Initial Study

Tract 6302 Residential Project

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PROJECT INFORMATION

This document is the Initial Study for the potential environmental effects of the City of Kerman's (City) Tract 6302 Residential Project (Project). The City of Kerman will act as the Lead Agency for this project pursuant to the California Environmental Quality Act (CEQA) and the CEQA Guidelines. Copies of all material s referenced in this report are available for review in the project file during regular business hours at 850 S. Madera Avenue, Kerman, CA 93630.

Project title

Tract 6302 Residential Project

Lead agency name and address

City of Kerman
850 S. Madera Avenue
Kerman, CA 93630

Contact person and phone number

Olivia Pimentel
City of Kerman
(559) 846-9384

Project location

The City of Kerman is located in Fresno County in the heart of the San Joaquin Valley. The proposed Project lies south of west Whitesbridge Avenue/State Route 180. West Stanislaus Avenue is the nearest road bordering the site to the south, south Vineland Avenue is the nearest to the west, and south Goldenrod Avenue is the nearest to the east. The proposed 104-lot single-family residential subdivision will be located on 20.38 acres of currently vacant land, assigned Assessor's Parcel Numbers 023-220-34S, -35S, -23S and -51S. The City of Kerman lies just south of SR 180 and is bisected by SR 145.

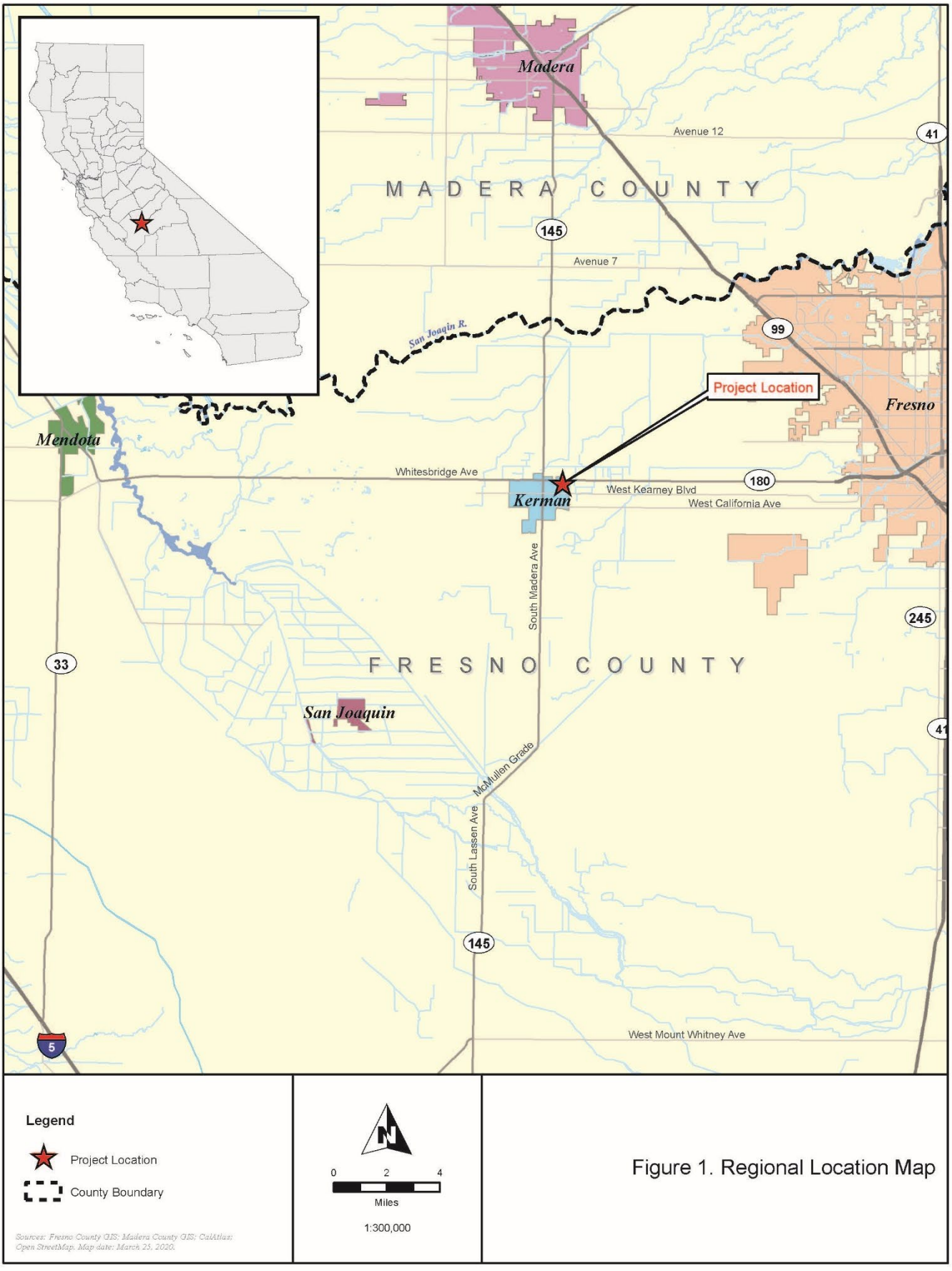


Figure 1. Regional Location Map

Figure 2. Vicinity Map

Project sponsor's name/address

Omni Land Development, LLC.
2348 Whitendale Avenue, Suite D
Visalia, CA 93277

General plan designation

APNs 023-220-34S and -35S are designated as Regional Commercial and APNs 023-220-23S and -51S are Medium Density Residential.

Zoning

APNs 023-220-34S and -35S are zoned as CG and APNs 023-220-23S and -51S are zoned R-2.

Project Description

The Project consists of a General Plan Amendment, Rezone, Planned Development and Vesting Tentative Tract Map to allow for the construction and operation of a new 104-unit single-family residential development and associated improvements.

Project Components

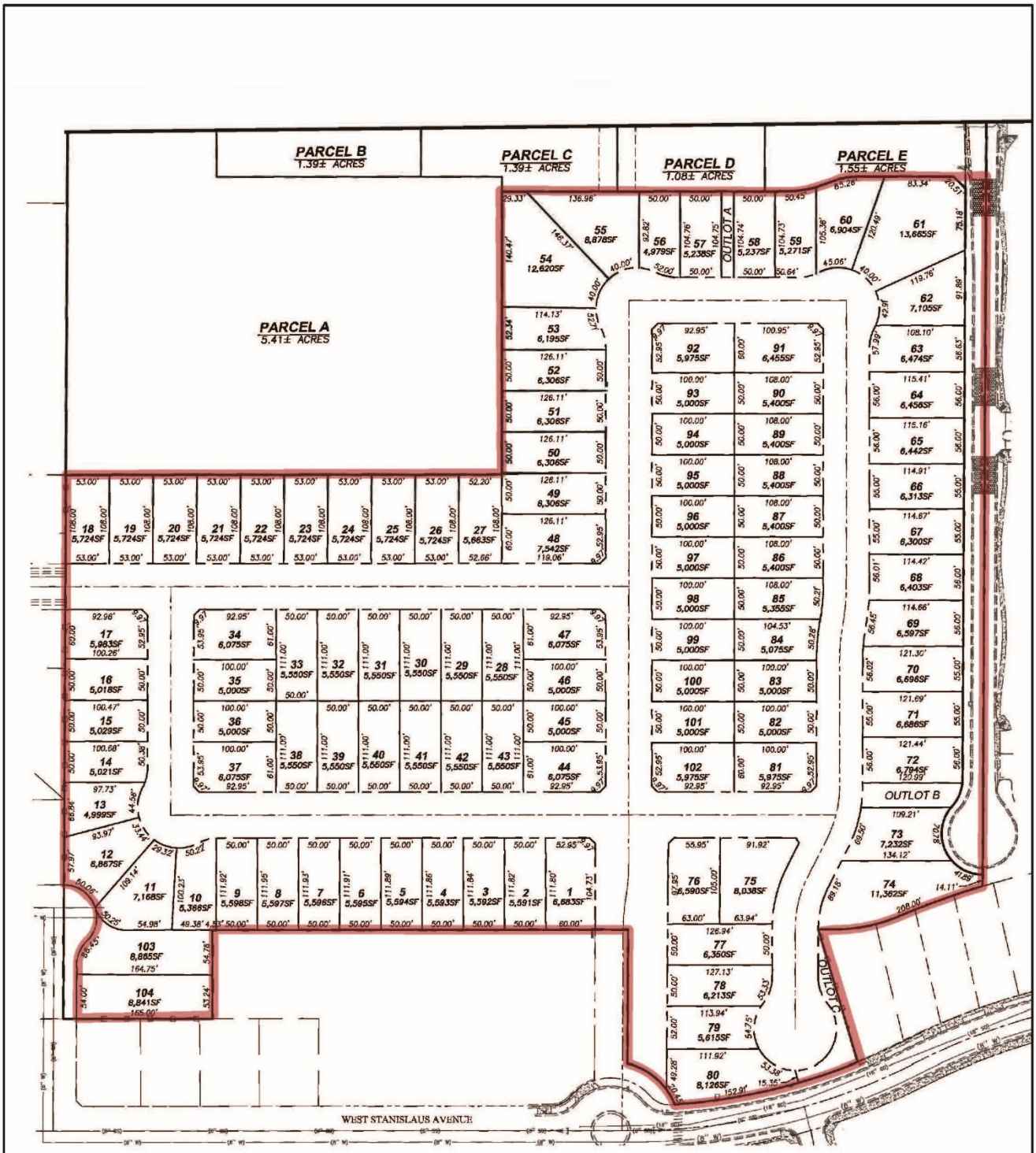
- Construction of 104 single family residential units.
- Construction of internal roads, accessed from the existing roundabout located on west Stanislaus Avenue, as well as the extension of west El Mar Avenue. Pedestrian access would be available via two paseos located on the eastern edge of the project and one paseo located on the northern edge.
- Construction of a block wall along the edge of the Project site closest to west Whitesbridge/SR 180.
- A Class III bikeway along the frontage of Stanislaus Avenue.
- Improve all streets in or adjacent to the subdivision, in accordance with Section 16.40, Improvement Standards, of the Kerman Subdivisions Ordinance.
- A tentative subdivision map has been developed in compliance with Section 16.28.030, Subdivision Maps, of the Kerman Municipal Code.

Surrounding Land Uses/Existing Conditions

The proposed Project site is currently vacant.

Lands surrounding the proposed Project are described as follows:

- North: Vehicle repair and row crops, West Whitesbridge Avenue
- South: Assisted living facility, single-family residential homes
- East: Commercial shopping center
- West: Single-family residential homes and Flea Market



Legend

Project Boundary

0 100 200

Feet

1:2,000

Source: QK, Inc., 3-18-2020.
Map date: March 24, 2020.

Figure 3. Tract Map

Other Public Agencies Involved

- State of California Native American Heritage Commission
- San Joaquin Valley Air Pollution Control District
- Central Valley Regional Water Quality Control Board

Tribal Consultation

The City of Kerman has not received any project-specific requests from any Tribes in the geographic area with which it is traditionally and culturally affiliated with or otherwise to be notified about projects in the City of Kerman.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture Resources and Forest 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

DETERMINATION

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ 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.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ 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.

☐ 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.

City of Kerman _____ Date _____

ENVIRONMENTAL CHECKLIST

I. AESTHETICS

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	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. In non-urbanized areas, 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 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?	☐	☐	☒	☐

ENVIRONMENTAL SETTING

The City of Kerman is located in the central portion of the San Joaquin Valley. The site resides in a residential and commercial area, with single-family tract homes dominating the visual landscape. The Project site generally flat and is bounded to the north by west Whitesbridge Avenue/SR 180. The areas immediately west and south of the Project site primarily consist of single-family homes. A commercial shopping center, including Walmart and Starbucks, lie to the east. There are no adopted scenic resources or scenic vistas in the area. SR 180 is in the immediate vicinity, and SR 145 is 0.7 miles to the east.

The existing visual character of the site consists of vacant land with minimal vegetation. Views of the proposed Project site area visible from west Whitesbridge Avenue/SR 180.

RESPONSES

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?

Less Than Significant Impact. A scenic vista is defined as a viewpoint that provides expansive views of highly valued landscape for the benefit of the general public. Views of the Coastal Range and Sierra Nevada Mountains are the only natural and visual resource in the Project area. Views of these distant mountains, are afforded only during clear conditions due to poor air quality in the valley. Distant views of these mountains would largely be unaffected by the development of the Project because of the nature of the Project, distance and limited visibility of these features. The City of Kerman does not identify views of these features as required to be "protected."

The Project site is within an urbanized area of east Kerman. There are no scenic vistas or other protected scenic resources on or near the site. Visual character of the site is addressed further in Response C. below.

There are no scenic highways near the proposed site.

Therefore, the Project has ***less than significant impact*** on scenic vistas or designated scenic resources or highways.

Mitigation Measures: None are required.

c. In non-urbanized areas, 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 regulations governing scenic quality?

Less Than Significant Impact. The proposed Project would alter the existing visual character of public views of the site from vacant land to fully developed with single-family tract homes. The Project design is subject to the City's Design Guidelines adopted for the City's General Plan which apply to site layout, building design, landscaping, interior street design, lighting, parking and signage. Per the City's Design Guidelines, detailed architectural plans, color palettes and building materials as well as landscaping plans will be submitted by the Project developer to the City of Kerman. The plans shall be required prior to issuance of any building permits. The review shall be substantially based on the building plans and elevations illustrated within this document.

The proposed Project will require removal of minimal vegetation on the vacant parcels. Landscaping easements and a sound wall will run along west Whitesbridge Avenue/SR 180. Additional landscaping, fences and three paseos for pedestrian use are incorporated into the project design.

The improvements such as those proposed by the Project are typical of City urban areas and are generally expected from residents of the City. These improvements would not substantially degrade the visual character of the area and would not diminish the visual quality of the area, as they would be consistent with the existing visual setting. The proposed Project itself is not visually imposing against the scale of the existing adjacent residential buildings and nature of the surrounding area.

Therefore, the Project would have ***less than significant impacts*** on the visual character of the area.

Mitigation Measures: None are required.

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. Nighttime lighting is necessary to provide and maintain safe, secure, and attractive environments; however, these lights have the potential to produce spillover light and glare and waste energy, and if designed incorrectly, could be considered unattractive. Light that falls beyond the intended area is referred to as "light trespass." Types of light trespass include spillover light and glare. Minimizing all these forms of obtrusive light is an important environmental consideration. A less obtrusive and well-designed energy efficient fixture would face downward, emit the correct intensity of light for the use, and incorporate energy timers.

Spillover light is light emitted by a lighting installation that falls outside the boundaries of the property on which the installation is sited. Spillover light can adversely affect light-sensitive uses, such as residential neighborhoods at nighttime. Because light dissipates as it travels from the source, the intensity of a light fixture is often increased at the source to compensate for the dissipated light. This can further increase the amount of light that illuminates adjacent uses. Spillover light can be minimized by using only the level of light necessary, and by using cutoff type fixtures or shielded light fixtures, or a combination of fixture types.

Glare results when a light source directly in the field of vision is brighter than the eye can comfortably accept. Squinting or turning away from a light source is an indication of glare. The presence of a bright light in an otherwise dark setting may be distracting or annoying, referred to as discomfort glare, or it may diminish the ability to see other objects in the darkened environment, referred to as disability glare. Glare can be reduced by design features that block direct line of sight to the light source and that direct

light downward, with little or no light emitted at high (near horizontal) angles, since this light would travel long distances. Cutoff-type light fixtures minimize glare because they emit relatively low-intensity light at these angles.

Currently the sources of light in the Project area are from adjacent uses, including commercial security lighting to the east and streetlights from the residential development to the west. The Project would necessitate street lighting and such lighting that would be subject to City standards. Accordingly, potential impacts would be considered ***less than significant***.

Mitigation Measures: None are required.

II. AGRICULTURE AND FOREST RESOURCES

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	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 non-agricultural 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 non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

ENVIRONMENTAL SETTING

The City of Kerman is located in Fresno County in the heart of the San Joaquin Valley. The City's General Plan contains several policies intended to protect agricultural resources. The Project site, however, does not contain any agricultural resource and therefore, the City's policies are not applicable. Row crops less than 0.5 miles to the north are the nearest agricultural areas, across west Whitesbridge Avenue/SR 180.

RESPONSES

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 non-agricultural 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 non-agricultural use or conversion of forest land to non-forest use?

No Impact. There are no agricultural resources or forest lands present on the Project site, which currently consists of Regional Commercial and Two-Family Residential land designations. The Project consists of a General Plan Amendment and Rezone, intended to homogenize all parcels of the Project area to Low Density Residential/SDR-5. The proposed Project would not conflict with the City of Kerman's land use designations upon approval. There are no existing agricultural uses or operations within the Project boundaries. The proposed Project would not convert prime farmland, conflict with an existing agricultural use, or result in the conversion of existing farmland. Additionally, no Williamson Act contracted lands would be impacted due to the Project.

The proposed Project does not conflict with any forest land or Timberland Production or result in any loss of forest land. The proposed Project does not include any changes which will affect the existing environment. Therefore, the Project has *no impact* on agricultural and forest resources.

Mitigation Measures: None are required.

III. AIR QUALITY

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	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 or adversely affecting a substantial number of people)?	☐	☐	☒	☐

ENVIRONMENTAL SETTING

The climate of the City of Kerman and the San Joaquin Valley is characterized by long, hot summers and stagnant, foggy winters. Precipitation is low and temperature inversions are common. These characteristics are conducive to the formation and retention of air pollutants and are in part influenced by the surrounding mountains which intercept precipitation and act as a barrier to the passage of cold air and air pollutants.

The proposed Project lies within the San Joaquin Valley Air Basin, which is managed by the San Joaquin Valley Air Pollution Control District (SJVAPCD or Air District). National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) have been established for the following criteria pollutants: carbon monoxide (CO), ozone (O_3), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), particulate matter (PM_{10} and $PM_{2.5}$), and lead (Pb). The CAAQS also set standards for sulfates, hydrogen sulfide, and visibility.

Air quality plans or attainment plans are used to bring the applicable air basin into attainment with all state and federal ambient air quality standards designed to protect the health and safety of residents

within that air basin. Areas are classified under the Federal Clean Air Act as either "attainment", "non-attainment", or "extreme non-attainment" areas for each criteria pollutant based on whether the NAAQS have been achieved or not. Attainment relative to the State standards is determined by the California Air Resources Board (CARB). The San Joaquin Valley is designated as a State and Federal extreme non-attainment area for O3, a State and Federal non-attainment area for PM2.5, a State non-attainment area for PM10, and Federal and State attainment area for CO, SO2, NO2, and Pb.

Standards and attainment status for listed pollutants in the Air District can be found in Table 1. Note that both state and federal standards are presented.

Table 1 - Standards and Attainment Status for Listed Pollutants in the Air District

	Federal Standard	California Standard
Ozone	0.075 ppm (8-hr avg)	0.07 ppm (8-hr avg) 0.09 ppm (1-hr avg)
Carbon Monoxide	9.0 ppm (8-hr avg) 35.0 ppm (1-hr avg)	9.0 ppm (8-hr avg) 20.0 ppm (1-hr avg)
Nitrogen Dioxide	0.053 ppm (annual avg)	0.30 ppm (annual avg) 0.18 ppm (1-hr avg)
Sulfur Dioxide	0.03 ppm (annual avg) 0.14 ppm (24-hr avg) 0.5 ppm (3-hr avg)	0.04 ppm (24-hr avg) 0.25 ppm (1hr avg)
Lead	1.5 µg/m3 (calendar quarter) 0.15 µg/m3 (rolling 3-month avg)	1.5 µg/m3 (30-day avg)
Particulate Matter (PM10)	150 µg/m3 (24-hr avg)	20 µg/m3 (annual avg) 50 µg/m3 (24-hr avg)
Particulate Matter (PM2.5)	15 µg/m3 (annual avg)	35 µg/m3 (24-hr avg) 12 µg/m3 (annual avg)

µg/m3 = micrograms per cubic meter

Additional State regulations include:

CARB Portable Equipment Registration Program – This program was designed to allow owners and operators of portable engines and other common construction or farming equipment to register their equipment under a statewide program so they may operate it statewide without the need to obtain a permit from the local air district.

U.S. EPA/CARB Off-Road Mobile Sources Emission Reduction Program – The California Clean Air Act (CCAA) requires CARB to achieve a maximum degree of emissions reductions from off-road mobile sources to attain State Ambient Air Quality Standards (SAAQS); off- road mobile sources include most construction equipment. Tier 1 standards for large compression-ignition engines used in off-road mobile sources went into effect in California in 1996. These standards, along with ongoing rulemaking, address emissions of nitrogen oxides (NOX) and toxic particulate matter from diesel engines. CARB is currently

developing a control measure to reduce diesel PM and NOX emissions from existing off-road diesel equipment throughout the state.

California Global Warming Solutions Act – Established in 2006, Assembly Bill 32 (AB 32) requires that California's GHG emissions be reduced to 1990 levels by the year 2020. This will be implemented through a statewide cap on GHG emissions, which was phased in beginning in 2012. AB 32 requires CARB to develop regulations and a mandatory reporting system to monitor global warming emissions levels.

Mitchell Air Quality Consulting prepared an Air Quality and Greenhouse Gas Analysis Report for proposed Project and is provided as Appendix A.

RESPONSES

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

Less Than Significant Impact. The CEQA Guidelines indicate that a significant impact would occur if the project would conflict with or obstruct implementation of the applicable air quality plan. The GAMAQI indicates that projects that do not exceed SJVAPCD regional criteria pollutant emissions quantitative thresholds would not conflict with or obstruct the applicable air quality plan (AQP). An additional criterion regarding the project's implementation of control measures was assessed to provide further evidence of the project's consistency with current AQPs. This document proposes the following criteria for determining project consistency with the current AQPs:

1. Will the project 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 AQPs? This measure is determined by comparison to the regional and localized thresholds identified by the District for Regional and Local Air Pollutants.

2. Will the project comply with applicable control measures in the AQPs? The primary control measures applicable to development projects is Regulation VIII—Fugitive PM10 Prohibitions and Rule 9510 Indirect Source Review.

A measure for determining if the project is consistent with the air quality plans is if the project would not result in an increase in the frequency or severity of existing air quality violations, cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the air quality plans. Regional air quality impacts and attainment of standards are the result of the cumulative impacts of all emission sources within the air basin. Individual projects are generally not large enough to contribute measurably to an existing violation of air quality standards. Therefore, the cumulative impact of the project is based on its cumulative contribution. Because of the region's

nonattainment status for ozone, PM2.5, and PM10—if project generated emissions of either of the ozone precursor pollutants (ROG and NOX), PM10, or PM2.5 would exceed the District's significance thresholds—then the project would be considered to contribute to violations of the applicable standards and conflict with the attainment plans. As discussed in Impact III (b) below, emissions of ROG, NOX, PM10, and PM2.5 associated with the construction and operation of the Project would not exceed the District's significance thresholds. As shown in Impact III (b), the Project would not result in CO hotspots that would violate CO standards. Therefore, the project would not contribute to air quality violations.

Compliance with Applicable Control Measures

The AQP contains a number of control measures, which are enforceable requirements through the adoption of rules and regulations. A description of rules and regulations that apply to this Project is provided below.

SJVAPCD Rule 9510—Indirect Source Review (ISR) is a control measure in the 2006 PM10 Plan that requires NOX and PM10 emission reductions from development projects in the San Joaquin Valley. The NOX emission reductions help reduce the secondary formation of PM10 in the atmosphere (primarily ammonium nitrate and ammonium sulfate) and also reduce the formation of ozone. Reductions in directly emitted PM10 reduce particles such as dust, soot, and aerosols. Rule 9510 is also a control measure in the 2016 Plan for the 2008 8-Hour Ozone Standard. Developers of projects subject to Rule 9510 must reduce emissions occurring during construction and operational phases through on-site measures, or pay off-site mitigation fees. The proposed Project is required to comply with Rule 9510.

Regulation VIII—Fugitive PM10 **Prohibitions** is a control measure that is one main strategies from the 2006 PM10 for reducing the PM10 emissions that are part of fugitive dust. Residential projects over 10 acres are required to file a Dust Control Plan (DCP) containing dust control practices sufficient to comply with Regulation VIII. The Project is required to prepare a DCP to comply with Regulation VIII.

Other control measures that apply to the Project are Rule 4641—Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operation that requires reductions in VOC emissions during paving and Rule 4601—Architectural Coatings that limits the VOC content of all types of paints and coatings sold in the San Joaquin Valley. These measures apply at the point of sale of the asphalt and the coatings, so project compliance is ensured.

The Project would comply with all applicable SJVAPCD rules and regulations. Therefore, the Project complies with this criterion and would not conflict with or obstruct implementation of the applicable air quality attainment plan and any impacts would be ***less than significant.***

Mitigation Measures: None are required.

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

Less Than Significant Impact. To result in a less than significant impact, the following criteria must be true:

1. Regional analysis: emissions of nonattainment pollutants must be below the District's regional significance thresholds. This is an approach recommended by the District in its GAMAQI.

2. Summary of projections: the project must be consistent with current air quality attainment plans including control measures and regulations. This is an approach consistent with Section 15130(b) of the CEQA Guidelines.

3. Cumulative health impacts: the project must result in less than significant cumulative health effects from the nonattainment pollutants. This approach correlates the significance of the regional analysis with health effects, consistent with the court decision, *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1219-20.

Regional Emissions

Air pollutant emissions have both regional and localized effects. This analysis assesses the regional effects of the project's criteria pollutant emissions in comparison to SJVAPCD thresholds of significance for short-term construction activities and long-term operation of the Project. Localized emissions from Project construction and operation are assessed under Impact III (c) —Sensitive Receptors using concentration-based thresholds that determine if the project would result in a localized exceedance of any ambient air quality standards or would make a cumulatively considerable contribution to an existing exceedance.

The primary pollutants of concern during project construction and operation are ROG, NOX, PM10, and PM2.5. The SJVAPCD GAMAQI adopted in 2015 contains thresholds for CO, NOX, ROG, SOX, PM10, and PM2.5.

Ozone is a secondary pollutant that can be formed miles from the source of emissions, through reactions of ROG and NOX emissions in the presence of sunlight. Therefore, ROG and NOX are termed ozone precursors. The Air Basin often exceeds the state and national ozone standards. Therefore, if the project emits a substantial quantity of ozone precursors, the project may contribute to an exceedance of the ozone standard. The Air Basin also exceeds air quality standards for PM10, and PM2.5; therefore, substantial project emissions may contribute to an exceedance for these pollutants.

The District's annual emission significance thresholds used for the project define the substantial contribution for both operational and construction emissions as follows:

- 100 tons per year CO
- 10 tons per year NOX
- 10 tons per year ROG
- 27 tons per year SOX
- 15 tons per year PM10
- 15 tons per year PM2.5

The Project does not contain sources that would produce substantial quantities of SO2 emissions during construction and operation. Modeling conducted for the project show that SO2 emissions are well below the SJVAPCD GAMAQI thresholds, as shown in the modeling results contained in Appendix A. No further analysis of SO2 is required.

Construction Emissions

Construction emissions were modeled using the CalEEMod version 2016.3.2. The results of the modeling are presented in Table 2 and output files are provided in Appendix A. The highest emissions that would occur in any year of construction activity were compared with the significance threshold. For assumptions in estimating the emissions, please refer to Section 4, Modeling Parameters and Assumptions. As shown in Table 2, the emissions are below the significance thresholds in each construction year. Therefore, the emissions are less than significant on a Project basis.

Table 2 – Construction Air Pollutant Emissions Summary (Unmitigated)[1]

Maximum Daily Emissions by Year	Emissions (pounds per day)				
	ROG	NOx	CO	PM10	PM2.5
Construction 2021	0.32	3.30	2.53	0.45	0.27
Construction 2022	0.93	1.51	1.59	0.11	0.08
Grand Total for All Construction Years	1.25	4.81	4.12	0.56	0.34
Highest Emissions in Any Year	0.93	3.30	2.53	0.45	0.27
Screening Thresholds	10	10	100	15	15
Exceeds Threshold (Yes or No)	No	No	No	No	No

[1] Mitchell Air Quality Consulting. Air Quality and Greenhouse Gas Analysis Report. See Appendix A

Operational Emissions

Operational emissions occur over the lifetime of the project and are from three main sources: area sources, energy, and motor vehicles, or mobile sources. Project construction is expected to begin as early as January 2021 with first occupancy expected in February 2022. Project buildout was based on the CalEEMod default construction schedule. The actual buildout date is dependent on market forces. The SJVAPCD considers construction and operational emissions separately when making significance determinations.

For assumptions in estimating the emissions, please refer to Section 4, Modeling Parameters and Assumptions and Appendix A. The emissions modeling results for project operation are summarized in Table 3.

Credit for project design features and compliance with regulations not accounted for in CalEEMod default assumption are addressed using the CalEEMod mitigation component and are reflected in the mitigated results. As shown in Table 3, the emissions are below the SJVAPCD significance thresholds prior to accounting for regulations not included in CalEEMod defaults and design features; therefore, the Project would result in a less than significant impact.

Table 3 – Operational Air Pollutant Emissions (Unmitigated)[2]

Maximum Daily Emissions by Year	Emissions (pounds per day)				
	ROG	NOx	CO	PM10	PM2.5
Area	1.25	0.11	4.58	0.63	0.63
Energy	0.01	0.13	0.05	0.01	0.01
Mobile	0.31	1.12	3.47	1.08	0.29
Total Project Emissions	1.57	1.36	8.10	1.71	0.93
Significance Threshold	10	10	100	15	15
Exceeds Threshold (Yes or No)	No	No	No	No	No

Plan Approach

In accordance with CEQA Guidelines 15130(b), this analysis of cumulative impacts is based on a summary of projections analysis. The District attainment plans are based on a summary of projections that accounts for projected growth throughout the Air Basin, and the controls needed to achieve ambient air quality standards. This analysis considers the current CEQA Guidelines, which includes the

[2] Mitchell Air Quality Consulting. Air Quality and Greenhouse Gas Analysis Report. See Appendix A

amendments approved by the Natural Resources Agency, effective on December 28, 2018. The Air Basin is in nonattainment or maintenance status for ozone and particulate matter (PM10 and PM2.5), which means that concentrations of those pollutants currently exceed the ambient air quality standards for those pollutants, or that the standards have recently been attained in the case of pollutants with maintenance status. When concentrations of ozone, PM10, or PM2.5 exceed the ambient air quality standard, then those sensitive to air pollution (such as children, the elderly, and the infirm) could experience health effects such as: decrease of pulmonary function and localized lung edema in humans and animals; increased mortality risk; and risk to public health, implied by altered connective tissue metabolism, altered pulmonary morphology in animals after long-term exposures, and pulmonary function decrements in chronically exposed humans.

Under the CEQA Guidelines, cumulative impacts may be analyzed using other plans that evaluate relevant cumulative effects. The geographic scope for cumulative criteria pollution from air quality impacts is the Air Basin, because that is the area in which the air pollutants generated by the sources within the Air Basin circulate and are often trapped. The SJVAPCD is required to prepare and maintain air quality attainment plans and a State Implementation Plan to document the strategies and measures to be undertaken to reach attainment of ambient air quality standards. While the SJVAPCD does not have authority over land use decisions, it is recognized that changes in land use and circulation planning would help the Air Basin achieve clean air mandates. The District evaluated emissions from land uses and transportation in the entire Air Basin when it developed its attainment plans. Emission inventories used to predict attainment of NAAQS must be based on the latest planning assumptions for mobile sources.

