Critical Habitat delineates all suitable habitat, occupied or not, that is essential to the survival and recovery of the species. According to the USFWS Critical Habitat WebGIS map, the Project site does fall within Designated Critical Habitat (USFWS 2022). Critical Habitat for the San Bernardino Merriam's kangaroo rat is present within 1 mile of the Project site. The Federal and State endangered Southern mountain yellow-legged frog is present within 5 miles of the Project site to the southwest as depicted in (Attachment 1: Figure 5 – USFWS Critical Habitat Map).

Conclusions and Recommendations

Hydrology

A cement-lined channel runs along the northern boundary of the Project site. No work is anticipated to occur within or near the channel; therefore, no impacts are anticipated to occur as a result of the Project.

Special Status Plant Species

Following the literature review and after the assessment of the various habitat types in the Survey Area, it was determined that of the seven special status plant species known to historically occur within the Survey Area, all seven species are considered absent within the Survey Area due to a lack of suitable habitat for these species. No special status species were observed during the field survey.

Special Status Wildlife Species

Following the literature review and the assessment of the various habitat types within the Survey Area, it was determined that all 30 special status wildlife species known to occur within the Project site are considered absent due to a lack of suitable habitat for these species. No sensitive wildlife species were observed during the field survey.

To minimize potential impacts to nesting birds protected under the Migratory Bird Treaty Act (MBTA), construction activities should take place outside nesting season (February 1 to August 31) to the greatest extent practicable.

If construction activities occur during nesting season, a preconstruction nesting bird survey should be conducted prior to initiation of ground-disturbing activities. To the maximum extent practicable, a minimum buffer zone around occupied nests should be determined by a qualified biologist to avoid impacts to the active nest. The buffer should be maintained during physical ground-disturbing activities. Once nesting has ceased, the buffer may be removed.

Please contact me at (760) 953-2466 or cjacobs@chambersgroupinc.com if you have any questions or concerns regarding this memo report.

Sincerely,

CHAMBERS GROUP, INC.

Corey Jacobs

Biologist

cjacobs@chambersgroupinc.com

PBK Architects

(760) 953-2466

Attachments

Attachment 1: Figure 1 – Project Location and Vicinity Map
Figure 2 – CNDDB Occurrences Map
Figure 3 – -Vegetation Communities Map
Figure 4 – Jurisdictional Waters Map
Figure 5 – USFWS Critical Habitat Map
Attachment 2: Plant Species Observed.
Attachment 3: Wildlife Species Observed.
Attachment 4: Site Photographs.

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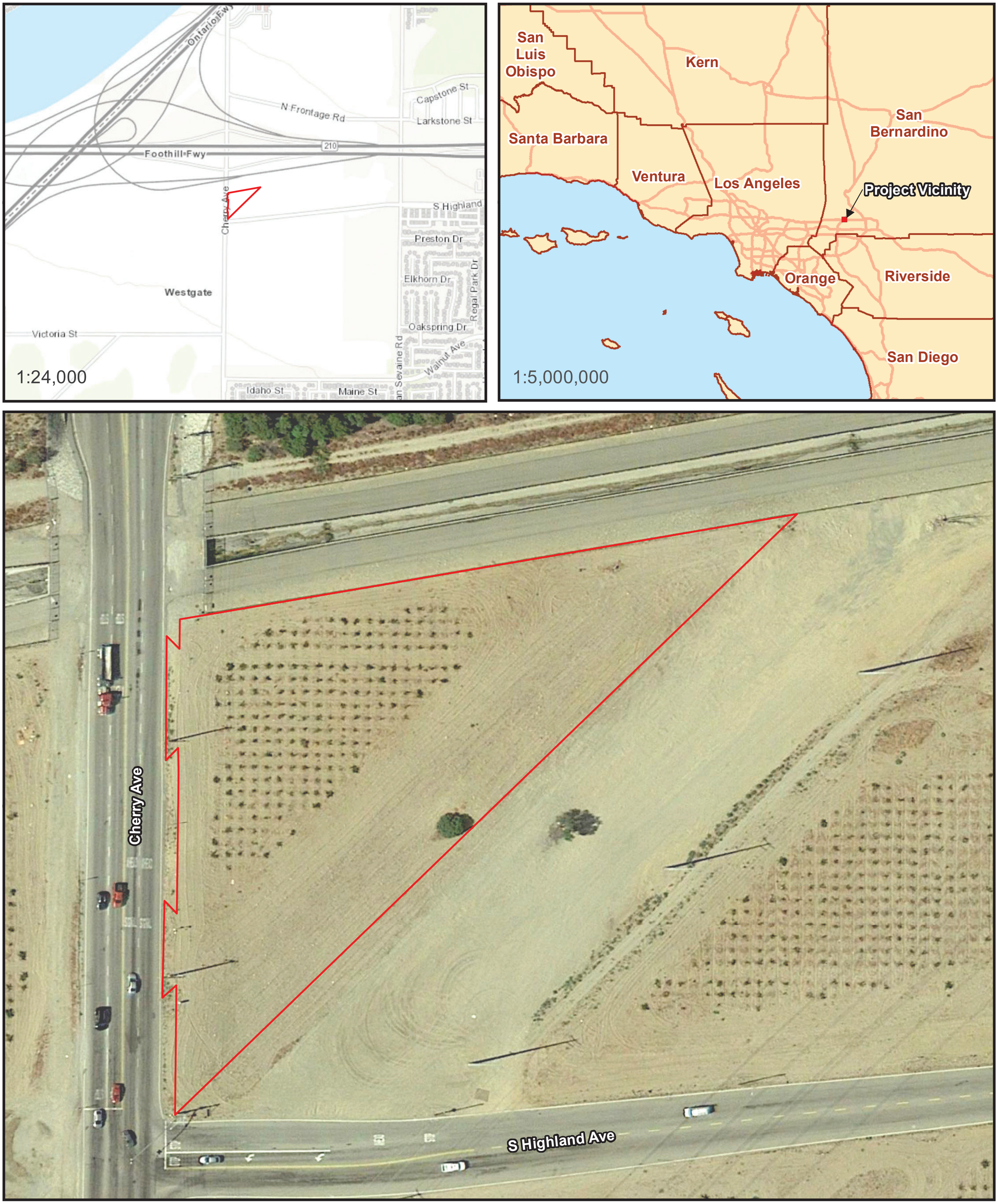
ATTACHMENT 1 – FIGURES



Project Location

Figure 1
Fontana Fire Station 80
Project Location and Vicinity

N

0 40 80 160
Feet

Name: 21289 BIO Fig 1 Project Location and Vicinity.Mxd
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CHAMBERS GROUP

Project Location

Vegetation Communities

Agriculture - Grapes

Bareground

Ruderal

N

0 25 50 100

Feet

Figure 3

Fontana Fire Station 80

Vegetation Communities

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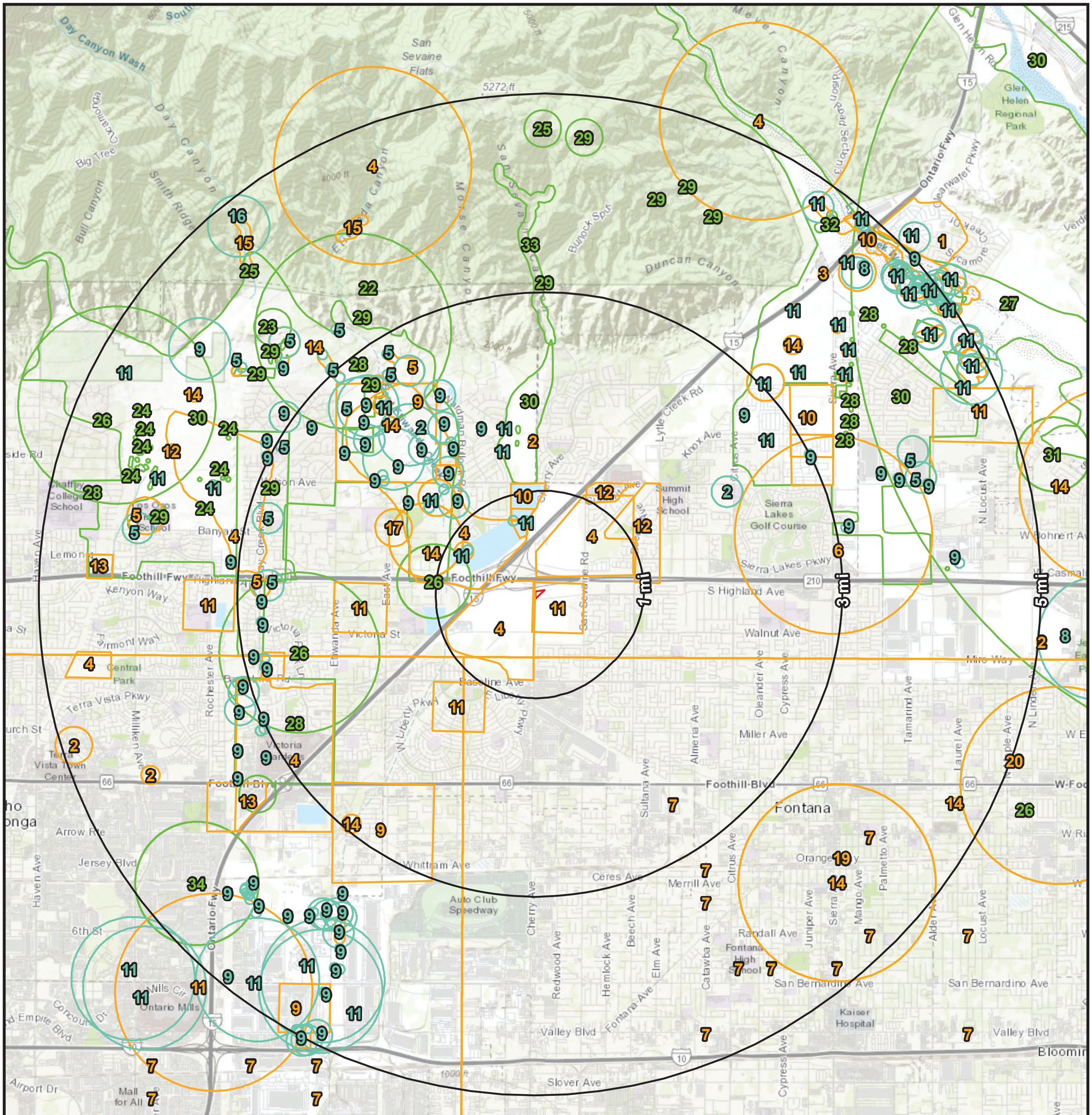
CHAMBERS GROUP



Animals

1. Bell's sage sparrow
2. burrowing owl
3. California glossy snake
4. coast horned lizard
5. coastal California gnatcatcher
6. Crotch bumble bee
7. Delhi Sands flower-loving fly
8. least Bell's vireo
9. Los Angeles pocket mouse
10. northwestern San Diego pocket mouse
11. San Bernardino kangaroo rat
12. San Diego black-tailed jackrabbit
13. San Diego desert woodrat
14. Southern California legless lizard
15. southern mountain yellow-legged frog
16. southwestern willow flycatcher
17. western mastiff bat
18. western spadefoot
19. western yellow bat
20. white cuckoo bee

Plants

21. Brand's star phacelia
22. California Walnut Woodland
23. Coastal and Valley Freshwater Marsh
24. intermediate mariposa-lily
25. lemon lily
26. mesa horkelia
27. Parish's desert-thorn
28. Parry's spineflower
29. Plummer's mariposa-lily
30. Riversidian Alluvial Fan Sage Scrub
31. singlewhorl burrobrush
32. slender-horned spineflower
33. Southern Sycamore Alder Riparian Woodland
34. white rabbit-tobacco

Project Location

USFWS Occurrences

CNDDB Occurrences

Animals

Plants

N

0 0.5 1 2

Miles

Figure 2 Fontana Fire Station 80
CNDDB and USFWS Occurrences

Name: 21289 BIO Fig 3 CNDDB and USFWS Occurrences.Mxd
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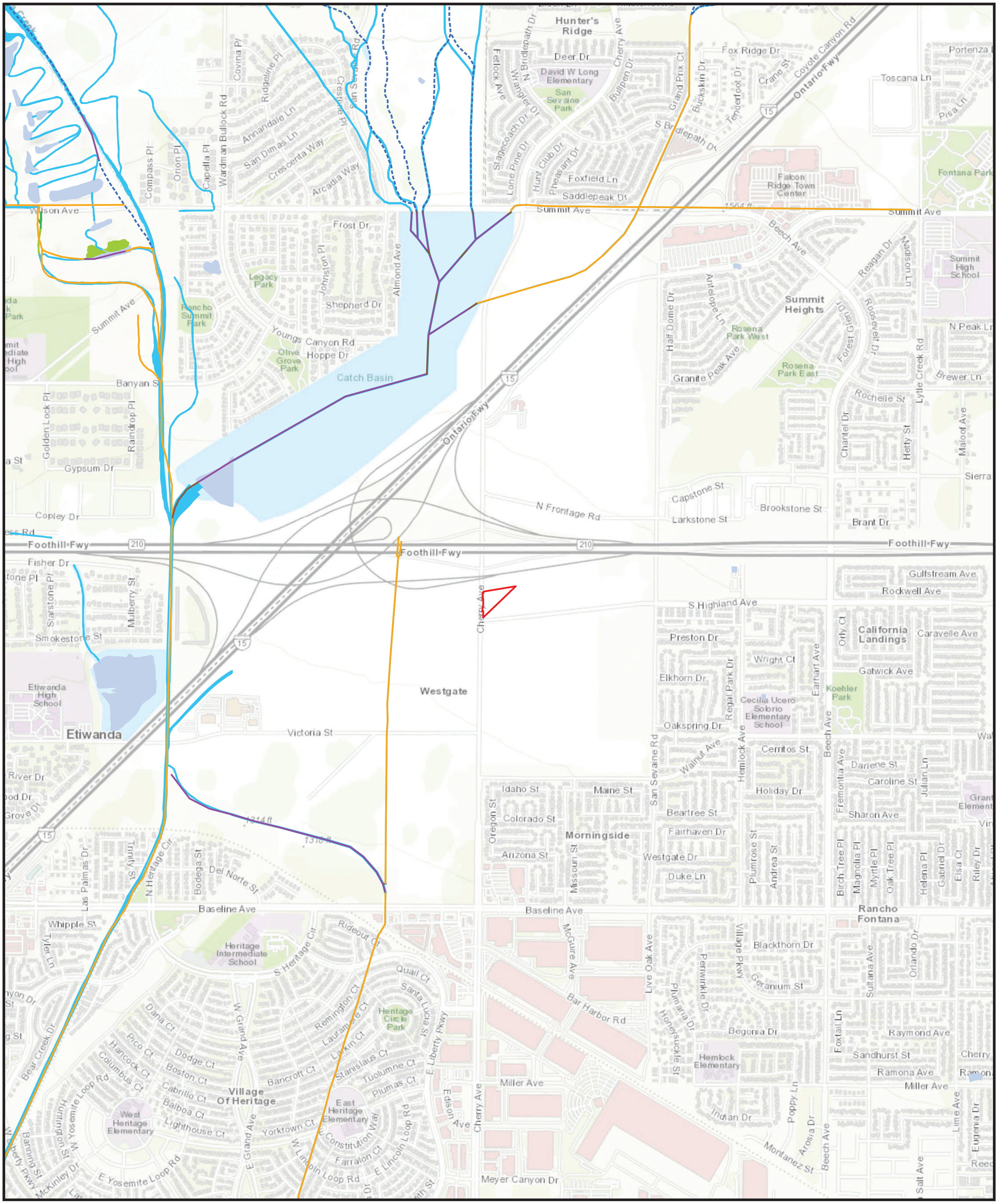
CHAMBERS GROUP



Project Location

NWI

Freshwater Emergent Wetland
Freshwater Pond
Freshwater Forested/Shrub Wetland
Lake
Riverine

NHD

Connector
Pipeline
Artificial Path
Canal/Ditch
Stream/River

N

0 750 1,500 3,000

Feet

Figure 4

Fontana Fire Station 80
NWI and NHD

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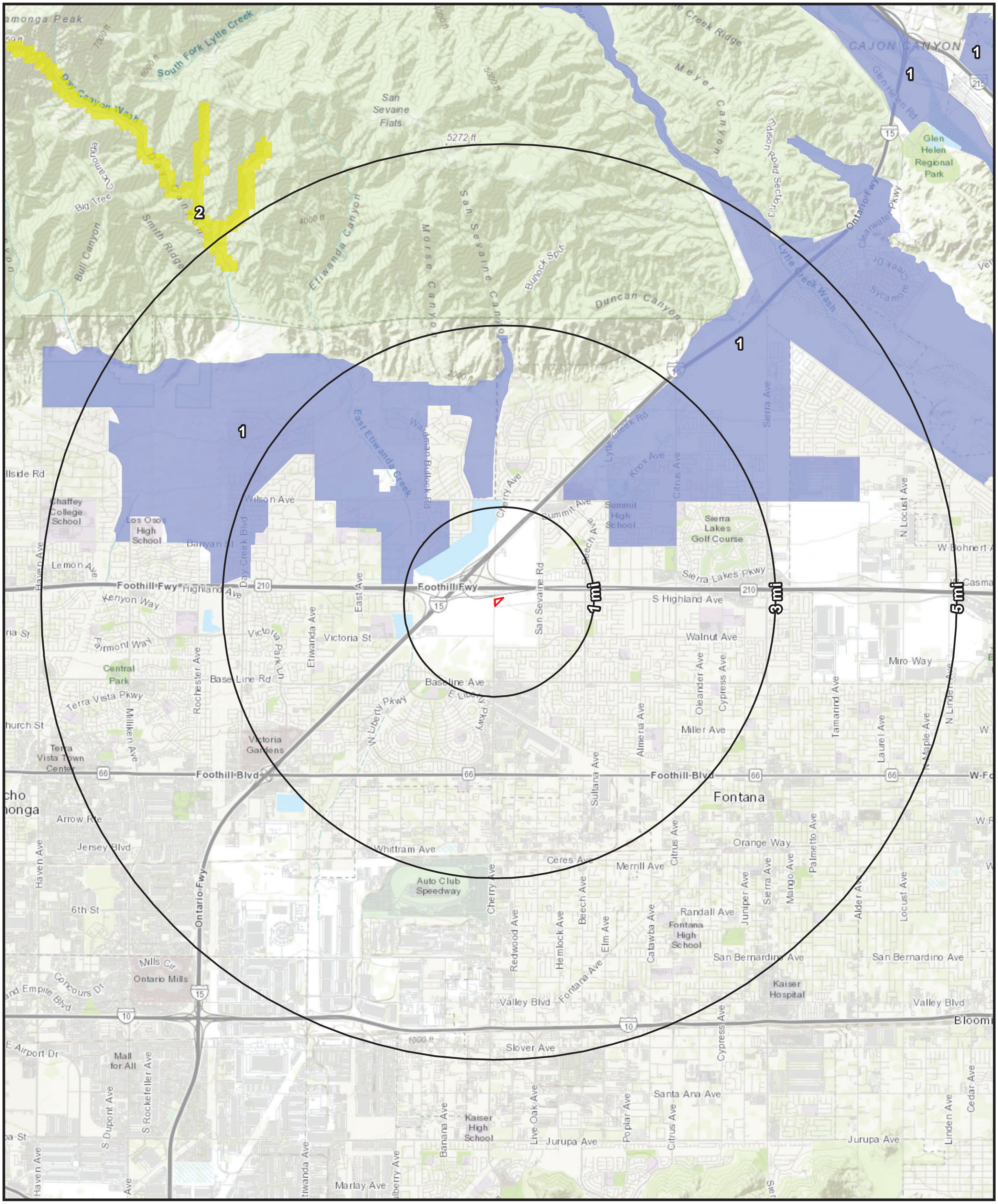

Project Location

USFWS Critical Habitat

1. San Bernardino Merriam's kangaroo rat

2. Mountain yellow-legged frog

N

0 0.5 1 2

Miles

Figure 5
Fontana Fire Station 80
CNDDB and USFWS Occurrences

Name: 21289 BIO Fig 4 USFWS Critical Habitat.Mxd
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ATTACHMENT 2 – PLANT SPECIES OBSERVED

ATTACHMENT 2: PLANT SPECIES OBSERVED

Scientific Name	Common Name
ANGIOSPERMS (EUDICOTS)	
ASTERACEAE	**SUNFLOWER FAMILY**
Ambrosia acanthicarpa	*annual bur-sage*
Heterotheca grandiflora	*telegraph weed*
Verbesina encelioides subsp. exauriculata	*golden crownbeard*
BRASSICACEAE	**MUSTARD FAMILY**
*Hirschfeldia incana**	*shortpod mustard*
CHENOPODIACEAE	**GOOSEFOOT FAMILY**
*Chenopodium album**	*lamb's quarters*
*Salsola tragus**	*Russian thistle*
FABACEAE	**LEGUME FAMILY**
*Lotus corniculatus**	birdfoot trefoil
GERANIACEAE	**GERANIUM FAMILY**
Erodium malacoides	*Mediterranean stork's-bill*
*Erodium botrys**	*broad-lobed filaree*
MYRTACEAE	**MYRTLE FAMILY**
*Eucalyptus sp.**	*gum tree*
ROSACEAE	**ROSE FAMILY**
Prunus ilicifolia	*holly-leaf cherry*
VITACEAE	**GRAPE FAMILY**
*Vitis vinifera**	*European grape*
ANGIOSPERMS (MONOCOTS)	
POACEAE	**GRASS FAMILY**
*Avena fatua**	*wild oat*
*Bromus madritensis subsp. rubens**	*red brome*
*Eleusine coracana ssp. Africana**	*African finger millet*
*Cynodon dactylon**	*Bermuda grass*
*Schismus barbatus**	*Mediterranean schismus*

*Non-Native Species, +Ornamental, Unlikely to be Invasive

ATTACHMENT 3 – WILDLIFE SPECIES OBSERVED/DETECTED

ATTACHMENT 3 – WILDLIFE SPECIES LIST

Scientific Name	Common Name
CLASS AVES	**BIRDS**
TROCHILIDAE	**HUMMINGBIRDS**
Calypte anna	Anna's hummingbird
TYRANNIDAE	**TYRAN FLYCATCHER**
S. nigricans	black phoebe
CHARADRIIDAE	**PLOVERS**
Charadrus vociferus	killdeer
CORVIDAE	**JAYS & CROWS**
Corvius brachyrhynchos	American crow
Corvus corax	common raven
STURNIDAE	**STARLINGS**
Sturnus vulgaris	European starling
COLUMBIDAE	**DOVES**
Zenaida macroura	mourning dove
Columba livia	Rock dove
MIMIDAE	**MOCKINGBIRDS, THRASHERS**
Mimus polyglottos	northern mockingbird
ALAUDIDAE	**Larks**
Eremophila alpestris	Horned lark
ACCIPITRIDAE	**Hawks**
Buteo jamaicensis	red-tailed hawk
FRINGILLIDAE	**FINCHES**
Carpodacus mexicanus	house finch
CLASS MAMMALIA	**MAMMAL**
Otospermophilus beecheyi	California ground squirrel
CLASS REPTILE	Reptiles
Uta	Side-blotched lizards
PIERIDAE	**BUTTERFLIES**
Pieris rapae	cabbage white

ATTACHMENT 4 – SITE PHOTOGRAPHS

ATTACHMENT 4 – SITE PHOTOGRAPHS

Photo 1.

Overview of the project location on the southwest corner of the site. Photo facing northeast.

Photo 2.

Photo showing an overview of the agriculture grapes on the northwest corner of project site. Photo facing southeast.

Photo 3.

Photo showing overview of the site from the northeast corner. Photo facing southwest.

Photo 4.

Photo showing the agricultural grapes from west edge of project. Photo facing northeast.

APPENDIX C – Cultural Resources Survey and Report

CULTURAL RESOURCES SURVEY RESULTS LETTER REPORT FOR THE FONTANA FIRE STATION 80 PROJECT

City of Fontana

November 4, 2022
(21289)

Kelley Needham
WLC Architects
8163 Rochester Avenue, Suite 100
Rancho Cucamonga, CA 91730-0729

Subject: Cultural Resources Survey Report for the Fontana Fire Station 80 Project, City of Fontana, San Bernardino, California

Dear Ms. Needham,

Chambers Group, Inc. (Chambers Group) is providing this Letter Report documenting the results of a cultural resources records search, literature review and field survey in support of the Fontana Fire Station 80 Project (Project, Proposed Project) in the City of Fontana (City), San Bernardino County, California. This assessment includes a cultural resources records search and literature review for the Project site and study area (Figure 1). The review also includes a field survey of the entire Project site. The purpose of review is to gather and analyze information needed to assess the potential for impacts to cultural resources within the Proposed Project site.

Project Description

The Proposed Project includes Fire Station 80 and Training Center, which will be a new facility built by the City of Fontana in coordination with the San Bernardino County Fire Department. The Project proposes to construct an approximately 14,663 square-foot fire station, 4,203 square-foot training center, 7,019 square-foot training tower, along with an equipment storage area. The Project also proposes site improvements proposed include a new parking area, outdoor training grounds, security fencing, concrete masonry wall, and landscaping.

The City of Fontana is the lead agency for the Proposed Project. An Initial Study has been prepared in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] §21000 et seq.) and the State CEQA Guidelines (Title 14, California Code of Regulations [CCR] §15000 et seq.) and has determined that preparation of a Mitigated Negative Declaration would be appropriate under CEQA.

Location and Setting

The Project site is located in the northwestern portion of the City of Fontana, San Bernardino County, California. The triangular shaped 2.3-acre parcel, Assessor's Parcel Number (APN) 0228-021-460000, is situated at the northeast corner of Cherry Avenue and South Highland Avenue (Figure 1). Cherry Avenue borders the site to the west and South Highland Avenue borders the site to the south. The location of the Project site is in a Regional Mixed Use (RMU) section of the city (Fontana General Plan 2021). A utility easement owned by the Metropolitan Water District (MWD) is adjacent to the southeastern edge of the Project site. Flood control channels managed by the San Bernardino County Flood Control District are located along the northern edge of the Project site. Route 210 (Foothill Freeway) is approximately 0.1 mile north and Interstate 15 is located 0.5 miles to the west of the Project site. The southern foothills of the San Gabriel Mountains are approximately 2.5 miles to the north.

The Project is located on the United States Geological Survey (USGS) 7.5' Devore Quadrangle, Township 1 North, Range 6 West, Section 35. The parcels to the west, south and east of the Project site appear to have previously been used for agriculture; land to the north has been developed. The Project site is sparsely vegetated and was previously partially developed for grapevine cultivation. The nearest water source, the Santa Ana River, is approximately 10 miles to the southeast.

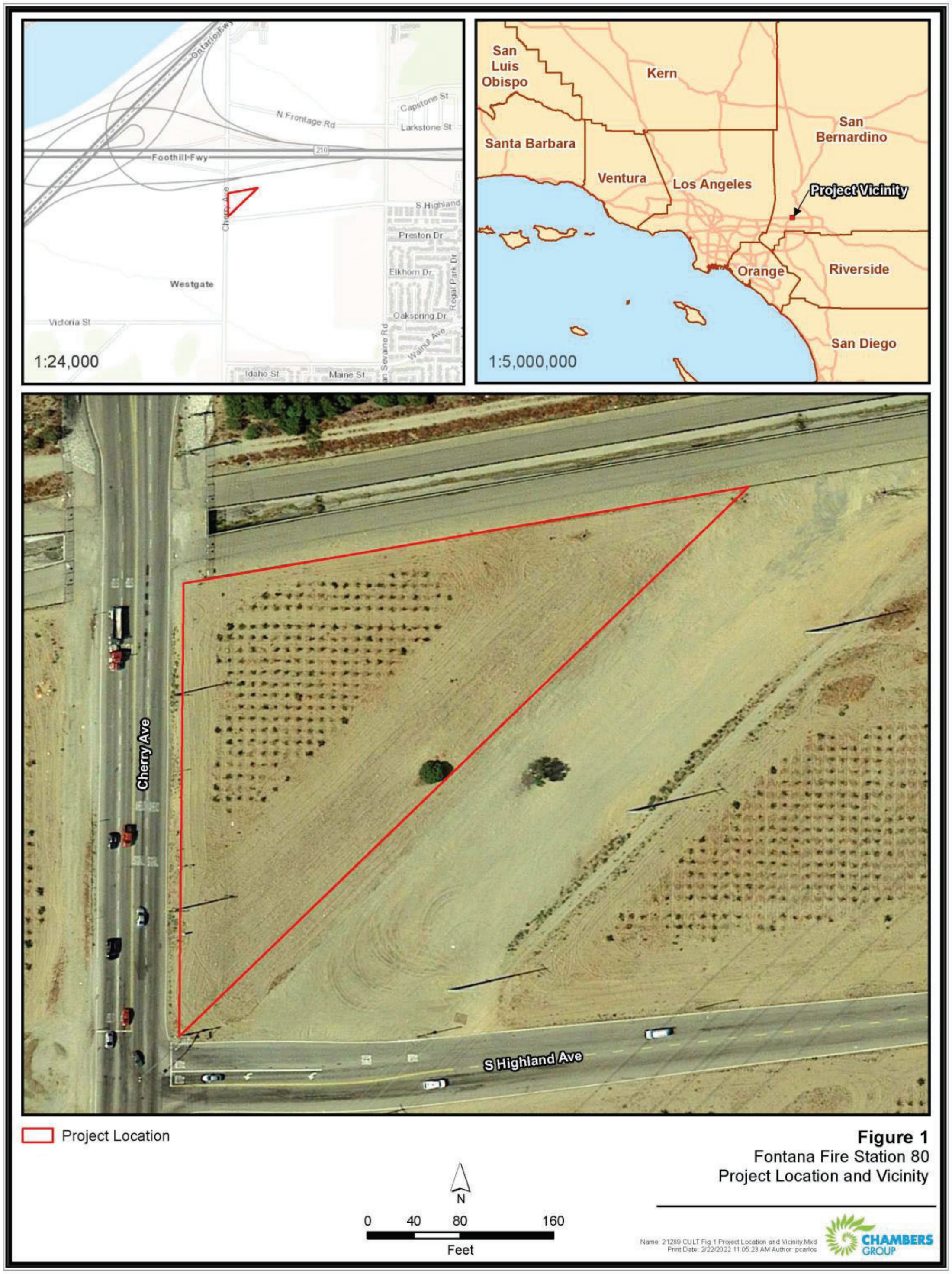

Figure 1: Project Location and Vicinity

Regulatory Context

As lead agency, the City of Fontana must ensure that the Proposed Project complies with the provisions of CEQA and determine whether a project may have a significant effect on historical resources (PRC Section 21084.1). In addition to State regulations, proposed projects are also subject to several County of San Bernardino and City of Fontana policies relating to archaeological, historical, and paleontological resources. In particular, Chapter 4 of the City of Fontana's *Fontana Forward - General Plan Update 2015-2038* (2018) includes goals and policies pertaining specifically to cultural and historic preservation within the City. The regulatory framework as it pertains to cultural resources under CEQA is detailed below.

Under the provisions of CEQA, including the CEQA Statutes (PRC §§ 21083.2 and 21084.1), the CEQA Guidelines (Title 14 CCR § 15064.5), and PRC § 5024.1 (Title 14 CCR § 4850 et seq.), properties expected to be directly or indirectly affected by a proposed project must be evaluated for eligibility for listing in the California Register of Historical Resources (CRHR, PRC § 5024.1).

The purpose of the CRHR is to maintain listings of the State's historical resources and to indicate which properties are to be protected, to the extent prudent and feasible, from material impairment and substantial adverse change. The term *historical resources* includes a resource listed in or determined to be eligible for listing in the CRHR; a resource included in a local register of historical resources; and any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant (CCR § 15064.5[a]). The criteria for listing properties in the CRHR were expressly developed in accordance with previously established criteria developed for listing in the National Register of Historic Places (NRHP). The California Office of Historic Preservation (OHP 1995:2) regards "any physical evidence of human activities over 45 years old" as meriting recordation and evaluation.

California Register of Historic Resources

A cultural resource is considered "historically significant" under CEQA if the resource meets one or more of the criteria for listing in the CRHR. The CRHR was designed to be used by State and local agencies, private groups, and citizens to identify existing cultural resources within the state and to indicate which of those resources should be protected, to the extent prudent and feasible, from substantial adverse change. The following criteria have been established for the CRHR. A resource is considered significant if it:

1. is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. is associated with the lives of persons important in our past;
3. embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. has yielded, or may be likely to yield, information important in prehistory or history.

In addition to meeting one or more of the above criteria, historical resources eligible for listing in the CRHR must retain enough of their historic character or appearance to be able to convey the reasons for their significance. Such integrity is evaluated in regard to the retention of location, design, setting, materials, workmanship, feeling, and association.

Under CEQA, if an archeological site is not a historical resource but meets the definition of a "unique archeological resource" as defined in PRC § 21083.2, then it should be treated in accordance with the provisions of that section. A *unique archaeological resource* is defined as follows:

- An archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:
- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information

- Has a special and particular quality, such as being the oldest of its type or the best available example of its type
- Is directly associated with a scientifically recognized important prehistoric or historic event or person
- Resources that neither meet any of these criteria for listing in the CRHR nor qualify as a "unique archaeological resource" under CEQA PRC § 21083.2 are viewed as not significant. Under CEQA, "A non-unique archaeological resource need be given no further consideration, other than the simple recording of its existence by the lead agency if it so elects" (PRC § 21083.2[h]).

Impacts that adversely alter the significance of a resource listed in or eligible for listing in the CRHR are considered a significant effect on the environment. Impacts to historical resources from a proposed project are thus considered significant if the project:

(1) physically destroys or damages all or part of a resource;

(2) changes the character of the use of the resource or physical feature within the setting of the resource, which contributes to its significance; or

(3) introduces visual, atmospheric, or audible elements that diminish the integrity of significant features of the resource.

Assembly Bill 52

Assembly Bill (AB) 52 was enacted in 2015 and expands CEQA by defining a new resource category: tribal cultural resources (TCRs). AB 52 establishes that "a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment" (PRC Section 21084.2). AB 52 also establishes a formal consultation process for California tribes regarding those resources. The consultation process must be completed before a CEQA document can be certified. AB 52 requires that lead agencies "begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project." Native American tribes to be included in the process are those that have requested notice of projects proposed in the jurisdiction of the lead agency. It further states that the lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a tribal cultural resource, when feasible (PRC Section 21084.3). PRC Section 21074 (a)(1)(A) and (B) defines tribal cultural resources as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe" and meets either of the following criteria:

- Listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC Section 5020.1(k)
- A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1 (in applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe)

County of San Bernardino

In addition to the State regulations, the County of San Bernardino adopted several regulations relating to historic, tribal, and paleontological resources. The Countywide Plan, as it pertains specifically to historic, tribal, and paleontological resource preservation within the county are included in the Policy Plan (County of San Bernardino, 2020). Cited in the Cultural Resource Element Section of the Policy Plan, its purpose and principles are as follows:

Purpose: The Cultural Resources Element: Establishes direction on notification, coordination, and partnerships to preserve and conserve cultural resources. Provides guidance on how new development can avoid or minimize impacts on cultural resources. Provides direction on increasing public awareness and education efforts about cultural resources.

Principles: We believe: Today's generations are stewards of the county's cultural history and are responsible for conserving it for future generations. Preserving and celebrating cultural resources enhances our understanding of the world in which we live. Cultural resources are valuable assets that attract visitors and support local businesses.

Goal CR-1 Tribal Cultural Resources:
Tribal cultural resources that are preserved and celebrated out of respect for Native American beliefs and traditions

- Policy CR-1.1 Tribal notification and coordination
  - We notify and coordinate with tribal representatives in accordance with state and federal laws to strengthen our working relationship with area tribes, avoid inadvertent discoveries of Native American archaeological sites and burials, assist with the treatment and disposition of inadvertent discoveries, and explore options of avoidance of cultural resources early in the planning process.
- Policy CR-1.2 Tribal planning
  - We will collaborate with local tribes on countywide planning efforts and, as permitted or required, planning efforts initiated by local tribes.
- Policy CR-1.3 Mitigation and avoidance
  - We consult with local tribes to establish appropriate project-specific mitigation measures and resource-specific treatment of potential cultural resources. We require project applicants to design projects to avoid known tribal cultural resources, whenever possible. If avoidance is not possible, we require appropriate mitigation to minimize project impacts on tribal cultural resources.
- Policy CR-1.4 Resource monitoring
  - We encourage active participation by local tribes as monitors in surveys, testing, excavation, and grading phases of development projects with potential impacts on tribal resources.

Goal CR-2 Historic and Paleontological Resources:
Historic resources (buildings, structures, or archaeological resources) and paleontological resources that are protected and preserved for their cultural importance to local communities as well as their research and educational potential.

- Policy CR-2.1 National and State Historic Resources
  - We encourage the preservation of archaeological sites and structures of state or national significance in accordance with the Secretary of Interior's standards.
- Policy CR-2.2 Local historic resources
  - We encourage property owners to maintain the historic integrity of resources on their property by (listed in order of preference): preservation, adaptive reuse, or memorialization.
- Policy CR-2.3 Paleontological and archaeological resources
  - We strive to protect paleontological and archaeological resources from loss or destruction by requiring that new development include appropriate mitigation to preserve the quality and integrity of these resources. We require new development to avoid paleontological and archeological resources whenever possible. If avoidance is not possible, we require the salvage and preservation of paleontological and archeological resources.
- Policy CR-2.4 Partnerships
  - We encourage partnerships to champion and financially support the preservation and restoration of historic sites, structures, and districts.
- Policy CR-2.5 Public awareness and education

- We increase public awareness and conduct education efforts about the unique historic, natural, tribal, and cultural resources in San Bernardino County through the County Museum and in collaboration with other entities.

City of Fontana

In addition to State regulations, projects built in the City of Fontana are also subject to the following goals and policies outlined in the City of Fontana's Fontana Forward - General Plan Update 2015-2038 (2018). Specifically, Chapter 4: Community and Neighborhoods section of the General Plan outlines the City's goals, policies, and actions relating to archaeological, historical, and paleontological resources.

Chapter 4: Community and Neighborhoods; Section B: Goals and Policies
Goals Historic and Cultural Preservation:

- The integrity and character of historic structures, and cultural resources sites within the City of Fontana are preserved.

  Policies:
  - Coordinate city programs and policies to support preservation goals.
  - Support and promote community-based historic preservation initiatives.
  - Collaborate with the Native American Heritage Commission (NAHC) and local tribal organizations about land development that may affect Native American cultural resources and artifacts.
- Residents' and visitors' experience of Fontana is enhanced by a sense of the city's history.
  Policies:
  - Enhance public awareness of Fontana's unique historical and cultural legacy and the economic benefits of historic preservation in Fontana.
  - Support creation of the Fontana Historical Museum.
- Archaeological resources are protected and preserved.
  Policies:
  - Collaborate with state archaeological agencies to protect resources.

E. Policies and Actions to Achieve the Goals
Goal 1: The integrity and character of historic structures, cultural resources sites and overall historic character of the City of Fontana is maintained and enhanced.

Policies:

- Coordinate City programs and policies to support preservation goals.
- Support and promote community-based historic preservation initiatives.
- Designate local historic landmarks.
- Provide appropriate tools to review changes that may detract from historic integrity and character.

Actions:

A. Designate a staff person in the Planning Division with responsibility for historic and cultural resource issues and as a liaison to the Fontana Historical Society.
B. Establish and maintain a thorough inventory of historic sites to be kept in the Planning Division and at the Fontana Historical Society.
C. Review the Historic Resources Inventory prepared in the 1990s and other resources to develop an authoritative listing.
D. Create a ranking system and priority list to identify the most important historic sites in Fontana to ensure that these sites are protected by Article XIII of the Fontana Code.
E. Seek assistance in reviewing and completing the Historic Resources Inventory, creating a priority list, and researching and preparing any sites to submit to listing.

Goal 2: Residents' and visitors' experiences of Fontana are enhanced by a sense of the city's history.

Policies:

- Enhance public awareness of Fontana's unique historical and cultural legacy and the economic benefits of historic preservation in Fontana.
- Support creation of the Fontana Historical Museum.

Actions:

A. Inform owners about the historic value of their properties.
B. Create a program of historic plaques and markers in collaboration with the Historical Society. Provide a history of the property and a building plaque in return for a contribution to the Historical Society.
C. Provide information and assistance for owners of historic properties who do not require a Certificate of Appropriateness to encourage them to retain the historic value of their properties when making alterations.
D. Establish the Fontana Historical Museum.
E. Establish programs to inform residents and visitors about Fontana's history.
F. Develop a brochure and/or a podcast for self-guided historical tours of Fontana, including all aspects of the city's history.
G. Create roadside and building markers for important locations in Fontana history, regardless of whether a historic structure remains on the site.
H. Provide a yearly presentation to schools in Fontana about the city's history.
I. Incorporate Route 66 history into revitalization design for Foothill Boulevard.

Goal 3: Cultural and archaeological resources are protected and preserved.

Policy:

- Collaborate with state agencies to protect cultural and archaeological resources.

Actions:

A. Continue to ensure that proper protocols are observed in development proposals for sites with potential archaeological significance.
B. Include cultural and archaeological sites and Native American history and archaeology in programs about Fontana history.

Environmental Setting

The City of Fontana is located in the San Bernardino Valley, south of the foothills of the San Gabriel Mountains, which in addition to the San Bernardino Mountains form the Traverse Mountain Ranges. The San Bernardino Valley is bordered on the north by the eastern San Gabriel Mountains and the San Bernardino Mountains, on the east by the San Jacinto Mountains, on the south by the Temescal Mountains and Santa Ana Mountains, and on the west by the Pomona Valley. The area is characterized by the presence of decomposing granite derived from the nearby hillsides and windborne or water-borne alluvial deposits. The University of California, Davis SoilWeb database was consulted to identify soils that underlie the Project site. The database indicates that the property is underlain by the Hanford (HaC) soil association, which consists of coarse sandy loam with slopes ranging from 2 to 9 percent (2022).

The Project site is generally located in the southwestern portion of San Bernardino County on the San Gabriel alluvial fan. Sediments from the San Gabriel Mountains have washed into the valleys below over thousands of years forming this fan. The Project site is situated atop a geologic formation of Pleistocene to Holocene age sediments comprised largely of marine and non-marine (continental) sedimentary rocks described as alluvium, lake, playa, and terrace deposits; both unconsolidated and semi-consolidated (Jennings 2010; Morton and Miller 2006). At the surface and immediate subsurface, the sediments are Holocene in age (less than 11,000 years old). Deeper sediments in the valley areas are Pleistocene in age, ranging from 2.6 million to 11,000 years old (Morton and Miller 2006).

In Southern California, the middle Pleistocene is generally associated with a pre-human presence, although recent research suggests early human exploration of North America earlier in the Late Pleistocene than previously documented. Fossil specimens are also associated with the Pleistocene, particularly in areas where deposits are referred to as "older Alluvium." The Holocene is the most recent geologic period and one that is directly associated with human activity. The Holocene is also generally associated with "younger Alluvium," which tend not to be fossil bearing, except in instances where fossils have been redeposited (Morton and Miller 2006).

Native vegetation in the area has generally been denominated by the chapparal community, which includes species such as California sagebrush (Artemisia californica), black sage (Salvia mellifera), California or wild buckwheat (*Eriogonum fasciculatum*), laurel sumac (*Malosma laurina*), white sage (*Salvia apiana*), purple sage (*Salvia leucophylla*), bush monkeyflower (*Mimulus aurantiacus*), bush sunflower (*Encelia californica*), coyote brush (*Baccharis pilularis*), woolly blue curls (*Trichostema lanatum*), canyon sunflower (*Venegasia carpesioides*), deerweed (*Lotus scoparius*), coast prickly pear (*Opuntia littoralis*), lupines (Lupinus spp.), and grasses (Calscape 2022).

Cultural Setting

Prehistoric Overview

During the twentieth century, many archaeologists developed chronological sequences to explain prehistoric cultural changes within all or portions of Southern California (Moratto 1984; Jones and Klar 2007). A prehistoric chronology was devised for the Southern California coastal region based on early studies and focused on data synthesis that included four horizons: Early Man, Milling Stone, Intermediate, and Late Prehistoric (Wallace 1955, 1978). Though initially lacking the chronological precision of absolute dates (Moratto 1984:159), Wallace's 1955 synthesis has been modified and improved using thousands of radiocarbon dates obtained by Southern California researchers over recent decades (Byrd and Raab 2007:217; Koerper and Drover 1983; Koerper et al. 2002). The prehistoric chronological sequence for Southern California presented below is a composite based on Wallace (1955) and Warren (1968) as well as later studies, including Koerper and Drover (1983).

It is generally believed that human occupation of Southern California began at least 10,000 years before present (BP). The archaeological record indicates that between approximately 10,000 and 6,000 years BP, a predominantly hunting and gathering economy existed, characterized by archaeological sites containing numerous projectile points and butchered large animal bones. The most heavily exploited species were likely those species still alive today. Bones of extinct species have been found but cannot definitively be associated with human artifacts in California, unlike other regions of the continent. Although small animal bones and plant grinding tools are rarely found within archaeological sites of this period, small game and vegetal foods were likely exploited. A lack of deep cultural deposits from this period suggests small groups practiced high residential mobility during this period (Wallace 1978).

The three major periods of prehistory for the greater Los Angeles Basin region have been refined by recent research using radiocarbon dates from archaeological sites in coastal Southern California (Koerper and Drover 1983; Mason and Peterson 1994):

- Millingstone Period (6,000–1,000 B.C., or about 8,000–3,000 years ago)
- Intermediate Period (1,000 B.C.–A.D. 650, or 3,000–1,350 years ago)
- Late Prehistoric Period (A.D. 650–about A.D. 1800, or 1,350–200 years ago)

Around 6,000 years BP, a shift in focus from hunting toward a greater reliance on vegetal resources occurred. Archaeological evidence of this trend consists of a much greater number of milling tools (e.g., metates and manos) for processing seeds and other vegetable matter (Wallace 1978). This period, known to archaeologists as the Millingstone Period, was a long period of time characterized by small, mobile groups that likely relied on a seasonal round of settlements that included both inland and coastal residential bases. Seeds from sage and grasses, rather than acorns, provided calories and carbohydrates. Faunal remains from sites dating to this period indicate similar animals were hunted. Inland Millingstone sites are characterized by numerous manos, metates, and hammerstones. Shell middens are common at coastal Millingstone sites. Coarse-grained lithic materials, such as quartzite and rhyolite, are more common than fine-grained materials in flaked stone tools from this time. Projectile points are found in archaeological sites from this period, but they are far fewer in number than from sites dating to before 6,000 years BP. An increase in the size of groups and the stability of settlements is indicated by deep, extensive middens at some sites from this period (Wallace 1978).

In sites post-dating roughly 3,000 years BP, archaeological evidence indicates the reliance on both plant gathering and hunting continued but was more specialized and locally adapted to particular environments. Mortars and pestles were added to metates and manos for grinding seeds and other vegetable material. Chipped-stone tools became more refined and specialized, and bone tools were more common. During this period, new peoples from the Great Basin began entering Southern California. These immigrants, who spoke a language of the Uto-Aztecan linguistic stock, seem to have displaced or absorbed the earlier population of Hokan-speaking peoples. The exact time of their entry into the region is not known; however, they were present in Southern California during the final phase of prehistory. During this period, population densities were higher than before; and settlement became concentrated in villages and communities along the coast and interior valleys (Erlandson 1994; McCawley 1996). During the Intermediate Period, mortars and pestles appeared, indicating the beginning of acorn exploitation. Use of the acorn – a high-calorie, storable food source – probably facilitated greater sedentism and increased social organization. Large projectile points from archaeological sites of this period indicate that the bow and arrow, a hallmark of the Late Prehistoric Period, had not yet been introduced; and hunting was likely accomplished using the *atlatl* (spear thrower) instead. Settlement patterns during this time are not well understood. The semi-sedentary settlement pattern characteristic of the Late Prehistoric Period may have begun during the Intermediate Period, although territoriality may not yet have developed because of lower population densities. Regional subcultures also started to develop, each with its own geographical territory and language or dialect (Kroeber 1925; McCawley 1996; Moratto 1984). These were most likely the basis for the groups encountered by the first Europeans during the eighteenth century (Wallace 1978). Despite the regional differences, many material culture traits were shared among groups, indicating a great deal of interaction (Erlandson 1994). The Late Prehistoric Period is better understood than earlier periods largely through ethnographic analogy made possible by ethnographic and anthropological research of the descendants of these groups in the late nineteenth and early twentieth centuries.

Ethnographic Overview

The Project site lies within an area known to be transitionally occupied by both the Gabrielino who's villages stretched from the Pacific coast, east to the edge of the San Bernardino Mountains where the Serrano people have resided for many generations, and the Cahuilla in the mountains to the Southeast.

Gabrielino

The Gabrielino (sometimes spelled Gabrieliño, Gabrieleno or Gabrieleño), are Cupan speakers. The Cupan languages are part of the Takic family, which is part of the Uto-Aztecan linguistic stock. Their tribal territory included the watersheds of the Los Angeles, San Gabriel, and Santa Ana rivers, all of the Los Angeles Basin, the coast from Aliso Creek in the south to Topanga Creek in the north, and the islands of San Clemente, San Nicholas, and Santa Catalina. Villages or triblets were politically autonomous and made up of different lineages. Each lineage had its own leader and would seasonally leave the village to collect resource items (Bean and Smith 1978). Tribal boundaries were not fixed and overlapped with neighboring people, including Chumash (Barbareño, Ventureño, Purisimeño, Obispeño, Ineseño, Cruzeño, Emigdiano, and the Cuyama Chumash), Fernandeño Tataviam, Serrano, Cahuilla, Acjachemen (Juaneño), and Luiseño cultural groups. These overlaps historically have been a source of confusion, contest, conflict, and opportunity, which has persisted to this day.

Gabrielino material culture incorporates a variety of tools, including saws made from deer scapulae, bone or shell needles, fishhooks and awls, scrapers, flakers (of bone or shell), wedges, hafted or unhafted lithic or cane knives, and lithic drills. Food preparation items included bedrock and portable mortars, metates, mullers, shell spoons, and mealing brushes. Wooden items include stirrers, paddles, bark platters, wooden bowls (often inlaid with Haliotis shell). Pottery vessels were made by coiling technique and paddle and anvil (Blackburn 1962-1963). The Gabrielino were noted for their objects made of steatite, usually obtained from Santa Catalina Islands, where a veritable steatite industry flourished, either in raw or finished form. The steatite was used in making animal carvings, pipes, "ritual" objects, ornaments, and cooking utensils. Utilitarian items were frequently decorated with shell inlaid in asphaltum, rare minerals, carvings, and painting, and comparable in quality and excellence to that of the Chumash (Bean and Smith 1978).

Houses were domed, circular structures thatched with tule, fern, or carrizo, and in some cases, "so spacious that each will hold fifty people" (Johnston 1962), capable of supporting three or four families living in each one (Costansó 1911). For groups located near the sea, the doorways opened seaward, to avoid the north wind (Harrington 1942). Other structures commonly found in villages included sweathouses (small, semicircular, earth-covered buildings used for pleasure and as a clubhouse or meeting place for adult males), menstrual huts, and a ceremonial enclosure, the *yuva·r. Ayuva'r* was built near the chief's house and was essentially an open-air enclosure, oval in plan, made with willows inserted wicker fashion among willow stakes, decorated with eagle and raven feathers, skins, and flowers, and containing inside the enclosure painted and decorated poles. Consecrated anew before every ceremony, these ceremonial enclosures were the centers for activities relating to the Chingichngish cult. The religious beliefs and rituals of the cult originated in the Gabrielino territory and found its way to, and significantly influenced, non-Gabrielino groups (Bean and Smith 1978).

Typically, men hunted, fished, assisted in some gathering activities, and conducted most trading ventures. Large land mammals were hunted with bow and arrow, while smaller game was taken with deadfalls, snares, and traps, or in communal hunts with nets, bow and arrows, and throwing clubs (Blackburn 1962-1963). Along the coast harpoons, spear throwers, and clubs were used. Fishing, typically, took place along shore or along rivers, streams, and creeks with the use of hook and line, nets, basketry traps, spears, bow and arrow, and vegetal poisons. Deep-sea fishing and trading expeditions also occurred between island and mainland groups and were undertaken from boats made of wooden planks lashed and asphalted together. Women were involved mainly in collecting and preparing most floral and some animal food resources, as well as the production of baskets, pots, and clothing (Bean and Smith 1978).

During the Spanish missionization period people from greater area would have been incorporated into the San Gabriel mission. Whether they were Serrano, Cahuilla, Fernandeño Tataviam, Chumash or local Gabrielino, all would have been identified as Gabrielino, or as belonging to Mission San Gabriel. Indeed, even Fernandeño people have been collectively grouped within Gabrielino ethnographic treatments. Today, Fernandeño Tataviam, Gabrieleño Band of Mission Indians-Kihz Nation, and the Gabrielino-Tongva Indian Tribe identify as individual groups.

Serrano

Despite their Spanish-given name of "Mountaineers" Serrano territory included not only the San Bernardino Mountains east of Cajon Pass, but also the base and areas north of the San Bernardino mountains out to the desert near Victorville, eastward as far as Twentynine Palms, and south to and in the Yucaipa Valley (Bean and Smith 1978). The Serrano were organized into localized lineages occupying favored territories but rarely claiming any territory far from the lineage's home base, and as there were neither political unity or organized supralineal groups tribal holdings were only generally organized and use areas ill-defined (Bean and Smith 1978). The estimated population of the Serrano before European contact was 1,500-2,500. It has been difficult to estimate the number of people that resided in each village; however, it is likely that individual villages held only as many as could be accommodated by water sources (Stickle and Weinman-Roberts 1980). Most village-hamlets were in the foothill Upper Sonoran life-zone while a few were out on the desert floor (near permanent water sources) or in the forest Transition zone (Bean and Smith 1978). Like their neighbors Kitanemuk, and Vanyume to the north, the Serrano spoke a dialect of the Takic family of the Uto-Aztecan linguistic stock termed Serran, which differed from Cupan speakers such as the Cahuilla and Gabrielino to the south.

Typical Serrano dwellings were circular, domed structures built over an excavated area. These structures were large enough to contain fire pits, and primarily served as sleeping areas. Ceremonial houses were the only other buildings in the villages and were normally occupied by the village priest (Stickle and Weinman-Roberts 1980).

Serrano artifact assemblage is noted to be similar to that of the neighboring Cahuilla and includes musical instruments such as rattles and flutes; utensils and ornaments such as fire drills, mortars, metates, pipes, beads, awls, and projectile points from wood, shell, bone, and stone. The Serrano were noted for their pottery and baskets. Their pots were made of coiled clay smoothed out with a paddle and set in the sun to dry before being fired in a pit. The brownware was sometimes decorated with designs of circles and lines of either red or black (Stickle and Weinman-Roberts 1980).

The Serrano were also known for their petroglyphs. Abstract and geometric designs are often seen with representational figures of sheep, lizards and human beings. Some state that their petroglyphs were records of important events, rough maps, and artistic representations of native life (Stickle and Weinman-Roberts 1980).

Cahuilla

The Cahuilla, along with the Luiseño and the Gabrielino, are one of the most southwesterly of the Shoshonean or Uto-Aztecan speakers. They are members of the Takic branch of this large language family. Traditional Cahuilla territory originally included western and part of central Riverside County and extended into northeastern San Diego and northwestern Imperial counties. The western boundary generally followed the Santa Ana, Elsinore, and Palomar Mountains. The northern boundary extended north of Riverside to the San Gabriel and San Bernardino Mountains. Cahuilla territory extended east to include the Coachella Valley and down the valley as far south as the approximate middle of the Salton Sea. The approximate southern territorial limits included Borrego springs and the south end of the Santa Rosa Mountains. The Cahuilla territory consisted of the Mountain, the Pass or Western, and the Desert divisions (Bean 1978; Hooper 1920:316; Strong 1929).

According to Kroeber (1925), Cahuilla society consisted of two ceremonial divisions or moieties: wildcat and coyote. People were further divided into somewhat localized, patrilineal clans. Each clan had a chief: net in Cahuilla (Kroeber 1925). Some villages contained people of only one clan, but other villages had more than one clan. Also, people of one clan might live in more than one village. Chiefs were usually chosen by heredity. The chief typically was a religious leader of the larger social group, from which the chief drew certain wealth. A chief ordered ceremonies, but it was his assistant, the paha', who executed them. Choice hunting and gathering areas were owned by the clan. The clan chief also settled intraclan disputes and met with other nets to solve interclan problems and organize ceremonies among clans.

The Cahuilla sustained themselves through hunting, gathering, and fishing. Major villages were fully occupied during the winter; but, during other seasons, task groups made periodic forays to collect various plant foods, with larger groupings from several villages organizing for the annual acorn harvest (Bean and Saubel 1972). Bean and Saubel (1972) have recorded the use of several hundred species of plants used for food, building/artifact materials, and medicines. The major plant foods included acorns, pinyon nuts, and various seed-producing legumes. Agave, wild fruits and berries, tubers, cactus bulbs, roots and greens, and seeds complemented these.

Hunting focused on both small and medium-sized mammals, such as rodents and rabbits, and large mammals, such as pronghorn sheep, mountain sheep, and mule deer. Hunting was done using the throwing stick or the bow and arrow, although nets and traps were also used for small animals (Bean 1972).

Cahuilla material culture included dome-shaped to rectangular type houses; aboveground granaries; baskets, pottery, and grinding implements; throwing sticks, clubs, nets, traps, dead falls with seed triggers, spring-poled snares, arrows and self-backed and sinew-backed bows. They sometimes fired bush clumps to drive game out in the open and flares to attract birds at night. Baskets of various kinds were used for winnowing, leaching, grinding, transporting, parching, storing, and cooking. Pottery vessels were used for carrying water, for storage, cooking, and serving food and drink. Cahuilla tools included mortars and pestles; manos and metates; fire drills; awls; arrow-straighteners; flint knives; wood, horn, and bone spoons and stirrers; scrapers; and hammerstones. Woven rabbit-skin blankets served to keep people warm in cold weather. Feathered costumes were worn for ceremonial events; and at these events the Cahuilla made music using rattles derived from insect cocoon, turtle and tortoise shell, and deer-hoofs, along with wood rasps, bone whistles, bull-roarers, and flutes, to make music. They wove bags, storage pouches, cords, and nets from the fibers of yucca, agave, and other plants (Drucker 1937; Bean 1972, 1978).

Historic Overview

Post-European contact history for the state of California is generally divided into three periods: the Spanish Period (1769–1822), the Mexican Period (1822–1848), and the American Period (1848– present). Briefly, and in very general terms, the Spanish Period encompassed the earliest historic-period explorations of the West, bringing colonization, missionization and proselytization across the western frontier, the establishment of major centers such as Los Angeles and Monterey and a line of missions and presidios with attendant satellite communities, along with minor prospecting, and a foundational economic structure based on the rancho system.

The Mexican Period initiated with a continuation of the same structures; however, commensurate with the political changes that led to the establishment of the Mexican state the missions and presidios were secularized, the lands parceled, and Indian laborers released. Increased global trade introduced both foreign and American actors into the Mexican economic and political sphere, both coincidentally, and purposefully, smoothing the transition to the American Period. The American Period was ushered in with a momentous influx of people seeking fortune in the Sierra foothills where gold was “discovered” in 1848.

By the early 1850s people from all over the globe had made their way to California. Expansive industries were required to supply the early mining operations, such as forestry products, food networks to supply grains, poultry, cattle, and water systems, which intensified the early Mexican Period structures of ranches and supply chains, as well as the development and expansion of port cities to supply hard goods and clothes, animals, and people that moved across vastly improved trail and road networks. California cycled through boom and bust for several decade until World War I when the Department of the Navy began porting war ships along the west coast. Subsequently, California has grown, and contracted, predominantly around military policy along the west coast, and the Pacific Ocean. Following the industrial expansion related to World War II and the Cold War, technology and systems associated have come to fore as economic drivers.

City of Fontana

The City of Fontana is considered part of the “Inland Empire” in San Bernardino County due its location around numerous lakes, mountains, desert areas and close proximity to Los Angeles. Fontana is located within San Bernardino Valley, which became more widely settled once the Southern (Union) Pacific Railroad line between San Francisco and Los Angeles was completed in 1876. Having been founded in 1913, Fontana began as an agricultural community and quickly became a thriving industrial town by 1942 due to the opening of the Henry J. Kaiser Steel Mill, which operations were largely geared towards supporting the efforts made during World War II (WWII). This in turn allowed for a large percentage of the population to have a primary source of employment, even after the war had ended; the Kaiser Steel Mill closed operations in 1984 (City 2022).