In accordance with CEQA Guidelines Section 15064, subdivision (h)(3), a lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project complies with the requirements in a previously approved plan or mitigation program. The 2007 8-Hour Ozone Plan contains measures to achieve reductions in emissions of ozone precursors, and sets plans towards attainment of ambient ozone standards by 2023. The 2012 PM2.5 Plan and the 2015 PM2.5 Plan for the 1997 PM2.5 Standard require fewer NOX reductions to attain the PM2.5 standard than the Ozone Plan, so the Ozone Plan is considered the applicable plan for reductions of the ozone precursors NOX and ROG. The 2012 PM2.5 Plan requires reductions in directly emitted PM2.5 from combustion sources, such as diesel engines and fireplaces, and from fugitive dust to attain the ambient standard and is the applicable plan for PM2.5 emissions. PM2.5 is also formed in secondary reactions in the atmosphere involving NOX and ammonia to form nitrate particles. Reductions in NOX required for ozone attainment are also sufficient for PM2.5 attainment. As discussed in Impact III (a), the Project is consistent with all applicable control measures in the air quality attainment plans. The Project would comply with any

District rules and regulations that may pertain to implementation of the AQPs. Therefore, impacts would be less than significant with regard to compliance with applicable rules and regulations.

This project does not exceed SJVAPCD thresholds and will reduce its cumulative impact through compliance with Rule 9510; therefore, the project is considered less than significant for this criterion.

Cumulative Health Impacts

The Air Basin is in nonattainment for ozone, PM10 (State only), and PM2.5, which means that the background levels of those pollutants are at times higher than the ambient air quality standards. The air quality standards were set to protect public health, including the health of sensitive individuals (such as children, the elderly, and the infirm). Therefore, when the concentration of those pollutants exceeds the standard, it is likely that some sensitive individuals in the population would experience health effects.

Since the Basin is nonattainment for ozone, PM10, and PM2.5, it is considered to have an existing significant cumulative health impact without the Project. When this occurs, the analysis considers whether the Project's contribution to the existing violation of air quality standards is cumulatively considerable. The SJVAPCD regional thresholds for NOX, VOC, PM10, or PM2.5 are applied as cumulative contribution thresholds. Projects that exceed the regional thresholds would have a cumulatively considerable health impact. As shown in Table 2 and Table 3, the regional analysis of construction and operational emissions indicates that the Project would not exceed the District's significance thresholds and the project is consistent with the applicable Air Quality Plan.

The SJVAPCD Air Quality Attainment Plans predict that nonattainment pollutant emissions will continue to decline each year as regulations adopted to reduce these emissions are implemented, accounting for growth projected for the region. Therefore, the cumulative health impact will also decline even with the project's emission contribution. Any impacts to air resources would be considered ***less than significant***.

Mitigation Measures: None are required.

c. Expose sensitive receptors to substantial pollutant concentrations?

Sensitive Receptors

Those who are sensitive to air pollution include children, the elderly, and persons with pre-existing respiratory or cardiovascular illness. The District considers a sensitive receptor a location that houses or attracts children, the elderly, people with illnesses, or others who are especially sensitive to the effects of

air pollutants. Examples of sensitive receptors include hospitals, residences, convalescent facilities, and schools. The closest off-site sensitive receptors are existing residences located adjacent to the project site to the north, south, and west. As a residential land use development project, proposed residences included as part of the project would be considered sensitive receptors once occupied.

Off-site Sensitive Receptors

Impacts to receptors located outside the project boundaries would occur primarily during project construction. Construction emissions commencing with the year 2021 and continue until project buildout. Construction activities are expected to occur over several years as the subdivision is gradually built out; however, most emissions are expected to occur during the initial site preparation and grading activities and to a lesser extent during ground up construction. For criteria pollutants, impacts to receptors located outside of the project are based on emissions during the highest emissions during any construction year. As shown in Table 2 and Table 3, emissions generated from construction and operation of the project are less than SJVAPCD screening criteria. Therefore, this impact would be less than significant.

On-site Sensitive Receptors

The project is not a significant source of TAC emissions. Construction activities produce short-term emissions that would not contribute substantially to cancer risk, which is estimated on a 70-year exposure period.

Construction: ROG

ROG is emitted during the application of architectural coatings (painting). The amount emitted is dependent on the amount of ROG (or VOC) in the paint. ROG emissions are typically an indoor air quality health hazard concern rather than an outdoor air quality health hazard concern. Therefore, exposure to ROG during architectural coatings is a less than significant health impact.

There are three types of asphalt that are typically used in paving: asphalt cements, cutback asphalts, and emulsified asphalts. However, SJVAPCD Rule 4641 prohibits the use of the following types of asphalt: rapid cure cutback asphalt; medium cure cutback asphalt; slow cure asphalt that contains more than one-half (0.5) percent of organic compounds that evaporate at 500 degrees Fahrenheit (°F) or lower; and emulsified asphalt containing organic compounds, in excess of 3 percent by volume, that evaporate at 500°F or lower. An exception to this is medium cure asphalt when the National Weather Service official forecast of the high temperature for the 24-hour period following application is below 50°F.

The acute (short-term) health effects from worker direct exposure to asphalt fumes include irritation of the eyes, nose, and throat. Other effects include respiratory tract symptoms and pulmonary function

changes. The studies were based on occupational exposure of fumes. Residents are not in the immediate vicinity of the fumes; therefore, they would not be subjected to concentrations high enough to evoke a negative response. In addition, the restrictions that are placed on asphalt in the San Joaquin Valley reduce ROG emissions from asphalt and exposure. The impact to nearby sensitive receptors from ROG during construction would be less than significant.

Localized Pollutant Screening Analysis

Emissions occurring at or near the project have the potential to create a localized impact, also referred to as an air pollutant hotspot. Localized emissions are considered significant if, when combined with background emissions, they would result in exceedance of any health-based air quality standard. The impact from localized pollutants is based on the impact to the nearest sensitive receptor.

The SJVAPCD's GAMAQI includes screening thresholds for identifying projects that need detailed analysis for localized impacts. Projects with on-site emission increases from construction activities or operational activities that exceed the 100 pounds per day screening level of any criteria pollutant after compliance with Rule 9510 and implementation of all enforceable mitigation measures would require preparation of an ambient air quality analysis. The criteria pollutants of concern for localized impact in the SJVAB are PM10, PM2.5, NOX, and CO. There is no localized emission standard for ROG and most types of ROG are not toxic and have no health-based standard; however, ROG was included for informational purposes only.

The highest daily emissions occur during project grading activities except for ROG emissions, which are highest during application of architectural coatings. The results of the construction screening analysis are presented in Table 4.

Table 4 – Maximum Daily Air Pollutant Emissions during Construction[3]

Maximum Daily Emissions by Year	Emissions (pounds per day)				
	ROG	NOx	CO	PM10	PM2.5
Construction 2021	4.86	66.72	34.16	10.32	6.39
Construction 2022	76.37	16.87	17.51	1.19	0.87
Highest Emissions in Any Year	76.37	66.72	34.16	10.32	6.39
Screening Thresholds	100	100	100	100	100
Exceeds Threshold (Yes or No)	No	No	No	No	No

[3] Mitchell Air Quality Consulting. Air Quality and Greenhouse Gas Analysis Report. See Appendix A

Maximum Daily Operational Emissions

An analysis of maximum daily emissions during operation was conducted to determine if emissions would exceed 100 pounds per day for any pollutant of concern. The maximum daily operational emissions would occur at project buildout. The project at buildout was modeled for 2022, which is the estimated year of first occupancy. This is considered conservative because emissions decline each year and will be lower if a later buildout year is assumed. Operational emissions include emissions generated on-site by area sources such as natural gas combustion and landscape maintenance, and off-site by motor vehicles accessing the project. Most motor vehicle emissions would occur distant from the site and would not contribute to a violation of ambient air quality standards; therefore, operational emissions reflect a very conservative assumption. The results of the screening analysis are presented in Table 5.

Table 5 – Maximum Daily Air Pollutant Emissions during Operations[4]

Maximum Daily Emissions by Year	Emissions (pounds per day)				
	ROG	NOx	CO	PM10	PM2.5
Area	4.79	1.05	9.00	0.12	0.12
Energy	0.08	0.65	0.27	0.05	0.05
Mobile	2.21	6.21	20.64	5.78	1.58
Total	7.08	7.90	29.91	5.96	1.75
Screening Thresholds	100	100	100	100	100
Exceeds Threshold (Yes or No)	No	No	No	No	No

The project would not exceed SJVAPCD screening thresholds for localized operational criteria pollutant impacts; therefore, the project's localized criteria pollutant impacts would be less than significant.

Operation: ROG

During operation, ROG would be emitted primarily from motor vehicles. Direct exposure to ROG from project motor vehicles would not result in health effects, because the ROG would be distributed across miles and miles of roadway and in the air. The concentrations would not be great enough to result in direct health effects.

Operation: PM10, PM2.5, CO, NO2

As shown in Table 5, localized emissions of PM10, PM2.5, CO, and NO2 would not exceed the SJVAPCD screening thresholds at full project build-out. Residential development is an insignificant source of these

[4] Mitchell Air Quality Consulting. Air Quality and Greenhouse Gas Analysis Report. See Appendix A

pollutants, except for projects that allow woodburning devices that emit PM10, PM2.5 in wood smoke. The project will include only natural gas-fueled fireplaces and inserts that are insignificant sources of PM2.5 and PM10. Therefore, the project would not expose sensitive receptors to substantial criteria air pollutant concentrations during operation.

Carbon Monoxide Hot Spot Analysis

Localized high levels of CO are associated with traffic congestion and idling or slow-moving vehicles. The SJVAPCD provides screening criteria to determine when to quantify local CO concentrations based on impacts to the level of service (LOS) of intersections in the project vicinity. Construction of the project would result in minor increases in traffic for the surrounding road network during the duration of construction. Motor vehicles accessing the site when it becomes operational would result in a minor increase in daily trips that would not substantially reduce the LOS on roads serving the site. The highest background 8-hour average CO concentration during the latest year it was monitored is 2.06 ppm, which is 78 percent lower than the CAAQS of 9.0 ppm or the NAAQS of 9 ppm.

A sensitivity analysis using the CALINE4 CO Hotspot model was run for the nearby City of Fresno for its General Plan Master EIR to determine the volume of trips that would be required to exceed the most stringent CO standard. At triple the predicted peak for General Plan buildout of 36,000 peakhour trips, the hourly concentration was 7.5 ppm and an 8-hour concentration of 6.0 ppm. Based on this analysis, it is extremely unlikely that a CO hotspot will occur even in the most populous city in the region. CO emissions are predicted to continue to decline as old vehicles are retired and cleaner new motor vehicles take their place.

Therefore, no CO hotspot modeling is required for new projects unless intersection volumes exceed 36,000 peak-hour trips, which is not projected to occur with the project. The highest volume road in vicinity of the project with trip data available is Whitesbridge Road (State Route 180) east of Madera Avenue (State Route 145) with 14,700 trips per day in 2017 (Caltrans 2018). The peak-hour rates would be a small fraction of the daily rates.

Operation: Toxic Air Contaminants

The ARB Air Quality and Land Use Handbook contains recommendations that will "help keep California's children and other vulnerable populations out of harm's way with respect to nearby sources of air pollution" (ARB 2005), including recommendations for distances between sensitive receptors and certain land uses. In the *California Building Industry Association v. Bay Area Air Quality Management District*, 62 Cal.4th 369 (2015) (Case No. S213478) the California Supreme Court held that "agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents. But when a proposed project risks exacerbating those environmental

hazards or conditions that already exist, an agency must analyze the potential impact of such hazards on future residents or users. In those specific instances, it is the project's impact on the environment—and not the environment's impact on the project—that compels an evaluation of how future residents or users could be affected by exacerbated conditions." Although the Court ruled that impacts from the existing environment on projects are not required to be addressed under CEQA, land uses such as gasoline stations, dry cleaners, distribution centers, and auto body shops can expose residents to high levels of TAC emissions if they are in close proximity to the project site. Information regarding the location of existing TAC sources is provided for disclosure purposes only and not as a measure of the project's significance under CEQA.

Consistency with these recommendations is assessed as follows:

- Heavily traveled roads. ARB recommends avoiding new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day. Epidemiological studies indicate that the distance from the roadway and truck traffic densities were key factors in the correlation of health effects, particularly in children. The project is located at the northeast corner of East Butler Avenue and South Armstrong Avenue. The traffic volumes on the road segments nearest the project are available for Whitesbridge Road east of Madera Avenue with 14,400 trips per day. No roads serving the project would exceed this criterion (Caltrans 2018).
- Distribution centers. ARB also recommends avoiding siting new sensitive land uses within 1,000 feet of a distribution center. The project is not located within 1,000 feet of a distribution center.
- Fueling stations. ARB recommends avoiding new sensitive land uses within 300 feet of a large fueling station (a facility with a throughput of 3.6 million gallons per year or greater). ARB recommends a 50-foot separation for typical gas dispensing facilities. The nearest gas station is located at 200 S. Madera Avenue, approximately 0.58 mile west of the project site.
- Dry cleaning operations. ARB recommends avoiding siting new sensitive land uses within 300 feet of any dry-cleaning operation that uses perchloroethylene. For operations with two or more machines, ARB recommends a buffer of 500 feet. For operations with three or more machines, ARB recommends consultation with the local air district. There are no dry-cleaning operations located in the City of Kerman.
- Auto body shops. Auto body shops have the potential to emit TACs related to painting. The nearest auto body shop is located at 14703 W. Whitesbridge Avenue approximately 0.36 mile west of the project site, which is beyond the distance that would result in a measurable impact.

Valley Fever

Valley fever, or coccidioidomycosis, is an infection caused by inhalation of the spores of the fungus, *Coccidioides immitis* (*C. immitis*). The spores live in soil and can live for an extended time in harsh environmental conditions. Activities or conditions that increase the amount of fugitive dust contribute to greater exposure, and they include dust storms, grading, and recreational off-road activities.

The San Joaquin Valley is considered an endemic area for Valley fever. By geographic region, hospitalizations for Valley fever in the San Joaquin Valley increased from 230 (6.9 per 100,000 population) in 2000 to 701 (17.7 per 100,000 population) in 2007. Within the region, Kern County reported the highest hospitalization rates, increasing from 121 (18.2 per 100,000 population) in 2000 to 285 (34.9 per 100,000 population) in 2007, and peaking in 2005 at 353 hospitalizations (45.8 per 100,000 population). The Centers for Disease Control and Prevention indicates that 752 of the 8,657 persons (8.7 percent) hospitalized in California between 2000 and 2007 for Valley fever died (CDC 2009). California experienced 7,466 new cases of Valley fever in 2017. A total of 275 Valley fever cases were reported in Fresno County in 2017 for a rate of 82.4 per 100,000 people (CDPH 2018). The distribution of *C. immitis* within endemic areas is not uniform and growth sites are commonly small (a few tens of meters) and widely scattered. Known sites appear to have some ecological factors in common suggesting that certain physical, chemical, and biological conditions are more favorable for *C. immitis* growth. Avoidance, when possible, of sites favorable for the occurrence of *C. immitis* is a prudent risk management strategy. Listed below are ecologic factors and sites favorable for the occurrence of *C. immitis*:

1) Rodent burrows (often a favorable site for *C. immitis*, perhaps because temperatures are more moderate and humidity higher than on the ground surface)

2) Old (prehistoric) Indian campsites near fire pits

3) Areas with sparse vegetation and alkaline soils

4) Areas with high salinity soils

5) Areas adjacent to arroyos (where residual moisture may be available)

6) Packrat middens

7) Upper 30 centimeters of the soil horizon, especially in virgin undisturbed soils

8) Sandy, well-aerated soil with relatively high water-holding capacities

Sites within endemic areas less favorable for the occurrence of *C. immitis* include:

1) Cultivated fields

2) Heavily vegetated areas (e.g. grassy lawns)

3) Higher elevations (above 7,000 feet)

4) Areas where commercial fertilizers (e.g. ammonium sulfate) have been applied

5) Areas that are continually wet

6) Paved (asphalt or concrete) or oiled areas

7) Soils containing abundant microorganisms

8) Heavily urbanized areas where there is little undisturbed virgin soil.[5]

The Project site is situated in a city growth area. The Project includes urbanization of a site that was formerly used for agricultural purposes. Therefore, implementation of the Project would have a low probability of the site having *C. immitis* growth sites and exposure to the spores from disturbed soil.

Construction activities would generate fugitive dust that could contain *C. immitis* spores. The Project will minimize the generation of fugitive dust during construction activities by complying with the District's Regulation VIII. Therefore, this regulation, combined with the relatively low probability of the presence of *C. immitis* spores, would reduce Valley fever impacts to less than significant. During operations, dust emissions are anticipated to be negligible, because most of the project area would be occupied by buildings, pavement, and landscaped areas. This condition would preclude the possibility of the project from providing habitat suitable for *C. immitis* spores and for generating fugitive dust that may contribute to Valley fever exposure. Impacts would be less than significant.

Naturally Occurring Asbestos

According to a map of areas where naturally occurring asbestos in California are likely to, there are no such areas in the Project area. Therefore, development of the Project is not anticipated to expose receptors to naturally occurring asbestos. Impacts would be less than significant.

In summary, the Project would not exceed SJVAPCD localized emission daily screening levels for any criteria pollutant. The project is not a significant source of TAC emissions during construction or operation. The project is not in an area with suitable habitat for Valley fever spores and is not in area known to have naturally occurring asbestos. Therefore, impacts are ***less than significant***.

[5] Mitchell Air Quality Consulting. Air Quality and Greenhouse Gas Analysis Report. See Appendix A

Mitigation Measures: None are required.

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

Less than Significant Impact. Land uses that are typically identified as sources of objectionable odors include landfills, transfer stations, sewage treatment plants, wastewater pump stations, composting facilities, feed lots, coffee roasters, asphalt batch plants, and rendering plants. The Project would not engage in any of these activities. Therefore, the Project would not be considered a generator of objectionable odors during operations.

During construction, the various diesel-powered vehicles and equipment in use on-site would create localized odors. These odors would be temporary and would not likely be noticeable for extended periods of time beyond the Project's site boundaries. The potential for diesel odor impacts would therefore be less than significant. Any impacts would be ***less than significant.***

Mitigation Measures: None are required.

IV. BIOLOGICAL RESOURCES

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	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 federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒

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

ENVIRONMENTAL SETTING

The proposed Project site is located in a portion of the central San Joaquin Valley that has, for decades, experienced intensive agricultural and urban disturbances. Current agricultural endeavors in the region include dairies, groves, and row crops.

Like most of California, the Central San Joaquin Valley experiences a Mediterranean climate. Warm dry summers are followed by cool moist winters. Summer temperatures usually exceed 90 degrees Fahrenheit, and the relative humidity is generally very low. Winter temperatures rarely raise much above 70 degrees Fahrenheit, with daytime highs often below 60 degrees Fahrenheit. Annual precipitation within the proposed Project site is about 10 inches, almost 85% of which falls between the months of October and March. Nearly all precipitation falls in the form of rain and storm-water readily infiltrates the soils of the surrounding the sites.

Native plant and animal species once abundant in the region have become locally extirpated or have experienced large reductions in their populations due to conversion of upland, riparian, and aquatic habitats to agricultural and urban uses. Remaining native habitats are particularly valuable to native wildlife species including special status species that still persist in the region. According to the 2007 Kerman General Plan Update, most of the Kerman area is dominated by urban development, however; the City is entirely surrounded by agricultural land mixed with farmhouses and small ranches. These uses may attract the San Joaquin kit fox for foraging habitat.

The site is currently vacant. The Project site's surrounding lands consist primarily of single-family residences and commercial businesses.

No aquatic or wetland features occur on the proposed Project site; therefore, jurisdictional waters are considered absent from the site.

A Biological Habitat Assessment (BHA) was performed on behalf of the Project developer by Argonaut Ecological Consulting, Inc. on February 19, 2020. The assessment was compiled utilizing a combination of data review and evaluation, field studies and aerial photo interpretations. The BHA is provided in Appendix B.

RESPONSES

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?

Less than Significant Impact. The site is currently fallow and disked for fire suppression. The BHA concluded that the Project site is highly disturbed and completely lacking in substantial vegetation, such as trees, brush or shrubs. This factor suggests that the Project site is extremely unlikely to serve as nesting habitat for bird species. The study area was historically used for agricultural purposes. A California Natural Diversity Database (CNDDB) search determined that there is no critical habitat for any listed species (plant or animal) within or near the Project area. The closest critical habitat nearby is approximately 11 miles west of the Project area and is designated for the Fresno kangaroo rat. Additionally, no wetlands or waters of the U.S. or water of the State were found within the Project area. Any impacts to special status species would be ***less than significant***.

Mitigation Measures: None are required.

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

No Impact. There are no natural waterways, sensitive natural communities, or protected wetlands on the subject site. As such, there is ***no impact.***

Mitigation Measures: None are required.

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?

No Impact. There are no natural waterways or natural vegetation on the subject site. There would be ***no impact*** to native species movement.

Mitigation Measures: None are required.

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

No Impact. The City of Kerman is near two ecological reserves; the Kerman Ecological Reserve and the Alkali Sink Ecological Reserve, both of which lie within 12 miles of Kerman. Due to the intervening land uses and distance from the proposed Project site, the proposed Project would not conflict with any of the adopted policies and there is ***no impact.***

Mitigation Measures: None are required.

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?

No Impact. The proposed Project site is not within an area set aside for the conservation of habitat or sensitive plant or animal species pursuant to a Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. As such, there is ***no impact***.

Mitigation Measures: None are required.

V. CULTURAL RESOURCES

Would the project:

		Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a.	Cause a substantial adverse change in the significance of a historical resource as defined in §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?	☐	☒	☐	☐

ENVIRONMENTAL SETTING

Archaeological resources are places where human activity has measurably altered the earth or left deposits of physical remains. Archaeological resources may be either prehistoric (before the introduction of writing in a particular area) or historic (after the introduction of writing). The majority of such places in this region are associated with either Native American or Euroamerican occupation of the area. The most frequently encountered prehistoric and early historic Native American archaeological sites are village settlements with residential areas and sometimes cemeteries; temporary camps where food and raw materials were collected; smaller, briefly occupied sites where tools were manufactured or repaired; and special-use areas like caves, rock shelters, and sites of rock art. Historic archaeological sites may include foundations or features such as privies, corrals, and trash dumps.

A prehistoric and historic site records and literature search was conducted for the Project area and a 1.125-mile radius through the Southern San Joaquin Valley Archaeological Information Center of the California Historical Resources Information System on February 3, 2020 (File RS#20-051). Records indicated that the northern portion of the Project area had previously been surveyed by Binning in 2008 (Report #FR-2501), which was concluded with negative findings. No additional archaeological or historic sites have been recorded in the Project area or within the 0.125-mile radius; however, several other surveys have been performed near the Project area vicinity.

A field survey of the Project area was conducted by Michael Lawson of Peak & Associates, Inc., on February 6, 2020, using a complete inspection. He performed parallel transects of ten meters during the

survey. His observations show that the Project site is flat with occasional undulations, and that it is vegetation-free, aside from a few emerging grasses. His conclusion was that there is no surface evidence of prehistoric or historic cultural resources within the Project area. The full report is included as Appendix C.

RESPONSES

a. Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

No Impact. As discussed above, no historic resources were identified within or adjacent to the project site. There is ***no impact***.

Mitigation Measures: None are required.

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?

Less Than Significant Impact With Mitigation. The project area is highly disturbed, consisting of vacant land, virtually free of vegetation. There are no known or visible cultural or archaeological resources, paleontological resources, or human remains that exist on the surface of the project area. Therefore, it is determined that the project has low potential to impact any sensitive resources and no further cultural resources work is required unless project plans change to include work not currently identified in the project description.

Although no cultural or archaeological resources, paleontological resources or human remains have been identified in the project area, the possibility exists that such resources or remains may be discovered during Project site preparation, excavation and/or grading activities. Mitigation Measures CUL – 1 and CUL – 2 will be implemented to ensure that Project will result in ***less than significant impacts with mitigation***.

Mitigation Measures:

CUL – 1 Should evidence of prehistoric archeological resources be discovered during construction, the contractor shall halt all work within 25 feet of the find and the resource shall be evaluated by a qualified archaeologist. If evidence of any archaeological, cultural, and/or historical deposits is found, hand excavation and/or mechanical excavation shall

proceed to evaluate the deposits for determination of significance as defined by the CEQA guidelines. The archaeologist shall submit reports, to the satisfaction of the City of Fresno, describing the testing program and subsequent results. These reports shall identify any program mitigation that the project proponent shall complete in order to mitigate archaeological impacts (including resource recovery and/or avoidance testing and analysis, removal, reburial, and curation of archaeological resources).

CUL – 2 In order to ensure that the proposed project does not impact buried human remains during construction, the project proponent shall be responsible for on-going monitoring of project construction. Prior to the issuance of any grading permit, the project proponent shall provide the City of Fresno with documentation identifying construction personnel that will be responsible for on-site monitoring. If buried human remains are encountered during construction, further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall be halted until the Fresno coroner is contacted and the coroner has made the determinations and notifications required pursuant to Health and Safety Code Section 7050.5. If the coroner determines that Health and Safety Code Section 7050.5(c) require that he give notice to the Native American Heritage Commission, then such notice shall be given within 24 hours, as required by Health and Safety Code Section 7050.5(c). In that event, the NAHC will conduct the notifications required by Public Resources Code Section 5097.98. Until the consultations described below have been completed, the landowner shall further ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices where Native American human remains are located, is not disturbed by further development activity until the landowner has discussed and conferred with the Most Likely Descendants on all reasonable options regarding the descendants' preferences and treatments, as prescribed by Public Resources Code Section 5097.98(b). The NAHC will mediate any disputes regarding treatment of remains in accordance with Public Resources Code Section 5097.94(k). The landowner shall be entitled to exercise rights established by Public Resources Code Section 5097.98(e) if any of the circumstances established by that provision become applicable.

VI. ENERGY

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	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?	☐	☐	☒	☐

ENVIRONMENTAL SETTING

California's total energy consumption is second-highest in the nation, but, in 2016, the state's per capita energy consumption ranked 48th, due in part to its mild climate and its energy efficiency programs. In 2017, California ranked second in the nation in conventional hydroelectric generation and first as a producer of electricity from solar, geothermal, and biomass resources while also in 2017, solar PV and solar thermal installations provided about 16% of California's net electricity generation.[6]

Energy usage is typically quantified using the British thermal unit (BTU). As a point of reference, the approximately amounts of energy contained in common energy sources are as follows:

Energy Source	BTUs[7]
Gasoline	120,429 per gallon
Natural Gas	1,037 per cubic foot
Electricity	3,412 per kilowatt-hour

[6] U.S. Energy Information Administration. Independent Statistics and Analysis. California Profile Overview. https://www.eia.gov/state/?sid=CA#tabs-1. Accessed March 2020.
[7] U.S. Energy Information Administration. Energy Units and Calculators Explained. https://www.eia.gov/energyexplained/index.php?page=about_energy_units. Accessed March 2020.

California electrical consumption in 2016 was 7,830.8 trillion BTU[8], as provided in Table 6, while total electrical consumption by Fresno County in 2018 was 26.109 trillion BTU.[9]

Table 6 – 2016 California Energy Consumption[10]

End User	BTU of energy consumed (in trillions)	Percentage of total consumption
Residential	1,384.4	17.7
Commercial	1,477.2	18.9
Industrial	1,854.3	23.7
Transportation	3,114.9	39.8
Total	**7,830.8**	--

The California Department of Transportation (Caltrans) reports that approximately 25.1 million automobiles, 5.7 million trucks, and 889,024 motorcycles were registered in the state in 2017, resulting in a total estimated 339.8 billion vehicles miles traveled (VMT).[11]

Applicable Regulations

California Energy Code (Title 24, Part 6, Building Energy Efficiency Standards)

California Code of Regulations Title 24, Part 6 comprises the California Energy Code, which was adopted to ensure that building construction, system design and installation achieve energy efficiency. The California Energy Code was first established in 1978 by the CEC in response to a legislative mandate to reduce California's energy consumption, and apply to energy consumed for heating, cooling, ventilation, water heating, and lighting in new residential and non-residential buildings. The standards are updated periodically to increase the baseline energy efficiency requirements. The 2013 Building Energy Efficiency Standards focus on several key areas to improve the energy efficiency of newly constructed buildings and additions and alterations to existing buildings and include requirements to enable both demand reductions during critical peak periods and future solar electric and thermal system installations. Although it was not originally intended to reduce greenhouse gas (GHG) emissions, electricity production by fossil fuels results in GHG emissions and energy efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions.

[8] U.S. Energy Information Administration. Independent Statistics and Analysis. California Profile Overview. https://www.eia.gov/state/?sid=CA#tabs-1. Accessed March 2020.
[9] California Energy Commission. Electricity Consumption by County. http://ecdms.energy.ca.gov/elecbycounty.aspx. Accessed March 2020.
[10] U.S. Energy Information Administration. Independent Statistics and Analysis. California Profile Overview. https://www.eia.gov/state/?sid=CA#tabs-1. Accessed March 2020.
[11] Caltrans. 2017. California Transportation Quick Facts. http://www.dot.ca.gov/drisi/library/qf/qf2017.pdf. Accessed March2020.

California Green Building Standards Code (Title 24, Part II, CALGreen)

The California Building Standards Commission adopted the California Green Buildings Standards Code (CALGreen in Part 11 of the Title 24 Building Standards Code) for all new construction statewide on July 17, 2008. Originally a volunteer measure, the code became mandatory in 2010 and the most recent update (2019) will go into effect on January 1, 2020. CALGreen sets targets for energy efficiency, water consumption, dual plumbing systems for potable and recyclable water, diversion of construction waste from landfills, and use of environmentally sensitive materials in construction and design, including eco-friendly flooring, carpeting, paint, coatings, thermal insulation, and acoustical wall and ceiling panels. The 2019 CALGreen Code includes mandatory measures for non-residential development related to site development; water use; weather resistance and moisture management; construction waste reduction, disposal, and recycling; building maintenance and operation; pollutant control; indoor air quality; environmental comfort; and outdoor air quality. Mandatory measures for residential development pertain to green building; planning and design; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; environmental quality; and installer and special inspector qualifications.

Clean Energy and Pollution Reduction Act (SB 350)

The Clean Energy and Pollution Reduction Act (SB 350) was passed by California Governor Brown on October 7, 2015, and establishes new clean energy, clean air, and greenhouse gas reduction goals for the year 2030 and beyond. SB 350 establishes a greenhouse gas reduction target of 40 percent below 1990 levels for the State of California, further enhancing the ability for the state to meet the goal of reducing greenhouse gas emissions by 80 percent below 1990 levels by the year 2050.

Renewable Portfolio Standard (SB 1078 and SB 107)

Established in 2002 under SB 1078, the state's Renewables Portfolio Standard (RPS) was amended under SB 107 to require accelerated energy reduction goals by requiring that by the year 2010, 20 percent of electricity sales in the state be served by renewable energy resources. In years following its adoption, Executive Order S-14-08 was signed, requiring electricity retail sellers to provide 33 percent of their service loads with renewable energy by the year 2020. In 2011, SB X1-2 was signed, aligning the RPS target with the 33 percent requirement by the year 2020. This new RPS applied to all state electricity retailers, including publicly owned utilities, investor-owned utilities, electrical service providers, and community choice aggregators. All entities included under the RPS were required to adopt the RPS 20 percent by year 2020 reduction goal by the end of 2013, adopt a reduction goal of 25 percent by the end of 2016, and meet the 33 percent reduction goal by the end of 2020. In addition, the Air Resources Board,

under Executive Order S-21-09, was required to adopt regulations consistent with these 33 percent renewable energy targets.

RESPONSES

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?

Less Than Significant Impact. The proposed Project includes construction and operation of a 104-unit single-family residential tract, on 20.38 acres. The Project would introduce minimal energy usage on a site that is presently demanding minimal energy. The Project at build-out may consume high amounts of energy in the short-term during Project construction, and low amounts of energy in the long-term during Project operation.

During construction, the Project would consume energy in two general forms: (1) the fuel energy consumed by construction vehicles and equipment; and (2) bound energy in construction materials, such as asphalt, steel, concrete, pipes, and manufactured or processed materials such as lumber and glass. Title 24 Building Energy Efficiency Standards provide guidance on construction techniques to maximize energy conservation and it is expected that contractors and owners have a strong financial incentive to use recycled materials and products originating from nearby sources in order to reduce materials costs. As such, it is anticipated that materials used in construction and construction vehicle fuel energy would not involve the wasteful, inefficient, or unnecessary consumption of energy.

Operational Project energy consumption would occur for multiple purposes, including but not limited to, building heating and cooling, refrigeration, lighting and electronics. Operational energy would also be consumed during each vehicle trip associated with the proposed use. CalEEMod was utilized to generate the estimated energy demand of the proposed Project. Annual Project energy consumption is provided in Table 7 while model assumptions along with the output files are provided in Appendix A.

Table 7 – Annual Project Energy Consumption

Land Use	Electricity Use in kWh/year	Natural Gas Use in kBTU/year
Single-Family Residential	903,867	2,555,870

The proposed Project would be required to comply with Title 24 Building Energy Efficiency Standards, which provide minimum efficiency standards related to various building features, including appliances, water and space heating and cooling equipment, building insulation and roofing, and lighting.

Implementation of Title 24 standards significantly increases energy savings, and it is generally assumed that compliance with Title 24 ensures projects will not result in the inefficient, wasteful, or unnecessary consumption of energy.

As discussed in Impact XVII – Transportation/Traffic, at build-out the Project will generate a maximum of 982 daily trips and is anticipated to have 77 a.m. peak hour trips and 103 p.m. peak hour trips. The length of these trips and the individual vehicle fuel efficiencies are not known; therefore, the resulting energy consumption cannot be accurately calculated. Adopted federal vehicle fuel standards have continually improved since their original adoption in 1975 and assists in avoiding the inefficient, wasteful, and unnecessary use of energy by vehicles.

As discussed previously, the proposed Project would be required to implement and be consistent with existing energy design standards at the local and state level. The Project would be subject to energy conservation requirements in the California Energy Code and CALGreen. Adherence to state code requirements would ensure that the Project would not result in wasteful and inefficient use of non-renewable resources due to building operation.

Therefore, any impacts are ***less than significant***.

Mitigation Measures: None are required.

VII. GEOLOGY AND SOILS

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	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 most recently adopted Uniform Building Code	☐	☐	☒	☐

	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?	☐	☐	☒	☐

ENVIRONMENTAL SETTING

The City of Kerman is situated in the center of the Great Valley of California. According to the 2007 Kerman General Plan Update, this area is an almost-flat, northwest-southeast trending basin, which is approximately 450 miles long and 50 miles wide. Mesozoic platonic, volcanic and metamorphic rocks of the Sierra Nevadas border the Great Valley basin on the east and the sedimentary rocks of the Coast Ranges on the western edge. The geologic formations found in and around the Kerman area are primarily the low alluvial fans of the perennial San Joaquin and Kings Rivers, and the multiple streams which comprise the Fresno alluvial fan sequence.

There are no known active earthquake faults in the City of Kerman. According to the 2007 Kerman General Plan Update, the greatest seismic threat to the region is posed by a complex thrust fault system, deep in the Sierran Block Boundary Zone, which is thought to be the source of the most notable earthquake recoded in the region (recorded in May 1983, 6.7 Rs). The nearest active fault near Kerman is the San Andreas, over 60 miles west.

According to the City's General Plan, much of the Planning area contains a combination of three major soil groups: Hanford, Traver and Hesperia. These soil types are generally considered well-drained.

RESPONSES

a-i. 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.

a-ii. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

a-iii. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

a-iv. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

Less Than Significant Impact. The proposed project site is not located in an earthquake fault zone as delineated by the 1972 Alquist-Priolo Earthquake Fault Zoning Map Act. The nearest known potentially active fault is the San Andreas Fault, located over sixty miles west of the site. No active faults have been mapped within the project boundaries, so there is no potential for fault rupture. It is anticipated that the proposed Project site would be subject to some ground acceleration and ground shaking associated with seismic activity during its design life. The proposed Project site would be engineered and constructed in strict accordance with the earthquake resistant design requirements contained in the latest edition of the California Building Code (CBC) for seismic zone II, as well as Title 24 of the California Administrative Code, and therefore would avoid potential seismically induced hazards on planned structures.

In addition, the entire City of Kerman, including the proposed Project site, is relatively flat which would preclude the likeliness of a landslide. The impact of seismic or landslide hazards on the project would be ***less than significant.***

Mitigation Measures: None are required.

b. Result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact. The proposed Project will construct up to 104 single-family residential units on approximately 20.38 acres. The Project site has a generally flat topography and is in an established urban area. Construction activities associated with the Project involves ground preparation work for the new housing development and associated improvements. These activities could expose barren soils to sources of wind or water, resulting in the potential for erosion and sedimentation on and off the Project site. During construction, nuisance flow caused by minor rain could flow off-site. The City and/or contractor would be required to employ appropriate sediment and erosion control BMPs as part of a Stormwater Pollution

Prevention Plan (SWPPP) that would be required in the California National Pollution Discharge Elimination System (NPDES). As such, any impacts would be considered ***less than significant.***

Mitigation Measures: None are required.

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 most recently adopted Uniform Building Code creating substantial risks to life or property?

Less Than Significant Impact. See Section VIa. above. The site is not at significant risk from earthquakes, ground shaking, liquefaction, or landslide and is otherwise considered geologically stable. Any impacts would be considered ***less than significant***.

Mitigation Measures: None are required.

e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?

No Impact. The proposed Project does not include the construction, replacement, or disturbance of septic tanks or alternative wastewater disposal systems. The Project will be required to tie into existing sewer services (See Utilities section for more details). Therefore, there is ***no impact.***

Mitigation Measures: None are required.

f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less Than Significant Impact. As identified in the cultural studies performed for the Project site (see Appendix C), there are no known paleontological resources on or near the site. Mitigation measures have been added that will protect unknown (buried) resources during construction, including paleontological resources. There are no unique geological features on site or in the area. Therefore, there is a ***less than significant impact.***

Mitigation Measures: None are required.

VIII. GREENHOUSE GAS EMISSIONS

Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	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?	☐	☐	☒	☐

ENVIRONMENTAL SETTING

Climate change is a change in the average weather of the earth that is measured by alterations in wind patterns, storms, precipitation, and temperature. These changes are assessed using historical records of temperature changes occurring in the past, such as during previous ice ages. Many of the concerns regarding climate change use this data to extrapolate a level of statistical significance, specifically focusing on temperature records from the last 150 years (the Industrial Age) that differ from previous climate changes in rate and magnitude.

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. In its Fourth Assessment Report, the IPCC predicted that the global mean temperature change from 1990 to 2100, given six scenarios, could range from 1.1 degrees Celsius (°C) to 6.4°C. Regardless of analytical methodology, global average temperatures and sea levels are expected to rise under all scenarios (IPCC 2007a). The report also concluded that "[w]arming of the climate system is unequivocal," and that "[m]ost of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations."

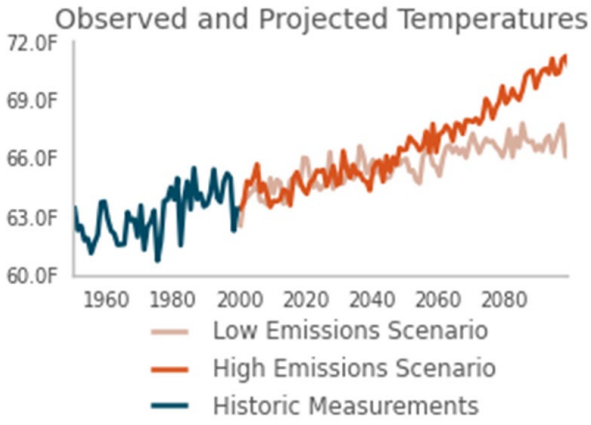
An individual project cannot generate enough GHG emissions to cause a discernible change in global climate. However, the project participates in the potential for global climate change by its incremental contribution of GHGs—and when combined with the cumulative increase of all other sources of GHGs—constitute potential influences on global climate change.

Consequences of Climate Change in the Kerman Area

Figure 4 displays a chart of measured historical and projected annual average temperatures in the project area. As shown in the figure, temperatures are expected to rise in the low and high GHG emissions

scenarios. The results indicate that temperatures are predicted to increase by 3.7 degrees Fahrenheit (°F) under the low emission scenario and 6.5°F under the high emissions scenario.

Figure 4 – Observed and Projected Temperatures for Climate Change in the Project Area[12]



Water Supply

The City of Kerman would provide water for the project. The City relies on groundwater for potable water supplies. The rate of groundwater recharge could decline if climate change were to result in reduced snowpack in the Sierra Nevada.

Wildfires

The project site is within an urbanizing area with limited fuels that would be subject to a wildfire. The City is surrounded by irrigated farmland that is not considered to be at high risk of wildfire. Increased temperatures and drought conditions due to climate change could result in increased risk from grass fires on vacant lots.

Human Health Effects of GHG Emissions

GHG emissions from development projects would not result in concentrations that would directly impact public health. However, the cumulative effects of GHG emissions on climate change have the potential to cause adverse effects to human health.

In its report, Global Climate Change Impacts in the U.S. (2009), the U.S. Global Change Research Program has analyzed the degree to which impacts on human health are expected to impact the United States.

[12] Mitchell Air Quality Consulting. Air Quality and Greenhouse Gas Analysis Report. See Appendix, Page 34.

Potential effects of climate change on public health include:

- Direct Temperature Effects: Climate change may directly affect human health through increases in average temperatures, which are predicted to increase the incidence of heat waves and hot extremes.
- Extreme Events: Climate change may affect the frequency and severity of extreme weather events, such as hurricanes and extreme heat and floods, which can be destructive to human health and well-being.
- Climate-Sensitive Diseases: Climate change may increase the risk of some infectious diseases, particularly those diseases that appear in warm areas and are spread by mosquitoes and other insects, such as malaria, dengue fever, yellow fever, and encephalitis.
- Air Quality: Respiratory disorders may be exacerbated by warming-induced increases in the frequency of smog (ground-level ozone) events and particulate air pollution.[13]

Although there could be health effects resulting from changes in the climate and the consequences that can occur, inhalation of GHGs at levels currently in the atmosphere would not result in adverse health effects, with the exception of ozone and aerosols (particulate matter). The potential health effects of ozone and particulate matter are discussed in criteria pollutant analyses. At very high indoor concentrations (not at levels existing outside), carbon dioxide, methane, sulfur hexafluoride, and some chlorofluorocarbons can cause suffocation as the gases can displace oxygen.[14]

A complete description of the regulatory setting is provided in Appendix A.

RESPONSES

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

Less Than Significant Impact.

Construction

Total GHG emissions generated during all phases of construction were combined and are presented in Table 8. The SJVAPCD does not recommend assessing the significance of construction-related emissions. However, other jurisdictions, such as the SCAQMD and the SMAQMD, have concluded that construction

[13] Mitchell Air Quality Consulting. Air Quality and Greenhouse Gas Analysis Report. See Appendix A, Page 35.
[14] Ibid.

emissions should be included since they may remain in the atmosphere for years after construction is complete. In order to account for the construction emissions, amortization of the total emissions generated during construction were based on the life of the development (residential—30 years) and added to the operational emissions.

Table 8 – Construction Greenhouse Gas Emissions[15]

Year	MTCO2e per year
2021	514.84
2022	285.81
Total	773.65
Amortized over 30 years	25.79

Operation

Operational or long-term emissions occur over the life of the project. Sources of emissions may include motor vehicles and trucks, energy usage, water usage, waste generation, and area sources, such as landscaping activities and residential wood burning.

Business As Usual Operational Emissions

Operational emissions under the BAU scenario were modeled using CalEEMod 2016.3.2. Modeling assumptions for the year 2005 were used to represent 2022 and 2030 BAU conditions (without the benefit of regulations adopted to reduce GHG emissions). The SJVAPCD guidance recommends using emissions in 2002–2004 in the baseline scenario to represent conditions—as if regulations had not been adopted—to allow the effect of projected growth on achieving reduction targets to be clearly defined. CalEEMod defaults were used for project energy usage, water usage, waste generation, and area sources (architectural coating, consumer products, and landscaping). The vehicle fleet mix was revised to reflect the residential fleet mix approved by SJVAPCD for the year of first occupancy, which is expected to occur in 2022. Full assumptions and CalEEMod model outputs are provided in Appendix A.

2022 and 2030 Operational Emissions

Operational emissions were modeled for the years 2022 and 2030 using CalEEMod. CalEEMod assumes compliance with some, but not all, applicable rules and regulations regarding energy efficiency, vehicle fuel efficiency, renewable energy usage, and other GHG reduction policies, as described in the CalEEMod User's Guide. Full assumptions and CalEEMod model outputs are provided in Appendix A.

[15] Mitchell Air Quality Consulting. Air Quality and Greenhouse Gas Analysis Report. See Appendix A

Regulations applicable to project sources and the percent reduction anticipated from each source are shown in Table 9. The percentage reductions are only applied to the specific sources subject to the regulations. For example, the Pavley LEV Standards apply only to light duty cars and trucks.

Table 9 – Reductions from Greenhouse Gas Regulations[16]

Regulation	Project Applicability	Reduction Source	Percent Reduction in 2020 and 2030
Pavley Low Emission Vehicle Standards	Light-duty cars and trucks accessing the site are subject to the regulation.	CalEEMod defaults (Pavley I).	25.1
		Adjusted GHG emission factor (Pavley II/LEV III) in CalEEMod.	3% in 2020 19.5% in 2030
Trucks and Bus Regulation	Heavy-duty trucks accessing the site for deliveries and services are subject to the regulation.	Adjusted GHG emission factors for the regulation in CalEEMod.	7.2%
Low Carbon Fuel Standards (LCFS)	Vehicles accessing the site will use fuel subject to the LCFS.	CalEEMod defaults.	10% in 2020 18% in 2030
Title 24 Energy Efficiency Standards	Project buildings will be constructed to meet the latest version of Title 24 (currently 2019). Reduction applies only to energy consumption subject to the regulation.	CalEEMod defaults. CalEEMod mitigation component for 2019 standards.	35% 7%
Green Building Code Standards	The Project will include water conservation features required by the standard.	CalEEMod mitigation component	20%
Water Efficient Land Use Ordinance	The project landscaping will comply with the regulation.	CalEEMod mitigation component	20%
Renewable Portfolio Standard (RPS)	Electricity purchased for use at the Project site is subject to the 33 percent mandate.	CalEEMod adjusted energy intensity factors with PG&E emission factors that show the company will exceed the 33 percent mandate.	54.4%
Solid Waste	The solid waste service provider will need to provide programs to	CalEEMod mitigation component.	25%

[16] Mitchell Air Quality Consulting. Air Quality and Greenhouse Gas Analysis Report. See Appendix A

Regulation	Project Applicability	Reduction Source	Percent Reduction in 2020 and 2030
	increase diversion and recycling to meet the 75 percent mandate.		

In addition to rules and regulations, the Project would incorporate design features and would obtain benefits from its location and infrastructure that would reduce Project vehicle miles traveled (VMT) compared with default values. The Project would construct pedestrian infrastructure connecting to adjacent land uses. The Project is located approximately 1.6 miles from existing development in Downtown Kerman providing shorter than average trip lengths to important destinations. Note that CalEEMod nominally treats these design elements and conditions as "mitigation measures," despite their inclusion in the Project description. Therefore, reported operational emissions are considered to represent unmitigated project conditions. Full assumptions and model outputs are provided in Appendix A and results of this analysis for 2022 are presented in Table 10. A second analysis for 2030 is presented in Table 11.

Table 10 – Project Operational Greenhouse Gases 2022[17]

Source	Emissions (MTCOE2e per year)		
	Business As Usual	2022 (with Regulation and Design Features)	Percent Reduction
Area	138.65	46.61	66.4%
Energy	412.06	256.93	37.6%
Mobile	1,278.46	862.88	32.5%
Water	24.30	12.85	47.1%
Amortized Construction Emissions	25.79	25.79	0.0%
Total	1,933.03	1,245.39	35.6%
	Reduction from BAU	687.64	--
	Percent Reduction	35.6%	--
Waste	53.77	40.33	25.0%
	Significance Threshold	21.7%	--
	Are emissions significant?	**No**	

As shown in Table 10, the project operations in 2022 would achieve a reduction from BAU of 35.6 percent which exceeds the 21.7 percent reduction required by the State to achieve the 2020 target by 13.9 percent and the SJVAPCD 29.0 percent target by 6.6 percent. No threshold has been adopted by the City of

[17] Mitchell Air Quality Consulting. Air Quality and Greenhouse Gas Analysis Report. See Appendix A

Kerman for the 2030 target, so in the interim the Project must make continued progress toward the 2030 goal.

The ARB originally identified a reduction of 29 percent from BAU as needed to achieve AB 32 targets. The 2008 recession and slower growth in the years since 2008 have reduced the growth forecasted for 2020, and the amount needed to be reduced to achieve 1990 levels as required by AB 32. The California Department of Finance (DOF) population forecast for 2020 to 2030 predicts growth in the State of 8.1 percent by the 2030 target year or 0.8 percent per year.[18]

The project includes design features that would result in reductions in energy use and support walking and bicycling. Measures that are part of the project design do not require additional mitigation measures to ensure they are accomplished.

Since the project buildout would occur after 2020, additional analysis summarized in Table 11 was prepared to show consistency with SB 32 2030 target.

Table 11 – Project Operational Greenhouse Gases 2030[19]

Source	Emissions (MTCOE2e per year)		
	Business As Usual	2030 (with Regulation and Design Features)	Percent Reduction
Area	138.65	46.61	66.4%
Energy	412.06	256.93	37.6%
Mobile	1,278.46	608.65	32.5%
Water	24.30	12.85	47.1%
Waste	53.77	40.33	25.0%
Amortized Construction Emissions	25.79	25.79	0.0%
Total	1,933.03	991.16	48.7%
	Reduction from BAU	941.16	--
	Percent Reduction	48.7%	--
	Significance Threshold	21.7%	--
	Are emissions significant?	**No**	

As shown in Table 11, the project would exceed the 21.7 percent reduction required by the State to achieve the 2020 target by 27.0 percent and the SJVAPCD 29.0 percent target by 19.7 percent. The analysis presented above does not include new strategies proposed in the 2017 Scoping Plan Update. The update was adopted in December 2017. The update provides alternatives in terms of their likelihood of

[18] Ibid.

[19] Mitchell Air Quality Consulting. Air Quality and Greenhouse Gas Analysis Report. See Appendix A

implementation and ranges of reduction from the strategies. Measures already authorized by legislation are highly likely to be implemented, while measures requiring new legislation are less likely to go forward. The State is highly likely to incorporate zero net energy buildings in future updates to Title 24 and now requires solar panels in most residential development. The developer indicates that homes will come with solar panels as a standard feature that will meet the new requirement. A new round of motor vehicle fuel efficiency standards beyond 2025 when LEV III standards are at their maximum reduction level is highly likely. Changing heavy duty trucks and off-road equipment to alternative fuels face greater technological hurdles and are less likely to provide dramatic reductions by 2030.

The 2030 emission limit is 260 MMTCO2e. The ARB estimates that the 2030 BAU (reference) Inventory will be 392 MMTCO2e—a reduction of 132 MMCO2e, including existing policies and programs but not including known commitments that are already underway. The 2017 Scoping Plan Update includes the estimated GHG emissions by sector compared with 1990 levels that is presented in Table 12. The proposed plan would achieve the bulk of the reductions from Electric Power, Industrial fuel combustion, and Transportation. Cap-and-Trade would provide between 10 and 20 percent of the required reductions depending on the amounts achieved by the other reduction measures.

Table 12 – 2017 Scoping Plan Update Estimated Change in GHG Emissions by Sector[20]

Scoping Plan Sector	Emissions (MMTCO2e per year)		
	1990	2030 Proposed Plan Ranges	Percent Change from 1990
Agriculture	26	24-25	-4 to -8
Residential and Commercial	44	38-40	-9 to -14
Electric Power	108	42-62	-43 to -61
High GWP	3	8-11	167 to 267
Industrial	98	77-87	-11 to -21
Recycling and Waste	7	8-9	14 to 29
Transportation (including TCU)	152	103-111	-27 to -32
Net Sink	-7	TBD	TBD
Subtotal	431	300-345	-20 to -30
Cap-and-Trade Program	N/A	40-85	N/A
Total	**431**	**260**	**-40**

Although 2017 Scoping Plan Update focuses on state agency actions necessary to achieve the 2030 GHG limit, the ARB considers local governments essential partners in achieving California's goals to reduce GHG emissions. The 2030 target will require an increase in the rate of emission reductions compared to what was needed to achieve the 2020 limit, and this will require action and collaboration at all levels,

[20] Mitchell Air Quality Consulting. Air Quality and Greenhouse Gas Analysis Report. See Appendix A

including local government action to complement and support State-level actions. For individual projects, the 2017 Scoping Plan Update suggests that all new land use development implement all feasible measures to reduce GHG emissions. The Scoping Plan does not define all feasible measures or attribute an amount of reductions required from new development beyond compliance with regulations. When requiring mitigation of a project's fair share of a cumulative impact, the Lead Agency must show the nexus between the project contribution and its fair share of mitigation to reduce the impact to less than cumulatively considerable. A threshold based on local support and collaboration with State actions as described in the 2017 Scoping Plan Update does not lend itself to a quantitative determination of fair share. Requiring developers and future residents of the development to fully mitigate emissions without accounting for compliance with regulations would result in double mitigation, first by the developer and then by the residents purchasing electricity, fuel, and vehicles compliant with regulations in effect at the time of purchase and beyond that would violate constitutional nexus requirements.

In conclusion, the Project would achieve reductions 13.9 percent beyond the ARB 2020 21.7 percent target and 6.6 percent beyond the SJVAPCD 29 percent reduction from BAU requirements from adopted regulations and on-site design features. No threshold has been adopted by the City for the SB 32 2030 target; however, the 48.7 percent reduction from BAU by 2030 is 27.0 percent beyond the 21.7 percent required for the 2020 target. Based on this progress and the strong likelihood that the measures included in the 2017 Scoping Plan Update will be implemented, it is reasonable to conclude that the proposed Project is consistent with the 2017 Scoping Plan and will contribute a reasonable fair-share contribution to achieving the 2030 target. The fair share may very well be achieved through compliance with increasingly stringent state regulations that apply to new development, such as Title 24 and CALGreen; regulations on energy production, fuels, and motor vehicles that apply to both new and existing development; and voluntary actions to improve energy efficiency in existing development. In addition, compliance with the VMT targets adopted to comply with SB 375 and implemented through the RTP/SCS may be considered to adequately address GHG emissions from passenger cars and light-duty trucks. As shown in Table 12, the state strategy relies on the Cap and - Trade Program to make up any shortfalls that may occur from the other regulatory strategies. The costs of Cap-and-Trade emission reductions will ultimately be passed on to the consumers of fuels, electricity, and products produced by regulated industries, which include future residents of development projects and other purchasers of products and services. Therefore, the impact in terms of Considerations #1 and #2 would be ***less than significant***.

Mitigation Measures: None are required.

b. <u>Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?</u>

The following analysis assesses the Project's compliance with Consideration #3 regarding consistency with adopted plans to reduce GHG emissions. The City of Kerman has not adopted a GHG reduction plan. In addition, the City has not completed the GHG inventory, benchmarking, or goal-setting process required to identify a reduction target and take advantage of the streamlining provisions contained in the CEQA Guidelines amendments adopted for SB 97 and clarifications provided in the CEQA Guidelines amendments adopted on December 28, 2018. The SJVAPCD has adopted a Climate Action Plan, but it does not contain measures that are applicable to the project. Therefore, the SJVAPCD Climate Action Plan cannot be applied to the project. Since no other local or regional Climate Action Plan is in place, the project is assessed for its consistency with ARB's adopted Scoping Plan. This would be achieved with an assessment of the project's compliance with Scoping Plan measures.

AB 32 Scoping Plan

The California State Legislature adopted AB 32 in 2006. AB 32 focuses on reducing GHGs (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) to 1990 levels by the year 2020. Pursuant to the requirements in AB 32, the ARB adopted the Climate Change Scoping Plan (Scoping Plan) in 2008, which outlines actions recommended to obtain that goal. The Scoping Plan calls for an "ambitious but achievable" reduction in California's GHG emissions, cutting approximately 30 percent from BAU emission levels projected for 2020, or about 10 percent from 2008 levels. On a per-capita basis, that means reducing annual emissions of 14 tons of carbon dioxide for every man, woman, and child in California down to about 10 tons per person by 2020. As stated earlier, the ARB has updated its emission inventory forecasts and now estimates a reduction of 21.7 percent is required from BAU in 2020 to achieve AB 32 targets.

The project would achieve a 35.6 percent reduction from the BAU inventory by 2022 and 48.7 percent from the BAU inventory by 2030, as demonstrated in Table 18 of Appendix A, therefore, the Project would not significantly hinder or delay the State's ability to meet the reduction targets contained in AB 32 or SB 32 or conflict with implementation of the Scoping Plan. The Project promotes the goals of the Scoping Plan through implementation of design measures that reduce energy consumption, water consumption, and reduction in VMT. Therefore, the Project does not conflict with any plans to reduce GHG emissions. The impact would be ***less than significant***.

Mitigation Measures: None are required.

IX. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	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 has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☒	☐
f. Impair implementation of or physically interfere with an adopted emergency	☐	☐	☐	☒

IX. HAZARDS AND HAZARDOUS MATERIALS **Would the project:**	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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?	☐	☐	☐	☒

ENVIRONMENTAL SETTING

The area immediately surrounding the proposed Project consists of commercial, agricultural and single-family residential uses. The parcel is currently vacant.

RESPONSES

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?

Less than Significant Impact. The proposed Project would include the construction of up to 104 multi-family residential homes and new internal access roads. Proposed Project construction activities may involve the use and transport of hazardous materials. These materials may include fuels, oils, mechanical fluids, and other chemicals used during construction. Transportation, storage, use, and disposal of hazardous materials during construction activities would be required to comply with applicable federal, state, and local statutes and regulations. Compliance would ensure that human health and the environment are not exposed to hazardous materials. In addition, the Project would be required to comply with the National Pollutant Discharge Elimination System (NPDES) permit program through the submission and implementation of a Stormwater Pollution Prevention Plan during construction activities to prevent contaminated runoff from leaving the project site. Therefore, no significant impacts would occur during construction activities.

The operational phase of the proposed Project would occur after construction is completed and residents move in to occupy the structures on a day-to-day basis. The proposed Project includes land uses that are

considered compatible with the surrounding uses. None of these land uses routinely transport, use, or dispose of hazardous materials, or present a reasonably foreseeable release of hazardous materials, with the exception of common residential grade hazardous materials such as household and commercial cleaners, paint, etc. The proposed Project would not create a significant hazard through the routine transport, use, or disposal of hazardous materials, nor would a significant hazard to the public or to the environment through the reasonably foreseeable upset and accidental conditions involving the likely release of hazardous materials into the environment occur. Therefore, the proposed Project will not create a significant hazard to the public or the environment and any impacts would be ***less than significant***.

Mitigation Measures: None are required.

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

Less Than Significant Impact. Goldenrod Elementary School is approximately 0.15 miles to the southeast of the proposed Project site. As the proposed Project includes the development of single-family residences, it is not reasonably foreseeable that the proposed Project will cause a significant impact by emitting hazardous waste or bringing hazardous materials within one-quarter mile of an existing or proposed school. Residential land uses do not generate, store, or dispose of significant quantities of hazardous materials. Such uses also do not normally involve dangerous activities that could expose persons onsite or in the surrounding areas to large quantities of hazardous materials. See also Responses a. and b. regarding hazardous material handling. The impact is ***less than significant.***

Mitigation Measures: None are required.

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?

No Impact. The proposed Project site is not located on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5 (Geotracker and DTSC Envirostor databases – accessed in March 2020).[21]

[21] California Department of Toxic Substances Control. Envirostor Database. https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=kerman+. Accessed March 2020.

There are no hazardous materials sites that impact the Project. As such, ***no impacts*** would occur that would create a significant hazard to the public or the environment.

Mitigation Measures: None are required.

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

Less than Significant Impact. There are no private or public airstrips in the Project vicinity. The Fresno Chandler Executive Airport is located approximately 12 miles to the east of the proposed Project site. Thus, any impacts are ***less than significant***.

Mitigation Measures: None are required.

f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

No Impact. The Project will not interfere with any adopted emergency response or evacuation plan. There is ***no impact.***

Mitigation Measures: None are required.

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

No Impact. There are no wildlands on or near the proposed Project site. There is ***no impact***.

Mitigation Measures: None are required.

X. HYDROLOGY AND WATER QUALITY

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	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 flooding on- or offsite;	☐	☐	☒	☐
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?	☐	☐	☒	☐

X. HYDROLOGY AND WATER QUALITY

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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?	☐	☐	☐	☒

ENVIRONMENTAL SETTING

The City of Kerman obtains its water from a five deeps wells, located at depths of 300 to 900 feet, penetrating the vast aquifer underlying the San Joaquin Valley. Production capacity remains at a level of 5,700 gallons per minute (gpm). The wells contain a static water level from 85-90 feet. City staff have confirmed that over the past 10 to 15 years the depth of the groundwater for the City of Kerman has remained stable.

The City of Kerman will provide water to the residential development; however, the Project will be required to tie into the City's existing water service infrastructure.

RESPONSES

a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less Than Significant Impact. The proposed Project site is just over 20 acres in size and as such, grading, excavation and loading activities associated with construction activities could temporarily increase runoff, erosion, and sedimentation. Construction activities also could result in soil compaction and wind erosion effects that could adversely affect soils and reduce the revegetation potential at construction sites and staging areas.

Three general sources of potential short-term construction-related stormwater pollution associated with the proposed project are: 1) the handling, storage, and disposal of construction materials containing pollutants; 2) the maintenance and operation of construction equipment; and 3) earth moving activities

which, when not controlled, may generate soil erosion and transportation, via storm runoff or mechanical equipment. Generally, routine safety precautions for handling and storing construction materials may effectively mitigate the potential pollution of stormwater by these materials. These same types of common sense, "good housekeeping" procedures can be extended to non-hazardous stormwater pollutants such as sawdust and other solid wastes.