Additionally, the original Fontana Kaiser Permanente Facility and Hospital establishment owe its namesake to Mr. Henry Kaiser, as he produced an innovative and effective health care program over concerns for public welfare during the Great Depression and WWII. As we have seen, the Kaiser Permanente health system has grown to become vast throughout many states in the Unites States (City 2022).

The City of Fontana also has an early history of being part of the Commerce Department’s network of airfields set up along airways between major cities. The Fontana Gilfillan Airport, which has had a few different names over the years, was first recorded on the June 1932 LA Sectional Chart, and was at that time called the “Fontana Intermediate Field.” It was depicted as a commercial/municipal airport and labeled as a Landing Field. During WWII, the airport was used as a night training field for the Cal Aero Cadets and was called “Cal-Aero” on the 1947 LA Local Aeronautical Chart. The first aerial image is from 1948 and shows two very side but short, parallel, paved runways with several small buildings near the field, along with five single-engine aircraft (Airfields-Freeman.com 2021).

In the 1950s, the “Fontana Airport” became the site of radar testing flight operations for the Gilfillan Brothers, who were pioneers in the further development of GCA (Ground Controlled Approach) radar; the technology had been initially developed by MIT during WWII (Airfields-Freeman.com 2021). The 1954 USGS topographical map reflects the “Gilfillan Airport.” The Fontana Airport would go on to be used for testing vast amounts of radar systems produced by the Gilfillans and was named “Fontana Gilfillan on the 1965 LA Local Area Aeronautical Chart. The runways were still depicted on the 1998 USGS topographical map, however, it soon ceased operations, and in 2001 a housing development was building on the airport site location (Airfields-Freeman.com 2021).

Since Fontana’s incorporation in 1952, and with its sphere of influence, the City now encompasses an area of approximately 52 square miles and boasts a population of over 213,000. As the City continues to grow, due to its close proximity to the historic Union Pacific Railroad and major freeways (I-10, I-15, and SR-210), it remains to be a vital hub for the supply chain. Additionally, the Fontana Metrolink station provides an additional commuting option for residents working in the larger Los Angeles metropolitan area (City 2022).

Methods of Review

Chambers Group requested a records search from the California Historical Resources Information System (CHRIS) South Central Coastal Information Center (SCCIC) at California State University, Riverside on March 25, 2021. Results were received on July 9, 2021, providing information on all documented cultural resources and previous archaeological investigations within one mile of the Project site. A one-mile study area was requested to provide additional context to the Project site and surrounding area and more information on which to base this review. These results have been incorporated into this report and are included in Attachment B. Resources consulted during a records search conducted by the SCCIC include the NRHP, California Historical Landmarks (CHL), California Points of Historical Interest (CPHI), Caltrans Historic Highway Bridge Inventory, the California State Historic Resources Inventory, local registries of historic properties, and a review of available Sanborn Fire Insurance maps as well as historical photographs, maps, and aerial imagery. The task also includes a search for potential prehistoric and/or historic burials (human remains) evident in previous site records and/or historical maps. On May 20, 2021, Chambers Group also submitted a request to the Native American Heritage Commission (NAHC) for a review of the Sacred Land Files (SLF) for the Project site and surrounding vicinity. On June 7, 2021, results of the SLF records search were received and are detailed below and included in Attachment A.

In addition, on May 20, 2021, Chambers Group requested a paleontological records search from the Western Science Center (WSC). This information was requested with the intent to provide further context related to the paleontological sensitivity of the area based on known fossil locations identified within the Project site or one-mile study area. The paleontological records provide insight into what associated geological formations are more likely to contain fossils as well as the associated depths and placement of the known fossil locals relative to the geological formations in the area. On June 1, 2021, Chambers Group received the results of the records search.

Chambers Group archaeologist and cross-trained paleontologist Ken Hazlett conducted a cultural resources Phase I intensive pedestrian survey of the Project area on February 18, 2022. The cultural resources survey consisted of systematic surface inspection of all areas with transects walked at 10-meter intervals to ensure that any evidence of surface-exposed cultural materials and/or evidence of paleontological resources could be identified. Chambers Group examined the ground surface for the presence of prehistoric artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools), historical artifacts (e.g., metal, glass, ceramics), sediment discoloration that might indicate the presence of a cultural midden, roads and trails, and depressions and other features that might indicate the former presence of structures or buildings (e.g., post holes, foundations). The Project development area was photographed using a digital camera and any on-site data was recorded using a hand-held global positioning system (GPS) unit with sub-meter accuracy. Chambers Group has all field notes, photographs, geodata, and other records related to the current study on file.

Project Personnel

Chambers Group Cultural Resources Department Lead Lucas Tutschulte managed the Project and co-authored the report. Chambers Group archaeologist and cross-trained paleontologist Ken Hazlett performed the cultural resources survey and co-authored the report. Chambers Group Cultural Resources Specialists Kellie Kandybowicz and Eduvijes Davis-Mullens conducted the background research and co-authored the report. Richard Shultz, MA, RPA, served as Principal Investigator for cultural resources, and performed quality control for the report.

Cultural Resources Reports within the Study Area

Results of the CHRIS records search indicate that 34 previous cultural resource investigations have been conducted within a one-mile study area surrounding the Project site. Of the 34 investigations, three included the Proposed Project site (SB-02621, SB-03050, SB-07990) and have been bolded and italicized in the following table. Further details pertaining to these previous investigations are listed in Table 1 and are included in Attachment B.

Table 1: Previous Cultural Resources Studies within the One-Mile Study Area

Report Number	Year	Author	Title	Resources	Within Project Boundary?
SB-01189	1981	Scientific Resource Surveys, Inc.	Cultural Resources Report on The Rancho Fontana Project Located in The Fontana Area of The County of San Bernardino		No
SB-01501	1985	Mason, Roger D.	Cultural Resource Survey Report for The Etiwanda Pipeline and Power Plant EIR		No
SB-01506	1985	Swope, Karen K. and Meg McDonald	Environmental Impact Evaluation: Archaeological Assessment of Tentative Tract 13000, City of Fontana, San Bernardino County, California		No
SB-01582	1986	Lerch, Michael K.	Class III Cultural Resources Inventory: San Sevaine Creek Water Project, San Bernardino County, California	36-005569, 36-033130	No
SB-01655	1987	Lerch, Michael K.	Cultural Resource Field Reconnaissance: Caryn Project, West Valley Foothills Community Plan		No
SB-02033	1990	McKenna, Jeanette A.	A Phase I Archaeological Investigation of The Proposed Lewis Homes' Project Area, Fontana, San Bernardino County, California		No
SB-02041	1989	Hammond, Stephen R.	Negative Archaeological Survey Report: Route 15, 30, Post Mile 7.6/9.3, 11.8/13.1		No
SB-02413	1991	Sutton, Paula A.	First Addendum Archaeological Survey Report for The Construction of The Interstate 15/State Route 30 Interchange in The Cities of Ranch Cucamonga and Fontana in San Bernardino County, CA	36-006901	No
SB-02621	***1992***	***Alexandrowicz, J. Steven, Anne Q. Duffield-Stoll, Jeanette A. Mckenna, Susan R. Alexandrowicz,***	***Cultural And Paleontological Resources Investigations Within the North Fontana Infrastructure Area, City of Fontana, San Bernardino County, California***	***36-004296, 36-006110, 36-006111, 36-006251, 36-006583, 36-006584, 36-006585,***	***Yes***

Table 1: Previous Cultural Resources Studies within the One-Mile Study Area

Report Number	Year	Author	Title	Resources	Within Project Boundary?
		Arthur A. Kuhner, And Eric Scott		***36-006586, 36-006587, 36-006588, 36-006589, 36-006807, 36-006808, 36-006809, 36-006810, 36-006811, 36-006812, 36-006813, 36-006814, 36-006815, 36-006816***	
SB-02851	1993	Landis, Daniel G.	A Cultural Resources Survey for The Chino Basin Groundwater Storage Program, San Bernardino County, CA	36-006254, 36-006810, 36-006901, 36-007323, 36-007661, 36-007792, 36-007793, 36-007794	No
SB-03050	***1995***	***McKenna, Jeanette A.***	***A Cultural Resources Reconnaissance Survey of Westgate Property (1000 +/- Acres) In the City of Fontana, San Bernardino County, CA***	***36-006901***	***Yes***
SB-03172	1996	McKenna, Jeanette A., and Richard S. Shepard	A Phase I Cultural Resource Investigation of The Landings 750 LLC Project Area, A 200 +/- Acre Property Located in North Fontana, San Bernardino County, CA. 51pp	36-009363, 36-009364, 36-009365	No
SB-03173	1997	McKenna, Jeanette A. And Richard S. Shepard	Phase III Cultural Resources Investigation: Archaeological Monitoring Program for The Landings 750 LLC Project Area, A 200 +/- Acre Property Located in North Fontana, San Bernardino County, CA. 45pp	36-009363, 36-009364, 36-009365, 36-009366	No
SB-03174	1996	McKenna, Jeanette A., and Richard S. Shepard	A Phase I Cultural Resources Investigation of The Summit Heights Project Area, Located in North Fontana, San Bernardino County, CA. 35pp	36-009367, 36-009368, 36-009369, 36-009370	No
SB-04019	2002	McKenna, Jeanette A.	A Phase I Cultural Resource Investigation of The Tentative Tract 16291, The Russo Property, In the City of Fontana, San Bernardino County, CA. 42pp		No
SB-04023	2002	McKenna, Jeanette A.	Archaeological Monitoring, Fontana Property. 7pp		No

Table 1: Previous Cultural Resources Studies within the One-Mile Study Area

Report Number	Year	Author	Title	Resources	Within Project Boundary?
SB-04206	2003	Hammond, Stephen	Inland Empire Traffic Management Center. 7pp		No
SB-04547	2005	Shepard, Richard	Cultural Resources Assessment: Fairfield Apartments Project Site, APN: 0226-135-03, Fontana, San Bernardino County, CA. 7pp		No
SB-04549	2004	Shepard, Richard	Cultural Resource Assessment: Sommerville-Conzelman/Covenant Project Site, APN:0228-021-20, Fontana, San Bernardino County, CA. 7pp		No
SB-04554	2004	Dice, Michael, and Marnie Vianna	An Archaeological Resources Evaluation & Paleontological Records Search for The Chaffey High School #9 Project, San Sevaine & Walnut Ave, City of Fontana, San Bernardino County, CA. 33pp		No
SB-04559	2003	Berryman, Judy A.	Cultural Resources Survey of 250 Acres on the Western Edge & Proposed Fence line for The Rifle Ranges & Revaluation of A Portion Of CA-SBR-8318, Mclb, Barstow, CA. 80pp	36-008318, 36-011294, 36-011295, 36-011296, 36-011297, 36-011298, 36-011299, 36-011300, 36-011301, 36-064594, 36-064595, 36-064596, 36-064597, 36-064598, 36-064599, 36-064600, 36-064601, 36-064602, 36-064603, 36-064604, 36-064605, 36-064606	No
SB-04679	2006	Goodwin, Riordan, Hansen, Janet, Judith Marvin, and Laura S. White	Historical Resources Evaluation Report and Archaeological Survey Report for the Pacific Electric Inland Empire Trail, Phase I, City of Rancho Cucamonga, San Bernardino County, CA	36-016448, 36-020136, 36-020137, 36-020138	No
SB-05911	No Data	No Data	No Data	No Data	No
SB-05997	2008	Smallwood, Josh, John J. Eddy, Harry M. Quinn, and	Identification and Evaluation of Historic Properties: Monitoring Wells and Lysimeters for Victoria and San Sevaine Flood Control		No

Table 1: Previous Cultural Resources Studies within the One-Mile Study Area

Report Number	Year	Author	Title	Resources	Within Project Boundary?
		Laura Hensley Shaker	Basins in the Cities of Rancho Cucamonga and Fontana, San Bernardino County, California.		
SB-05999	2008	Tang, Bai "Tom", John J. Eddy, Harry M. Quinn, Terri Jacquemain, Daniel Ballester, and Laura Hensley Shaker	Identification and Evaluation of Historic Properties: Northeast Recycled Water Expansion Projects in and near the Cities of Rancho Cucamonga and Fontana, San Bernardino County, California.		No
SB-06000	2008	Tang, Bai "Tom", John J. Eddy, Harry M. Quinn, Terri Jacquemain, Daniel Ballester, and Laura Hensley Shaker	Extended Phase I Historical/Archaeological Resources Study: Northeast Recycled Water Expansion Projects in and near the Cities of Rancho Cucamonga and Fontana, San Bernardino County, California.		No
SB-06492	No Data	No Data	No Data	No Data	No
SB-06534	2009	Bonner, Wayne H., and Arabesque Said	Cultural Resource Records Search and Site Visit Results for Verizon Wireless Candidate Cherry line, 14337 Baseline Avenue, Fontana, San Bernardino County, California.		No
SB-06907	No Data	No Data	No Data	No Data	No
SB-07401	2013	Tang, Bai "Tom", Deirdre Encarnacion, Terri Jacquemain, and Daniel Ballester	Historical/Archaeological Resources Survey Report: Vulcan Conservation and Flood Control Project, in and near the City of Fontana, San Bernardino County, California.		No
SB-07906	2015	Pigniola, Andrew R.	Cultural Resources Survey Report for the TTM19917 Subdivision Project Rancho Cucamonga, California		No
SB-07990	***2014***	***George, Joan, and Josh Smallwood***	***Phase I Cultural Resources Assessment for the Etiwanda Pipeline North Relining Project, Cities of Fontana and Rancho Cucamonga, San Bernardino County, California***	***36-002910, 36-006901, 36-015497, 36-016454, 36-020137, 36-024086***	***Yes***
SB-08257	2016	Tang, Bai	Due-Diligence Historical/Archaeological Resources Study Inland Empire Utilities Agency Recharge Basin Maintenance Plan Chino Basin Area, San Bernardino and Riverside Counties, California CRM TECH Contract No. 2989		No

Table 1: Previous Cultural Resources Studies within the One-Mile Study Area

Report Number	Year	Author	Title	Resources	Within Project Boundary?
SB-08269	2017	Bryne, Stephen, Gary Jones, and Gabrielle Duff	Archaeological Survey Report Interstate 15 (1-15) Corridor Project	36-002910, 36-006901	No

Previously Recorded Cultural Resources within the Study Area

The CHRIS records search also identified 10 previously recorded cultural resources located within the one-mile record search radius of the Project site. Of these previously recorded resources, none were mapped within the Project site. The results are summarized in Table 2 and are included in Attachment B.

Table 2: Previously Recorded Cultural Resources within the One-Mile Study Area

Primary Number	Trinomial	Resource Names	Site Type	Within Project Boundary?
P-36-007324	CA-SBR-007324		Historic Farm/Vineyard	No
P-36-007325	CA-SBR-007325		Historic Site	No
P-36-009363	CA-SBR-009363H	Johnson/Miller Complex	Historic Site	No
P-36-009364	CA-SBR-009364H	S. And M. Biocima Residential Complex	Historic Site	No
P-36-009365	CA-SBR-009365H	Otteson Property	Historic Site, Building and Structure; Prehistoric Site	No
P-36-009368	CA-SBR-009368H		Historic Structure/Reservoir	No
P-36-009369	CA-SBR-009369H		Historic Site	No
P-36-013746		Tibbetts House, Jim's Landscaping and Nursery	Historic Building	No
P-36-014190		Arrowhead Realty Co. Reservoir	Historic Structure/Reservoir	No
P-36-015497	CA-SBR-007324	*Base Line Road	Historic Structure/Road	No

*Registered as California Point of Historical Interest (CPHI) #12/Landmark Plaque Number P278 on 1/31/1973.

Background Research Results

In addition to the records search review, Chambers Group archaeologists completed research to determine if any additional historic properties, landmarks, bridges, or other potentially significant or listed properties are located within the Project footprint or one-mile study area. This background research included, but was not limited to, the NRHP, California State Historic Property Data Files, California State Historical Landmarks, California Points of Historical Interest, Office of Historic Preservation Archaeological Determinations of Eligibility, historical aerial imagery accessed via NETR Online, historical U.S. Geological Survey topographic maps, Built Environment Resource Directory (BERD), and California Department of Transportation (Caltrans) State and Local Bridge Surveys. As a result of the archival research, in addition to the resource indicated in the SCCIC record search results, no previously recorded resources or any other listed or potentially significant properties were identified within the Project site.

Historic maps and aerial imagery indicate that the Project site has remained largely undeveloped from 1938 to present. The historical aerial imagery and topographic maps indicate that the earliest alignment of Highland Avenue was established sometime before 1896. Historic aerial imagery shows that the overall area, including the Project site, was developed for agricultural use by 1938 and continued to be utilized for agriculture through the 1980's. The electric transmission line, which runs northeast to southwest, outside the Project site but paralleling the current boundary, was first constructed between 1948 and 1959. Additionally, the swath of cleared that is currently observed adjacent to the southeast margin of the Project site, between the Project site and the transmission line corridor to the west, appears to have been established and cleared between 1985 and 1994. This cleared area is still maintained and cleared, and is observable in current imagery bounding the Project site to the southeast. The current alignments of Cherry Avenue and Highland Avenue were established as dirt roads before 1941 and were later paved sometime between 1966 and 1980. Evidence of disturbance related to the construction of the Fontana segment of Route 210, the Foothill Freeway, north of the Project site, was observed in aerial imagery between 1994 and 2002 (NETRonline 2022). The Project site appears to have been subject to minimal agriculture or re-vegetation efforts between 2002 and present.

Field Survey Results

Chambers Group archaeologist and cross-trained paleontologist Ken Hazlett conducted a cultural resources pedestrian survey of the Project site on February 18, 2022. The Project site was visually examined with pedestrian survey transects at 5–10-meter intervals. Ground visibility within the Project site was fair to good, with clear bare ground areas between and around vegetation providing an average of approximately 70 to 80 percent surface visibility throughout the site. The entire Project site displayed evidence of previous disturbance related to the adjacent developed infrastructure as well as previous agricultural activity (Photographs 1 through 4). The western margin of the Project site is bound by the maintained roadside shoulder along the east margin of Cherry Avenue (Photograph 3). The northern margin of the Project site is bound by a six-foot-tall chain link fence (Photograph 2). The diagonal southeastern margin is free of any physical boundary, with similar terrain observed on either side of the Project site boundary along that edge (Photograph 1). While it is located well outside of the current Project site, the existing electric transmission line roughly follows the northeast to southwest alignment of the southeastern boundary of the Project site. Between the transmission line and the Project site boundary is the same cleared and well-maintained corridor that appears on the historic aerial imagery between 1985 and 1994 (Photograph 1). Upon inspection during the survey, this cleared area was observed and determined that it is not a channel or drainage but may aid in surface water run-off, in addition to serving as an obvious fire break. Additionally, an approximately 12-meter-wide (east-west) section is cleared and graded along the western margin, likely related to the agricultural activity to keep a cleared margin between the roadway and the active agriculture on site (Photograph 3). A sparse scatter of modern refuse was observed along the roadside shoulder margin, within the Project site. The northern margin exhibited evidence of previous agricultural activity by the plow lines observed (Photograph 2). Similarly, the southeastern margin of the Project site exhibited a narrow 15-meter-wide section of soils with shallow 0- to 6-inch-deep plow lines observed. The central portion of the Project site showed evidence of grapevine cultivation in east-west rows (Photograph 4), with significant bioturbation noted throughout by small burrowing animal activity. Soils observed were light-brown silty sand along the outer plowed and bladed regions and medium-brown silty sandy loam in the inner triangular area, in both cases presenting moderate to profuse 0- to 10-cm rounded cobble inclusions.

No surface evidence of prehistoric or historic archaeological resources or paleontological resources was identified within the Project site.

Native American Heritage Commission Sacred Lands File Search

On May 20, 2021, Chambers Group requested that the Native American Heritage Commission (NAHC) conduct a search of its Sacred Lands File (SLF) to determine if Tribal Cultural Resources (TCR) important to Native Americans have been recorded in the Project footprint and one-mile study area. On June 7, 2021, Chambers Group received a response from the NAHC stating that the search of its Sacred Lands File was positive.

The NAHC provided a list of 18 Native American tribal contacts that may have knowledge of cultural resources near the Project area (Attachment A). The NAHC SLF results letter and the list of contacts are included in Attachment A.

AB 52 Consultation

The City of Fontana is the lead agency per CEQA Guidelines, and as such, is responsible for initiating tribal consultation under AB 52. As of the date of this report, Chambers Group has not been notified of the status of AB 52 consultation between the City of Fontana and any requesting tribal groups, if TCRs have been identified, or if appropriate mitigation measures have been presented.

As discussed above, a resource may be defined as a TCR if it meets either of the following criteria:

1. sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe that are listed, or determined to be eligible for listing, in the national or state register of historical resources, or listed in a local register of historic resources; or
2. a resource that the lead agency determines, in its discretion, is a tribal cultural resource (PRC Section 21074)

Paleontological Resources

On June 1, 2021, Chambers Group received the results of the records search. The results indicate that no fossil localities have been identified within the Project site or within a one-mile radius of the Project site. The records search consisted only of the records maintained by the Western Science Center (WSC).

Based on these results the paleontological sensitivity is considered low to moderate in the overall area considering the lack of known fossil localities within the one-mile radius. As noted, no fossils are mapped within the Project site. However, the Project site is situated on the on the San Gabriel alluvial fan, which is composed of Pleistocene and Holocene age deposits. While Holocene alluvial units are considered to be of high preservation potential, any potential materials found are unlikely to be considered fossil material due to the relatively modern dates of the associated deposits. Conversely, if development requires any substantial depth of disturbance, the likelihood of reaching older Holocene or Late Pleistocene alluvial sediments would increase. If excavation activity associated with the Fontana Fire Training Station 80 Project disturbs sediments dating to the early Holocene or Late Pleistocene periods, any identified paleontological materials would be scientifically significant (Radford 2021).

Discussion

Chambers Group requested a cultural resources records search and literature review within the Project site and surrounding one-mile radius study area between March and June of 2021 and conducted a cultural and paleontological pedestrian field survey in February 2022. The records search results did not indicate any previously identified cultural resources within the Project site. Similarly, the pedestrian survey did not discover any new cultural resources within the Project site.

The paleontological records search did not identify any previously recorded paleontological fossil localities within the Project site and surrounding study area, and no evidence of paleontological resources was observed on the surface during the pedestrian survey.

In addition, Chambers Group submitted a search request of the NAHC SLF to determine the presence or absence of any known SLFs within the Project site or surrounding vicinity. The NAHC SLF search resulted in positive findings, indicating the presence of sacred lands or resources within the vicinity of the Project.

Chambers Group consulted cultural resources and Native American repositories to identify previously recorded archaeological, paleontological, and tribal resources that may be located on or near the proposed Project, and which may be adversely affected by the Project. Chambers Group also conducted a pedestrian survey to identify any surface evidence of cultural and paleontological resources that may exist in the Project site. The background research confirmed a moderate level of sensitivity for buried resources, both archaeological and paleontological. The survey was negative for new or previously recorded cultural resources and no evidence of paleontological resources was observed on the visible ground surface. As determined through the background research, the general Fontana region is associated with the traditional use by Gabrielino, Serrano, and Cahuilla tribal groups. The Santa Ana River and its relative proximity to the Project site would have also provided valuable resources and allowed for a sustainable way of life in the area, and while cultural resources have not been identified within the Project site, other resources such as TCRs may exist, but require consultation with such tribes to elucidate their presence.

Additionally, given the largely undisturbed nature of the Project site with no previous development beyond historic agricultural activity within the site, there remains potential that the current Project's ground disturbing activity could impact intact native soil formations or intact geologic units known to be fossil bearing in the region.

Recommendations

Per CEQA Guidelines the Project should be designed to avoid impacts to cultural resources within the project area whenever feasible. While Chambers Group did not identify any cultural resources through background research or though survey of the Project site, Chambers Group recommends the following mitigation measures be implemented as part of Project approval to ensure that potential impacts to cultural and paleontological resources are less than significant.

MM CUL-1 The Applicant shall retain the services of a Qualified Archaeologist, meeting the Secretary of the Interior Standards or County standards, whichever is greater, and require that all initial ground-disturbing work be monitored by archaeological specialist (monitor) proficient in artifact and feature identification in monitoring contexts. The Consultant (Qualified Archaeologist and/or monitor) shall be present at the Project construction phase kickoff meeting.

MM CUL-2 Prior to commencing construction activities and thus prior to any ground disturbance in the proposed Project site, the Consultant shall conduct initial Worker Environmental Awareness Program (WEAP) training to all construction personnel, including supervisors, present at the outset of the Project construction work phase, for which the Lead Contractor and all subcontractors shall make their personnel available. A tribal monitor shall be provided an opportunity to attend the pre-construction briefing, if requested. This WEAP training will educate construction personnel on how to work with the monitor(s) to identify and minimize impacts to archaeological resources and maintain environmental compliance. This WEAP training will educate the monitor(s) of construction procedures to avoid construction-related injury or harm. This training may be performed periodically, such as for new personnel coming on to the Project as needed.

MM CUL-3 The Contractor shall provide the Consultant with a schedule of initial potential ground-disturbing activities. A minimum of 48 hours will be provided to the Consultant of commencement of any initial ground-disturbing activities such as vegetation grubbing or clearing, grading, trenching, or mass excavation.

A monitor shall be present on-site at the commencement of ground-disturbing activities related to the Project. The monitor, in consultation with the Qualified Archaeologist, shall observe initial ground-disturbing activities and, as they proceed, adjust the number of monitors as needed to provide adequate observation and oversight. All monitors will have stop-work authority to allow for recordation and evaluation of finds during construction. The monitor will maintain a daily record of observations to serve as an ongoing reference resource and to provide a resource for final reporting upon completion of the Project.

The Consultant and the Lead Contractor and subcontractors shall maintain a line of communication regarding schedule and activity such that the monitor is aware of all ground-disturbing activities in advance in order to provide appropriate oversight.

MM CUL-4 In the event of the discovery of previously unidentified archaeological materials, the Contractor shall immediately cease all work activities within an area of no less than 50 feet (15 meters) of the discovery. After cessation of excavation, the Contractor shall immediately contact the City. Except in the case of cultural items that fall within the scope of the Native American Grave Protection and Repatriation Act, the California Health and Safety Code 7050.5, CEQA Section 15064.5, or California Public Resources Code Section 5097.98, the discovery of any cultural resource within the Project area shall not be grounds for a project-wide “stop work” notice or otherwise interfere with the Project’s continuation except as set forth in this paragraph. Additionally, all consulting Native American Tribal groups that requested notification of any unanticipated discovery of archaeological resources on the Project shall be notified appropriately. If a discovery results in the identification of cultural items that fall within the scope of the Native American Grave Protection and Repatriation Act, the Contractor shall immediately cease all work activities within an area of no less than 100 feet (30 meters) of the discovery. In the event of an unanticipated discovery of archaeological materials during construction, the Applicant retained Qualified Professional Archaeologist shall be contacted to evaluate the significance of the materials prior to resuming any construction-related activities in the vicinity of the find. If the Qualified Archaeologist determines that the discovery constitutes a significant resource under CEQA and it cannot be avoided, the Applicant shall implement an archaeological data recovery program.

MM-CUL-5 At the completion of all ground-disturbing activities, the Consultant shall prepare an Archaeological Resources Monitoring Report summarizing all monitoring efforts and observations, as performed, and any and all prehistoric or historic archaeological finds as well as providing follow-up reports of any finds to the South Central Coastal Information Center (SCCIC), as required.

MM PAL-1 Prior to issuance of a grading permit, the applicant shall be required to obtain the services of a qualified project paleontologist to remain on-call for the duration of the proposed ground disturbing construction activity. The paleontologist selected must be approved by the City. Upon approval or request by the City, a paleontological mitigation plan (PMP) outlining procedures for paleontological data recovery shall be prepared for the Proposed Project and submitted to the City for review and approval. The development and implementation of the PMP shall include consultations with the applicant's engineering geologist as well as a requirement that the curation of all specimens recovered under any scenario shall be through an appropriate repository agreed upon by the City. All specimens become the property of the City of Fontana unless the City chooses otherwise. If the City accepts ownership, the curation location may be revised. The PMP shall include developing a multilevel ranking system, or Potential Fossil Yield Classification (PFYC), as a tool to demonstrate the potential yield of fossils within a given stratigraphic unit. The PMP shall outline the monitoring and salvage protocols to address paleontological resources encountered during ground disturbing activities. As well as the appropriate recording, collection, and processing protocols to appropriately address any resources discovered. The cost of data recovery is limited to the discovery of a reasonable sample of available material. The interpretation of reasonableness rests with the City, in consultation with the project paleontologist.

MM-PAL-2 At the completion of all ground-disturbing activities, the project paleontologist shall prepare a final paleontological mitigation report summarizing all monitoring efforts and observations, as performed in line with the PMP, and all paleontological resources encountered, if any. As well as providing follow-up reports of any specific discovery, if necessary.

HUMAN REMAINS – LEGAL REQUIREMENTS In the event that human remains are discovered during ground-disturbing activities, then the proposed Project would be subject to California Health and Safety Code 7050.5, CEQA Section 15064.5, and California Public Resources Code Section 5097.98. If human remains are found during ground-disturbing activities, State of California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. In the event of an unanticipated discovery of human remains, the County Coroner shall be notified immediately. If the human remains are determined to be prehistoric, the County Coroner shall notify the NAHC, which shall notify a most likely descendant (MLD). The MLD shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials (NPS 1983).

Chambers Group is available to assist with any further support or document preparation related to Cultural Resources, including tribal consultation. Please contact the Project Manager Eunice Bagwan, at 949.261.5414 ext 7325, or one of the contacts below if you have any questions or comments regarding this report.

Sincerely,

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Attachments

Attachment A (Confidential): NAHC SLF Results
Attachment B (Confidential): Record Search Results

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Photograph 1: Overview of Project site from northeast corner. View Southwest.

Photograph 2: Overview of Project site from northwest corner. View east.

Photograph 3: Overview of Project site from southwest corner. View north.

Photograph 4: Overview of Project site from northwest corner. View southeast.

APPENDIX D – Geotechnical Exploration Report

GEOTECHNICAL EXPLORATION

PROPOSED FIRE STATION NO. 80 TRAINING CENTER

NORTHEAST CORNER OF CHERRY AVENUE AND SOUTH HIGHLAND AVENUE

CITY OF FONTANA, SAN BERNARDINO COUNTY CALIFORNIA

Prepared For **PBK ARCHITECTS, INC.**
8163 Rochester Avenue, Suite 100
Rancho Cucamonga, California 91730

Prepared By **LEIGHTON CONSULTING, INC.**
10532 Acacia Street, Suite B-6
Rancho Cucamonga, California 91730

Project No. 13491.001

May 18, 2022

May 18, 2022

Project No. 13491.001

PBK Architects, Inc.
8163 Rochester Avenue, Suite 100
Rancho Cucamonga, California 91730

Attention: Mr. Kelley Needham

Subject: Geotechnical Exploration
Proposed Fire Station No. 80 Training Center
Southeast of Cherry Avenue and South Highland Avenue
City of Fontana, San Bernardino County, California

In accordance with our March 24, 2022 proposal, and your authorization on the same date, Leighton Consulting, Inc. (Leighton) has completed this geotechnical exploration in support of design of the new Fire Station No. 80 Training Center for the City of Fontana Fire Protection District, to be constructed southeast of Chery Avenue and South Highland Avenue, in the City of Fontana, California. The purpose of our exploration was to evaluate geologic hazards and geotechnical conditions of the site with respect to the proposed improvements and to provide geotechnical recommendations for design and construction of the proposed Fire Station No. 80 Training Center development.

This site is not located within a currently designated State of California Earthquake Fault Zone nor a fault zone identified by the County of San Bernardino, and no active faults have been mapped within or trending towards the project site. The site is located about 2.3 miles south of the Cucamonga fault zone and does not require a fault study. However, as is the case for most of southern California, strong ground shaking has and will occur at this site.

Based on this investigation, the proposed development of the fire station is feasible from a geotechnical standpoint. Significant geotechnical issues for this project include those related to the potential for strong seismic shaking and potentially compressible soils. Good planning and design of the project can limit the impacts of these constraints. This report presents our findings, conclusions and geotechnical recommendations for the project.

We appreciate this opportunity to be of additional service to PBK Architects, Inc. If you have any questions or if we can be of further service, please contact us at your convenience at ***866-LEIGHTON***, directly at the phone extensions or e-mail addresses listed below.

Respectfully submitted,

LEIGHTON CONSULTING, INC.

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TABLE OF CONTENTS

Section | **Page**

Tables **Page**

List of Figures (Behind References)

Appendices

1.0 INTRODUCTION

1.1 Site Location and Description

As depicted on Figure 1, *Site Location Map*, this proposed fire station training center site is located in the City of Fontana, San Bernardino County, California (latitude 34.1343° and longitude -117.4878°). The existing approximate 2.2-acre undeveloped site is mapped as Assessor Parcel Numbers (APN) 0228-021-46 by the County of San Bernardino. The proposed Fire Station No. 80 and training center buildings are planned to be constructed towards the western portion of the overall site and the proposed training tower is to be constructed towards the northeastern portion of the overall site. The site is bounded to the west by Cherry Avenue, to the south by South Highland Avenue, to the north by the Highland Channel, and the west by the Southern California Edison (SCE) easement, which includes overhead transmission lines, a transmission tower, and land previously used for agricultural purposes.

Based on our review of historical aerial imagery dating back to 1938 (NETR, 2022), the site has utilized for agricultural purposes up to present day and remained vacant with the exception of The Metropolitan Water District's 144-inch diameter Etiwanda Pipeline running through the eastern edge of the site, installed around approximately 1992 and the Highland Channel constructed between 1994 and 2002.

This site slopes gently towards the southwest to Cherry Avenue, from an approximately elevation of 1403 feet at the northeast most part of the site to approximately 1389 feet in the southwest corner.

1.2 Proposed Fire Station No. 80 Training Center

Based on the February 15, 2022, *City of Fontana Fire Station No. 80 and Training Center, Proposed Site Plan* prepared by PBK Architects Inc., the approximate 2.2-acre site will accommodate an approximate 4,300-square-foot (SF) Training Classroom building, an approximately 3,750-SF, 5-story, Training Tower building, and an approximately 10,400-SF Fire Station building. The site layout also includes associated visitor and secured parking, drives, electrical equipment enclosure, outdoor patio, a monument sign and flag, trash enclosure, a sliding security gate, perimeter walls, confined space training facilities, and landscaping.

At this time, structural loading of the proposed foundations has not been provided, but we assume the proposed building will be relatively lightly loaded, and we assume that the proposed building will have a concrete slab-on-grade, and will consist of reinforced masonry, wood and/or cold-formed steel stud construction.

1.3 Purpose and Scope of Exploration

Purpose of our exploration was to: (1) evaluate geotechnical conditions of the site of the proposed Fire Station No. 80 Training Center with respect to the proposed improvements, (2) identify significant geotechnical or geologic issues that would impact this proposed building, and (3) provide geotechnical recommendations for design and construction of proposed building and associated improvements as currently planned. In accordance with our March 24, 2022 proposal, the scope of our exploration included the following:

- **Research**: We reviewed readily available geotechnical literature, reports and aerial photographs relevant to this site. Pertinent geotechnical documents are referenced at the end of this report text.

- **Field Exploration**: On April 7, 2022, seven (7) hollow-stem auger borings were drilled with a truck-mounted rig, logged and sampled to depths ranging from approximately 11½ feet to 51½ feet below the existing ground surface. Water infiltration testing was performed on two borings (IT-1 and IT-2). After sampling, logging, and testing, all borings were immediately backfilled. Approximate boring locations are depicted on Figure 2, *Geotechnical Map*. Descriptions of encountered soil conditions are presented in our boring logs in Appendix A, *Field Exploration*.

- **Geotechnical Laboratory Testing**: Geotechnical laboratory tests were conducted on selected relatively undisturbed and bulk soil samples obtained during our field exploration. Our laboratory testing program was designed to evaluate engineering characteristics of onsite soils. A description of test procedures and results are presented in Appendix B, *Geotechnical Laboratory Testing*.

- **Engineering and Geologic Analysis**: Data obtained from field exploration and geotechnical laboratory testing were evaluated and analyzed to develop geotechnical conclusions and provide recommendations in general accordance with the California Geological Survey (CGS) Note 48.

- **Report Preparation**: Results of our geologic hazards review and geotechnical exploration have been summarized in this report, presenting our findings, conclusions and preliminary geotechnical design recommendations.

This report does not address the potential for encountering hazardous materials in site soils or within groundwater. Important information about limitations of geotechnical reports in general, is presented in Appendix D, *GBA's Important Information About This Geotechnical-Engineering Report*.

2.0 FINDINGS

2.1 Geologic Hazards Review

We have reviewed pertinent, readily available geologic and geotechnical literature covering the site. Our review included regional geologic maps and reports available from our library and online. Documents reviewed are listed in Appendix A, *References*. Potential geologic hazards are discussed in the following sections. Our review has considered California Geological Survey's Note 48, *Checklist of the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings*.

2.2 Regional Geologic Setting

The site is located on a gently sloping alluvial plain descending southward from the San Gabriel Mountains. This area is within the Chino Basin in the northern portion of the Peninsular Ranges geomorphic province of California. Major structural features surrounding the region include the Cucamonga Fault and the San Gabriel Mountains to the north, the inferred Fontana Seismic Trend to the southeast, and the San Jacinto Fault to the east. The region is an area of large-scale crustal disturbance as the relatively northwestward-migrating Peninsular Ranges Province interacts with the Transverse Ranges Province (which includes the San Gabriel Mountains) to the north. Several active or potentially active faults have been mapped in the region and are believed to accommodate compression and lateral displacement associated with this crustal interaction. The site is located approximately 2.3 miles south of the active Cucamonga Fault Zone, which accommodates uplift that forms the steep escarpment of the San Gabriel Mountains to the north relative to the basin floor to the south.

This site region is underlain by a thick accumulation of young alluvial fan deposits (Morton et al., 2001), which have been mapped to consist of gravel and sand deposits (Dibblee and Minch, 2003) eroded and transported from the San Gabriel Mountains and deposited in the site vicinity.

2.3 Subsurface Soil Conditions

Based upon our review of existing geotechnical literature (*References*) and our subsurface exploration (Appendix A), undocumented fill (Afu) placed by previous agricultural activities were observed at the site and underlain by Quaternary young alluvial fan deposits (Qyf).

Undocumented Artificial Fill (Afu): Undocumented artificial fill presumably placed during previous agricultural activities was observed at the surface of the site and was encountered to depths of approximately 1 to 2 feet below the current surface overlying alluvium. The undocumented artificial fill encountered in our borings was characterized as relatively dry to slightly moist, loose silty sand with minor gravel. During grading, dry and/ or loose undocumented fill in site vicinity may be uncovered to be locally deeper or shallower than currently estimated. More detailed descriptions of subsurface soils encountered are presented on our boring logs in Appendix A.

Quaternary Young Alluvial Fan Deposits (Qyf): Young alluvial fan deposits have been mapped (Morton et al., 2001) underlying undocumented artificial fill in the site vicinity. Alluvium encountered in our exploratory borings was observed to be moist and dense to very dense sand, gravel and cobbles. Boulders were not encountered during our subsurface exploration with small-diameter borings, though give the cobbly nature of the soils, boulders could be present.

2.4 Groundwater

Groundwater was not encountered in any of our borings drilled to a maximum depth of 51½ feet below the existing ground surface (bgs) on April 7, 2022. To research groundwater levels at this site, we obtained groundwater level data from the California Department of Water Resources (CDWR, 2022a) Groundwater Management Act Data Viewer website from a Chino Basin Watermaster managed well (Well ID Chino-1223006) located approximately 1.6 miles southwest of the site. Well data from this location ranged in date from 2011 through 2021 and indicated the shallowest groundwater measurement to be at an elevation of 723 feet above mean sea level (MSL) that correlates to a depth no shallower than 665 feet below the site's lowest surface. We also reviewed Geohydrology Maps of the Chino-Riverside Area (CDWR, 1970) dating back to 1933, in which the area site is mapped in an area with closest groundwater elevations contours ranging from 1,000 to 1,100 above mean sea level, that correlates to a depth no shallower than approximately 289 feet below the site's lowest surface.

Based on the data collected, groundwater is not expected to be a significant constraint for development nor is anticipated to be encountered during construction activities for the proposed fire station training center.

2.5 Faulting and Seismicity

Southern California is a seismically active area. As such, the site will be subject to seismic hazards from numerous sources in the area. The severity of potential seismic hazards is related to site-specific geology, distances from seismic sources, and the magnitude of earthquake events. Principal seismic hazards evaluated on a site-specific basis included: potential for surface rupture along active or potentially active fault traces, magnitude of seismic shaking, and the susceptibility to ground failure (liquefaction, lurching, and seismically induced landslides). The potential for fault rupture and seismic shaking are discussed below.

2.5.1 Surface Faulting

Fault classification criteria adopted by the California Geological Survey, formerly the California Division of Mines and Geology, defines Earthquake Fault Zones along active or potentially active faults. The California Alquist-Priolo Earthquake Fault Zoning Act of 1972 classification system is used in this report, as follows:

- **Active**: An active fault is one that has ruptured within the Holocene epoch (the last 11,700 years).
- **Potentially Active**: A fault that has ruptured during the last 1.8 million years (Quaternary period), but has not been proven by direct evidence to have not moved within the Holocene epoch is considered to be potentially active.
- **Inactive**: A fault that has not moved during both Pleistocene and Holocene epochs (that is, no movement within the last 1.8 million years) is considered to be inactive.

Based on our review of available in-house literature, and as depicted on Figure 4, *Regional Faults and Historic Seismicity Map*, there are no currently known active surface faults that traverse or trend towards this site. Additionally, this site is not located within a currently designated Alquist-Priolo Earthquake Fault Zone (CGS, 2022), or a fault zone delineated by the County (County of San Bernardino, 2007) or City (City of Fontana, 2018).

The closest know active or potentially active faults are the Cucamonga fault located approximately 2.3 miles north of the site, and the Fontana fault located 2.8 miles southeast of the project site. The know regional active or potentially active faults that could produce the most significant ground shaking at the site include the San Jacinto (San Bernardino), San Andreas, Cucamonga, San Jacinto (Lytle Creek), and the fault related to the Fontana seismic trend. Nearby faults are depicted in Figure 4 – *Regional Fault and Historical Seismicity Map*.

2.5.2 Seismicity (Ground Shaking): A principal seismic hazard that could impact this site is ground shaking resulting from an earthquake occurring along several major active or potentially active faults throughout southern California. An evaluation of historical seismicity from significant past earthquakes related to the site was performed. Plotted on Figure 4, *Regional Fault and Historic Seismicity Map*, are epicenters of historic earthquakes (1769 through 2016) in and around Fontana, color coded as a function of magnitude. Based on this map, it appears that the site has been exposed to relatively significant seismic events; however, this site does not appear to have experienced more severe seismicity that compared to much of southern California in general. We are unaware of documentation indicating that past earthquake damage in the site vicinity has been significantly worse than for the majority of southern California. In addition, we are unaware of damage in the site vicinity as the result of liquefaction, lateral spreading, or other related phenomenon.

2.6 Secondary Seismic Hazards

In general, secondary seismic hazards for sites in this region could include soil liquefaction, earthquake-induced settlement, slope instability and landslides, earthquake-induced seiches and tsunamis flooding. Site-specific potential for secondary seismic hazards is discussed in the following subsections:

2.6.1 Liquefaction Potential: Liquefaction is the loss of soil strength due to a buildup of excess pore-water pressure during strong and long-duration ground shaking. Liquefaction is associated primarily with loose (low density), saturated, relatively uniform fine- to medium-grained, clean cohesionless soils. As shaking action of an earthquake progresses, soil granules are rearranged and the soil densifies within a short period. This rapid densification of soil results in a buildup of pore-water pressure. When the pore-water pressure approaches the total overburden pressure, soil shear strength reduces abruptly and temporarily behaves similar to a fluid. For liquefaction to occur there must be:

(1) loose, clean granular soils,
(2) shallow groundwater, **and**
(3) strong, long-duration ground shaking

The State of California has not prepared a map delineating zones of liquefaction potential for the quadrangle that contains the site. The San Bernardino County Land Use Plan - Geologic Hazards Overlays for the Devore Quadrangle (SBC, 2010) has mapped this area outside a zone of liquefaction potential. No groundwater was encountered during our exploration to explored depths of 51 ½ feet bgs, and collected data indicated that groundwater depths at and near this site have been historically greater than approximately 289 feet deep beneath the site. In addition, encountered alluvial soils onsite were generally medium dense to very dense within our borings. Based on the absence of shallow groundwater and the dense nature of the onsite soils, liquefaction is unlikely to occur at the site.

2.6.2 Lateral Spreading: Lateral spreading is unlikely to occur at the site due to the lack of liquefaction potential and lack of significant topographic relief at and around this site.

2.6.3 Seismically Induced Settlement: During a strong seismic event, non-liquefaction, seismically induced settlement can occur within loose and dry granular soils. Settlement caused by ground shaking is often unevenly distributed, which can result in differential settlement. Fill soils are typically highly susceptible to seismically induced settlement. Undocumented fill soils under the proposed building footprint are recommended (discussed later in this report) to be recompacted to mitigate dynamic settlement concerns.

We have performed analyses to estimate the potential for seismically induced settlement using the method of Tokimatsu and Seed (1987), and based on Martin and Lew (1999), considering the maximum considered earthquake (MCE) peak ground acceleration (PGA_M). The results of our analyses suggested that the onsite soils are susceptible to less than 1 inch of seismic settlement based on the MCE. Differential settlement due to seismic loading is assumed to be less than ½ inch over a horizontal distance of 40 feet based on the MCE. A summary of seismic settlement analysis is included in Appendix C.

2.6.4 Slope Instability and Landslides: Seismically induced landslides and other slope failures are common occurrences during or soon after earthquakes. The State of California has not prepared a map delineating zones of landslide potential for the quadrangle that contains the site. The County of San Bernardino for the Devore Quadrangle have mapped this area to be outside a zone of landslide potential. The site and vicinity are gently sloping. The potential for seismically induced landslide activity is considered negligible for this site due to the lack of significant slopes.

2.6.5 Earthquake-Induced Seiches and Tsunamis: Seiches are large waves generated in enclosed bodies of water in response to ground shaking. Tsunamis are predominately ocean waves generated by undersea large magnitude fault displacement or major ground movement.

Based on separation of the site from any enclosed body of water, there is no seiche impact at the site. Also, due to average site elevation of -feet above mean sea level and the inland location of this site relative to the Pacific

Ocean tsunami risks at this site is nil.

2.6.6 **<u>Earthquake-Induced Inundation</u>:** This inundation hazard is flooding caused by failure of dams or other water-retaining structures as a result of earthquakes. Figure 5, *Dam Inundation Map*, shows an area of dam breach inundation approximately 3,500 feet northwest of the site. The subject site is not mapped within a dam breach inundation zone.

2.7 Storm-Induced Flood Hazard

As depicted on Figure 6, *Flood Hazard Zone Map*, this site is not mapped within a “100-year” or “500-year” flood zone as defined by the Federal Emergency Management Agency’s (FEMA’s) Flood Insurance Rate Map (FIRM).

2.8 Infiltration Testing

Infiltration testing was conducted within two of our borings onsite (IT-1 and IT-2) to estimate the infiltration characteristics of the onsite soils at the depths and locations tested. The infiltration testing was conducted at a bottom test zone depth of approximately 10 feet below the existing ground surface within native soils.

Well permeameter tests are useful for field measurements of soil infiltration rates, and are suited for testing when the design depth of the basin or chamber is deeper than current existing grades. It should be noted that this is a clean-water, small-scale test, and that correction factors need to be applied. A test consists of excavating a boring to the depth of the test (or deeper as long as it is partially backfilled with soil and a bentonite plug with a thin soil covering is placed just below the design test elevation). A layer of clean sand or gravel is then placed in the boring bottom to temporarily support a perforated well casing pipe system. Once the well casing pipe has been installed, coarse sand or gravel is poured in the annular space outside of the well casing within the test zone to prevent the boring from caving/collapsing or spalling when water is added. Water is added into the boring to an initial water height, as water within the boring infiltrates into the soil, measurements are taken of the height of the water column within the boring at equally timed intervals (known as a falling head test). The infiltration rate as measured during intervals of the test is defined as the flow rate of water infiltrated, divided by the surface area of the infiltration interface. The test was conducted based on the USBR 7300-89 test method.

Raw infiltration rates for the well permeameter test yielded rates of 10 and 6 inches/hour within borings IT-1 and IT-2, respectively within the native soils.

Results of infiltration testing are provided in Appendix B. Further discussion of infiltration testing and related recommendations are included in Section 3.9.

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 Conclusions

This site is not located within a currently designated Alquist-Priolo Earthquake Fault Zone delineated for surface fault rupture hazards. However, as is the case for most of southern California, strong ground shaking has and will occur at this site. Historical groundwater levels are on the order of approximately 289 feet below the surface or deeper based on available well data. Encountered native site soils were medium dense to very dense sands and gravels. Due to the lack of groundwater and dense condition of native soils, liquefaction is highly unlikely to occur at this site. Near-surface soils have very low expansion potential.

3.2 Recommendations Summary

We are unaware of any fill placement documentation for this site. Based upon our geotechnical exploration and analysis, all existing undocumented fill soil and compressible native alluvium soils within the proposed building footprint should be excavated and recompacted to provide more uniform shallow foundation support. In any case, overexcavation should extend at least 3.5 feet below existing grade, or at least 2 feet below proposed footings, whichever is deeper, within building footprints. The proposed fire station can be founded on conventional spread footings bearing solely on a zone of newly excavated and recompacted fill soils derived from onsite soils, overlying solely undisturbed native soils.

Geotechnical recommendations for the proposed Fire Station 80 Training Center site are presented in the following subsections.

3.3 Earthwork

Project earthwork is expected to include overexcavation and recompaction of undocumented fill soils and onsite alluvium soils below the proposed new building footprint as described in the following subsections:

3.3.1 Earthwork Observation and Testing: Leighton should observe and test all grading and earthwork to check that the site has been properly prepared, to assess that selected fill materials are satisfactory, and to evaluate that placement and compaction of fills has been performed in accordance with our recommendations and the project specifications. Any imported soil or aggregate material to be evaluated for its suitability as onsite fill material should be submitted to a Leighton geotechnical laboratory at least two working days in advance of earth material placement and compaction. Project plans and specifications should incorporate recommendations contained in the text of this report.

Variations in site conditions are possible and may be encountered during construction. To confirm correlation between soil data obtained during our field and laboratory testing and actual subsurface conditions encountered during construction, and to observe conformance with approved plans and specifications, we should be retained to perform continuous or intermittent review during earthwork, excavation and foundation construction phases. Conclusions and recommendations presented in this report are contingent upon construction geotechnical observation services.

3.3.2 Surface Drainage: Water should not be allowed to pond or accumulate anywhere except in approved drainage areas, which should be set back at least 15 feet from proposed structures. Pad drainage should be designed to collect and direct surface water away from structures to approved drainage facilities. Hardscape drains should be installed and drain to storm water disposal systems. Drainage patterns and drainpipes approved at the time of fine grading should be maintained throughout the life of proposed structures. Percolation or stormwater infiltration should not be allowed within at least horizontal 15 feet of the proposed Fire Station 80 Training Center buildings.

3.3.3 Site Preparation: Prior to construction, the site should be cleared of vegetation, trash and debris, which should be disposed of offsite. Any underground obstructions should be removed. Resulting cavities should be properly backfilled and compacted. Efforts should be made to locate existing utility lines. Those lines should be removed or rerouted if they interfere with the proposed construction, and the resulting cavities should be properly backfilled and compacted.

Based on encountered site conditions, we recommend that all fill and native soils should be excavated from the proposed building footprint, down at least 2 feet below the bottoms of proposed footings or at least 3.5 feet below existing grade, whichever is deeper. Undocumented fill was not encountered deeper than 3 feet in the exploratory borings performed for this study, though should be removed if encountered. Overexcavation bottoms should extend horizontally either the thickness of fill below spread footings or at least 5 feet horizontally beyond the outside edges of proposed building perimeter footings, whichever is greater, encompassing the whole new building footprint, including attached columns. Any underground obstructions encountered should be removed. Efforts should be made to locate any existing utility lines. Those lines should be removed or rerouted where interfering with proposed construction.

Areas outside proposed building footprint limits, planned for asphalt and/or concrete pavement, should be overexcavated to a minimum depth of 18 inches below existing or finish grade, or 12 inches below proposed pavement sections; whichever is deeper.

Resulting removal excavation bottom surfaces should be observed by Leighton prior to placement of any backfill or new construction. It is essential that all existing fill soils be excavated from the proposed building footprints, regardless of depth. After overexcavations are completed and prior to fill placement, exposed surfaces should be scarified to a minimum depth of 6 inches, moisture conditioned to 2 percent above optimum moisture content, and recompacted to a minimum 90 percent relative compaction as determined by ASTM D1557 standard test method (modified Proctor compaction curve).

3.3.4 **Fill Placement and Compaction:** Onsite soils free of organics and debris are suitable for use as compacted structural fill provided it is free of oversized material greater than 8 inches in its largest dimension. However, any soil to be placed as fill, whether onsite or imported material, should be first viewed by Leighton and then tested if and as necessary, prior to approval for use as compacted fill. All structural fill should be free of hazardous materials.

All fill soil should be placed in thin, loose lifts, moisture-conditioned, as necessary, to within 3 percent above optimum moisture content, and compacted to a minimum 90% relative compaction as determined by ASTM D1557 standard test method (modified Proctor compaction curve) within the building footprint. Aggregate base for pavement sections should be compacted to a minimum of 95% relative compaction.

3.3.5 **Shrinkage or Bulking:** The change in volume of excavated and recompacted soil varies according to soil type and location. This volume change is represented as a percentage increase (bulking) or decrease (shrinkage) in volume of fill after removal and recompaction. Subsidence occurs as in-place soil (e.g., natural ground) is moisture-conditioned and densified to receive fill, such as in processing an overexcavation bottom. Subsidence is in addition to shrinkage due to recompaction of fill soil. Field and laboratory data used in our calculations included laboratory-measured maximum dry densities for soil types encountered at the subject site, the measured in-place densities of soils encountered, sampling blow counts, and our experience. We preliminarily estimate the following earth volume changes will occur during grading:

Shrinkage and Subsidence	
Shrinkage	Approximately 10 +/- 5 percent
Subsidence (overexcavation bottom processing)	Approximately 0.1 foot

The level of fill compaction, variations in the dry density of the existing soils and other factors influence the amount of volume change. Some adjustments to earthwork volume should be anticipated during grading of the site.

3.4 Seismic Design Parameters

The site will experience strong ground shaking after the proposed project is developed resulting from an earthquake occurring along one or more of the major active or potentially active faults in southern California. Accordingly, the project should be designed in accordance with all applicable current codes and standards utilizing the appropriate seismic design parameters to reduce seismic risk as defined by California Geological Survey (CGS) Chapter 2 of Special Publication 117a (CGS, 2008). Through compliance with these regulatory requirements and the utilization of appropriate seismic design parameters selected by the design professionals, potential effects relating to seismic shaking can be reduced.

The following parameters should be considered for design under the 2019 CBC:

Table 1 . 2019 CBC Site-Specific Seismic Parameters

2019 CBC Parameters (CBC or ASCE 7-16 reference)	Value 2019 CBC
Site Latitude and Longitude: 34.1343, -117.4881	
Site Class Definition (1613.2.2, ASCE 7-16 Ch 20)	C
Mapped Spectral Response Acceleration at 0.2s Period (1613.2.1), S_s	1.907 g
Mapped Spectral Response Acceleration at 1s Period (1613.2.1), S_1	0.625 g
Short Period Site Coefficient at 0.2s Period (T1613.2.3(1)), F_a	1.2
Long Period Site Coefficient at 1s Period (T1613.2.3(2)), F_v	1.4
Adjusted Spectral Response Acceleration at 0.2s Period (1613.2.3), S_{MS}	2.288 g
Adjusted Spectral Response Acceleration at 1s Period (1613.2.3), S_{M1}	0.875 g
Design Spectral Response Acceleration at 0.2s Period (1613.2.4), S_{DS}	1.526 g
Design Spectral Response Acceleration at 1s Period (1613.2.4), S_{D1}	0.583 g
Mapped MCE_G peak ground acceleration (11.8.3.2, Fig 22-9 to 13), **PGA**	0.775 g
Site Coefficient for Mapped MCE_G *PGA* (11.8.3.2), F_{PGA}	1.100
Site-Modified Peak Ground Acceleration (1803.5.12; 11.8.3.2), PGA_M	0.93 g

Hazard deaggregation was estimated using the USGS Interactive Deaggregations utility. The results of this analysis indicate that the predominant modal earthquake has a magnitude of approximately 7.9 (M_W) at a distance on the order of 10.6 kilometers for the Maximum Considered Earthquake (2% probability of exceedance in 50 years.

3.5 Foundations

Based on our preliminary exploration and our experience in the region, conventional shallow spread footings may be used to support the proposed buildings. Anticipated foundation loads were not available during preparation of this report. We assumed maximum column dead loads up to (≤) 50 kips and wall loads of 3 kips per lineal foot for our preliminary foundation recommendations. Overexcavation and recompaction of footing subgrade soils should be performed as detailed in Section 3.3 of this report. Specific foundation recommendations are presented below:

3.5.1 **Minimum Embedment and Width:** Based on our preliminary exploration, footings for this proposed building should have a minimum embedment of 18 inches below lowest adjacent exterior grade or interior finished grade; whichever is deeper/lower. Minimum footings widths should be at least 24 inches for isolated rectangular column footings or 12 inches for continuous bearing wall (strip) footings.

3.5.2 **Allowable Bearing Capacity:** A net allowable bearing capacity of 2,500 pounds per square foot (psf) may be used for design, based on an assumed embedment depth of 18 inches and minimum width described above. This allowable bearing value may be increased by 250 psf per foot increase in embedment depth and/or width to a maximum allowable bearing pressure of 4,000 psf, and are for total dead load and sustained live loads, which can be increased by one-third when considering short-duration wind or seismic loads. Footing reinforcement should be designed by the project Structural Engineer.

3.5.3 **Lateral Load Resistance:** Soil resistance available to withstand lateral loads on a shallow foundation is a function of the frictional resistance along the base of the footing and the passive resistance that may develop as the face of the structure tends to move into the soil. The frictional resistance between the base of the foundation and the subgrade soil may be computed using a coefficient of friction of 0.4. The passive resistance may be computed using an equivalent fluid pressure of 290 pounds per cubic foot (pcf), assuming there is constant contact between the footing and undisturbed soil. These friction and passive values have already been reduced by a factor of safety of 1.5, and can be increased by one third when considering short-duration wind or seismic loads. For spread footings and slabs-on-grade bearing on properly compacted fill over undisturbed native soils, full friction and passive resistance can be combined to resist lateral loads; although some lateral displacement is required to mobilize full passive resistance.

3.5.4 **Settlement Estimates:** The above recommended allowable bearing capacity is generally based on a total allowable, post-construction total settlement of 1 inch, for column loads and wall loads not exceeding 50 kips and 3 kips per foot, respectively, for dead plus sustained live loads. Differential settlement due to static loading is generally estimated at ½ inch over a horizontal distance of 30 feet. Once developed by the Structural Engineer, we can review total dead and sustained live loads for each column including plan location and span distance, to evaluate if differential settlements between dissimilarly loaded columns will be tolerable. Excessive differential settlement can be mitigated with the use of reduced bearing pressures, deeper footing embedment, possibly changing overexcavation schemes and using imported base material under spread footings, or possibly other methods. Assuming all existing fill soils are properly recompacted below these buildings, dynamic differential settlement in dense sands is expected to be negligible.

3.6 Concrete Slab-On-Grade

Concrete slabs-on-grade should be designed by the structural engineer in accordance with 2019 CBC requirements. More stringent requirements may be required by the structural engineer and/or architect; however, slabs-on-grade should have the following minimum recommended components:

- **Subgrade:** Slab-on-grade subgrade soil should be moisture conditioned to or within 2% over optimum moisture content, to a minimum depth of 18 inches within building footprints, and compacted to 95% of the modified Proctor (ASTM D1557) laboratory maximum density prior to placing either a moisture barrier, steel and/or concrete.