Poorly maintained vehicles and heavy equipment leaking fuel, oil, antifreeze, or other fluids on the construction site are also common sources of stormwater pollution and soil contamination. In addition, grading activities can greatly increase erosion processes. Two general strategies are recommended to prevent construction silt from entering local storm drains. First, erosion control procedures should be implemented for those areas that must be exposed. Secondly, the area should be secured to control offsite migration of pollutants. These Best Management Practices (BMPs) would be required in the Stormwater Pollution Prevention Plan (SWPPP) to be prepared prior to commencement of Project construction. When properly designed and implemented, these "good-housekeeping" practices are expected to reduce short-term construction-related impacts to less than significant.

In accordance with the National Pollution Discharge Elimination System (NPDES) Stormwater Program, the Project will be required to comply with existing regulatory requirements to prepare a SWPPP designed to control erosion and the loss of topsoil to the extent practicable using BMPs that the Regional Water Quality Control Board (RWQCB) has deemed effective in controlling erosion, sedimentation, runoff during construction activities. The specific controls are subject to the review and approval by the RWQCB and are an existing regulatory requirement.

The Project will comply with all City ordinances and standards to assure proper grading and drainage. Compliance with all local, state, and federal regulations will prevent violation of water quality standards or waste discharge requirements. The Project will be required to prepare a grading and drainage plan for review and approval by the City Engineer, prior to issuance of building permits. Storm drain planning for Kerman is provided by the Kerman Storm Drainage Master Plan. The Plan divides Kerman into a number of storm drain planning areas and indicates that the Project site is within Area E. There is a storm drain basin within Area E that will accommodate runoff resulting from Project development.

Therefore, any impacts are ***less than significant.***

Mitigation Measures: None are required.

b. 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. Site development will result in an increased demand for water. Kerman relies on groundwater underlying the planning area for domestic water supplies.

Based on information in the Kerman Water Master Plan, single family dwellings demand 750 gallons per day per unit. At 750 gallons per day per unit multiplied by 104 units, the proposed Project is estimated to demand 78,000 gallons per day.

The City's Engineering and Public Works Departments indicate there is adequate capacity in the City's water system and groundwater supply to accommodate the project.

In order to reduce demands on the groundwater system, the Project will be required to comply with several existing standards, including:

- Compliance with the State's Model Water Efficient Landscape Ordinance. Under this ordinance, landscaping (which typically demands the greatest amount of water for urban development) must demonstrate a 45-55% reduced water demand of "business as usual"
- Low flow toilets and shower heads
- Dwellings will be fitted with water meters
- During construction, hoses must be fitted with automatic shutoff devices (spray gun)

Compliance with existing State regulations will ensure that impacts to groundwater supply will be ***less than significant.***

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 offsite;

   ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

   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?

Less Than Significant Impact With Mitigation. The proposed Project includes minor changes to the existing stormwater drainage pattern of the area through the installation of asphalt, residences,

driveways, landscaping, curb, gutter and sidewalks. Standard construction practices and compliance with state and federal regulations, City ordinance and regulations, *The Uniform Building Code*, and adherence to profession engineering design approved by the City of Kerman will reduce or eliminate drainage impacts from the Project. There are no streams or rivers near the site. Any impacts would be ***less than significant.***

Mitigation Measures: None are required.

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?

No Impact. The Project is not within a regulatory floodway or within a base floodplain (100 year) elevation, as identified by the Federal Emergency Management Agency. In addition, the Project does not include any housing or structures that would be subject to flooding either from a watercourse or from dam inundation. There are no bodies of water near the site that would create a potential risk of hazards from seiche, tsunami or mudflow. The Project will not conflict with any water quality control plans or sustainable groundwater management plan. However, as mentioned in Section c., all new development within the City of Kerman Planning Area must conform to standards and plans contained in the Kerman Stormwater Drainage Master Plan. By conforming to all standards and policies as outlined, there will be ***no impacts*** associated with the Project.

Mitigation Measures: None are required.

XI. LAND USE AND PLANNING

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	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?	☐	☐	☒	☐

ENVIRONMENTAL SETTING

The proposed Project site is in the eastern portion of the City of Kerman. The area is south of west Whitesbridge Avenue/SR 180, between north Vineland Avenue and north Goldenrod Avenue. The vicinity is heavily disturbed with commercial and residential uses, and agricultural uses outside the City. The site is currently vacant, see Figure 2 – Vicinity Map. The site is currently zoned Regional Commercial (CG) and Medium Density Residential (R-2). The Project consists of a Plan Amendment, Rezone, Planned Development and Vesting Tentative Tract Map to allow for the construction and operation of a new 104-unit single-family residential development and associated improvements.

RESPONSES

a. Physically divide an established community?

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

Less Than Significant Impact. The immediate vicinity of the proposed Project site is comprised of other residential neighborhoods, commercial business, row crops on the opposite side of west Whitesbridge Avenue/SR 180, and Goldenrod Elementary School and Golden Sunset Memorial Park within 0.5 miles to the southeast. The proposed Project will not divide an existing community; rather, it will extend an existing one. The Project will include construction of internal roads, accessed from the existing roundabout located on west Stanislaus Avenue, as well as the extension of west El Mar Avenue. This will provide vehicle access from the south and west, where the majority of the City lies. Pedestrian access

from the development would be available via two paseos located on the eastern edge of the project and one paseo located on the northern edge, which will conveniently allow access to the nearby commercial businesses to the east. The area is highly disturbed with urban uses.

The developer is requesting authorization from the City of Kerman to amend the zoning of APN 023-220-23S and -51S from R-2 (Two-Family Residential) to SDR-5 (Smart Development), as well as to amend the zoning of 023-220-34S and -35S from CG (Regional Commercial) to SDR-5 planned land use. This re-zoning would create a completely homologous Project site and allow the applicant to provide aesthetically pleasing and consistent homes. The proposed TSM is consistent with the General Plan Designation of Medium Density (MD) and the Zone District titled Smart Development Combining District, which has a standard of a 5,000 square feet minimum lot size.

Based upon compliance with the goals, objectives and policies referenced herein below, the proposed project is determined to be consistent with the Kerman General Plan goals and objectives related to land use and the urban form:

Goal No. 2: Protect the health, safety and welfare of residents by ensuring that Kerman is well-planned.

The Project includes pedestrian access, is near public schools and parks, and is in an area planned for residential development. Public services such as fire protection and police protection are readily available and emergency access will be developed into the final site plan.

Goal No. 3: Protect the environment against negative impacts to water, air and energy by promoting economic and industrial development of a business- and industry- friendly community that creates local jobs, thus reducing negative impacts caused by commutes to other areas for employment.

The Project will provide temporary construction jobs and will provide housing for the growing local work force.

Goal No. 5: Increase major retail shopping and service commercial opportunities in Kerman.

The Project includes a pedestrian access to nearby commercial shopping centers.

Goal No. 8: Promote urban growth patterns and land use arrangements in Kerman that minimize land use conflicts.

Upon approval of the previously mentioned General Plan Amendments and Re-zoning, the Project will be entirely consistent with neighboring residential land uses.

Goal No. 11: Preserve Kerman's single-family residential neighbor atmosphere.

As discussed, the proposed Project will not divide an existing community and it will not conflict with an established land use plan. Any impacts are ***less than significant.***

Mitigation Measures: None are required.

XII. MINERAL RESOURCES

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	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?	☐	☐	☐	☒

ENVIRONMENTAL SETTING

According to the 2007 Kerman General Plan Update, there are no significant mineral resources within the planning area. No known mining of mineral resources has occurred in the City of Kerman. Raisin City field represents the closest significant mineral resource, which is an oil field for petroleum extraction about five miles south of Kerman.

RESPONSES

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?

No Impact. There are no known mineral resources in the proposed Project area and the site is not included in a State classified mineral resource zones. Therefore, there is ***no impact***.

Mitigation Measures: None are required.

XIII. NOISE

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	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?	☐	☐	☐	☒

ENVIRONMENTAL SETTING

Noise is most often described as unwanted sound. Although sound can be easily measured, the perception of noise and the physical response to sound complicate the analysis of its impact on people. The City of Fresno is impacted by a multitude of noise sources. Mobile sources of noise, especially cars and trucks, are the most common and significant sources of noise in most communities, and they are predominant sources of noise in the City. Commercial, industrial, and institutional land uses throughout the City (i.e., schools, fire stations, utilities) also generate stationary-source noise. The Project is located in an area with a mix of uses. The predominant noise sources in the Project area include traffic on local roadways, residential noise (lawn movers, audio equipment, voices, etc.) and noise from the nearby school and commercial businesses. Agricultural noise is unlikely but possible. Sensitive receptors in the area include the residential housing near the Project areas.

Noise-reduction measures are incorporated into the Project plan to reduce the exposure of the proposed residences to road noise, as suggested by the acoustical analysis prepared by WJV Acoustics, Inc. (see Appendix D) to quantify noise exposure and determine noise mitigation requirements.

RESPONSES

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?

Less than Significant Impact.

Short-term (Construction) Noise Impacts

Proposed Project construction related activities will involve temporary noise sources. Typical construction related equipment include graders, trenchers, small tractors and excavators. During the proposed Project construction, noise from construction related activities will contribute to the noise environment in the immediate vicinity. Activities involved in construction will generate maximum noise levels, as indicated in Table 13, ranging from 79 to 91 dBA at a distance of 50 feet, without feasible noise control (e.g., mufflers) and ranging from 75 to 80 dBA at a distance of 50 feet, with feasible noise controls.

Table 13
Typical Construction Noise Levels

Type of Equipment	dBA at 50 ft	
	Without Feasible Noise Control	With Feasible Noise
Dozer or Tractor	80	75
Excavator	88	80
Scraper	88	80
Front End Loader	79	75
Backhoe	85	75
Grader	85	75
Truck	91	75

The distinction between short-term construction noise impacts and long-term operational noise impacts is a typical one in both CEQA documents and local noise ordinances, which generally recognize the reality that short-term noise from construction is inevitable and cannot be mitigated beyond a certain level. Thus, local agencies frequently tolerate short-term noise at levels that they would not accept for permanent noise sources. A more severe approach would be impractical and might preclude the kind of

construction activities that are to be expected from time to time in urban environments. Most residents of urban areas recognize this reality and expect to hear construction activities on occasion.

Long-term (Operational) Noise Impacts

The primary source of on-going noise from the Project will be from vehicles traveling to and from the site and from traffic traveling along west Whitesbridge Avenue/SR 180. The proposed Project intends for the closest lots to this roadway to be 300 feet away. A six-foot minimum sound wall will be constructed along the northernmost lots to attenuate traffic noise to keep the Project in compliance with City of Kerman noise level standards, as outlined in the Noise Element of the 2007 Kerman General Plan Update.

The Project will result in an increase in traffic on some roadways in the Project area. However, the relatively low number of new trips associated with the Project is not likely to increase the ambient noise levels by a significant amount. Policy 2 of the Transportation Noise Sources section of the of the City's Noise Element states that noise created by new transportation noise sources must be mitigated if they exceed 60 dB Ldn within outdoor activity areas and 45 dB Ldn for interior spaces. Given the amount of existing vehicular activity in the Project area, the moderate increase in traffic associated with the new residential development (982 daily trips maximum), is not expected to increase ambient noise levels by more than 1 dB. The area is active with vehicles, a school, residential housing and commercial businesses and the proposed Project will not introduce a new significant source of noise that isn't already occurring in the area. Therefore, the impact is considered ***less than significant.***

Mitigation Measures: None are required.

c. <u>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?</u>

No Impact. The Project is not located within an airport land use plan. Therefore, there is ***no impact***.

Mitigation Measures: None are required.

XIV. POPULATION AND HOUSING

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

ENVIRONMENTAL SETTING

The City of Kerman's 2000 population was 8,551, up by 3,103 people from the 1990 census figure of 5,448. The State Department of Finance, which provides population projections for cities and counties in California, estimated Kerman's population to be 40,561 as a high estimate in 2027, and 26,613 as a low estimate.[22]

The current status of the Project site is vacant land. New housing associated with the Project includes 104 single-family homes.

The Project site is located in an area dominated by residential, commercial, and agricultural uses. The nearest residences are adjacent to the Project site to the south and west.

RESPONSESs

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

b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

[22] 2007 Kerman General Plan Update, Part II, Chapter 1: Human Environment, 1-7 and 1-8.

Less Than Significant Impact. There are 104 new homes associated with the proposed Project and there are no residential structures currently on-site. The proposed Project would provide housing to a community that the 2000 Census cited in the General Plan Update shows as being overcrowded. The Census data indicates that 31.7% of Kerman's dwellings are overcrowded, which is an increase from 18% in 1990. The average household size was 3.57 persons per dwelling in 2000. Using this ratio, the project will accommodate approximately 371 persons. This is a relatively small population and is not expected to affect any regional population, housing or employment projections anticipated by City documents. However; the proposed Project will alleviate some overcrowding in the regional population by contributing reliable housing, and will additionally provide temporary construction jobs to the local work force. In conclusion, the Project implementation will not displace substantial numbers of people and instead provide needed housing. Any impacts are considered ***less than significant.***

Mitigation Measures: None are required.

XV. PUBLIC SERVICES

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	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:				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐

ENVIRONMENTAL SETTING

The proposed Project site is located in a primarily single- family residential area in the eastern portion of the City of Kerman. The immediate vicinity is comprised of single-family tract homes to the west, commercial businesses and row crops to the north, a commercial shopping center to the east and an assisted living facility and single-family residences to the south of the site. Goldenrod Elementary School campus is also less than a mile away to the southeast of the Project site. The area is served by North Central Fire Protection, Kerman Police Department, the Kerman Unified School District and other public facilities.

RESPONSES

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:

Fire protection?

Less than Significant Impact. North Central Fire Protection offers a full range of services including fire prevention, suppression, emergency medical care, hazardous materials, urban search, and rescue response, as well as emergency preparedness planning and public education coordination within the Kerman City Limits. The Kearney Park Station located eight miles east provides backup assistance as needed, and the Biola Station located nine miles northeast may also respond to emergency events in Kerman.

North Central Fire Protection is able to respond to emergency call in within two to three minutes. The station employs two full-time personnel and two medical professionals, in addition to ten volunteer fire fighters. The North Central Fire Protection station maintains two 1,250 gpm (gallons per minute) fire engines, a 65-foot aerial ladder (750 gpm) and a paramedic rescue vehicle.

The proposed Project would be served by the current North Central Fire Station, which is located at 15850 west Kearney Boulevard, Kerman, approximately 1.6 miles west of the Project site.

The Project would be required to comply with all applicable fire and building safety codes (California Building Code and Uniform Fire Code) to ensure fire safety elements are incorporated into final Project design, including the providing designated fire lanes marked as such. Proposed interior streets will be required to provide appropriate widths and turning radii to safely accommodate emergency response and the transport of emergency/public safety vehicles. The Project will also be designed to meet Fire Department requirements regarding water flow, water storage requirements, hydrant spacing, infrastructure sizing, and emergency access. As a result, appropriate fire safety considerations will be included as part of the final design of the Project. As such, any impacts are ***less than significant***.

Police Protection?

Less than Significant Impact. Protection services would be provided to the proposed Project site from the existing Kerman Police Department, which is approximately 0.9 miles southwest of the Project site at 850 south Madera Avenue, Kerman. The Kerman Police Department provides a full range of police services and is staffed by a chief, four sergeants, one detective, thirteen full-time sworn officers, three Community Service Officers and ten reserve officer positions. Kerman also has a mutual aid agreement with the Fresno County Sheriff's Department, which has a substation located in San Joaquin. The Project site is located in an area currently served by the Kerman Police Department; the Department would not need to expand its existing service area or construct a new facility to serve the Project site. Impacts are ***less than significant.***

Schools?

Less Than Significant Impact. Educational services for the proposed Project will be provided by the Kerman Unified School District (KUSD). Kerman Unified School District operates five schools within the planning area, Kerman-Floyd Elementary (Pre-school, K-4), Sun Empire Elementary (K-4) Liberty Intermediate School (5-6), Kerman Middle School (7-8), Kerman High School (9-12), and Nova High School (continuation). The total enrollment for the district in 2007 was 3,864 students.

Based on a per-unit enrollment rate of 0.963 students per dwelling (provided by KUSD), development of the site with 104 units cold be expected to generate just over 100 children. Elementary school-age students generated within the Project area would attend Goldenrod Elementary School.

To offset the impacts of new development KUSD charges school impact fees against new residential, commercial and industrial development. As such, any impacts will be ***less than significant.***

Parks?

Less Than Significant Impact. The proposed Project does not include any parkland or recreational facilities. However, the Project will be facilitating the construction of paseos for pedestrian use. The Project will be required to pay City park facility impact fees. Impacts are ***less than significant.***

Other public facilities?

Less Than Significant Impact. The proposed Project is within the land use and growth projections identified in the City's General Plan and other infrastructure studies. The Project, therefore, would not result in increased demand for, or impacts on, other public facilities such as library services.

Mitigation Measures: None are required.

XVI. RECREATION

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	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?	☐	☐	☐	☒

ENVIRONMENTAL SETTING

The City of Kerman has a standard of providing four acres of parkland for every 1,000 persons, according to the 2007 Kerman General Plan Update. Private parks are not factored into the standard. The City currently maintains nine parks; Plaza Veterans Park, B Street Park, Wooten Park, Kiwanis Park, Katey's Kids Park, Rotary Park, Lions Park, Kerckhoff Park and Soroptimist Park. In addition to the city's parks, the athletic fields on the campuses of Kerman's school district provides recreational opportunities after school hours.

RESPONSES

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?

Less Than Significant Impact. The proposed Project does not include any parks or recreational facilities. The increase of 371 persons resulting from the Project would have a relatively small impact on existing recreational facilities. In order to implement the goals and objectives of the City's General Plan, and to mitigate the impacts caused by future development in the City, park facilities must be constructed. The City Council has determined that a Park Facilities Fee is needed in order to finance these public facilities and to pay for each development's fair share of the construction and acquisition costs. The Project Applicant will be required to pay development impact fees as determined by the City of Park Facilities Fees.

In addition, the Project will be incorporating and facilitating the completion of three paseos within the proposed site's footprint. However, the Project will still be required to pay City park facility impact fees, as required. Therefore, impacts are considered ***less than significant.***

Mitigation Measures: None are required.

XVII. TRANSPORTATION/ TRAFFIC

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☒	☐	☐
b. Would the project conflict or be inconsistent with CEQA Guidelines 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?	☐	☐	☒	☐

ENVIRONMENTAL SETTING

The proposed Project lies south of west Whitesbridge Avenue/State Route 180 in the City of Kerman, Fresno County, California. West Stanislaus Avenue is the nearest road bordering the site to the south, south Vineland Avenue is the nearest to the west, and south Goldenrod Avenue is the nearest to the east. The proposed 104-lot single-family residential subdivision will be located on 20.38 acres of currently vacant land, assigned Assessor's Parcel Numbers 023-220-34S, -35S, -23S and -51S. The City of Kerman lies just south of SR 180 and is bisected by SR 145.

Important roadways serving the Project are discussed below.

Whitesbridge Road (State Route 180) is an existing east-west four-lane divided roadway in the vicinity of the proposed Project site. In this area, Whitesbridge Road is a two-lane undivided conventional highway west of Siskiyou Avenue, a two- to four-lane arterial divided predominately by a two-way left-turn lane between Siskiyou Avenue and Goldenrod Avenue, and a three-lane undivided conventional highway east of Goldenrod Avenue through the City of Kerman SOI. The City of Kerman draft 2040 General Plan Update Circulation Element designates Whitesbridge Road as an expressway within the City of Kerman.

San Joaquin Avenue is an existing east-west two-lane undivided local street in the vicinity of the proposed Project site. In this area, San Joaquin Avenue exists as a two-lane undivided local street through the City of Kerman SOI. The City of Kerman draft 2040 General Plan Update Circulation Element designates San Joaquin Avenue as a local street.

Stanislaus Avenue is an existing east-west two-lane undivided local street adjacent to the proposed Project site. In this area, Stanislaus Avenue exists as a two-lane undivided local street west of 1st Street, a two-lane undivided collector between 1st Street and Vineland Avenue, and a two-lane undivided local street east of Goldenrod Avenue through the City of Kerman SOI. The City of Kerman Circulation Element designates Stanislaus Avenue as a collector between 1st Street and Vineland Avenue. However, other segments of Stanislaus Avenue are designated as a local street.

Vineland Avenue is an existing north-south two-lane collector divided by a two-way left-turn lane in the vicinity to the proposed Project site. In this area, Vineland Avenue exists as a two-lane undivided local street between Belmont Avenue and Whitesbridge Road, a two-lane local collector divided by a two-way left-turn lane between Whitesbridge Road and A Street, and a two-lane undivided local street between A Street and Jensen Avenue. The City of Kerman draft 2040 General Plan Update Circulation Element designates Vineland Avenue as an arterial between Whitesbridge Road and Church Avenue.

16th Street is an existing north-south two-lane undivided local street in the vicinity of the proposed Project site. In this area, 16th Street exists as a local street between Stanislaus Avenue and A Street. The City of Kerman draft 2040 General Plan Update Circulation Element designates 16th Street as a local street.

Goldenrod Avenue is an existing north-south two to four-lane divided local street in the vicinity of the proposed Project site. In this area, Goldenrod Avenue exists as a two-lane undivided local street between Belmont Avenue and Whitesbridge Road, a four-lane divided arterial between Whitesbridge Road and Stanislaus Avenue, a two-lane divided arterial between Stanislaus Avenue and California Avenue, and a two-lane undivided arterial between California Avenue and Church Avenue. The City of Kerman draft 2040 General Plan Update Circulation Element designates Goldenrod Avenue as an arterial between Whitesbridge Avenue and Church Avenue.

Public Transit

The Fresno County Rural Transit Agency (FCRTA) is the only public transit operator in the City of Kerman. The Westside route runs between the City of Firebaugh and the City of Fresno making two stops in the City of Kerman. The closest bus stop to the Project is located on the west side of the south leg of the intersection of Goldenrod Avenue and Whitesbridge Road (SR 180). This route runs twice daily from Firebaugh to Fresno, stopping in the City of Kerman a total of eight (8) times a day.

A Traffic Impact Analysis (TIA) was prepared for the Project by JLB Traffic Engineering, Inc. on March 17, 2020 (See Appendix E) and is the basis for analysis for the following transportation analysis.

RESPONSES

a. Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Less Than Significant Impact with Mitigation.

Trip Generation Analysis

At build-out, the Project will generate a maximum of 982 daily trips and is anticipated to have 77 a.m. peak hour trips and 103 p.m. peak hour trips (See Table 14 below). Compared to what the City of Kerman anticipated for the existing land use, the Project is expected to generate 6,933 fewer daily trips (129 a.m. and 697 p.m.).

Table 14
Proposed Project Trip Generation

Project Component	Total Daily Trips	AM Peak Hour In	AM Peak Hour Out	PM Peak Hour In	PM Peak Hour Out
Single Family Detached (210)	982	19	58	65	38
		Total: 77		Total: 103	

Level of Service Analysis

The City of Kerman's traffic circulation system is composed of arterials, major and minor collectors, local roadways and alleys. Kerman also contains two expressways, one of which is Whitesbridge Avenue and lies adjacent to the Project running east-west. Vineland Avenue and Goldenrod Avenue are considered north-south arterials, and are in the Project vicinity. The Circulation Element of the City of Kerman 2007 General Plan Update evaluates traffic capacity within the City of Kerman by utilizing the Level of Service (LOS) rating system. A LOS Level of C is considered acceptable by the City of Kerman and is defined as having "stable flow, high volume, speed and maneuverability determined by traffic conditions". The existing traffic volume for Whitesbridge Avenue/SR 180 is LOS Level A east of Madera Avenue and LOS Level B west of Goldenrod Avenue. Vineland Avenue is LOS Level A north of and south of Whitesbridge Avenue. Goldenrod Avenue is LOS Level A north of and south of Whitesbridge Avenue/ SR 180. The TIA confirms that at present, all study intersections in the Project vicinity are at an acceptable LOS during both a.m. and p.m. peak periods. Results of the Cumulative Year 2040 plus Project Level of Service Analysis depict that that all study intersections in the Project vicinity will remain at an acceptable LOS during both a.m. and p.m. peak periods with the exception of Goldenrod Avenue/Kearney Boulevard.

Signal Warrant Analysis for Cumulative Year 2040 plus Project Traffic Conditions

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Cumulative Year 2040 plus Project Traffic Conditions scenario and are provided in Appendix E. The effects of right-turning traffic from the minor approach onto the major approach were taken into account using engineering judgement pursuant to the CA MUTCD guidelines for the preparation of traffic signal warrants. Under this scenario, the intersection of Goldenrod Avenue and Kearney Boulevard is projected to satisfy the peak hour signal warrant during both peak periods. Based on the signal warrant, the intersection operational analysis and engineering judgement, signalization of this intersection is recommended. However, implementation of a single-lane roundabout is also recommended.

Project's Pro-Rate Fair Share of Future Transportation Improvements

The Project's fair share percentage impacts of Project to study intersections projected to fall below their LOS threshold are provided in Table XI of Appendix E. The proposed Project's fair share percentage impacts were calculated pursuant to the Caltrans Guide for the Preparation of Traffic Impact Studies. The Project's pro-rata fair shares were calculated utilizing the Existing volumes, Project Only Trips and Cumulative Year 2040 plus Project volumes. Figure 2 of Appendix E illustrates the Existing traffic volumes, Figure 4 of Appendix E illustrates the Project Only Trips, and Figure 9 of Appendix E illustrates the Cumulative Year 2040 plus Project traffic volumes. Since the critical peak period for the study facilities was determined to be during the AM peak, the AM peak volumes are utilized to determine the Project's pro-rata fair share.

Implementation of TRA-1 will ensure that the intersection of Goldenrod Avenue and Kearney Boulevard will maintain an acceptable LOS with Project buildout. Impacts will be ***less than significant with mitigation*** incorporation.

Mitigation Measures:

TRA-1

The Project applicant shall be responsible for paying fair share fees as identified in Table XI of Appendix E (3.82%) for the improvements to the intersection of Goldenrod Avenue and Kearney Boulevard as needed under the 2040 plus Project Traffic Volumes. The Project applicant shall work with the City of Kerman to develop the estimated construction costs. These fees shall be required in addition to the local and regional impact fee programs and would be required to be paid prior to issuance of building permits.

b. Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

Less Than Significant Impact. Senate Bill (SB) 743 (Steinberg 2013) was approved by then Governor Brown on September 27, 2013. SB 743 created a path to revise the definition of transportation impacts according to CEQA. The revised CEQA Guidelines requiring VMT analysis became effective December 28, 2018; however, agencies have until July 1, 2020 to finalize their local guidelines on VMT analysis. Therefore, as agencies finalize their VMT analysis protocol, CEQA transportation impacts are to be determined using a qualitative VMT Analysis. The intent of SB 743 is to align CEQA transportation study methodology with and promote the statewide goals and policies of reducing vehicle miles traveled (VMT) and greenhouse gases (GHG). Three objectives of SB 743 related to development are to reduce GHG, diversify land uses, and focus on creating a multimodal environment. It is hoped that this will spur infill development.

The Technical Advisory on Evaluating Transportation Impacts in CEQA published by the Governor's Office of Planning and Research (OPR) dated December 2018 acknowledges that lead agencies should set criteria and thresholds for VMT and transportation impacts. However, the Technical Advisory provides guidance to residential, office and retail uses, citing these as the most common land uses. Beyond these three land uses, there is no guidance provided for any other land use type. The Technical Advisory also notes that land uses may have a less than significant impact if located within low VMT areas of a region and suggests that screening maps be used for this determination.

VMT is simply the product of a number of trips and those trips' lengths. The first step in a VMT analysis is to establish the baseline average VMT, which requires the definition of a region. The Technical Advisory states that existing VMT may be measured at the regional or city level. On the contrary, the Technical Advisory also notes that VMT analyses should not be truncated due to "jurisdictional or other boundaries."

Currently, Fresno COG and its member agencies, which include the City of Kerman, have begun the process to develop recommended criteria and thresholds that balance the direction from OPR and the goals of SB 743 with the vision of Kerman and economic development, access to goods and services, and overall quality of life. While these regional recommended criteria are not anticipated to be completed until mid-2020, Fresno COG was able to provide estimated VMT data for the proposed Project. Based on the Fresno COG model run, the Project is anticipated to generate an average of 10.14 VMT per trip. However, there is no established threshold to measure significance. As discussed above, significance criteria are anticipated to be completed mid-2020. As such, impacts are ***less than significant.***

Mitigation Measures: None are required.

c. 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 proposed Project has been designed for ease of access, adequate circulation/movement, and is typical of residential developments in the City of Kerman. On-site circulation patterns do not involve high speeds, sharp curves or dangerous intersections. Although there will be an increase in the volume of vehicles accessing the site and surrounding areas, the proposed Project will not present a substantial increase in hazards. Any impacts are considered ***less than significant.***

Mitigation Measures: None are required.

d. Result in inadequate emergency access?

Less Than Significant Impact. The proposed Project does not involve a change to any emergency response plan. Access point to the Project are along the east and south boundaries of the development and the site will remain accessible to emergency vehicles of all sizes. As such, potential impacts are ***less than significant.***

Mitigation Measures: None are required.

XVIII. TRIBAL CULTURAL RESOURCES

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☐	☒	☐
ii. 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 the Public Resources Code section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☒	☐

RESPONSES

a). Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or

ii) 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 Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Less Than Significant Impact. In accordance with Assembly Bill (AB) 52 and Senate Bill (SB) 18, potentially affected Tribes were formally notified of this Project and were given the opportunity to request consultation on the Project. The City contacted the Native American Heritage Commission, requesting a contact list of applicable Native American Tribes, which was provided to the City. The City provided letters to the listed Tribes on March 19, 2020, notifying them of the Project and requesting consultation, if desired. The City did not receive any responses from the tribes contacted. Therefore, there is a ***less than significant impact***.

Mitigation Measures: None are required.

XIX. UTILITIES AND SERVICE SYSTEMS

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	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 waste?	☐	☐	☒	☐

ENVIRONMENTAL SETTING

The proposed Project will be required to connect to water, sewer, stormwater and wastewater services provided by the City of Kerman and may be subject to water use fees and/or development fees to be provided such service. In addition, the Project will require solid waste disposal services.

The City of Kerman contracts with Allied Waste Management Services for solid waste collection. Allied Waste utilizes the American Avenue Landfill, approximately 6 miles southwest of the City.

RESPONSES

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?

Less Than Significant Impact. The proposed Project will not require or result in the relocation or construction of new or expanded water or wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities that will result in environmental impacts that are not analyzed elsewhere in this document. Any impacts are ***less than significant.***

Mitigation Measures: None are required.

b. 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. Water service would be provided to the Project by the City of Kerman. The City draws groundwater from five wells located in the Kerman community, which are located at depths varying from 300 to 900 feet to penetrate the underlying aquifers. The production capacity of these wells are approximately 5,700 gallons per minute. According to Kerman's Urban Water Management Plan (adopted in 2015), Kerman's water supply is sufficient to meet both "Single Dry Year" and "Multiple Dry Year" scenarios; however, the Management Plan emphasizes that it is essential that the City continue its current efforts towards conservation, groundwater recharge and groundwater management. The Project will be required to pay the City of Kerman's water system impact fees. Funds accrued under this fee are used to make capital improvements to the City's water system, including conservation improvements. Impacts are ***less than significant.***

Mitigation Measures: None are required.

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?