- **Moisture Barrier:** A moisture barrier consisting of 15-mil-thick Stego-wrap vapor barriers (see: http://www.stegoindustries.com/products/stego_wrap_vapor_barrier.php), or equivalent, should be placed below slabs where moisture-sensitive floor coverings or equipment will be placed.

- **Reinforced Concrete**: A conventionally reinforced concrete slab-on-grade with a thickness of at least 4 inches should be placed in pedestrian areas without heavy loads. Reinforcing steel should be designed by the structural engineer, but as a minimum should be No. 4 rebar placed at 18 inches on-center, each direction (perpendicularly), mid-depth in the slab. A modulus of subgrade reaction (k) as a linear spring constant, of 175 pounds per square inch per inch deflection (pci) can be used for design of heavily loaded slabs-on-grade, assuming a linear response up to deflections on the order of ¾ inch.

- **Slab-On-Grade Control Joints**: Slab-on-grade crack control joint locations and spacing should be designed by the project Structural Engineer (SE).

Minor cracking of concrete after curing due to drying and shrinkage is normal and should be expected. However, cracking is often aggravated by a high water-to-cement ratio, high concrete temperature at the time of placement, small nominal aggregate size, and rapid moisture loss due to hot, dry, and/or windy weather conditions during placement and curing. Cracking due to temperature and moisture fluctuations can also be expected. The use of low-slump concrete or low water/cement ratios can reduce the potential for shrinkage cracking.

3.7 Sulfate Attack and Ferrous Corrosion Protection

3.7.1 Sulfate Exposure: Sulfate ions in the soil can lower the soil resistivity and can be highly aggressive to Portland cement concrete by combining chemically with certain constituents of the concrete, principally tricalcium aluminate. This reaction is accompanied by expansion and eventual disruption of the concrete matrix. A potentially high sulfate content could also cause corrosion of reinforcing steel in concrete. Section 1904A of the 2019 California Building Code (CBC) defers to the American Concrete Institute's (ACI's) ACI 318-14 for concrete durability requirements. Table 19.3.1.1 of ACI 318-14 lists "*Exposure categories and classes*," including sulfate exposure as follows:

Table 2. Sulfate Concentration and Exposure

Soluble Sulfate in Water (parts-per-million)	Water-Soluble Sulfate (SO_4) in soil (percentage by weight)	ACI 318-14 Sulfate Class
0-150	0.00 - 0.10	S0 (negligible)
150-1,500	0.10 - 0.20	S1 (moderate*)
1,500-10,000	0.20 - 2.00	S2 (severe)
>10,000	>2.00	S3 (very severe)

*or seawater

3.7.2 Ferrous Corrosivity: Many factors can modify corrosion potential of soil including soil moisture content, resistivity, permeability and pH, as well as chloride and sulfate concentration. In general, soil resistivity, which is a measure of how easily electrical current flows through soils, is the most influential factor. Based on the findings of studies presented in ASTM STP 1013 titled "*Effects of Soil Characteristics on Corrosion*" (February 1989), the approximate relationship between soil resistivity and soil corrosiveness was developed as follows:

Table 3. Soil Resistivity and Soil Corrosivity

Soil Resistivity (ohm-cm)	Classification of Soil Corrosiveness
0 to 900	Very Severely Corrosive
900 to 2,300	Severely Corrosive
2,300 to 5,000	Moderately Corrosive
5,000 to 10,000	Mildly Corrosive
10,000 to >100,000	Very Mildly Corrosive

Acidity is an important factor of soil corrosivity. The lower the pH (the more acidic the environment), the higher the soil corrosivity will be with respect to buried metallic structures and utilities. As soil pH increases above 7 (the neutral value), the soil is increasingly more alkaline and less corrosive to buried steel structures, due to protective surface films, which form on steel in high pH environments. A pH between 5 and 8.5 is generally considered relatively passive from a corrosion standpoint. Chloride and sulfate ion concentrations, and pH appear to play secondary roles in modifying corrosion potential. High chloride levels tend to reduce soil resistivity and break down otherwise protective surface deposits, which can result in corrosion of buried steel or reinforced concrete structures.

3.7.3 <u>Corrosivity Test Results</u>: To evaluate corrosion potential of soils sampled from this site, we tested a bulk soil sample for soluble sulfate content, soluble chloride content, pH and resistivity. Results of these tests are summarized below:

Table 4. Results of Corrosivity Testing

Locations	Sample Depth (feet)	Sulfate (ppm)	Chloride (ppm)	pH	Minimum Resistivity (ohm-cm)
Boring LB-1	0 - 5	128	80	6.71	4,450

Note: mg/kg = milligrams per kilogram, or parts-per-million (ppm)

These results are discussed as follows:

- **Sulfate Exposure**: Based on Table 19.3.1.1 of ACI 318-14, in our opinion, sulfate exposure should be considered “negligible” with an Exposure Class S0 for native soils sampled at the site. Based on Table 19.3.2.1 of ACI 318-14, for this Exposure Category S0, there would be no restrictions on cement type (“cementitious material”) nor water/cement ratio, and an f_c’ (28-day compressive strength) of at least 2,500 pounds per square inch (psi) is required at a minimum for structural concrete.
- **Ferrous Corrosivity**: As shown above, minimum soil resistivity of 4,450 ohm-centimeters was measured in our laboratory test. In our opinion, it appears for site soils that corrosion potential to buried steel may be characterized as “moderately corrosive” at the site. Ferrous pipe buried in moist to wet site earth materials should be avoided by using high-density polyethylene (HDPE) or other non-ferrous pipe when possible. Or ferrous pipe can be protected by polyethylene bags, tap or coatings, di-electric fittings or other means to separate the pipe from on-site earth materials.

3.8 <u>Pavement Section Design</u>

Based on design procedures outlined in the current Caltrans *Highway Design Manual* and a maximum design R-value of 50 for compacted onsite subgrade soils, preliminary flexible pavement sections were calculated for the Traffic Indices (TIs) tabulated, and are listed below:

Table 5. Hot Mixed Asphalt (HMA) Pavement Sections

Assumed Traffic Index	Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
5 or less (auto access)	3.0	4.0
7.0 (truck/60-000-lb apparatus access)	4.0	4.0

Undistributed apparatus outrigger loads could cause local asphalt pavement punching damage. When possible, outrigger loads should be distributed over asphalt pavements with planks and plywood. Otherwise, areas where outrigger loads are anticipated could be paved with 8-inch-thick concrete as described below.

Portland cement concrete (PCC) pavement sections were calculated in accordance with procedures developed by the Portland Cement Association. Concrete paving sections for two Traffic Indices (TIs) are presented below:

Table 6. Portland Cement Concrete Pavement Sections

Assumed Traffic Index	PC Concrete (inches)	Base Course (inches)
5.0 (automobile parking, driveways)	5	0
7.0 (truck access)	6.5	

We have assumed that this Portland cement concrete will have a compressive strength of at least 4,000 psi. Reinforcement should be specified by the structural engineer, but should be a minimum of #3 rebar at 18 inches on center each way. The PCC pavement sections should be provided with crack-control joints spaced no more than 13 feet on center each way. If sawcuts are used, they should have a minimum depth of ¼ of the slab thickness and made within 24 hours of concrete placement. We recommend that sections be as nearly square as possible.

PCC sidewalks should be at least 4 inches thick over prepared subgrade soil, with construction joints no more than 8 feet on center each way, with sections as nearly square as possible. Use of reinforcing will help reduce severity of cracking.

All pavement construction should be performed in accordance with the Standard Specifications for Public Works Construction. Field observations and periodic testing, as needed during placement of the base course materials, should be undertaken to ensure that the requirements of the standard specifications are fulfilled. Prior to placement of aggregate base, the subgrade soil should be processed to a minimum depth of 8 inches, moisture-conditioned, as necessary, and recompacted to a minimum of 90 percent relative compaction. Aggregate base should be moisture conditioned, as necessary, and compacted to a minimum of 95 percent relative compaction. Field observation and periodic testing, as needed during placement of base course materials, should be undertaken to ensure that requirements of Caltrans' *Standard Specifications* (2015) and Special Provisions are fulfilled. Consideration should be given to reinforce concrete pavements where large outrigger point loads are anticipated.

Recommended structural pavement materials should conform to the specified provisions in the Caltrans *Standard Specifications* (2015) including grading and quality requirements, shown below:

- **Asphalt Concrete (Hot Mixed Asphalt)** for pavement should be Type A and should conform to Section 39 of the *Standard Specifications*. Asphalt concrete specimens should be tested for surface abrasion in accordance with CT-360.
- **Portland Cement Concrete (PCC)** pavement should conform to Section 40 of the *Standard Specifications*. PCC pavement materials (pavement, structures, minor concrete) should conform to Section 90 of the *Standard Specifications*.
- **Class II Aggregate Base (AB)** should conform to Section 26 of the *Standard Specifications*.

Traffic Indices (TIs) used in our pavement design are considered reasonable values for typical parking lot areas, and should provide a pavement life of approximately 20 years with a normal amount of flexible pavement maintenance. Irrigation adjacent to pavements, without a deep curb or other cutoff to separate landscaping from the paving, will result in premature pavement failure. Traffic parameters used for design were selected based on engineering judgment and not on information furnished to us such as an equivalent wheel-load analysis or a traffic study. The project Civil Engineer should confirm the TI assumptions.

3.9 Retaining Wall Recommendations

The following retaining wall recommendations are included for design consideration of walls with a height less than 6 feet. We recommend that retaining walls be backfilled with very low expansive soil and constructed with a backdrain in accordance with the recommendations provided on Figure 7, *Retaining Wall Backfill and Subdrain Detail*. Using expansive soil as retaining wall backfill will result in higher lateral earth pressures exerted on the wall and are, therefore, not recommended. Retaining wall locations and configurations are unknown at the time of this report.

Table 7. Retaining Wall Design Parameters

Static Equivalent Fluid Pressure (pcf)	
Condition	Level Backfill
Active	38
At-Rest (drained, compacted-fill backfill)	59
Passive (allowable)	290 (Max. 3,000 psf)

The above values do not contain an appreciable factor of safety (except for the passive pressure value), so the structural engineer should apply the applicable factors of safety and/or load factors during design.

Cantilever walls that are designed to yield at least 0.001H, where H is equal to the wall height, may be designed using the active condition. Rigid walls and walls braced at the top should be designed using the at-rest condition.

Passive pressure is used to compute soil resistance to lateral structural movement. In addition, for sliding resistance, a frictional resistance coefficient of 0.4 may be used at the concrete and soil interface. The lateral passive resistance should be taken into account only if it is ensured that the soil providing passive resistance, embedded against the foundation elements, will remain intact with time. A soil unit weight of 120 pcf may be assumed for calculating the actual weight of the soil over the wall footing.

In addition to the above lateral forces due to retained earth, surcharge due to improvements, such as an adjacent structure or traffic loading, should be considered in the design of the retaining wall. Loads applied within a 1:1 projection from the surcharging structure on the stem of the wall should be considered in the design. A third of uniform vertical surcharge-loads should be applied at the surface as a horizontal pressure on cantilever (active) retaining walls, while half of uniform vertical surcharge-loads should be applied as a horizontal pressure on braced (at-rest) retaining walls. To account for automobile parking surcharge, we suggest that a uniform horizontal pressure of 100 psf (for restrained walls) or 70 psf (for cantilever walls) be added for design, where autos are parked within a horizontal distance behind the retaining wall less than the height of the retaining wall stem.

We recommend that the wall designs for walls 6 feet tall or taller be checked seismically using an *additive seismic* Equivalent Fluid Pressure (EFP) of 43 pcf, which is added to the EFP. The *additive seismic* EFP should be applied at the retained midpoint.

Conventional retaining wall footings should have a minimum width of 24 inches and a minimum embedment of 18 inches below the lowest adjacent grade. An allowable bearing pressure of 2,500 psf may be used for retaining wall footing design, based on the minimum footing width and depth. This bearing value may be increased by 250 psf per foot increase in width or depth to a maximum allowable bearing pressure of 4,000 psf.

3.10 Infiltration Recommendations

We recommend that the onsite artificial fill not be relied upon for infiltration. For underlying alluvial soils that are granular with a low fines content, we recommend an unfactored (small-scale) infiltration rate of 6 inches per hour, for depths of at least 6 feet. The incremental infiltration rate is defined as the incremental flow rate of water infiltrated, divided by the surface area of the infiltration interface. We recommend that a correction factor/safety factor be applied to the infiltration rate in conformance with *San Bernardino County Stormwater Program Technical Guidance Document for Water Quality Management Plans (WQMP)* guidelines, since monitoring of actual facility performance has shown that actual infiltration rates are lower than for small-scale tests. The small-scale infiltration rate should be divided by a correction factor of at least 3 for buried chambers and higher for open basins, but the correction/safety factor may be higher based on project-specific aspects.

The infiltration rates described herein are for a clean, unsilted infiltration surface in native, sandy alluvial soil. These values may be reduced over time as silting of the basin or chamber occurs. Furthermore, if the chamber bottom is allowed to be compacted by heavy equipment, this value is expected to be significantly reduced. Infiltration of water through soil is highly dependent on such factors as grain size distribution of the soil particles, particle shape, fines content, clay content, and density. Small changes in soil conditions, including density, can cause large differences in observed infiltration rates. Infiltration is not suitable in compacted fill.

It should be noted that during periods of prolonged precipitation, the underlying soils tend to become saturated to greater and greater depths/extents. Therefore, infiltration rates tend to decrease with prolonged rainfall. It is difficult to extrapolate longer-term, full-scale infiltration rates from small-scale tests, and as such, this is a significant source of uncertainty in infiltration rates.

General Design Considerations:
The periodic flow of water carrying sediments in the basin or chamber, plus the introduction of wind-blown sediments and sediments from erosion of the basin side walls, can eventually cause the bottom of the basin or chamber to accumulate a layer of silt, which has the potential of significantly reducing the overall infiltration rate of the basin or chamber. Therefore, we recommend that significant amounts of silt/sediment not be allowed to flow into the facility within storm water, especially during construction of the project and prior to achieving a mature landscape on site. As it is typically very difficult to remove silt from buried infiltration facilities, we recommend that an easily maintained, robust silt/sediment removal system be installed to pretreat storm water before it enters the infiltration facility.

As infiltrating water can seep within the soil strata nearly horizontally for long distances, it is important to consider the impact that infiltration facilities can have on nearby subterranean structures, such as basement walls or open excavations, whether onsite or offsite, and whether existing or planned. Any such nearby features should be identified and evaluated as to whether infiltrating water can impact these. Such features should be brought to Leighton’s attention as they are identified.

Infiltration facilities should not be constructed adjacent to or under buildings. Setbacks should be discussed with Leighton during the planning process.

Infiltration facilities should be constructed with spillways or other appropriate means that would cause overfilling to not be a concern to the facility or nearby improvements.

For buried chambers that allow interior standing water, control/access manhole covers should not contain holes or should be screened to prevent mosquitos from entering the cambers.

Construction Considerations:
We recommend that Leighton evaluate the infiltration facility excavations, to confirm that granular, undisturbed alluvium is exposed in the bottoms and sides. Additional excavation or evaluation may be required if fine grained soils are exposed.

It is critical to infiltration that the basin or chamber bottom not be allowed to be compacted during construction or maintenance; rubber-tired equipment and vehicles should not be allowed to operate on the bottom. We recommend that at least the bottom 3 feet of the basins or chambers be excavated with an excavator or similar.

If fill material is needed to be placed in the basin, such as due to removal of uncontrolled artificial fill, the fill material should be select and free-draining sand, and should be observed and evaluated by Leighton.

Maintenance Considerations:
The infiltration facilities should be routinely monitored, especially before and during the rainy season, and corrective measures should be implemented as/when needed. Things to check for include proper upkeep, proper infiltration, absence of accumulated silt, and that de-silting filters/features are clean and functioning. Pretreatment desilting features should be cleaned and maintained per manufacturers' recommendations. Even with measures to prevent silt from flowing into the infiltration facility, accumulated silt may need to be removed occasionally as part of maintenance.

4.0 CONSTRUCTION CONSIDERATIONS

4.1 Trench Excavations

Based on our field observations, caving of cohesionless and loose fill soils will likely be encountered in unshored trench excavations. To protect workers entering excavations, excavations should be performed in accordance with OSHA and Cal-OSHA requirements, and the current edition of the California Construction Safety Orders, see:

http://www.dir.ca.gov/title8/sb4a6.html

Contractors should be advised that fill soils should initially be considered Type C soils as defined in the California Construction Safety Orders. As indicated in Table B-1 of Article 6, Section 1541.1, Appendix B, of the California Construction Safety Orders, excavations less-than (<) 20 feet deep within Type C soils should be sloped back no steeper than 1½:1 (horizontal:vertical), where workers are to enter the excavation. This may be impractical near adjacent existing utilities and structures; so shoring may be required depending on trench locations. Stiff undisturbed native clays will stand steeper.

During construction, soil conditions should be regularly evaluated to verify that conditions are as anticipated. The contractor is responsible for providing the "competent person" required by OSHA standards to evaluate soil conditions. Close coordination between the competent person and Leighton Consulting, Inc. should be maintained to facilitate construction while providing safe excavations.

4.2 Temporary Shoring

Temporary cantilever shoring can be designed based on the active equivalent fluid pressure of 40 pounds-per-cubic-foot (pcf) in alluvium. If excavations are braced at the top and at specific depth intervals, then braced earth pressure may be approximated by a uniform rectangular soil pressure distribution. This uniform pressure expressed in pounds-per-square-foot (psf), may be assumed to be 25 multiplied by H for design, where H is equal to the depth of the excavation being shored, in feet. These recommendations are valid only for trenches not exceeding 15 feet in depth at this site.

4.3 Trench Backfill

Utility trenches should be backfilled with compacted fill in accordance with Sections 306-1.2 and 306-1.3 of the *Standard Specifications for Public Works Construction* (SSPWC, “Greenbook”), 2018 Edition. Utility trenches may be backfilled with onsite material free of rubble, debris, organic and oversized material up to 3 inches in largest dimension. Prior to backfilling trenches, pipes should be bedded in and covered with either:

(1) **Granular Bedding:** a uniform sand material with a Sand Equivalent (SE) greater-than-or-equal-to (≥) 30, passing the No. 4 U.S. Standard Sieve (or as specified by the pipe manufacturer).

(2) **CLSM:** Controlled Low Strength Material (CLSM) conforming to Section 201-6 of the SPWC. CLSM bedding should be placed to 1-foot (0.3 m) over the top of the conduit, and vibrated.

Pipe bedding should extend at least 4 inches below the pipeline invert and at least 12 inches over the top of the pipeline. The bedding and shading sand is recommended to be densified in place by vibratory, lightweight compaction equipment.

Trench backfill over the pipe bedding zone may consist of native and clean fill soils. All backfill should be placed in thin lifts (appropriate for the type of compaction equipment), moisture conditioned to slightly above optimum, and mechanically compacted to at least 90 percent of the laboratory derived maximum density as determined by ASTM Test Method D 1557.

4.4 Geotechnical Services During Construction

Our geotechnical recommendations provided in this report are based on information available at the time the report was prepared and may change as plans are developed. Additional geotechnical exploration, testing and/or analysis may be required based on final plans. Leighton Consulting, Inc. should review site grading, foundation and shoring (if any) plans when available, to comment further on geotechnical aspects of this project and check to see general conformance of final project plans to recommendations presented in this report.

Leighton Consulting, Inc. should be retained to provide geotechnical observation and testing during excavation and all phases of earthwork. Our conclusions and recommendations should be reviewed and verified by us during construction and revised accordingly if geotechnical conditions encountered vary from our findings and interpretations. Geotechnical observation and testing should be provided:

- During all excavation,
- During compaction of all fill materials,

- After excavation of all footings and prior to placement of concrete,
- During utility trench backfilling and compaction,
- During pavement subgrade and base preparation, and/or
- If and when any unusual geotechnical conditions are encountered.

5.0 LIMITATIONS

This report was necessarily based in part upon data obtained from a limited number of observances, site visits, soil samples, tests, analyses, histories of occurrences, spaced subsurface explorations and limited information on historical events and observations. Such information is necessarily incomplete. The nature of many sites is such that differing characteristics can be experienced within small distances and under various climatic conditions. Changes in subsurface conditions can and do occur over time. This exploration was performed with the understanding that this subject site is proposed for development as described in Section 1.2 of this report. Please also refer to Appendix C, *GBA's Important Information About This Geotechnical-Engineering Report*, presenting additional information and limitations regarding geotechnical engineering studies and reports.

Until reviewed and accepted by the reviewing government agency, this report may be subject to change. Changes may be required as part of the review process. Leighton Consulting, Inc. assumes no risk or liability for consequential damages that may arise due to design work progressing before this report is reviewed and accepted.

This report was prepared for PBK Architects, Inc., based on their needs, directions and requirements at the time of our exploration, in accordance with generally accepted geotechnical engineering practices at this time in Fontana for public sites. This report is not authorized for use by, and is not to be relied upon by, any party except PBK Architects Inc., and their design and construction management team, with whom Leighton Consulting, Inc. has contracted for this work. Use of or reliance on this report by any other party is at that party's risk. Unauthorized use of or reliance on this report constitutes an agreement to defend and indemnify Leighton Consulting, Inc. from and against any liability which may arise as a result of such use or reliance, regardless of any fault, negligence, and/or strict liability of Leighton Consulting, Inc.

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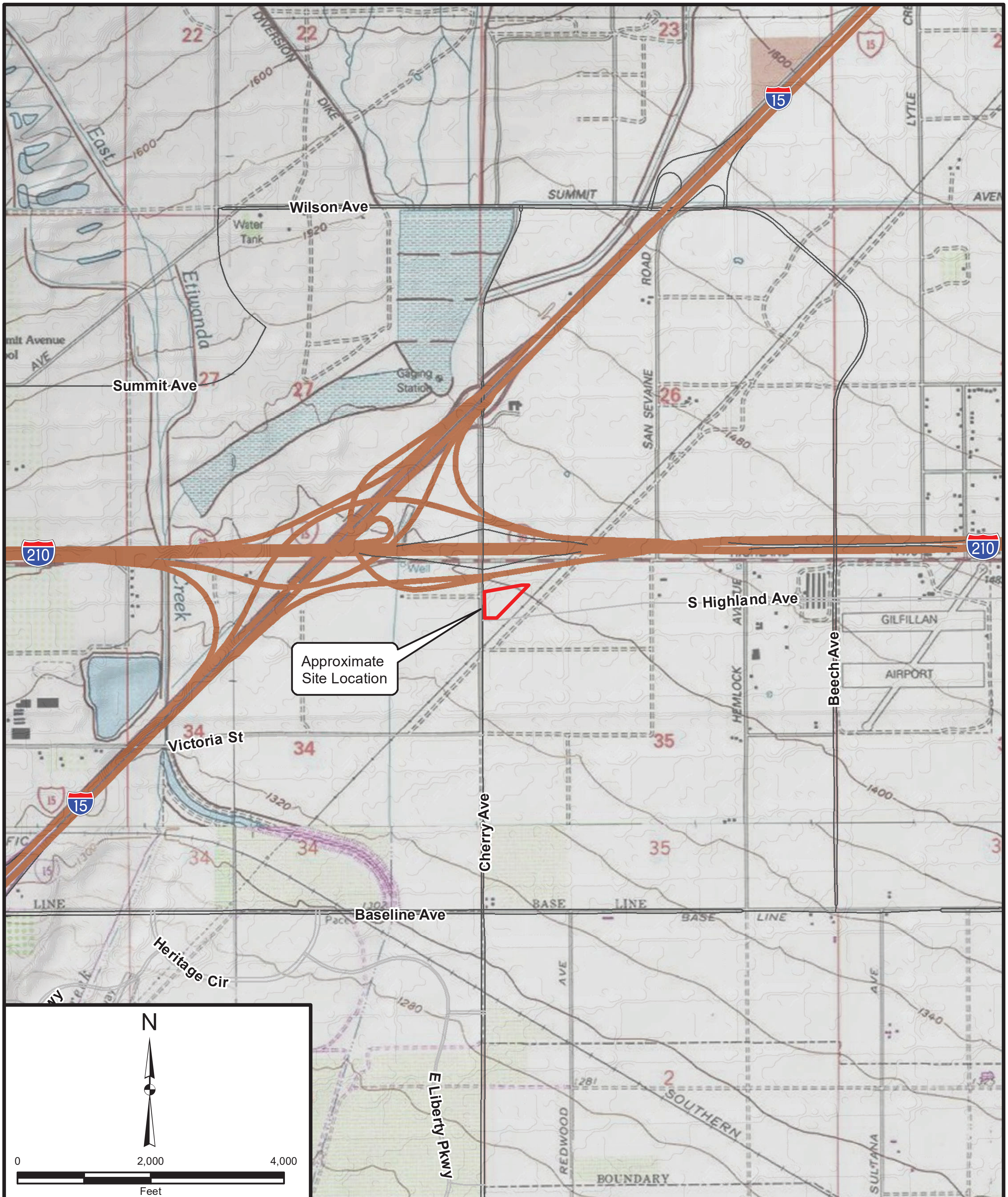

Project: 13491.001	Eng/Geol: JDH/SGO
Scale: 1 " = 2,000 '	Date: May 2022

Reference: Copyright:© 2013 National Geographic Society, i-cubed

SITE LOCATION MAP

Fontana Fire Station No. 80
Northeast Corner of
Highland Avenue and Cherry Avenue
Fontana, California

FIGURE 1

Leighton

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Project: 13491.001	Eng/Geol: JDH/SGO
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EXPLORATION LOCATION MAP

Fontana Fire Station No. 80
Northeast Corner of Highland Avenue and Cherry Avenue
Fontana, California

FIGURE 2

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Project: 13491.001	Eng/Geol: JDH/SGO
Scale: 1 " = 2,000 '	Date: May 2022

Reference: Geologic Map of the Long Beach 30'X60' Quadrangle, California, version 2.0 by Saucedo et.al., 2016

REGIONAL GEOLOGY MAP

Fontana Fire Station No. 80
Northeast Corner of
Highland Avenue and Cherry Avenue
Fontana, California

FIGURE 3

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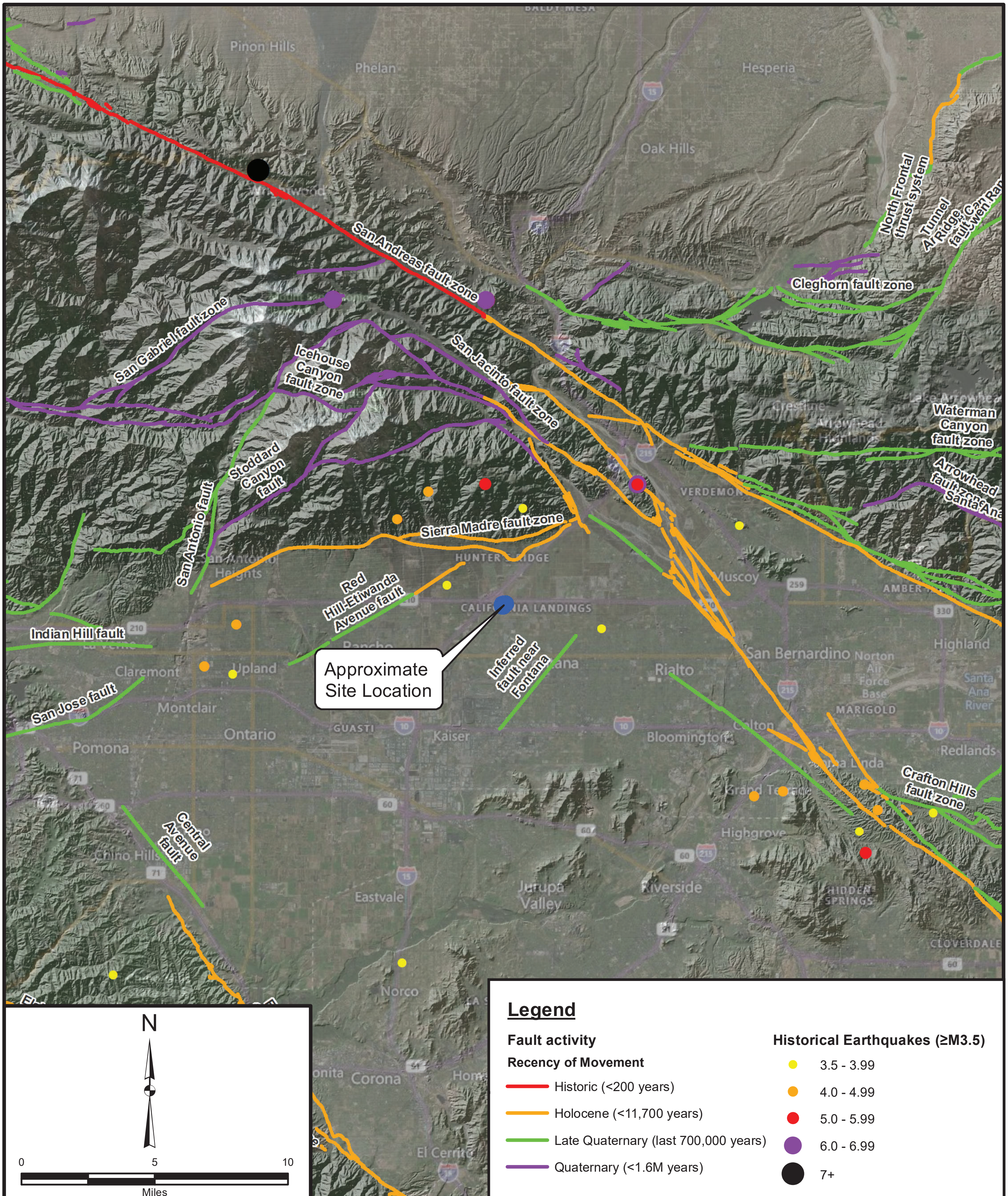

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Scale: 1 " = 5 miles	Date: May 2022

Basemap Reference: © 2022 Microsoft Corporation
Earthstar Geographics SIO © 2022 TomTom
Seismicity Data Reference: maps.conservation.ca.gov

REGIONAL FAULTS AND HISTORIC SEISMICITY MAP

Fontana Fire Station No. 80
Northeast Corner of Highland Ave and Cherry Ave
Fontana, California

FIGURE 4

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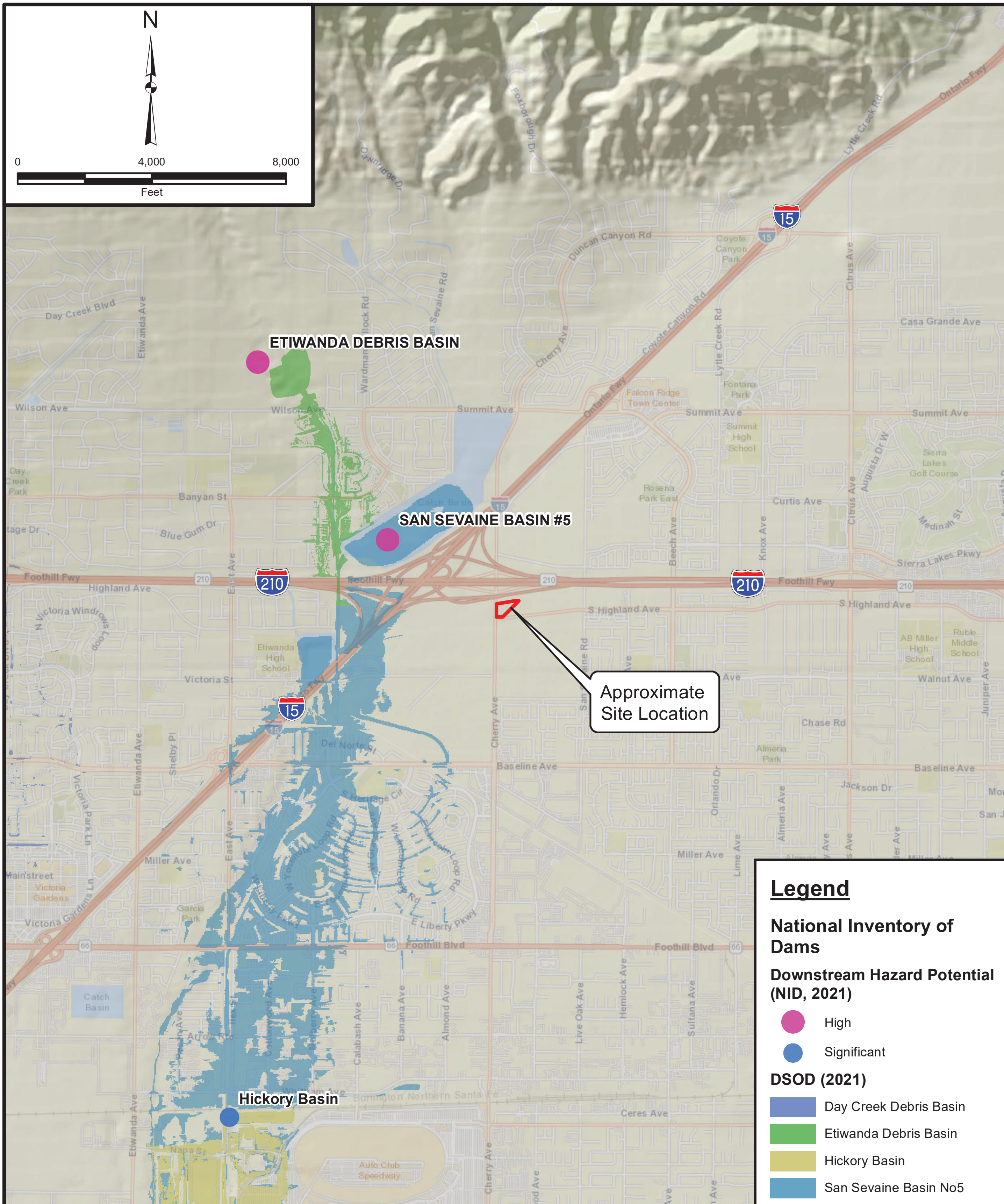

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Scale: 1 " = 4,000 '	Date: May 2022

Basemap Reference: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China
Reference: Office of Emergency Services (2007),
Dept of Safety of Dams (2021)
National Inventory of Dams, Army Corps of Engrs (2021)

DAM INUNDATION MAP

Fontana Fire Station No. 80
Northeast Corner of
Highland Avenue and Cherry Avenue
Fontana, California

FIGURE 5

Leighton

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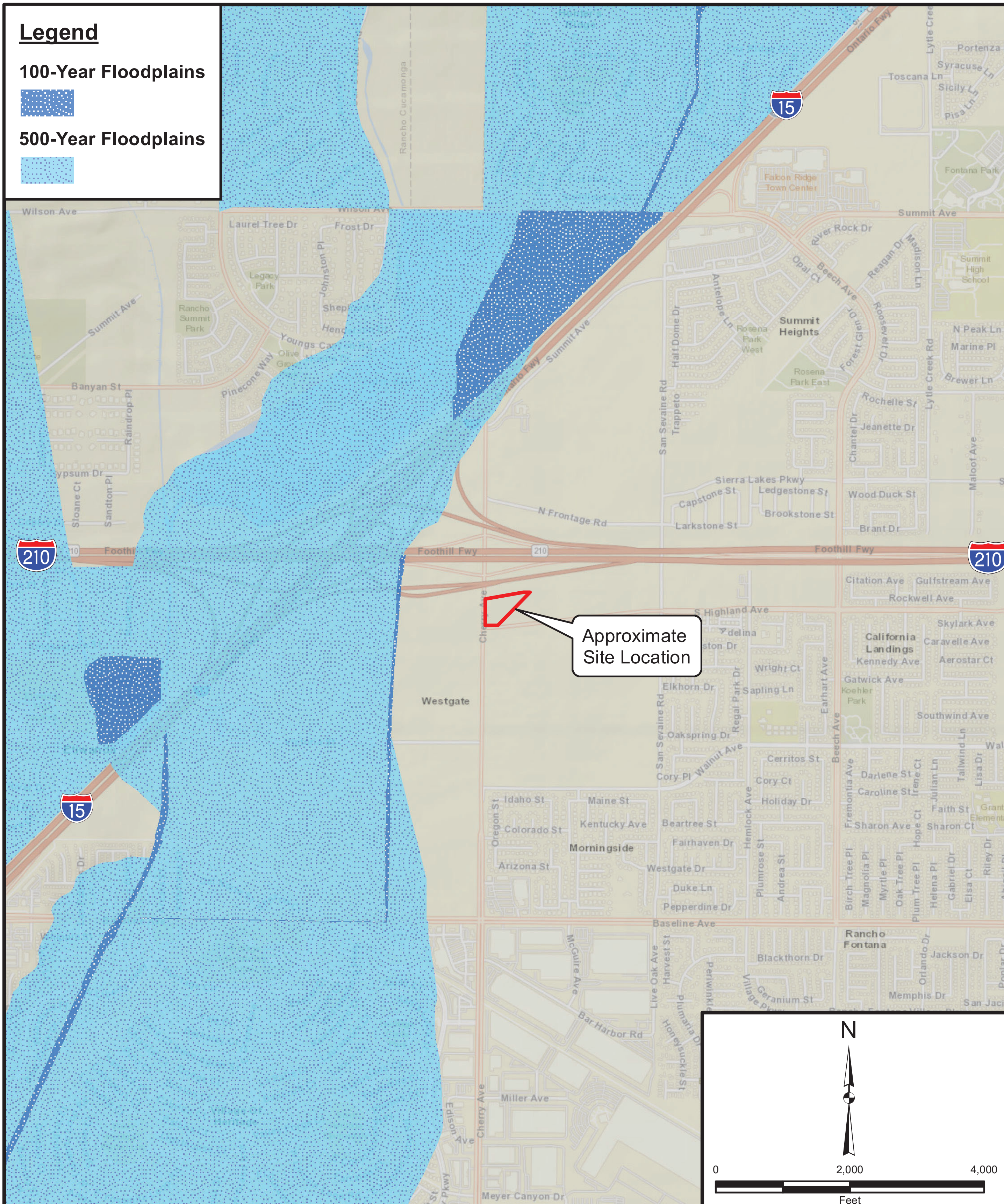

Project: 13491.001	Eng/Geol: JDH/SGO
Scale: 1 " = 2,000 '	Date: May 2022

Reference: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
FEMA (http://www.fema.gov/index.shtm), DWR (http://www.dwr.ca.gov)

FLOOD HAZARD ZONE MAP

Fontana Fire Station No. 80
Northeast Corner of
Highland Avenue and Cherry Avenue
Fontana, California

FIGURE 6

Leighton

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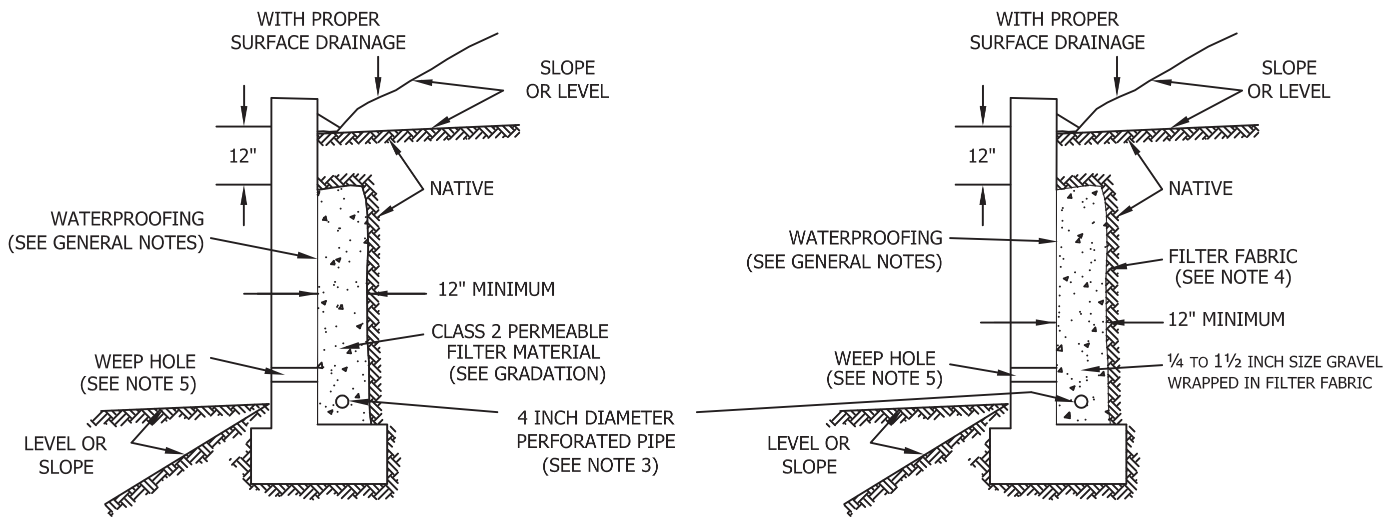
SUBDRAIN OPTIONS AND BACKFILL WHEN NATIVE MATERIAL HAS EXPANSION INDEX OF ≤50

OPTION 1: PIPE SURROUNDED WITH CLASS 2 PERMEABLE MATERIAL

OPTION 2: GRAVEL WRAPPED IN FILTER FABRIC



Class 2 Filter Permeable Material Gradation
Per Caltrans Specifications

Sieve Size	Percent Passing
1"	100
3/4"	90-100
3/8"	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3

GENERAL NOTES:

* Waterproofing should be provided where moisture nuisance problem through the wall is undesirable.
* Water proofing of the walls is not under purview of the geotechnical engineer
* All drains should have a gradient of 1 percent minimum
*Outlet portion of the subdrain should have a 4-inch diameter solid pipe discharged into a suitable disposal area designed by the project engineer. The subdrain pipe should be accessible for maintenance (rodding)
*Other subdrain backfill options are subject to the review by the geotechnical engineer and modification of design parameters.

Notes:
1) Sand should have a sand equivalent of 30 or greater and may be densified by water jetting.
2) 1 Cu. ft. per ft. of 1/4- to 1 1/2-inch size gravel wrapped in filter fabric
3) Pipe type should be ASTM D1527 Acrylonitrile Butadiene Styrene (ABS) SDR35 or ASTM D1785 Polyvinyl Chloride plastic (PVC), Schedule 40, Armco A2000 PVC, or approved equivalent. Pipe should be installed with perforations down. Perforations should be 3/8 inch in diameter placed at the ends of a 120-degree arc in two rows at 3-inch on center (staggered)
4) Filter fabric should be Mirafi 140NC or approved equivalent.
5) Weephole should be 3-inch minimum diameter and provided at 10-foot maximum intervals. If exposure is permitted, weepholes should be located 12 inches above finished grade. If exposure is not permitted such as for a wall adjacent to a sidewalk/curb, a pipe under the sidewalk to be discharged through the curb face or equivalent should be provided. For a basement-type wall, a proper subdrain outlet system should be provided.
6) Retaining wall plans should be reviewed and approved by the geotechnical engineer.
7) Walls over six feet in height are subject to a special review by the geotechnical engineer and modifications to the above requirements.

RETAINING WALL BACKFILL AND SUBDRAIN DETAIL FOR WALLS 6 FEET OR LESS IN HEIGHT

WHEN NATIVE MATERIAL HAS EXPANSION INDEX OF ≤50

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Figure 8

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APPENDIX A

FIELD EXPLORATION

Our field exploration consisted of geologic reconnaissance and a subsurface exploration program consisting of five (5) borings and two (2) infiltration tests. These subsurface exploration locations are plotted on Figure 2, *Geotechnical Map*, and describe in more detail below:

Hollow Stem Auger Borings: On April 7, 2022, seven borings were drilled with a truck rig, logged and sampled to depths ranging from approximately 11½ feet to 51½ feet. After sampling and logging, all borings were immediately backfilled, except for IT-1 and IT-2 where infiltration tests were performed in accordance with the guidelines of San Bernardino County. Encountered soils were continuously logged in the field by our representative and described in accordance with the Unified Soil Classification System (ASTM D 2488). Near surface bulk soil samples were collected from these borings. Boring logs and infiltration test results are included as part of this appendix.

Subsurface Variations and Limitations: These attached subsurface exploration logs and related information depict subsurface conditions only at the approximate locations indicated and at the particular date designated on the logs. Subsurface conditions at other locations may differ from conditions occurring at these locations. Passage of time may result in altered subsurface conditions due to possible environmental changes. In addition, any stratification lines depicted on these logs represent an approximate boundary between soil types, but these transitions can be gradual.

GEOTECHNICAL BORING LOG IT-1

Project No.	13491.001	**Date Drilled**	4-7-22
Project	Fontana Fire Station #80	**Logged By**	AA
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Autohammer - 140lb - Hollow Stem Auger - 30" Drop	**Ground Elevation**	1385'
Location	See Figure 2- Geotechnical Exploration Map	**Sampled By**	AA

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
1385	0							GP	@Surface: GRAVEL with sand (GP), cobbles present **Undocumented Artificial Fill (AF)**	
									Quaternary Young Alluvial Fan Deposits (Qyf)	
1380	5							SM	@5': SILTY SAND with gravel (SM), dry, grayish brown, fine to coarse sand, coarse gravel, angular	
1375	10				50/6"			GP	@10': **NO RECOVERY** GRAVEL with sand (GP), very dense, dry, gray, fine to coarse gravel	
									TOTAL DEPTH = 11.5 FEET **NO GROUNDWATER ENCOUNTERED** **CONVERTED TO INFILTRATION BORING** **SET WELL @ 11.5 FT**	
1370	15									
1365	20									
1360	25									
1355	30									

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

SAMPLE TYPES:
- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:
- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

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GEOTECHNICAL BORING LOG IT-2

Project No.	13491.001	**Date Drilled**	4-7-22
Project	Fontana Fire Station #80	**Logged By**	AA
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Autohammer - 140lb - Hollow Stem Auger - 30" Drop	**Ground Elevation**	1384'
Location	See Figure 2- Geotechnical Exploration Map	**Sampled By**	AA

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION *This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	Type of Tests
	0							GP	@Surface: GRAVEL with sand (GP), cobbles present **Undocumented Artificial Fill (AF)**	
									Quaternary Young Alluvial Fan Deposits (Qyf)	
1380	5							SM	@5': SILTY SAND with gravel (SM), dry, grayish brown, fine to coarse sand, coarse gravel, angular	
1375	10			S-1	14 21 24			SP-SM	@10': SAND with silt and gravel (SP-SM), dense, slightly moist, gray, fine to coarse sand, fine to coarse gravel, 7% fines (lab)	-200
1370	15								**TOTAL DEPTH = 11.5 FEET** **NO GROUNDWATER ENCOUNTERED** **CONVERTED TO INFILTRATION BORING** **SET WELL @ 11.5 FT**	
1365	20									
1360	25									
1355	30									

SAMPLE TYPES:
- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:
- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

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GEOTECHNICAL BORING LOG LB-1

Project No.	13491.001	**Date Drilled**	4-7-22
Project	Fontana Fire Station #80	**Logged By**	AA
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Autohammer - 140lb - Hollow Stem Auger - 30" Drop	**Ground Elevation**	1386'
Location	See Figure 2- Geotechnical Exploration Map	**Sampled By**	AA

SOIL DESCRIPTION

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	Soil Description	Type of Tests
	0			B-1				GP	@Surface: GRAVEL with sand (GP) **Undocumented Artificial Fill (AF)**	-200, MD, EI, CR
1385										
									Quaternary Young Alluvial Fan Deposits (Qyf)	
				R-1	15 17 22	118	3	SM	@2.5': SILTY SAND with gravel (SM), medium dense, dry, grayish brown, fine to coarse sand, coarse gravel, angular, 29% gravel, 21% fines (lab)	
	5			R-2	16 22 30	110	2	SM	@5': SILTY SAND with gravel (SM), dense, dry, grayish brown, fine to coarse sand, coarse gravel, angular, 30% gravel (field estimate)	
1380										
				R-3	22 29 31			SP-SM	@7.5': SAND with silt and gravel (SP-SM), dense, slightly moist, gray, medium to coarse sand, coarse gravel, angular, 5% fines (lab)	-200
	10			R-4	18 50/6"	137	2	GP	@10': GRAVEL with sand (GP), very dense, slightly moist, brown, medium to coarse sand	
1375										
	15			S-1	20 50/5.5"			GP	@15': GRAVEL with sand (GP), very dense, slightly moist, brown, medium to coarse sand, fine to coarse gravel	
1370									**TOTAL DEPTH = 16 FEET** **NO GROUNDWATER ENCOUNTERED** **BACKFILLED WITH SOIL CUTTINGS TO SURFACE**	
	20									
1365										
	25									
1360										
	30									

SAMPLE TYPES:
- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:
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- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

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GEOTECHNICAL BORING LOG LB-2

Project No.	13491.001	**Date Drilled**	4-7-22
Project	Fontana Fire Station #80	**Logged By**	AA
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Autohammer - 140lb - Hollow Stem Auger - 30" Drop	**Ground Elevation**	1385'
Location	See Figure 2- Geotechnical Exploration Map	**Sampled By**	AA

SOIL DESCRIPTION

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	Soil Description	Type of Tests
1385	0							GP	@Surface: GRAVEL with sand (GP), cobbles present **Undocumented Artificial Fill (AF)**	
				R-1	6 8 17			SM	**Quaternary Young Alluvial Fan Deposits (Qyf)** @2.5': SILTY SAND (SM), medium dense, slightly moist, brown, fine to medium sand, 20% gravel, (field estimate), 25% fines (field estimate)	
1380	5			R-2	20 21 27	121	7	SP	@5': SAND with gravel (SP), medium dense, slightly moist, brown, medium to coarse sand, 30% gravel (field estimate)	
				R-3	36 50/6"	130	2	SP	@7.5': SAND with gravel (SP), very dense, slightly moist, brown, medium to coarse sand, 30% gravel (field estimate)	
1375	10				50/2"			GP	@10': **NO RECOVERY** Soil Cuttings: GRAVEL with sand (GP), very dense, slightly moist, brown, medium to coarse sand	
1370	15			S-1	10 42 50/6"			GP	@15': GRAVEL with sand (GP), very dense, slightly moist, brown, medium to coarse sand	
1365	20			S-2	21 25 49			SP	@20': SAND with gravel (SP), very dense, slightly moist, brown, medium to coarse sand, 30% gravel (field estimate)	
1360	25			S-3	23 50/6"			SP	@25': SAND with gravel (SP), very dense, slightly moist, brown, medium to coarse sand, 30% gravel (field estimate)	
1355	30									

SAMPLE TYPES:
- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:
- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

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GEOTECHNICAL BORING LOG LB-2

Project No.	13491.001	**Date Drilled**	4-7-22
Project	Fontana Fire Station #80	**Logged By**	AA
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Autohammer - 140lb - Hollow Stem Auger - 30" Drop	**Ground Elevation**	1385'
Location	See Figure 2- Geotechnical Exploration Map	**Sampled By**	AA

SOIL DESCRIPTION

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
1355	30			S-4	25 40 50/1"			SP	@30': SAND with gravel (SP), very dense, slightly moist, brown, medium to coarse sand, 30% gravel (field estimate)	
1350	35			S-5	41 50/6" 50/4.5"			GP	@35': GRAVEL with sand (GP), very dense, slightly moist, brown, medium to coarse sand	
1345	40			S-6	25 42 50/4.5"			GP	@40': GRAVEL with sand (GP), very dense, slightly moist, brown, medium to coarse sand, 40% gravel (field estimate)	
1340	45			S-7	26 50/5"			GP	@45': GRAVEL with sand (GP), very dense, slightly moist, grayish brown, medium to coarse sand, 20% gravel (field estimate)	
1335	50			S-8	15 50/3"			GP	@50': GRAVEL with sand and silt (GP-GM), very dense, moist, brown, 10% fines (field estimate)	
									TOTAL DEPTH = 51.5 FEET **NO GROUNDWATER ENCOUNTERED** **BACKFILLED WITH SOIL CUTTINGS TO SURFACE**	
1330	55									
1325	60									

SAMPLE TYPES:
- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:
- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

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GEOTECHNICAL BORING LOG LB-3

Project No.	13491.001	**Date Drilled**	4-7-22
Project	Fontana Fire Station #80	**Logged By**	AA
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Autohammer - 140lb - Hollow Stem Auger - 30" Drop	**Ground Elevation**	1385'
Location	See Figure 2- Geotechnical Exploration Map	**Sampled By**	AA

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION *This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	Type of Tests
1385	0							GP	@Surface: GRAVEL with sand (GP) **Undocumented Artificial Fill (AF)**	
				R-1	6 10 21	92	3	SM	**Quaternary Young Alluvial Fan Deposits (Qyf)** @2.5': SILTY SAND with gravel (SM), medium dense, slightly moist, brown, fine to medium sand, 17% fines (lab)	-200
1380	5			R-2	19 24 23	114	1	SP	@5': Poorly-graded SAND with silt (SP-SM), dense, slightly moist, gray, fine to coarse gravel, 30% gravel (field estimate)	CO
				R-3	40 31 38	118	2	SP	@7.5': SAND with gravel (SP), very dense, slightly moist, gray, fine to medium gravel, 40% gravel (field estimate)	
1375	10				50/5"			GP	@10': **NO RECOVERY** Soil Cuttings: GRAVEL with sand (GP), very dense, slightly moist, grayish brown, fine to medium gravel	
1370	15			S-1	25 36 31			SP	@15': Fragments of GRAY SANDSTONE @15.5': SAND with gravel (SP), very dense, slightly moist, gray, fine to medium gravel, 30% gravel (field estimate)	
1365	20			S-2	15 37 30			SP-SM	@20': SAND with silt and gravel (SP-SM), very dense, slightly moist, gray, fine to medium gravel, 6% fines (lab)	-200
1360	25			S-3	10 21 50/6"			SP	@25': SAND with gravel (SP), very dense, slightly moist, gray, fine to medium gravel, 30% gravel (field estimate)	
1355	30									

SAMPLE TYPES:
- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:
- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

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GEOTECHNICAL BORING LOG LB-3

Project No.	13491.001	**Date Drilled**	4-7-22
Project	Fontana Fire Station #80	**Logged By**	AA
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Autohammer - 140lb - Hollow Stem Auger - 30" Drop	**Ground Elevation**	1385'
Location	See Figure 2- Geotechnical Exploration Map	**Sampled By**	AA

SOIL DESCRIPTION

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	Soil Description	Type of Tests
1355	30			S-4	24 50/5.5"			SP	@30': SAND with gravel (SP), very dense, slightly moist, gray, fine to medium gravel, 30% gravel (field estimate)	
1350	35			S-5	26 40 30			SP	@35': SAND with gravel (SP), very dense, slightly moist, gray, fine to medium gravel, 20% gravel (field estimate)	
1345	40			S-6	32 30 50/5"			GP	@40': GRAVEL with sand (GP), very dense, slightly moist, gray, fine to medium gravel	
1340	45			S-7	30 50/2"			GP	@45': GRAVEL with sand (GP), dense, slightly moist, gray, fine to medium gravel	
1335	50			S-8	18 50/5"			GP	@50': GRAVEL with sand (GP), very dense, slightly moist, gray, fine to medium gravel	
									TOTAL DEPTH = 51.5 FEET **NO GROUNDWATER ENCOUNTERED** **BACKFILLED WITH SOIL CUTTINGS TO SURFACE**	
1330	55									
1325	60									

SAMPLE TYPES:
- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:
- -200 % FINES PASSING
- AL ATTERBERG LIMITS
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- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

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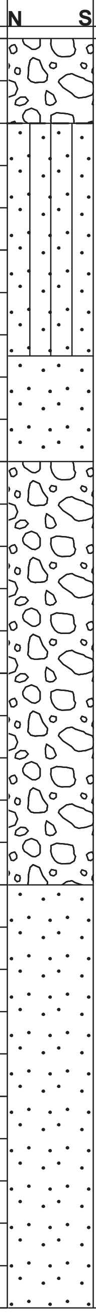
GEOTECHNICAL BORING LOG LB-4

Project No.	13491.001	**Date Drilled**	4-7-22
Project	Fontana Fire Station #80	**Logged By**	AA
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Autohammer - 140lb - Hollow Stem Auger - 30" Drop	**Ground Elevation**	1386'
Location	See Figure 2- Geotechnical Exploration Map	**Sampled By**	AA

SOIL DESCRIPTION

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.



Elevation Feet	Depth Feet	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	Soil Description	Type of Tests
1385	0		B-1				GP	@Surface: GRAVEL with sand (GP) **Undocumented Artificial Fill (AF)**	
			R-1	5 5 6			SM	**Quaternary Young Alluvial Fan Deposits (Qyf)** @2.5': SILTY SAND (SM), loose, slightly moist, fine sand, 40% sand (field estimate)	
1380	5		R-2	11 10 20	105	8	SM	@5': SILTY SAND (SM), medium dense, slightly moist, fine sand, 30% fines (field estimate), gravel present near 6.5' depth	
			R-3	17 20 30			SP	@7.5': SAND with gravel (SP), dense, slightly moist, brown, fine to coarse sand, 20% gravel (field estimate)	
1375	10		R-4	23 50/6"	110	2	GP	@10': **PARTIAL RECOVERY** GRAVEL with sand (GP), very dense, slightly moist, brown, fine to coarse sand	
1370	15		S-1	12 50/6"			GP	@15': **NO RECOVERY** GRAVEL with sand (GP), very dense, slightly moist, brown, fine to coarse sand, granite found- approximately 1-inch in diameter	
1365	20		S-2	34 34 35			SP	@20': SAND (SP), very dense, slightly moist, brown, fine to coarse sand, pieces of sandstone in upper 2-inches	
1360	25		S-3	32 50/6"			SP	@25': SAND with gravel (SP), very dense, slightly moist, gray, fine to coarse sand, fine to coarse gravel, 30% (field estimate)	
	30								

SAMPLE TYPES:
- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:
- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

Leighton

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GEOTECHNICAL BORING LOG LB-4

Project No.	13491.001	**Date Drilled**	4-7-22
Project	Fontana Fire Station #80	**Logged By**	AA
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Autohammer - 140lb - Hollow Stem Auger - 30" Drop	**Ground Elevation**	1386'
Location	See Figure 2- Geotechnical Exploration Map	**Sampled By**	AA

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION *This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	Type of Tests
1355	30			S-4	13 26 32			SP	@30': SAND with gravel (SP), dense, slightly moist, gray, fine to coarse sand, fine to coarse gravel, 30% (field estimate)	
									TOTAL DEPTH = 31.5 FEET **NO GROUNDWATER ENCOUNTERED** **BACKFILLED WITH SOIL CUTTINGS TO SURFACE**	
1350	35									
1345	40									
1340	45									
1335	50									
1330	55									
	60									

SAMPLE TYPES:
- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:
- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

Leighton

*** * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * ***

GEOTECHNICAL BORING LOG LB-5

Project No. 13491.001
Project Fontana Fire Station #80
Drilling Co. Martini Drilling
Drilling Method Autohammer - 140lb - Hollow Stem Auger - 30" Drop
Location See Figure 2- Geotechnical Exploration Map

Date Drilled 4-7-22
Logged By AA
Hole Diameter 8"
Ground Elevation 1385'
Sampled By AA

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION *This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	Type of Tests
1385	0			B-1				GP	@Surface: GRAVEL with sand (GP), cobbles present **Undocumented Artificial Fill (AF)**	RV
									Quaternary Young Alluvial Fan Deposits (Qyf)	
				R-1	11 20 21	116	3	SM	@2.5': SILTY SAND with gravel (SM), dense, slightly moist, gray, fine to medium gravel, 30% (field estimate)	
1380	5			R-2	9 10 19	130	3	SM	@5': SILTY SAND with gravel (SM), medium dense, slightly moist, gray, fine to medium gravel, 40% (field estimate)	
				R-3	14 32 25	121	3	GP	@7.5': GRAVEL with sand (GP), dense, slightly moist, gray, fine to coarse gravel, 40% (field estimate)	
1375	10			S-1	31 50/6"			GP	@10': GRAVEL with sand (GP), very dense, slightly moist, grayish brown, medium to coarse sand, fine to coarse gravel	
1370	15			S-2	20 50/6"			GP	@15': GRAVEL with sand (GP), very dense, slightly moist, grayish brown, medium to coarse sand, fine to coarse gravel	
1365	20			S-3	50/5"			GP	@20': GRAVEL with sand (GP), very dense, slightly moist, grayish brown, medium to coarse sand, fine to coarse gravel	
1360	25			S-4	21 40 45			SP	@25': SAND with gravel (SP), very dense, slightly moist, grayish brown, medium to coarse sand, fine to coarse gravel, 30% (field estimate)	
									TOTAL DEPTH = 26.5 FEET **NO GROUNDWATER ENCOUNTERED** **BACKFILLED WITH SOIL CUTTINGS TO SURFACE**	
1355	30									

SAMPLE TYPES:
- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:
- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

Leighton

*** * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * ***

Results of Falling Head Infiltration Test

Project:	13491.001	Initial estimated Depth to Water Surface (in.):	54
Exploration #/Location:	*IT-1*	Average depth of water in well, "h" (in.):	48
Depth Boring drilled, bgs (ft):	11.5	approx. h/r:	12.0
Tested by:	AA	Tu (Fig. 8) (ft):	95.5
USCS Soil Type in test zone:	GP	Tu>3h?:	yes, OK
Weather (start to finish):	Sunny, Windy		
Water Source/pH:	H2O		
Measured boring diameter:	8 in.	4 in. Well Radius	
Depth to GW or aquitard, bgs:	100 ft		

Cross-sectional area for flow calcs based on Δh

Well pack sand porosity	0.3
Casing outer diameter, in.	2.3
Casing inner diameter, in.	2.1
Cross-sectional area, in.^2	17.3

Well Prep: Drilled to 10', collected sample at 10', set sand at bottom, insert 2" Well Pipe through hollow-stem, backfill with sand as augers removed, bottom 5' screened

	ft	in.	Total (in.)
Depth to bottom of well measured from top of auger (or gr	9. ft	5. in.	113
Casing stickup measured above top of auger (or ground su	0. ft	11.25 in.	11.3
Depth to top of sand from top of casing	3. ft	0. in.	