Less Than Significant Impact. The proposed Project will result in wastewater from residential units that will be discharged into the City's existing wastewater treatment system. The wastewater will be typical of other urban/residential developments consisting of bathrooms, kitchen drains and other similar features. The project will not discharge any unusual or atypical wastewater that would violate the City's waste discharge requirements. Therefore, with compliance to applicable standards and payment of required fees and connection charges, the Project would not result in a significant impact related to construction or expansions of existing wastewater treatment facilities. The impact of the Project on wastewater treatment is ***less than significant.***

Mitigation Measures: None are required.

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 waste?

Less Than Significant Impact. The City of Kerman's solid waste is primarily landfilled at the American Avenue Landfill in Tranquility. The landfill is permitted to accept 2,200 tons per day and has a permitted capacity of 29.3 million cubic yards. The original closure date was 2031; however, due to enhanced recycling efforts, particularly on the part of the City of Fresno, the closure date has been extended to 2050.

The proposed Project would be required to comply with all federal, State, and local regulations related to solid waste. Furthermore, the proposed Project would be required to comply with all standards related to solid waste diversion, reduction, and recycling during project construction and operation. The proposed Project will comply with all federal, state and local statutes and regulations related to solid waste. As such, any impacts would be ***less than significant.***

Mitigation Measures: None are required.

XX. 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 Incorporation	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?	☐	☐	☒	☐
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?	☐	☐	☒	☐

ENVIRONMENTAL SETTING

The City of Kerman's planning area is composed of urbanized portions of land and the surrounding agricultural fields. North Central Fire Protection District serves the entire area and is generally located about three minutes away from any service area in Kerman. According to the 2007 Kerman General Plan Update, Kerman has established a good record in terms of fire safety. The City has enacted Fire Development Impact Fees to provide funding for the potential development of an additional Fire Station and equipment, in order to better serve the growing community.

The proposed Project site's elevation is approximately 222 feet above sea level in an area of intense urban uses. The Project site is located on adjacent parcels south of west Whitesbridge Avenue/SR 180 in eastern Kerman, California. The immediate vicinity is comprised of single-family tract homes and fair grounds to the west, commercial business and row crops to the north, a commercial shopping center to the east and single-family residences and an assisted living facility to the south of the site. Goldenrod Elementary School and Golden Sunset Memorial Park lie just southeast of the site.

RESPONSES

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?

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?

Less Than Significant Impact. The proposed Project is located in an area developed with commercial, agricultural and residential uses, which precludes the risk of wildfire. The area is flat in nature which would limit the risk of downslope flooding and landslides, and limit any wildfire spread. The proposed Project does not require the installation or maintenance of associated infrastructure that would increase wildfire risk or result in impacts to the environment.

To receive building permits, the proposed Project would be required to be in compliance with the adopted emergency response plan. As such, any wildfire risk to the project structures or people would be ***less than significant.***

Mitigation Measures: None are required.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Does the project have the potential to 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, 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?	☐	☒	☐	☐

RESPONSES

a. Does the project have the potential to 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, 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. The analyses of environmental issues contained in this Initial Study indicate that the proposed Project is not expected to have substantial impact on the environment or on any resources identified in the Initial Study. Mitigation measures have been incorporated in the Project to reduce all potentially significant impacts to ***less than significant***.

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. CEQA Guidelines Section 15064(i) states that a Lead Agency shall consider whether the cumulative impact of a project is significant and whether the effects of the project are cumulatively considerable. The assessment of the significance of the cumulative effects of a project must, therefore, be conducted in connection with the effects of past projects, other current projects, and probable future projects. Due to the nature of the Project and consistency with environmental policies, incremental contributions to impacts are considered less than cumulatively considerable. The proposed Project would not contribute substantially to adverse cumulative conditions, or create any substantial indirect impacts (i.e., increase in population could lead to an increase need for housing, increase in traffic, air pollutants, etc.). The impact is ***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. The analyses of environmental issues contained in this Initial Study indicate that the project is not expected to have substantial impact on human beings, either directly or indirectly. Mitigation measures have been incorporated in the Project to reduce all potentially significant impacts to ***less than significant.***

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Appendix A

Air Quality & GHG Analysis Report

Mitchell Air Quality Consulting

Air Quality and Greenhouse Gas Analysis Report
Omni Land Development, LLC Tract No. 6302
City of Kerman, California

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ACRONYMS AND ABBREVIATIONS

$\mu g/m^3$	micrograms per cubic meter
AB	Assembly Bill
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
BAU	Business as Usual
CalEEMod	California Emissions Estimator Model
CAPCOA	California Air Pollution Control Officers Association
CEQA	California Environmental Quality Act
CO	carbon monoxide
CO_2	carbon dioxide
District	San Joaquin Valley Air Pollution Control District
DPM	diesel particulate matter
EMFAC	EMission FACtors Model
EPA	United States Environmental Protection Agency
Fresno COG	Fresno Council of Governments
GAMAQI	Guidance for Assessing and Mitigating Air Quality Impacts
GHG Rx	Greenhouse Gas Reduction Exchange
GHG(s)	greenhouse gas(es)
HAP	hazardous air pollutant
HRA	health risk assessment
IPCC	United Nations Intergovernmental Panel on Climate Change
MAQC	Mitchell Air Quality Consulting
$MMTCO_2e$	million metric tons of carbon dioxide equivalent
$MTCO_2e$	metric tons of carbon dioxide equivalent
NO_X	nitrogen oxides
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
ppb	parts per billion
ppm	parts per million
ROG	reactive organic gases
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SJVAPCD	San Joaquin Valley Air Pollution Control District
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO_X	sulfur oxides
VOC	volatile organic compounds

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SECTION 1: EXECUTIVE SUMMARY

1.1—Purpose and Methods of Analysis

The following air quality and greenhouse gas (GHG) analysis was prepared to evaluate whether the estimated criteria air pollutants, toxic air contaminants (TACs), and GHG emissions generated from the development of Tract No. 6302 (project) would cause significant impacts to air resources in the project area. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000, et seq.). The methodology follows the Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI) prepared by the San Joaquin Valley Air Pollution Control District (SJVAPCD or District) for quantification of emissions and evaluation of potential impacts to air resources (SJVAPCD 2015a) and the SJVAPCD's Guidance for Valley Land-Use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA (SJVAPCD 2009).

1.2—Project Description

The project includes the construction and development of a 104-lot tentative subdivision (single-family) on approximately 20 acres of a 31-acre site. The project is located south of West Whitesbridge Avenue between North Vineland Avenue and North Goldenrod Avenue in the City of Kerman, California. The Assessor's Parcel Numbers are 023-220-23s, 023-220-34s, 023-220-35s, and 023-330-51s. The project requires approval of a General Plan Amendment, Zone Change, and Tentative Tract Map. The applicant is also processing a Tentative Parcel Map that will create five commercial parcels. Although not currently proposed for development, the commercial parcels will be subject to a separate environmental review when actual development is identified. The Air Quality and Greenhouse Gas Analysis applies only to the effects of the residential subdivision.

The project's regional vicinity location is shown in Figure 1; an aerial view of the local vicinity is provided in Figure 2; and the Tentative Tract Map is provided in Figure 3.

1.3—Summary of Analysis Results

The following is a summary of the analysis results. As shown below, the project would result in less than significant impacts for all air quality and GHG impact criteria analyzed.

Impact AIR-1: The project would not conflict with or obstruct implementation of the applicable air quality plan. **Less than significant impact.**

Impact AIR-2: The project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors). **Less than significant impact.**

Impact AIR-3: The project would not expose sensitive receptors to substantial pollutant concentrations. **Less than significant impact.**

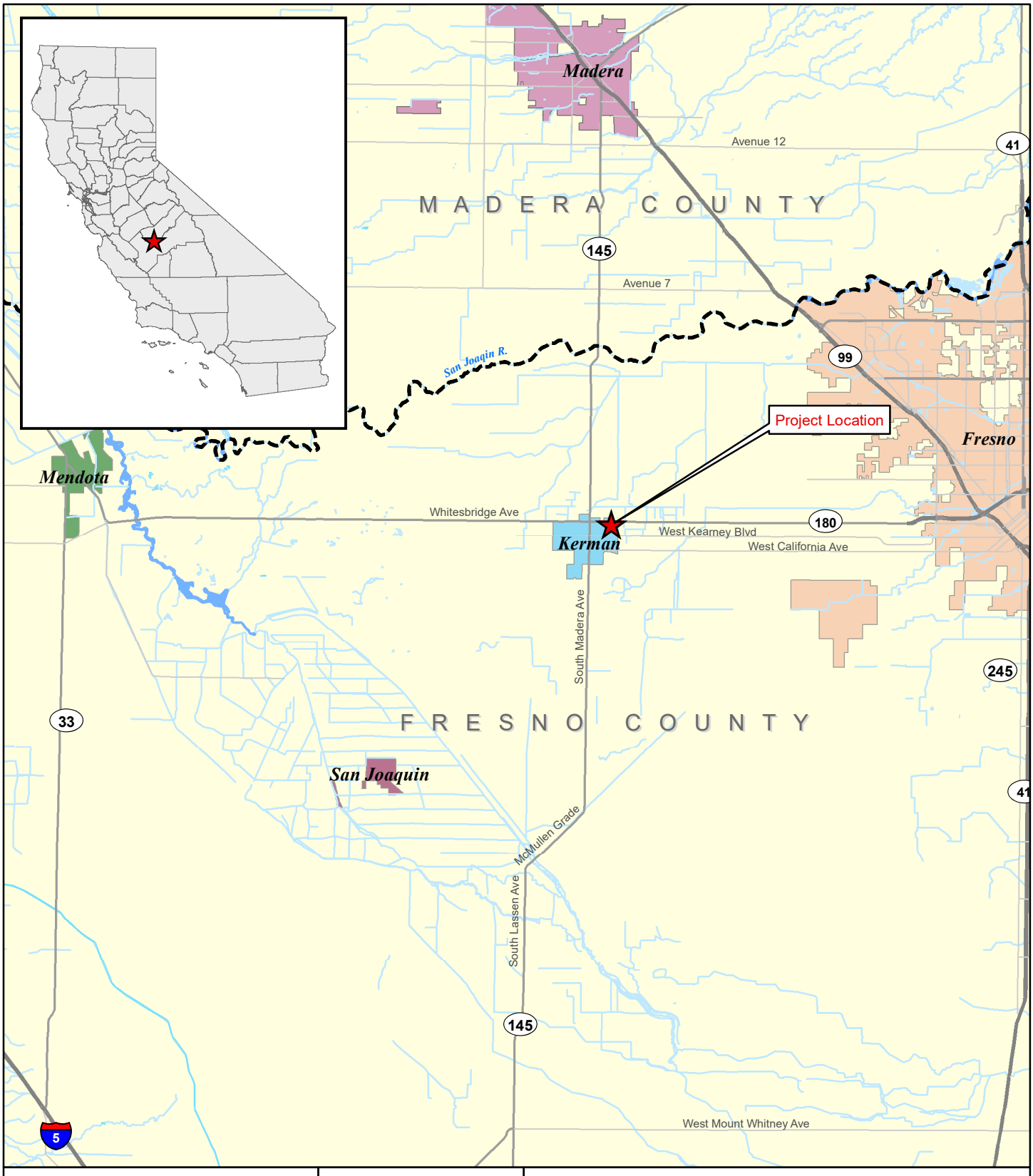
Impact AIR-4: The project would not create objectionable odors affecting a substantial number of people. **Less than significant impact.**

Impact GHG-1: The project would not generate direct or indirect greenhouse gas emissions that would result in a significant impact on the environment. **Less than significant impact.**

Impact GHG-2: The project would not conflict with any applicable plan, policy or regulation of an agency adopted to reduce the emissions of greenhouse gases. **Less than significant impact**.

1.4—Standard Conditions and Mitigation Measures Applied to the Project

No mitigation measures beyond compliance with mandatory regulations were required to demonstrate that the project would have less than significant for air quality, health risk, and GHG impacts.



Legend

Project Location

County Boundary

Sources: Fresno County GIS; Madera County GIS; CalAtlas; Open StreetMap. Map date: March 25, 2020.

N

0 2 4

Miles

1:300,000

OMNI LAND DEVELOPMENT, LLC
AIR QUALITY AND GREENHOUSE GAS ANALYSIS REPORT
TRACT 6302

Figure 1. Regional Location Map

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- Project Boundary
- Kerman City Limits

0 500 1,000

Feet

1:12,000

Sources: Fresno County GIS; Google Maps; ArcGIS Online World Imagery Map Service. Map date: March 25, 2020.

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TRACT 6302

Figure 2. Vicinity Map

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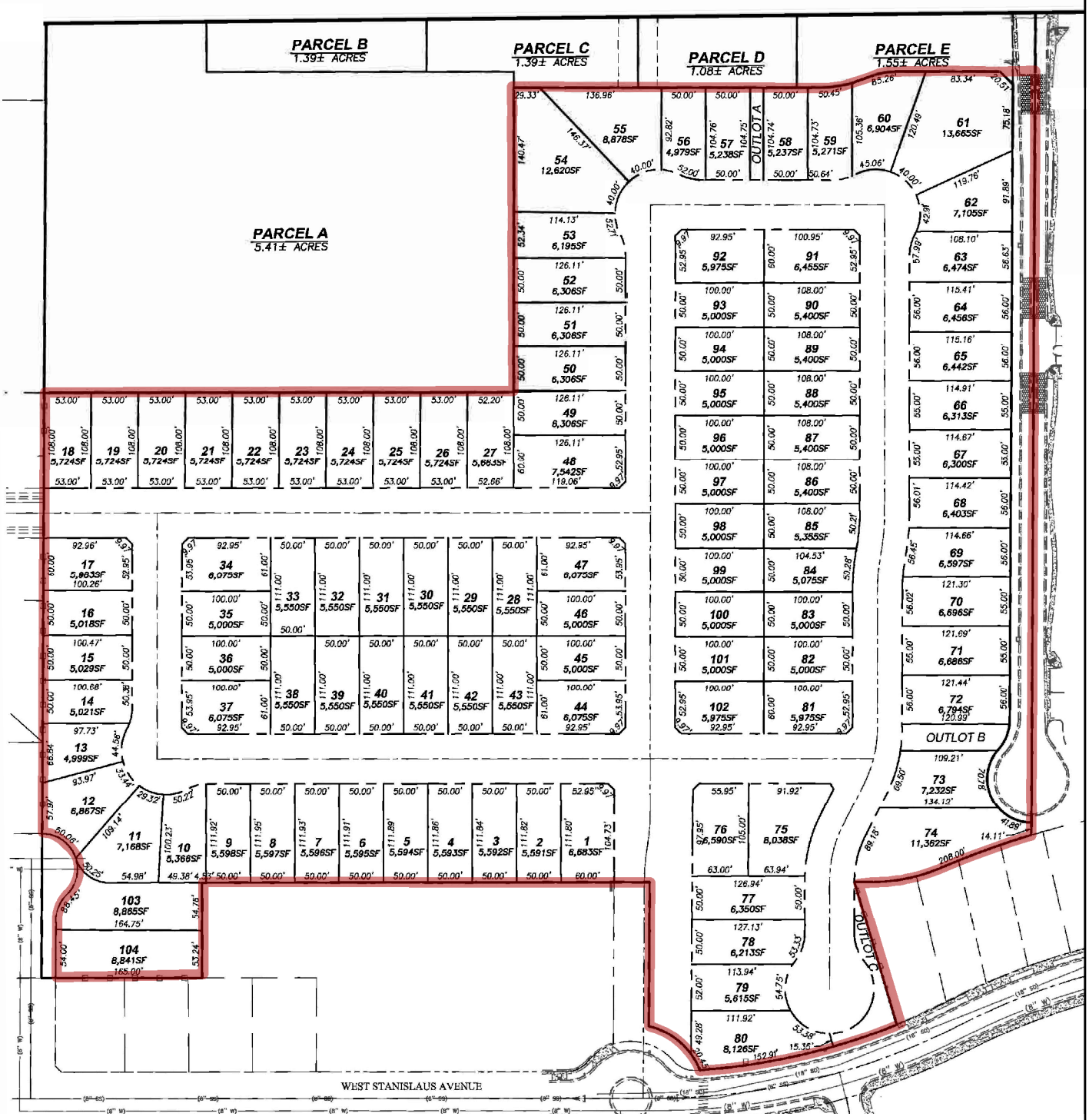

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Project Boundary

0 100 200

Feet

1:2,000

Source: QK, Inc., 3-18-2020.
Map date: March 24, 2020.

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TRACT 6302

Figure 3. Tract Map

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SECTION 2: AIR QUALITY SETTING

2.1—Environmental Setting

Air quality impacts are both local and regional. Regional and local air quality is impacted by topography, dominant airflows, atmospheric inversions, location, and season. The project is located in the San Joaquin Valley Air Basin (Air Basin), which experiences some of the most challenging environmental conditions for air quality in the nation. The following section describes these conditions as they pertain to the Air Basin. The information in this section is primarily from the SJVAPCD's GAMAQI (SJVAPCD 2015a).

2.1.1 - San Joaquin Valley Air Basin

Topography

The topography of a region is important for air quality because mountains can block airflow that would help disperse pollutants, and can channel air from upwind areas that transports pollutants to downwind areas. The SJVAPCD covers the entirety of the Air Basin. The Air Basin is generally shaped like a bowl. It is open in the north and is surrounded by mountain ranges on all other sides. The Sierra Nevada mountains are along the eastern boundary (8,000 to 14,000 feet in elevation), the Coast Ranges are along the western boundary (3,000 feet in elevation), and the Tehachapi Mountains are along the southern boundary (6,000 to 8,000 feet in elevation).

Climate

The climate is important for air quality because of differences in the atmosphere's ability to trap pollutants close to the ground, which creates adverse air quality; inversely, the atmosphere's ability to rapidly disperse pollutants over a wide area prevents high concentrations from accumulating under different climatic conditions. The Air Basin has an "inland Mediterranean" climate and is characterized by long, hot, dry summers and short, foggy winters. Sunlight can be a catalyst in the formation of some air pollutants (such as ozone); the Air Basin averages over 260 sunny days per year.

Inversion layers are significant in determining pollutant concentrations. Concentration levels can be related to the amount of mixing space below the inversion. Temperature inversions that occur on the summer days are usually encountered 2,000 to 2,500 feet above the valley floor. In winter months, overnight inversions occur 500 to 1,500 feet above the valley floor.

Dominant airflows provide the driving mechanism for transport and dispersion of air pollution. The mountains surrounding the Air Basin form natural horizontal barriers to the dispersion of air contaminants. The wind generally flows south-southeast through the valley, through the Tehachapi Pass and into the Mojave Desert Air Basin portion of Kern County. As the wind moves through the Air Basin, it mixes with the air pollution generated locally, generally transporting air pollutants from the north to the south in the summer and in a reverse flow in the winter.

The winds and unstable air conditions experienced during the passage of winter storms result in periods of low pollutant concentrations and excellent visibility. Between winter storms, high pressure and light winds allow cold moist air to pool on the San Joaquin Valley floor. This creates strong, low-

level temperature inversions and very stable air conditions, which can lead to Tule fog. Wintertime conditions favorable to fog formation are also conditions favorable to high concentrations of $PM_{2.5}$ and PM_{10}.

2.2—Regulatory Setting

Air pollutants are regulated to protect human health and for secondary effects such as visibility and building soiling. The Clean Air Act of 1970 tasks the United States Environmental Protection Agency (EPA) with setting air quality standards. The State of California also sets air quality standards, which are in some cases more stringent than federal standards, in addition to addressing additional pollutants. The following section describes these federal and state standards and the health effects of the regulated pollutants.

2.2.1 - Clean Air Act

Congress established much of the basic structure of the Clean Air Act (CAA) in 1970, and made major revisions in 1977 and 1990. Six common air pollutants (also known as criteria pollutants) are addressed in the CAA: particulate matter, ground-level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead. The EPA labels these pollutants as criteria air pollutants because they are regulated by developing human health-based and/or environmentally based criteria (science-based guidelines), which sets permissible levels. The set of limits based on human health are called primary standards. Another set of limits intended to prevent environmental and property damage are called secondary standards (EPA 2014). The federal standards are called National Ambient Air Quality Standards (NAAQS). The air quality standards provide benchmarks for determining whether air quality is healthy at specific locations and whether development activities will cause or contribute to a violation of the standards. The criteria pollutants are:

- Ozone
- Nitrogen dioxide (NO_2)
- Lead
- Particulate matter (PM_{10} and $PM_{2.5}$)
- Carbon monoxide (CO)
- Sulfur dioxide

The federal standards were set to protect public health, including that of sensitive individuals; thus, the EPA is tasked with updating the standards as more medical research is available regarding the health effects of the criteria pollutants. Primary federal standards are the levels of air quality necessary, with an adequate margin of safety, to protect the public health (ARB 2016).

2.2.2 - California Clean Air Act

The California Legislature enacted the California Clean Air Act (CCAA) in 1988 to address air quality issues of concern not adequately addressed by the federal CAA at the time. California's air quality problems were and continue to be some of the most severe in the nation, and required additional actions beyond the federal mandates. The California Air Resources Board (ARB) administers California Ambient Air Quality Standards (CAAQS) for the 10 air pollutants designated in the CCAA. The 10 state air pollutants are the six federal standards listed above as well visibility-reducing particulates, hydrogen sulfide, sulfates, and vinyl chloride. The EPA authorized California to adopt its own regulations for motor vehicles and other sources that are more stringent than similar federal regulations implementing the CAA. Generally, the planning requirements of the CCAA are less

stringent than the federal CAA; therefore, consistency with the CAA will also demonstrate consistency with the CCAA.

2.2.3 - Toxic Air Contaminants

A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. There are no ambient air quality standards for TAC emissions. TACs are regulated in terms of health risks to individuals and populations exposed to the pollutants. The 1990 Clean Air Act Amendments significantly expanded the EPA's authority to regulate hazardous air pollutants (HAP). Section 112 of the Clean Air Act lists 187 hazardous air pollutants to be regulated by source category. Authority to regulate these pollutants was delegated to individual states. ARB and local air districts regulate TACs and HAPs in California.

2.2.4 - Air Pollutant Description and Health Effects

The federal and state ambient air quality standards, relevant effects, properties, and sources of the pollutants are summarized in Table 1.

Table 1: Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Ozone	1 Hour	0.09 ppm	—	Irritate respiratory system; reduce lung function; breathing pattern changes; reduction of breathing capacity; inflame and damage cells that line the lungs; make lungs more susceptible to infection; aggravate asthma; aggravate other chronic lung diseases; cause permanent lung damage; some immunological changes; increased mortality risk; vegetation and property damage.	Ozone is a photochemical pollutant as it is not emitted directly into the atmosphere, but is formed by a complex series of chemical reactions between volatile organic compounds (VOC), NO_X, and sunlight. Ozone is a regional pollutant that is generated over a large area and is transported and spread by the wind.	Ozone is a secondary pollutant; thus, it is not emitted directly into the lower level of the atmosphere. The primary sources of ozone precursors (VOC and NO_X) are mobile sources (on-road and off-road vehicle exhaust).
	8 Hour	0.070 ppm	0.070 ppm[f]			
Carbon monoxide (CO)	1 Hour	20 ppm	35 ppm	Ranges depending on exposure: slight headaches; nausea; aggravation of angina pectoris (chest pain) and other aspects of coronary heart disease; decreased exercise tolerance in persons with peripheral vascular disease and lung disease; impairment of central nervous system functions; possible increased risk to fetuses; death.	CO is a colorless, odorless, toxic gas. CO is somewhat soluble in water; therefore, rainfall and fog can suppress CO conditions. CO enters the body through the lungs, dissolves in the blood, replaces oxygen as an attachment to hemoglobin, and reduces available oxygen in the blood.	CO is produced by incomplete combustion of carbon-containing fuels (e.g., gasoline, diesel fuel, and biomass). Sources include motor vehicle exhaust, industrial processes (metals processing and chemical manufacturing), residential wood burning, and natural sources.
	8 Hour	9.0 ppm	9 ppm			
Nitrogen dioxide[b] (NO_2)	1 Hour	0.18 ppm	0.100 ppm	Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; contribution to atmospheric discoloration; increased visits to hospital for respiratory illnesses.	During combustion of fossil fuels, oxygen reacts with nitrogen to produce nitrogen oxides—NO_X (NO, NO_2, NO_3, N_2O, N_2O_3, N_2O_4, and N_2O_5). NO_X is a precursor to ozone, PM_{10}, and $PM_{2.5}$ formation. NO_X can react with compounds to form nitric acid and related small particles and result in PM-related health effects.	NO_X is produced in motor vehicle internal combustion engines and fossil fuel-fired electric utility and industrial boilers. Nitrogen dioxide (NO_2) forms quickly from NO_X emissions. NO_2 concentrations near major roads can be 30 to 100 percent higher than those at monitoring stations.
	Annual	0.030 ppm	0.053 ppm			

Table 1 (cont.): Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Sulfur dioxide[c] (SO_2)	1 Hour	0.25 ppm	0.075 ppm	Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma. Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient sulfur dioxide levels. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.	Sulfur dioxide is a colorless, pungent gas. At levels greater than 0.5 ppm, the gas has a strong odor, similar to rotten eggs. Sulfur oxides (SO_X) include sulfur dioxide and sulfur trioxide. Sulfuric acid is formed from sulfur dioxide, which can lead to acid deposition and can harm natural resources and materials. Although sulfur dioxide concentrations have been reduced to levels well below state and federal standards, further reductions are desirable because sulfur dioxide is a precursor to sulfate and PM_{10}.	Human-caused sources include fossil-fuel combustion, mineral ore processing, and chemical manufacturing. Volcanic emissions are a natural source of sulfur dioxide. The gas can also be produced in the air by dimethylsulfide and hydrogen sulfide. Sulfur dioxide is removed from the air by dissolution in water, chemical reactions, and transfer to soils and ice caps. The sulfur dioxide levels in the State are well below the maximum standards.
	3 Hour	—	0.5 ppm			
	24 Hour	0.04 ppm	0.14 (for certain areas)			
	Annual	—	0.030 ppm (for certain areas)			
Particulate matter (PM_{10})	24 Hour	50 µg/m^3	150 µg/m^3	• Short-term exposure (hours/days): irritation of the eyes, nose, throat; coughing; phlegm; chest tightness; shortness of breath; aggravates existing lung disease, causing asthma attacks and acute bronchitis; those with heart disease can suffer heart attacks and arrhythmias. • Long-term exposure: reduced lung function; chronic bronchitis; changes in lung morphology; death.	Suspended particulate matter is a mixture of small particles that consist of dry solid fragments, droplets of water, or solid cores with liquid coatings. The particles vary in shape, size, and composition. PM_{10} refers to particulate matter that is between 2.5 and 10 microns in diameter (1 micron is one-millionth of a meter). $PM_{2.5}$ refers to particulate matter that is 2.5 microns or less in diameter, about one-thirtieth the size of the average human hair.	Stationary sources include fuel or wood combustion for electrical utilities, residential space heating, and industrial processes; construction and demolition; metals, minerals, and petrochemicals; wood products processing; mills and elevators used in agriculture; erosion from tilled lands; waste disposal; and recycling. Mobile or transportation-related sources are from vehicle exhaust and road dust. Secondary particles form from reactions in the atmosphere.
	Mean	20 µg/m^3	—			
Particulate matter ($PM_{2.5}$)	24 Hour	—	35 µg/m^3			
	Annual	12 µg/m^3	12.0 µg/m^3			
Visibility-reducing particles	8 Hour	See note below[d]				

Table 1 (cont.): Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Sulfates	24 Hour	25 µg/m^3	—	(a) Decrease in ventilatory function; (b) aggravation of asthmatic symptoms; (c) aggravation of cardio-pulmonary disease; (d) vegetation damage; (e) degradation of visibility; (f) property damage.	The sulfate ion is a polyatomic anion with the empirical formula SO_4^{2-}. Sulfates occur in combination with metal and/or hydrogen ions. Many sulfates are soluble in water.	Sulfates are particulates formed through the photochemical oxidation of sulfur dioxide. In California, the main source of sulfur compounds is combustion of gasoline and diesel fuel.
Lead[e]	30-day	1.5 µg/m^3	—	Lead accumulates in bones, soft tissue, and blood and can affect the kidneys, liver, and nervous system. It can cause impairment of blood formation and nerve conduction, behavior disorders, mental retardation, neurological impairment, learning deficiencies, and low IQ.	Lead is a solid heavy metal that can exist in air pollution as an aerosol particle component. Leaded gasoline was used in motor vehicles until around 1970. Lead concentrations have not exceeded state or federal standards at any monitoring station since 1982.	Lead ore crushing, lead-ore smelting, and battery manufacturing are currently the largest sources of lead in the atmosphere in the United States. Other sources include dust from soils contaminated with lead-based paint, solid waste disposal, and crustal physical weathering.
	Quarter	—	1.5 µg/m^3			
	Rolling 3-month average	—	0.15 µg/m^3			
Vinyl chloride[e]	24 Hour	0.01 ppm	—	Short-term exposure to high levels of vinyl chloride in the air causes central nervous system effects, such as dizziness, drowsiness, and headaches. Epidemiological studies of occupationally exposed workers have linked vinyl chloride exposure to development of a rare cancer, liver angiosarcoma, and have suggested a relationship between exposure and lung and brain cancers.	Vinyl chloride, or chloroethene, is a chlorinated hydrocarbon and a colorless gas with a mild, sweet odor. In 1990, ARB identified vinyl chloride as a toxic air contaminant and estimated a cancer unit risk factor.	Most vinyl chloride is used to make polyvinyl chloride plastic and vinyl products, including pipes, wire and cable coatings, and packaging materials. It can be formed when plastics containing these substances are left to decompose in solid waste landfills. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites.
Hydrogen sulfide	1 Hour	0.03 ppm	—	High levels of hydrogen sulfide can cause immediate respiratory arrest. It can irritate the eyes and respiratory tract and cause	Hydrogen sulfide (H_2S) is a flammable, colorless, poisonous gas that smells like rotten eggs.	Manure, storage tanks, ponds, anaerobic lagoons, and land application sites are the primary sources of hydrogen sulfide.

Table 1 (cont.): Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
				headache, nausea, vomiting, and cough. Long exposure can cause pulmonary edema.		Anthropogenic sources include the combustion of sulfur-containing fuels (oil and coal).
Volatile organic compounds (VOC)		There are no state or federal standards for VOCs because they are not classified as criteria pollutants.		Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations because of interference with oxygen uptake. In general, concentrations of VOCs are suspected to cause eye, nose, and throat irritation; headaches; loss of coordination; nausea; and damage to the liver, the kidneys, and the central nervous system. Many VOCs have been classified as toxic air contaminants.	Reactive organic gases (ROG), or VOCs, are defined as any compound of carbon—excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate—that participates in atmospheric photochemical reactions. Although there are slight differences in the definition of ROG and VOCs, the two terms are often used interchangeably.	Indoor sources of VOCs include paints, solvents, aerosol sprays, cleansers, tobacco smoke, etc. Outdoor sources of VOCs are from combustion and fuel evaporation. A reduction in VOC emissions reduces certain chemical reactions that contribute to the formulation of ozone. VOCs are transformed into organic aerosols in the atmosphere, which contribute to higher PM_{10} and lower visibility.
Diesel particulate matter (DPM)		There are no ambient air quality standards for DPM.		Some short-term (acute) effects of DPM exposure include eye, nose, throat, and lung irritation, coughs, headaches, light-headedness, and nausea. Studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems. Human studies on the carcinogenicity of DPM demonstrate an increased risk of lung cancer, although the increased risk cannot be clearly attributed to diesel exhaust exposure.	DPM is a source of $PM_{2.5}$—diesel particles are typically 2.5 microns and smaller. Diesel exhaust is a complex mixture of thousands of particles and gases that is produced when an engine burns diesel fuel. Organic compounds account for 80 percent of the total particulate matter mass, which consists of compounds such as hydrocarbons and their derivatives, and polycyclic aromatic hydrocarbons and their derivatives. Fifteen polycyclic aromatic hydrocarbons are confirmed carcinogens, a number of which are found in diesel exhaust.	Diesel exhaust is a major source of ambient particulate matter pollution in urban environments. Typically, the main source of DPM is from combustion of diesel fuel in diesel-powered engines. Such engines are in on-road vehicles such as diesel trucks, off-road construction vehicles, diesel electrical generators, and various pieces of stationary construction equipment.

Table 1 (cont.): Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources

Notes:
ppm = parts per million (concentration) $\mu g/m^3$ = micrograms per cubic meter Annual = Annual Arithmetic Mean 30-day = 30-day average Quarter = Calendar quarter

[a] Federal standard refers to the primary national ambient air quality standard, or the levels of air quality necessary, with an adequate margin of safety to protect the public health. All standards listed are primary standards except for 3 Hour SO_2, which is a secondary standard. A secondary standard is the level of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[b] To attain the 1-hour NO_2 national standard, the 3-year average of the annual 98^{th} percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 parts per billion (ppb) (0.100 ppm).

[c] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

[d] Visibility-reducing particles: In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are “extinction of 0.23 per kilometer” and “extinction of 0.07 per kilometer” for the statewide and Lake Tahoe Air Basin standards, respectively.

[e] The ARB has identified lead and vinyl chloride as “toxic air contaminants” with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[f] The EPA Administrator approved a revised 8-hour ozone standard of 0.07 ppb on October 1, 2015. The new standard went into effect 60 days after publication of the Final Rule in the Federal Register. The Final Rule was published in the Federal Register on October 26, 2015 and became effective on December 28, 2015.

Source of effects, properties, and sources: South Coast Air Quality Management District 2007; California Environmental Protection Agency 2002; California Air Resources Board 2009a; U.S. Environmental Protection Agency 2003, 2009a, 2009b, 2010, 2011, 2012a and 2012b; National Toxicology Program 2011 and 2016.
Source of standards: California Air Resources Board 2013a.

Several pollutants listed in Table 1 are not addressed in this analysis. Analysis of lead, hydrogen sulfide, sulfates, and vinyl chloride are not included in this report because no new sources of these pollutant emissions are anticipated with the project. Visibility-reducing particles are not explicitly addressed in this analysis because particulate matter is addressed as PM_{10} and $PM_{2.5}$.

Toxic Air Contaminants Health Effects

A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. There are no ambient air quality standards for TAC emissions. TACs are regulated in terms of health risks to individuals and populations exposed to the pollutants. The 1990 Clean Air Act Amendments significantly expanded the EPA's authority to regulate hazardous air pollutants. Section 112 of the Clean Air Act lists 187 hazardous air pollutants to be regulated by source category. Authority to regulate these pollutants was delegated to individual states. ARB and local air districts regulate TACs and hazardous air pollutants in California.

Exposures to TACs emissions can have both chronic long-term (over a year or longer) and acute short-term (over a period of hours) health impacts. The TACs of greatest concern are those that cause serious health problems or affect many people. Health problems can include cancer, respiratory irritation, nervous system problems, and birth defects. Some health problems occur very soon after a person inhales a TAC. These immediate effects may be minor, such as watery eyes, or they may be serious, such as life-threatening lung damage. Other health problems may not appear until many months or years after a person's first exposure to the TAC. Cancer is one example of a delayed health problem.

A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. The California Almanac of Emissions and Air Quality—2009 Edition (ARB 2009b) presents the relevant concentration and cancer risk data for the ten TACs that pose the most substantial health risk in California based on available data. The ten TACs are acetaldehyde, benzene, 1.3-butadiene, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and diesel particulate matter (DPM).

Some studies indicate that DPM poses the greatest health risk among the TACs listed above. A 10-year research program (ARB 1998) demonstrated that DPM from diesel-fueled engines is a human carcinogen and that chronic (long-term) inhalation exposure to DPM poses a chronic health risk. In addition to increased risk of lung cancer, exposure to diesel exhaust can have other health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause a cough, headaches, lightheadedness, and nausea. Diesel exhaust is a major source of fine particulate pollution as well, and studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems.

DPM differs from other TACs in that it is not a single substance, but a complex mixture of hundreds of substances. Although DPM is emitted by diesel-fueled, internal combustion engines, the

composition of the emissions varies, depending on: engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. Unlike the other TACs, however, no ambient monitoring data are available for DPM because no routine measurement method currently exists. The ARB has made preliminary concentration estimates based on a DPM exposure method. This method uses the ARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of DPM.

Health risks attributable to the top 10 TACs listed above are available from the ARB as part of its California Almanac of Emissions and Air Quality. As shown therein for data collected at the First Street air monitoring station in Fresno, cancer risks attributable to all of the listed TACs above with the exception of DPM have declined about 70 percent from the mid-1990s to 2007. Risks associated with DPM emissions are provided only for the year 2000 and have not been updated in the Almanac. Although more recent editions of the Almanac do not provide estimated risk, they do provide emission inventories for DPM for later years. The 2013 Almanac provides emission inventory trends for DPM from 2000 through 2035. The same Almanac reports that DPM emissions were reduced in the SJVAB from 16 tons per day in 2000 to 11 tons per day in 2010, a 31 percent decrease. DPM emissions in the San Joaquin Valley are projected to decrease to 6 tons per day by 2015, a 62 percent reduction from year 2000 levels. ARB predicts a reduction to three tons per day by 2035, which would be an 81 percent reduction from year 2000 levels. Continued implementation of the ARB's Diesel Risk Reduction Plan is expected to provide continued reductions in DPM through 2020 and beyond through regulations on this source (ARB 2013b).

Asbestos

Asbestos is the name given to a number of naturally occurring fibrous silicate minerals that have been mined for their useful properties such as thermal insulation, chemical and thermal stability, and high tensile strength. The three most common types of asbestos are chrysotile, amosite, and crocidolite. Chrysotile, also known as white asbestos, is the most common type of asbestos found in buildings. Chrysotile makes up approximately 90 to 95 percent of all asbestos contained in buildings in the United States. Exposure to asbestos is a health threat; exposure to asbestos fibers may result in health issues such as lung cancer, mesothelioma (a rare cancer of the thin membranes lining the lungs, chest, and abdominal cavity), and asbestosis (a non-cancerous lung disease that causes scarring of the lungs). Exposure to asbestos can occur during demolition or remodeling of buildings that were constructed prior to the 1977 ban on asbestos for use in buildings. Exposure to naturally occurring asbestos can occur during soil-disturbing activities in areas with deposits present. No naturally occurring asbestos is located near the project site.

2.3—Existing Air Quality Conditions

The local air quality can be evaluated by reviewing relevant air pollution concentrations near the project area. Table 2 summarizes 2016 through 2018 published monitoring data, which is the most recent three-year period available. Data were obtained from the closest air monitoring stations with data available. The table displays data from the Madera-Pump Yard monitoring station (located approximately 9.4 miles north of the project site), and the Fresno-Garland monitoring station (located approximately 15.2 miles east of the project site). The monitoring stations are the closest to the project site for each pollutant. The data show that during the past few years, the project area has

exceeded the standards for ozone (state and national), PM_{10} (state), and $PM_{2.5}$ (national). The data in the table reflect the concentration of the pollutants in the air, measured using air monitoring equipment. This differs from emissions, which are calculations of a pollutant being emitted over a certain period. No recent monitoring data for Fresno County or the San Joaquin Valley Air Basin were available for CO or SO_2. Generally, no monitoring is conducted for pollutants that are no longer likely to exceed ambient air quality standards.

Table 2: Air Quality Monitoring Summary

Air Pollutant	Averaging Time	Item	2016	2017	2018
Ozone[1]	1 Hour	Max 1 Hour (ppm)	**0.094**	**0.104**	**0.090**
		Days > State Standard (0.09 ppm)	0	2	0
Ozone[1]	8 Hour	Max 8 Hour (ppm)	**0.085**	**0.090**	**0.078**
		Days > State Standard (0.07 ppm)	28	27	9
		Days > National Standard (0.070 ppm)	25	26	6
Carbon monoxide (CO)	8 Hour	Max 8 Hour (ppm)	ND	ND	ND
		Days > State Standard (9.0 ppm)	ND	ND	ND
		Days > National Standard (9 ppm)	ND	ND	ND
Nitrogen dioxide (NO_2)[2]	Annual	Annual Average (ppm)	ID	0.010	0.090
	1 Hour	Max 1 Hour (ppm)	0.0498	0.0588	0.0645
		Days > State Standard (0.18 ppm)	0	0	0
Sulfur dioxide (SO_2)	Annual	Annual Average (ppm)	ND	ND	ND
	24 Hour	Max 24 Hour (ppm)	ND	ND	ND
		Days > State Standard (0.04 ppm)	ND	ND	ND
Inhalable coarse particles (PM_{10})[2]	Annual	Annual Average (µg/m^3)	**38.0**	**44.0**	**45.8**
	24 hour	24 Hour (µg/m^3)	**88.3**	**115.6**	**152.2**
		Days > State Standard (50 µg/m^3)	98.9	111.6	116.0
		Days > National Standard (150 µg/m^3)	0	0	0
Fine particulate matter ($PM_{2.5}$)[2]	Annual	Annual Average (12 µg/m^3)	**12.9**	**15.0**	**17.1**
	24 Hour	24 Hour (µg/m^3)	**48.6**	**88.3**	**89.8**
		Days > National Standard (35 µg/m^3)	15.3	27.6	34.3

Notes:
> = exceed ppm = parts per million µg/m^3 = micrograms per cubic meter
ID = insufficient data ND = no data max = maximum
Bold = exceedance
State Standard = California Ambient Air Quality Standard
National Standard = National Ambient Air Quality Standard
[1] Madera-Pump Yard
[2] Fresno-Garland
Source: California Air Resources Board 2019a

The health impacts of the various air pollutants of concern can be presented in a number of ways. The clearest of these is comparable with the state and federal ozone standards. If concentrations are below the standard, it is safe to say that no health impact would occur to anyone. When concentrations exceed the standard, impacts will vary based on the amount by which the standard is exceeded. The EPA developed the Air Quality Index (AQI) as an easy-to-understand measure of health impacts compared with concentrations in the air. Table 3 provides a description of the health impacts of ozone at different concentrations.

Table 3: Air Quality Index and Health Effects from Ozone

Air Quality Index/ 8-hour Ozone Concentration	Health Effects Description
AQI 51–100—Moderate	**Sensitive Groups**: Children and people with asthma are the groups most at risk.
Concentration 55–70 ppb	**Health Effects Statements**: Unusually sensitive individuals may experience respiratory symptoms.
	Cautionary Statements: Unusually sensitive people should consider limiting prolonged outdoor exertion.
AQI 101–150—Unhealthy for Sensitive Groups	**Sensitive Groups**: Children and people with asthma are the groups most at risk.
Concentration 71–85 ppb	**Health Effects Statements**: Increasing likelihood of respiratory symptoms and breathing discomfort in active children and adults and people with respiratory disease, such as asthma.
	Cautionary Statements: Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion.
AQI 151–200—Unhealthy	**Sensitive Groups**: Children and people with asthma are the groups most at risk.
Concentration 86–105 ppb	**Health Effects Statements**: Greater likelihood of respiratory symptoms and breathing difficulty in active children and adults and people with respiratory disease, such as asthma; possible respiratory effects in general population.
	Cautionary Statements: Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion.
AQI 201–300—Very Unhealthy	**Sensitive Groups**: Children and people with asthma are the groups most at risk.
Concentration 106–200 ppb	**Health Effects Statements**: Increasingly severe symptoms and impaired breathing likely in active children and adults and people with respiratory disease, such as asthma; increasing likelihood of respiratory effects in general population.
	Cautionary Statements: Active children and adults, and people with respiratory disease, such as asthma, should avoid all outdoor exertion; everyone else, especially children, should limit outdoor exertion.
Source: Air Now 2016.	

The AQI for the 8-hour ozone standard is based on the current NAAQS of 70 parts per billion (ppb). Based on the AQI scale for the 8-hour ozone standard, the project area experienced no days in the last three years that would be categorized as very unhealthy (AQI 201–250), and as many as 57 days that were unhealthy (AQI 151–200) or unhealthy for sensitive groups (AQI 101–150), violating the 70-ppb standard as measured at the Madera Pump Yard monitoring station. The highest reading was 90 parts per billion (ppb) in 2017 (AQI 161), compared with the 85-ppb cutoff or unhealthy for sensitive groups and the 105-ppb cutoff point for unhealthy for everyone (AQI 200). The most days over the standard were 26 days in 2017.

The other nonattainment pollutant of concern is $PM_{2.5}$. An AQI of 100 or lower is considered moderate and would be triggered by a 24-hour average concentration of 12.1 to 35.4 µg/m^3. An AQI of 101 to 150 or 35.5-55.4 µg/m^3 is considered unhealthful for sensitive groups. When concentrations reach this amount, it is considered an exceedance of the federal $PM_{2.5}$ standard. The monitoring station nearest the project exceeded the standard on approximately 83 days in the three-year period spanning from 2016 to 2018. The greatest number of days occurred in 2018 with approximately 36 days over the standard. People with respiratory or heart disease, the elderly and children are the groups most at risk. Unusually sensitive people should consider reducing prolonged or heavy exertion. The AQI of 151 to 200 is classified as unhealthy for everyone. This AQI classification is triggered when $PM_{2.5}$ concentration ranges from 55.4 to 150.4 µg/m^3. At this concentration, there is increasing likelihood of respiratory symptoms in sensitive individuals, aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease, and in the elderly. People with respiratory or heart disease, the elderly, and children should limit prolonged exertion. Everyone else should reduce prolonged or heavy exertion. The highest concentration recorded at the Fresno-Garland monitoring station in the last three years was 95.7 µg/m^3 (AQI 172) in 2018. At this concentration, increased aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease and the elderly, and increased respiratory effects in general population would occur. People with respiratory or heart disease, the elderly, and children should avoid prolonged exertion; everyone else should limit prolonged exertion when the AQI exceeds this level. The relationship of the AQI to health effects is shown Table 4.

Table 4: Air Quality Index and Health Effects of Particulate Pollution

Air Quality Index/ $PM_{2.5}$ Concentration	Health Effects Description
AQI 51–100—Moderate Concentration 12.1–35.4 µg/m^3	**Sensitive Groups**: Some people who may be unusually sensitive to particle.
	Health Effects Statements: Unusually sensitive people should consider reducing prolonged or heavy exertion.
	Cautionary Statements: Unusually sensitive people: Consider reducing prolonged or heavy exertion. Watch for symptoms such as coughing or shortness of breath. These are signs to take it easier.
AQI 101–150—Unhealthy for Sensitive Groups Concentration 35.5–55.4 µg/m^2	**Sensitive Groups**: Sensitive groups include people with heart or lung disease, older adults, children, and teenagers.
	Health Effects Statements: Increasing likelihood of respiratory symptoms in sensitive individuals, aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease, and the elderly.

Table 4 (cont.): Air Quality Index and Health Effects of Particulate Pollution

Air Quality Index/ $PM_{2.5}$ Concentration	Health Effects Description
	If you have heart disease: Symptoms such as palpitations, shortness of breath, or unusual fatigue may indicate a serious problem. If you have any of these, contact your health care provider.
AQI 151–200—Unhealthy Concentration 55.5–150.4 µg/m^3	**Sensitive Groups**: Everyone
	Health Effects Statements: Increased aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease and the elderly; increased respiratory effects in general population.
	Cautionary Statements: Sensitive groups: Avoid prolonged or heavy exertion. Consider moving activities indoors or rescheduling. Everyone else: Reduce prolonged or heavy exertion. Take more breaks during outdoor activities.
AQI 201–300—Very Unhealthy Concentration 150.5–250.4 µg/m^3	**Sensitive Groups**: Everyone
	Health Effects Statements: Significant aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease and the elderly; significant increase in respiratory effects in general population.
	Cautionary Statements: Sensitive groups: Avoid all physical activity outdoors. Move activities indoors or reschedule to a time when air quality is better. Everyone else: Avoid prolonged or heavy exertion. Consider moving activities indoors or rescheduling to a time when air quality is better.
Source: Air Now 2016.	

2.3.1 - Attainment Status

The EPA and the ARB designate air basins where ambient air quality standards are exceeded as "nonattainment" areas. If standards are met, the area is designated an "attainment" area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered "unclassified." National nonattainment areas are further designated marginal, moderate, serious, severe, or extreme as a function of deviation from standards.

Each standard has a different definition, or "form" of what constitutes attainment, based on specific air quality statistics. For example, the federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring values exceeds the threshold per year. In contrast, the federal annual $PM_{2.5}$ standard is met if the three-year average of the annual average $PM_{2.5}$ concentration is less than or equal to the standard.

The current attainment designations for the Air Basin are shown in Table 5. The Air Basin is designated nonattainment for ozone, PM_{10}, and $PM_{2.5}$.

Table 5: San Joaquin Valley Air Basin Attainment Status

Pollutant	State Status	National Status
Ozone—One Hour	Nonattainment/Severe	No Standard
Ozone—Eight Hour	Nonattainment	Nonattainment/Extreme
Carbon monoxide	Attainment/Unclassified	Merced, Madera, and Kings Counties are unclassified; others are in Attainment
Nitrogen dioxide	Attainment	Attainment/Unclassified
Sulfur dioxide	Attainment	Attainment/Unclassified
PM_{10}	Nonattainment	Attainment
$PM_{2.5}$	Nonattainment	Nonattainment
Lead	Attainment	No Designation/Classification
Source of State status: California Air Resources Board (ARB 2013c). Source of National status: U.S. Environmental Protection Agency (EPA 2016a). Source of additional status information (SJVAPCD 2017a).		

2.4—Air Quality Plans and Regulations

Air pollutants are regulated at the national, state, and air basin or county level, and each agency has a different level of regulatory responsibility: the EPA regulates at the national level, the ARB at the state level, and the SJVAPCD at the air basin level.

The EPA is responsible for national and interstate air pollution issues and policies. The EPA sets national vehicle and stationary source emission standards, oversees approval of all State Implementation Plans, provides research and guidance for air pollution programs, and sets National Ambient Air Quality Standards—also known as the federal standards described earlier.

A State Implementation Plan (SIP) is a document prepared by each state describing existing air quality conditions and measures that will be followed to attain and maintain federal standards. The SIP for the State of California is administered by the ARB, which has overall responsibility for statewide air quality maintenance and air pollution prevention. California's SIP incorporates individual federal attainment plans for regional air districts; specifically, an air district prepares their federal attainment plan, which is sent to ARB to be approved and incorporated into the California State Implementation Plan. Federal attainment plans include the technical foundation for understanding air quality (e.g., emission inventories and air quality monitoring), control measures and strategies, and enforcement mechanisms. The ARB then submits the SIP to the EPA for approval. After reviewing submitted SIPs, the EPA proposes to approve or disapprove all or part of each plan. The public has an opportunity to comment on the EPA's proposed action. The EPA considers public input before taking final action on a state's plan. If EPA approves all or part of a SIP, those control measures are enforceable in federal court. If a state fails to submit an approvable plan or if the EPA disapproves a plan, the EPA is required to develop a federal implementation plan (FIP). The SIP approval process often takes several years. The most recent federally approved attainment plans for the SJVAPCD are the 2007 8-Hour Ozone Attainment Plan and the 2012 $PM_{2.5}$ Plan for the 2006 $PM_{2.5}$ standard.

Areas designated nonattainment must develop air quality plans and regulations to achieve standards by specified dates, depending on the severity of the exceedances. For much of the country, implementation of federal motor vehicle standards and compliance with federal permitting requirements for industrial sources are adequate to attain air quality standards on schedule. For many areas of California, however, additional state and local regulation is required to achieve the standards. Regulations adopted by California are described below.

2.4.1 - California Regulations

Low-Emission Vehicle Program

The ARB first adopted Low-Emission Vehicle (LEV) program standards in 1990. These first LEV standards ran from 1994 through 2003. LEV II regulations, running from 2004 through 2010, represent continuing progress in emission reductions. As the State's passenger vehicle fleet continues to grow and more sport utility vehicles and pickup trucks are used as passenger cars rather than work vehicles, the more stringent LEV II standards were adopted to provide reductions necessary for California to meet federally mandated clean air goals outlined in the 1994 State Implementation Plan. In 2012, ARB adopted the LEV III amendments to California's LEV regulations. These amendments, also known as the Advanced Clean Car Program include more stringent emission standards for model years 2017 through 2025 for both criteria pollutants and GHGs for new passenger vehicles (ARB 2012a).

On-Road Heavy-Duty Vehicle Program

The ARB has adopted standards for emissions from various types of new on-road heavy-duty vehicles. Section 1956.8, Title 13, California Code of Regulations contains California's emission standards for on-road heavy-duty engines and vehicles, as well as test procedures. ARB has also adopted programs to reduce emissions from in-use heavy-duty vehicles including the Heavy-Duty Diesel Vehicle Idling Reduction Program, the Heavy-Duty Diesel In-Use Compliance Program, the Public Bus Fleet Rule and Engine Standards, and the School Bus Program and others (ARB 2013b).

The regulation applies to nearly all privately and federally owned diesel-fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds. The regulation provides a variety of flexibility options tailored to fleets operating low-use vehicles, fleets operating in selected vocations like agricultural and construction, and small fleets of three or fewer trucks (ARB 2015b).

ARB Truck and Bus Regulation

The latest amendments to the Truck and Bus regulation became effective on December 31, 2014. The amended regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Newer heavier trucks and buses must meet PM filter requirements beginning January 1, 2012. Lighter and older heavier trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent.

The regulation applies to nearly all privately and federally owned diesel-fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating (GVWR) greater than

14,000 pounds. The regulation provides a variety of flexibility options tailored to fleets operating low-use vehicles, fleets operating in selected vocations like agricultural and construction, and small fleets of three or fewer trucks (ARB 2015a).

ARB Regulation for In-Use Off-Road Diesel Vehicles

On July 26, 2007, the ARB adopted a regulation to reduce DPM and nitrous oxide (NO_X) emissions from in-use (existing) 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. The ARB is enforcing that part of the rule with fines up to $10,000 per day for each vehicle in violation. Performance requirements of the rule are based on a fleet's average NO_X 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 requirements, 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).

ARB Regulation for Consumer Products

The ARB Consumer Products Regulation was last amended in January 2015. The ARB regulates the VOC content of a wide variety of consumer products sold and manufactured in California. The purpose of the regulation is to reduce the emission of ozone precursors, TACs, and GHG emissions in products that are used by Communities and businesses. The regulated products include but are not limited to solvents, adhesives, air fresheners, soaps, aromatic compounds, windshield cleaners, charcoal lighter, dry cleaning fluids, floor polishes, and general cleaners and degreasers (ARB 2015b)

ARB Airborne Toxic Control Measure for Asbestos

In July 2001, the ARB approved an Air Toxic Control Measure for construction, grading, quarrying, and surface mining operations to minimize emissions of naturally occurring asbestos. The regulation requires application of best management practices to control fugitive dust in areas known to have naturally occurring asbestos and requires notification to the local air district prior to commencement of ground-disturbing activities. The measure establishes specific testing, notification and engineering controls prior to grading, quarrying, or surface mining in construction zones where naturally occurring asbestos is located on projects of any size. There are additional notification and engineering controls at work sites larger than one acre in size. These projects require the submittal of a "Dust Mitigation Plan" and approval by the air district prior to the start of a project.

Construction sometimes requires the demolition of existing buildings where construction occurs. The project includes no demolition. Asbestos is also found in a natural state, known as naturally occurring asbestos. Exposure and disturbance of rock and soil that naturally contain asbestos can result in the release of fibers into the air and consequent exposure to the public. Asbestos most commonly occurs in ultramafic rock that has undergone partial or complete alteration to serpentine rock (serpentinite) and often contains chrysotile asbestos. In addition, another form of asbestos, tremolite, can be found associated with ultramafic rock, particularly near faults. Sources of asbestos emissions include unpaved roads or driveways surfaced with ultramafic rock, construction activities in ultramafic rock deposits, or rock quarrying activities where ultramafic rock is present.

The ARB has an Air Toxic Control Measure for construction, grading, quarrying, and surface mining operations, requiring the implementation of mitigation measures to minimize emissions of asbestos-laden dust. The measure applies to road construction and maintenance, construction and grading operations, and quarries and surface mines when the activity occurs in an area where naturally occurring asbestos is likely to be found. Areas are subject to the regulation if they are identified on maps published by the Department of Conservation as ultramafic rock units or if the Air Pollution Control Officer or owner/operator has knowledge of the presence of ultramafic rock, serpentine, or naturally occurring asbestos on the site. The measure also applies if ultramafic rock, serpentine, or asbestos is discovered during any operation or activity. Review of the Department of Conservation maps indicates that no ultramafic rock has been found near the southeast Fresno area.

Diesel Risk Reduction Plan

The ARB's Diesel Risk Reduction Plan has led to the adoption of new state regulatory standards for all new on-road, off-road, and stationary diesel-fueled engines and vehicles to reduce DPM emissions by about 90 percent overall from year 2000 levels. The projected emission benefits associated with the full implementation of this plan, including federal measures, are reductions in DPM emissions and associated cancer risks of 75 percent by 2010, and 85 percent by 2020 (ARB 2000).

2.4.2 - San Joaquin Valley Air Pollution Control District

The District is responsible for controlling emissions primarily from stationary sources. The District, in coordination with the eight countywide transportation agencies, is also responsible for developing, updating, and implementing air quality attainment plans for the Air Basin. The District also has roles under CEQA.

Ozone Plans

The Air Basin is designated nonattainment of state and federal health-based air quality standards for ozone. To meet Clean Air Act requirements for the one-hour ozone standard, the District adopted an Extreme Ozone Attainment Demonstration Plan in 2004, with an attainment date of 2010. Although the EPA revoked the federal 1-hour ozone standard effective June 15, 2005 and replaced it with an 8-hour standard, the requirement to submit a plan for that standard remained in effect for the San Joaquin Valley.

The planning requirements for the 1-hour plan remain in effect until replaced by a federal 8-hour ozone attainment plan. On March 8, 2010, the EPA approved the 2004 Extreme Ozone Attainment Demonstration Plan, including revisions to the plan, effective April 7, 2010. However, the Air Basin failed to attain the standard in 2010 and was subject to a $29 million Clean Air Act penalty. The penalty is being collected through an additional $12 motor vehicle registration surcharge for each passenger vehicle registered in the Air Basin that will be applied to pollution reduction programs in the region. The District also instituted a more robust ozone episodic program to reduce emissions on days with the potential to exceed the ozone standards. On July 18, 2016, the EPA published in the Federal Register a final action determining that the San Joaquin Valley has attained the 1-hour ozone national ambient air quality standard. This determination is based on the most recent three-year period (2012-2014) of sufficient, quality-assured, and certified data. The penalty fees remain in place pending submittal of a demonstration that the San Joaquin Valley will maintain the 1-hour standard for 10 years (EPA 2016b).

The EPA originally classified the Air Basin as serious nonattainment for the 1997 federal 8-hour ozone standard with an attainment date of 2013. On April 30, 2007, the District's Governing Board adopted the 2007 Ozone Plan, which contained analysis showing a 2013 attainment target to be infeasible. The 2007 Ozone Plan details the plan for achieving attainment on schedule with an "extreme nonattainment" deadline of 2024. At its adoption of the 2007 Ozone Plan, the District also requested a reclassification to extreme nonattainment. ARB approved the plan in June 2007, and the EPA approved the request for reclassification to extreme nonattainment on April 15, 2010.

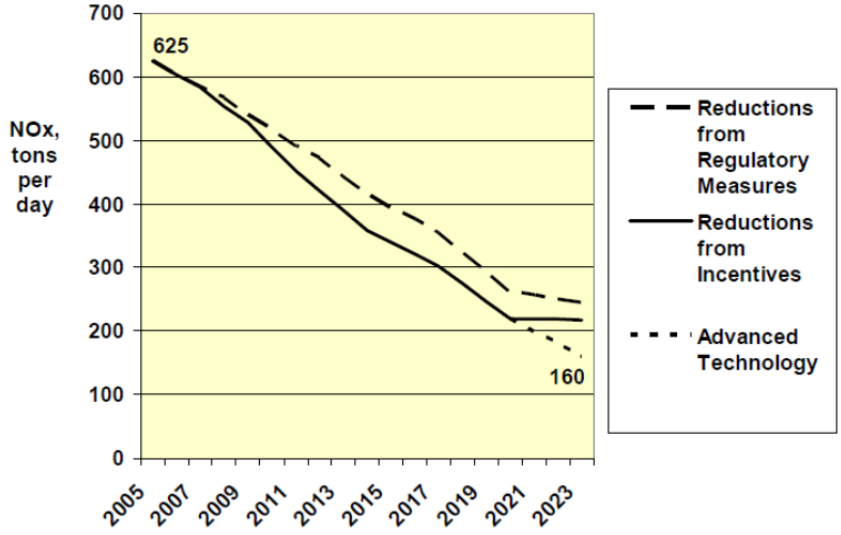
The 2007 Ozone Plan contains measures to reduce ozone and particulate matter precursor emissions to bring the Basin into attainment with the federal 8-hour ozone standard. The 2007 Ozone Plan calls for a 75 percent reduction of NO_X and a 25 percent reduction of reactive organic gases (ROG). Figure 4 displays the anticipated NO_X reductions attributed in the 2007 Ozone Plan (Source: 2007 Ozone Plan). The plan, with innovative measures and a "dual path" strategy, assures expeditious attainment of the federal 8-hour ozone standard for all Air Basin residents. The District Governing Board adopted the 2007 Ozone Plan on April 30, 2007. The ARB approved the plan on June 14, 2007. The 2007 Ozone Plan requires yet to be determined "Advanced Technology" to achieve additional reductions after 2021, in order to attain the standard at all monitoring stations in the Air Basin by 2024 as allowed for areas designated extreme nonattainment by the federal Clean Air Act.

The Air Basin is designated an extreme ozone nonattainment area for the EPA's 2008 8-hour ozone standard of 75 ppb. The District's Governing Board approved the 2016 Plan for the 2008 8-Hour Ozone Standard on June 16, 2016. The ARB approved the attainment demonstration plan for the San Joaquin Valley on July 21, 2016 and transmitted the plan to EPA on August 24, 2016. The comprehensive strategy in this plan will reduce NO_X emissions by over 60 percent between 2012 and 2031, and will bring the San Joaquin Valley into attainment of the EPA's 2008 8-hour ozone standard as expeditiously as practicable, no later than December 31, 2031. The 2016 Ozone Plan predicts attainment of the 2008 standard by 2031 (SJVAPCD 2018a). To ensure that the plan is approvable with the necessary contingencies, the plan includes a "Black Box" that will require implementation of new advanced technologies and controls prior to the 2031 deadline.

The EPA Administrator signed the Final Rule revising the 8-hour ozone standard to 70 ppm on October 1, 2015. The new standard will require the SJVAPCD to prepare a new attainment to achieve the more stringent emission level within 20 years from the effective date of designation (EPA 2018).