Depth of well bottom below top of casing (in): 124

Use of Barrels:	Yes
Use of Flow Meter:	No
Test Type:	Falling Head

Barrel Data: Diameter (in.): 22.5 # of Supply barrels: 1 Total Area of barrels (in.^2): 397

Field Data **Calculations**

Date	Time	Water Level in Supply Barrel (in.)	Depth to WL in Boring (measured from top of casing) ft	in.	Water Temp (deg F)	Refilled? (or Comments)	Δt (min)	Total Elapsed Time (min)	Depth to WL in well (in.)	h, Height of Water in Well (in.)	Δh (in.)	Avg. h	Vol Change (in.^3) from supply	from Δh	Total	Flow (in^3/ min)	q, Flow (in^3/ hr)	Average Infiltration Surface Area, (in^2)	V (Fig 9)	K20, Coef. Of Perme-ability at 20 deg C (in./hr)	Infiltration Rate [flow/surf area] (in./hr) (FS=1)
Start Date	Start time:																				
4/8/2022	9:34																				
4/8/22	9:34	16.6	4.7					0	45.2	67.9											
4/8/22	9:36	14	4.72				2	2	45.4	67.6	-0.24	68	1033	4	1037	519	31122	1753	0.9	2.58	16.37
4/8/22	9:38	11	4.9				2	4	47.6	65.5	-2.16	67	1192	37	1230	615	36887	1722	0.9	3.24	19.74
4/8/22	9:40	9	4.9				2	6	47.6	65.5	0	65	795	0	795	397	23844	1695	0.9	2.08	12.97
4/8/22	9:42	6.5	4.95				2	8	48.2	64.9	-0.6	65	994	10	1004	502	30117	1688	0.9	2.67	16.45
4/8/22	9:44	4.25	5				2	10	48.8	64.3	-0.6	65	894	10	905	452	27136	1673	0.9	2.45	14.96
4/8/22	9:46	1.9	5.04				2	12	49.2	63.8	-0.48	64	934	8	942	471	28266	1659	0.9	2.58	15.71
4/8/22	9:48	0.3	5.09				2	14	49.8	63.2	-0.6	63	636	10	646	323	19387	1645	0.9	1.80	10.86
4/8/22						switch barrel															
4/8/22	9:54	14.9	6.51					20	66.9	46.1											
4/8/22	9:56	13.25	6.9			adjust flow	2	22	71.6	41.5	-4.68	44	656	81	737	368	22100	1151	0.9	4.11	17.70
4/8/22	9:58	12.1	7.1				2	24	74.0	39.1	-2.4	40	457	42	499	249	14956	1062	0.9	3.02	12.98
4/8/22	10:00	11	7.15				2	26	74.6	38.5	-0.6	39	437	10	448	224	13426	1024	0.9	2.75	12.08
4/8/22	10:02	10	7.15				2	28	74.6	38.5	0	38	397	0	397	199	11922	1017	0.9	2.43	10.81
4/8/22	10:04	9	7.15				2	30	74.6	38.5	0	38	397	0	397	199	11922	1017	0.9	2.43	10.81
4/8/22	10:06	8	7.13				2	32	74.3	38.7	0.24	39	397	-4	393	197	11798	1020	0.9	2.38	10.67
4/8/22	10:08	6.9	7.13				2	34	74.3	38.7	0	39	437	0	437	219	13114	1023	0.9	2.65	11.82
4/8/22	10:10	5.7	7.14				2	36	74.4	38.6	-0.12	39	477	2	479	239	14369	1021	0.9	2.92	12.97
4/8/22	10:12	4.7	7.14				2	38	74.4	38.6	0	39	397	0	397	199	11922	1020	0.9	2.42	10.78
4/8/22	10:15	3	7.17				3	41	74.8	38.2	-0.36	38	676	6	682	227	13636	1015	0.9	2.82	12.38
4/8/22	10:17	2.1	7.2				2	43	75.2	37.9	-0.36	38	358	6	364	182	10917	1006	0.9	2.29	10.00
4/8/22	10:19	1.1	7.2				2	45	75.2	37.9	0	38	397	0	397	199	11922	1002	0.9	2.49	10.97
4/8/22	10:21	0	7.21				2	47	75.3	37.7	-0.12	38	437	2	439	220	13177	1000	0.9	2.77	12.15

Minimum Rate:	10.00
Raw Rate for design, prior to application of adjustment factors:	**10.00**

Results of Falling Head Infiltration Test

Project:	13491.001	Initial estimated Depth to Water Surface (in.):	59
Exploration #/Location:	*IT-2*	Average depth of water in well, "h" (in.):	55
Depth Boring drilled, bgs (ft):	11.5	approx. h/r:	13.9
Tested by:	AA	Tu (Fig. 8) (ft):	95.1
USCS Soil Type in test zone:	SP-SM	Tu>3h?:	yes, OK
Weather (start to finish):	Sunny, Windy		
Water Source/pH:	H2O		
Measured boring diameter:	8 in.	4 in. Well Radius	
Depth to GW or aquitard, bgs:	100 ft		

Cross-sectional area for flow calcs based on Δh

Well pack sand porosity	0.3
Casing outer diameter, in.	2.3
Casing inner diameter, in.	2.1
Cross-sectional area, in.^2	17.3

Well Prep: Drilled to 10', collected sample at 10', set sand at bottom, insert 2" Well Pipe through hollow-stem, backfill with sand as augers removed, bottom 5' screen

Use of Barrels:	Yes
Use of Flow Meter:	No
Test Type:	Falling Head

	ft	in.	Total (in.)
Depth to bottom of well measured from top of auger (or gr	9. ft	11. in.	119
Casing stickup measured above top of auger (or ground su	0. ft	5. in.	5
Depth to top of sand from top of casing	2.2 ft	0. in.	

Depth of well bottom below top of casing (in): 124

Barrel Data: Diameter (in.): 22.5 # of Supply barrels: 1 Total Area of barrels (in.^2): 397

Field Data / **Calculations**

Date	Time	Water Level in Supply Barrel (in.)	Depth to WL in Boring (measured from top of casing) ft	in.	Water Temp (deg F)	Refilled? (or Comments)	Δt (min)	Total Elapsed Time (min)	Depth to WL in well (in.)	h, Height of Water in Well (in.)	Δh (in.)	Avg. h	Vol Change (in.^3) from supply	from Δh	Total	Flow (in^3/ min)	q, Flow (in^3/ hr)	Average Infiltration Surface Area, (in^2)	V (Fig 9)	K20, Coef. Of Perme-ability at 20 deg C (in./hr)	Infiltration Rate [flow/surf area] (in./hr) (FS=1)
Start Date	Start time:																				
4/8/2022	10:52																				
4/8/22	10:52	30.1	4.7					0	51.4	67.6											
4/8/22	10:55	28.9	4.72				3	3	51.6	67.4	-0.24	67	477	4	481	160	9621	1746	0.9	0.80	5.08
4/8/22	11:00	26.75	4.9				5	8	53.8	65.2	-2.16	66	854	37	892	178	10701	1716	0.9	0.95	5.75
4/8/22	11:05	24.6	4.9				5	13	53.8	65.2	0	65	854	0	854	171	10253	1689	0.9	0.90	5.60
4/8/22	11:10	22.6	4.95				5	18	54.4	64.6	-0.6	65	795	10	805	161	9662	1681	0.9	0.86	5.30
4/8/22	11:15	20.5	6.05				5	23	67.6	51.4	-13.2	58	835	228	1063	213	12754	1508	0.9	1.72	7.80
4/8/22	11:20	18.4	6.05				5	28	67.6	51.4	0	51	835	0	835	167	10015	1342	0.9	1.29	6.88
4/8/22	11:25	16.5	6.06				5	33	67.7	51.3	-0.12	51	755	2	757	151	9086	1341	0.9	1.18	6.25
4/8/22	11:30	14.5	6.08				5	38	68.0	51.0	-0.24	51	795	4	799	160	9588	1336	0.9	1.25	6.62
4/8/22	11:35	12.5	6.1				5	43	68.2	50.8	-0.24	51	795	4	799	160	9588	1330	0.9	1.26	6.65
4/8/22	11:40	10.4	6.13				5	48	68.6	50.4	-0.36	51	835	6	841	168	10089	1322	0.9	1.34	7.03
4/8/22	11:45	8.5	6.17				5	53	69.0	50.0	-0.48	50	755	8	763	153	9160	1312	0.9	1.24	6.44
4/8/22	11:50	6.5	6.19				5	58	69.3	49.7	-0.24	50	795	4	799	160	9588	1303	0.9	1.31	6.78
4/8/22	11:55	4.75	6.2				5	63	69.4	49.6	-0.12	50	695	2	698	140	8370	1298	0.9	1.14	5.94
4/8/22	12:00	2.75	6.21				5	68	69.5	49.5	-0.12	50	795	2	797	159	9563	1295	0.9	1.31	6.81
																			Minimum Rate:		5.08
													Raw Rate for design, prior to application of adjustment factors:								**6.00**

APPENDIX B

GEOTECHNICAL LABORATORY TESTING

Our geotechnical laboratory testing program was directed toward a quantitative and qualitative evaluation of physical and mechanical properties of soils underlying proposed improvements, and to aid in verifying soil classification.

In-Situ Moisture and Density: As-sampled soil moisture content was measured (ASTM D 2216) on selected samples recovered from our borings. In addition, in place dry density was measured (ASTM D 2937) on selected relatively undisturbed soil samples. Results of these tests are shown on our logs at the appropriate sample depths in Appendix A.

Percent Passing No. 200 Sieve: Percent fines (silt and clay) passing the No. 200 U.S. Standard Sieve was determined for soil samples in accordance with ASTM D 1140 Standard Test Method. Samples were dried and passed through a No. 4 sieve, then a No. 200 sieve. Result of this grain size analysis, as percent by dry weight passing the No. 200 U.S. Standard Sieve, is tabulated in this appendix and entered on our test pit logs.

Particle Size (Sieve) Analysis: Particle size analysis of bulk soil samples by passing sieves was evaluated using the ASTM D 6913 Standard Test Method. Results of these analysis are presented on the *Particle-Size Distribution ASTM D 6913* sheets in this appendix.

Modified Proctor Compaction Curve: A laboratory modified Proctor compaction curve (ASTM D1557) was established for bulk soil-sample to evaluate the modified Proctor laboratory maximum dry density and optimum moisture content. Results of this test are presented on the following *Modified Proctor Compaction Test* sheet in this appendix.

Corrosivity Tests: To evaluate corrosion potential of subsurface soils at the site, we tested a bulk soil sample collected during our subsurface exploration for pH, electrical resistivity (CTM 532/643), soluble sulfate content (CTM 417 Part II) and soluble chloride content (CTM 422) testing. Results of these tests are enclosed at the end of this appendix.

Direct Shear Tests (DS): Direct shear tests were performed on a selected remolded sample, with cut specimens soaked for a minimum of 24 hours under a surcharge equal to the applied normal force during testing. Specimens were then transferred to the shear box, reloaded, and pore pressures set up in the sample (due to transfer) were allowed to dissipate for a period of approximately one-hour. Following pore pressure dissipation, samples were subjected to shearing forces. These specimens were tested under various normal loads by a motor-driven, strain-controlled, direct-shear testing apparatus at a strain rate of 0.05 inches per minute. Test results are presented on the "*Direct Shear Test Results*" figures in this appendix.

Expansion Index (EI): An Expansion Index (EI) test was performed on a representative shallow bulk soil sample from this site, in general accordance with the ASTM D4829 Standard Test Method. Results of this test are presented on the following "*Expansion Index of Soils"* table.

Swell or Collapse of Soils (CO): Swell or collapse of soil tests were performed on relatively-undisturbed ring-lined drive-sampler soil samples, to measure the magnitude of one-dimensional wetting-induced swell or collapse on unsaturated soils. Results are presented in this appendix on the *One-Dimensional Swell or Collapse of Soils* (ASTM D 4546) sheets.

Resistance Value (R-Value): R-Value for a shallow bulk soil sample was established by California Test Method 301 to assist in preliminary pavement design recommendations. R-Value results are presented in this appendix on the *R-Value Test Results* sheets.

MODIFIED PROCTOR COMPACTION TEST
ASTM D 1557

Leighton

Project Name:	Fontana FS No 80	Tested By:	J. Gonzalez	Date:	04/14/22
Project No.:	13491.001	Checked By:	A. Santos	Date:	04/18/22
Boring No.:	LB-1	Depth (ft.):	0-5		
Sample No.:	B-1				
Soil Identification:	Dark brown silty sand with gravel (SM)g				

Note: Corrected dry density calculation assumes specific gravity of 2.70 and moisture content of 1.0% for oversize particles

			Scalp Fraction (%)	
Preparation Method:	X	Moist	#3/4	
		Dry	#3/8	
Compaction Method	X	Mechanical Ram	#4	28.7
		Manual Ram		

Rammer Weight (lb.) = 10.0
Height of Drop (in.) = 18.0
Mold Volume (ft³) = 0.03330

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	3903	3981	3894			
Weight of Mold (g)	1826	1826	1826			
Net Weight of Soil (g)	2077	2155	2068			
Wet Weight of Soil + Cont. (g)	518.3	527.5	461.9			
Dry Weight of Soil + Cont. (g)	487.5	484.4	416.7			
Weight of Container (g)	39.3	37.9	38.8			
Moisture Content (%)	6.87	9.65	11.96			
Wet Density (pcf)	137.5	142.7	136.9			
Dry Density (pcf)	128.7	130.1	122.3			

Maximum Dry Density (pcf) 131.0 **Optimum Moisture Content (%)** 8.6

Corrected Dry Density (pcf) 139.9 **Corrected Moisture Content (%)** 6.4

X **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

☐ **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

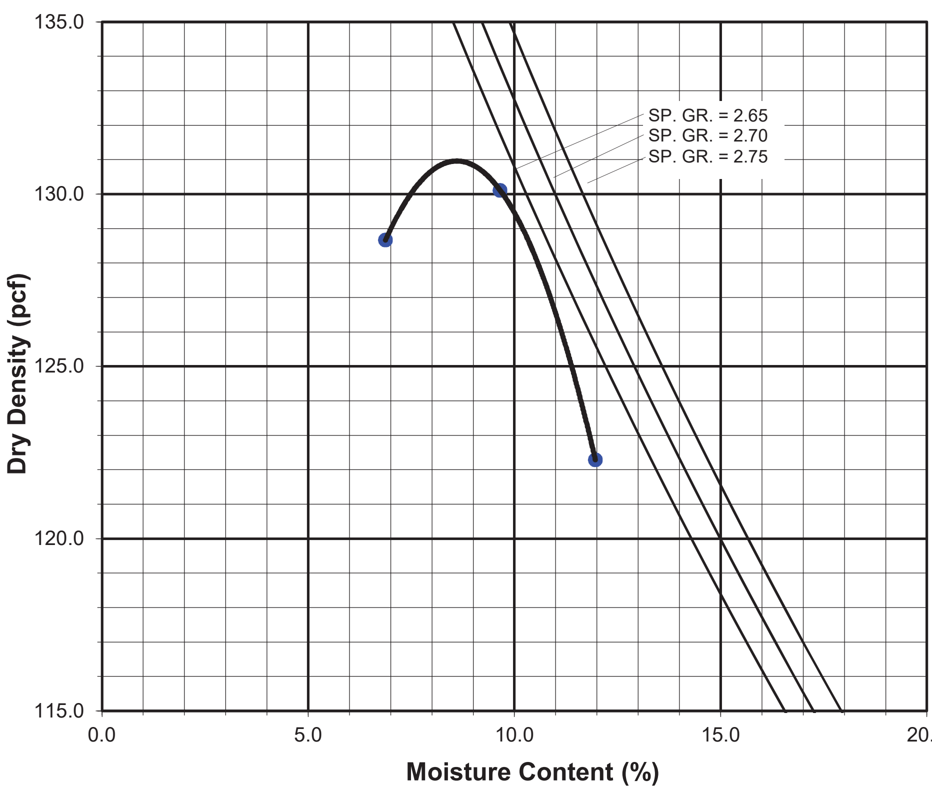
☐ **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI



PARTICLE-SIZE DISTRIBUTION (GRADATION) of SOILS USING SIEVE ANALYSIS
ASTM D6913

Project Name: Fontana FS No 80
Project No.: 13491.001
Boring No.: LB-1
Sample No.: B-1
Soil Identification: Dark brown silty sand with gravel (SM)g

Tested By: J. Domingo Date: 04/15/22
Checked By: A. Santos Date: 04/28/22
Depth (feet): 0-5

Calculation of Dry Weights	Whole Sample	Sample Passing #4	Moisture Contents	Whole Sample	Sample passing #4
Container No.:	P-16	910	Wt. of Air-Dry Soil + Cont.(g)	0.0	0.0
Wt. Air-Dried Soil + Cont.(g)	2799.2	530.9	Wt. of Dry Soil + Cont. (g)	0.0	0.0
Wt. of Container (g)	278.2	74.8	Wt. of Container No._____(g)	1.0	1.0
Dry Wt. of Soil (g)	2521.0	456.1	Moisture Content (%)	0.0	0.0

Passing #4 Material After Wet Sieve		
	Container No.	910
	Wt. of Dry Soil + Container (g)	402.6
	Wt. of Container (g)	74.8
	Dry Wt. of Soil Retained on # 200 Sieve (g)	327.8

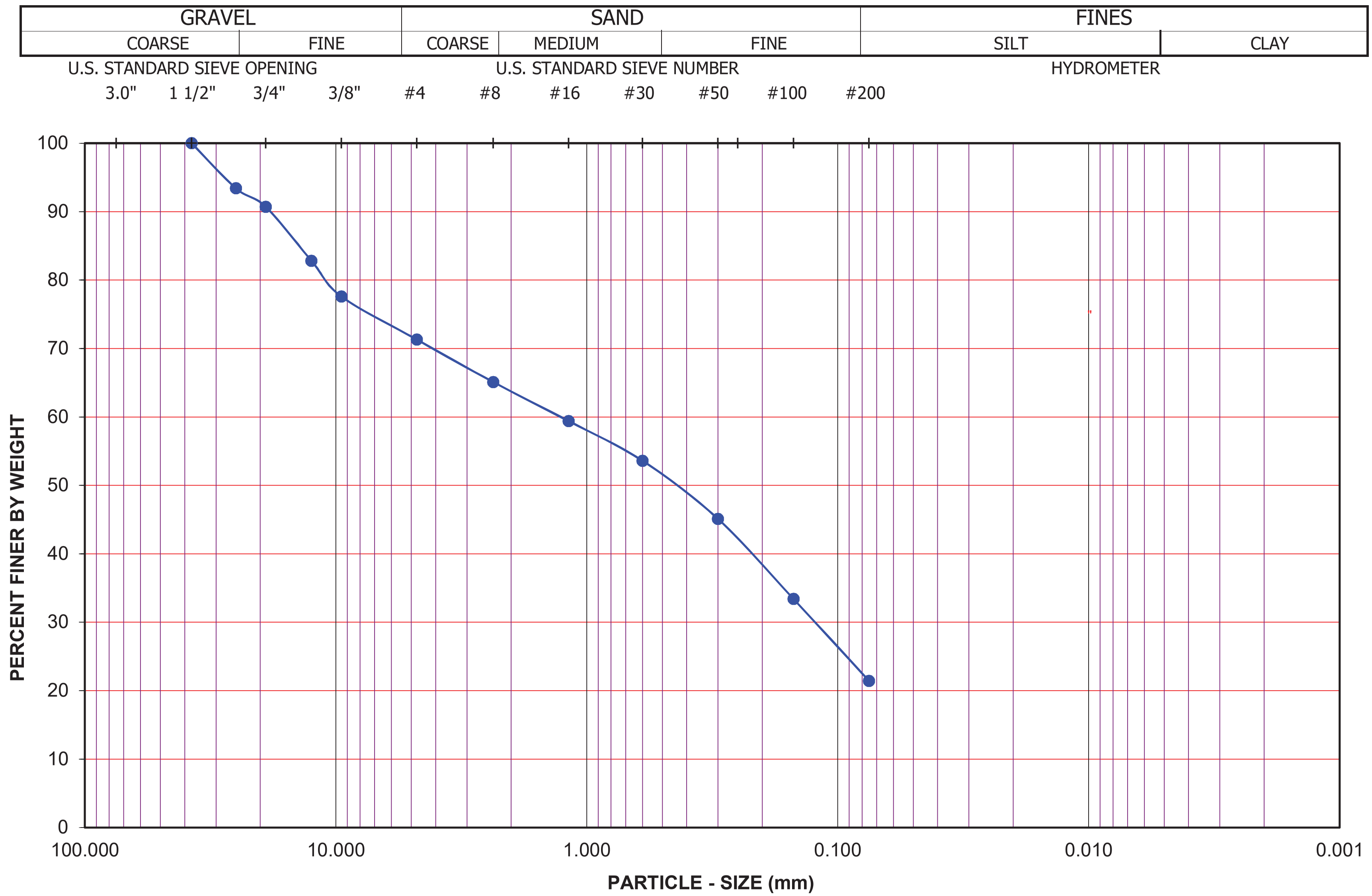
U. S. Sieve Size		Cumulative Weight of Dry Soil Retained (g)		Percent Passing (%)
	(mm.)	Whole Sample	Sample Passing #4	
3"	75.0			
1 1/2"	37.5	0.0		100.0
1"	25.0	167.0		93.4
3/4"	19.0	233.3		90.7
1/2"	12.5	432.4		82.8
3/8"	9.5	563.7		77.6
#4	4.75	722.5		71.3
#8	2.36		39.9	65.1
#16	1.18		75.9	59.4
#30	0.600		113.2	53.6
#50	0.300		167.7	45.1
#100	0.150		242.4	33.4
#200	0.075		319.4	21.4
PAN				

GRAVEL: **29 %**
SAND: **50 %**
FINES: **21 %**
GROUP SYMBOL: **(SM)g**

Cu = D60/D10 = ______

Cc = $(D30)^2/(D60*D10)$ = ______

Remarks:



Project Name: Fontana FS No 80

Project No.: 13491.001

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PARTICLE - SIZE DISTRIBUTION ASTM D 6913

Boring No.: LB-1 | Sample No.: B-1

Depth (feet): 0-5 | Soil Type : (SM)g

Soil Identification: Dark brown silty sand with gravel (SM)g

GR:SA:FI : (%) 29 : 50 : 21

Apr-22

Sieve LB-1, B-1 @ 0-5

Leighton

EXPANSION INDEX of SOILS
ASTM D 4829

Project Name:	Fontana FS No 80	Tested By:	G. Berdy	Date:	04/18/22
Project No.:	13491.001	Checked By:	A. Santos	Date:	04/28/22
Boring No.:	LB-1	Depth (ft.):	0-5		
Sample No.:	B-1				
Soil Identification:	Dark brown silty sand with gravel (SM)g				

Dry Wt. of Soil + Cont. (g)	1000.00
Wt. of Container No. (g)	0.00
Dry Wt. of Soil (g)	1000.00
Weight Soil Retained on #4 Sieve	0.00
Percent Passing # 4	100.00

MOLDED SPECIMEN	Before Test	After Test
Specimen Diameter (in.)	4.01	4.01
Specimen Height (in.)	1.0000	0.9990
Wt. Comp. Soil + Mold (g)	601.60	461.40
Wt. of Mold (g)	163.50	0.00
Specific Gravity (Assumed)	2.70	2.70
Container No.	O	O
Wet Wt. of Soil + Cont. (g)	875.50	624.90
Dry Wt. of Soil + Cont. (g)	820.50	574.09
Wt. of Container (g)	0.00	163.50
Moisture Content (%)	6.70	12.37
Wet Density (pcf)	132.1	139.3
Dry Density (pcf)	123.8	124.0
Void Ratio	0.361	0.360
Total Porosity	0.265	0.265
Pore Volume (cc)	54.9	54.7
Degree of Saturation (%) [S_{meas}]	**50.1**	92.9

SPECIMEN INUNDATION in distilled water for the period of 24 h or expansion rate < 0.0002 in./h

Date	Time	Pressure (psi)	Elapsed Time (min.)	Dial Readings (in.)
04/18/22	9:12	1.0	0	0.5790
04/18/22	9:22	1.0	10	0.5785
Add Distilled Water to the Specimen				
04/18/22	9:50	1.0	28	0.5775
04/19/22	6:01	1.0	1239	0.5780
04/19/22	7:15	1.0	1313	0.5780

Expansion Index (EI_{meas}) = ((Final Rdg - Initial Rdg) / Initial Thick.) x 1000	**0**

TESTS for SULFATE CONTENT CHLORIDE CONTENT and pH of SOILS

Leighton

Project Name:	Fontana FS No 80	Tested By :	G. Berdy	Date:	04/18/22
Project No. :	13491.001	Checked By:	A. Santos	Date:	04/28/22

Boring No.	LB-1			
Sample No.	B-1			
Sample Depth (ft)	0-5			
Soil Identification:	Dark brown (SM)g			
Wet Weight of Soil + Container (g)	0.00			
Dry Weight of Soil + Container (g)	0.00			
Weight of Container (g)	1.00			
Moisture Content (%)	0.00			
Weight of Soaked Soil (g)	100.31			

SULFATE CONTENT, DOT California Test 417, Part II

Beaker No.	2			
Crucible No.	3			
Furnace Temperature (°C)	860			
Time In / Time Out	7:15/8:00			
Duration of Combustion (min)	45			
Wt. of Crucible + Residue (g)	24.5154			
Wt. of Crucible (g)	24.5123			
Wt. of Residue (g) (A)	0.0031			
PPM of Sulfate (A) x 41150	127.56			
PPM of Sulfate, Dry Weight Basis	**128**			

CHLORIDE CONTENT, DOT California Test 422

ml of Extract For Titration (B)	15			
ml of AgNO3 Soln. Used in Titration (C)	0.6			
PPM of Chloride (C -0.2) * 100 * 30 / B	80			
PPM of Chloride, Dry Wt. Basis	**80**			

pH TEST, DOT California Test 643

pH Value	**6.81**			
Temperature °C	21.2			

SOIL RESISTIVITY TEST

DOT CA TEST 643

Leighton

Project Name:	Fontana FS No 80	Tested By :	G. Berdy	Date:	04/25/22
Project No. :	13491.001	Checked By:	A. Santos	Date:	04/28/22
Boring No.:	LB-1	Depth (ft.) :	0-5		
Sample No. :	B-1				

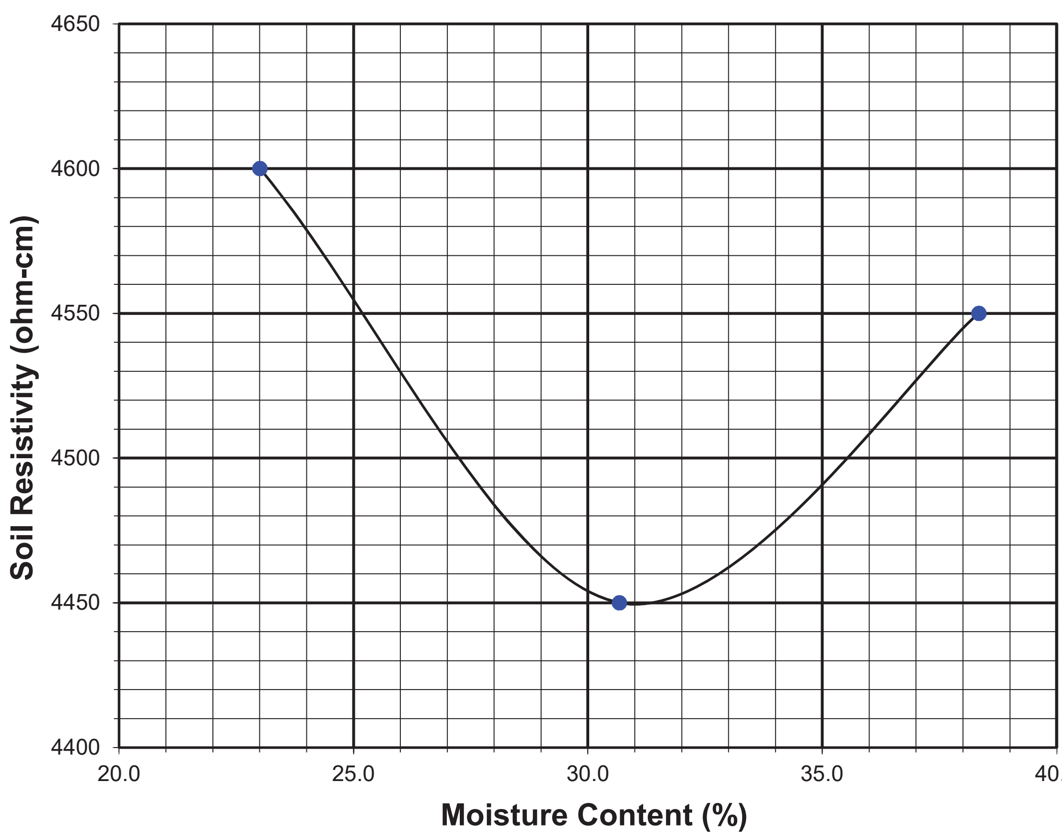
Soil Identification:* Dark brown (SM)g

*California Test 643 requires soil specimens to consist only of portions of samples passing through the No. 8 US Standard Sieve before resistivity testing. Therefore, this test method may not be representative for coarser materials.

Specimen No.	Water Added (ml) (Wa)	Adjusted Moisture Content (MC)	Resistance Reading (ohm)	Soil Resistivity (ohm-cm)
1	30	23.01	4600	4600
2	40	30.67	4450	4450
3	50	38.34	4550	4550
4				
5				

Moisture Content (%) (MCi)	0.00
Wet Wt. of Soil + Cont. (g)	0.00
Dry Wt. of Soil + Cont. (g)	0.00
Wt. of Container (g)	1.00
Container No.	
Initial Soil Wt. (g) (Wt)	130.40
Box Constant	1.000
MC =(((1+Mci/100)x(Wa/Wt+1))-1)x100	

Min. Resistivity (ohm-cm)	Moisture Content (%)	Sulfate Content (ppm)	Chloride Content (ppm)	Soil pH	
				pH	Temp. (°C)
DOT CA Test 643		DOT CA Test 417 Part II	DOT CA Test 422	DOT CA Test 643	
4450	**31.0**	**128**	**80**	**6.81**	**21.2**



DIRECT SHEAR TEST

Consolidated Drained - ASTM D 3080

Project Name: Fontana FS No 80
Tested By: G. Bathala
Date: 04/19/22

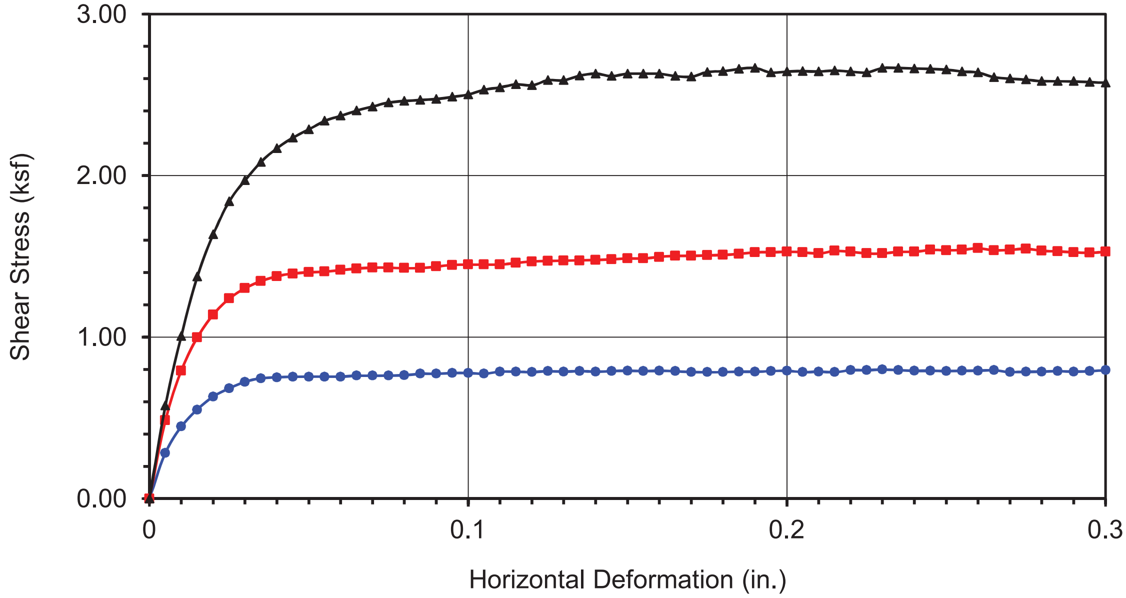
Project No.: 13491.001
Checked By: A. Santos
Date: 04/28/22

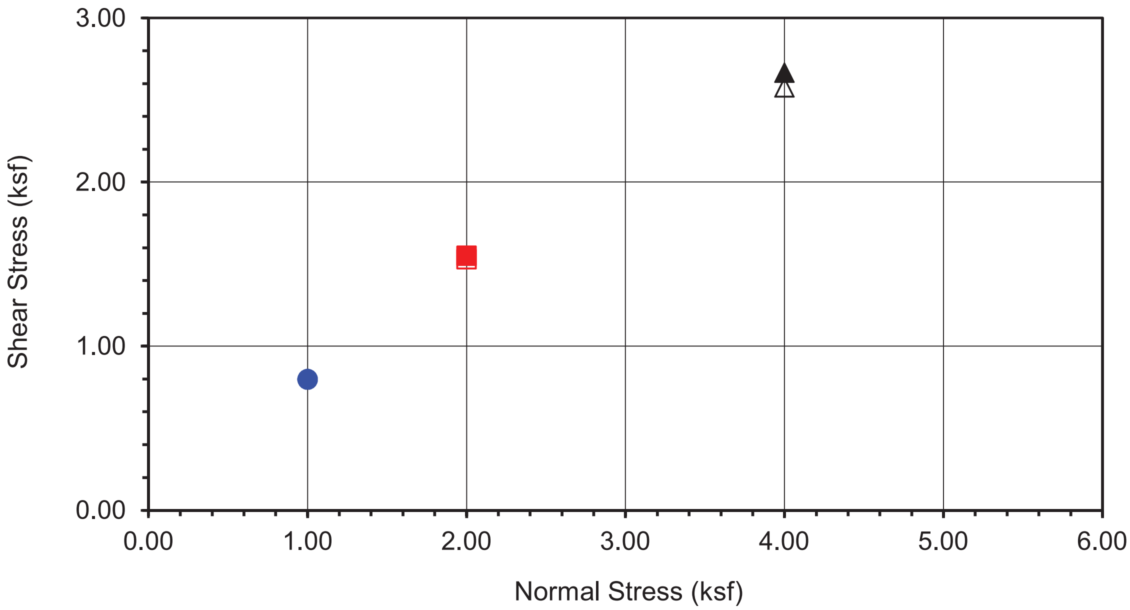
Boring No.: LB-5
Sample Type: 90% Remold

Sample No.: B-1
Depth (ft.): 0-5

Soil Identification: Olive brown silty sand with gravel (SM)g

Sample Diameter(in):	2.415	2.415	2.415
Sample Thickness(in.):	1.000	1.000	1.000
Weight of Sample + ring(gm):	199.81	200.09	200.43
Weight of Ring(gm):	45.39	45.44	45.61
Before Shearing			
Weight of Wet Sample+Cont.(gm):	162.65	162.65	162.65
Weight of Dry Sample+Cont.(gm):	154.48	154.48	154.48
Weight of Container(gm):	56.91	56.91	56.91
Vertical Rdg.(in): Initial	0.0000	0.2383	0.2586
Vertical Rdg.(in): Final	-0.0106	0.2516	0.2772
After Shearing			
Weight of Wet Sample+Cont.(gm):	222.40	212.48	224.21
Weight of Dry Sample+Cont.(gm):	206.55	196.65	208.81
Weight of Container(gm):	67.11	56.91	69.11
Specific Gravity (Assumed):	2.70	2.70	2.70
Water Density(pcf):	62.43	62.43	62.43





Boring No.	**LB-5**
Sample No.	**B-1**
Depth (ft)	**0-5**

Sample Type:

90% Remold

Soil Identification:
Olive brown silty sand with gravel (SM)g

Normal Stress (kip/ft²)	1.000	2.000	4.000
Peak Shear Stress (kip/ft²)	● 0.799	■ 1.550	▲ 2.666
Shear Stress @ End of Test (ksf)	○ 0.795	□ 1.528	△ 2.575
Deformation Rate (in./min.)	0.0033	0.0033	0.0033
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	8.37	8.37	8.37
Dry Density (pcf)	118.5	118.7	118.8
Saturation (%)	53.5	53.8	54.0
Soil Height Before Shearing (in.)	0.9894	0.9867	0.9814
Final Moisture Content (%)	11.4	11.3	11.0

Leighton

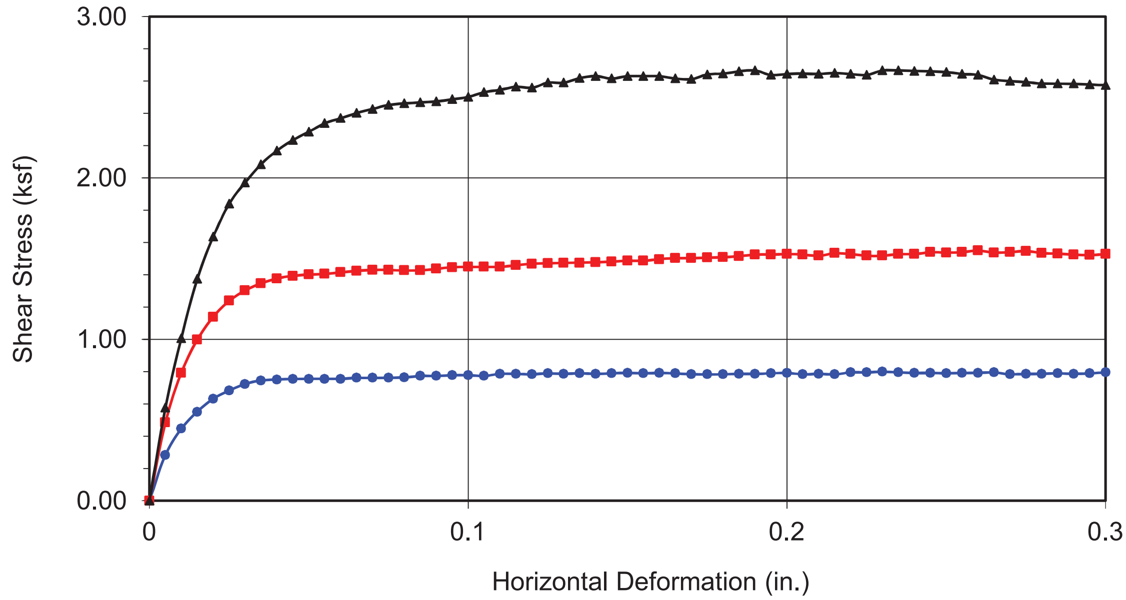
DIRECT SHEAR TEST RESULTS

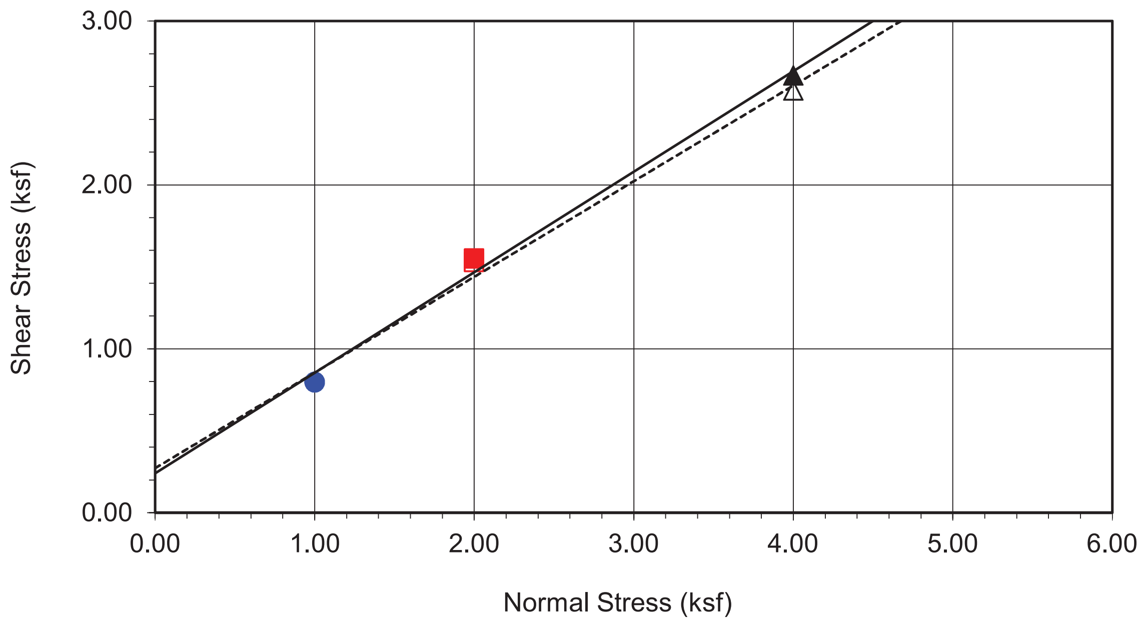
Consolidated Drained - ASTM D 3080

Project No.: 13491.001

Fontana FS No 80

04-22





Boring No.	**LB-5**
Sample No.	**B-1**
Depth (ft)	**0-5**
Sample Type: 90% Remold	
Soil Identification: Olive brown silty sand with gravel (SM)g	

Strength Parameters

	C (psf)	ϕ (°)
Peak	241	32
Ultimate	272	30

Normal Stress (kip/ft²)	1.000	2.000	4.000
Peak Shear Stress (kip/ft²)	● 0.799	■ 1.550	▲ 2.666
Shear Stress @ End of Test (ksf)	○ 0.795	□ 1.528	△ 2.575
Deformation Rate (in./min.)	0.0033	0.0033	0.0033
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	8.37	8.37	8.37
Dry Density (pcf)	118.5	118.7	118.8
Saturation (%)	53.5	53.8	54.0
Soil Height Before Shearing (in.)	0.9894	0.9867	0.9814
Final Moisture Content (%)	11.4	11.3	11.0

Leighton

DIRECT SHEAR TEST RESULTS

Consolidated Drained - ASTM D 3080

Project No.: 13491.001

Fontana FS No 80

04-22

Leighton

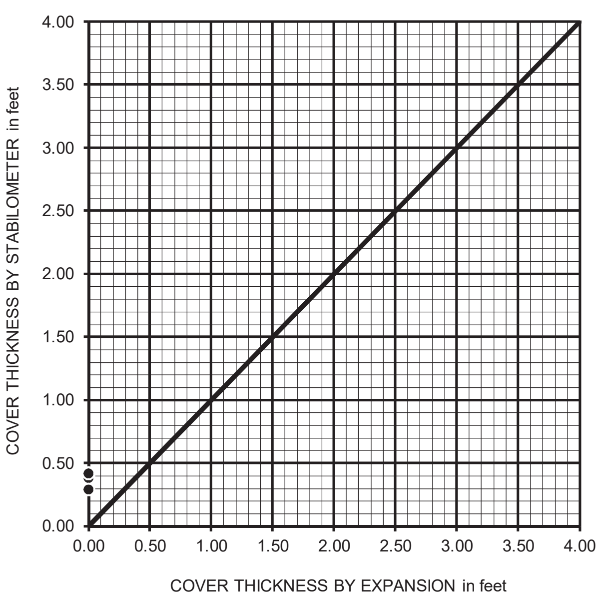
R-VALUE TEST RESULTS
DOT CA Test 301

PROJECT NAME:	Fontana FS No 80	PROJECT NUMBER:	13491.001
BORING NUMBER:	LB-5	DEPTH (FT.):	0-5
SAMPLE NUMBER:	B-1	TECHNICIAN:	O. Figueroa
SAMPLE DESCRIPTION:	Olive brown silty sand with gravel (SM)g	DATE COMPLETED:	4/18/2022

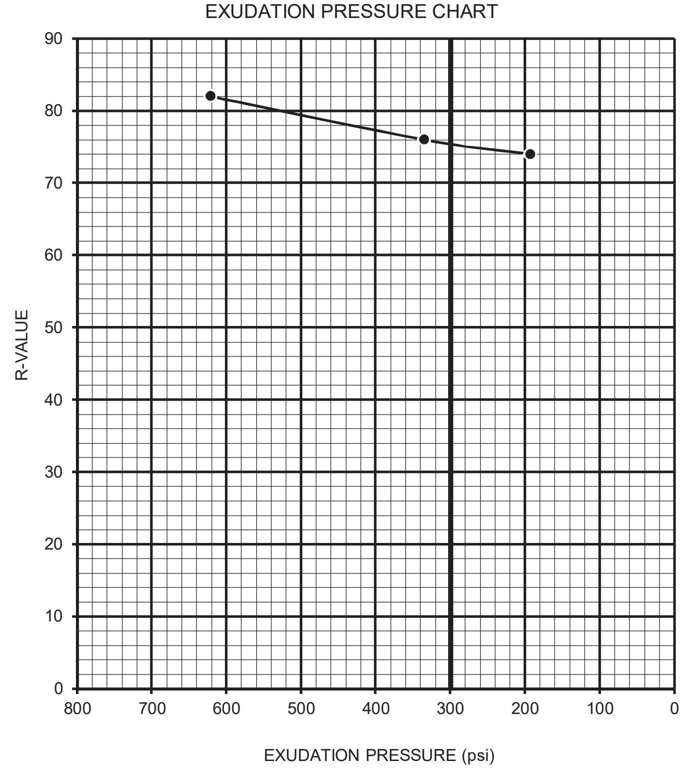
TEST SPECIMEN	a	b	c
MOISTURE AT COMPACTION %	6.7	7.2	7.6
HEIGHT OF SAMPLE, Inches	2.47	2.44	2.43
DRY DENSITY, pcf	135.2	134.1	135.0
COMPACTOR PRESSURE, psi	320	250	225
EXUDATION PRESSURE, psi	621	335	193
EXPANSION, Inches x 10exp-4	0	0	0
STABILITY Ph 2,000 lbs (160 psi)	16	18	20
TURNS DISPLACEMENT	4.99	5.50	5.60
R-VALUE UNCORRECTED	82	78	76
R-VALUE CORRECTED	82	76	74

DESIGN CALCULATION DATA	a	b	c
GRAVEL EQUIVALENT FACTOR	1.0	1.0	1.0
TRAFFIC INDEX	5.0	5.0	5.0
STABILOMETER THICKNESS, ft.	0.29	0.38	0.42
EXPANSION PRESSURE THICKNESS, ft.	0.00	0.00	0.00

EXPANSION PRESSURE CHART



EXUDATION PRESSURE CHART



R-VALUE BY EXPANSION:	N/A
R-VALUE BY EXUDATION:	75
EQUILIBRIUM R-VALUE:	75

ONE-DIMENSIONAL SWELL OR SETTLEMENT POTENTIAL OF COHESIVE SOILS
ASTM D 4546

Project Name:	Fontana ES No 80	Tested By:	G. Bathala
Date:	04/26/22		
Project No.:	13491.001	Checked By:	A. Santos
Date:	04/28/22		
Boring No.:	LB-3	Sample Type:	Ring
Sample No.:	R-2	Depth (ft.)	5.0

Sample Description: Olive gray poorly-graded sand with silt (SP-SM)

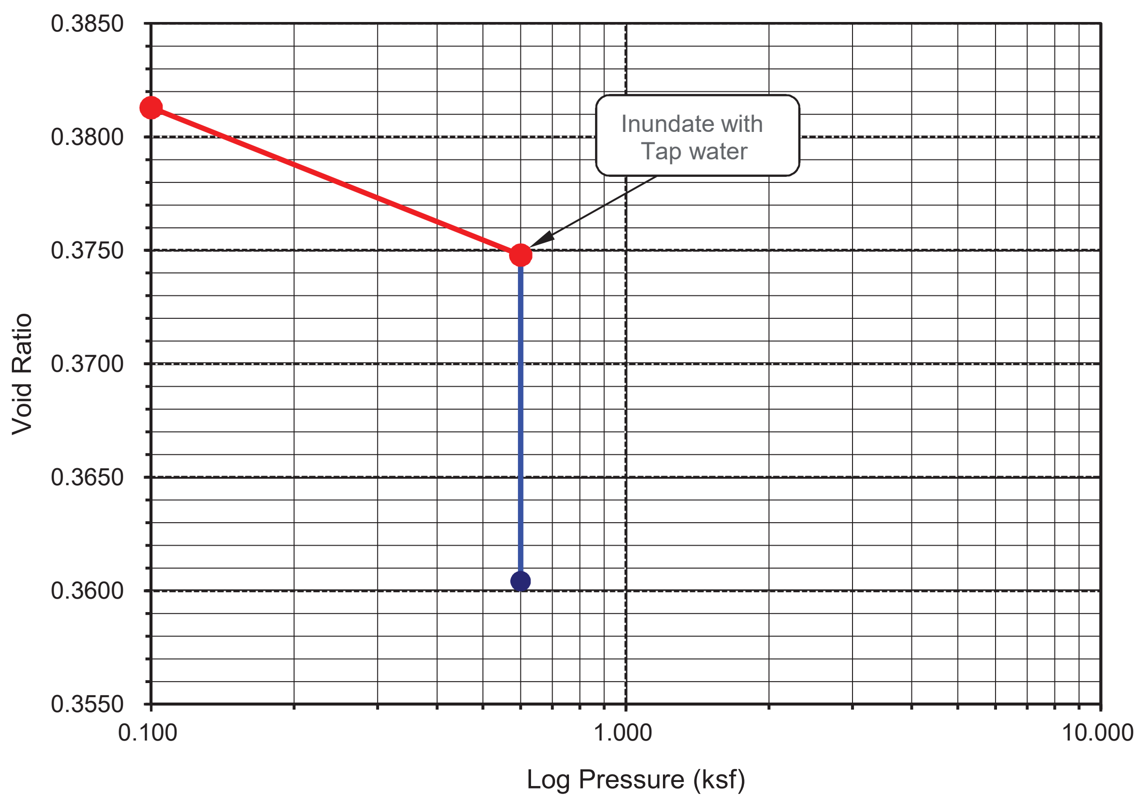
Initial Dry Density (pcf):	122.0
Initial Moisture (%):	1.26
Initial Length (in.):	1.0000
Initial Dial Reading:	0.1036
Diameter(in):	2.415

Final Dry Density (pcf):	124.3
Final Moisture (%) :	10.0
Initial Void ratio:	0.3816
Specific Gravity(assumed):	2.70
Initial Saturation (%)	8.9

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.100	0.1038	0.9998	0.00	-0.02	0.3813	-0.02
0.600	0.1100	0.9936	0.15	-0.64	0.3748	-0.49
H2O	0.1204	0.9832	0.15	-1.68	0.3604	-1.53

Percent Swell (+) / Settlement (-) After Inundation = -1.05

Void Ratio - Log Pressure Curve



Boring No.	LB-1	LB-3	LB-3	IT-2				
Sample No.	R-3	R-1	S-2	S-1				
Depth (ft.)	7.5	2.5	20.0	10.0				
Sample Type	Ring	Ring	SPT	Ring				
Soil Identification	Grayish brown (SP-SM)g	Brown (SM)g	Grayish brown (SP-SM)g	Gray (SP-SM)g				
Moisture Correction								
Wet Weight of Soil + Container (g)	0.00	0.00	0.00	0.00				
Dry Weight of Soil + Container (g)	0.00	0.00	0.00	0.00				
Weight of Container (g)	1.00	1.00	1.00	1.00				
Moisture Content (%)	0.00	0.00	0.00	0.00				
Sample Dry Weight Determination								
Weight of Sample + Container (g)	920.60	780.60	812.30	835.50				
Weight of Container (g)	107.60	110.10	245.50	234.40				
Weight of Dry Sample (g)	813.00	670.50	566.80	601.10				
Container No.:								
After Wash								
Method (A or B)	A	A	A	A				
Dry Weight of Sample + Cont. (g)	878.70	664.40	777.40	792.40				
Weight of Container (g)	107.60	110.10	245.50	234.40				
Dry Weight of Sample (g)	771.10	554.30	531.90	558.00				
% Passing No. 200 Sieve	**5.2**	**17.3**	**6.2**	**7.2**				
% Retained No. 200 Sieve	94.8	82.7	93.8	92.8				

Leighton

PERCENT PASSING
No. 200 SIEVE
ASTM D 1140

Project Name: Fontana FS No 80
Project No.: 13491.001
Tested By: S. Felter Date: 04/27/22

APPENDIX C

SEISMIC

Liquefaction Susceptibility Analysis: SPT Method

Youd and Idriss (2001), Martin and Lew (1999)

Description: Fontana Fire Station No. 80; Case 1; PGAm 0.85; design GW 289; No overex 0
Project No.: 13491.001
Apr 2022

General Boring Information:

Boring No.	Existing GW Depth (ft)	Design GW Depth (ft)	Design Fill Height (ft)	Overex. depth bgs (ft)	Ground Surface Elev (ft)	design gw elve
LB-1	665	289		0	1393	1104
LB-2	665	289		0	1398	1109
LB-3	665	289		0	1394	1105
LB-4	665	289		0	1397	1108
LB-5	665	289		0	1397	1108
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0

Boring Location Coordinates X (ft)	Y (ft)
66.598	-189.1
331.77	-31.95
96.169	-109.9
248.62	-112.8
139.47	-12.2

General Parameters:

a_{max} = 0.85g
M_W = 7.9
MSF eq: 1
MSF = 0.88
Hammer Efficiency = 84
C_E = 1.40
C_B = 1
C_S for SPT? TRUE
Unlined, but room for liner
Rod Stickup (feet) = 3
Ring sample correction = 0.65

Summary of Liquefaction Susceptibility Analysis: SPT Method

Liquefaction Method: Youd and Idriss (2001). Seismic Settlement Method: Tokimatsu and Seed (1987) and Martin and Lew (1999).

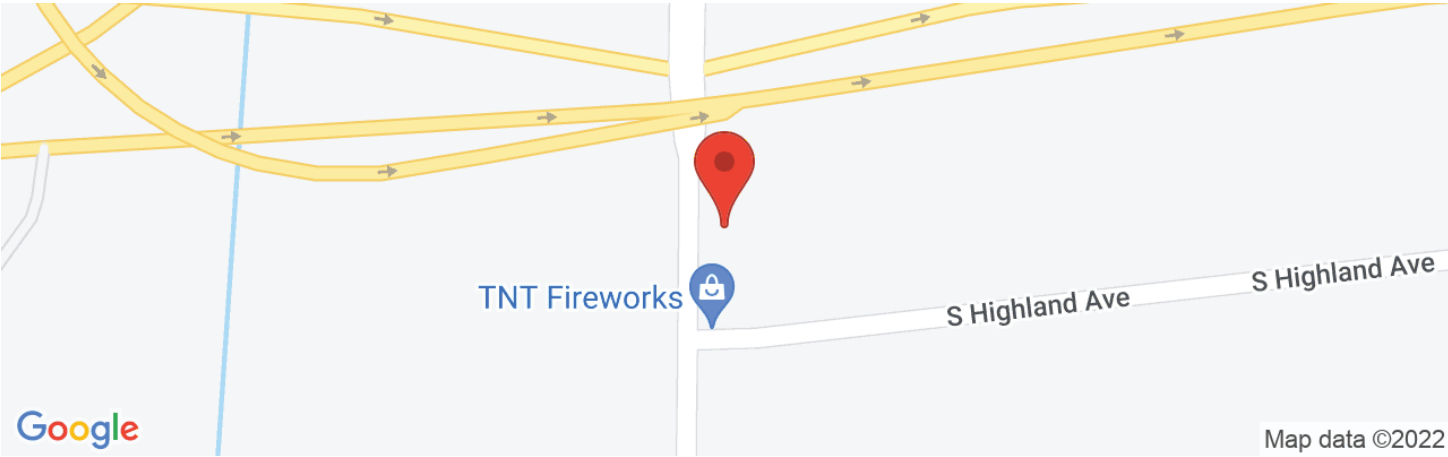
Project: Fontana Fire Station No. 80; Case 1; PGAm 0.85; design GW 289; No overex 0

Project No.: 13491.001

Boring No.	Approx. Layer Depth (ft)	SPT Depth (ft)	Approx Layer Thick-ness (ft)	Plasticity ("n"=non susc. to liq.)	Estimated Fines Cont (%)	γ_t (pcf)	N_m or B (blows/ft)	Sampler Type (enter 2 if mod CA Ring)	Cs	N_m (corrected for Cs and ring->SPT) (blows/ft)	Exist σ_{vo}' (psf)	$(N_1)_{60}$	$(N_1)_{60CS}$	**$CRR_{7.5}$**	Design σ_{vo}' (psf)	$CSR_{7.5}$	CSR_M	**Liquefaction Factor of Safety**	$(N_1)_{60CS}$ (for Settle-ment) (blows/ft)	Dry Sand Strain (%) (Tok/ Seed 87) (%)	Sat Sand Strain (%) (Tok/ Seed 87) (%)	Seismic Sett. of Layer (in.)	**Cummulative Seismic Settlement** (in.)
LB-1	0 to 3.8	2.5	3.8		**21**	120	39	2	1	25.4	300	45.2	52.9	>Range	300	0.55	0.63	**NonLiq**	52.9	0.02		0.01	0.1
LB-1	3.8 to 6.3	5	2.5		5	120	52	2	1	33.8	600	60.3	60.3	>Range	600	0.55	0.62	**NonLiq**	60.3	0.07		0.02	0.1
LB-1	6.3 to 8.8	7.5	2.5		**5**	120	60	2	1	39.0	900	66.5	66.5	>Range	900	0.54	0.62	**NonLiq**	66.5	0.03		0.01	0.0
LB-1	8.8 to 12.5	10	3.8		5	120	100	2	1	65.0	1200	102.0	102.0	>Range	1200	0.54	0.62	**NonLiq**	102.0	0.03		0.01	0.0
LB-1	12.5 to 17.0	15	4.5		5	120	100	1	1.3	130.0	1800	166.6	166.6	>Range	1800	0.53	0.61	**NonLiq**	166.6	0.02		0.01	0.0
LB-2	0 to 3.8	2.5	3.8		25	120	25	2	1	16.3	300	29.0	36.6	>Range	300	0.55	0.63	**NonLiq**	36.6	0.08		0.04	0.2
LB-2	3.8 to 6.3	5	2.5		5	120	48	2	1	31.2	600	55.7	55.7	>Range	600	0.55	0.62	**NonLiq**	55.7	0.08		0.02	0.2
LB-2	6.3 to 8.8	7.5	2.5		5	120	100	2	1	65.0	900	110.9	110.9	>Range	900	0.54	0.62	**NonLiq**	110.9	0.02		0.01	0.1
LB-2	8.8 to 12.5	10	3.8		5	120	100	2	1	65.0	1200	102.0	102.0	>Range	1200	0.54	0.62	**NonLiq**	102.0	0.03		0.01	0.1
LB-2	12.5 to 17.5	15	5.0		5	120	92	1	1.3	119.6	1800	153.3	153.3	>Range	1800	0.53	0.61	**NonLiq**	153.3	0.02		0.01	0.1
LB-2	17.5 to 22.5	20	5.0		5	120	74	1	1.3	96.2	2400	119.3	119.3	>Range	2400	0.53	0.60	**NonLiq**	119.3	0.03		0.02	0.1
LB-2	22.5 to 27.5	25	5.0		5	120	100	1	1.3	130.0	3000	144.2	144.2	>Range	3000	0.52	0.59	**NonLiq**	144.2	0.03		0.02	0.1
LB-2	27.5 to 32.5	30	5.0		5	120	100	1	1.3	130.0	3600	138.6	138.6	>Range	3600	0.51	0.59	**NonLiq**	138.6	0.02		0.01	0.1
LB-2	32.5 to 37.5	35	5.0		5	120	100	1	1.3	130.0	4200	128.3	128.3	>Range	4200	0.49	0.56	**NonLiq**	128.3	0.03		0.02	0.1
LB-2	37.5 to 42.5	40	5.0		5	120	100	1	1.3	130.0	4800	120.0	120.0	>Range	4800	0.47	0.54	**NonLiq**	120.0	0.03		0.02	0.1
LB-2	42.5 to 47.5	45	5.0		5	120	100	1	1.3	130.0	5400	113.2	113.2	>Range	5400	0.45	0.51	**NonLiq**	113.2	0.03		0.02	0.0
LB-2	47.5 to 52.0	50	4.5		5	120	100	1	1.3	130.0	6000	107.4	107.4	>Range	6000	0.42	0.48	**NonLiq**	107.4	0.03		0.02	0.0
LB-3	0 to 3.8	2.5	3.8		**17**	120	31	2	1	20.2	300	36.0	41.1	>Range	300	0.55	0.63	**NonLiq**	41.1	0.02		0.01	0.2
LB-3	3.8 to 6.3	5	2.5		5	120	47	2	1	30.6	600	54.5	54.5	>Range	600	0.55	0.62	**NonLiq**	54.5	0.08		0.02	0.2
LB-3	6.3 to 8.8	7.5	2.5		5	120	69	2	1	44.9	900	76.5	76.5	>Range	900	0.54	0.62	**NonLiq**	76.5	0.03		0.01	0.2
LB-3	8.8 to 12.5	10	3.8		5	120	100	2	1	65.0	1200	102.0	102.0	>Range	1200	0.54	0.62	**NonLiq**	102.0	0.03		0.01	0.2
LB-3	12.5 to 17.5	15	5.0		5	120	67	1	1.3	87.1	1800	111.6	111.6	>Range	1800	0.53	0.61	**NonLiq**	111.6	0.02		0.01	0.1
LB-3	17.5 to 22.5	20	5.0		**6**	120	67	1	1.3	87.1	2400	108.1	108.6	>Range	2400	0.53	0.60	**NonLiq**	108.6	0.03		0.02	0.1
LB-3	22.5 to 27.5	25	5.0		5	120	71	1	1.3	92.3	3000	102.4	102.4	>Range	3000	0.52	0.59	**NonLiq**	102.4	0.04		0.03	0.1
LB-3	27.5 to 32.5	30	5.0		5	120	100	1	1.3	130.0	3600	138.6	138.6	>Range	3600	0.51	0.59	**NonLiq**	138.6	0.02		0.01	0.1
LB-3	32.5 to 37.5	35	5.0		5	120	70	1	1.3	91.0	4200	89.8	89.8	>Range	4200	0.49	0.56	**NonLiq**	89.8	0.03		0.02	0.1
LB-3	37.5 to 42.5	40	5.0		5	120	90	1	1.3	117.0	4800	108.0	108.0	>Range	4800	0.47	0.54	**NonLiq**	108.0	0.03		0.02	0.1
LB-3	42.5 to 47.5	45	5.0		5	120	100	1	1.3	130.0	5400	113.2	113.2	>Range	5400	0.45	0.51	**NonLiq**	113.2	0.03		0.02	0.0
LB-3	47.5 to 52.0	50	4.5		5	120	100	1	1.3	130.0	6000	107.4	107.4	>Range	6000	0.42	0.48	**NonLiq**	107.4	0.03		0.02	0.0
LB-4	0 to 3.8	2.5	3.8		20	120	11	2	1	7.2	300	12.8	17.4	0.185	300	0.55	0.63	**NonLiq**	17.4	0.80		0.36	0.6
LB-4	3.8 to 6.3	5	2.5		5	120	30	2	1	19.5	600	34.8	34.8	>Range	600	0.55	0.62	**NonLiq**	34.8	0.37		0.11	0.2
LB-4	6.3 to 8.8	7.5	2.5		5	120	50	2	1	32.5	900	55.4	55.4	>Range	900	0.54	0.62	**NonLiq**	55.4	0.04		0.01	0.1
LB-4	8.8 to 12.5	10	3.8		5	120	100	2	1	65.0	1200	102.0	102.0	>Range	1200	0.54	0.62	**NonLiq**	102.0	0.03		0.01	0.1
LB-4	12.5 to 17.5	15	5.0		5	120	100	1	1.3	130.0	1800	166.6	166.6	>Range	1800	0.53	0.61	**NonLiq**	166.6	0.02		0.01	0.1

Boring No.	Approx. Layer Depth (ft)	SPT Depth (ft)	Approx Layer Thick-ness (ft)	Plasticity ("n"=non susc. to liq.)	Estimated Fines Cont (%)	γ_t (pcf)	N_m or B (blows/ft)	Sampler Type (enter 2 if mod CA Ring)	Cs	N_m (corrected for Cs and ring->SPT) (blows/ft)	Exist σ_{vo}' (psf)	$(N_1)_{60}$	$(N_1)_{60CS}$	**$CRR_{7.5}$**	Design σ_{vo}' (psf)	$CSR_{7.5}$	CSR_M	**Liquefaction Factor of Safety**	$(N_1)_{60CS}$ (for Settle-ment) (blows/ft)	Dry Sand Strain (%) (Tok/ Seed 87) (%)	Sat Sand Strain (%) (Tok/ Seed 87) (%)	Seismic Sett. of Layer (in.)	**Cummulative Seismic Settlement** (in.)
LB-4	17.5 to 22.5	20	5.0		5	120	69	1	1.3	89.7	2400	111.3	111.3	>Range	2400	0.53	0.60	**NonLiq**	111.3	0.03		0.02	0.1
LB-4	22.5 to 27.5	25	5.0		5	120	100	1	1.3	130.0	3000	144.2	144.2	>Range	3000	0.52	0.59	**NonLiq**	144.2	0.03		0.02	0.0
LB-4	27.5 to 32.0	30	4.5		5	120	58	1	1.3	75.4	3600	80.4	80.4	>Range	3600	0.51	0.59	**NonLiq**	80.4	0.04		0.02	0.0
LB-5	0 to 3.8	2.5	3.8		5	120	31	2	1	20.2	300	36.0	36.0	>Range	300	0.55	0.63	**NonLiq**	36.0	0.08		0.04	0.2
LB-5	3.8 to 6.3	5	2.5		5	120	29	2	1	18.9	600	33.6	33.6	>Range	600	0.55	0.62	**NonLiq**	33.6	0.39		0.12	0.2
LB-5	6.3 to 8.8	7.5	2.5		5	120	57	2	1	37.1	900	63.2	63.2	>Range	900	0.54	0.62	**NonLiq**	63.2	0.03		0.01	0.1
LB-5	8.8 to 12.5	10	3.8		5	120	100	1	1.3	130.0	1200	204.1	204.1	>Range	1200	0.54	0.62	**NonLiq**	204.1	0.02		0.01	0.1
LB-5	12.5 to 17.5	15	5.0		5	120	100	1	1.3	130.0	1800	166.6	166.6	>Range	1800	0.53	0.61	**NonLiq**	166.6	0.02		0.01	0.0
LB-5	17.5 to 22.5	20	5.0		5	120	100	1	1.3	130.0	2400	161.3	161.3	>Range	2400	0.53	0.60	**NonLiq**	161.3	0.02		0.01	0.0
LB-5	22.5 to 27.0	25	4.5		5	120	85	1	1.3	110.5	3000	122.6	122.6	>Range	3000	0.52	0.59	**NonLiq**	122.6	0.04		0.02	0.0

Latitude, Longitude: 34.1343, -117.4881



Date	4/20/2022, 9:25:46 AM
Design Code Reference Document	ASCE7-16
Risk Category	IV
Site Class	D - Stiff Soil

Type	Value	Description
S_S	1.907	MCE_R ground motion. (for 0.2 second period)
S_1	0.625	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.907	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.272	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.775	MCE_G peak ground acceleration
F_{PGA}	1.1	Site amplification factor at PGA
PGA_M	0.853	Site modified peak ground acceleration
T_L	12	Long-period transition period in seconds
SsRT	2.066	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	2.246	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.907	Factored deterministic acceleration value. (0.2 second)
S1RT	0.798	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.889	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.625	Factored deterministic acceleration value. (1.0 second)
PGAd	0.775	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.92	Mapped value of the risk coefficient at short periods
C_{R1}	0.897	Mapped value of the risk coefficient at a period of 1 s

DISCLAIMER

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U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition

Dynamic: Conterminous U.S. 2014 (u…

Latitude

Decimal degrees

34.1343

Longitude

Decimal degrees, negative values for western longitudes

-117.4881

Site Class

259 m/s (Site class D)

Spectral Period

Peak Ground Acceleration

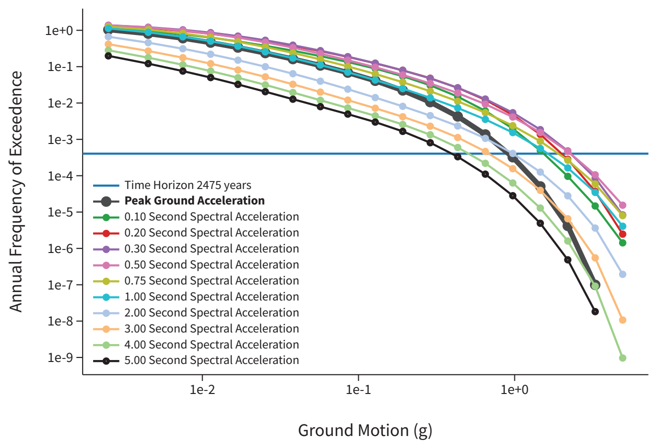
Time Horizon

Return period in years

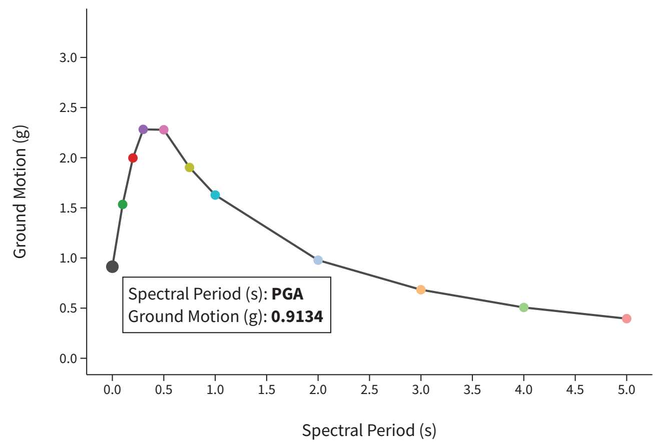
2475

Hazard Curve

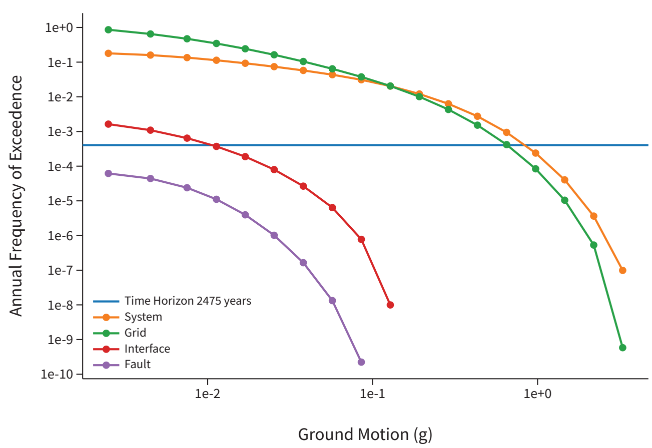
Hazard Curves



Uniform Hazard Response Spectrum



Component Curves for Peak Ground Acceleration

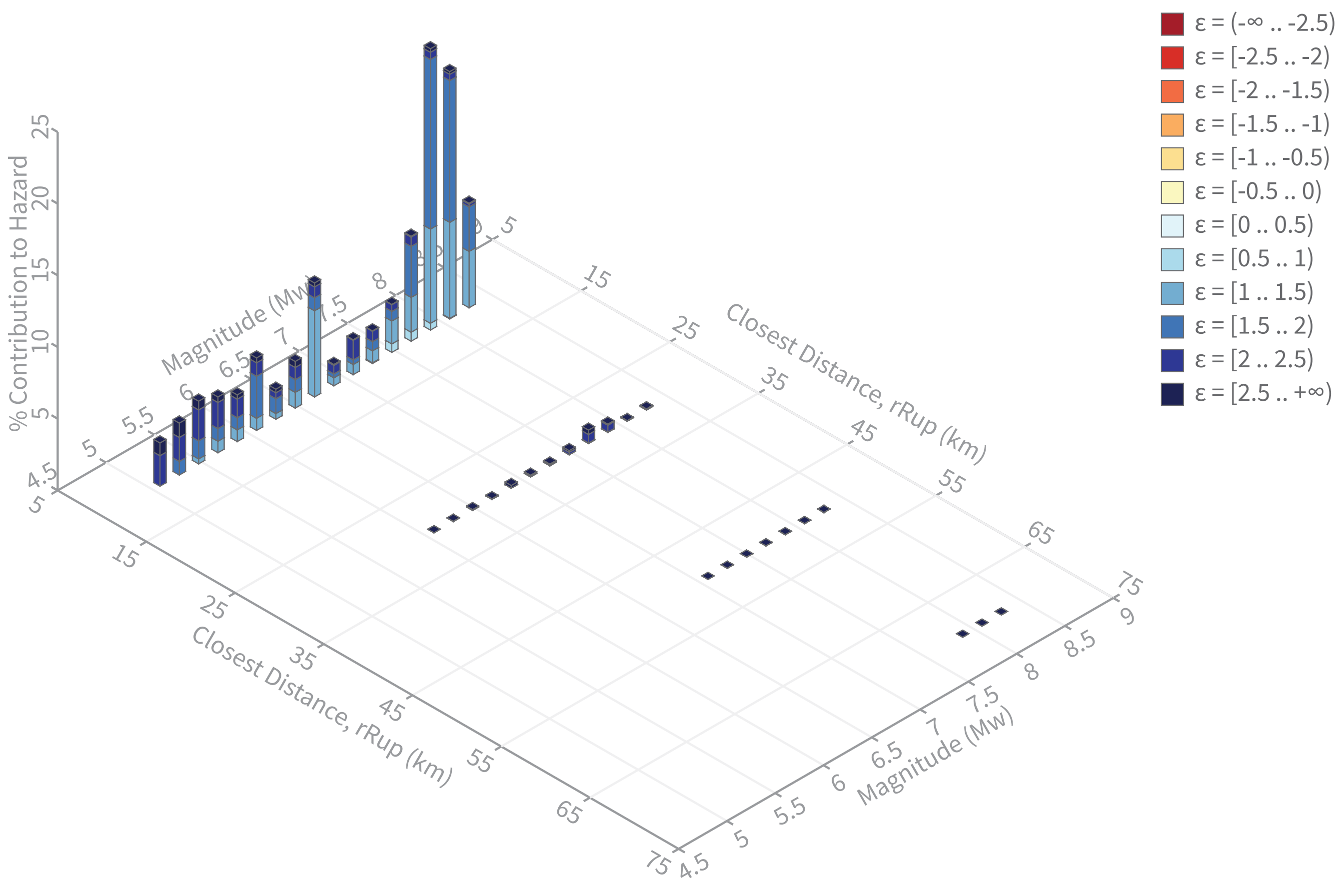


[View Raw Data]

Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 2475 yrs
Exceedance rate: 0.0004040404 yr^{-1}
PGA ground motion: 0.9133858 g

Recovered targets

Return period: 3217.2647 yrs
Exceedance rate: 0.00031082304 yr^{-1}

Totals

Binned: 100 %
Residual: 0 %
Trace: 0.01 %

Mean (over all sources)

m: 7.18
r: 9.92 km
ε_0: 1.72 σ

Mode (largest m-r bin)

m: 7.9
r: 10.62 km
ε_0: 1.59 σ
Contribution: 19.61 %

Mode (largest m-r-ε_0 bin)

m: 7.91
r: 12.99 km
ε_0: 1.76 σ
Contribution: 11.83 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km
m: min = 4.4, max = 9.4, Δ = 0.2
ε: min = -3.0, max = 3.0, Δ = 0.5 σ

Epsilon keys

ε0: [-∞ .. -2.5)
ε1: [-2.5 .. -2.0)
ε2: [-2.0 .. -1.5)
ε3: [-1.5 .. -1.0)
ε4: [-1.0 .. -0.5)
ε5: [-0.5 .. 0.0)
ε6: [0.0 .. 0.5)
ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Deaggregation Contributors

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
UC33brAvg_FM31	System							37.47
San Andreas (San Bernardino N) [2]		14.25	7.80	1.87	117.395°W	34.237°N	36.78	12.01
San Jacinto (San Bernardino) [1]		10.66	8.06	1.56	117.421°W	34.212°N	35.59	8.67
Cucamonga [0]		5.10	7.56	1.26	117.490°W	34.179°N	357.61	6.36
Fontana (Seismicity) [0]		4.59	6.61	1.33	117.455°W	34.107°N	135.17	3.89
San Jacinto (Lytle Creek connector) [1]		6.86	8.02	1.32	117.438°W	34.178°N	43.48	3.09
UC33brAvg_FM32	System							36.59
San Andreas (San Bernardino N) [2]		14.25	7.80	1.87	117.395°W	34.237°N	36.78	12.19
San Jacinto (San Bernardino) [1]		10.66	8.05	1.56	117.421°W	34.212°N	35.59	8.54
Cucamonga [0]		5.10	7.59	1.26	117.490°W	34.179°N	357.61	6.35
Fontana (Seismicity) [0]		4.59	6.61	1.33	117.455°W	34.107°N	135.17	3.18
San Jacinto (Lytle Creek connector) [1]		6.86	8.02	1.33	117.438°W	34.178°N	43.48	3.01
UC33brAvg_FM31 (opt)	Grid							12.98
PointSourceFinite: -117.488, 34.166		6.28	5.60	1.79	117.488°W	34.166°N	0.00	2.86
PointSourceFinite: -117.488, 34.166		6.28	5.60	1.79	117.488°W	34.166°N	0.00	2.86
PointSourceFinite: -117.488, 34.202		8.81	5.69	2.15	117.488°W	34.202°N	0.00	1.38
PointSourceFinite: -117.488, 34.202		8.81	5.69	2.15	117.488°W	34.202°N	0.00	1.38
PointSourceFinite: -117.488, 34.211		9.48	5.74	2.21	117.488°W	34.211°N	0.00	1.06
PointSourceFinite: -117.488, 34.211		9.48	5.74	2.21	117.488°W	34.211°N	0.00	1.06
UC33brAvg_FM32 (opt)	Grid							12.96
PointSourceFinite: -117.488, 34.166		6.28	5.60	1.79	117.488°W	34.166°N	0.00	2.86
PointSourceFinite: -117.488, 34.166		6.28	5.60	1.79	117.488°W	34.166°N	0.00	2.86
PointSourceFinite: -117.488, 34.202		8.81	5.69	2.15	117.488°W	34.202°N	0.00	1.38
PointSourceFinite: -117.488, 34.202		8.81	5.69	2.15	117.488°W	34.202°N	0.00	1.38
PointSourceFinite: -117.488, 34.211		9.48	5.74	2.21	117.488°W	34.211°N	0.00	1.06
PointSourceFinite: -117.488, 34.211		9.48	5.74	2.21	117.488°W	34.211°N	0.00	1.06

APPENDIX D

GBA'S IMPORTANT INFORMATION ABOUT THIS GEOTECHNICAL-ENGINEERING REPORT

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled.* No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be*, and, in general, *if you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying it. A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old.*

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration.*** Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org

APPENDIX E – Noise Study

NOISE IMPACT ANALYSIS

FIRE STATION NO. 80 AND TRAINING CENTER PROJECT

CITY OF FONTANA

Lead Agency:

City of Fontana
Planning Department
8353 Sierra Avenue
Fontana, CA 92335

Prepared by:

Vista Environmental
1021 Didrickson Way
Laguna Beach, CA 92651
949 510 5355
Greg Tonkovich, INCE

Project No. 20115

December 13, 2022

TABLE OF CONTENTS

TABLE OF CONTENTS CONTINUED

APPENDICES

LIST OF FIGURES

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

ANSI	American National Standards Institute
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
City	City of Fontana
cmu	Concrete masonry unit
CNEL	Community Noise Equivalent Level
dB	Decibel
dBA	A-weighted decibels
DOT	Department of Transportation
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
EPA	Environmental Protection Agency
Hz	Hertz
Ldn	Day-night average noise level
Leq	Equivalent sound level
Lmax	Maximum noise level
ONAC	Federal Office of Noise Abatement and Control
OSB	Oriented Strand Board
OSHA	Occupational Safety and Health Administration
PPV	Peak particle velocity
RMS	Root mean square
SEL	Single Event Level or Sound Exposure Level
STC	Sound Transmission Class
VdB	Vibration velocity level in decibels

1.0 INTRODUCTION

1.1 Purpose of Analysis and Study Objectives

This Noise Impact Analysis has been prepared to determine the noise impacts associated with the proposed Fire Station No. 80 and Training Center project (proposed project). The following is provided in this report:

- A description of the study area and the proposed project;
- Information regarding the fundamentals of noise;
- Information regarding the fundamentals of vibration;
- A description of the local noise guidelines and standards;
- An evaluation of the current noise environment;
- An analysis of the potential short-term construction-related noise impacts from the proposed project; and,
- An analysis of long-term operations-related noise impacts from the proposed project.

1.2 Site Location and Study Area

The project site is located in the northwestern portion of the City of Fontana (City). The project site consists of an approximately 2.3-acre triangular shaped lot and a 100 foot wide Metropolitan Water District (MWD) easement area that approximately 1.41 acres of the easement area will be disturbed as part of the proposed project. As such, the project site covers approximately 3.68 acres, which is currently vacant and is bounded by a flood control channel and Interstate 210 to the north, a 100 foot Southern California Edison (SCE) easement and vacant land to the southeast, Highland Avenue and vacant land to the south, Cherry Avenue and vacant land to the west. The project study area is shown in Figure 1.

Sensitive Receptors in Project Vicinity

The nearest sensitive receptors to the project site are homes located as near as 2,200 feet (0.4 mile) to the east of the project site. The nearest school is East Heritage Elementary School, which is located as near as 1.4 mile south of the project site.

1.3 Proposed Project Description

The proposed project consists of development of Fire Station 80 and Training Center, which will be a new facility built by the City of Fontana in coordination with the San Bernardino County Fire Department. The proposed project would include a 14,663 square foot fire station, a 4,193 square foot training center, a 5,721 square foot six story training tower, and an outdoor equipment storage area. The proposed Site Plan is shown in Figure 2.

Construction would be completed in two phases, with Phase 1 including the training center and tower, along with a portion of the fire station facilities described below. Phase 2 of construction would include a 2-bay double deep apparatus room, individual dormitories, kitchen, dining room, day room, physical training room, and other support spaces. Phase 1 of the proposed project is expected to break ground in June 2024 and be completed by January 2025; with Phase 2 anticipated to begin in June 2027.

Construction activities will take place between the hours of 7:00 a.m. and 6:00 p.m. on weekdays and between the hours of 8:00 a.m. and 5:00 p.m. on Saturdays, in accordance with the City's Noise Ordinance.

1.4 Standard Noise Regulatory Conditions

The proposed project will be required to comply with the following regulatory conditions from the City of Fontana and State of California.

City of Fontana Municipal Code

The following lists the City of Fontana Municipal Code noise and vibration regulations that are applicable to all industrial development projects in the City.

Section 18-63(b)(7) Construction Noise

Section 18-63(b)(7) of the Municipal Code restricts construction activities from occurring between the hours of 6:00 p.m. and 7:00 a.m. on weekdays, between the hours of 5:00 p.m. and 8:00 a.m. on Saturdays, or anytime on Sundays.

Section 30-543(a) Operational Noise Performance Standards

Section 30-543(d) of the City's Municipal Code limits the noise created from industrial sources at the property lines of the nearby residential properties to 70 dBA between 7:00 a.m. and 10:00 p.m. and 65 dBA between 10:00 p.m. and 7:00 a.m..

Section 30-543(c) 090 Vibration Performance Standards

Section 30-543(c) of the City's Municipal Code restricts the creation of vibration which can be felt beyond the property line.

State of California Rules

The following lists the State of California rules that are applicable to all industrial projects in the State.

California Vehicle Code Section 27200-27207 – On-Road Vehicle Noise

California Vehicle Code Section 27200-27207 provides noise limits for vehicles operated in California. For vehicles over 10,000 pounds noise is limited to 88 dB for vehicles manufactured before 1973, 86 dB for vehicles manufactured before 1975, 83 dB for vehicles manufactured before 1988, and 80 dB for vehicles manufactured after 1987. All measurements are based at 50 feet from the vehicle.

California Vehicle Section 38365-38380 – Off-Road Vehicle Noise

California Vehicle Code Section 38365-38380 provides noise limits for off-highway motor vehicles operated in California. 92 dBA for vehicles manufactured before 1973, 88 dBA for vehicles manufactured before 1975, 86 dBA for vehicles manufactured before 1986, and 82 dBA for vehicles manufactured after December 31, 1985. All measurements are based at 50 feet from the vehicle.

1.5 Summary of Analysis Results

The following is a summary of the proposed project's impacts with regard to the State CEQA Guidelines noise checklist questions.

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.

Generation of excessive groundborne vibration or groundborne noise levels?

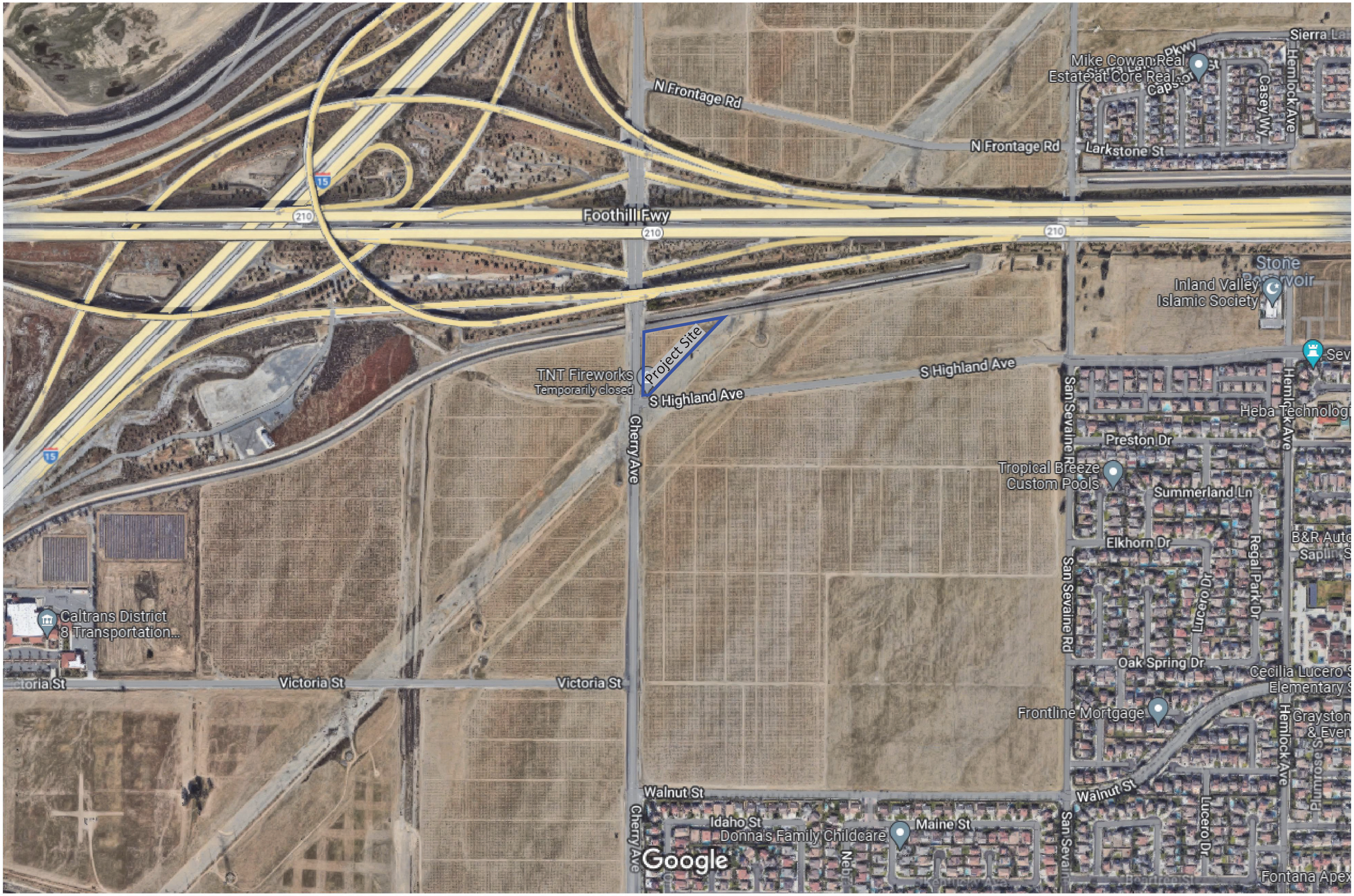
Less than significant impact.

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.

1.6 Mitigation Measures for the Proposed Project

This analysis found that through adherence to the noise and vibration regulations detailed in Section 1.4 above were adequate to limit all noise and vibration impacts to less than significant levels. No mitigation measures are required for the proposed project with respect to noise and vibration impacts.



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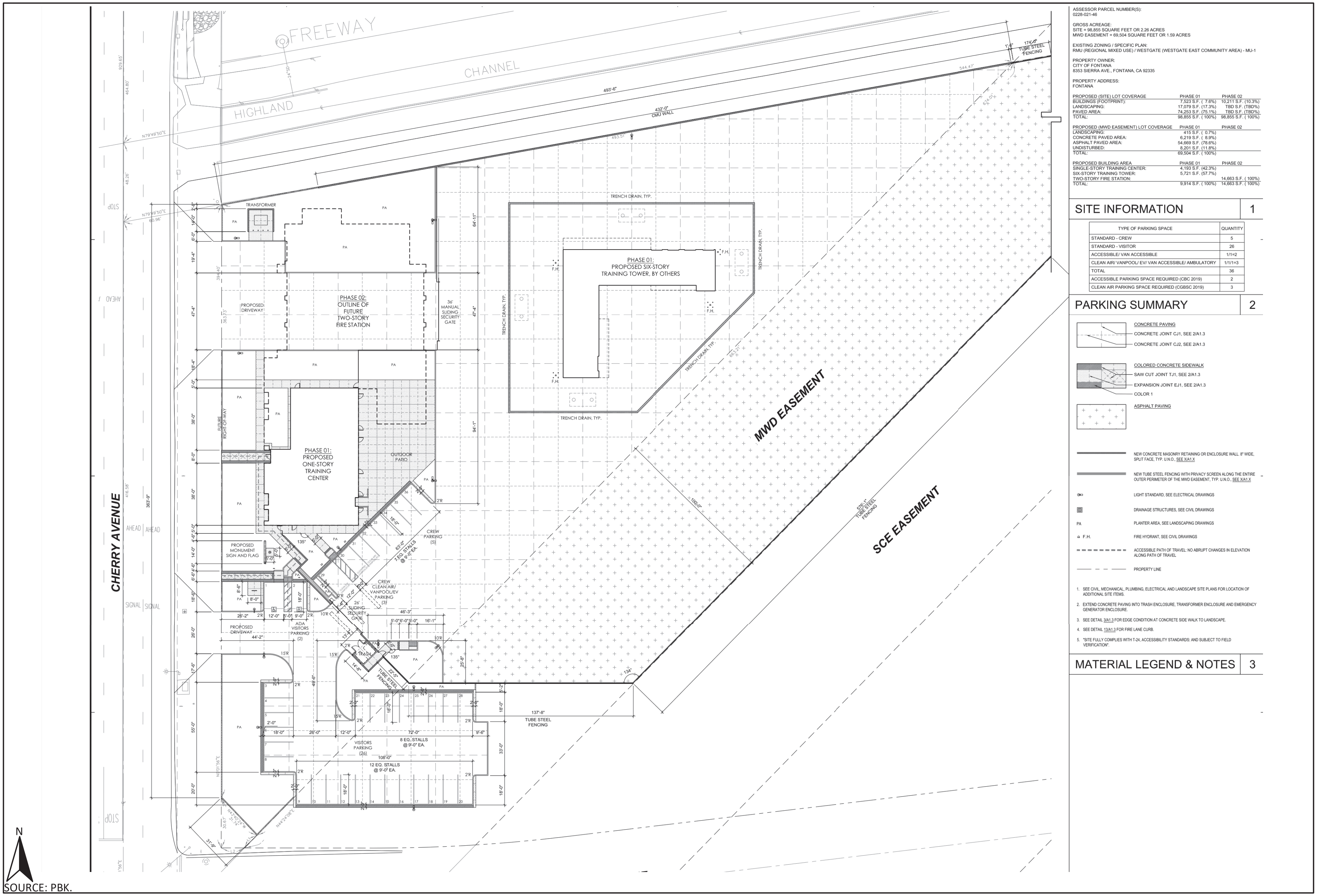
SOURCE: Google Maps.

VISTA ENVIRONMENTAL

Figure 1
Project Location Map



SOURCE: PBK.

Figure 2
Proposed Site Plan

2.0 NOISE FUNDAMENTALS

Noise is defined as unwanted sound. Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Sound is produced by the vibration of sound pressure waves in the air. Sound pressure levels are used to measure the intensity of sound and are described in terms of decibels. The decibel (dB) is a logarithmic unit which expresses the ratio of the sound pressure level being measured to a standard reference level. A-weighted decibels (dBA) approximate the subjective response of the human ear to a broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear.

2.1 Noise Descriptors

Noise Equivalent sound levels are not measured directly, but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. The peak traffic hour Leq is the noise metric used by California Department of Transportation (Caltrans) for all traffic noise impact analyses.

The Day-Night Average Level (Ldn) is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of ten decibels to sound levels at night between 10 p.m. and 7 a.m. While the Community Noise Equivalent Level (CNEL) is similar to the Ldn, except that it has another addition of 4.77 decibels to sound levels during the evening hours between 7 p.m. and 10 p.m. These additions are made to the sound levels at these time periods because during the evening and nighttime hours, when compared to daytime hours, there is a decrease in the ambient noise levels, which creates an increased sensitivity to sounds. For this reason the sound appears louder in the evening and nighttime hours and is weighted accordingly. The City of Fontana relies on the CNEL noise standard to assess transportation-related impacts on noise sensitive land uses.

2.2 Tone Noise

A pure tone noise is a noise produced at a single frequency and laboratory tests have shown that humans are more perceptible to changes in noise levels of a pure tone. For a noise source to contain a "pure tone," there must be a significantly higher A-weighted sound energy in a given frequency band than in the neighboring bands, thereby causing the noise source to "stand out" against other noise sources. A pure tone occurs if the sound pressure level in the one-third octave band with the tone exceeds the average of the sound pressure levels of the two contiguous one-third octave bands by:

- 5 dB for center frequencies of 500 hertz (Hz) and above
- 8 dB for center frequencies between 160 and 400 Hz
- 15 dB for center frequencies of 125 Hz or less

2.3 Noise Propagation

From the noise source to the receiver, noise changes both in level and frequency spectrum. The most obvious is the decrease in noise as the distance from the source increases. The manner in which noise reduces with distance depends on whether the source is a point or line source as well as ground absorption, atmospheric effects and refraction, and shielding by natural and manmade features. Sound from point sources, such as air conditioning condensers, radiate uniformly outward as it travels away from the source in a spherical pattern. The noise drop-off rate associated with this geometric spreading is 6 dBA per each doubling of the distance (dBA/DD). Transportation noise sources such as roadways are typically analyzed as line sources, since at any given moment the receiver may be impacted by noise from multiple vehicles at various locations along the roadway. Because of the geometry of a line source, the noise drop-off rate associated with the geometric spreading of a line source is 3 dBA/DD.

2.4 Ground Absorption

The sound drop-off rate is highly dependent on the conditions of the land between the noise source and receiver. To account for this ground-effect attenuation (absorption), two types of site conditions are commonly used in traffic noise models, soft-site and hard-site conditions. Soft-site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. For point sources, a drop-off rate of 7.5 dBA/DD is typically observed over soft ground with landscaping, as compared with a 6.0 dBA/DD drop-off rate over hard ground such as asphalt, concrete, stone and very hard packed earth. For line sources a 4.5 dBA/DD is typically observed for soft-site conditions compared to the 3.0 dBA/DD drop-off rate for hard-site conditions. Caltrans research has shown that the use of soft-site conditions is more appropriate for the application of the Federal Highway Administration (FHWA) traffic noise prediction model used in this analysis.

3.0 GROUND-BORNE VIBRATION FUNDAMENTALS

Ground-borne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. The effects of ground-borne vibrations typically only cause a nuisance to people, but at extreme vibration levels damage to buildings may occur. Although ground-borne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. Ground-borne noise is an effect of ground-borne vibration and only exists indoors, since it is produced from noise radiated from the motion of the walls and floors of a room and may also consist of the rattling of windows or dishes on shelves.

3.1 Vibration Descriptors

There are several different methods that are used to quantify vibration amplitude such as the maximum instantaneous peak in the vibrations velocity, which is known as the peak particle velocity (PPV) or the root mean square (rms) amplitude of the vibration velocity. Due to the typically small amplitudes of vibrations, vibration velocity is often expressed in decibels and is denoted as (L_v) and is based on the rms velocity amplitude. A commonly used abbreviation is "VdB", which in this text, is when L_v is based on the reference quantity of 1 micro inch per second.

3.2 Vibration Perception

Typically, developed areas are continuously affected by vibration velocities of 50 VdB or lower. These continuous vibrations are not noticeable to humans whose threshold of perception is around 65 VdB. Off-site sources that may produce perceptible vibrations are usually caused by construction equipment, steel-wheeled trains, and traffic on rough roads, while smooth roads rarely produce perceptible ground-borne noise or vibration.

3.3 Vibration Propagation

The propagation of ground-borne vibration is not as simple to model as airborne noise. This is due to the fact that noise in the air travels through a relatively uniform median, while ground-borne vibrations travel through the earth which may contain significant geological differences. There are three main types of vibration propagation; surface, compression, and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by throwing a rock into a pool of water. P-waves, or compression waves, are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal (i.e., in a "push-pull" fashion). P-waves are analogous to airborne sound waves. S-waves, or shear waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse or "side-to-side and perpendicular to the direction of propagation."

As vibration waves propagate from a source, the vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil but has been shown to be effective enough for screening purposes, in order to identify potential vibration impacts that may need to be studied through actual field tests.

4.0 REGULATORY SETTING

The project site is located in the City of Fontana. Noise regulations are addressed through the efforts of various federal, state, and local government agencies. The agencies responsible for regulating noise are discussed below.

4.1 Federal Regulations

The adverse impact of noise was officially recognized by the federal government in the Noise Control Act of 1972, which serves three purposes:

- Promulgating noise emission standards for interstate commerce
- Assisting state and local abatement efforts
- Promoting noise education and research

The Federal Office of Noise Abatement and Control (ONAC) was initially tasked with implementing the Noise Control Act. However, the ONAC has since been eliminated, leaving the development of federal noise policies and programs to other federal agencies and interagency committees. For example, the Occupational Safety and Health Administration (OSHA) agency prohibits exposure of workers to excessive sound levels. The Department of Transportation (DOT) assumed a significant role in noise control through its various operating agencies. The Federal Aviation Administration (FAA) regulates noise of aircraft and airports. Surface transportation system noise is regulated by a host of agencies, including the Federal Transit Administration (FTA), which regulates transit noise, while freeways that are part of the interstate highway system are regulated by the Federal Highway Administration (FHWA). Finally, the federal government actively advocates that local jurisdictions use their land use regulatory authority to arrange new development in such a way that “noise sensitive” uses are either prohibited from being sited adjacent to a highway or, alternately that the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Although the proposed project is not under the jurisdiction of the FTA, the *Transit Noise and Vibration Assessment Manual* (FTA Manual), prepared by the FTA, September 2018, is the only guidance document that has defined what constitutes a significant noise impact from implementing a project. The FTA standards are based on extensive studies by the FTA and other governmental agencies on the human effects and reaction to noise and a summary of the FTA findings are provided below in Table A.

Table A – FTA Project Effects on Cumulative Noise Exposure

Existing Noise Exposure (dBA Leq or Ldn)	Allowable Noise Impact Exposure dBA Leq or Ldn		
	Project Only	Combined	Noise Exposure Increase
45	51	52	+7
50	53	55	+5
55	55	58	+3
60	57	62	+2
65	60	66	+1
70	64	71	+1
75	65	75	0

Source: Federal Transit Administration, 2018.

As shown in Table A, the allowable cumulative noise level increase created from a project would range from 0 to 7 dBA, which is based on the existing (ambient) noise levels in the project vicinity. The justification for the sliding scale, is that people already exposed to high levels of noise should be expected to tolerate only a small increase in the amount of noise in their community. In contrast, if the existing noise levels are quite low, it is reasonable to allow a greater change in the community noise for the equivalent difference in annoyance.

The FTA Manual also provides specific guidance for construction noise. The FTA recommends developing construction noise criteria on a project-specific basis that utilizes local noise ordinances if possible. However, local noise ordinances usually relates to nuisance and hours of allowed activity and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the noise impacts of a construction project. Project construction noise criteria should take into account the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land uses. The FTA standards are based on extensive studies by the FTA and other governmental agencies on the human effects and reaction to noise and a summary of the FTA findings for a general construction noise assessment are provided below in Table B.

Table B – FTA Construction Noise Criteria

Land Use	Day (dBA Leq(8-hour))	Night (dBA Leq(8-hour))	30-day Average (dBA Ldn)
Residential	80	70	75
Commercial	85	85	80*
Industrial	90	90	85*

Notes:
* 24-hour Leq not Ldn.
Source: Federal Transit Administration, 2018.

Since the federal government has preempted the setting of standards for noise levels that can be emitted by transportation sources, the City is restricted to regulating noise generated by the transportation system through nuisance abatement ordinances and land use planning.

4.2 State Regulations

Noise Standards

California Department of Health Services Office of Noise Control

Established in 1973, the California Department of Health Services Office of Noise Control (ONC) was instrumental in developing regularity tools to control and abate noise for use by local agencies. One significant model is the "Land Use Compatibility for Community Noise Environments Matrix," which allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise.

California Noise Insulation Standards

Title 24, Chapter 1, Article 4 of the California Administrative Code (California Noise Insulation Standards) requires noise insulation in new hotels, motels, apartment houses, and dwellings (other than single-family detached housing) that provides an annual average noise level of no more than 45 dBA CNEL. When such structures are located within a 60-dBA CNEL (or greater) noise contour, an acoustical analysis is required to ensure that interior levels do not exceed the 45-dBA CNEL annual threshold. In addition, Title 21, Chapter 6, Article 1 of the California Administrative Code requires that all habitable rooms, hospitals, convalescent homes, and places of worship shall have an interior CNEL of 45 dB or less due to aircraft noise.

Government Code Section 65302

Government Code Section 65302 mandates that the legislative body of each county and city in California adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines published by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable.

Vibration Standards

Title 14 of the California Administrative Code Section 15000 requires that all state and local agencies implement the California Environmental Quality Act (CEQA) Guidelines, which requires the analysis of exposure of persons to excessive groundborne vibration. However, no statute has been adopted by the state that quantifies the level at which excessive groundborne vibration occurs.

The *Transportation and Construction Vibration Guidance Manual*, prepared by Caltrans, April 2020, provides practical guidance to Caltrans engineers, planners, and consultants who must address vibration issues associated with the construction, operation, and maintenance of Caltrans projects. However, this manual is also used as a reference point by many lead agencies and CEQA practitioners throughout California, as it provides numeric thresholds for vibration impacts. Thresholds are established for continuous (construction-related) and transient (transportation-related) sources of vibration, which found that the human response becomes distinctly perceptible at 0.25 inch per second PPV for transient sources and 0.04 inch per second PPV for continuous sources.

4.3 Local Regulations

The City of Fontana General Plan and Municipal Code establishes the following applicable policies related to noise and vibration.

City of Fontana General Plan

The following applicable goals and policies to the proposed project are from the Noise Element of the General Plan.

Goal 8: The City of Fontana protects sensitive land uses from excessive noise by diligent planning through 2035.

Policies

- New sensitive land uses shall be prohibited in incompatible areas.
- Noise-tolerant land uses shall be guided into areas irrevocably committed to land uses that are noise-producing, such as transportation corridors.
- Where sensitive uses are to be placed along transportation routes, mitigation shall be provided to ensure compliance with state-mandated noise levels.

- Noise spillover or encroachment from commercial, industrial and educational land uses shall be minimized into adjoining residential neighborhoods or noise-sensitive uses.

Goal 10: Fontana's residents are protected from the negative effects of "spillover" noise.

Policies

- Residential land uses and areas identified as noise-sensitive shall be protected from excessive noise from non-transportation sources including industrial, commercial, and residential activities and equipment.

City of Fontana Municipal Code

The City of Fontana Municipal Code establishes the following applicable standards related to noise.

Article II. – Noise

Section 18-62 Prohibited noise generally, penalties, remedies.

(a) It shall be unlawful for any person within the city to make, cause, or to continue to make or cause, loud, excessive, impulsive or intrusive sound or noise that annoys or disturbs persons of ordinary sensibilities.

Section 18-63 Scope, enumeration of prohibited noises.

(a) This article shall apply to loud, excessive, impulsive or intrusive interior and exterior sound or noise that annoys or disturbs persons of ordinary sensibilities emanating from any type of property or source within the city.

(b) The following acts, which create loud, excessive, impulsive or intrusive sound or noise that annoys or disturbs persons of ordinary sensibilities from a distance of 50 feet or more from the edge of the property, structure or unit in which the source is located, are declared to be in violation of this article, but such enumeration shall not be deemed to be exclusive, namely:

(7) *Construction or repairing of buildings or structures.* The erection (including excavating), demolition, alteration or repair of any building or structure other than between the hours of 7:00 a.m. and 6:00 p.m. on weekdays and between the hours of 8:00 a.m. and 5:00 p.m. on Saturdays, except in case of urgent necessity in the interest of public health and safety, and then only with a permit from the building inspector, which permit may be granted for a period not to exceed three days or less while the emergency continues and which permit may be renewed for periods of three days or less while the emergency continues. If the building inspector should determine that the public health and safety will not be impaired by the erection, demolition, alteration or repair of any building or structure or the excavation of streets and highways within the hours of 6:00 p.m. and 7:00 a.m., and if he shall further determine that loss or inconvenience would result to any party in interest, he may grant permission for such work to be done on weekdays within the hours of 6:00 p.m. and 7:00 a.m., upon application being made at the time the permit for the work is awarded or during the progress of the work.

Article VII. – Industrial Zoning Districts

Division 6 – Performance Standards

Section 30-543 Noise and Vibration

(a) *Noise levels.* No person shall create or cause to be created any sound which exceeds the noise levels on this section as measured at the property line of any residentially zoned property:

(1) The noise level between 7:00 a.m. and 10:00 p.m. shall not exceed 70 dB(A).

(2) The noise level between 10:00 p.m. and 7:00 a.m. shall not exceed 65 dB(A).

(b) *Noise measurements*. Noise shall be measured with a sound level meter that meets the standards of the American National Standards Institute (ANSI) Section S14-1979, Type 1 or Type 2. Noise levels shall be measures using the "A" weighted sound pressure level scale in decibels (reference pressure = 20 micronewtons per meter squared).

(c) *Vibration.* No person shall create or cause to be created any activity which causes a vibration which can be felt beyond the property line with or without the aid of an instrument.

5.0 EXISTING NOISE CONDITIONS

To determine the existing noise levels, noise measurements have been taken in the vicinity of the project site. The field survey noted that noise within the proposed project area is generally characterized by vehicle traffic on Cherry Avenue, which is located adjacent to the west side of the project site, Highland Avenue, which is adjacent to the south side of the project site, and from Interstate 210, where the Interstate 15 onramp lanes to Interstate 210 are as near as 200 feet north of the project site. The following describes the measurement procedures, measurement locations, noise measurement results, and the modeling of the existing noise environment.

5.1 Noise Measurement Equipment

The noise measurements were taken using two Extech Model 407780 Type 2 integrating sound level meters programmed in “slow” mode to record the sound pressure level at 3-second intervals for approximately 24 hours in “A” weighted form. In addition, the Leq averaged over the entire measuring time and Lmax were recorded. The sound level meters and microphones were mounted approximately five feet above the ground and were equipped with a windscreen. The sound level meters were calibrated before and after the monitoring using an Extech calibrator, Model 407766. The noise level measurement equipment meets American National Standards Institute specifications for sound level meters (S1.4-1983 identified in Chapter 19.68.020.AA).

Noise Measurement Locations

The noise monitoring locations were selected in order to obtain noise levels on the project site. Descriptions of the noise monitoring sites are provided below in Table C and are shown in Figure 3. Appendix A includes a photo index of the study area and noise level measurement locations.

Noise Measurement Timing and Climate

The noise measurements were recorded between 11:49 a.m. on Tuesday, September 20, 2022 and 11:54 a.m. on Wednesday, September 21, 2022. At the start of the noise measurements, the sky was clear (no clouds), the temperature was 78 degrees Fahrenheit, the humidity was 44 percent, barometric pressure was 28.43 inches of mercury, and the wind was blowing at an average rate of four miles per hour. Overnight, the temperature dropped to 61 degrees Fahrenheit and the humidity peaked at 89 percent. At the conclusion of the noise measurements, the sky was clear, the temperature was 78 degrees Fahrenheit, the humidity was 41 percent, barometric pressure was 28.48 inches of mercury, and the wind was blowing at an average rate of five miles per hour.

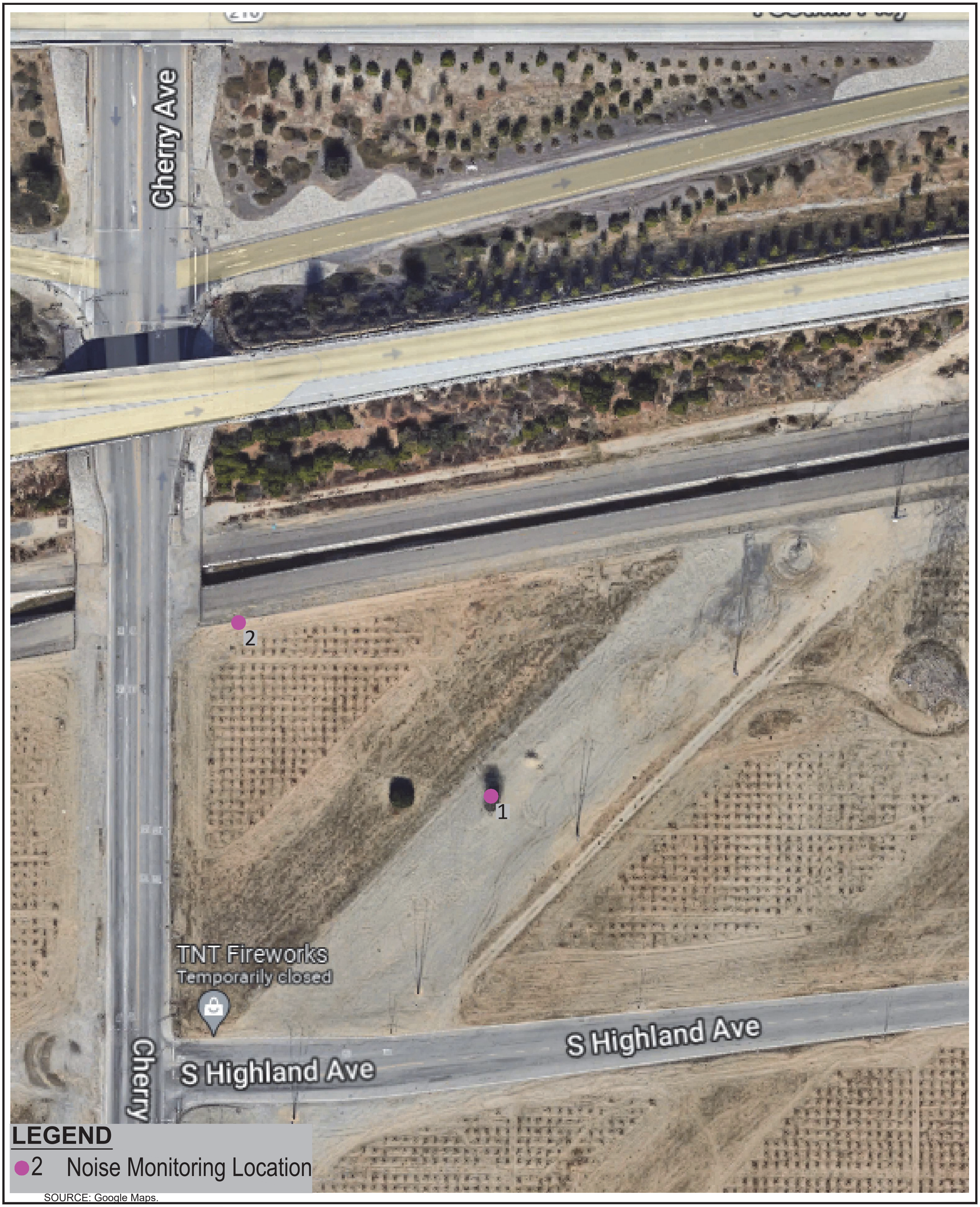
5.2 Noise Measurement Results

The results of the noise level measurements are presented in Table C. The measured sound pressure levels in dBA have been used to calculate the minimum and maximum L_{eq} averaged over 1-hour intervals. Table C also shows the L_{eq}, L_{max}, and CNEL, based on the entire measurement time. The noise monitoring data printouts are included in Appendix B. Figure 4 shows a graph of the 24-hour noise measurements.

Table C – Existing (Ambient) Noise Measurement Results

Site No.	Site Description	Average (dBA L_{eq})	Maximum (dBA L_{max})	(dBA $L_{eq\ 1\text{-}hour}$/Time) Minimum	Maximum	Average (dBA CNEL)
1	Located on a tree on southeast side of the project site, approximately 245 feet north of the centerline for Highland Avenue and 340 feet east of the centerline for Cherry Avenue.	63.8	83.1	57.5 12:37 a.m.	69.2 6:46 a.m.	70.5
2	Located on a chain-link fence on the north side of the project site, approximately 80 feet east of the centerline of Cherry Avenue..	69.6	93.4	61.4 1:26 a.m.	72.3 3:19 p.m.	74.3

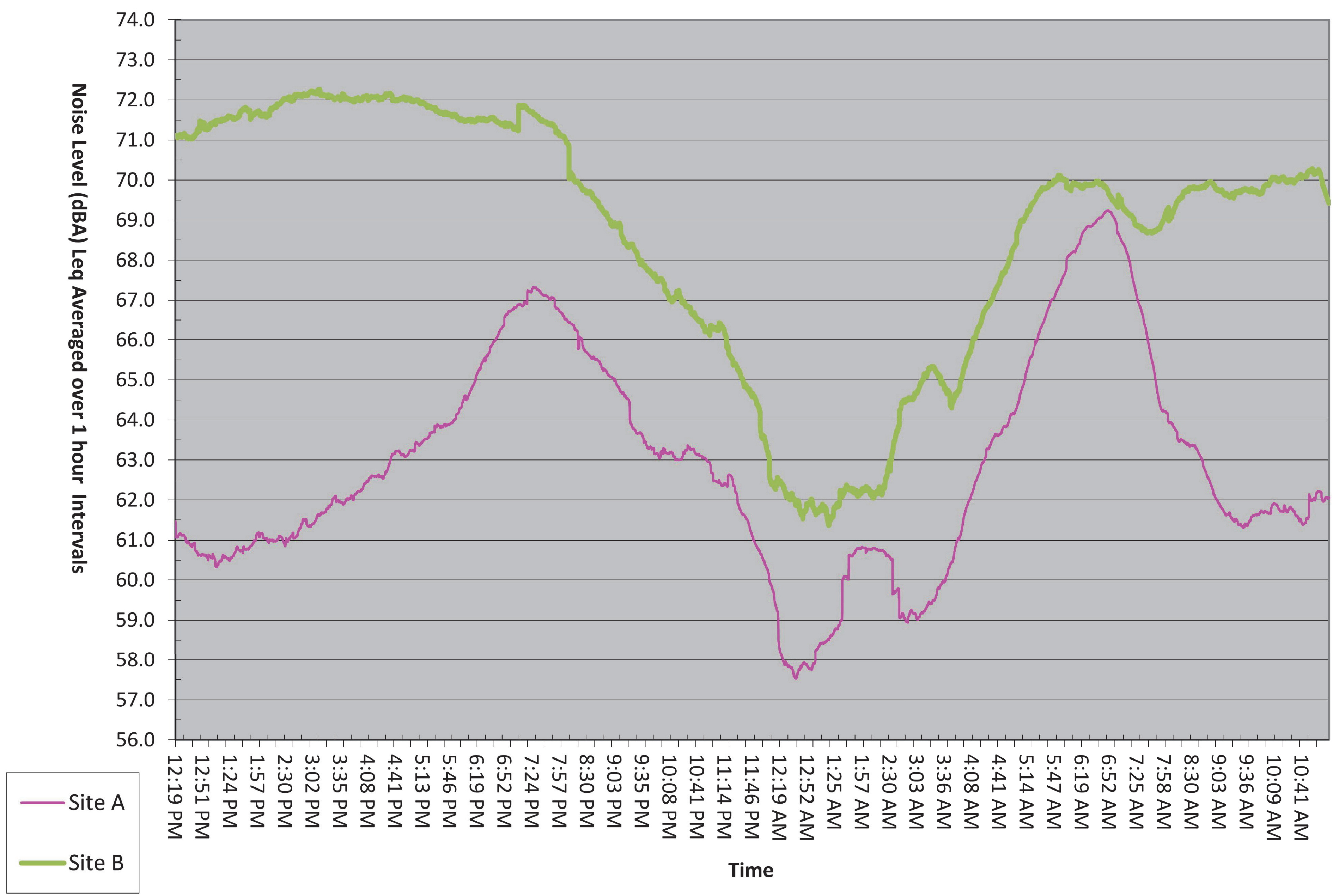
Source: Noise measurements were taken with two Extech Model 407780 Type 2 sound level meters from Tuesday September 20, 2022 to Wednesday, September 21, 2022.



SOURCE: Google Maps.

VISTA ENVIRONMENTAL

Figure 3
Field Noise Monitoring Locations



SOURCE: Extech Model 407780 Type 2 Sound Level Meters.

Figure 4
Field Noise Measurements Graph

6.0 MODELING PARAMETERS AND ASSUMPTIONS

6.1 Construction Noise

The noise impacts from construction of the proposed project have been analyzed through use of the FHWA's Roadway Construction Noise Model (RCNM). The FHWA compiled noise measurement data regarding the noise generating characteristics of several different types of construction equipment used during the Central Artery/Tunnel project in Boston. Table D below provides a list of the construction equipment anticipated to be used for each phase of construction as detailed in *Air Quality, Energy, and Greenhouse Gas Emissions Impact Analysis Fire Station No. 80 and Training Center Project* (Air Quality Analysis), prepared by Vista Environmental, December 12, 2022.