State ozone standards do not have an attainment deadline but require implementation of all feasible measures to achieve attainment at the earliest date possible. This is achieved through compliance with the federal deadlines and control measure requirements.

Figure 4: San Joaquin Valley NO_X Emissions Forecast



Particulate Matter Plans

The Air Basin was designated nonattainment of state and federal health-based air quality standards for PM_{10}. The Air Basin is also designated nonattainment of state and federal standards for $PM_{2.5}$.

To meet Clean Air Act requirements for the PM_{10} standard, the District adopted a PM_{10} Attainment Demonstration Plan (Amended 2003 PM_{10} Plan and 2006 PM_{10} Plan), which has an attainment date of 2010. The District adopted the 2007 PM_{10} Maintenance Plan in September 2007 to assure the San Joaquin Valley's continued attainment of the EPA's PM_{10} standard. The EPA designated the valley as an attainment/maintenance area for PM_{10} on September 25, 2008. Although the San Joaquin Valley has exceeded the standard since then, those days were considered exceptional events that are not considered a violation of the standard for attainment purposes.

The 2008 $PM_{2.5}$ Plan builds upon the comprehensive strategy adopted in the 2007 Ozone Plan to bring the Air Basin into attainment of the 1997 national standards for $PM_{2.5}$. The EPA has identified NO_X and SO_2as precursors that must be addressed in air quality plans for the 1997 $PM_{2.5}$ standards. The 2008 $PM_{2.5}$ Plan is a continuation of the District's strategy to improve the air quality in the Air Basin. The EPA issued final approval of the 2008 $PM_{2.5}$ Plan on November 9, 2011, which became effective on January 9, 2012. The EPA approved the emissions inventory, the reasonably available control measures/reasonably available control technology demonstration, reasonable further progress demonstration, attainment demonstration and associated air quality modeling, and the transportation conformity motor vehicle emissions budgets. The EPA also granted California's request to extend the attainment deadline for the San Joaquin Valley to April 5, 2015 and approved commitments to measures and reductions by the District and the ARB. Finally, it disapproved the State Implementation Plan's contingency provisions and issued a protective finding for transportation conformity determinations.

In December 2012, the District adopted the 2012 $PM_{2.5}$ Plan to bring the San Joaquin Valley into attainment of the EPA's 2006 24-hour $PM_{2.5}$ standard of 35 $\mu g/m^3$. The ARB approved the District's 2012 $PM_{2.5}$ Plan for the 2006 standard at a public hearing on January 24, 2013 (SJVAPCD 2012). This

plan seeks to bring the Valley into attainment with the standard by 2019, with the expectation that most areas will achieve attainment before that time.

The 2015 Plan for the 1997 $PM_{2.5}$ Standard approved by the District Governing Board on April 16, 2015—will bring the Valley into attainment of the EPA's 1997 $PM_{2.5}$ standard as expeditiously as practicable, but no later than December 31, 2020. The plan was required to request reclassification to Serious nonattainment and to extend the attainment date from 2018 to 2020 (SJVAPCD 2015b).

The 2016 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard was adopted on September 15, 2016. This plan includes an attainment impracticability demonstration and request for reclassification of the Valley from Moderate nonattainment to Serious nonattainment (SJVAPCD 2017b).

The SJVAPCD adopted the 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards on November 15, 2018. This plan provides a combined strategy to address the EPA federal 1997 annual $PM_{2.5}$ standard of 15 µg/m³ and 24-hour $PM_{2.5}$ standard of 65 µg/m³; the 2006 24-hour $PM_{2.5}$ standard of 35 µg/m³; and the 2012 annual $PM_{2.5}$ standard of 12 µg/m³. This plan demonstrates attainment of the federal $PM_{2.5}$ standards as expeditiously as practicable (SJVAPCD 2018b).

SJVAPCD Rules and Regulations

The SJVAPCD rules and regulations that may apply to projects that will occur during buildout of the project include but are not limited to the following:

Rule 4102—Nuisance. The purpose of this rule is to protect the health and safety of the public, and applies to any source operation that emits or may emit air contaminants or other materials. This rule is enforced on a complaint basis.

Rule 4601—Architectural Coatings. The purpose of this rule is to limit Volatile Organic Compounds (VOC) emissions from architectural coatings. Emissions are reduced by limits on VOC content and providing requirements on coatings storage, cleanup, and labeling. Only compliant components are available for purchase in the San Joaquin Valley.

Rule 4641—Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations. The purpose of this rule is to limit VOC emissions from asphalt paving and maintenance operations. If asphalt paving will be used, then the paving operations will be subject to Rule 4641. This regulation is enforced on the asphalt provider

Rule 4901—Wood-Burning Fireplaces and Wood-Burning Heaters. The purposes of this rule are to limit emissions of carbon monoxide and particulate matter from wood-burning fireplaces, wood-burning heaters, and outdoor wood-burning devices, and to establish a public education program to reduce wood-burning emissions. All development that includes wood-burning devices are subject to this rule.

Rule 4902—Residential Water Heaters. In 2009, the District amended Rule 4902 to strengthen the rule by lowering the limit to 10 nanograms per joule (ng/J) for new or replacement water heaters, and to a limit of 14 ng/J for instantaneous water heaters. Retailer compliance dates ranged from 2010 to 2012, depending on the unit type.

Regulation VIII—Fugitive PM_{10} Prohibitions. Rules 8011–8081 are designed to reduce PM_{10} emissions (predominantly dust/dirt) generated by human activity, including construction and demolition activities, road construction, bulk materials storage, paved and unpaved roads, carryout and trackout, etc. All development projects that involve soil disturbance are subject to at least one provision of the Regulation VIII series of rules.

Rule 9510—Indirect Source Review. This rule reduces the impact of NO_X and PM_{10} emissions from growth within the Air Basin. The rule places application and emission reduction requirements on development projects meeting applicability criteria in order to reduce emissions through on-site mitigation, off-site District-administered projects, or a combination of the two. This project is subject to Rule 9510 because it would develop more than 50 residential dwelling units.

CEQA

The District has three roles under CEQA:

1. **Lead Agency:** Responsible for preparing environmental analyses for its own projects (adoption of rules, regulations, or plans) or permit projects filed with the District where the District has primary approval authority over the project.
2. **Responsible Agency:** The discretionary authority of a responsible agency is more limited than a lead agency; having responsibility for mitigating or avoiding only the environmental effects of those parts of the project which it decides to approve, carry out, or finance. The District defers to the lead agency for preparation of environmental documents for land use projects that also have discretionary air quality permits, unless no document is prepared by the lead agency and potentially significant impacts related to the permit are possible. The District regularly submits comments on documents prepared by lead agencies to ensure that District concerns are addressed.
3. **Commenting Agency:** The District reviews and comments on air quality analyses prepared by other public agencies (such as the project).

The District also provides guidance and thresholds for CEQA air quality and GHG analyses. The result of this guidance, as well as state regulations to control air pollution, is an overall improvement in the Air Basin. In particular, the District's 2015 GAMAQI states the following:

1. The District's Air Quality Attainment Plans include measures to promote air quality elements in county and city general plans as one of the primary indirect source programs. The general plan is the primary long-range planning document used by cities and counties to direct development. Since air districts have no authority over land use decisions, it is up to cities and counties to ensure that their general plans help achieve air quality goals. Section 65302.1 of the California Government Code requires cities and counties in the San Joaquin Valley to amend appropriate elements of their general plans to include data, analysis, comprehensive goals, policies, and feasible implementation strategies to improve air quality in their next housing element revisions.
2. The Air Quality Guidelines for General Plans (AQGGP), adopted by the District in 1994 and amended in 2005, is a guidance document containing goals and policy examples that cities and counties may want to incorporate into their General Plans to satisfy Section 65302.1.

When adopted in a general plan and implemented, the suggestions in the AQGGP can reduce vehicle trips and miles traveled and improve air quality. The specific suggestions in the AQGGP are voluntary. The District strongly encourages cities and counties to use their land use and transportation planning authority to help achieve air quality goals by adopting the suggested policies and programs.

2.4.3 - Local

The City of Kerman General Plan was last updated in 2007. The Public Review Draft City of Kerman 2040 General Plan Update was released in June 2019 and has completed public review, but it was not approved as of the date of preparation of this report (City of Kerman 2019). Therefore, the 2007 General Plan remains the plan applicable to the project.

2.4.4 - Existing Sources of Toxic Emissions

No existing sources were identified that exceed ARB recommendations in its Air Quality Land Use Handbook for siting sensitive land uses impact the project.

2.4.5 - ARB Air Quality Land Use Handbook

Table 6 lists the following ARB advisory recommendations that address the issue of siting "sensitive land uses" near specific sources of air pollution (ARB 2005):

- High traffic freeways and roads
- Distribution centers
- Rail yards
- Ports
- Refineries
- Chrome plating facilities
- Dry cleaners
- Large gas dispensing facilities

The analysis examines the area around the site to determine if potential sources of TAC emissions may impact the project, based on the ARB recommended screening distances.

Table 6: Recommendations on Siting New Sensitive Land Uses

Source Category	Advisory Recommendations
Freeways and High-Traffic Roads	Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.
Distribution Centers	Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week). Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points.
Rail Yards	Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard. Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.

Table 6 (cont.): Recommendations on Siting New Sensitive Land Uses

Source Category	Advisory Recommendations
Ports	Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the ARB on the status of pending analyses of health risks.
Refineries	Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.
Chrome Platers	Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.
Dry Cleaners Using Perchloroethylene	Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with three or more machines, consult with the local air district. Do not site new sensitive land uses in the same building with perchloroethylene dry cleaning operations.
Gasoline Dispensing Facilities	Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50-foot separation is recommended for typical gas dispensing facilities.
Note: These recommendations are advisory. Land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.	

SECTION 3: CLIMATE CHANGE SETTING

3.1—Climate Change

Climate change is a change in the average weather of the earth that is measured by alterations in wind patterns, storms, precipitation, and temperature. These changes are assessed using historical records of temperature changes occurring in the past, such as during previous ice ages. Many of the concerns regarding climate change use this data to extrapolate a level of statistical significance, specifically focusing on temperature records from the last 150 years (the Industrial Age) that differ from previous climate changes in rate and magnitude.

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. In its Fourth Assessment Report, the IPCC predicted that the global mean temperature change from 1990 to 2100, given six scenarios, could range from 1.1 degrees Celsius (°C) to 6.4°C. Regardless of analytical methodology, global average temperatures and sea levels are expected to rise under all scenarios (IPCC 2007a). The report also concluded that "[w]arming of the climate system is unequivocal," and that "[m]ost of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations."

An individual project cannot generate enough GHG emissions to cause a discernible change in global climate. However, the project participates in the potential for global climate change by its incremental contribution of GHGs—and when combined with the cumulative increase of all other sources of GHGs—constitute potential influences on global climate change.

3.1.1 - Consequences of Climate Change in California

In California, climate change may result in consequences such as the following (from CCCC 2006 and Moser et al. 2009):

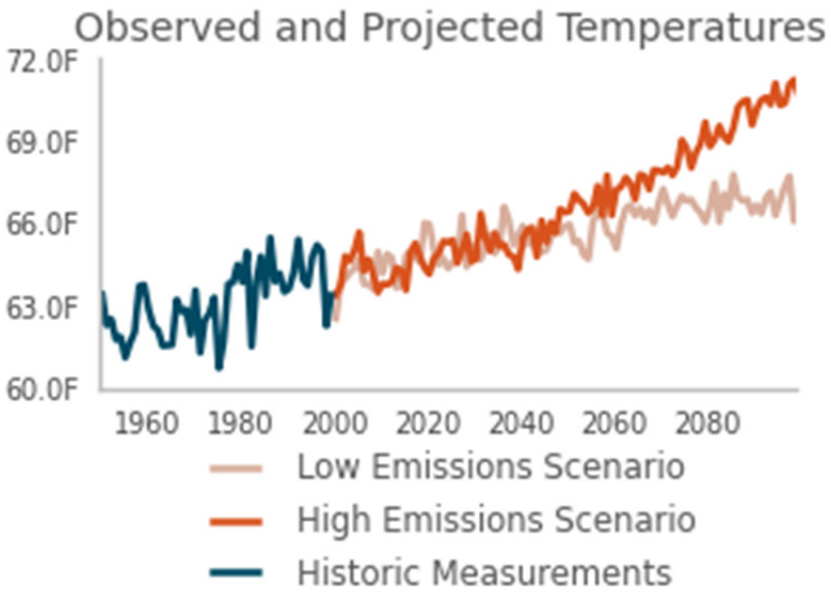
- **A reduction in the quality and supply of water from the Sierra snowpack.** If heat-trapping emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. This can lead to challenges in securing adequate water supplies. It can also lead to a potential reduction in hydropower.
- **Increased risk of large wildfires.** If rain increases as temperatures rise, wildfires in the grasslands and chaparral ecosystems of southern California are estimated to increase by approximately 30 percent toward the end of the 21st century because more winter rain will stimulate the growth of more plant "fuel" available to burn in the fall. In contrast, a hotter, drier climate could promote up to 90 percent more northern California fires by the end of the century by drying out and increasing the flammability of forest vegetation.
- **Reductions in the quality and quantity of certain agricultural products.** The crops and products likely to be adversely affected include wine grapes, fruit, nuts, and milk.

- **Exacerbation of air quality problems.** If temperatures rise to the medium warming range, there could be 75 to 85 percent more days with weather conducive to ozone formation in Los Angeles and the San Joaquin Valley, relative to today's conditions. This is more than twice the increase expected if rising temperatures remain in the lower warming range. This increase in air quality problems could result in an increase in asthma and other health-related problems.
- **A rise in sea levels resulting in the displacement of coastal businesses and residences.** During the past century, sea levels along California's coast have risen about seven inches. If emissions continue unabated and temperatures rise into the higher anticipated warming range, sea level is expected to rise an additional 22 to 35 inches by the end of the century. Elevations of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats.
- **An increase in temperature and extreme weather events.** Climate change is expected to lead to increases in the frequency, intensity, and duration of extreme heat events and heat waves in California. More heat waves can exacerbate chronic disease or heat-related illness.
- **A decrease in the health and productivity of California's forests.** Climate change can cause an increase in wildfires, an enhanced insect population, and establishment of non-native species.

Consequences of Climate Change in the Kerman Area

Figure 5 displays a chart of measured historical and projected annual average temperatures in the project area. As shown in the figure, temperatures are expected to rise in the low and high GHG emissions scenarios. The results indicate that temperatures are predicted to increase by 3.7 degrees Fahrenheit (°F) under the low emission scenario and 6.5°F under the high emissions scenario (CalAdapt 2019).

Figure 5: Observed and Projected Temperatures for Climate Change in the Project Area



Source: CalAdapt 2019

Water Supply

The City of Kerman would provide water for the project. The City relies on groundwater for potable water supplies. The rate of groundwater recharge could decline if climate change were to result in reduced snowpack in the Sierra Nevada.

Wildfires

The project site is within an urbanizing area with limited fuels that would be subject to a wildfire. The City is surrounded by irrigated farmland that is not considered to be at high risk of wildfire. Increased temperatures and drought conditions due to climate change could result in increased risk from grass fires on vacant lots.

Human Health Effects of GHG Emissions

GHG emissions from development projects would not result in concentrations that would directly impact public health. However, the cumulative effects of GHG emissions on climate change have the potential to cause adverse effects to human health.

In its report, Global Climate Change Impacts in the U.S. (2009), the U.S. Global Change Research Program has analyzed the degree to which impacts on human health are expected to impact the United States.

Potential effects of climate change on public health include:

- Direct Temperature Effects: Climate change may directly affect human health through increases in average temperatures, which are predicted to increase the incidence of heat waves and hot extremes.
- Extreme Events: Climate change may affect the frequency and severity of extreme weather events, such as hurricanes and extreme heat and floods, which can be destructive to human health and well-being.
- Climate-Sensitive Diseases: Climate change may increase the risk of some infectious diseases, particularly those diseases that appear in warm areas and are spread by mosquitoes and other insects, such as malaria, dengue fever, yellow fever, and encephalitis.
- Air Quality: Respiratory disorders may be exacerbated by warming-induced increases in the frequency of smog (ground-level ozone) events and particulate air pollution (EPA 2009a).

Although there could be health effects resulting from changes in the climate and the consequences that can occur, inhalation of GHGs at levels currently in the atmosphere would not result in adverse health effects, with the exception of ozone and aerosols (particulate matter). The potential health effects of ozone and particulate matter are discussed in criteria pollutant analyses. At very high indoor concentrations (not at levels existing outside), carbon dioxide, methane, sulfur hexafluoride, and some chlorofluorocarbons can cause suffocation as the gases can displace oxygen (CDC 2010 and OSHA 2003).

3.2—Greenhouse Gases

Gases that trap heat in the atmosphere are referred to as GHGs. The effect is analogous to the way a greenhouse retains heat. Common GHGs include water vapor, carbon dioxide, methane, NO_X, chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, ozone, and aerosols. Natural processes and human activities emit GHGs. The presence of GHGs in the atmosphere affects the earth's temperature. It is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

Climate change is driven by forcings and feedbacks. Radiative forcing is the difference between the incoming energy and outgoing energy in the climate system. Positive forcing tends to warm the surface while negative forcing tends to cool it. Radiative forcing values are typically expressed in watts per square meter. A feedback is a climate process that can strengthen or weaken a forcing. For example, when ice or snow melts, it reveals darker land underneath which absorbs more radiation and causes more warming. The global warming potential is the potential of a gas or aerosol to trap heat in the atmosphere. The global warming potential of a gas is essentially a measurement of the radiative forcing of a GHG compared with the reference gas, CO_2.

Individual GHG compounds have varying global warming potential and atmospheric lifetimes. CO_2, the reference gas for global warming potential, has a global warming potential of one. The global warming potential of a GHG is a measure of how much a given mass of a GHG is estimated to contribute to global warming. To describe how much global warming a given type and amount of GHG may cause, the carbon dioxide equivalent is used. The calculation of the carbon dioxide equivalent is a consistent methodology for comparing GHG emissions since it normalizes various GHG emissions to a consistent reference gas, CO_2. For example, CH_4's warming potential of 25 indicates that CH_4 has 25 times greater warming effect than CO_2 on a molecule-per-molecule basis. A carbon dioxide equivalent is the mass emissions of an individual GHG multiplied by its global warming potential. GHGs defined by Assembly Bill (AB) 32 (see the Climate Change Regulatory Environment section for a description) include CO_2, CH_4, NO_X, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. They are described in Table 7. A seventh GHG, nitrogen trifluoride, was added to Health and Safety Code section 38505(g)(7) as a GHG of concern. The global warming potential amounts are from IPCC Fourth Assessment Report (AR4). The new amounts have been incorporated into the CalEEMod 2016.3.2 used in this analysis.

Table 7: Description of Greenhouse Gases

Greenhouse Gas	Description and Physical Properties	Sources
Nitrous oxide	Nitrous oxide (laughing gas) is a colorless GHG. It has a lifetime of 114 years. Its global warming potential is 298.	Microbial processes in soil and water, fuel combustion, and industrial processes.
Methane	Methane is a flammable gas and is the main component of natural gas. It has a lifetime of 12 years. Its global warming potential is 25.	Methane is extracted from geological deposits (natural gas fields). Other sources are landfills, fermentation of manure, and decay of organic matter.

Table 7 (cont.): Description of Greenhouse Gases

Greenhouse Gas	Description and Physical Properties	Sources
Carbon dioxide	Carbon dioxide (CO_2) is an odorless, colorless, natural GHG. Carbon dioxide's global warming potential is 1. The concentration in 2005 was 379 parts per million (ppm), which is an increase of about 1.4 ppm per year since 1960.	Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood.
Chlorofluorocarbons	These are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). Global warming potentials range from 124 to 14,800.	Chlorofluorocarbons were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone. The Montreal Protocol on Substances that Deplete the Ozone Layer prohibited their production in 1987.
Perfluorocarbons	Perfluorocarbons have stable molecular structures and only break down by ultraviolet rays about 60 kilometers above Earth's surface. Because of this, they have long lifetimes, between 10,000 and 50,000 years. Global warming potentials range from 7,390 to 12,200.	Two main sources of perfluorocarbons are primary aluminum production and semiconductor manufacturing.
Sulfur hexafluoride	Sulfur hexafluoride (SF_6) is an inorganic, odorless, colorless, and nontoxic, nonflammable gas. It has a lifetime of 3,200 years. It has a high global warming potential of 22,800.	This gas is man-made and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas.
Nitrogen trifluoride	Nitrogen trifluoride (NF_3) was added to Health and Safety Code section 38505(g)(7) as a GHG of concern. It has a high global warming potential of 17,200.	This gas is used in electronics manufacture for semiconductors and liquid crystal displays.
Sources: Compiled from a variety of sources, primarily Intergovernmental Panel on Climate Change 2007a and 2007b.		

The State has begun addressing pollutants referred to as short-lived climate pollutants. Senate Bill (SB) 605, approved by the governor on September 14, 2014 required the ARB to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants by January 1, 2016. ARB was required to complete an emission inventory of these pollutants, identify research needs, identify existing and potential new control measures that offer co-benefits, and coordinated with other state agencies and districts to develop measures. The Short-Lived Climate Pollutant Strategy was approved by the ARB on March 24, 2017. The strategy calls for reductions of 50 percent from black carbon, 40 percent from methane, and 40 percent from HFCs from the 2030 Business as Usual (BAU) inventory for these pollutants (ARB 2017b).

The short-lived climate pollutants include three main components: black carbon, fluorinated gases, and methane. Fluorinated gases and methane are described in Table 7 and are already included in the California GHG inventory. Black carbon has not been included in past GHG inventories; however, ARB will include it in its comprehensive strategy (ARB 2015c).

Ozone is another short-lived climate pollutant that will be part of the strategy. Ozone affects evaporation rates, cloud formation, and precipitation levels. Ozone is not directly emitted, so its precursor emissions, volatile organic compounds (VOC) and oxides of nitrogen (NO_X) on a regional scale and CH_4 on a hemispheric scale will be subject of the strategy (ARB 2015c).

Black carbon is a component of fine particulate matter. Black carbon is formed by incomplete combustion of fossil fuels, biofuels, and biomass. Sources of black carbon within a jurisdiction may include exhaust from diesel trucks, vehicles, and equipment, as well as smoke from biogenic combustion. Biogenic combustion sources of black carbon include the burning of biofuels used for transportation, the burning of biomass for electricity generation and heating, prescribed burning of agricultural residue, and natural and unnatural wildfires. Black carbon is not a gas but an aerosol—particles or liquid droplets suspended in air. Black carbon only remains in the atmosphere for days to weeks, whereas other GHGs can remain in the atmosphere for years. Black carbon can be deposited on snow, where it absorbs sunlight, reduces sunlight reflectivity, and hastens snowmelt. Direct effects include absorbing incoming and outgoing radiation; indirectly, black carbon can also affect cloud reflectivity, precipitation, and surface dimming (cooling).

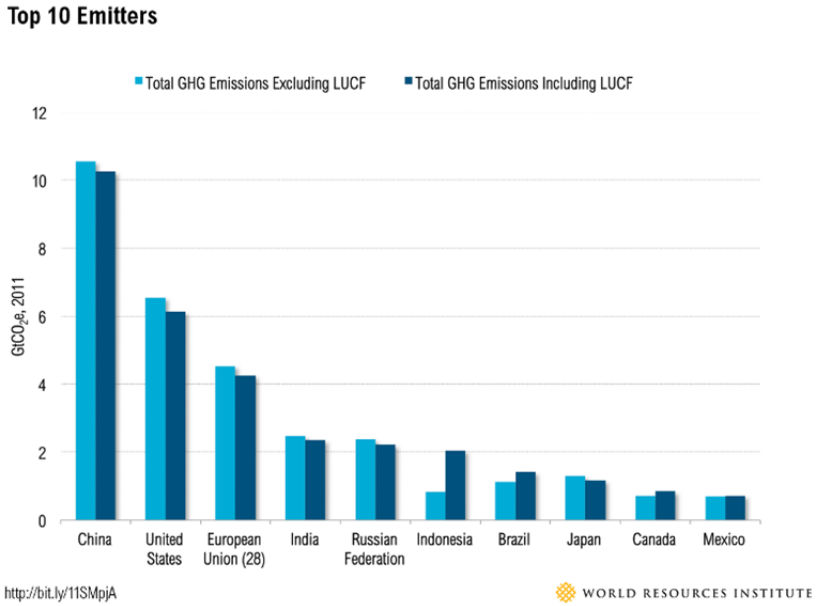
Global warming potentials for black carbon were not defined by the IPCC in its Fourth Assessment Report. The ARB has identified a global warming potential of 3,200 using a 20-year time horizon and 900 using a 100-year time horizon from the IPCC Fifth Assessment. Sources of black carbon are already regulated by ARB, and air district criteria pollutant and toxic regulations that control fine particulate emissions from diesel engines and other combustion sources (ARB 2015d). Additional controls on the sources of black carbon specifically for their GHG impacts beyond those required for toxic and fine particulates are not likely to be needed.

Water vapor is also considered a GHG. Water vapor is an important component of our climate system and is not regulated. Increasing water vapor leads to warmer temperatures, which causes more water vapor to be absorbed into the air. Warming and water absorption increase in a spiraling cycle. Water vapor feedback can also amplify the warming effect of other GHGs, such that the warming brought about by increased carbon dioxide allows more water vapor to enter the atmosphere (NASA 2015b).

3.2.1 - Emissions Inventories

An emissions inventory is a database that lists, by source, the amount of air pollutants discharged into the atmosphere of a geographic area during a given time period. Emissions worldwide were approximately 43,286 million metric tons of carbon dioxide equivalents ($MMTCO_2e$) in 2012. As shown in Figure 6, China was the largest GHG emitter with over 10 billion metric tons of CO_2e, and the United States was the second-largest GHG emitter with over 6 billion metric tons of CO_2e (WRI 2014).

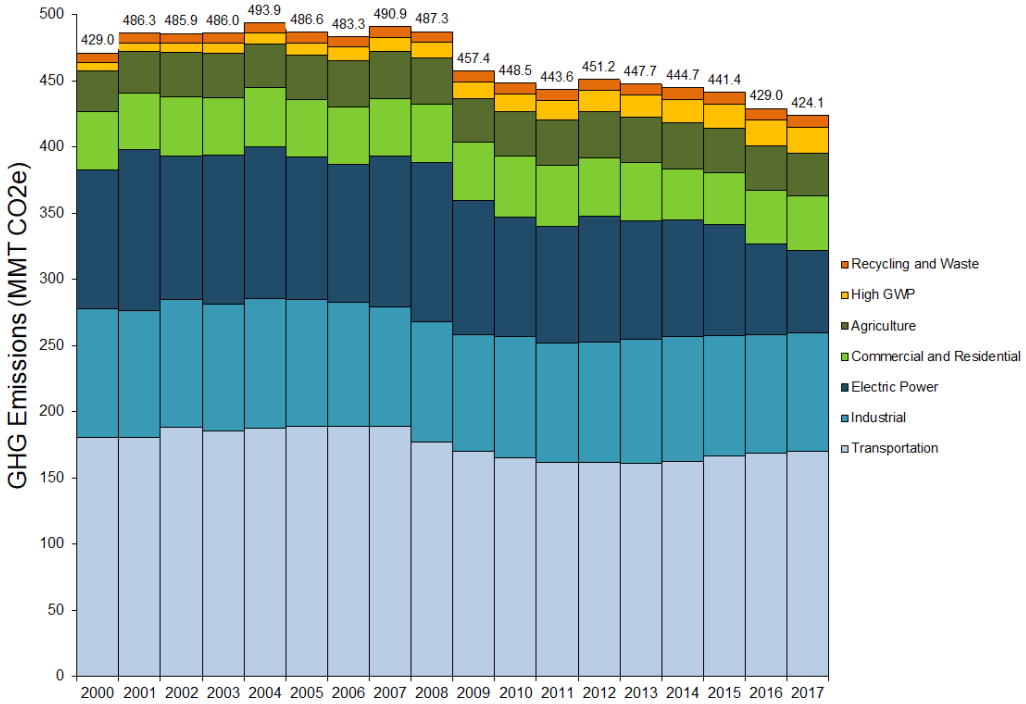
Figure 6: Greenhouse Gas Emissions by Geographic Area



Source: WRI 2014.

Figure 7 shows the contributors of GHG emissions in California between years 2000 and 2017 by Scoping Plan category. The main contributor was transportation. The second highest sector was industrial, which includes sources from refineries, general fuel use, oil and gas extraction, cement plants, and cogeneration heat output. ARB reported that California's GHG emissions inventory was 424.1 $MMTCO_2e$ in 2017 (ARB 2018a).

Figure 7: Greenhouse Gas Emission Trends by Scoping Plan Category in California



Source: ARB 2018a.

3.3—Regulatory Environment

3.3.1 - International

International organizations, such as the ones discussed below, have made substantial efforts to reduce GHGs. Preventing human-induced climate change will require the participation of all nations in solutions to address the issue.

Intergovernmental Panel on Climate Change. In 1988, the United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change. The panel was tasked with assessing the scientific, technical, and socioeconomic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation.

United Nations Framework Convention on Climate Change (Convention). On March 21, 1994, the United States joined a number of countries around the world in signing the Convention. Under the Convention, governments gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change.

Kyoto Protocol. The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing GHG emissions at average of five percent against 1990 levels over the five-year period from 2008–2012. The Convention (as discussed above) encouraged industrialized countries to stabilize emissions; however, the Protocol commits them to do so. Developed countries have contributed more emissions over the last 150 years; therefore, the Protocol places a heavier burden on developed nations under the principle of "common but differentiated responsibilities."

In 2001, President George W. Bush indicated that he would not submit the treaty to the U.S. Senate for ratification, which effectively ended American involvement in the Kyoto Protocol. In December 2009, international leaders met in Copenhagen to address the future of international climate change commitments post-Kyoto. No binding agreement was reached in Copenhagen; however, the Committee identified the long-term goal of limiting the maximum global average temperature increase to no more than 2°C above pre-industrial levels, subject to a review in 2015. The UN Climate Change Committee held additional meetings in Durban, South Africa in November 2011; Doha, Qatar in November 2012; and Warsaw, Poland in November 2013. The meetings are gradually gaining consensus among participants on individual climate change issues.

On September 23, 2014, more than 100 heads of state and government, along with leaders from the private sector and civil society met at the Climate Summit in New York hosted by the United Nations. At the Summit, heads of government, business, and civil society announced actions in areas that would have the greatest impact on reducing emissions, including: climate finance, energy, transport, industry, agriculture, cities, forests, and building resilience.

Paris Agreement. Parties to the United Nations Framework Convention on Climate Change (UNFCCC) reached a landmark agreement on December 12, 2015 in Paris, charting a fundamentally new course in the two-decade-old global climate effort. Culminating in a 4-year negotiating round, the new treaty ends the strict differentiation between developed and developing countries that characterized earlier efforts, replacing it with a common framework that commits all countries to put forward their best efforts and to strengthen those efforts in the years ahead. This includes, for the first time, requirements that all parties report regularly on their emissions and implementation efforts, and undergo international review.