Table D – Construction Equipment Noise Emissions and Usage Factors

Equipment Description	Number of Equipment	Acoustical Use Factor[1] (percent)	Spec 721.560 Lmax at 50 feet[2] (dBA, slow[3])	Actual Measured Lmax at 50 feet[4] (dBA, slow[3])
Site Preparation				
Rubber Tired Dozer	3	40	85	83
Tractors	2	40	84	N/A
Front End Loader	1	40	80	79
Backhoe	1	40	80	78
Grading				
Excavator	1	40	85	81
Grader	1	40	85	83
Rubber Tired Dozer	1	40	85	82
Tractor	1	40	84	N/A
Front End Loader	1	40	80	79
Backhoe	1	40	80	78
Building Construction				
Crane	1	16	85	81
Forklift (Gradall)	3	40	85	83
Generator	1	50	82	81
Tractor	1	40	84	N/A
Front End Loader	1	40	80	79
Backhoe	1	40	80	78
Welder	1	40	73	74
Paving				
Cement and Mortar Mixers	2	50	85	77
Paver	1	50	85	77
Paving Equipment	2	50	85	77
Rollers	2	20	85	80
Tractor	1	40	84	N/A
Architectural Coating				
Air Compressor	1	40	80	78

Notes:
[1] Acoustical use factor is the percentage of time each piece of equipment is operational during a typical workday.
[2] Spec 721.560 is the equipment noise level utilized by the RCNM program.
[3] The "slow" response averages sound levels over 1-second increments. A "fast" response averages sound levels over 0.125-second increments.

[4] Actual Measured is the average noise level measured of each piece of equipment during the Central Artery/Tunnel project in Boston, Massachusetts primarily during the 1990s.
Source: Federal Highway Administration, 2006 and CalEEMod default equipment mix.

Table D also shows the associated measured noise emissions for each piece of equipment from the RCNM model and measured percentage of typical equipment use per day. Construction noise impacts to the nearby sensitive receptors have been calculated according to the equipment noise levels and usage factors listed in Table D and through use of the RCNM. For each phase of construction, all construction equipment was analyzed based on being placed in the middle of the project site, which is based on the analysis methodology detailed in FTA Manual for a General Assessment. However, in order to provide a conservative analysis, all equipment was analyzed, instead of just the two nosiest pieces of equipment as detailed in the FTA Manual. The RCNM model printouts are provided in Appendix C.

6.2 Vibration

Construction activity can result in varying degrees of ground vibration, depending on the equipment used on the site. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings in the vicinity of the construction site respond to these vibrations with varying results ranging from no perceptible effects at the low levels to slight damage at the highest levels. Table E gives approximate vibration levels for particular construction activities. The data in Table E provides a reasonable estimate for a wide range of soil conditions.

Table E – Vibration Source Levels for Construction Equipment

Equipment		Peak Particle Velocity (inches/second)	Approximate Vibration Level (L_v)at 25 feet
Pile driver (impact)	Upper range	1.518	112
	typical	0.644	104
Pile driver (sonic)	Upper range	0.734	105
	typical	0.170	93
Clam shovel drop (slurry wall)		0.202	94
Vibratory Roller		0.210	94
Hoe Ram		0.089	87
Large bulldozer		0.089	87
Caisson drill		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58

Source: Federal Transit Administration, 2018.

The construction-related vibration impacts have been calculated through the vibration levels shown above in Table E and through typical vibration propagation rates. The equipment assumptions were based on the equipment lists provided above in Table D.

7.0 IMPACT ANALYSIS

7.1 CEQA Thresholds of Significance

Consistent with the California Environmental Quality Act (CEQA) and the State CEQA Guidelines, a significant impact related to noise would occur if a proposed project is determined to 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;
- Generation of excessive groundborne vibration or groundborne noise levels; or
- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

7.2 Generation of Noise Levels in Excess of Standards

The proposed project would not generate 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 following section calculates the potential noise emissions associated with the temporary construction activities and long-term operations of the proposed project and compares the noise levels to the City standards.

Construction-Related Noise

The construction activities for the proposed project are anticipated to include site preparation and grading of approximately 3.68 acres, building construction of the proposed training center and fire station, paving of onsite driveways, paved training area, and parking lots, and application of architectural coatings. According to the project applicant, construction would be completed in two phases. Phase 1 of the proposed project is expected to break ground in June 2024 and be completed by January 2025; with Phase 2 anticipated to begin in June 2027.

Noise impacts from construction activities associated with the proposed project would be a function of the noise generated by construction equipment, equipment location, sensitivity of nearby land uses, and the timing and duration of the construction activities. The nearest sensitive receptors to the project site are homes located as near as 2,200 feet to the east of the project site and as near as 2,500 feet to the south of the project site.

Section 18-63(b)(7) of the City's Municipal Code restricts construction activities from occurring between the hours of 6:00 p.m. and 7:00 a.m. on weekdays, between the hours of 5:00 p.m. and 8:00 a.m. on Saturdays, or anytime on Sundays. However, the City construction noise standards do not provide any limits to the noise levels that may be created from construction activities and even with adherence to the City standards, the resultant construction noise levels may result in a significant substantial temporary noise increase to the nearby residents.

In order to determine if the proposed construction activities would create a significant substantial temporary noise increase, the FTA construction noise criteria thresholds detailed above in Section 4.1

have been utilized, which shows that a significant construction noise impact would occur if construction noise exceeds 80 dBA during the daytime at any of the nearby homes.

Construction noise impacts to the nearby sensitive receptors have been calculated through use of the RCNM and the parameters and assumptions detailed in Section 6.1 of this report including Table D – Construction Equipment Noise Emissions and Usage Factors. The results are shown below in Table F and the RCNM printouts are provided in Appendix C.

Table F – Construction Noise Levels at the Nearby Sensitive Receptors

Construction Phase	Construction Noise Level (dBA Leq) at:	
	Nearest Homes to East[1]	Nearest Homes to South[2]
Site Preparation	54	52
Grading	53	52
Building Construction	54	53
Paving	52	51
Painting	41	40
FTA Construction Noise Threshold[3]	**80**	**80**
Exceed Thresholds?	**No**	**No**

Notes:
[1] The nearest homes to the east are located as near as 2,200 feet from the project site.
[2] The nearest homes to the south are located as near as 2,500 feet from the project site.
[3] The FTA Construction noise thresholds are detailed above in Table B.
Source: RCNM, Federal Highway Administration, 2006

Table F shows that greatest construction noise impacts would be as high as 54 dBA Leq during the site preparation and building construction phases at the nearest homes, located east of the project site. All calculated construction noise levels shown in Table F are within the FTA daytime construction noise standard of 80 dBA averaged over eight hours. Therefore, through adherence to the limitation of allowable construction times provided in Section 18-63(b)(7) of the Municipal Code, construction-related noise levels would not exceed any standards established in the General Plan or Noise Ordinance nor would construction activities create a substantial temporary increase in ambient noise levels from construction of the proposed project. Impacts would be less than significant.

Operational-Related Noise

The proposed project would consist of the development of a fire station and training center. Potential noise impacts associated with the operations of the proposed project would be from project-generated vehicular traffic on the nearby roadways and from onsite activities, which have been analyzed separately below.

Roadway Vehicular Noise

Vehicle noise is a combination of the noise produced by the engine, exhaust and tires. The level of traffic noise depends on three primary factors (1) the volume of traffic, (2) the speed of traffic, and (3) the number of trucks in the flow of traffic. The proposed project does not propose any uses that would require a substantial number of truck trips and the proposed project would not alter the speed limit on any existing roadway so the proposed project's potential offsite noise impacts have been focused on the noise impacts associated with the change of volume of traffic that would occur with development of the proposed project.

The General Plan Noise Element Goal 8 and associated policies, requires the protection of noise sensitive land uses through diligent planning that includes a prohibition of new sensitive land uses in incompatible areas and noise-tolerant uses shall be located in noise-producing areas such as near transportation corridors. However, neither the General Plan nor the CEQA Guidelines define what constitutes a "substantial permanent increase to ambient noise levels", as such, this impact analysis has utilized guidance from the Federal Transit Administration for a moderate impact that has been detailed above in Table A that shows that the project contribution to the noise environment can range between 0 and 7 dB, which is dependent on the existing noise levels.

The *Transportation Assessment for the City of Fontana's Fire Station No. 80 and Training Center* (Traffic Analysis), prepared by David Evans and Associates, November 29, 2022, that found that the Training Center would generate 18 average daily trips (ADT) per day and the fire station would also generate 18 ADT per day. According to the project applicant, in addition to the automobile daily trips there would also be an average of six times per day when emergency vehicles would leave the fire station, which would generate 12 trips per day (leaving and returning to fire station). As such, the entire project would generate a total of 48 ADT. Most of these trips would travel north on Cherry Avenue to Interstate 210 and not pass any sensitive receptors in the vicinity of the project site.

The *Fontana Forward General Plan Update 2015-2035 Draft Environmental Impact Report* (General Plan DEIR), June 8, 2018, shows that for the year 2017, Cherry Avenue in the vicinity of the project site had an average of 20,800 daily vehicle trips. In order for project-generated vehicular traffic to increase the noise level of Cherry Avenue in the vicinity of the project site, by 3 dB, the roadway traffic would have to double, and for the roadway noise levels to increase by 1.5 dB, the roadway traffic would have to increase by 50 percent. Since the proposed project would only result in a maximum of a 0.2 percent increase in traffic volumes on Cherry Avenue, the project-related roadway noise increase is anticipated to be negligible. Impacts would be less than significant.

Onsite Noise Sources

The operation of the proposed fire station and training center may create an increase in noise levels created onsite from fire station activities, rooftop mechanical equipment, backup generator, and parking lot activities. Section 30-543(d) of the City's Municipal Code limits the noise created onsite at the property lines of the nearby residential properties to 70 dBA between 7:00 a.m. and 10:00 p.m. and 65 dBA between 10:00 p.m. and 7:00 a.m.. In order to determine the noise impacts from the operation of fire station activities that include siren use at a fire station, rooftop mechanical equipment, backup generator, and parking lots activities, reference noise measurements were taken of each noise source and are shown in Table G and the reference noise measurement printouts are provided in Appendix D.

Table G – Operational Noise Levels at the Nearby Homes to South and West of Project Site

Noise Source	Homes East of Project Site		Homes South of Project Site	
	Distance - Source to Property Line (feet)	Noise Level[1] (dBA Leq)	Distance - Source to Property Line (feet)	Noise Level[1] (dBA Leq)
Fire Station Activities (including siren use)[2]	2,200	18	2,500	17
Rooftop Equipment[3]	2,200	20	2,500	19
Parking Lot[4]	2,200	10	2,500	9
Backup Generator[5]	2,200	42	2,500	41
	Combined Noise Levels	**42**		**41**

City Noise Standard[6] (day/night)	**70/65**		**70/65**
Exceed City Noise Standard?	**No/No**		**No/No**

Notes:
[1] The noise levels were calculated through use of standard geometric spreading of noise from a point source with a drop-off rate of 6.0 dB for each doubling of the distance between the source and receiver.
[2] Fire Station Activities is based on a reference noise measurement of 55.7 dBA at 30 feet.
[3] Rooftop equipment is based on a reference noise measurement of 66.6 dBA at 10 feet.
[4] Parking lot is based on a reference noise measurement of 63.1 dBA at 5 feet.
[5] Backup Generator is based on a reference noise measurement of 82 dBA at 23 feet.
[6] City Noise Standard obtained from Section 30-543(d) of the City's Municipal Code

Table G shows that the proposed project's worst-case operational noise from the simultaneous operation of all noise sources on the project site would create a noise level of 42 dBA at the homes to the east and 41 dBA at the homes to the south of the project site. The worst-case operational noise level of 64 dBA at the nearby homes would be within both the City's daytime noise standard of 70 dBA and nighttime noise standard of 65 dBA. Therefore, operational onsite noise impacts would be less than significant

Level of Significance

Less than significant impact.

7.3 Generation of Excessive Groundborne Vibration

The proposed project would not expose persons to or generation of excessive groundborne vibration or groundborne noise levels. The following section analyzes the potential vibration impacts associated with the construction and operations of the proposed project.

Construction-Related Vibration Impacts

The construction activities for the proposed project are anticipated to include site preparation and grading of approximately 3.68 acres, building construction of the proposed training center and fire station, paving of onsite driveways, paved training area, and parking lots, and application of architectural coatings. Vibration impacts from construction activities associated with the proposed project would typically be created from the operation of heavy off-road equipment. The nearest sensitive receptors to the project site are homes located as near as 2,200 feet to the east of the project site.

Section 30-543(c) of the City's Municipal Code restricts the creation of vibration which can be felt beyond the property line. However, since neither the Municipal Code nor the General Plan provides a quantifiable vibration threshold level, Caltrans guidance that is detailed above in Section 4.2 has been utilized, which defines the threshold of perception from transient sources at 0.25 inch per second PPV.

The primary source of vibration during construction would be from the operation of a bulldozer. From Table E above a large bulldozer would create a vibration level of 0.089 inch per second PPV at 25 feet. Based on typical propagation rates, the vibration level at the nearest homes (2,200 feet away) would be 0.001 inch per second PPV. The vibration level at the nearest homes would be well below the 0.25 inch per second PPV threshold detailed above. Impacts would be less than significant.

Operations-Related Vibration Impacts

The proposed project would consist of the development of a fire station and training center. The proposed project would result in the operation of fire trucks on the project site, which are a known source of vibration. The nearest sensitive receptors to the project site are homes located as near as 2,200 feet to the east of the project site.

Caltrans has done extensive research on vibration level created along freeways and State Routes and their vibration measurements of roads have never exceeded 0.08 inches per second PPV at 15 feet from the center of the nearest lane, with the worst combinations of heavy trucks. Based on typical propagation rates, the vibration level at the nearest homes would by 0.0003 inch per second PPV. Therefore, vibration created from operation of the proposed project would be well below the 0.25 inch per second threshold detailed above. Impacts would be less than significant.

Level of Significance

Less than significant impact.

7.4 Aircraft Noise

The proposed project would not expose people residing or working in the project area to excessive noise levels from aircraft. The nearest airport is Ontario International Airport that is located approximately seven miles southwest of the project site. The project site is located outside of the 60 dBA CNEL noise contours of Ontario International Airport. No impacts would occur from aircraft noise.

Level of Significance

No impact.

8.0 REFERENCES

California Department of Transportation (Caltrans), *Technical Noise Supplement to the Traffic Noise Analytics Protocol*, September 2013.

California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, April 2020.

City of Fontana, *Fontana Forward General Plan Update 2015-2035*, November 13, 2018.

City of Fontana, *Fontana Forward General Plan Update 2015-2035 Draft Environmental Impact Report*, June 8, 2018.

City of Fontana, *Fontana, California Code of Ordinances,* 2021.

David Evans and Associates Inc., *Transportation Assessment for the City of Fontana's Fire Station No. 80 and Training Center Located at the NEC of Cherry Avenue and S. Highland Avenue in Fontana, California,* November 29, 2022

Federal Transit Administration, *Transit Noise and Vibration Impact Assessment,* September 2018.

U.S. Department of Transportation, *FHWA Roadway Construction Noise Model User's Guide,* January, 2006.

Vista Environmental, *Air Quality, Energy, and Greenhouse Gas Emissions Impact Analysis Fire Station No. 80 and Training Center Project,* December 12, 2022.

APPENDIX A

Field Noise Measurements Photo Index


Noise Measurement Site 1 - looking north


Noise Measurement Site 1 - looking northeast


Noise Measurement Site 1 - looking east


Noise Measurement Site 1 - looking southeast


Noise Measurement Site 1 - looking south


Noise Measurement Site 1 - looking southwest


Noise Measurement Site 1 - looking west


Noise Measurement Site 1 - looking northwest

Noise Measurement Site 2 - looking north

Noise Measurement Site 2 - looking northeast

Noise Measurement Site 2 - looking east

Noise Measurement Site 2 - looking southeast

Noise Measurement Site 2 - looking south

Noise Measurement Site 2 - looking southwest

Noise Measurement Site 2 - looking west

Noise Measurement Site 2 - looking northwest

APPENDIX B

Field Noise Measurements Printouts

Site A - On Tree near middle of NE Side of Project Site

Date	Time=09/20/22	11:49:00 AM			
Sampling	Time=3	Weighting=A			
Record	Num= 28800	Weighting=Slow	CNEL(24hr)=	70.5	
Leq	63.8 SEL	Value=113.1	Ldn(24hr)=	70.1	
MAX	83.1	Min Leq1hr =	57.5	12:37 AM	
MIN	48.8	Max Leq1hr =	69.2	6:46 AM	

Site A - On Tree near middle of NE Side of Project Site

SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
61.1	11:49:00		61.1	61.1
59.3	11:49:03		59.3	59.3
62	11:49:06		62	62.0
68	11:49:09		68	68.0
66.8	11:49:12		66.8	66.8
59.6	11:49:15		59.6	59.6
65.2	11:49:18		65.2	65.2
65.5	11:49:21		65.5	65.5
65.6	11:49:24		65.6	65.6
71.1	11:49:27		71.1	71.1
70.1	11:49:30		70.1	70.1
66.4	11:49:33		66.4	66.4
66.7	11:49:36		66.7	66.7
60.9	11:49:39		60.9	60.9
79.4	11:49:42		79.4	79.4
71.6	11:49:45		71.6	71.6
63.7	11:49:48		63.7	63.7
64.4	11:49:51		64.4	64.4
65.6	11:49:54		65.6	65.6
60.4	11:49:57		60.4	60.4
58.2	11:50:00		58.2	58.2
57.3	11:50:03		57.3	57.3
57.9	11:50:06		57.9	57.9
57	11:50:09		57	57.0
57	11:50:12		57	57.0
57.5	11:50:15		57.5	57.5
58	11:50:18		58	58.0
59.6	11:50:21		59.6	59.6
60.1	11:50:24		60.1	60.1
59.7	11:50:27		59.7	59.7
58.9	11:50:30		58.9	58.9
59.2	11:50:33		59.2	59.2
60	11:50:36		60	60.0
61.1	11:50:39		61.1	61.1
61.9	11:50:42		61.9	61.9
61.6	11:50:45		61.6	61.6
61.3	11:50:48		61.3	61.3
60	11:50:51		60	60.0
61.5	11:50:54		61.5	61.5
60.8	11:50:57		60.8	60.8
60.6	11:51:00		60.6	60.6
59	11:51:03		59	59.0
58.8	11:51:06		58.8	58.8
60	11:51:09		60	60.0
60.7	11:51:12		60.7	60.7
59.6	11:51:15		59.6	59.6
60.8	11:51:18		60.8	60.8
61.3	11:51:21		61.3	61.3
62.4	11:51:24		62.4	62.4
62.9	11:51:27		62.9	62.9
60.4	11:51:30		60.4	60.4
59	11:51:33		59	59.0
57.9	11:51:36		57.9	57.9
59.1	11:51:39		59.1	59.1
59.8	11:51:42		59.8	59.8
59.8	11:51:45		59.8	59.8
57.9	11:51:48		57.9	57.9
58.5	11:51:51		58.5	58.5
59.2	11:51:54		59.2	59.2
61.2	11:51:57		61.2	61.2
60.4	11:52:00		60.4	60.4
58.9	11:52:03		58.9	58.9
57.7	11:52:06		57.7	57.7
57	11:52:09		57	57.0
57.5	11:52:12		57.5	57.5
56.1	11:52:15		56.1	56.1
56.4	11:52:18		56.4	56.4
56.2	11:52:21		56.2	56.2
57.1	11:52:24		57.1	57.1
59.5	11:52:27		59.5	59.5
59.8	11:52:30		59.8	59.8
59	11:52:33		59	59.0
58.2	11:52:36		58.2	58.2
58.2	11:52:39		58.2	58.2
58	11:52:42		58	58.0
59	11:52:45		59	59.0
60.7	11:52:48		60.7	60.7

Site B - On Fence near NW Corner of Project Site

Date	Time=09/20/22	11:54:00 AM			
Sampling	Time=3	Freq Weighting=A			
Record	Num= 28800	Weighting=Slow	CNEL(24hr)=	74.3	
Leq	69.6 SEL	Value=119.0	Ldn(24hr)=	73.8	
MAX	93.4	Min Leq1hr =	61.4	1:26 AM	
MIN	48.9	Max Leq1hr =	72.3	3:19 PM	

Site B - On Fence near NW Corner of Project Site

SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
66.2	11:54:00		66.2	66.2
68.3	11:54:03		68.3	68.3
70.9	11:54:06		70.9	70.9
68.5	11:54:09		68.5	68.5
62	11:54:12		62	62
67.6	11:54:15		67.6	67.6
67.7	11:54:18		67.7	67.7
67.6	11:54:21		67.6	67.6
65	11:54:24		65	65
68.8	11:54:27		68.8	68.8
62.6	11:54:30		62.6	62.6
65.1	11:54:33		65.1	65.1
66.7	11:54:36		66.7	66.7
67.2	11:54:39		67.2	67.2
72.5	11:54:42		72.5	72.5
68.4	11:54:45		68.4	68.4
65.6	11:54:48		65.6	65.6
67.6	11:54:51		67.6	67.6
76.5	11:54:54		76.5	76.5
71.9	11:54:57		71.9	71.9
64.1	11:55:00		64.1	64.1
62.1	11:55:03		62.1	62.1
72	11:55:06		72	72
70.8	11:55:09		70.8	70.8
69.2	11:55:12		69.2	69.2
67.2	11:55:15		67.2	67.2
67	11:55:18		67	67
71.6	11:55:21		71.6	71.6
71.4	11:55:24		71.4	71.4
69.7	11:55:27		69.7	69.7
65.3	11:55:30		65.3	65.3
61.5	11:55:33		61.5	61.5
61.8	11:55:36		61.8	61.8
64	11:55:39		64	64
67	11:55:42		67	67
71	11:55:45		71	71
69	11:55:48		69	69
68	11:55:51		68	68
67.8	11:55:54		67.8	67.8
71	11:55:57		71	71
77	11:56:00		77	77
76.7	11:56:03		76.7	76.7
78.5	11:56:06		78.5	78.5
76.2	11:56:09		76.2	76.2
73.2	11:56:12		73.2	73.2
68.8	11:56:15		68.8	68.8
65.3	11:56:18		65.3	65.3
70.3	11:56:21		70.3	70.3
75	11:56:24		75	75
68.3	11:56:27		68.3	68.3
68	11:56:30		68	68
67.3	11:56:33		67.3	67.3
71.2	11:56:36		71.2	71.2
71.2	11:56:39		71.2	71.2
70.5	11:56:42		70.5	70.5
71.6	11:56:45		71.6	71.6
71.2	11:56:48		71.2	71.2
64.4	11:56:51		64.4	64.4
62.8	11:56:54		62.8	62.8
63.9	11:56:57		63.9	63.9
59.1	11:57:00		59.1	59.1
59.2	11:57:03		59.2	59.2
62.8	11:57:06		62.8	62.8
67.7	11:57:09		67.7	67.7
72.1	11:57:12		72.1	72.1
69.6	11:57:15		69.6	69.6
69.1	11:57:18		69.1	69.1
69.2	11:57:21		69.2	69.2
71.2	11:57:24		71.2	71.2
72.4	11:57:27		72.4	72.4
72.7	11:57:30		72.7	72.7
72	11:57:33		72	72
68.3	11:57:36		68.3	68.3
66.1	11:57:39		66.1	66.1
70.4	11:57:42		70.4	70.4
72.4	11:57:45		72.4	72.4
68.4	11:57:48		68.4	68.4

Site A - On Tree near middle of NE Side of Project Site					Site B - On Fence near NW Corner of Project Site				
SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL	SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
58.3	11:52:51		58.3	58.3	70.4	11:57:51		70.4	70.4
56.6	11:52:54		56.6	56.6	68	11:57:54		68	68
56.8	11:52:57		56.8	56.8	73	11:57:57		73	73
56.9	11:53:00		56.9	56.9	65.6	11:58:00		65.6	65.6
56.9	11:53:03		56.9	56.9	66.5	11:58:03		66.5	66.5
60	11:53:06		60	60.0	71.2	11:58:06		71.2	71.2
57	11:53:09		57	57.0	72.1	11:58:09		72.1	72.1
57.1	11:53:12		57.1	57.1	69.8	11:58:12		69.8	69.8
57.1	11:53:15		57.1	57.1	70.8	11:58:15		70.8	70.8
57.6	11:53:18		57.6	57.6	67.3	11:58:18		67.3	67.3
57	11:53:21		57	57.0	65.1	11:58:21		65.1	65.1
57.1	11:53:24		57.1	57.1	61.4	11:58:24		61.4	61.4
56.6	11:53:27		56.6	56.6	60.7	11:58:27		60.7	60.7
55.2	11:53:30		55.2	55.2	61.4	11:58:30		61.4	61.4
56.7	11:53:33		56.7	56.7	65	11:58:33		65	65
56.7	11:53:36		56.7	56.7	63.2	11:58:36		63.2	63.2
56.8	11:53:39		56.8	56.8	62.2	11:58:39		62.2	62.2
57.5	11:53:42		57.5	57.5	68.4	11:58:42		68.4	68.4
58	11:53:45		58	58.0	72.5	11:58:45		72.5	72.5
58	11:53:48		58	58.0	71.4	11:58:48		71.4	71.4
58.6	11:53:51		58.6	58.6	68.5	11:58:51		68.5	68.5
59.1	11:53:54		59.1	59.1	67.5	11:58:54		67.5	67.5
58.8	11:53:57		58.8	58.8	68.1	11:58:57		68.1	68.1
57.5	11:54:00		57.5	57.5	70.4	11:59:00		70.4	70.4
56.3	11:54:03		56.3	56.3	66.3	11:59:03		66.3	66.3
57.4	11:54:06		57.4	57.4	69.1	11:59:06		69.1	69.1
56.9	11:54:09		56.9	56.9	70.1	11:59:09		70.1	70.1
56.4	11:54:12		56.4	56.4	69.1	11:59:12		69.1	69.1
55.9	11:54:15		55.9	55.9	68.8	11:59:15		68.8	68.8
55.8	11:54:18		55.8	55.8	67.8	11:59:18		67.8	67.8
56.8	11:54:21		56.8	56.8	70	11:59:21		70	70
57.2	11:54:24		57.2	57.2	67.8	11:59:24		67.8	67.8
56.1	11:54:27		56.1	56.1	69.7	11:59:27		69.7	69.7
56.1	11:54:30		56.1	56.1	69.8	11:59:30		69.8	69.8
58.7	11:54:33		58.7	58.7	68.8	11:59:33		68.8	68.8
58.8	11:54:36		58.8	58.8	66	11:59:36		66	66
58.1	11:54:39		58.1	58.1	69.1	11:59:39		69.1	69.1
58.1	11:54:42		58.1	58.1	70.4	11:59:42		70.4	70.4
57	11:54:45		57	57.0	69.1	11:59:45		69.1	69.1
60.5	11:54:48		60.5	60.5	68.1	11:59:48		68.1	68.1
60.8	11:54:51		60.8	60.8	68	11:59:51		68	68
60	11:54:54		60	60.0	70.9	11:59:54		70.9	70.9
60.8	11:54:57		60.8	60.8	69.9	11:59:57		69.9	69.9
60.7	11:55:00		60.7	60.7	70	12:00:00		70	70
59.3	11:55:03		59.3	59.3	71.6	12:00:03		71.6	71.6
58.6	11:55:06		58.6	58.6	69.3	12:00:06		69.3	69.3
59	11:55:09		59	59.0	69.1	12:00:09		69.1	69.1
59	11:55:12		59	59.0	71	12:00:12		71	71
60.9	11:55:15		60.9	60.9	66.4	12:00:15		66.4	66.4
61.2	11:55:18		61.2	61.2	66.5	12:00:18		66.5	66.5
62.9	11:55:21		62.9	62.9	69.6	12:00:21		69.6	69.6
62.3	11:55:24		62.3	62.3	73.5	12:00:24		73.5	73.5
63.4	11:55:27		63.4	63.4	76.4	12:00:27		76.4	76.4
64.8	11:55:30		64.8	64.8	74.2	12:00:30		74.2	74.2
62.6	11:55:33		62.6	62.6	69.6	12:00:33		69.6	69.6
62.5	11:55:36		62.5	62.5	71.5	12:00:36		71.5	71.5
59.8	11:55:39		59.8	59.8	68.5	12:00:39		68.5	68.5
60.7	11:55:42		60.7	60.7	70.7	12:00:42		70.7	70.7
59.4	11:55:45		59.4	59.4	70.9	12:00:45		70.9	70.9
60.4	11:55:48		60.4	60.4	69	12:00:48		69	69
61	11:55:51		61	61.0	69	12:00:51		69	69
60.4	11:55:54		60.4	60.4	71.6	12:00:54		71.6	71.6
59.9	11:55:57		59.9	59.9	75.4	12:00:57		75.4	75.4
59.7	11:56:00		59.7	59.7	75.2	12:01:00		75.2	75.2
61.2	11:56:03		61.2	61.2	72.3	12:01:03		72.3	72.3
61.2	11:56:06		61.2	61.2	72.1	12:01:06		72.1	72.1
64	11:56:09		64	64.0	71.9	12:01:09		71.9	71.9
63.9	11:56:12		63.9	63.9	70.6	12:01:12		70.6	70.6
63.2	11:56:15		63.2	63.2	71	12:01:15		71	71
61.4	11:56:18		61.4	61.4	72.2	12:01:18		72.2	72.2
63.9	11:56:21		63.9	63.9	70	12:01:21		70	70
65.3	11:56:24		65.3	65.3	71	12:01:24		71	71
61.7	11:56:27		61.7	61.7	75.9	12:01:27		75.9	75.9
61.4	11:56:30		61.4	61.4	75.1	12:01:30		75.1	75.1
62.6	11:56:33		62.6	62.6	68	12:01:33		68	68
63	11:56:36		63	63.0	65.6	12:01:36		65.6	65.6
62.3	11:56:39		62.3	62.3	64	12:01:39		64	64
61.4	11:56:42		61.4	61.4	63.1	12:01:42		63.1	63.1
62	11:56:45		62	62.0	63.4	12:01:45		63.4	63.4
60	11:56:48		60	60.0	62.9	12:01:48		62.9	62.9
61.8	11:56:51		61.8	61.8	61.5	12:01:51		61.5	61.5
61.7	11:56:54		61.7	61.7	60.9	12:01:54		60.9	60.9
61.9	11:56:57		61.9	61.9	64.2	12:01:57		64.2	64.2
61.6	11:57:00		61.6	61.6	66.6	12:02:00		66.6	66.6
61.7	11:57:03		61.7	61.7	68.4	12:02:03		68.4	68.4
59.8	11:57:06		59.8	59.8	71.3	12:02:06		71.3	71.3
59	11:57:09		59	59.0	71.5	12:02:09		71.5	71.5
59.8	11:57:12		59.8	59.8	68.9	12:02:12		68.9	68.9
59.8	11:57:15		59.8	59.8	71.4	12:02:15		71.4	71.4

Site A - On Tree near middle of NE Side of Project Site					Site B - On Fence near NW Corner of Project Site				
SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL	SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
57.5	11:57:18		57.5	57.5	74.3	12:02:18		74.3	74.3
57.8	11:57:21		57.8	57.8	75.2	12:02:21		75.2	75.2
57.3	11:57:24		57.3	57.3	72.1	12:02:24		72.1	72.1
59.5	11:57:27		59.5	59.5	74.8	12:02:27		74.8	74.8
58.9	11:57:30		58.9	58.9	72.6	12:02:30		72.6	72.6
59.3	11:57:33		59.3	59.3	71.5	12:02:33		71.5	71.5
61.4	11:57:36		61.4	61.4	68.7	12:02:36		68.7	68.7
63.3	11:57:39		63.3	63.3	70	12:02:39		70	70
62.6	11:57:42		62.6	62.6	66.5	12:02:42		66.5	66.5
60.8	11:57:45		60.8	60.8	67.8	12:02:45		67.8	67.8
60.1	11:57:48		60.1	60.1	67.8	12:02:48		67.8	67.8
59.4	11:57:51		59.4	59.4	66.2	12:02:51		66.2	66.2
62.9	11:57:54		62.9	62.9	67.7	12:02:54		67.7	67.7
62.7	11:57:57		62.7	62.7	67.2	12:02:57		67.2	67.2
62	11:58:00		62	62.0	71.3	12:03:00		71.3	71.3
59.6	11:58:03		59.6	59.6	68.4	12:03:03		68.4	68.4
60.6	11:58:06		60.6	60.6	73.9	12:03:06		73.9	73.9
61.5	11:58:09		61.5	61.5	72.1	12:03:09		72.1	72.1
62.6	11:58:12		62.6	62.6	69.1	12:03:12		69.1	69.1
63.1	11:58:15		63.1	63.1	71.2	12:03:15		71.2	71.2
62.2	11:58:18		62.2	62.2	72.8	12:03:18		72.8	72.8
62.6	11:58:21		62.6	62.6	72	12:03:21		72	72
58.9	11:58:24		58.9	58.9	68.4	12:03:24		68.4	68.4
59.1	11:58:27		59.1	59.1	65	12:03:27		65	65
59.9	11:58:30		59.9	59.9	65	12:03:30		65	65
59.7	11:58:33		59.7	59.7	62.5	12:03:33		62.5	62.5
61.4	11:58:36		61.4	61.4	64.2	12:03:36		64.2	64.2
60.6	11:58:39		60.6	60.6	66.7	12:03:39		66.7	66.7
58.8	11:58:42		58.8	58.8	68.6	12:03:42		68.6	68.6
57.6	11:58:45		57.6	57.6	70.1	12:03:45		70.1	70.1
56.8	11:58:48		56.8	56.8	73	12:03:48		73	73
58.2	11:58:51		58.2	58.2	74.4	12:03:51		74.4	74.4
58.7	11:58:54		58.7	58.7	68.6	12:03:54		68.6	68.6
59.4	11:58:57		59.4	59.4	65.8	12:03:57		65.8	65.8
58.2	11:59:00		58.2	58.2	69.9	12:04:00		69.9	69.9
57.3	11:59:03		57.3	57.3	72.1	12:04:03		72.1	72.1
58.6	11:59:06		58.6	58.6	68.9	12:04:06		68.9	68.9
60.1	11:59:09		60.1	60.1	67.9	12:04:09		67.9	67.9
60.2	11:59:12		60.2	60.2	62.9	12:04:12		62.9	62.9
61.4	11:59:15		61.4	61.4	60.2	12:04:15		60.2	60.2
60.9	11:59:18		60.9	60.9	60	12:04:18		60	60
59.8	11:59:21		59.8	59.8	60.9	12:04:21		60.9	60.9
58.2	11:59:24		58.2	58.2	63.4	12:04:24		63.4	63.4
60.1	11:59:27		60.1	60.1	65	12:04:27		65	65
61.9	11:59:30		61.9	61.9	65	12:04:30		65	65
62.6	11:59:33		62.6	62.6	66.5	12:04:33		66.5	66.5
61.6	11:59:36		61.6	61.6	67.8	12:04:36		67.8	67.8
59.7	11:59:39		59.7	59.7	70.5	12:04:39		70.5	70.5
61.9	11:59:42		61.9	61.9	71.8	12:04:42		71.8	71.8
61.1	11:59:45		61.1	61.1	71.1	12:04:45		71.1	71.1
63.3	11:59:48		63.3	63.3	71	12:04:48		71	71
61.6	11:59:51		61.6	61.6	71.1	12:04:51		71.1	71.1
63.2	11:59:54		63.2	63.2	66.8	12:04:54		66.8	66.8
62.8	11:59:57		62.8	62.8	66.9	12:04:57		66.9	66.9
63.4	12:00:00		63.4	63.4	68.9	12:05:00		68.9	68.9
62.8	12:00:03		62.8	62.8	68.9	12:05:03		68.9	68.9
61.3	12:00:06		61.3	61.3	67.1	12:05:06		67.1	67.1
62.3	12:00:09		62.3	62.3	70.4	12:05:09		70.4	70.4
63.5	12:00:12		63.5	63.5	67.8	12:05:12		67.8	67.8
63	12:00:15		63	63.0	74.1	12:05:15		74.1	74.1
62.9	12:00:18		62.9	62.9	70.8	12:05:18		70.8	70.8
63.5	12:00:21		63.5	63.5	70	12:05:21		70	70
66.1	12:00:24		66.1	66.1	72.8	12:05:24		72.8	72.8
62.3	12:00:27		62.3	62.3	73.3	12:05:27		73.3	73.3
61.4	12:00:30		61.4	61.4	73.9	12:05:30		73.9	73.9
60.9	12:00:33		60.9	60.9	73.4	12:05:33		73.4	73.4
61.4	12:00:36		61.4	61.4	71.4	12:05:36		71.4	71.4
62.1	12:00:39		62.1	62.1	71.3	12:05:39		71.3	71.3
61.1	12:00:42		61.1	61.1	73.4	12:05:42		73.4	73.4
61.4	12:00:45		61.4	61.4	75.3	12:05:45		75.3	75.3
61.6	12:00:48		61.6	61.6	74.2	12:05:48		74.2	74.2
60.9	12:00:51		60.9	60.9	70.8	12:05:51		70.8	70.8
60.9	12:00:54		60.9	60.9	68	12:05:54		68	68
60.9	12:00:57		60.9	60.9	68.4	12:05:57		68.4	68.4
61.8	12:01:00		61.8	61.8	67.4	12:06:00		67.4	67.4
61.5	12:01:03		61.5	61.5	72.8	12:06:03		72.8	72.8
61.3	12:01:06		61.3	61.3	78.7	12:06:06		78.7	78.7
62.4	12:01:09		62.4	62.4	78	12:06:09		78	78
62.7	12:01:12		62.7	62.7	71.5	12:06:12		71.5	71.5
62.9	12:01:15		62.9	62.9	68	12:06:15		68	68
64.9	12:01:18		64.9	64.9	66.2	12:06:18		66.2	66.2
64	12:01:21		64	64.0	66.8	12:06:21		66.8	66.8
63.1	12:01:24		63.1	63.1	72	12:06:24		72	72
65.3	12:01:27		65.3	65.3	70.3	12:06:27		70.3	70.3
67.5	12:01:30		67.5	67.5	67.6	12:06:30		67.6	67.6
65.8	12:01:33		65.8	65.8	73	12:06:33		73	73
66	12:01:36		66	66.0	72.2	12:06:36		72.2	72.2
63.3	12:01:39		63.3	63.3	73.2	12:06:39		73.2	73.2
63.6	12:01:42		63.6	63.6	73.2	12:06:42		73.2	73.2

Site A - On Tree near middle of NE Side of Project Site					Site B - On Fence near NW Corner of Project Site				
SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL	SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
64.3	12:01:45		64.3	64.3	72.5	12:06:45		72.5	72.5
63.6	12:01:48		63.6	63.6	71.8	12:06:48		71.8	71.8
61	12:01:51		61	61.0	73.5	12:06:51		73.5	73.5
59.4	12:01:54		59.4	59.4	71.9	12:06:54		71.9	71.9
58.7	12:01:57		58.7	58.7	69.8	12:06:57		69.8	69.8
59.8	12:02:00		59.8	59.8	70.2	12:07:00		70.2	70.2
60.6	12:02:03		60.6	60.6	71.3	12:07:03		71.3	71.3
59.4	12:02:06		59.4	59.4	69.4	12:07:06		69.4	69.4
58.7	12:02:09		58.7	58.7	73.3	12:07:09		73.3	73.3
60	12:02:12		60	60.0	67.9	12:07:12		67.9	67.9
58.7	12:02:15		58.7	58.7	64.6	12:07:15		64.6	64.6
60.2	12:02:18		60.2	60.2	67.3	12:07:18		67.3	67.3
60.4	12:02:21		60.4	60.4	68.4	12:07:21		68.4	68.4
63.2	12:02:24		63.2	63.2	64.4	12:07:24		64.4	64.4
64.1	12:02:27		64.1	64.1	64.3	12:07:27		64.3	64.3
65	12:02:30		65	65.0	67.6	12:07:30		67.6	67.6
61.8	12:02:33		61.8	61.8	70.5	12:07:33		70.5	70.5
61.3	12:02:36		61.3	61.3	70.3	12:07:36		70.3	70.3
61.1	12:02:39		61.1	61.1	68.2	12:07:39		68.2	68.2
60.1	12:02:42		60.1	60.1	68.6	12:07:42		68.6	68.6
61	12:02:45		61	61.0	69.9	12:07:45		69.9	69.9
61.6	12:02:48		61.6	61.6	73.4	12:07:48		73.4	73.4
61.2	12:02:51		61.2	61.2	73.6	12:07:51		73.6	73.6
60.9	12:02:54		60.9	60.9	71.2	12:07:54		71.2	71.2
60	12:02:57		60	60.0	71.2	12:07:57		71.2	71.2
60.2	12:03:00		60.2	60.2	68.5	12:08:00		68.5	68.5
62.4	12:03:03		62.4	62.4	71.1	12:08:03		71.1	71.1
62.3	12:03:06		62.3	62.3	74.5	12:08:06		74.5	74.5
61.8	12:03:09		61.8	61.8	65.3	12:08:09		65.3	65.3
63.2	12:03:12		63.2	63.2	67.9	12:08:12		67.9	67.9
62.6	12:03:15		62.6	62.6	67.9	12:08:15		67.9	67.9
61.1	12:03:18		61.1	61.1	64.8	12:08:18		64.8	64.8
60.8	12:03:21		60.8	60.8	69.7	12:08:21		69.7	69.7
61	12:03:24		61	61.0	74.5	12:08:24		74.5	74.5
60.7	12:03:27		60.7	60.7	71.2	12:08:27		71.2	71.2
59.9	12:03:30		59.9	59.9	66.3	12:08:30		66.3	66.3
64.1	12:03:33		64.1	64.1	70.1	12:08:33		70.1	70.1
64.6	12:03:36		64.6	64.6	68.3	12:08:36		68.3	68.3
64.8	12:03:39		64.8	64.8	71.2	12:08:39		71.2	71.2
61.4	12:03:42		61.4	61.4	69.4	12:08:42		69.4	69.4
59.9	12:03:45		59.9	59.9	72.6	12:08:45		72.6	72.6
59.7	12:03:48		59.7	59.7	71.7	12:08:48		71.7	71.7
58.7	12:03:51		58.7	58.7	68.8	12:08:51		68.8	68.8
59.8	12:03:54		59.8	59.8	68	12:08:54		68	68
60	12:03:57		60	60.0	69.2	12:08:57		69.2	69.2
63.2	12:04:00		63.2	63.2	70.9	12:09:00		70.9	70.9
63.8	12:04:03		63.8	63.8	69.3	12:09:03		69.3	69.3
62.3	12:04:06		62.3	62.3	63.9	12:09:06		63.9	63.9
63.9	12:04:09		63.9	63.9	66.2	12:09:09		66.2	66.2
64.8	12:04:12		64.8	64.8	66.8	12:09:12		66.8	66.8
63	12:04:15		63	63.0	68	12:09:15		68	68
62.6	12:04:18		62.6	62.6	69.9	12:09:18		69.9	69.9
59.5	12:04:21		59.5	59.5	65.3	12:09:21		65.3	65.3
60.5	12:04:24		60.5	60.5	63.3	12:09:24		63.3	63.3
61.1	12:04:27		61.1	61.1	64.8	12:09:27		64.8	64.8
60.3	12:04:30		60.3	60.3	72	12:09:30		72	72
60.9	12:04:33		60.9	60.9	67.5	12:09:33		67.5	67.5
61.4	12:04:36		61.4	61.4	70.2	12:09:36		70.2	70.2
58.4	12:04:39		58.4	58.4	68.4	12:09:39		68.4	68.4
59.4	12:04:42		59.4	59.4	68.1	12:09:42		68.1	68.1
60.1	12:04:45		60.1	60.1	67.2	12:09:45		67.2	67.2
61	12:04:48		61	61.0	69.8	12:09:48		69.8	69.8
59.7	12:04:51		59.7	59.7	75.4	12:09:51		75.4	75.4
59.2	12:04:54		59.2	59.2	69.5	12:09:54		69.5	69.5
59.5	12:04:57		59.5	59.5	73.2	12:09:57		73.2	73.2
60.2	12:05:00		60.2	60.2	73.5	12:10:00		73.5	73.5
60	12:05:03		60	60.0	75	12:10:03		75	75
60.4	12:05:06		60.4	60.4	73.2	12:10:06		73.2	73.2
61.5	12:05:09		61.5	61.5	69.8	12:10:09		69.8	69.8
61	12:05:12		61	61.0	71.8	12:10:12		71.8	71.8
61	12:05:15		61	61.0	76.9	12:10:15		76.9	76.9
61.6	12:05:18		61.6	61.6	80.5	12:10:18		80.5	80.5
60.9	12:05:21		60.9	60.9	70.4	12:10:21		70.4	70.4
62.6	12:05:24		62.6	62.6	65	12:10:24		65	65
61.4	12:05:27		61.4	61.4	69.4	12:10:27		69.4	69.4
60.8	12:05:30		60.8	60.8	67.3	12:10:30		67.3	67.3
59.2	12:05:33		59.2	59.2	69.3	12:10:33		69.3	69.3
59.8	12:05:36		59.8	59.8	68.9	12:10:36		68.9	68.9
59.5	12:05:39		59.5	59.5	67	12:10:39		67	67
59.4	12:05:42		59.4	59.4	68.9	12:10:42		68.9	68.9
61.8	12:05:45		61.8	61.8	64.6	12:10:45		64.6	64.6
62.5	12:05:48		62.5	62.5	67.4	12:10:48		67.4	67.4
63	12:05:51		63	63.0	66.6	12:10:51		66.6	66.6
61.8	12:05:54		61.8	61.8	69.1	12:10:54		69.1	69.1
62.7	12:05:57		62.7	62.7	71.7	12:10:57		71.7	71.7
63.8	12:06:00		63.8	63.8	71.9	12:11:00		71.9	71.9
61.8	12:06:03		61.8	61.8	70.8	12:11:03		70.8	70.8
62.6	12:06:06		62.6	62.6	73.4	12:11:06		73.4	73.4
62.3	12:06:09		62.3	62.3	66.8	12:11:09		66.8	66.8

Site A - On Tree near middle of NE Side of Project Site					Site B - On Fence near NW Corner of Project Site				
SPL	**Time**	**Leq (1 hour Avg.)**	**Ldn**	**CNEL**	**SPL**	**Time**	**Leq (1 hour Avg.)**	**Ldn**	**CNEL**
61.7	12:06:12		61.7	61.7	69.3	12:11:12		69.3	69.3
63.1	12:06:15		63.1	63.1	69.7	12:11:15		69.7	69.7
60.2	12:06:18		60.2	60.2	68.3	12:11:18		68.3	68.3
59.9	12:06:21		59.9	59.9	68.3	12:11:21		68.3	68.3
61.4	12:06:24		61.4	61.4	72.3	12:11:24		72.3	72.3
61.7	12:06:27		61.7	61.7	76.4	12:11:27		76.4	76.4
63.6	12:06:30		63.6	63.6	73.5	12:11:30		73.5	73.5
63.9	12:06:33		63.9	63.9	69.9	12:11:33		69.9	69.9
62.2	12:06:36		62.2	62.2	69.8	12:11:36		69.8	69.8
61.3	12:06:39		61.3	61.3	70.1	12:11:39		70.1	70.1
60.5	12:06:42		60.5	60.5	62.4	12:11:42		62.4	62.4
60.4	12:06:45		60.4	60.4	63.9	12:11:45		63.9	63.9
59.7	12:06:48		59.7	59.7	65.3	12:11:48		65.3	65.3
58.9	12:06:51		58.9	58.9	63.5	12:11:51		63.5	63.5
59.6	12:06:54		59.6	59.6	65	12:11:54		65	65
61.3	12:06:57		61.3	61.3	64.7	12:11:57		64.7	64.7
60.7	12:07:00		60.7	60.7	63.4	12:12:00		63.4	63.4
61.4	12:07:03		61.4	61.4	62	12:12:03		62	62
60.3	12:07:06		60.3	60.3	63.4	12:12:06		63.4	63.4
61.2	12:07:09		61.2	61.2	70.2	12:12:09		70.2	70.2
60.3	12:07:12		60.3	60.3	70.6	12:12:12		70.6	70.6
60.4	12:07:15		60.4	60.4	70.3	12:12:15		70.3	70.3
59.7	12:07:18		59.7	59.7	72.7	12:12:18		72.7	72.7
59.2	12:07:21		59.2	59.2	74	12:12:21		74	74
59.4	12:07:24		59.4	59.4	70.8	12:12:24		70.8	70.8
59.2	12:07:27		59.2	59.2	72.4	12:12:27		72.4	72.4
61	12:07:30		61	61.0	73.2	12:12:30		73.2	73.2
61.4	12:07:33		61.4	61.4	73.2	12:12:33		73.2	73.2
60.9	12:07:36		60.9	60.9	70	12:12:36		70	70
60.3	12:07:39		60.3	60.3	70.9	12:12:39		70.9	70.9
60.1	12:07:42		60.1	60.1	68	12:12:42		68	68
59.6	12:07:45		59.6	59.6	75.7	12:12:45		75.7	75.7
59.5	12:07:48		59.5	59.5	77.1	12:12:48		77.1	77.1
61.1	12:07:51		61.1	61.1	70	12:12:51		70	70
63.2	12:07:54		63.2	63.2	68.4	12:12:54		68.4	68.4
64.6	12:07:57		64.6	64.6	64	12:12:57		64	64
62.3	12:08:00		62.3	62.3	63.4	12:13:00		63.4	63.4
62	12:08:03		62	62.0	65.7	12:13:03		65.7	65.7
62.5	12:08:06		62.5	62.5	62.8	12:13:06		62.8	62.8
62.9	12:08:09		62.9	62.9	64	12:13:09		64	64
60.3	12:08:12		60.3	60.3	69.2	12:13:12		69.2	69.2
61.3	12:08:15		61.3	61.3	70.5	12:13:15		70.5	70.5
61.4	12:08:18		61.4	61.4	68	12:13:18		68	68
61	12:08:21		61	61.0	68.6	12:13:21		68.6	68.6
61.2	12:08:24		61.2	61.2	67.4	12:13:24		67.4	67.4
62.3	12:08:27		62.3	62.3	71.3	12:13:27		71.3	71.3
64.9	12:08:30		64.9	64.9	73.2	12:13:30		73.2	73.2
63.7	12:08:33		63.7	63.7	72.8	12:13:33		72.8	72.8
61.2	12:08:36		61.2	61.2	68.8	12:13:36		68.8	68.8
60.9	12:08:39		60.9	60.9	73.2	12:13:39		73.2	73.2
60	12:08:42		60	60.0	74.7	12:13:42		74.7	74.7
61.8	12:08:45		61.8	61.8	72.7	12:13:45		72.7	72.7
62.4	12:08:48		62.4	62.4	73.9	12:13:48		73.9	73.9
61.2	12:08:51		61.2	61.2	73.1	12:13:51		73.1	73.1
61.6	12:08:54		61.6	61.6	71.4	12:13:54		71.4	71.4
59.1	12:08:57		59.1	59.1	73	12:13:57		73	73
58.4	12:09:00		58.4	58.4	72.5	12:14:00		72.5	72.5
57.6	12:09:03		57.6	57.6	65.8	12:14:03		65.8	65.8
59.2	12:09:06		59.2	59.2	64.3	12:14:06		64.3	64.3
58.9	12:09:09		58.9	58.9	71	12:14:09		71	71
59.6	12:09:12		59.6	59.6	72.9	12:14:12		72.9	72.9
58.6	12:09:15		58.6	58.6	75.4	12:14:15		75.4	75.4
58.4	12:09:18		58.4	58.4	73.4	12:14:18		73.4	73.4
58.1	12:09:21		58.1	58.1	67.3	12:14:21		67.3	67.3
60.9	12:09:24		60.9	60.9	64.1	12:14:24		64.1	64.1
61.1	12:09:27		61.1	61.1	61.5	12:14:27		61.5	61.5
60.3	12:09:30		60.3	60.3	63.6	12:14:30		63.6	63.6
60	12:09:33		60	60.0	70	12:14:33		70	70
60.6	12:09:36		60.6	60.6	68.9	12:14:36		68.9	68.9
64.8	12:09:39		64.8	64.8	68.6	12:14:39		68.6	68.6
65.4	12:09:42		65.4	65.4	64.8	12:14:42		64.8	64.8
63.4	12:09:45		63.4	63.4	67.4	12:14:45		67.4	67.4
62.1	12:09:48		62.1	62.1	71.5	12:14:48		71.5	71.5
61.9	12:09:51		61.9	61.9	65.3	12:14:51		65.3	65.3
60.4	12:09:54		60.4	60.4	65.2	12:14:54		65.2	65.2
58.5	12:09:57		58.5	58.5	64.5	12:14:57		64.5	64.5
59	12:10:00		59	59.0	69.4	12:15:00		69.4	69.4
59.4	12:10:03		59.4	59.4	75.9	12:15:03		75.9	75.9
60.1	12:10:06		60.1	60.1	68.9	12:15:06		68.9	68.9
60.8	12:10:09		60.8	60.8	65.5	12:15:09		65.5	65.5
61.7	12:10:12		61.7	61.7	68.4	12:15:12		68.4	68.4
62.5	12:10:15		62.5	62.5	71.6	12:15:15		71.6	71.6
60.7	12:10:18		60.7	60.7	71.2	12:15:18		71.2	71.2
59.8	12:10:21		59.8	59.8	67.9	12:15:21		67.9	67.9
62.2	12:10:24		62.2	62.2	70.1	12:15:24		70.1	70.1
59.8	12:10:27		59.8	59.8	73.4	12:15:27		73.4	73.4
58.6	12:10:30		58.6	58.6	72.6	12:15:30		72.6	72.6
58.9	12:10:33		58.9	58.9	70.8	12:15:33		70.8	70.8
60.2	12:10:36		60.2	60.2	71	12:15:36		71	71

Site A - On Tree near middle of NE Side of Project Site					Site B - On Fence near NW Corner of Project Site				
SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL	SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
60.3	12:10:39		60.3	60.3	71.9	12:15:39		71.9	71.9
58.7	12:10:42		58.7	58.7	73.6	12:15:42		73.6	73.6
58.1	12:10:45		58.1	58.1	71.2	12:15:45		71.2	71.2
58.1	12:10:48		58.1	58.1	73	12:15:48		73	73
57.1	12:10:51		57.1	57.1	73.3	12:15:51		73.3	73.3
56.2	12:10:54		56.2	56.2	72.9	12:15:54		72.9	72.9
59.7	12:10:57		59.7	59.7	73.1	12:15:57		73.1	73.1
60.2	12:11:00		60.2	60.2	71.4	12:16:00		71.4	71.4
60.2	12:11:03		60.2	60.2	68.4	12:16:03		68.4	68.4
60.1	12:11:06		60.1	60.1	69	12:16:06		69	69
59.5	12:11:09		59.5	59.5	69.7	12:16:09		69.7	69.7
59.2	12:11:12		59.2	59.2	72.3	12:16:12		72.3	72.3
57.5	12:11:15		57.5	57.5	70.2	12:16:15		70.2	70.2
56.9	12:11:18		56.9	56.9	68.5	12:16:18		68.5	68.5
57.2	12:11:21		57.2	57.2	70.6	12:16:21		70.6	70.6
59	12:11:24		59	59.0	75.4	12:16:24		75.4	75.4
60.5	12:11:27		60.5	60.5	76.8	12:16:27		76.8	76.8
60.1	12:11:30		60.1	60.1	73.8	12:16:30		73.8	73.8
59.5	12:11:33		59.5	59.5	69.9	12:16:33		69.9	69.9
60.3	12:11:36		60.3	60.3	69.9	12:16:36		69.9	69.9
61	12:11:39		61	61.0	70.2	12:16:39		70.2	70.2
60.6	12:11:42		60.6	60.6	73.3	12:16:42		73.3	73.3
60.7	12:11:45		60.7	60.7	70.8	12:16:45		70.8	70.8
61.6	12:11:48		61.6	61.6	72.8	12:16:48		72.8	72.8
60.4	12:11:51		60.4	60.4	70.9	12:16:51		70.9	70.9
60.8	12:11:54		60.8	60.8	71.2	12:16:54		71.2	71.2
58.3	12:11:57		58.3	58.3	71.2	12:16:57		71.2	71.2
58.1	12:12:00		58.1	58.1	74	12:17:00		74	74
57.2	12:12:03		57.2	57.2	71.4	12:17:03		71.4	71.4
57.3	12:12:06		57.3	57.3	72.7	12:17:06		72.7	72.7
57.2	12:12:09		57.2	57.2	65	12:17:09		65	65
60.2	12:12:12		60.2	60.2	67.7	12:17:12		67.7	67.7
62.9	12:12:15		62.9	62.9	69.3	12:17:15		69.3	69.3
72	12:12:18		72	72.0	68.5	12:17:18		68.5	68.5
76.2	12:12:21		76.2	76.2	69.2	12:17:21		69.2	69.2
66.3	12:12:24		66.3	66.3	76.4	12:17:24		76.4	76.4
59.2	12:12:27		59.2	59.2	70.7	12:17:27		70.7	70.7
59.2	12:12:30		59.2	59.2	74.2	12:17:30		74.2	74.2
58.5	12:12:33		58.5	58.5	70	12:17:33		70	70
58	12:12:36		58	58.0	70.2	12:17:36		70.2	70.2
58.3	12:12:39		58.3	58.3	71.6	12:17:39		71.6	71.6
60.1	12:12:42		60.1	60.1	71.6	12:17:42		71.6	71.6
59.4	12:12:45		59.4	59.4	71.5	12:17:45		71.5	71.5
61.1	12:12:48		61.1	61.1	73	12:17:48		73	73
61.1	12:12:51		61.1	61.1	73.6	12:17:51		73.6	73.6
61	12:12:54		61	61.0	71.9	12:17:54		71.9	71.9
59.6	12:12:57		59.6	59.6	70.4	12:17:57		70.4	70.4
59.8	12:13:00		59.8	59.8	69.5	12:18:00		69.5	69.5
59.5	12:13:03		59.5	59.5	68.4	12:18:03		68.4	68.4
60	12:13:06		60	60.0	71.9	12:18:06		71.9	71.9
58.6	12:13:09		58.6	58.6	70.7	12:18:09		70.7	70.7
59.2	12:13:12		59.2	59.2	71.8	12:18:12		71.8	71.8
57.5	12:13:15		57.5	57.5	65.4	12:18:15		65.4	65.4
57.9	12:13:18		57.9	57.9	61.6	12:18:18		61.6	61.6
57.8	12:13:21		57.8	57.8	62.3	12:18:21		62.3	62.3
58.4	12:13:24		58.4	58.4	64.8	12:18:24		64.8	64.8
58.2	12:13:27		58.2	58.2	64	12:18:27		64	64
58.3	12:13:30		58.3	58.3	69.2	12:18:30		69.2	69.2
59.3	12:13:33		59.3	59.3	71.2	12:18:33		71.2	71.2
60.6	12:13:36		60.6	60.6	71.5	12:18:36		71.5	71.5
61.9	12:13:39		61.9	61.9	71.4	12:18:39		71.4	71.4
61.6	12:13:42		61.6	61.6	66.6	12:18:42		66.6	66.6
61.8	12:13:45		61.8	61.8	71.9	12:18:45		71.9	71.9
61.6	12:13:48		61.6	61.6	68.3	12:18:48		68.3	68.3
62.4	12:13:51		62.4	62.4	67.4	12:18:51		67.4	67.4
64.3	12:13:54		64.3	64.3	66.2	12:18:54		66.2	66.2
61	12:13:57		61	61.0	73.1	12:18:57		73.1	73.1
63.8	12:14:00		63.8	63.8	65.5	12:19:00		65.5	65.5
62.9	12:14:03		62.9	62.9	67.8	12:19:03		67.8	67.8
62	12:14:06		62	62.0	68.3	12:19:06		68.3	68.3
59.5	12:14:09		59.5	59.5	69.5	12:19:09		69.5	69.5
58.7	12:14:12		58.7	58.7	72.4	12:19:12		72.4	72.4
59	12:14:15		59	59.0	74.5	12:19:15		74.5	74.5
59.4	12:14:18		59.4	59.4	74.7	12:19:18		74.7	74.7
59.6	12:14:21		59.6	59.6	70.2	12:19:21		70.2	70.2
58.3	12:14:24		58.3	58.3	68.7	12:19:24		68.7	68.7
57.9	12:14:27		57.9	57.9	73.9	12:19:27		73.9	73.9
61.4	12:14:30		61.4	61.4	67	12:19:30		67	67
64	12:14:33		64	64.0	62.2	12:19:33		62.2	62.2
64.4	12:14:36		64.4	64.4	63.3	12:19:36		63.3	63.3
63.5	12:14:39		63.5	63.5	65.1	12:19:39		65.1	65.1
62.9	12:14:42		62.9	62.9	70.8	12:19:42		70.8	70.8
63.4	12:14:45		63.4	63.4	72.3	12:19:45		72.3	72.3
62.5	12:14:48		62.5	62.5	72	12:19:48		72	72
60.1	12:14:51		60.1	60.1	73.8	12:19:51		73.8	73.8
61.6	12:14:54		61.6	61.6	71.6	12:19:54		71.6	71.6
62.2	12:14:57		62.2	62.2	69.7	12:19:57		69.7	69.7
63.1	12:15:00		63.1	63.1	62.6	12:20:00		62.6	62.6
64.8	12:15:03		64.8	64.8	67.9	12:20:03		67.9	67.9
62.6	12:15:06		62.6	62.6	67.4	12:20:06		67.4	67.4
60.5	12:15:09		60.5	60.5	72.2	12:20:09		72.2	72.2
59.1	12:15:12		59.1	59.1	66.8	12:20:12		66.8	66.8
57.5	12:15:15		57.5	57.5	68.8	12:20:15		68.8	68.8
60.3	12:15:18		60.3	60.3	65.4	12:20:18		65.4	65.4
61.1	12:15:21		61.1	61.1	65.7	12:20:21		65.7	65.7

Site A - On Tree near middle of NE Side of Project Site					Site B - On Fence near NW Corner of Project Site				
SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL	SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
59.7	12:15:24		59.7	59.7	60.1	12:20:24		60.1	60.1
61.7	12:15:27		61.7	61.7	60.2	12:20:27		60.2	60.2
59.3	12:15:30		59.3	59.3	65.5	12:20:30		65.5	65.5
60.3	12:15:33		60.3	60.3	65.6	12:20:33		65.6	65.6
60.8	12:15:36		60.8	60.8	64.4	12:20:36		64.4	64.4
59.1	12:15:39		59.1	59.1	60.5	12:20:39		60.5	60.5
60.4	12:15:42		60.4	60.4	61.4	12:20:42		61.4	61.4
58.3	12:15:45		58.3	58.3	68	12:20:45		68	68
60.4	12:15:48		60.4	60.4	71	12:20:48		71	71
60.1	12:15:51		60.1	60.1	70.8	12:20:51		70.8	70.8
60	12:15:54		60	60.0	66.6	12:20:54		66.6	66.6
61.3	12:15:57		61.3	61.3	64.2	12:20:57		64.2	64.2
62.1	12:16:00		62.1	62.1	68	12:21:00		68	68
64.5	12:16:03		64.5	64.5	71	12:21:03		71	71
65.6	12:16:06		65.6	65.6	73	12:21:06		73	73
64.6	12:16:09		64.6	64.6	72.8	12:21:09		72.8	72.8
63.8	12:16:12		63.8	63.8	68.6	12:21:12		68.6	68.6
66.8	12:16:15		66.8	66.8	66.4	12:21:15		66.4	66.4
64.6	12:16:18		64.6	64.6	68.3	12:21:18		68.3	68.3
63.6	12:16:21		63.6	63.6	65.9	12:21:21		65.9	65.9
61.1	12:16:24		61.1	61.1	67.8	12:21:24		67.8	67.8
60.5	12:16:27		60.5	60.5	71.8	12:21:27		71.8	71.8
59.9	12:16:30		59.9	59.9	68.9	12:21:30		68.9	68.9
59.6	12:16:33		59.6	59.6	67.7	12:21:33		67.7	67.7
60.3	12:16:36		60.3	60.3	62.6	12:21:36		62.6	62.6
60.8	12:16:39		60.8	60.8	62.4	12:21:39		62.4	62.4
59.7	12:16:42		59.7	59.7	67.7	12:21:42		67.7	67.7
61.2	12:16:45		61.2	61.2	73	12:21:45		73	73
62.3	12:16:48		62.3	62.3	71.6	12:21:48		71.6	71.6
61	12:16:51		61	61.0	73.4	12:21:51		73.4	73.4
60.9	12:16:54		60.9	60.9	72.1	12:21:54		72.1	72.1
58.2	12:16:57		58.2	58.2	69.2	12:21:57		69.2	69.2
61	12:17:00		61	61.0	69	12:22:00		69	69
60.3	12:17:03		60.3	60.3	71.8	12:22:03		71.8	71.8
60.6	12:17:06		60.6	60.6	70	12:22:06		70	70
59.4	12:17:09		59.4	59.4	69.9	12:22:09		69.9	69.9
58	12:17:12		58	58.0	67.8	12:22:12		67.8	67.8
58.4	12:17:15		58.4	58.4	65.9	12:22:15		65.9	65.9
59.4	12:17:18		59.4	59.4	64.5	12:22:18		64.5	64.5
61.9	12:17:21		61.9	61.9	73.7	12:22:21		73.7	73.7
61.4	12:17:24		61.4	61.4	71.6	12:22:24		71.6	71.6
63.1	12:17:27		63.1	63.1	73.5	12:22:27		73.5	73.5
60.5	12:17:30		60.5	60.5	72.1	12:22:30		72.1	72.1
60.3	12:17:33		60.3	60.3	70.1	12:22:33		70.1	70.1
59.6	12:17:36		59.6	59.6	69.6	12:22:36		69.6	69.6
59.4	12:17:39		59.4	59.4	72.6	12:22:39		72.6	72.6
60.3	12:17:42		60.3	60.3	75	12:22:42		75	75
60	12:17:45		60	60.0	76.4	12:22:45		76.4	76.4
58.6	12:17:48		58.6	58.6	74.6	12:22:48		74.6	74.6
57.7	12:17:51		57.7	57.7	68.3	12:22:51		68.3	68.3
57	12:17:54		57	57.0	69.4	12:22:54		69.4	69.4
56.9	12:17:57		56.9	56.9	69.8	12:22:57		69.8	69.8
57.9	12:18:00		57.9	57.9	69.7	12:23:00		69.7	69.7
60.4	12:18:03		60.4	60.4	70.8	12:23:03		70.8	70.8
59.6	12:18:06		59.6	59.6	68.2	12:23:06		68.2	68.2
58.7	12:18:09		58.7	58.7	65.3	12:23:09		65.3	65.3
56.6	12:18:12		56.6	56.6	70.1	12:23:12		70.1	70.1
58	12:18:15		58	58.0	69.9	12:23:15		69.9	69.9
57.1	12:18:18		57.1	57.1	63.5	12:23:18		63.5	63.5
57.4	12:18:21		57.4	57.4	62.8	12:23:21		62.8	62.8
59.1	12:18:24		59.1	59.1	67.5	12:23:24		67.5	67.5
57.8	12:18:27		57.8	57.8	61.8	12:23:27		61.8	61.8
57.8	12:18:30		57.8	57.8	68	12:23:30		68	68
58.2	12:18:33		58.2	58.2	64.2	12:23:33		64.2	64.2
58.9	12:18:36		58.9	58.9	63.4	12:23:36		63.4	63.4
60.2	12:18:39		60.2	60.2	71.1	12:23:39		71.1	71.1
58.6	12:18:42		58.6	58.6	70.2	12:23:42		70.2	70.2
59.4	12:18:45		59.4	59.4	65.5	12:23:45		65.5	65.5
62.3	12:18:48		62.3	62.3	69.6	12:23:48		69.6	69.6
61	12:18:51		61	61.0	69.4	12:23:51		69.4	69.4
61.2	12:18:54		61.2	61.2	71	12:23:54		71	71
59.3	12:18:57		59.3	59.3	70.4	12:23:57		70.4	70.4
58.9	12:19:00	61.5	58.9	58.9	72.2	12:24:00	71.0	72.2	72.2
57.7	12:19:03	61.5	57.7	57.7	73.4	12:24:03	71.0	73.4	73.4
58.5	12:19:06	61.5	58.5	58.5	68.2	12:24:06	71.0	68.2	68.2
57.1	12:19:09	61.5	57.1	57.1	68.6	12:24:09	71.0	68.6	68.6
56.1	12:19:12	61.5	56.1	56.1	71.2	12:24:12	71.0	71.2	71.2
59.2	12:19:15	61.4	59.2	59.2	68.5	12:24:15	71.0	68.5	68.5
58.5	12:19:18	61.4	58.5	58.5	71.3	12:24:18	71.0	71.3	71.3
60.6	12:19:21	61.4	60.6	60.6	72.3	12:24:21	71.0	72.3	72.3
59.9	12:19:24	61.4	59.9	59.9	69.4	12:24:24	71.0	69.4	69.4
59.5	12:19:27	61.4	59.5	59.5	65.6	12:24:27	71.0	65.6	65.6
59.9	12:19:30	61.4	59.9	59.9	65.6	12:24:30	71.0	65.6	65.6
60.2	12:19:33	61.4	60.2	60.2	65.1	12:24:33	71.0	65.1	65.1
60.1	12:19:36	61.4	60.1	60.1	70.1	12:24:36	71.0	70.1	70.1
63.7	12:19:39	61.4	63.7	63.7	67.6	12:24:39	71.0	67.6	67.6
62.2	12:19:42	61.4	62.2	62.2	70	12:24:42	71.0	70	70
60.9	12:19:45	61.1	60.9	60.9	70.5	12:24:45	71.0	70.5	70.5
61.2	12:19:48	61.1	61.2	61.2	70.2	12:24:48	71.0	70.2	70.2
57.8	12:19:51	61.1	57.8	57.8	72.5	12:24:51	71.0	72.5	72.5
57.4	12:19:54	61.1	57.4	57.4	70.6	12:24:54	71.0	70.6	70.6
57.9	12:19:57	61.1	57.9	57.9	72.1	12:24:57	71.0	72.1	72.1
57.7	12:20:00	61.1	57.7	57.7	67.1	12:25:00	71.0	67.1	67.1
58.7	12:20:03	61.1	58.7	58.7	72	12:25:03	71.0	72	72
59.6	12:20:06	61.1	59.6	59.6	70.9	12:25:06	71.0	70.9	70.9
60.3	12:20:09	61.1	60.3	60.3	68.7	12:25:09	71.0	68.7	68.7
58.9	12:20:12	61.1	58.9	58.9	66.8	12:25:12	71.0	66.8	66.8
57.7	12:20:15	61.1	57.7	57.7	66.6	12:25:15	71.0	66.6	66.6
58	12:20:18	61.1	58	58.0	71	12:25:18	71.1	71	71
57.8	12:20:21	61.1	57.8	57.8	70.6	12:25:21	71.1	70.6	70.6
59.2	12:20:24	61.1	59.2	59.2	72.1	12:25:24	71.1	72.1	72.1
59	12:20:27	61.1	59	59.0	68.5	12:25:27	71.1	68.5	68.5
59.2	12:20:30	61.1	59.2	59.2	71.6	12:25:30	71.1	71.6	71.6

APPENDIX C

RCNM Model Construction Noise Calculations

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/13/2022
Case Description: Fire Station No, 80 & Training Center - Site Preparation

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest Homes to East	Residential	63.8	63.8	63.8

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	2200	0
Dozer	No	40		81.7	2200	0
Dozer	No	40		81.7	2200	0
Backhoe	No	40		77.6	2200	0
Front End Loader	No	40		79.1	2200	0
Tractor	No	40	84		2200	0
Tractor	No	40	84		2200	0

Results

		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		48.8	44.8	N/A	N/A	N/A	N/A
Dozer		48.8	44.8	N/A	N/A	N/A	N/A
Dozer		48.8	44.8	N/A	N/A	N/A	N/A
Backhoe		44.7	40.7	N/A	N/A	N/A	N/A
Front End Loader		46.2	42.3	N/A	N/A	N/A	N/A
Tractor		51.1	47.2	N/A	N/A	N/A	N/A
Tractor		51.1	47.2	N/A	N/A	N/A	N/A
	Total	**51**	**54**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/13/2022

Case Description: Fire Station No, 80 & Training Center - Site Preparation

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest Homes to South	Residential	63.8	63.8	63.8

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	2500	0
Dozer	No	40		81.7	2500	0
Dozer	No	40		81.7	2500	0
Backhoe	No	40		77.6	2500	0
Front End Loader	No	40		79.1	2500	0
Tractor	No	40	84		2500	0
Tractor	No	40	84		2500	0

Results

		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		47.7	43.7	N/A	N/A	N/A	N/A
Dozer		47.7	43.7	N/A	N/A	N/A	N/A
Dozer		47.7	43.7	N/A	N/A	N/A	N/A
Backhoe		43.6	39.6	N/A	N/A	N/A	N/A
Front End Loader		45.1	41.2	N/A	N/A	N/A	N/A
Tractor		50.0	46.0	N/A	N/A	N/A	N/A
Tractor		50.0	46.0	N/A	N/A	N/A	N/A
	Total	**50**	**52**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/13/2022
Case Description: Fire Station No, 80 & Training Center - Grading

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Homes to East	Residential	63.8	63.8	63.8

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	2200	0
Grader	No	40	85		2200	0
Dozer	No	40		81.7	2200	0
Backhoe	No	40		77.6	2200	0
Front End Loader	No	40		79.1	2200	0
Tractor	No	40	84		2200	0

Results

		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator		47.8	43.9	N/A	N/A	N/A	N/A
Grader		52.1	48.2	N/A	N/A	N/A	N/A
Dozer		48.8	44.8	N/A	N/A	N/A	N/A
Backhoe		44.7	40.7	N/A	N/A	N/A	N/A
Front End Loader		46.2	42.3	N/A	N/A	N/A	N/A
Tractor		51.1	47.2	N/A	N/A	N/A	N/A
	Total	**52**	**53**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/13/2022
Case Description: Fire Station No, 80 & Training Center - Grading

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest Homes to South	Residential	63.8	63.8	63.8

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	2500	0
Grader	No	40	85		2500	0
Dozer	No	40		81.7	2500	0
Backhoe	No	40		77.6	2500	0
Front End Loader	No	40		79.1	2500	0
Tractor	No	40	84		2500	0

Results

		Calculated (dBA)		Noise Limits (dBA) Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator		46.7	43	N/A	N/A	N/A	N/A
Grader		51.0	47.0	N/A	N/A	N/A	N/A
Dozer		47.7	43.7	N/A	N/A	N/A	N/A
Backhoe		43.6	39.6	N/A	N/A	N/A	N/A
Front End Loader		45.1	41.2	N/A	N/A	N/A	N/A
Tractor		50.0	46.0	N/A	N/A	N/A	N/A
	Total	**51**	**52**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/13/2022
Case Description: Fire Station No, 80 & Training Center - Building Construction

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Homes to East	Residential	63.8	63.8	63.8

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	2200	0
Gradall	No	40		83.4	2200	0
Gradall	No	40		83.4	2200	0
Gradall	No	40		83.4	2200	0
Generator	No	50		80.6	2200	0
Backhoe	No	40		77.6	2200	0
Front End Loader	No	40		79.1	2200	0
Tractor	No	40	84		2200	0
Welder / Torch	No	40		74	2200	0

Results

		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane		47.7	39.7	N/A	N/A	N/A	N/A
Gradall		50.5	46.6	N/A	N/A	N/A	N/A
Gradall		50.5	46.6	N/A	N/A	N/A	N/A
Gradall		50.5	46.6	N/A	N/A	N/A	N/A
Generator		47.8	44.8	N/A	N/A	N/A	N/A
Backhoe		44.7	40.7	N/A	N/A	N/A	N/A
Front End Loader		46.2	42.3	N/A	N/A	N/A	N/A
Tractor		51.1	47.2	N/A	N/A	N/A	N/A
Welder / Torch		41.1	37.2	N/A	N/A	N/A	N/A
	Total	**51**	**54**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/13/2022
Case Description: Fire Station No, 80 & Training Center - Building Construction

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest Homes to South	Residential	63.8	63.8	63.8

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	2500	0
Gradall	No	40		83.4	2500	0
Gradall	No	40		83.4	2500	0
Gradall	No	40		83.4	2500	0
Generator	No	50		80.6	2500	0
Backhoe	No	40		77.6	2500	0
Front End Loader	No	40		79.1	2500	0
Tractor	No	40	84		2500	0
Welder / Torch	No	40		74	2500	0

Results

Equipment		Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq
Crane		46.6	38.6	N/A	N/A	N/A	N/A
Gradall		49.4	45.4	N/A	N/A	N/A	N/A
Gradall		49.4	45.4	N/A	N/A	N/A	N/A
Gradall		49.4	45.4	N/A	N/A	N/A	N/A
Generator		46.7	43.6	N/A	N/A	N/A	N/A
Backhoe		43.6	39.6	N/A	N/A	N/A	N/A
Front End Loader		45.1	41.2	N/A	N/A	N/A	N/A
Tractor		50.0	46.0	N/A	N/A	N/A	N/A
Welder / Torch		40.0	36.0	N/A	N/A	N/A	N/A
	Total	**50**	**53**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/13/2022
Case Description: Fire Station No, 80 & Training Center - Paving

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Homes to East	Residential	63.8	63.8	63.8

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Mixer Truck	No	40		78.8	2200	0
Concrete Mixer Truck	No	40		78.8	2200	0
Paver	No	50		77.2	2200	0
Paver	No	50		77.2	2200	0
Paver	No	50		77.2	2200	0
Roller	No	20		80	2200	0
Roller	No	20		80	2200	0
Tractor	No	40	84		2200	0

Results

		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Mixer Truck		45.9	42.0	N/A	N/A	N/A	N/A
Concrete Mixer Truck		45.9	42.0	N/A	N/A	N/A	N/A
Paver		44.4	41.3	N/A	N/A	N/A	N/A
Paver		44.4	41.3	N/A	N/A	N/A	N/A
Paver		44.4	41.3	N/A	N/A	N/A	N/A
Roller		47.1	40.1	N/A	N/A	N/A	N/A
Roller		47.1	40.1	N/A	N/A	N/A	N/A
Tractor		51.1	47.2	N/A	N/A	N/A	N/A
	Total	**51**	**52**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/13/2022
Case Description: Fire Station No, 80 & Training Center - Paving

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest Homes to South	Residential	63.8	63.8	63.8

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Mixer Truck	No	40		78.8	2500	0
Concrete Mixer Truck	No	40		78.8	2500	0
Paver	No	50		77.2	2500	0
Paver	No	50		77.2	2500	0
Paver	No	50		77.2	2500	0
Roller	No	20		80	2500	0
Roller	No	20		80	2500	0
Tractor	No	40	84		2500	0

Results

		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Mixer Truck		44.8	40.8	N/A	N/A	N/A	N/A
Concrete Mixer Truck		44.8	40.8	N/A	N/A	N/A	N/A
Paver		43.2	40.2	N/A	N/A	N/A	N/A
Paver		43.2	40.2	N/A	N/A	N/A	N/A
Paver		43.2	40.2	N/A	N/A	N/A	N/A
Roller		46.0	39.0	N/A	N/A	N/A	N/A
Roller		46.0	39.0	N/A	N/A	N/A	N/A
Tractor		50.0	46.0	N/A	N/A	N/A	N/A
	Total	**50**	**51**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/13/2022
Case Description: Fire Station No, 80 & Training Center - Painting

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest Homes to East	Residential	63.8	63.8	63.8

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	2200	0

		Calculated (dBA)		Results	Noise Limits (dBA)		
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		44.8	40.8	N/A	N/A	N/A	N/A
	Total	**45**	**41**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest Homes to South	Residential	63.8	63.8	63.8

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	2500	0

		Calculated (dBA)		Results	Noise Limits (dBA)		
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		43.7	39.7	N/A	N/A	N/A	N/A
	Total	**44**	**40**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

APPENDIX D

Operational Reference Noise Measurements Printouts

Measurement Report

Report Summary

Meter's File Name	831_Data.001	Computer's File Name	SLM_0002509_831_Data_001.05.ldbin
Meter	831		
Firmware	2.314		
User	GT	Location	
Description	Orange Fire Station No. 1 & Headquarters		
Note	Located on pole next to west property line of existing Fire Station at 176 S Grand St		

Start Time	2020-04-29 11:59:20	Duration	24:00:00.0		
End Time	2020-04-30 11:59:20	Run Time	24:00:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	55.7 dB		
LAE	105.1 dB	SEA	--- dB
EA	3.6 mPa²h		
LZ_{peak}	110.9 dB	2020-04-29 11:59:24	
LAS_{max}	86.8 dB	2020-04-29 16:31:32	
LAS_{min}	35.7 dB	2020-04-30 06:27:41	
LA_{eq}	55.7 dB		
LC_{eq}	63.2 dB	LC_{eq} - LA_{eq}	7.5 dB
LAI_{eq}	58.6 dB	LAI_{eq} - LA_{eq}	2.9 dB

Exceedances		Count	Duration
LAS >	65.0 dB	108	0:23:49.7
LAS >	85.0 dB	1	0:00:12.6
LZpeak >	135.0 dB	0	0:00:00.0
LZpeak >	137.0 dB	0	0:00:00.0
LZpeak >	140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight	
	58.1 dB	57.4 dB	0.0 dB	
	LDEN	LDay	LEve	LNight
	58.5 dB	58.0 dB	53.3 dB	49.1 dB

Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	55.7 dB		63.2 dB		70.4 dB	
$Ls_{(max)}$	86.8 dB	2020-04-29 16:31:32	91.1 dB	2020-04-29 16:31:29	98.2 dB	2020-04-29 15:37:05
$LF_{(max)}$	89.0 dB	2020-04-29 11:59:24	92.5 dB	2020-04-29 16:31:29	104.3 dB	2020-04-29 15:37:05
$LI_{(max)}$	93.4 dB	2020-04-29 11:59:24	95.5 dB	2020-04-29 11:59:24	106.9 dB	2020-04-29 15:37:05
$LS_{(min)}$	35.7 dB	2020-04-30 06:27:41	50.2 dB	2020-04-30 04:02:40	54.2 dB	2020-04-30 04:15:23
$LF_{(min)}$	35.1 dB	2020-04-30 06:28:01	48.0 dB	2020-04-30 04:02:39	51.0 dB	2020-04-30 04:16:25
$LI_{(min)}$	35.7 dB	2020-04-30 06:28:01	50.7 dB	2020-04-30 04:04:33	55.5 dB	2020-04-30 04:14:25
$L_{Peak(max)}$	107.7 dB	2020-04-29 11:59:24	108.8 dB	2020-04-29 11:59:24	110.9 dB	2020-04-29 11:59:24

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	1	0:00:02.0

Statistics

LAS 5.0	57.9 dB
LAS 10.0	53.4 dB
LAS 33.3	49.6 dB
LAS 50.0	47.9 dB
LAS 66.6	46.1 dB
LAS 90.0	41.7 dB

General Information

Serial Number	02509
Model	831
Firmware Version	2.112
Filename	831_Data.005
User	GT
Job Description	Northwest Fresno Walmart Relocation
Location	Rooftop HVAC Unit
Measurement Description	
Start Time	Saturday, 2013 July 27 18:31:43
Stop Time	Saturday, 2013 July 27 18:41:44
Duration	00:10:01.1
Run Time	00:10:01.1
Pause	00:00:00.0
Pre Calibration	Saturday, 2013 July 27 17:53:07
Post Calibration	None
Calibration Deviation	---

Note

Located 10 feet southeast of rooftop HVAC Unit 14 located on western side of roof
94 F, 30% Hu., 29.45 in Hg, no wind, partly cloudy

Overall Data

LAeq		66.6	dB
LASmax	2013 Jul 27 18:33:16	67.6	dB
LApeak (max)	2013 Jul 27 18:32:17	81.6	dB
LASmin	2013 Jul 27 18:41:08	65.8	dB
LCeq		75.8	dB
LAeq		66.6	dB
LCeq - LAeq		9.2	dB
LAIeq		67.2	dB
LAeq		66.6	dB
LAIeq - LAeq		0.6	dB
Ldn		66.6	dB
LDay 07:00-23:00		66.6	dB
LNight 23:00-07:00		---	dB
Lden		66.6	dB
LDay 07:00-19:00		66.6	dB
LEvening 19:00-23:00		---	dB
LNight 23:00-07:00		---	dB
LAE		94.4	dB
# Overloads		0	
Overload Duration		0.0	s
# OBA Overloads		0	
OBA Overload Duration		0.0	s

Statistics

LAS5.00	67.0	dBA
LAS10.00	66.9	dBA
LAS33.30	66.7	dBA
LAS50.00	66.6	dBA
LAS66.60	66.5	dBA
LAS90.00	66.3	dBA
LAS > 65.0 dB (Exceedence Counts / Duration)	1 / 601.1	s
LAS > 85.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0 / 0.0	s

Settings

RMS Weight	A Weighting	
Peak Weight	A Weighting	
Detector	Slow	
Preamp	PRM831	
Integration Method	Linear	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Freq. Weighting	Z Weighting	
OBA Max Spectrum	Bin Max	
Gain	+0	dB
Under Range Limit	26.2	dB
Under Range Peak	75.8	dB
Noise Floor	17.1	dB
Overload	143.4	dB

1/1 Spectra

Freq. (Hz):	8.0	16.0	31.5	63.0	125	250	500	1k	2k	4k	8k	16k
LZeq	70.9	64.4	61.4	74.2	68.2	64.9	66.3	61.7	55.1	49.9	44.3	44.0
LZSmax	83.8	78.9	70.0	78.4	72.3	66.1	67.8	63.1	56.9	53.2	46.7	45.4
LZSmin	53.2	56.5	56.7	67.7	66.1	63.5	65.0	60.7	53.9	48.4	43.2	43.7

1/3 Spectra

Freq. (Hz):	6.3	8.0	10.0	12.5	16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0
LZeq	68.1	65.7	63.2	61.0	58.0	59.3	56.0	57.8	55.8	69.7	72.0	59.3
LZSmax	82.3	79.5	78.7	77.2	72.8	72.3	67.9	63.5	64.0	74.2	76.1	72.0
LZSmin	41.9	46.3	48.8	48.7	46.5	49.7	50.1	51.8	41.2	63.9	67.9	54.5

Freq. (Hz):	100	125	160	200	250	315	400	500	630	800	1k	1.25k
LZeq	61.6	63.7	64.5	59.0	58.7	60.9	63.2	60.8	59.9	59.2	56.1	54.6
LZSmax	71.3	68.0	67.3	61.6	61.7	64.1	65.5	64.2	62.0	60.7	57.6	58.6
LZSmin	52.9	60.0	57.2	45.1	56.0	58.9	61.1	58.4	58.4	57.1	54.9	53.3

Freq. (Hz):	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	12.5k	16k	20k
LZeq	52.0	49.8	48.4	46.4	45.4	42.8	41.1	38.6	38.5	38.4	39.0	40.2
LZSmax	54.4	52.3	51.2	50.2	49.7	45.7	45.4	41.6	40.4	40.4	41.4	41.3
LZSmin	50.9	48.4	46.9	45.0	43.7	41.4	39.6	37.5	37.9	38.0	38.7	39.9

Calibration History

Preamp	Date	dB re. 1V/Pa
PRM831	27 Jul 2013 17:53:07	-25.9
PRM831	27 Jul 2013 13:36:08	-25.6
PRM831	28 Apr 2013 15:34:24	-25.9
PRM831	23 Apr 2013 10:17:33	-25.0
PRM831	27 Feb 2013 19:15:30	-25.7
PRM831	24 Jan 2013 12:00:16	-25.6
PRM831	15 Jan 2013 07:50:44	-26.2
PRM831	04 Jan 2013 13:47:46	-26.5

General Information

Serial Number	02509
Model	831
Firmware Version	2.112
Filename	831_Data.005
User	GT
Job Description	Northwest Fresno Walmart Relocation
Location	Rooftop HVAC Unit
Measurement Description	
Start Time	Saturday, 2013 July 27 18:31:43
Stop Time	Saturday, 2013 July 27 18:41:44
Duration	00:10:01.1
Run Time	00:10:01.1
Pause	00:00:00.0
Pre Calibration	Saturday, 2013 July 27 17:53:07
Post Calibration	None
Calibration Deviation	---

Note

Located 10 feet southeast of rooftop HVAC Unit 14 located on western side of roof
94 F, 30% Hu., 29.45 in Hg, no wind, partly cloudy

Overall Data

LAeq		66.6	dB
LASmax	2013 Jul 27 18:33:16	67.6	dB
LApeak (max)	2013 Jul 27 18:32:17	81.6	dB
LASmin	2013 Jul 27 18:41:08	65.8	dB
LCeq		75.8	dB
LAeq		66.6	dB
LCeq - LAeq		9.2	dB
LAIeq		67.2	dB
LAeq		66.6	dB
LAIeq - LAeq		0.6	dB
Ldn		66.6	dB
LDay 07:00-23:00		66.6	dB
LNight 23:00-07:00		---	dB
Lden		66.6	dB
LDay 07:00-19:00		66.6	dB
LEvening 19:00-23:00		---	dB
LNight 23:00-07:00		---	dB
LAE		94.4	dB
# Overloads		0	
Overload Duration		0.0	s
# OBA Overloads		0	
OBA Overload Duration		0.0	s

Statistics

LAS5.00	67.0	dBA
LAS10.00	66.9	dBA
LAS33.30	66.7	dBA
LAS50.00	66.6	dBA
LAS66.60	66.5	dBA
LAS90.00	66.3	dBA
LAS > 65.0 dB (Exceedence Counts / Duration)	1 / 601.1	s
LAS > 85.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0 / 0.0	s

Settings

RMS Weight	A Weighting	
Peak Weight	A Weighting	
Detector	Slow	
Preamp	PRM831	
Integration Method	Linear	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Freq. Weighting	Z Weighting	
OBA Max Spectrum	Bin Max	
Gain	+0	dB
Under Range Limit	26.2	dB
Under Range Peak	75.8	dB
Noise Floor	17.1	dB
Overload	143.4	dB

1/1 Spectra

Freq. (Hz):	8.0	16.0	31.5	63.0	125	250	500	1k	2k	4k	8k	16k
LZeq	70.9	64.4	61.4	74.2	68.2	64.9	66.3	61.7	55.1	49.9	44.3	44.0
LZSmax	83.8	78.9	70.0	78.4	72.3	66.1	67.8	63.1	56.9	53.2	46.7	45.4
LZSmin	53.2	56.5	56.7	67.7	66.1	63.5	65.0	60.7	53.9	48.4	43.2	43.7

1/3 Spectra

Freq. (Hz):	6.3	8.0	10.0	12.5	16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0
LZeq	68.1	65.7	63.2	61.0	58.0	59.3	56.0	57.8	55.8	69.7	72.0	59.3
LZSmax	82.3	79.5	78.7	77.2	72.8	72.3	67.9	63.5	64.0	74.2	76.1	72.0
LZSmin	41.9	46.3	48.8	48.7	46.5	49.7	50.1	51.8	41.2	63.9	67.9	54.5

Freq. (Hz):	100	125	160	200	250	315	400	500	630	800	1k	1.25k
LZeq	61.6	63.7	64.5	59.0	58.7	60.9	63.2	60.8	59.9	59.2	56.1	54.6
LZSmax	71.3	68.0	67.3	61.6	61.7	64.1	65.5	64.2	62.0	60.7	57.6	58.6
LZSmin	52.9	60.0	57.2	45.1	56.0	58.9	61.1	58.4	58.4	57.1	54.9	53.3

Freq. (Hz):	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	12.5k	16k	20k
LZeq	52.0	49.8	48.4	46.4	45.4	42.8	41.1	38.6	38.5	38.4	39.0	40.2
LZSmax	54.4	52.3	51.2	50.2	49.7	45.7	45.4	41.6	40.4	40.4	41.4	41.3
LZSmin	50.9	48.4	46.9	45.0	43.7	41.4	39.6	37.5	37.9	38.0	38.7	39.9

Calibration History

Preamp	Date	dB re. 1V/Pa
PRM831	27 Jul 2013 17:53:07	-25.9
PRM831	27 Jul 2013 13:36:08	-25.6
PRM831	28 Apr 2013 15:34:24	-25.9
PRM831	23 Apr 2013 10:17:33	-25.0
PRM831	27 Feb 2013 19:15:30	-25.7
PRM831	24 Jan 2013 12:00:16	-25.6
PRM831	15 Jan 2013 07:50:44	-26.2
PRM831	04 Jan 2013 13:47:46	-26.5

Cat® C9 DIESEL GENERATOR SETS

Image shown might not reflect actual configuration

200 ekW- 300 ekW

60 Hz

Standby	Prime
200ekW	180ekW
250ekW	225ekW
300ekW	275ekW

BENEFITS & FEATURES

CAT® GENERATOR SET PACKAGE

Cat generator set packages have been fully prototype tested and certified torsional vibration analysis reports are available. The packages are designed to meet the NFPA 110 requirement for loading, conform to the ISO 8528-5 steady state and fill transient response requirements.

CAT DIESEL ENGINES

The four-cycle Cat diesel engine combines consistent performance with excellent fuel economy and transient response that meets or exceeds ISO 8528-5. The engines feature a reliable, rugged, and durable design that has been field proven in thousands of applications worldwide in emergency standby installations.

COOLING SYSTEM

The cooling system has been designed and tested to ensure proper generator set cooling, and includes the radiator, fan, belts, and all guarding installed as standard. Contact your Cat dealer for specific ambient and altitude capabilities.

GENERATORS

The generators used on Cat packages have been designed and tested to work with the Cat engine. The generators are built with robust Class H insulation and provide industry-leading motor starting capability and altitude capabilities.

EMCP CONTROL PANELS

The EMCP controller features the reliability and durability you have to come to expect from your Cat equipment. The EMCP 4 is a scalable control platform designed to ensure reliable generator set operation, providing extensive information about power output and engine operation. EMCP 4 systems can be further customized to meet your needs through programming and expansion modules.

SPECIFICATIONS

ENGINE SPECIFICATIONS

Engine Model	Cat® C9 ACERT In-line 6, 4-cycle diesel
Bore x Stroke	112mm x 149mm (4.4in x 5.9in)
Displacement	8.8 L (538 in^3)
Compression Ratio	16.1:1
Aspiration	Turbocharged Air-to-Air Aftercooled
Fuel Injection System	MEUI
Governor	Electronic ADEM™ A4
Emission Certifications	EPA Tier 3 - EPA Stationary Emergency

GENERATOR SET SPECIFICATIONS

Alternator Design	Brushless Single Bearing, 4 Pole
Stator	2/3 Pitch
No. of Leads	12
Available Voltage Options	600V/480V/240V/208V
Frequency	60Hz
Alternator Voltage	24V
Alternator Insulation & IP	Class H; IP23
Standard Temperature Rise	150 Deg C
Available Excitation Options	Self-Excited, AR
Voltage Regulation, Steady State +/-	≤0.5%

Cat® C9 DIESEL GENERATOR SETS

CAT®

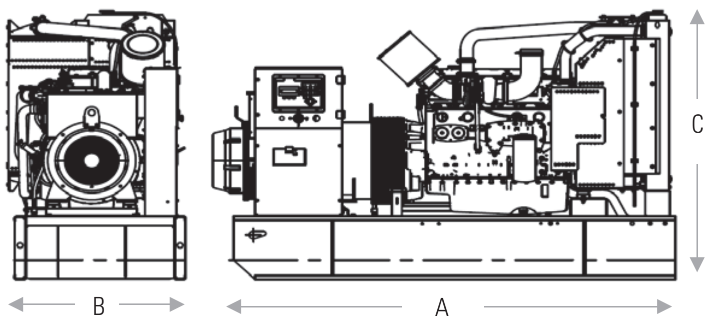
STANDARD EQUIPMENT

Air inlet system	Aftercooler core, Turbocharger.
Control panels	EMCP4.2 control panel.
Cooling system	Coolant drain line with valve; terminated on edge of base.
	Fan and belt guards.
	Coolant Level Sensor
	Thermostats and housing, full open temperature 92 deg C (198 deg F).
	Coolant level sight gauge.
	Jacket water pump, gear driven, centrifugal.
Exhaust system	Exhaust manifold; dry.
Fuel system	Primary fuel filter w/integral water separator & secondary filter.
	Fuel cooler.
	Fuel priming pump.
	Flexible fuel lines.
	Engine fuel transfer pump.
Generators and generator attachments	Brushless, self-excited 2/3 pitch, random wound.
	IP23 Protection.
	Insulation Class H and temperature rise
	Power center, IP22 bottom cable entry
	Segregated low voltage wiring panel
Governing system	Cat Electronic Governor (ADEM A4).
Lube system	Oil cooler.
	Lubricating oil.
	Oil filter and dipstick.
	Oil drain lines with valve; piped to edge of base.
	- Fumes disposal; piped to front of radiator.
Starting/charging system	24-volt electric starting motor.
	24V, 45 amp charging alternator.
General	Paint, Caterpillar Yellow.
	Vibration damper.

OPTIONAL EQUIPMENT

Air inlet system	STD AIR CLEANER
	Single Element Air Cleaner
	Dual Element Air Cleaner
Control panels	EMCP 4.4
	Local & Remote Annunciator
	Discrete I/O Module
Circuit Breakers	Power terminal strips- 800A & 600A
	3-Pole 100% Rated- Single (Manual & Motorised)
	3-Pole 100% Rated- Dual (Manual)
	3-Pole 100% Rated- Third (Manual)
	External Paralleling
Enclosures	Weather Protective
	Sound Attenuated
	Aluminium Enclosures
Cooling system	Stone guards.
Exhaust system	Industrial grade (10 dBA)
	Residential and Critical grade (25 dBA)
	Industrial grade (10 dBA)
Fuel storage	Sub Tank & Integral tank Bases
Generators and generator attachments	Space heater control
	Permanent magnet generator
Mounting system	Captive linear vibration isolators
Starting/charging system	Battery Chargers
	Jacket Water Heater
General	Tool Set.

WEIGHTS & DIMENSIONS



Genset Package		Dim "A" mm (in)	Dim "B" mm (in)	Dim "C" mm (in)	Open Generator Set Weight (Dry)[1] kg (lb)	Maximum Weight (Dry)[2] kg (lb)
Standby	Prime					
200 ekW	**180 ekW**	3091 (122)	1622 (64)	2066 (82)	2157 (4755)	2692 (5935)
250 ekW	**225 ekW**	3091 (122)	1622 (64)	2066 (82)	2248 (4956)	2692 (5935)
300 ekW	**275 ekW**	3091 (122)	1622 (64)	2066 (82)	2313 (5100)	2908 (6411)

[1]Estimated weight includes standard generator, narrow skid base and heaviest mechanically operated standard single circuit breaker.
[2]Estimated weight includes oversize generator, wide skid base and heaviest circuit breaker configuration.

Cat® C9 INTEGRAL & SUB BASE FUEL TANKS

Image shown might not reflect actual configuration

WEATHER PROTECTIVE & SOUND ATTENUATED FUEL TANKS

FEATURES

- UL Listed for United States (UL 142) and Canada (CAN/ULC S601)
- Facilitate compliance with NFPA 30 code, NFPA 37 and 110 standards and CSA C282 code.
- Dual wall
- Lockable fuel fill cap, 4" (101.6mm) NPT
- Low fuel level warning standard, customer configurable warning or shutdown Primary tank leak detection switch in containment basin.
- Tank design provides capacity for thermal expansion of fuel
- Fuel supply dip tube is positioned so as not to pick up fuel sediment
- Fuel return and supply dip tube is separated by an internal baffle to prevent immediate re-supply of heated return fuel
- Pressure washed with an iron phosphate solution
- Interior tank surfaces coated with a solvent-based thin-film rust preventative
- Heavy guage steel gussets with internal lifting rings
- Primary and secondary tanks are leak tested at 20.7 kPa (3 psi) minimum
- Compatible with open packages and enclosures
- Gloss black polyester alkyd enamel exterior paint
- Welded steel containment basin (minimum of 110% of primary tank capacity)
- Direct reading fuel gauge with variable electrical output
- Emergency vents on primary and secondary tanks are sized in accordance with NFPA 30

Sub Base

- The sub-base fuel tank mounts below the generator set wide base

Integral Base

- Integral diesel fuel tank is incorporated into the generator set base frame.
- Robust base design includes linear vibration isolators between tank base and engine generator.

Options

- Audio/visual fuel level alarm panel
- 5gal (18.9 L) spill containment
- 5gal (18.9 L) spill containment with fuel fill drop tube with in 6" (152mm) from bottom of tank.
- 5gal (18.9 L) spill containment with overfill prevention valve and fuel fill drop tube with in 6" (152mm) from bottom of tank
- ULC Listed 7.5gal (28.4 L) spill containment with vent extensions, vent whistle, and drop tube facilitating compliance with CSA B139-09.
- ULC Listed 7.5gal (28.4 L) spill containment with overfill prevention valve, vent extensions, vent whistle and drop tube facilitating compliance with CSA B139-09

Cat® C9 INTEGRAL & SUB BASE FUEL TANKS

Integral & Sub-Base Fuel Tank Base Capacities with Fuel Tank Dimensions & Weights

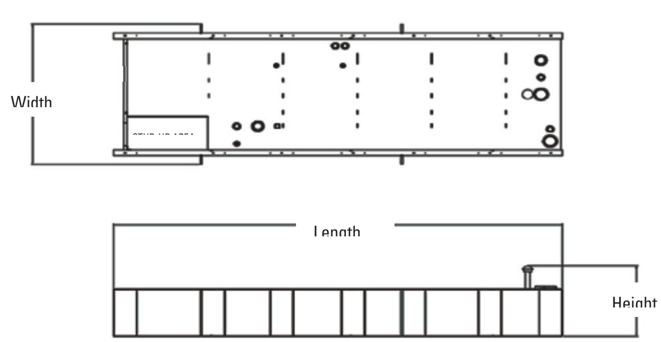
Integral – Width (W) 2014 mm (79.3 in); **Sub-base** – Width (W) 2056 mm (81.0 in)

Open Set, Weather Protective Enclosure & Sound Attenuated

C9 Tank Design	Feature Code	Total Capacity		Useable Capacity		Tank Only						Overall Package Height with Tank					
						Dry Weight		Height 'H'		Length 'L'		Open		Weather Protective		Sound Attenuated	
		Litre	Gallon	Litre	Gallon	kg	lb	mm	in	mm	in	mm	in	mm	in	mm	in
Integral	FTDW010	784	207	770	203	891	1964	635	25.0	3810	150.0	2360	90.0	2438	96.0	2492	98.1
Sub-Base	FTDW008	2476	654	2435	643	1468	3236	635	25.0	3810	150.0	2699	106.3	2777	109.4	2831	111.5
Sub-Base	FTDW009	3941	1041	3876	1024	1832	4039	635	25.0	5550	219.0	2699	106.3	2777	109.4	2831	111.5
Sub-Base	FTDW012	4285	1132	4221	1115	1542	3399	686	27.0	5550	219.0	5550	219.0	2750	108.3	2828	111.4

Estimated Run Times (hours) at 100% Load

C9 Tank Design	Feature Code	Standby Ratings (ekW)			Prime Ratings (kW)		
		300	250	200	275	225	180
Integral	FTDW010	9	11	13	10	11	14
Sub-Base	FTDW008	28	33	42	30	35	46
Sub-Base	FTDW009	45	53	67	48	56	73
Sub-Base	FTDW012	48	57	72	52	60	79



Notes:

The heights listed above do not include lumber used during manufacturing and shipping.

Tanks with full electrical stub-up area include removable end channel. Tanks with RH/LH stub-up include stub-up area directly below the circuit breaker or power terminal strips. Dimensions include weather-protective enclosure exhaust system.

Dual wall sub-base tanks are UL Listed and constructed in accordance with UL Standard for Safety UL 142, Steel Aboveground Tanks for Flammable and Combustible Liquids and Canada CAN/ULC S601, Standard for Shop Fabricated Steel Aboveground Horizontal Tanks for Flammable and Combustible Liquids.

Fuel tanks and applicable options facilitate compliance with the following United States NFPA Code and Standards:
NFPA 30: Flammable and Combustible Liquids Code
NFPA 37: Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines NFPA 110: Standard for Emergency and Standby Power Systems

Fuel tanks and applicable options facilitate compliance with the following Canadian Standard and Code:
CSA C282 – Emergency Electrical Power Supply for Buildings
CSA B139-09 – Installation Code for Oil-Burning Equipment

The following sub-base fuel tanks meet Chicago code for containment and labelling:
FTDW008
FTDW009
FTDW012

Cat® C9 ENCLOSURES

SOUND ATTENUATED & HIGH AMBIENT ENCLOSURES

60 Hz

These Sound Attenuated & High Ambient, factory installed enclosures incorporate internally mounted super critical level silencers and residential level silencers respectively, designed for safety and aesthetic value on integral fuel tank base or optional dual wall integral fuel tank base for total fluid containment. These enclosures are of extremely rugged construction to withstand exposure to the elements and provide weather protection.

FEATURES

Robust/Highly Corrosion Resistant Construction

- Factory-installed on skid base
- Environmentally friendly, polyester powder baked paint
- Zinc plated or stainless steel fasteners.
- Internally mounted-critical exhaust silencing system (sound attenuated only)
- Externally front-mounted enclosed exhaust
- silencing system (weather protective only)
- Designed and tested to comply with UL 2200 listed generator set package.
- Compression door latches providing solid door seal

Excellent Access

- Large cable entry area for installation ease.
- Accommodates side-mounted single or multiple breakers
- Two doors on both sides
- Vertically hinged allow 180° opening rotation and retention with door stays.
- Lube oil and coolant drains routed to the exterior of the enclosure base.

Transportability

- These enclosures are of extremely rugged construction to withstand outdoor exposure and rough handling common on many construction sites.
- Security and Safety
- Lockable access doors which give full access to control panel and breaker.
- Cooling fan and battery charging alternator fully guarded
- Fuel fill, oil fill, and battery can only be reached via lockable access.
- Externally mounted emergency stop button
- Designed for spreader bar lifting to ensure safety
- Stub-up area is rodent proof.

Options

- Caterpillar yellow* or white paint
- Weather protective enclosure constructed with14-gauge steel
- Sound attenuated Level 1 constructed with 14-gauge steel
- Sound attenuated Level 2 constructed with 14-gauge steel
- Sound attenuated enclosure constructed with 12-gauge aluminum (5052 grade)
- UL Listed 203 gallon integral fuel tank
- UL Listed 660 or 1002 gallon sub base fuel tanks
- Seismic certification per applicable building codes:
  - IBC 2000, IBC 2003, IBC 2006,
  - IBC 2009, IBC 2012, CBC 2007, CBC 2010
- IBC certification for 150 mph wind loading
- Anchoring details are site specific and are dependent on many factors such as generator set size, weight and concrete strength.
- IBC certification requires that the anchoring system used is reviewed and approved by a professional engineer.
- Control panel viewing window**
- Cold weather bundle. Available with SA Level 2 and Aluminum SA enclosures only.

**Not available with aluminum enclosures
**Steel sound attenuated only

Enclosure Package Operating Characteristics

ENCLOSURE TYPE	STANDBY ekW	PRIME ekW	COOLING AIR FLOW RATE		AMBIENT CAPABILITY*				(DBA) @ 7M (23 FT) AT 100% LOAD
					Standby		Prime		
			m³/min	cfm	˚C	˚F	˚C	˚F	
SOUND ATTENUATED LEVEL 2	300	275	351	12395	46	115	50	122	71
	250	225	351	12395	53	127	56	133	71
	200	180	351	12395	59	138	60	140	71
SOUND ATTENUATED LEVEL 1	300	275	351	12395	46	115	50	122	75
	250	225	351	12395	53	127	56	133	74
	200	180	351	12395	59	138	60	140	73
	300	275	516	18222	49	120	52	126	82
WEATHER PROTECTIVE	250	225	516	18222	55	131	59	138	82
	200	180	516	18222	60	140	60	140	82
ALUMINUM SOUND ATTENUATED	300	275	351	12395	46	115	46	115	72
	250	225	351	12395	53	127	56	133	72
	200	180	351	12395	59	138	60	140	72

*Cooling system performance at sea level. Consult your Caterpillar dealer for site specific ambient and altitude capabilities.

The sound pressure level data shown in the tables above is quoted as free field and is for guidance only. Actual levels produced may vary according to site conditions.

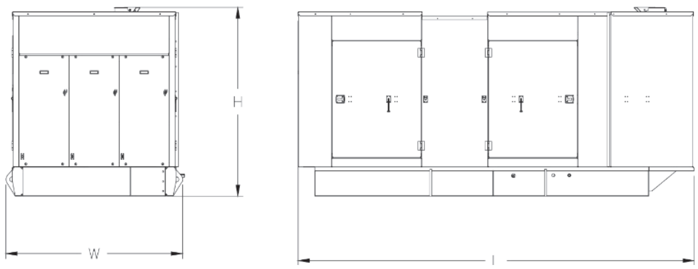
Component Weights to Calculate Package Weight

Narrow Skid		Wide Skid		Steel Enclosure						Aluminum Enclosure	
				Weather Protective		Sound Attenuated Level 1		Sound Attenuated Level 2		Sound Attenuated	
kg	**lb**	**kg**	**lb**	**kg**	**lb**	**kg**	**lb**	**kg**	**lb**	**kg**	**lb**
219	483	468	1032	660	1455	1062	2341	1062	2341	629	1387

Cat® C9 ENCLOSURES

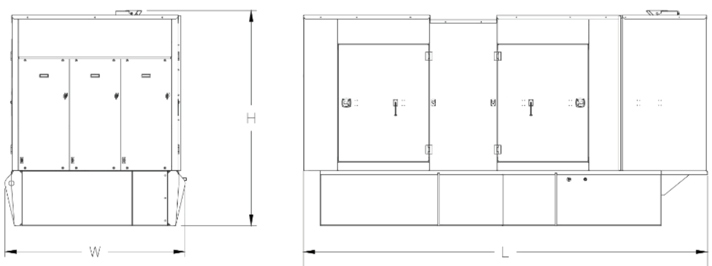
Enclosure Weights and Dimensions

A. Enclosure on Skid Base



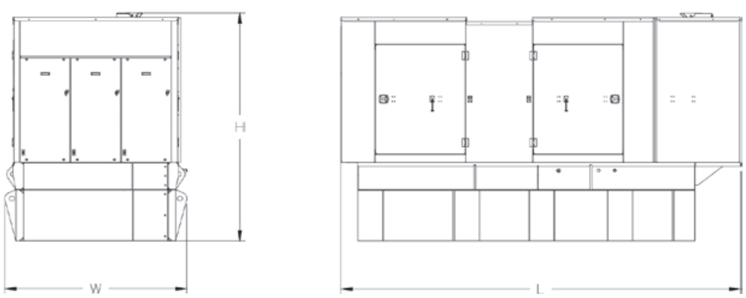
Enclosure Type	Length "L"		Width "W"		Height "H"	
	mm	in	mm	in	mm	in
Sound Attenuated	4515	177.8	2037	80.2	2196	86.5
Weather Protective	4035	158.9	2037	80.2	2142	84.3

C. Enclosure on UL Listed 203 Gallon Integral Fuel Tank Base



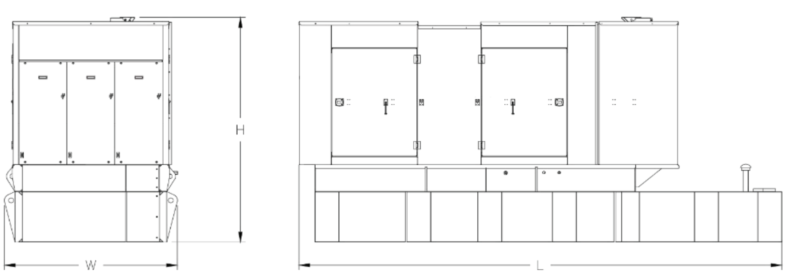
Enclosure Type	Length "L"		Width "W"		Height "H"	
	mm	in	mm	in	mm	in
Sound Attenuated	4515	177.8	2014	79.3	2492	98.1
Weather Protective	4035	158.9	2014	79.3	2438	96.0

B. Enclosure on UL Listed 660 Gallon Sub Base Fuel Tank Base



Enclosure Type	Length "L"		Width "W"		Height "H"	
	mm	in	mm	in	mm	in
Sound Attenuated	4515	177.8	2056	80.9	2831	111.5
Weather Protective	4035	158.9	2056	80.9	2777	109.3

D. Enclosure on UL Listed 1002 Gallon Sub Base Fuel Tank Base



Enclosure Type	Length "L"		Width "W"		Height "H"	
	mm	in	mm	in	mm	in
Sound Attenuated	5739	225.9	2056	80.9	2831	111.5
Weather Protective	5739	225.9	2056	80.9	2777	109.3

EMCP 4 CONTROL KEY FEATURES

EMCP 4 control features

- Run / Auto / Stop Control
- Speed and Voltage Adjust
- Engine Cycle Crank
- 24-volt DC operation
- Environmental sealed front face
- Text alarm/event descriptions

Digital indication for:

- RPM
- DC volts
- Operating hours
- Oil pressure (psi, kPa or bar)
- Coolant temperature
- Volts (L-L & L-N), frequency (Hz)
- Amps (per phase & average)
- ekW, kVA, kVAR, kW-hr, %kW, PF (4.2 only)

Warning/shutdown with common LED indication of:

- Low oil pressure
- High coolant temperature
- Overspeed
- Emergency Stop
- Failure to start (overcrank)
- Low coolant temperature
- Low coolant level

Programmable protective relaying functions:

- Generator phase sequence
- Over/Under voltage (27/59)
- Over/Under Frequency (81 o/u)
- Reverse Power (kW) (32) (4.2 only)
- Reverse reactive power (kVAr) (32RV)
- Overcurrent (50/51)

Communications:

- 4 digital inputs & 4 relay outputs (4.1)
- 6 digital inputs & 8 relay outputs (4.2)
- 12 digital inputs & 8 relay outputs (4.4)
- Customer data link (Modbus RTU) (4.2 only)
- Accessory module data link (4.2 only)
- Serial annunciator module data link (4.2 only)
- Emergency stop pushbutton

Compatible with the following:

- Digital I/O module
- Local Annunciator
- Remote CAN annunciator
- Remote serial annunciator

FINANCING

Caterpillar offers an array of financial products to help you succeed through financial service excellence. Options include loans, finance lease, operating lease, working capital, and revolving line of credit. Contact your local Cat dealer for availability in your region.

WORLDWIDE PRODUCT SUPPORT

Cat dealers provide extensive post-sale support including maintenance and repair agreements. Cat dealers have over 1,800 dealer branch stores operating in 200 countries. The Caterpillar® SOS℠ program effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products.

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APPENDIX F – Traffic Study

DAVID EVANS AND ASSOCIATES INC.

November 29, 2022

Eunice Bagwan
Environmental Planner/Safety Coordinator
Chambers Group, Inc.
5 Hutton Centre Drive, Suite 750
Santa Ana, CA 92707

RE: **CHAMBERS GROUP PROJECT NUMBER: 21289-001-3.4 - TRANSPORTATION ASSESSMENT FOR THE CITY OF FONTANA'S FIRE STATION NO. 80 AND TRAINING CENTER LOCATED AT THE NEC OF CHERRY AVENUE AND S. HIGHLAND AVENUE IN FONTANA, CALIFORNIA**

Dear Eunice:

David Evans and Associates, Inc. (DEA) is pleased to submit this draft transportation assessment for the City of Fontana's Fire Station No. 80 and Training Center as part of the project's environmental review.

INTRODUCTION AND SCOPE

The scope of this assessment includes:

1. A non-CEQA traffic impact analysis threshold evaluation to identify if the proposed facility would require the preparation of a traffic impact study to determine if the facility would cause, or contribute to, a deficiency in the city's general plan level of service policies. This analysis follows the procedures and the thresholds in the city's *Traffic Impact Analysis (TIA) Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment* (October 21, 2020).
2. A site access and safety analysis that specifically evaluates the following:
    a. Driveway sight distance analysis.
    b. Potential safety, and capacity effects of the driveways with respect to the operational area of the Cherry Avenue and S. Highland Avenue intersection.
    c. Evaluation of a common method of emergency-vehicle traffic control at fire station driveways where fire apparatus exits during an emergency call, specifically an Emergency-Vehicle Traffic Control Signal or a Hybrid Beacon and an assessment of potential impediments to meeting the standards for implement these devices.
3. A screening assessment for preparing a Vehicle Miles Traveled (VMT) analysis under CEQA. The city's guidelines permit screening to exempt VMT analysis requirements based on specific criteria including if the project is in a "low VMT-generating area" and whether the project meets the definition of a locally serving type of use which often includes community facilities like public libraries, local government offices, police, and fire stations.

PROJECT DESCRIPTION

The proposed project is construction of a two-phased public facility comprised of a firefighter training center in Phase 1 and a single-engine fire station in Phase 2. The project is on 2.16-acres (A.P.N. 022802146) located at the northeast corner of Cherry Avenue and South Highland Avenue in the City of Fontana, California. The parcel of land is constrained between San Bernardino County Flood Control District channel and a Southern California Edison (SCE) easement.

It is comprised of a triangular parcel of land fronting Cherry Avenue with two driveways. One driveway permits access to the training center and one driveway is used for emergency ingress and egress for the Phase 2 fire station. **Exhibit A** provides the proposed site plan for the project.

IMPACT ANALYSIS THRESHOLD EVALUATION

Project Trip Generation

Table A presents the estimated trip generation for the proposed training center. The estimated trip generation was derived from information provided in a questionnaire completed by fire district personnel. The questionnaire requested information about a typical training event and a large training event. As shown in **Table A**, the typical training event (attended by about 14 people) generates about four vehicles entering in the morning and four vehicles exiting in the early afternoon, or a bout a total of eight vehicles per day. A large training event (attended by about 19 people) is an all-day event and generates about 5 vehicles entering in the morning and five vehicles departing in the afternoon. **Table A** shows the sum of traffic generated on a day when both a typical and a large event occurs simultaneously which results in less than 10 trips in the morning peak, 5 trips in the afternoon peak and less than 20 trips per day.

Table A: Estimated Weekday Trip Generation for the City of Fontana / San Bernardino County Fire Department Training Center

Training Center Attendees	Number of Persons	Mode of Transportation	Weekday Vehicle Trips									
			Arrival (8:00 - 9:00 am)			Early Departure (12:00 noon - 1:00 pm)			Late Departure (4:00 pm - 5:00 pm)			Average Daily Trips
			In	Out	Total	In	Out	Total	In	Out	Total	
Typical Training Event (2 Days / Week) [a]												
Staff	2	Drive Alone	2	0	2	0	2	2	0	0	0	4
Trainees	12	Assigned Fire Engine [b]	2	0	2	0	2	2	0	0	0	4
Subtotal Typical Training Event	14		4	0	4	0	4	4	0	0	0	8
Large Training Event (3 days /week) [c]												
Staff	2	Drive Alone	2	0	2	0	0	0	0	2	2	4
Trainees	17	Assigned Fire Engine [b]	3	0	3	0	0	0	0	3	3	6
Subtotal Large Training Event	19		5	0	5	0	0	0	0	5	5	10
Total Both Events	**33**		**9**	**0**	**9**	**0**	**4**	**4**	**0**	**5**	**5**	**18**

Notes:
[a] Typical training events include laying hose, throwing ladders, flowing water, active fire training, ventilation, rescue operations, confined space rescue training.
[b] All fire fighting personnel (trainees) are required to arrive in their assigned fire apparatus because 1) they remain on duty and may be called to an emergency, and 2) much of their training is related to the operation of the fire engine itself and the euipment stored on the vehicle. For purposes of this analysis, fire engine personnel capacity (seats) is equal to the average vehicle occupancy of fire engines arriving at training events which is assumed to be 6 personnel / vehicle.
[c] Large training events include engine and truck company operations. To represent the highest potential number of trips generated by the training facility, it is assumed that a typical and large training event can on the same day. The estimated trip generation above assumes a typical and a large training event occuring on the same day.

Table B presents the estimated trip generation of the Phase 2 fire station. Fire station #80 is proposed as a single engine station. Shift changes occur in the early morning hours between 7:30 and 8:30 AM. **Table B** also presents the assumptions regarding emergency calls—about six emergency calls are assumed in each 24-hour period. With traffic generated by shift changing personnel and emergency calls, the fire station is estimated is estimated to generate about seven trips in the morning peak hour and one trip in the afternoon peak hour, or eighteen trips per day.

Combined, the training center and the fire station would generate about sixteen trips in the morning peak hour and six in the afternoon peak hour, or about 36 trips per day.

Table B: Estimated Weekday Trip Generation for the City of Fontana /San Bernardino County Fire Department Fire Station No. 80 (Fire Dept. Questionnaire Method)

Station Trip Generating Activity	Method of Estimating Trip Generation Fire Department Questionnaire of Station Traffic Characteristics for an Average Weekday						
	AM Peak Hour (7:30 TO 8:30 AM)			PM Peak Hour (4:00 TO 6:00 PM			Average Daily
	In	Out	Total	In	Out	Total	
Shift Change Every 24 hours (3 in and 3 out)	3	3	6	0	0	0	6
Emergency Vehicle Trips [a]	1	0	1	1	0	1	12
Total Trips	**1**	**3**	**7**	**1**	**0**	**1**	**18**

Notes:
[a] The derivation of peak hour emergency vehicle trips is based on a number of assumptions beginning with the fire department's estimate of an average of six emergency calls in each 24-hour period. Assumptions include:
- One emergency call occurs in the AM and PM peak hour with a minimum duration exceeding one hour.
- Each emergency call generates two emergency vehicle trips (one outbound and one inbound) but only the outbound trip is counted in the peak hour trip generation because the inbound return trip occurs outside of the peak hours.

Source of information used to derive trip generation: San Bernardino County Fire Department, 2022.

City of Fontana Impact Analysis Criteria

According to the city's TIA guidelines, a traffic impact analysis is required if the proposed use generates between 50 and 250 two-way peak hour trips. Since the proposed project, combining traffic from both the training center and the fire station, generates less than 50 two-way peak hour trips on a typical weekday, a traffic impact analysis is not required.

SITE ACCESS AND SAFETY ANALYSIS

Chapter 10.0 of the city's TIA guidelines (Site Access and Safety Analysis) specifies analyses for project access driveways related to safety. Not all the analyses in the guidelines are applicable to the project's driveways so this section summarizes the findings of the relevant analyses which include:

- Intersection sight distance
- Corner clearance
- Need for right turn deceleration or turning lanes

Planned Improvements Unrelated to the Project

The safety analysis of the project's driveways needs to reflect any future roadway and traffic control improvements that would affect the outcome of the analysis. Below is a brief discussion of a significant planned and funded improvement to Cherry Avenue that would affect site access and the driveway safety analysis.

The City of Fontana received a Rebuilding American Infrastructure with Sustainability and Equity (RAISE) discretionary grant from the U.S. Department of Transportation. The city's $15,088,195[1] application for RAISE funds was awarded in 2022 for the transportation project titled "Building a Better-Connected Inland Empire – A Complete Streets Solution", as described below:

- **Cherry Avenue** – improve the existing four-lane rural Cherry Avenue without sidewalks, curbs, or gutters to a six-lane major highway with a 20-foot-wide raised landscaped median, sidewalks, and curb and gutter on both sides of the 1.2-mile-long segment from north of the I-210 freeway to Baseline Avenue. The project includes installing traffic signals at South Highland Avenue and Victoria Street, adding Class I off-street trails and Class II bicycle lanes on Cherry Avenue, lighting

[1] The total project construction budget equals $20,877,639. A federal recreation trails grant, and private and local agency matching funds totaling $5,789,444 were added to the RAISE grant to provide for the total construction budget.

and bus turnouts, and broadband, stormwater, sewer, water, and recycled water infrastructure under the street.

- **Victoria Street** – improve the existing two-lane rural road without sidewalks, curbs, or gutters to a fully improved two-lane collector street with widened 20-foot lanes, a 10-foot-wide raised landscaped median, sidewalk, curb, and gutter on both sides of the 5,000-foot-long segment from the I-15 freeway to Cherry Avenue. This segment of the project realigns Victoria Street to intersect Cherry Avenue where Walnut Avenue currently intersects to create a four-leg intersection that will be signalized as part of the Cherry Avenue improvements. A Class I trail will parallel Victoria Street, and a new pedestrian bridge will extend the San Sevaine trail to the north. Other parts of the Victoria Street improvements include street lighting, a roundabout intersection for local access to new development, bus turnouts, and broadband, stormwater, sewer, water, and recycled water infrastructure under the street.

The Cherry Avenue and Victoria Street improvements complete two essential corridors within the Westgate Specific Plan Area. **Figure 1** shows the preliminary design plan for the intersection of Cherry Avenue and S. Highland Avenue that was included in the city's RAISE application. The proposed schedule for completion of the Cherry Avenue and Victoria Street improvements, according to the application, is December 2025.

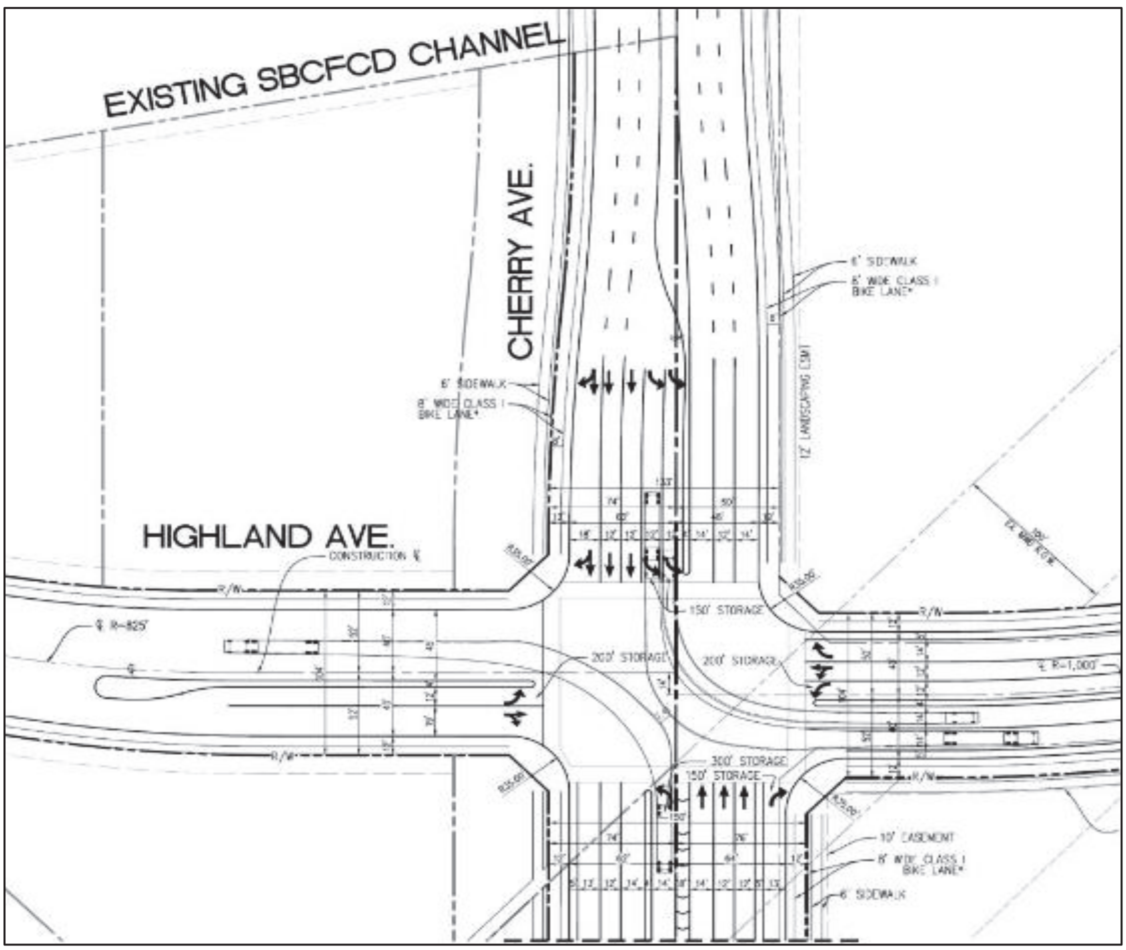


Figure 1: Preliminary Design Plan of Cherry Avenue and S. Highland Avenue. Source: Building a Better-Connected Inland Empire – A Complete Streets Solution, Funding Opportunity Number: DTOS59-22-RA-RAISE, Apr 14, 2022.

<u>Intersection Sight Distance Analysis</u>

At side-street stop-controlled intersections and driveways a substantially clear line of sight should be maintained between the driver of a vehicle, bicyclist or pedestrian stopped on the minor road/driveway and the driver of an approaching vehicle on the major road that has no stop. Gaps in both directions of the flow of traffic on the major street need to provide adequate time for the stopped vehicle on the minor road to either cross all lanes of through traffic, cross the near lanes and turn left, or turn right, without requiring through traffic to radically alter their speed. The visibility required for these maneuvers form a "sight triangle". There should be no sight obstructions within an intersection's sight triangles.

Intersection sight distance is different for vehicles turning from the project's driveways under Cherry Avenue's current configuration and width compared to its future configuration and width after implementation of the RAISE grant improvements. This is not only because of the width added to Cherry Avenue when the road is widened but also because of the restrictions placed on driveway movements with construction of a raised median. Further, the fire station will be built in Phase 2 of the project which is likely to occur after completion of the Cherry Avenue improvements in late 2025. The following summarizes the types of sight distance calculations applicable to each driveway based on the project's phasing and the anticipated completion of the Cherry Avenue improvements.

- <u>Phase 1: Training Center Access Driveway A</u> – the training center is assumed to be completed by 2024 prior to completion of the Cherry Avenue improvements. All project ingress and egress trips are assumed to use Driveway A (see **Figure 2**) which is located about 160 feet north of the centerline of South Highland Avenue. Corner sight distance (CSD) is the applicable sight distance for a stop-controlled rural driveway permitting left and right turn egress movements.
- <u>Phase 2: Fire Station #80 Access Driveway B</u> – the fire station in Phase 2 is assumed to be completed after completion of the Cherry Avenue improvements in late 2025. The Cherry Avenue improvements include a raised median which will restrict the training center's access Driveway A to right-turn-in / right-turn out. The fire station's access Driveway B, however, (see **Figure 2**) requires unrestricted egress to the northbound and southbound directions of Cherry Avenue to maintain Fontana's emergency response time standards. This requires modification to the raised median and a traffic control system that can be actuated from the fire station or from the station's fire apparatus.

Table C summarizes the required corner sight distance (CSD) for each project driveway by phase, scenario and movement.

Table C: Corner Sight Distance (CSD) by Phase, Scenario, Driveway, and Movement

Phase / Scenario [a]	Intersection Sight Distance	
	Driveway A (Feet)	Driveway B (Feet)
Phase 1 Training Center		
CSD (Left)	830	Not Applicable
CSD (Right)	700	
Phase 2 Training Center + Fire Station		
CSD (Left)	Not Applicable	360
CSD (Right)	700	360

<u>Notes</u>:
CSD = Corner Sight Distance
SSD = Stopping Sight Distance
[a] Phase / Scenario Assumptions:
Phase 1 (Driveway A): $CSD_{(Left)}$ = 1.47(Vm)(Tg+Tg(+)), Vm = 45 mph, (Tg+Tg(+)) = 12.55 sec
Phase 1 (Driveway A): $CSD_{(Right)}$ = 1.47(Vm)(Tg+Tg(+)), Vm = 45 mph, (Tg+Tg(+)) = 10.5 sec
Phase 2 (Driveway A): $CSD_{(Right)}$ = 1.47(Vm)(Tg+Tg(+)), Vm = 45 mph, (Tg+Tg(+)) = 10.5 sec
Phase 2 (Driveway B): Controlled by Emergency-Vehicle Hybrid Beacon (Min. CSD) = SSD at 45 mph
Source: Highway Design Manual, Caltrans, Chapter 400 Intersections At-Grade, Topic 405 Intersection Sight Distance

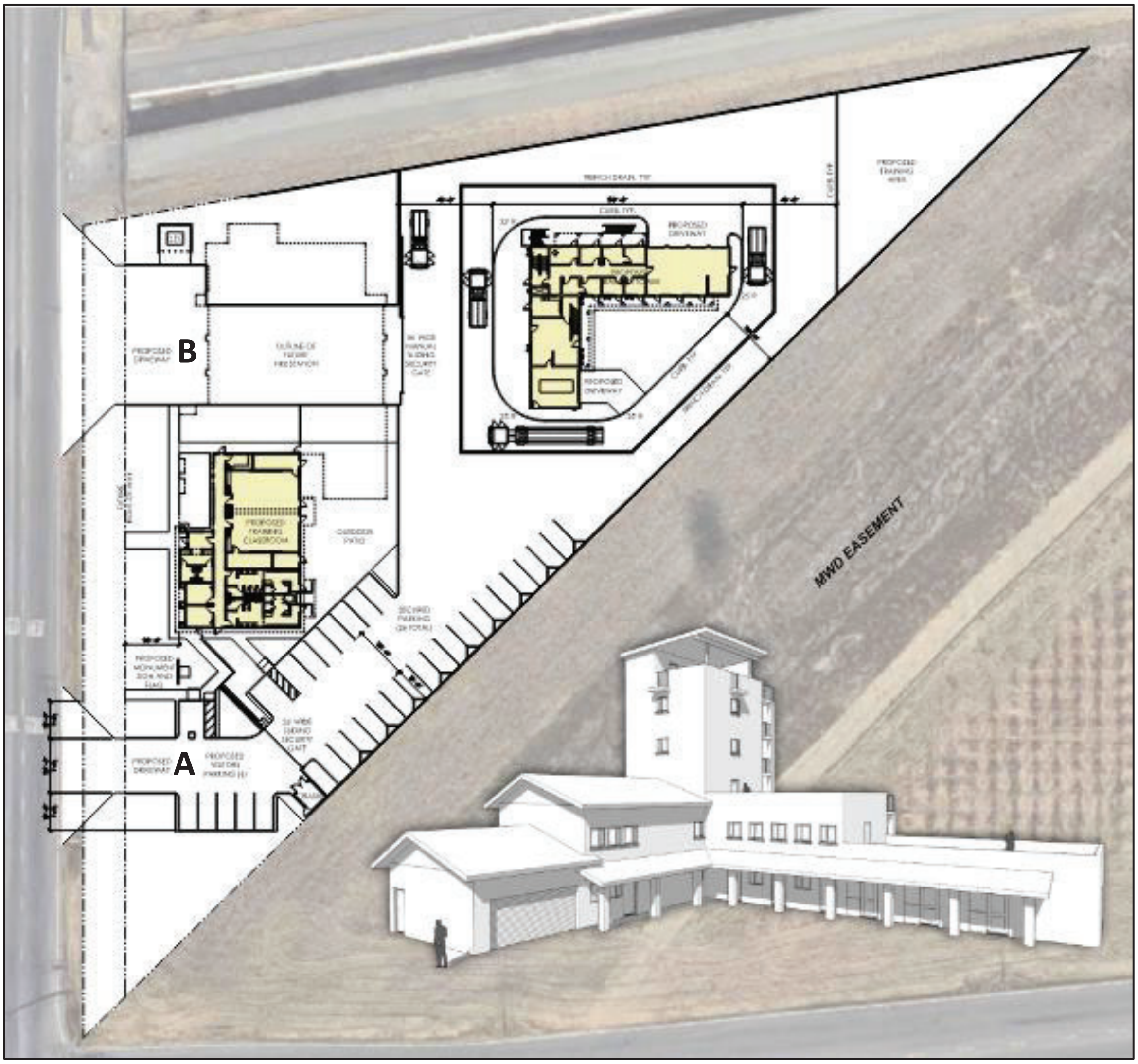


Figure 2: Proposed site plan showing the location of the Phase 1 Driveway A and the Phase 2 Driveway B.

Figure 3 illustrates the extent of the required minimum clear sight distance triangles at each of the project's driveway with Cherry Avenue under today's configuration and width and under future configuration and width. Driveway A's Phase 1 corner sight distances of 700 and 830 feet (based on 45 mph) are theoretically achievable due to Cherry Avenue's flat horizontal and vertical alignment and lack of obstructions. Practically, however, the 830-foot clear sight distance triangle required for turning left may occasionally be challenging for drivers because part of the triangle passes through the shadow created by the I-210 overcrossing and the multi-lane configuration may obscure vehicles in the outside lane.

Phase 1 conditions are temporary and by late 2025 the completed Cherry Avenue improvements will dramatically improve site access safety conditions.

<u>Corner Clearance</u>

Driveways should be located sufficiently distant from the functional area of an adjacent intersection so that right turns exiting a project driveway do not interfere with the right turn queuing at the intersection and provide enough maneuvering distance so the egressing vehicles can safely enter the adjacent intersection's left-turn lanes.

Regardless, a minimum corner clearance distance is not applicable to the project's Phase 1 or Phase 2 driveways because the driveways are located "downstream" of the functional area (or departure area) of the Cherry Avenue / South Highland Avenue intersection and do not interfere with the queues that form, or lane change maneuvering, at the approaches to intersections.

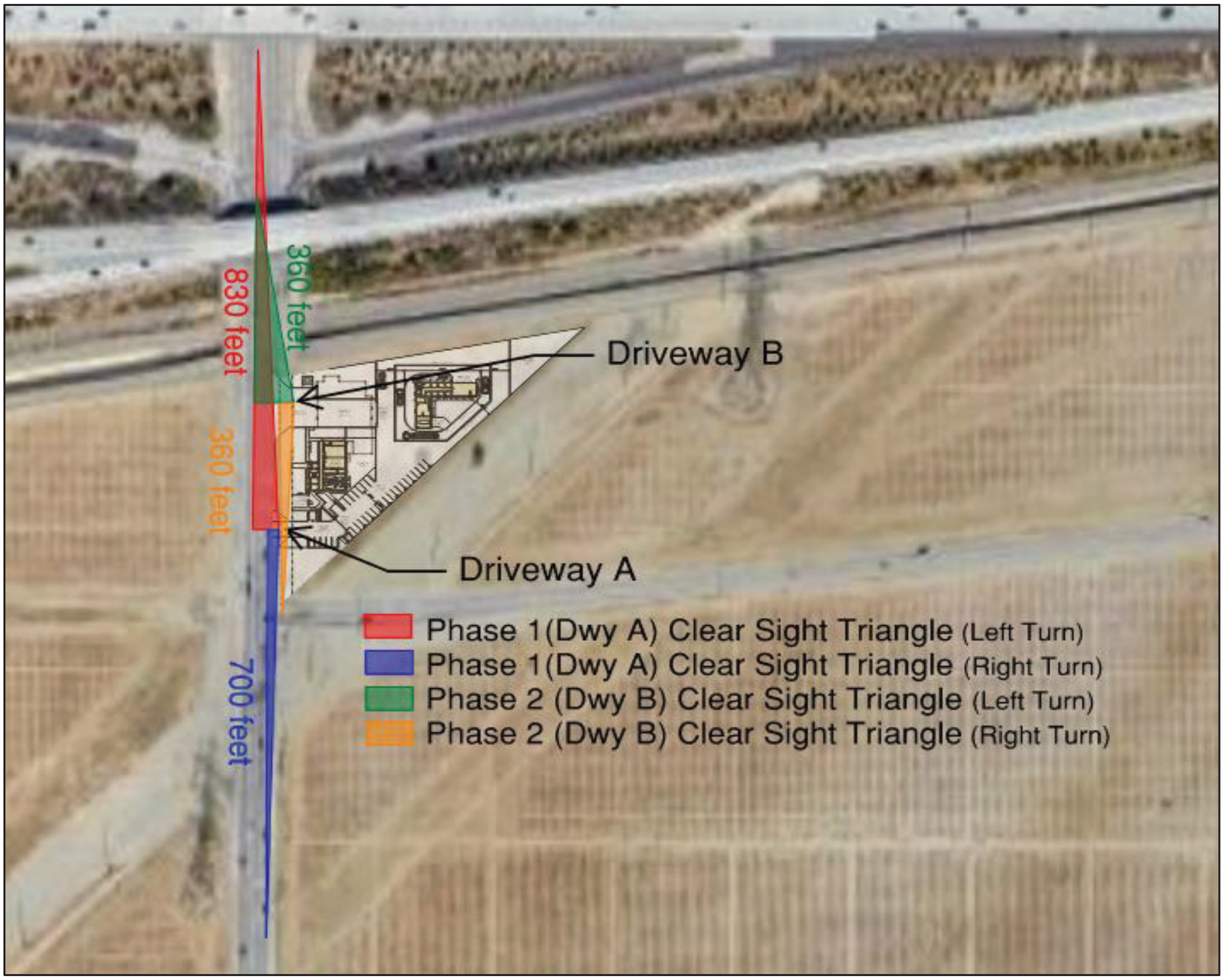


Figure 3: Site driveway clear sight distance triangles by phase and movement.

<u>Right Turn Treatments at Site Access Driveways</u>

The city's TIA guidelines contain traffic volume thresholds for considering installing right-turn deceleration lanes at site access driveways. When peak hour right-turn volumes reach or exceed 50 vehicles, a right-turn deceleration lane may be considered. Deceleration lanes are a safety feature at intersections. On higher speed roadways, when designed to the correct length, deceleration lanes eliminate the speed differential between vehicles slowing to turn right and through traffic traveling at the speed limit.

The city's guidelines suggest that right-turn deceleration lanes should be reviewed for appropriateness, when feasible, on all driveways accessing major and primary arterials. The length of right turn lane should be sufficient to allow a vehicle traveling at the posted speed to decelerate before entering the driveway as outlined in the Caltrans Highway Design Manual.

The estimated peak hour traffic volumes for both the Phase 1 training center and the Phase 2 fire station do not exceed 50 vehicles for all movements combined and do not trigger the threshold for considering right turn deceleration lanes

ASSESSMENT OF EMERGENCY-VEHICLE TRAFFIC CONTROL AT FIRE STATION DRIVEWAYS

Three common forms of traffic control are used at fire station driveways.

1. The most common type of control is **no control or yield control at the fire station driveway**. Pavement markings “Keep Clear” is typically installed on each lane adjacent to the fire station driveway. No control or yield control of fire station driveways is effective on low-volume collector or local streets where many fire stations are located. This form of control is not applicable to the Cherry Avenue driveways proposed for Fire Station #80 because of the volume and speed of traffic on Cherry Avenue.

2. An **emergency-vehicle traffic control signal** can be operated as a fully or semi-actuated traffic signal in stop and go mode for each non-fire station driveway approach with the fire station driveway actuated by an emergency vehicle or manually from controls inside the fire station. It can also be operated in flashing mode between emergency-vehicle actuations. There are specific sequences of flashing and steady indications for emergency-vehicle traffic control signals documented in the California Manual on Uniform Traffic Control Devices (CA MUTCD).

   This form of fire station driveway traffic control may not be the most suitable type of control for the Cherry Avenue driveway proposed for Fire Station #80 because of the relatively close spacing that would exist between the fire station’s emergency egress Driveway B and the future signalized Cherry Avenue / S. Highland Avenue intersection (about 375 feet).

3. A third common form of fire station driveway traffic control is an **emergency-vehicle hybrid beacon**. The hybrid beacon is often considered at locations where an emergency-vehicle traffic control signal is warranted but it is not practical or effective to install an emergency-vehicle traffic control signal. Emergency-vehicle hybrid beacons can only be actuated by authorized emergency or maintenance personnel. The CA MUTCD requires that all of the following criteria be satisfied before installing this form of traffic control:

   A. The conditions justifying an emergency-vehicle traffic control signal are met; and

   B. An engineering study, considering the road width, approach speeds, and other pertinent factors, determines that emergency-vehicle hybrid beacons can be designed and located in compliance with the requirements contained in the MUTCD, such that they effectively warn and control traffic at the location; and

   C. The location is not at or within 100 feet from an intersection or driveway where the side road or driveway is controlled by a STOP or YIELD sign.

   Figure 4 illustrates the recommended median modifications and an emergency-vehicle hybrid beacon traffic control arrangement required to expedite fire engine egress from the station with implementation of the RAISE grant improvements.

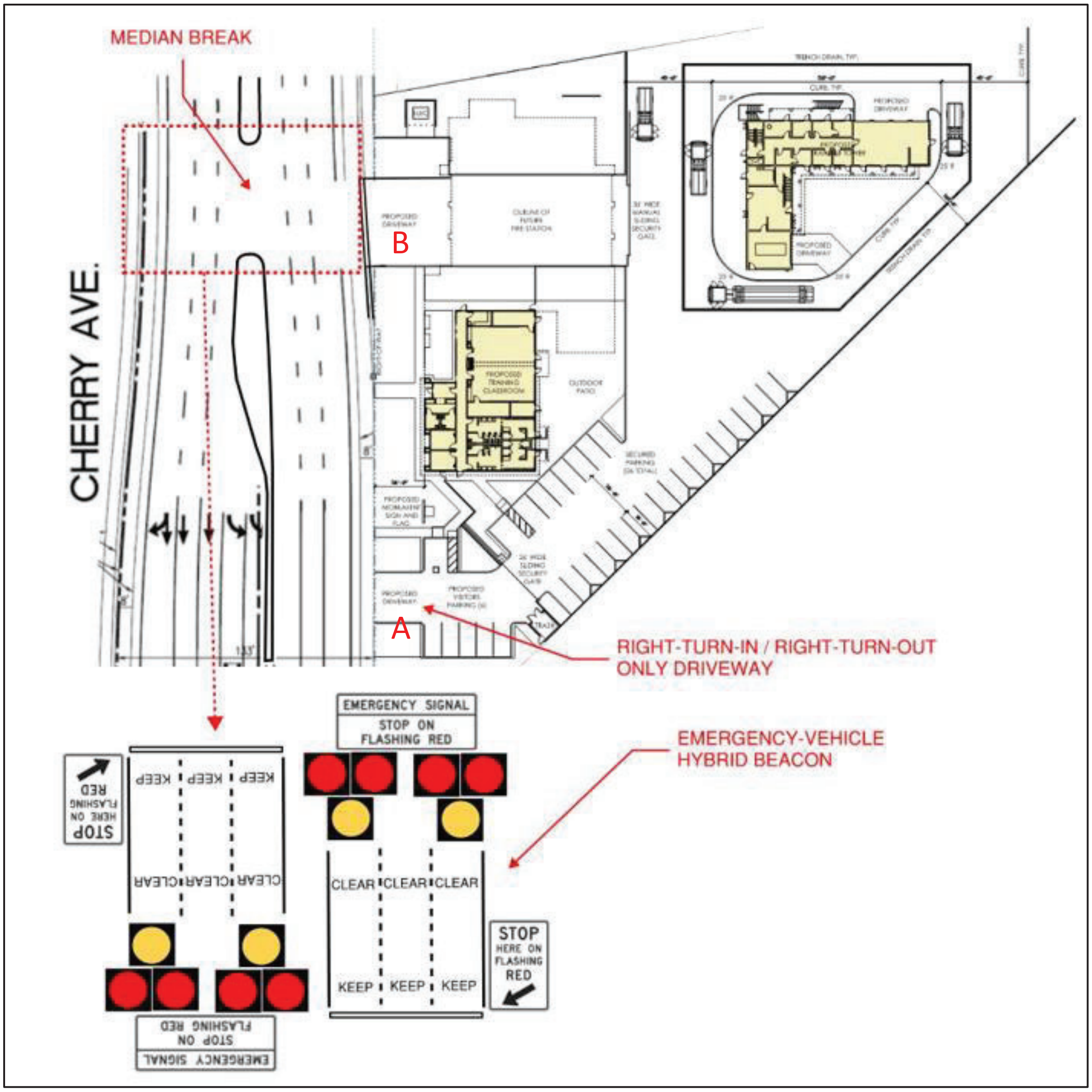


Figure 4: Widening of Cherry Avenue to six lanes will require a median break and some form of traffic control for emergency-vehicle egress to southbound Cherry Avenue. The emergency-vehicle hybrid beacon arrangement shown conceptually in this diagram is a common method of controlling traffic on major multi-lane arterial streets where emergency vehicles need to egress directly onto the arterial.

VEHICLE MILES TRAVELED (VMT) SCREENING ASSESSMENT

Fontana's Screening Criteria

The city's VMT guidelines identify four types of project screening that lead agencies can apply to screen projects from requiring a project-level VMT assessment. The screening criteria are consistent with other agency's criteria in San Bernardino County and are described below.

1. Projects located in a **Transit Priority Area (TPA)** may be presumed to have a less than significant impact absent substantial evidence to the contrary.
2. Projects located within a **Low-VMT Generating Area**. Projects located within these areas may be presumed to have a less than significant impact absent substantial evidence to the contrary. Projects screened from requiring a VMT analysis need to be shown to generate VMT per resident, per worker, or per service population that is like the existing land uses in the low VMT area.

   The San Bernardino County Transportation Authority (SBCTA) provides a web-based tool that can be used to identify whether individual parcels are located within a low-VMT generating area.

3. The **Low Project Type** screening criterion identifies local serving retail projects (having less than 50,000 square feet) that may be presumed to have a less than significant impact absent substantial evidence to the contrary. Local serving retail generally improves the convenience of shopping close to home and has the effect of reducing vehicle miles of travel. The city's VMT guidelines include the following list of local-serving retail:

    - Supermarket
    - Restaurant/café/bar
    - Coffee/donut shop
    - Dry cleaners
    - Barbershop
    - Hair/nails salon
    - Walk-in medical clinic
    - Urgent care
    - Auto repair/tire shop
    - Gyms/health club
    - Dance/yoga/fitness/material arts studio

    Non-retail land uses can also be local serving uses and be presumed to have a less than significant impact absent substantial evidence to the contrary. The following non-retail types of land uses are considered local serving by their very nature:

    - Local-serving K-12 schools
    - Local parks
    - Day care centers
    - Local-serving gas stations
    - Local-serving banks
    - Local-serving hotels (e.g., non-destination hotels)
    - Student housing projects on or adjacent to college campuses
    - Local-serving assembly uses (places of worship, community organizations)
    - Community institutions (public libraries, fire stations, local government)
    - Local serving community colleges that are consistent with the assumptions in the Southern California Association of Government's (SCAG) Regional Transportation Plan (RTP) /Sustainable Communities Strategy (SCS)
    - Affordable or supportive housing
    - Assisted living facilities
    - Senior housing (as defined by HUD)

4. **Projects generating net daily trips of less than 500 vehicular trips / day.** Projects that generate fewer than 500 average daily trips (ADT) would not cause a substantial increase in the total citywide or regional VMT and are therefore presumed to have a less than significant impact on VMT. Examples of development which generate less than 500 trips / day include:

    - Single family residential – 52 dwelling units or fewer
    - Multi-family residential – 68 dwelling units or fewer
    - General Office – 51,000 square feet or less
    - Light Industrial – 100,000 square feet or less
    - Warehousing – 287,000 square feet or less
    - High-Cube Fulfillment Center Warehouse – 357,000 square feet or less

<u>Applying the Screening Criteria to the Proposed Project</u>

Table D summarizes the application of the city's VMT screening criteria to the proposed project. The training center and the fire station each satisfy the Low Project Type and Net Daily Vehicle Trips Less Than 500 / Day criteria. The VMT screening assessment concludes that the proposed project is exempt from identifying significant VMT impacts under CEQA.

Table D: Summary of Fontana's VMT Screening Criteria Applied to the Proposed Project

Proposed Project	VMT Screening Criteria			
	1. Located in a Transit Priority Area	2. Located in a Low-VMT Generating Area [a]	3. Low Project Type [b]	4. Net Daily Vehicle Trips of 500 / Day or Less
Phase 1 Training Center	No	No	Yes	Yes
Phase 2 Fire Station	No	No	Yes	Yes

Notes:

[a] Based on output from the SBCTA Web-Based Screening Tool for a year 2022 baseline and deriving VMT metrics using OD VMT per service population. The proposed project is in Traffic Analysis Zone (TAZ) 53717301 which generates about 7.5% more VMT than the county's threshold established for the TAZ (see **Figure 5**). The SBCTA screening tool can be accessed at the following location: https://sbcta.maps.arcgis.com/apps/webappviewer/index.html?id=779a71bc659041ad995cd48d9ef4052b

[b] The city's VMT guidelines contain low project type screening criteria for non-retail local-serving land uses partly comprised of community institutions and services that include fire stations. The Training Center will be an integral part of developing and retaining a high quality and skilled fire-fighting resource in Fontana. Thus, it was considered a key part of the Fire District's infrastructure and subject to the low project type criteria.

Figure 5: Visual output from the SBCTA VMT screening tool for Low-VMT generating areas. The proposed training center and fire station are not located in a low-VFMT generating area.

APPENDICES

A. Traffic Counts at Cherry Avenue / South Highland Avenue

B. Preliminary Design Plans for RAISE Grant Funded Improvements to Cherry Avenue and Victoria Street

C. Exhibit of RAISE Grant Transportation Improvements Within the Westgate Specific Plan Area

APPENDIX A
Traffic Counts at Cherry Avenue / South Highland Avenue

CHERRY AVENUE AND S. HIGHLAND AVENUE
ALL WAY STOP CONTROLLED

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: CHERRY AVE
EAST-WEST STREET: S HIGHLAND AVE
JURISDICTION: FONTANA

DATE: 10-20-22

PEAK HOUR: 08:00AM

NORTH LEG

TOTAL: 818

	Rt	Thru	Lt
Total		795	23
1st		214	4
2nd		210	4
3rd		183	10
4th		188	5

EAST LEG TOTAL: 107

	1st	2nd	3rd	4th	Total
Rt	16	23	20	18	77
Thru					
Lt	10	8	8	4	30

	Total	1st	2nd	3rd	4th
Lt					
Thru					
Rt					

WEST LEG TOTAL: 0

PEAK HOUR FACTORS

NORTH LEG = 0.94
SOUTH LEG = 0.93
EAST LEG = 0.86
WEST LEG =

ALL LEGS = 0.94

	Lt	Thru	Rt
1st		225	6
2nd		206	6
3rd		200	5
4th		211	2
Total		842	19

TOTAL: 861

SOUTH LEG

HOUR TOTAL: 1,786

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: CHERRY AVE
EAST-WEST STREET: S HIGHLAND AVE
JURISDICTION: FONTANA

DATE: 10-20-22

PEAK HOUR: 04:00PM

NORTH LEG

TOTAL: 940

	Rt	Thru	Lt
Total		912	28
1st		214	6
2nd		186	10
3rd		243	3
4th		269	9

EAST LEG TOTAL: 44

	1st	2nd	3rd	4th	Total
Rt	6	6	5	9	26
Thru					
Lt	3	7	3	5	18

	Total	1st	2nd	3rd	4th
Lt					
Thru					
Rt					

WEST LEG TOTAL: 0

PEAK HOUR FACTORS

NORTH LEG = 0.85
SOUTH LEG = 0.91
EAST LEG = 0.79
WEST LEG =

ALL LEGS = 0.87

	Lt	Thru	Rt
1st		203	3
2nd		231	5
3rd		238	0
4th		255	4
Total		927	12

TOTAL: 939

SOUTH LEG

HOUR TOTAL: 1,923

Prepared by NEWPORT TRAFFIC STUDIES

CONVERT TRUCKS TO PASSENGER CAR EQUIVALENTS (PCEs) USING THE FOLLOWING FACTORS: 2-AXLE TRUCKS = 1.5, 3-AXLE TRUCKS = 2.0, 4+ AXLES = 3.0

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : CHERRY AVE — FONTANA

EAST-WEST STREET : S HIGHLAND AVE — 10-20-22

BEGINNING TIME : 08:00AM

AUTOS			LARGE 2 AXLE			3 AXLE			4(+) AXLE			TOTALS
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
NORTH LEG												
0	211	4	0	0	0	0	0	0	0	3	0	218
0	202	4	0	2	0	0	2	0	0	4	0	214
0	180	10	0	1	0	0	0	0	0	2	0	193
0	180	5	0	2	0	0	0	0	0	6	0	193
0	773	23	0	5	0	0	2	0	0	15	0	818
	+8+4+45 = 830			5*1.5=8			2*2=4			15*3=45		
SOUTH LEG												
6	220	0	0	2	0	0	0	0	0	3	0	231
6	201	0	0	2	0	0	1	0	0	2	0	212
5	194	0	0	1	0	0	1	0	0	4	0	205
2	207	0	0	0	0	0	1	0	0	3	0	213
19	822	0	0	5	0	0	3	0	0	12	0	861
	+8+6+36 = 872			5*1.5=8			3*2=6			12*3=36		
EAST LEG												
16	0	10	0	0	0	0	0	0	0	0	0	26
23	0	8	0	0	0	0	0	0	0	0	0	31
20	0	8	0	0	0	0	0	0	0	0	0	28
18	0	4	0	0	0	0	0	0	0	0	0	22
77	0	30	0	0	0	0	0	0	0	0	0	107
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

Prepared by Newport Traffic Studies

PEAK HOUR AUTO AND TRUCK VOLUMES IN 15-MINUTE INCREMENTS

CONVERT TRUCKS TO PASSENGER CAR EQUIVALENTS (PCEs) USING THE FOLLOWING FACTORS: 2-AXLE TRUCKS = 1.5, 3-AXLE TRUCKS = 2.0, 4+ AXLES = 3.0

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : CHERRY AVE FONTANA

EAST-WEST STREET : S HIGHLAND AVE 10-20-22

BEGINNING TIME : 04:00PM

PEAK HOUR = 4 TO 5:00 PM

NORTH LEG

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
0	211	6	0	0	0	0	0	0	0	3	0	220
0	181	10	0	1	0	0	2	0	0	2	0	196
0	239	3	0	2	0	0	0	0	0	2	0	246
0	264	9	0	1	0	0	0	0	0	4	0	278
			0	0	0	0	0	0	0	2	0	195
			0	2	0	0	0	0	0	3	0	177
			0	1	0	0	0	0	0	3	0	199
			0	1	0	0	1	0	0	1	0	166
0	1580	66	0	8	0	0	3	0	0	20	0	1677

3*1.5=5 2*2=4 11*3=33

+5+4+33

0 937 28

PEAK HOUR = 4 TO 5:00 PM

PEAK HOUR = 4 TO 5:00 PM

SOUTH LEG

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
3	200	0	0	1	0	0	0	0	0	2	0	206
5	226	0	0	1	0	0	1	0	0	3	0	236
0	234	0	0	1	0	0	0	0	0	3	0	238
4	252	0	0	0	0	0	1	0	0	2	0	259
			0	1	0	0	0	0	0	4	0	227
			0	0	0	0	0	0	0	2	0	184
			0	0	0	0	1	0	0	3	0	196
			0	2	0	0	0	0	0	5	0	179
31	1661	0	0	6	0	0	3	0	0	24	0	1725

3*1.5=5 2*2=4 10*3=30

+5+4+30

12 951 0

PEAK HOUR = 4 TO 5:00 PM NO TRUCKS

EAST LEG

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
6	0	3	0	0	0	0	0	0	0	0	0	9
6	0	7	0	0	0	0	0	0	0	0	0	13
5	0	3	0	0	0	0	0	0	0	0	0	8
9	0	5	0	0	0	0	0	0	0	0	0	14
			0	0	0	0	0	0	0	0	0	9
			0	0	0	0	0	0	0	0	0	8
			0	0	0	0	0	0	0	0	0	9
			0	0	0	0	0	0	0	0	0	8
47	0	31	0	0	0	0	0	0	0	0	0	78

26 0 18

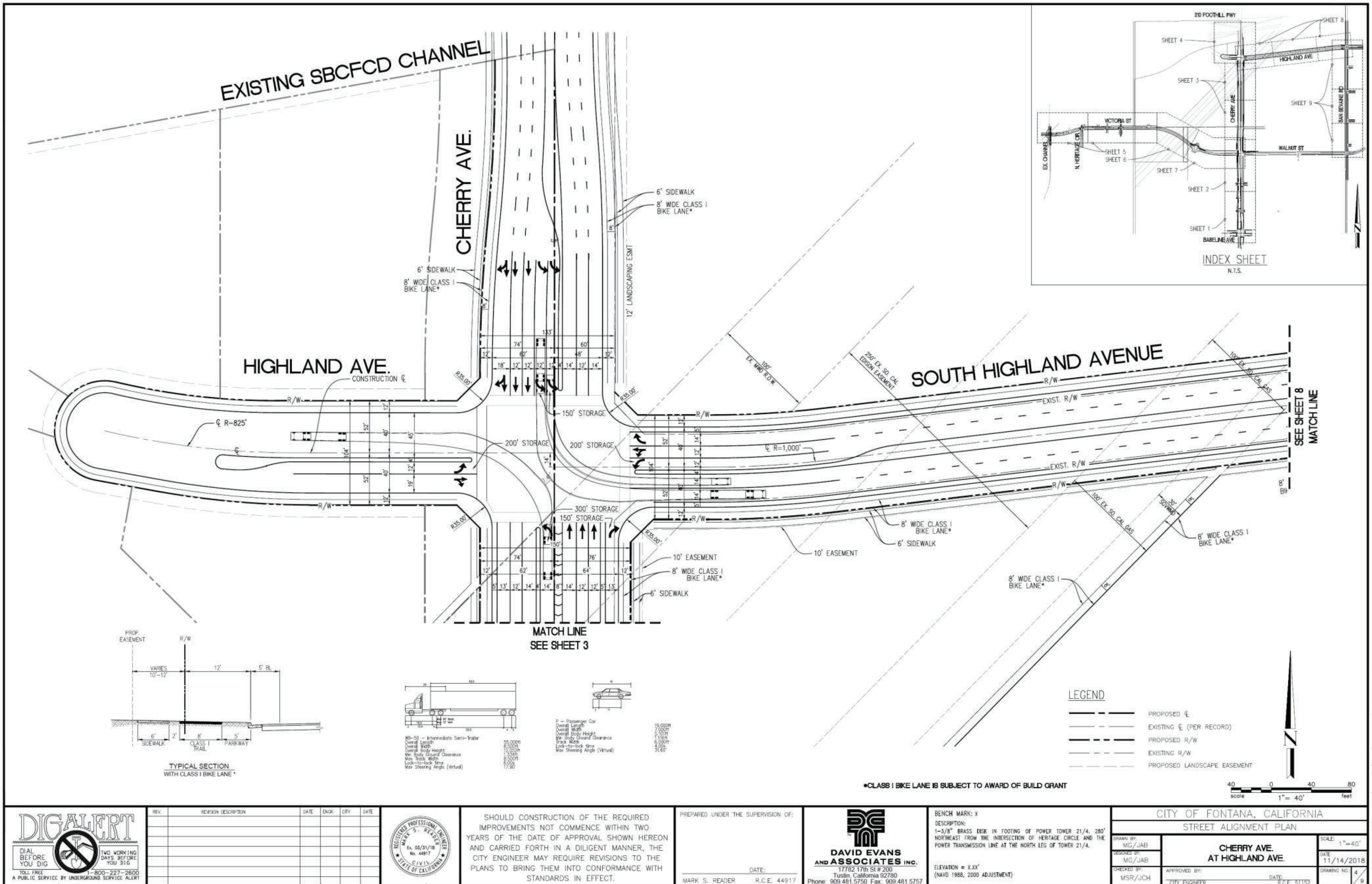
WEST LEG

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
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0

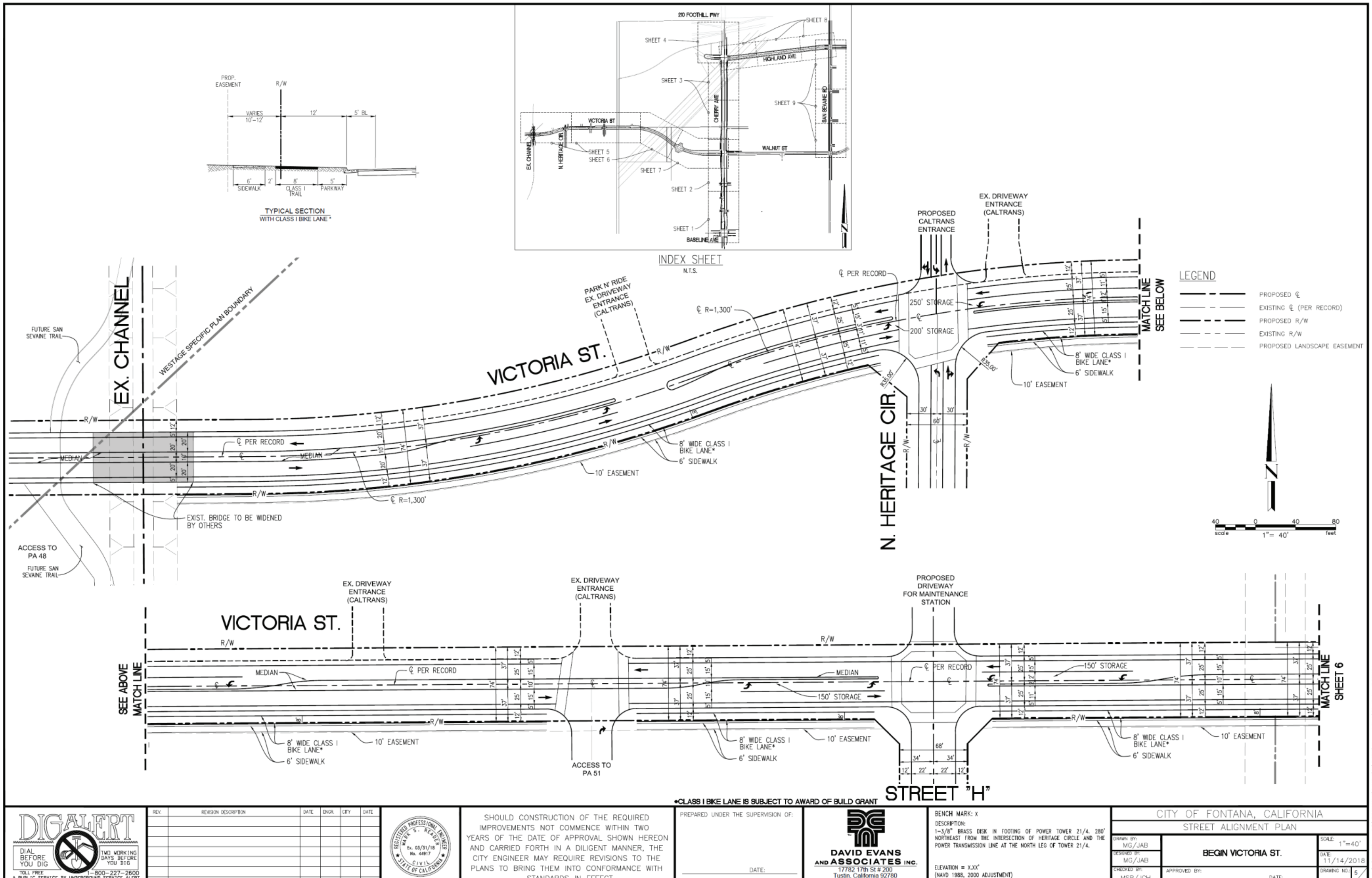
Prepared by Newport Traffic Studies

APPENDIX B
Preliminary Design Plans for RAISE Grant Funded Improvements to Cherry Avenue and Victoria Street

Preliminary Design Plans Completed

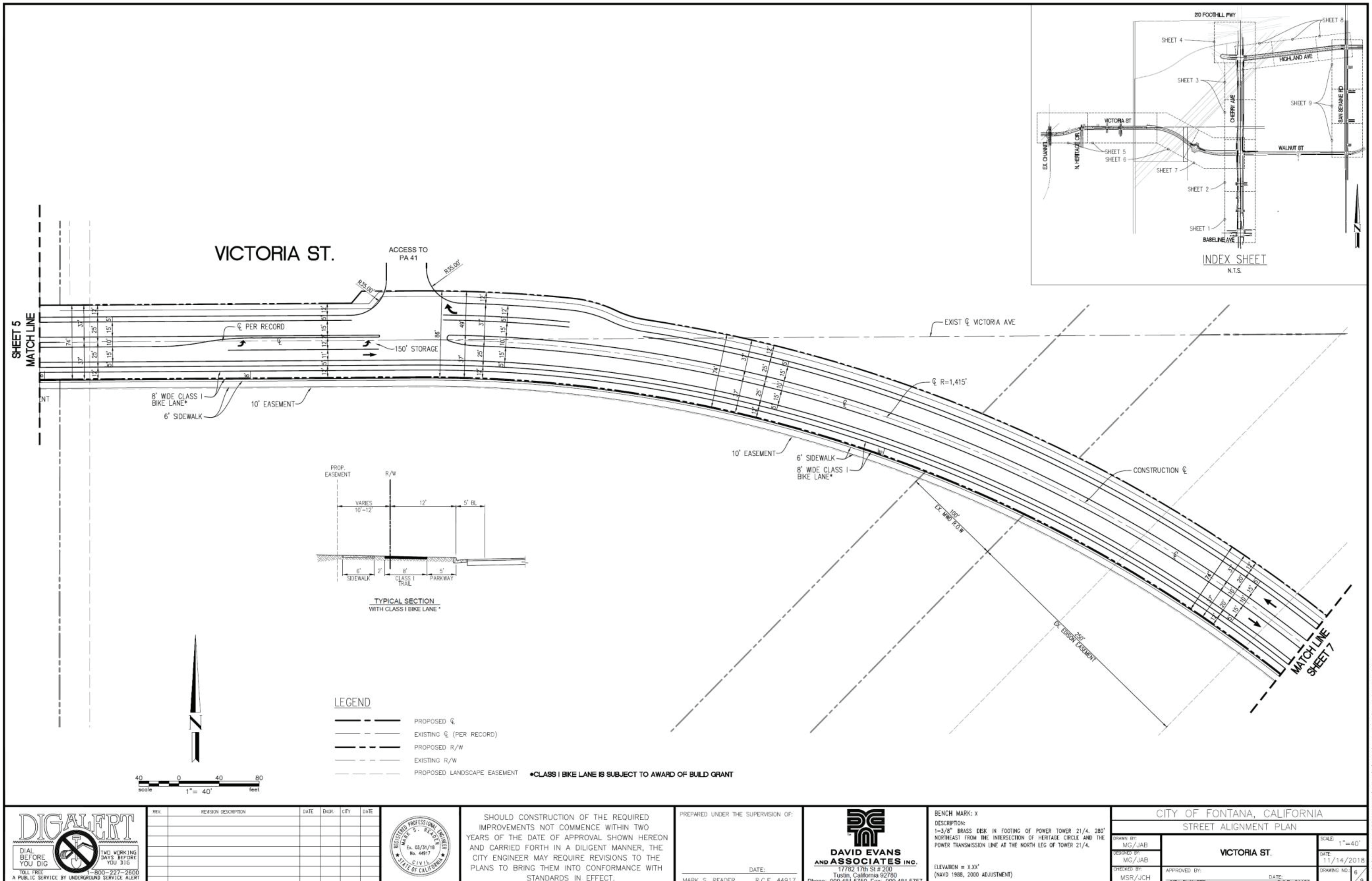


Preliminary Design Plans Completed



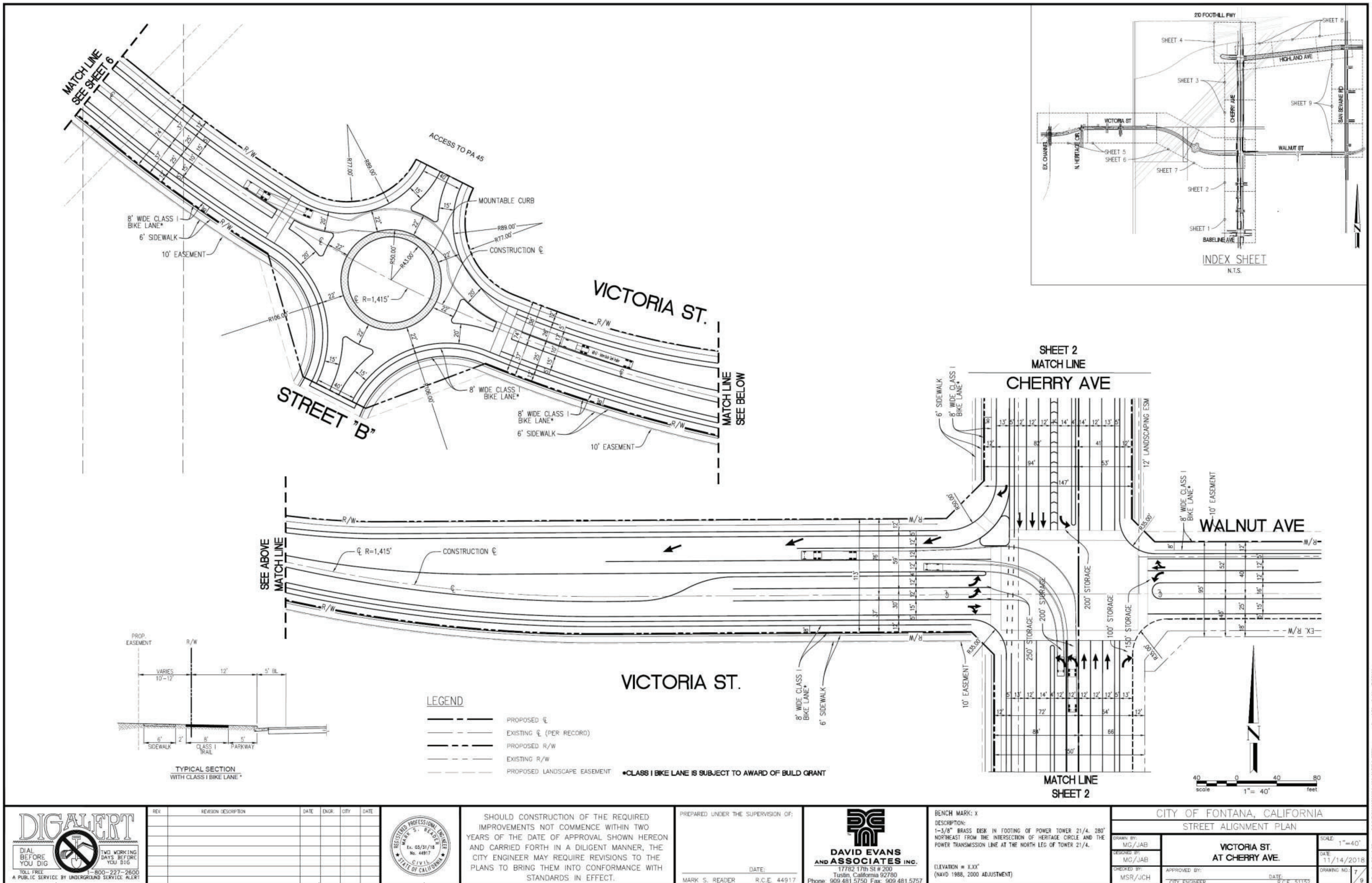
Tracking Number:GRANT13596617 Funding Opportunity Number:DTOS59-22-RA-RAISE Received Date:Apr 14, 2022 12:06:05 PM EDT

Preliminary Design Plans Completed



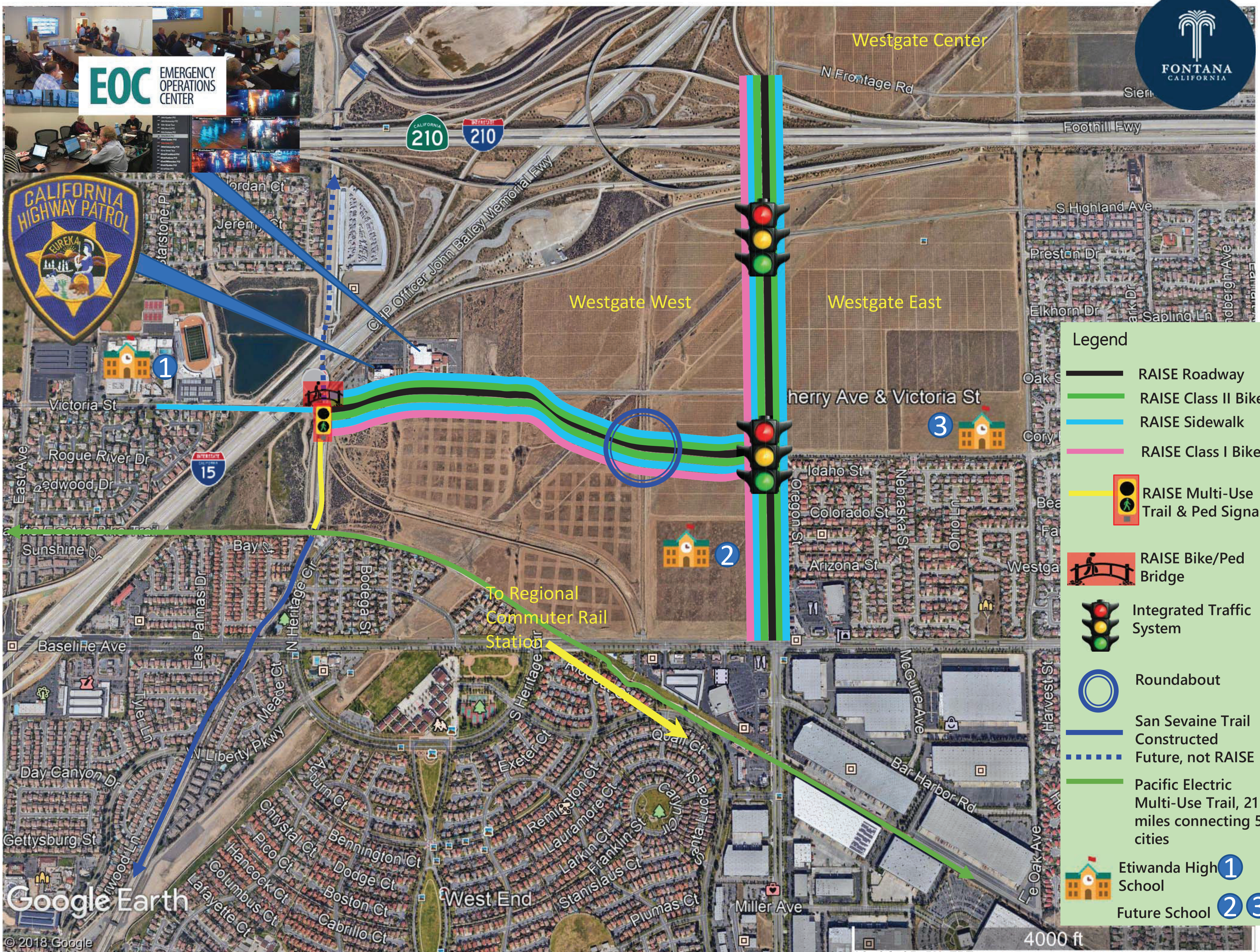
Tracking Number:GRANT13596617 Funding Opportunity Number:DTOS59-22-RA-RAISE Received Date:Apr 14, 2022 12:06:05 PM EDT

Preliminary Design Plans Completed



Tracking Number:GRANT13596617 Funding Opportunity Number:DTOS59-22-RA-RAISE Received Date:Apr 14, 2022 12:06:05 PM EDT

APPENDIX C
Exhibit of RAISE Grant Transportation Improvements Within the Westgate Specific Plan Area



EOC EMERGENCY OPERATIONS CENTER
CALIFORNIA HIGHWAY PATROL
FONTANA CALIFORNIA
Westgate Center
Westgate West
Westgate East
herry Ave & Victoria St
To Regional Commuter Rail Station
N Frontage Rd
Foothill Fwy
210
CHP Officer John Bailey Memorial Fwy
15
Victoria St
Rogue River Dr
Baseline Ave
Idaho St
Colorado St
Nebraska St
Arizona St
Ohio Ln
Oregon St
S Highland Ave
Preston Dr
Elkhorn Dr
McGuire Ave
Bar Harbor Rd
Le Oak Ave
Harvest St
Miller Ave
West End
Google Earth
© 2018 Google
4000 ft
Legend
RAISE Roadway
RAISE Class II Bike
RAISE Sidewalk
RAISE Class I Bike
RAISE Multi-Use Trail & Ped Signal
RAISE Bike/Ped Bridge
Integrated Traffic System
Roundabout
San Sevaine Trail Constructed
Future, not RAISE
Pacific Electric Multi-Use Trail, 21 miles connecting 5 cities
Etiwanda High School 1
Future School 2 3