The agreement and a companion decision by parties were the key outcomes of the conference, known as the 21st session of the UNFCCC Conference of the Parties, or COP 21. Together, the Paris Agreement and the accompanying COP decision:

- Reaffirm the goal of limiting global temperature increase well below 2 degrees Celsius, while urging efforts to limit the increase to 1.5 degrees;
- Establish binding commitments by all parties to make "nationally determined contributions" (NDCs), and to pursue domestic measures aimed at achieving them;
- Commit all countries to report regularly on their emissions and "progress made in implementing and achieving" their NDCs, and to undergo international review;
- Commit all countries to submit new NDCs every five years, with the clear expectation that they will "represent a progression" beyond previous ones;
- Reaffirm the binding obligations of developed countries under the UNFCCC to support the efforts of developing countries, while for the first time encouraging voluntary contributions by developing countries too;
- Extend the current goal of mobilizing $100 billion a year in support by 2020 through 2025, with a new, higher goal to be set for the period after 2025;
- Extend a mechanism to address "loss and damage" resulting from climate change, which explicitly will not "involve or provide a basis for any liability or compensation;"
- Require parties engaging in international emissions trading to avoid "double counting;" and
- Call for a new mechanism, similar to the Clean Development Mechanism under the Kyoto Protocol, enabling emission reductions in one country to be counted toward another country's NDC (C2ES 2015a).

On June 1, 2017, President Trump announced the decision for the United States to withdraw from the Paris Climate Accord (White House 2017). The earliest possible effective withdrawal date by the United States cannot be before November 4, 2020. California remains committed to combating climate change through programs designed to reduce GHGs.

3.3.2 - Federal Regulations

Prior to the last decade, there were no concrete federal regulations of GHGs or major planning for climate change adaptation. Since then, federal activity has increased. The following are actions regarding the federal government, GHGs, and fuel efficiency.

Greenhouse Gas Endangerment. *Massachusetts v. EPA* (Supreme Court Case 05-1120) was argued before the United States Supreme Court on November 29, 2006, in which it was petitioned that the EPA regulate four GHGs, including carbon dioxide, under Section 202(a)(1) of the Clean Air Act. A decision was made on April 2, 2007, in which the Supreme Court found that GHGs are air pollutants covered by the Clean Air Act. The Court held that the Administrator must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the Clean Air Act:

- Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed greenhouse gases—carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride—in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution, which threatens public health and welfare.

These findings do not impose requirements on industry or other entities. However, this was a prerequisite for implementing GHG emissions standards for vehicles, as discussed in the section "Clean Vehicles" below. After a lengthy legal challenge, the United States Supreme Court declined to review an Appeals Court ruling upholding the EPA Administrator findings (EPA 2009c).

Clean Vehicles. Congress first passed the Corporate Average Fuel Economy law in 1975 to increase the fuel economy of cars and light duty trucks. The law has become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the United States. On April 1, 2010, the EPA and the Department of Transportation's National Highway Safety Administration announced a joint final rule establishing a national program that would reduce GHG emissions and improve fuel economy for new cars and trucks sold in the United States.

The first phase of the national program applies to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile, equivalent to 35.5 miles per gallon; that is, if the automobile industry were to meet this CO_2 level solely through fuel economy improvements. Together, these standards would cut CO_2 emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012–2016). The EPA and the National Highway Safety Administration issued final rules on a second-phase joint rulemaking, establishing national standards for light-duty vehicles for model years 2017 through 2025 in August 2012 (EPA 2012b). The new standards for model years

2017 through 2025 apply to passenger cars, light-duty trucks, and medium duty passenger vehicles. The final standards are projected to result in an average industry fleetwide level of 163 grams/mile of CO_2 in model year 2025, which is equivalent to 54.5 miles per gallon if achieved exclusively through fuel economy improvements.

The EPA and the U.S. Department of Transportation issued final rules for the first national standards to reduce GHG emissions and improve fuel efficiency of heavy-duty trucks and buses on September 15, 2011, which became effective November 14, 2011. For combination tractors, the agencies are proposing engine and vehicle standards that began in the 2014 model year and achieve up to a 20-percent reduction in CO_2 emissions and fuel consumption by the 2018 model year. For heavy-duty pickup trucks and vans, the agencies are proposing separate gasoline and diesel truck standards, which phase in starting in the 2014 model year and achieve up to a 10-percent reduction for gasoline vehicles, and a 15-percent reduction for diesel vehicles by 2018 model year (12 and 17 percent respectively if accounting for air conditioning leakage). Lastly, for vocational vehicles, the engine and vehicle standards would achieve up to a 10-percent reduction in fuel consumption and CO_2 emissions from the 2014 to 2018 model years.

Mandatory Reporting of Greenhouse Gases. The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory GHG reporting requirements. On September 22, 2009, the EPA issued the Final Mandatory Reporting of Greenhouse Gases Rule, which became effective January 1, 2010. The rule requires reporting of GHG emissions from large sources and suppliers in the United States, and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, 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 are required to submit annual reports to the EPA.

New Source Review. The EPA issued a final rule on May 13, 2010 that establishes thresholds for GHGs, which will define when permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule "tailors" the requirements of these Clean Air Act permitting programs to limit which facilities will be required to obtain Prevention of Significant Deterioration and Title V permits. In the preamble to the revisions to the federal code of regulations, the EPA states:

> This rulemaking is necessary because without it the Prevention of Significant Deterioration and Title V requirements would apply, as of January 2, 2011, at the 100 or 250 tons per year levels provided under the Clean Air Act, greatly increasing the number of required permits, imposing undue costs on small sources, overwhelming the resources of permitting authorities, and severely impairing the functioning of the programs. EPA is relieving these resource burdens by phasing in the applicability of these programs to greenhouse gas sources, starting with the largest greenhouse gas emitters. This rule establishes two initial steps of the phase-in. The rule also commits the agency to take certain actions on future steps addressing smaller sources, but excludes certain smaller sources from Prevention of Significant Deterioration and Title V permitting for greenhouse gas emissions until at least April 30, 2016.

The EPA estimates that facilities responsible for nearly 70 percent of the national GHG emissions from stationary sources will be subject to permitting requirements under this rule. This includes the nation's largest GHG emitters—power plants, refineries, and cement production facilities.

Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units. As required by a settlement agreement, the EPA proposed new performance standards for emissions of carbon dioxide for new, affected, fossil fuel-fired electric utility generating units on March 27, 2012. New sources greater than 25 megawatts would be required to meet an output based standard of 1,000 pounds of carbon dioxide per megawatt-hour, based on the performance of widely used natural gas combined cycle technology. President Trump signed the Executive Order on Energy Independence (E.O. 13783), which calls for a review of the Clean Power Plan. On October 16, 2017, the EPA issued the proposed rule Repeal of Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units an Energy Independence (EPA 2017).

Cap-and-Trade. Cap-and-Trade refers to a policy tool where emissions are limited to a certain amount and can be traded, or provides flexibility on how the emitter can comply. There is no federal GHG Cap-and-Trade program currently; however, some states have joined to create initiatives to provide a mechanism for Cap-and-Trade.

The Regional Greenhouse Gas Initiative is an effort to reduce GHGs among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. Each state caps carbon dioxide emissions from power plants, auctions carbon dioxide emission allowances, and invests the proceeds in strategic energy programs that further reduce emissions, save consumers money, create jobs, and build a clean energy economy. The Initiative began in 2008.

The Western Climate Initiative partner jurisdictions have developed a comprehensive initiative to reduce regional GHG emissions to 15 percent below 2005 levels by 2020. The partners are California, British Columbia, Manitoba, Ontario, and Quebec. Currently only California and Quebec are participating in the Cap-and-Trade program (C2ES 2015).

3.3.3 - California

Legislative Actions to Reduce GHGs

The State of California legislature has enacted a series of bills that constitute the most aggressive program to reduce GHGs of any state in the nation. Some legislation such as the landmark AB 32 California Global Warming Solutions Act of 2006 was specifically enacted to address GHG emissions. Other legislation such as Title 24 and Title 20 energy standards were originally adopted for other purposes such as energy and water conservation, but also provide GHG reductions. This section describes the major provisions of the legislation.

AB 32. The California State Legislature enacted AB 32, the California Global Warming Solutions Act of 2006. AB 32 requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. "Greenhouse gases" as defined under AB 32 include carbon dioxide, methane, NO_X, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Since AB 32 was enacted, a seventh

chemical, nitrogen trifluoride, has also been added to the list of GHGs. The ARB is the state agency charged with monitoring and regulating sources of GHGs. AB 32 states the following:

> Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.

The ARB approved the 1990 GHG emissions level of 427 $MMTCO_2e$ on December 6, 2007 (ARB 2007). Therefore, to meet the State's target, emissions generated in California in 2020 are required to be equal to or less than 427 $MMTCO_2e$. Emissions in 2020 in a BAU scenario were estimated to be 596 $MMTCO_2e$, which do not account for reductions from AB 32 regulations (ARB 2008a). At that rate, a 28 percent reduction was required to achieve the 427 $MMTCO_2e$ 1990 inventory. In October 2010, ARB prepared an updated 2020 forecast to account for the effects of the 2008 recession and slower forecasted growth. The 2020 inventory without the benefits of adopted regulation is now estimated at 545 $MMTCO_2e$. Therefore, under the updated forecast, a 21.7 percent reduction from BAU is required to achieve 1990 levels (ARB 2010a).

Progress in Achieving AB 32 Targets and Remaining Reductions Required

The State has made steady progress in implementing AB 32 and achieving targets included in Executive Order S-3-05. The progress is evident in updated emission inventories prepared by ARB, which showed that the State inventory dropped below 1990 levels for the first time in 2016 (ARB 2018b). The 2017 Scoping Plan Update includes projections indicating that the State will meet or exceed the 2020 target with adopted regulations (ARB 2017c).

ARB 2008 Scoping Plan. The ARB's Climate Change Scoping Plan (Scoping Plan) contains measures designed to reduce the State's emissions to 1990 levels by the year 2020 to comply with AB 32 (ARB 2008). The Scoping Plan identifies recommended measures for multiple GHG emission sectors and the associated emission reductions needed to achieve the year 2020 emissions target—each sector has a different emission reduction target. Most of the measures target the transportation and electricity sectors. As stated in the Scoping Plan, the key elements of the strategy for achieving the 2020 GHG target include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewables energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related GHG emissions for regions throughout California and pursuing policies and incentives to achieve those targets;

- Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation.

In addition, the Scoping Plan differentiates between "capped" and "uncapped" strategies. Capped strategies are subject to the proposed Cap-and-Trade program. The Scoping Plan states that the inclusion of these emissions within the Cap-and-Trade program will help ensure that the year 2020 emission targets are met despite some degree of uncertainty in the emission reduction estimates for any individual measure. Implementation of the capped strategies is calculated to achieve a sufficient amount of reductions by 2020 to achieve the emission target contained in AB 32. Uncapped strategies that will not be subject to the Cap-and-Trade emissions caps and requirements are provided as a margin of safety by accounting for additional GHG emission reductions (ARB 2008).

Cap-and-Trade Program. The Cap-and-Trade Program is a key element of the Scoping Plan. It sets a statewide limit on sources responsible for 85 percent of California's GHG emissions, and establishes a price signal needed to drive long-term investment in cleaner fuels and more efficient use of energy. The program is designed to provide covered entities the flexibility to seek out and implement the lowest cost options to reduce emissions. The program conducted its first auction in November 2012. Compliance obligations began for power plants and large industrial sources in January 2013. Other significant milestones include linkage to Quebec's Cap-and-Trade system in January 2014 and starting the compliance obligation for distributors of transportation fuels, natural gas, and other fuels in January 2015 (ARB 2015d).

The Cap-and-Trade Program provides a firm cap, ensuring that the 2020 statewide emission limit will not be exceeded. An inherent feature of the Cap-and-Trade program is that it does not guarantee GHG emissions reductions in any discrete location or by any particular source. Rather, GHG emissions reductions are guaranteed only on an accumulative basis. As summarized by ARB in the First Update:

> The Cap-and-Trade Regulation gives companies the flexibility to trade allowances with others or take steps to cost-effectively reduce emissions at their own facilities. Companies that emit more have to turn in more allowances or other compliance instruments. Companies that can cut their GHG emissions have to turn in fewer allowances. But as the cap declines, aggregate emissions must be reduced. In other words, a covered entity theoretically could increase its GHG emissions every year and still comply with the Cap-and-Trade Program if there is a reduction in GHG emissions from other covered entities. Such a focus on aggregate GHG emissions is considered appropriate because climate change is a global phenomenon, and the effects of GHG emissions are considered cumulative (ARB 2014b).

The Cap-and-Trade Program works with other direct regulatory measures and provides an economic incentive to reduce emissions. If California's direct regulatory measures reduce GHG emissions more than expected, then the Cap-and-Trade Program will be responsible for relatively fewer emissions reductions. If California's direct regulatory measures reduce GHG emissions less than expected, then the Cap-and-Trade Program will be responsible for relatively more emissions reductions. Thus, the Cap-and-Trade Program assures that California will meet its 2020 GHG emissions reduction mandate:

> The Cap-and-Trade Program establishes an overall limit on GHG emissions from most of the California economy—the "capped sectors." Within the capped sectors, some of the reductions are being accomplished through direct regulations, such as improved building and appliance efficiency standards, the [Low Carbon Fuel Standard] LCFS, and the 33 percent [Renewables Portfolio Standard] RPS. Whatever additional reductions are needed to bring emissions within the cap is accomplished through price incentives posed by emissions allowance prices. Together, direct regulation and price incentives assure that emissions are brought down cost-effectively to the level of the overall cap. The Cap-and-Trade Regulation provides assurance that California's 2020 limit will be met because the regulation sets a firm limit on 85 percent of California's GHG emissions. In sum, the Cap-and-Trade Program will achieve aggregate, rather than site specific or project-level, GHG emissions reductions. Also, due to the regulatory architecture adopted by ARB in AB 32, the reductions attributed to the Cap-and-Trade Program can change over time depending on the State's emissions forecasts and the effectiveness of direct regulatory measures (ARB 2014b).

AB 398. The Governor signed AB 398 on July 25, 2017 to extend the Cap-and-Trade Program to 2030. The legislation includes provisions to ensure that offsets used by sources are limited to 4 percent of their compliance obligation from 2021 through 2025 and 6 percent from 2026 through 2030. AB 398 also prevents Air Districts from adopting or implementing emission reduction rules from stationary sources that are also subject to the Cap-and-Trade Program (CAR 2017).

SB 32. The Governor signed SB 32 on September 8, 2016. SB 32 now gives ARB the statutory responsibility to include the 2030 target previously contained in Executive Order B-30-15 in the 2017 Scoping Plan Update. SB 32 states that "In adopting rules and regulations to achieve the maximum technologically feasible and cost-effective greenhouse gas emissions reductions authorized by this division, the state [air resources] board shall ensure that statewide greenhouse gas emissions are reduced to at least 40 percent below the statewide greenhouse gas emissions limit no later than December 31, 2030." The 2017 Climate Change Scoping Plan Update addressing the SB 32 targets was adopted on December 14, 2017. The major elements of the framework proposed to achieve the 2030 target are as follows:

1. SB 350
   - Achieve 50 percent Renewables Portfolio Standard (RPS) by 2030.
   - Doubling of energy efficiency savings by 2030.
2. Low Carbon Fuel Standard (LCFS)
   - Increased stringency (reducing carbon intensity 18 percent by 2030, up from 10 percent in 2020).

3. Mobile Source Strategy (Cleaner Technology and Fuels Scenario)
   - Maintaining existing GHG standards for light- and heavy-duty vehicles.
   - Put 4.2 million zero-emission vehicles (ZEVs) on the roads.
   - Increase ZEV buses, delivery and other trucks.
4. Sustainable Freight Action Plan
   - Improve freight system efficiency.
   - Maximize use of near-zero emission vehicles and equipment powered by renewable energy.
   - Deploy over 100,000 zero-emission trucks and equipment by 2030.
5. Short-Lived Climate Pollutant (SLCP) Reduction Strategy
   - Reduce emissions of methane and hydrofluorocarbons 40 percent below 2013 levels by 2030.
   - Reduce emissions of black carbon 50 percent below 2013 levels by 2030.
6. SB 375 Sustainable Communities Strategies
   - Increased stringency of 2035 targets.
7. Post-2020 Cap-and-Trade Program
   - Declining caps, continued linkage with Québec, and linkage to Ontario, Canada.
   - ARB will look for opportunities to strengthen the program to support more air quality co-benefits, including specific program design elements. In Fall 2016, ARB staff described potential future amendments including reducing the offset usage limit, redesigning the allocation strategy to reduce free allocation to support increased technology and energy investment at covered entities and reducing allocation if the covered entity increases criteria or toxics emissions over some baseline.
8. 20 percent reduction in greenhouse gas emissions from the refinery sector.
9. By 2018, develop Integrated Natural and Working Lands Action Plan to secure California's land base as a net carbon sink (ARB 2017c).

SB 375—The Sustainable Communities and Climate Protection Act of 2008. SB 375 was signed into law on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions, which emits over 40 percent of the total GHG emissions in California. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

Concerning CEQA, SB 375—as codified in Public Resources Code Section 21159.28—states that CEQA findings determinations for certain projects are not required to reference, describe, or discuss (1) growth-inducing impacts or (2) any project-specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network if the project:

1. Is in an area with an approved Sustainable Communities Strategy or an alternative planning strategy that the ARB accepts as achieving the greenhouse gas emission reduction targets;
2. Is consistent with that strategy (in designation, density, building intensity, and applicable policies); and
3. Incorporates the mitigation measures required by an applicable prior environmental document.

The ARB has prepared the Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets. The update includes an increase in the 2035 target for Fresno County from 10 percent to 13 percent (ARB 2017a).

AB 1493—Pavley Regulations and Fuel Efficiency Standards. California AB 1493, enacted on July 22, 2002, required the ARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by the EPA's denial of an implementation waiver. The EPA subsequently granted the requested waiver in 2009, which was upheld by the by the U.S. District Court for the District of Columbia in 2011 (ARB 2013d).

The standards were phased in during the 2009 through 2016 model years. When fully phased in, the near-term (2009–2012) standards resulted in an approximately 22 percent reduction compared with the 2002 fleet, and the mid-term (2013–2016) standards resulted in about a 30 percent reduction. Several technologies stand out as providing significant reductions in emissions at favorable costs. These include discrete variable valve lift or camless valve actuation to optimize valve operation, rather than relying on fixed valve timing and lift as has historically been done; turbocharging to boost power and allow for engine downsizing; improved multi-speed transmissions; and improved air conditioning systems that operate optimally, leak less, and/or use an alternative refrigerant (ARB 2013e).

The second phase of the implementation for the Pavley bill was incorporated into Amendments to the Low-Emission Vehicle Program referred to as LEV III or the Advanced Clean Cars program. The Advanced Clean Car program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for model years 2017 through 2025. The regulation will reduce GHGs from new cars by 34 percent from 2016 levels by 2025. The rules will reduce pollutants from gasoline and diesel-powered cars, and deliver increasing numbers of zero-emission technologies, such as full battery electric cars, newly emerging plug-in hybrid electric vehicles, and hydrogen fuel cell cars. The regulations will also ensure adequate fueling infrastructure is available for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California (ARB 2017e).

SB 1368—Emission Performance Standards. In 2006, the State Legislature adopted SB 1368, which was subsequently signed into law by the governor. SB 1368 directs the California Public Utilities Commission to adopt a performance standard for GHG emissions for the future power purchases of California utilities. SB 1368 seeks to limit carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than 5 years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant. Because of the carbon content of its fuel source, a coal-fired plant cannot meet this standard

because such plants emit roughly twice as much carbon as natural gas, combined cycle plants. Accordingly, the new law effectively prevents California's utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of the State. The California Public Utilities Commission adopted the regulations required by SB 1368 on August 29, 2007. The regulations implementing SB 1368 establish a standard for baseload generation owned by, or under long-term contract to publicly owned utilities, of 1,100 lbs. CO_2 per megawatt-hour (MWh).

SB 1078—Renewable Electricity Standards. On September 12, 2002, Governor Gray Davis signed SB 1078, requiring California to generate 20 percent of its electricity from renewable energy by 2017. SB 107 changed the due date to 2010 instead of 2017. On November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order S-14-08, which established a Renewable Portfolio Standard target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020. Governor Schwarzenegger also directed the ARB (Executive Order S-21-09) to adopt a regulation by July 31, 2010, requiring the State's load serving entities to meet a 33 percent renewable energy target by 2020 The ARB approved the Renewable Electricity Standard on September 23, 2010 by Resolution 10-23. In 2011, the state legislature adopted this higher standard in SB X1-2. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas.

SB 350—Clean Energy and Pollution Reduction Act of 2015. The legislature approved and the governor then signed SB 350 on October 7, 2015, which reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the RPS, higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for electric vehicle charging stations. Provisions for a 50 percent reduction in the use of petroleum statewide were removed from the Bill because of opposition and concern that it would prevent the Bill's passage. Specifically, SB 350 requires the following to reduce statewide GHG emissions:

- Increase the amount of electricity procured from renewable energy sources from 33 percent to 50 percent by 2030, with interim targets of 40 percent by 2024, and 25 percent by 2027.
- Double the energy efficiency in existing buildings by 2030. This target will be achieved through the California Public Utility Commission (CPUC), the California Energy Commission (CEC), and local publicly owned utilities.
- Reorganize the Independent System Operator (ISO) to develop more regional electricity transmission markets and improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States (California Leginfo 2015).

SB 100- California Renewables Portfolio Standard Program. The Governor approved SB 100 on September 10, 2018. The legislation revised the Renewable Portfolio Standard goals to achieve the 50 percent renewable resources target by December 31, 2026, and to achieve a 60 percent target by December 31, 2030. The bill would require that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt hours of those products sold to their retail end-use customers achieve 44 percent of retail sales by December 31, 2024, 52 percent by December 31, 2027, and 60 percent by December 31, 2030 (California Leginfo 2018).

SBX 7-7—The Water Conservation Act of 2009. The legislation directs urban retail water suppliers to set individual 2020 per capita water use targets and begin implementing conservation measures to achieve those goals. Meeting this statewide goal of 20 percent decrease in demand will result in a reduction of almost 2 million acre-feet in urban water use in 2020.

Executive Orders Related to GHG Emissions

California's Executive Branch has taken several actions to reduce GHGs through the use of executive orders. Although not regulatory, they set the tone for the State and guide the actions of state agencies.

Executive Order S-3-05. On June 1, 2005, former California Governor Arnold Schwarzenegger announced through Executive Order S-3-05, the following reduction targets for GHG emissions:

- By 2010, reduce greenhouse gas emissions to 2000 levels.
- By 2020, reduce greenhouse gas emissions to 1990 levels.
- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.

The 2050 reduction goal represents what some scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be a mid-term target. Because this is an executive order, the goals are not legally enforceable for local governments or the private sector.

Executive Order B-30-15. On April 29, 2015, Governor Edmund G. Brown Jr. issued an executive order to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor's executive order aligns California's GHG reduction targets with those of leading international governments ahead of the United Nations Climate Change Conference in Paris late 2015. The executive order sets a new interim statewide GHG emission reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050, and directs the ARB to update the Climate Change Scoping Plan to express the 2030 target in terms of $MMTCO_2e$. The executive order also requires the State's climate adaptation plan to be updated every three years and for the State to continue its climate change research program, among other provisions. As with Executive Order S-3-05, this executive order is not legally enforceable against local governments and the private sector. Legislation that would update AB 32 to provide post-2020 targets was signed by the Governor in 2016. SB 32 includes a 2030 mandate matching the requirements of the Executive Order.

Executive Order S-01-07—Low Carbon Fuel Standard. The governor signed Executive Order S 01-07 on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. In particular, the executive order established a Low Carbon Fuel Standard (LCFS) and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, the ARB, the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. After legal challenge, the Office of Administrative Law (OAL) approved the regulation on November 16, 2015 (ARB 2015e). The ARB approved amendments to the LCFS on September 27, 2018 that require a 20 percent reduction in carbon intensity by 2030 (ARB 2018c).

Executive Order S-13-08. Executive Order S-13-08 states that "climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of its population and to its natural resources." Pursuant to the requirements in the order, the 2009 California Climate Adaptation Strategy (California Natural Resources Agency 2009) was adopted, which is the ". . . first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States." Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

Executive Order B-55-18. Executive Order B-55-18 issued by Governor Brown on September 10, 2018 establishes a new statewide goal to achieve carbon neutrality as soon as possible, but no later than 2045, and achieve and maintain net negative emissions thereafter. The executive order directs ARB to work with relevant state agencies to develop a framework for implementation and accounting that tracks progress toward this goal (Brown 2018).

California Regulations and Building Codes

California has a long history of adopting regulations to improve energy efficiency in new and remodeled buildings. These regulations have kept California's energy consumption relatively flat even with rapid population growth.

Title 20 Appliance Efficiency Regulations. California Code of Regulations, Title 20: Division 2, Chapter 4, Article 4, Sections 1601–1608: Appliance Efficiency Regulations regulates the sale of appliances in California. The Appliance Efficiency Regulations include standards for both federally regulated appliances and non-federally regulated appliances. Twenty-three categories of appliances are included in the scope of these regulations including lighting, air conditioning, and most home appliances. The standards within these regulations apply to appliances that are sold or offered for sale in California, except those sold wholesale in California for final retail sale outside the State and those designed and sold exclusively for use in recreational vehicles or other mobile equipment (CEC 2018a).

Title 24 Energy Efficiency Standards. California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The most current 2019 Building Energy Efficiency Standards went into effect on January 1, 2020 (CEC 2018b).

Title 24 California Green Building Standards Code (California Code of Regulations Title 24, Part 11 code) is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect January 1, 2011. The code is updated on a regular basis, with the most recent update consisting of the 2016 California Green Building Code Standards that became effective January 1, 2017. Local jurisdictions are permitted to adopt more stringent requirements, as state law provides methods for local enhancements. The Code recognizes that many jurisdictions have developed existing construction and demolition ordinances, and defers to them as the ruling guidance

as long as they provide a minimum 50-percent diversion requirement. The code also provides exemptions for areas not served by construction and demolition recycling infrastructure. State building code provides the minimum standard that buildings need to meet in order to be certified for occupancy, which is generally enforced by the local building official.

The California Green Building Standards Code (California Code of Regulations Title 24, Part 11 code) requires:

- **Short-term bicycle parking**. If a commercial project is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for five percent of visitor motorized vehicle parking capacity, with a minimum of one two-bike capacity rack (5.106.4.1.1).
- **Long-term bicycle parking**. For buildings with over 10 tenant-occupants, provide secure bicycle parking for five percent of tenant-occupied motorized vehicle parking capacity, with a minimum of one space (5.106.4.1.2).
- **Designated parking**. Provide designated parking in commercial projects for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).
- **Recycling by Occupants**. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage, and collection of nonhazardous materials for recycling. (5.410.1).
- **Construction waste**. A minimum 50-percent diversion of construction and demolition waste from landfills, increasing voluntarily to 65 and 80 percent for new Communities and 80-percent for commercial projects. (5.408.1, A5.408.3.1 [nonresidential], A5.408.3.1 [residential]). All (100 percent) of trees, stumps, rocks and associated vegetation and soils resulting from land clearing shall be reused or recycled (5.408.3).
- **Wastewater reduction**. Each building shall reduce the generation of wastewater by one of the following methods:
  1. The installation of water-conserving fixtures or
  2. Using nonpotable water systems (5.303.4).
- **Water use savings**. Twenty percent mandatory reduction in indoor water use with voluntary goal standards for 30, 35, and 40 percent reductions (5.303.2, A5303.2.3 [nonresidential]).
- **Water meters**. Separate water meters for buildings in excess of 50,000 square feet or buildings projected to consume more than 1,000 gallons per day (5.303.1).
- **Irrigation efficiency**. Moisture-sensing irrigation systems for larger landscaped areas (5.304.3).
- **Materials pollution control**. Low-pollutant emitting interior finish materials such as paints, carpet, vinyl flooring, and particleboard (5.404).
- **Building commissioning**. Mandatory inspections of energy systems (i.e., heat furnace, air conditioner, mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity according to their design efficiencies (5.410.2).

Model Water Efficient Landscape Ordinance. The Model Water Efficient Landscape Ordinance (Ordinance) was required by AB 1881 Water Conservation Act. The bill required local agencies to adopt a local landscape ordinance at least as effective in conserving water as the Model Ordinance by January 1, 2010. Reductions in water use of 20 percent consistent with (SBX-7-7) 2020 mandate are expected for the ordinance. Governor Brown's Drought Executive Order of April 1, 2015 (EO B-29-15) directed DWR to update the ordinance through expedited regulation. The California Water Commission approved the revised ordinance on July 15, 2015, which became effective on December 15, 2015. New development projects that include landscaped areas of 500 square feet or more are subject to the ordinance. The update requires:

- More efficient irrigation systems
- Incentives for graywater usage
- Improvements in on-site stormwater capture
- Limiting the portion of landscapes that can be planted with high water use plants
- Reporting requirements for local agencies.

SB 97 and the CEQA Guidelines Update. Passed in August 2007, SB 97 added Section 21083.05 to the Public Resources Code. The code states: "(a) On or before July 1, 2009, the Office of Planning and Research shall prepare, develop, and transmit to the Resources Agency guidelines for the mitigation of GHG emissions or the effects of GHG emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption. (b) On or before January 1, 2010, the Resources Agency shall certify and adopt guidelines prepared and developed by the Office of Planning and Research pursuant to subdivision (a)."

Section 21097 was also added to the Public Resources Code. This provided an exemption until January 1, 2010 for transportation projects funded by the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006, or projects funded by the Disaster Preparedness and Flood Prevention Bond Act of 2006—in stating that the failure to analyze adequately the effects of GHGs would not violate CEQA. The Natural Resources Agency completed the approval process and the Amendments became effective on March 18, 2010. The Natural Resources Agency adopted additional amendments related to greenhouse gases in the 2019 CEQA Guidelines Update adopted on December 28, 2018.

The 2010 CEQA Amendments along with the 2018 CEQA Amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. The CEQA Amendments fit within the existing CEQA framework by amending existing CEQA Guidelines to reference climate change.

Section 15064.4(b) of the CEQA Guidelines provides direction for lead agencies for assessing the significance of impacts of GHG emissions:

- The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; or

- The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project. In determining the significance of impacts, the lead agency may consider a project's consistency with the State's long-term climate goals or strategies, provided that substantial evidence supports the agency's analysis of how those goals or strategies address the project's incremental contribution to climate change and its conclusion that the project's incremental contribution is not cumulatively considerable.

Section 15064.4(c) states that a lead agency may use a model or methodology to estimate greenhouse gas emissions resulting from a project. The lead agency has discretion to select the model or methodology it considers most appropriate to enable decision makers to intelligently take into account the project's incremental contribution to climate change. The lead agency must support its selection of a model or methodology with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use.

The 2018 CEQA Guidelines include the following discussion regarding thresholds of significance.

> (d) Using environmental standards as thresholds of significance promotes consistency in significance determinations and integrates environmental review with other environmental program planning and regulation. Any public agency may adopt or use an environmental standard as a threshold of significance. In adopting or using an environmental standard as a threshold of significance, a public agency shall explain how the particular requirements of that environmental standard reduce project impacts, including cumulative impacts, to a level that is less than significant, and why the environmental standard is relevant to the analysis of the project under consideration. For the purposes of this subdivision, an "environmental standard" is a rule of general application that is adopted by a public agency through a public review process and that is all of the following:
>
> (1) a quantitative, qualitative or performance requirement found in an ordinance, resolution, rule, regulation, order, plan or other environmental requirement;
> (2) adopted for the purpose of environmental protection;
> (3) addresses the environmental effect caused by the project; and,
> (4) applies to the project under review.

In addition, the 2018 amendments revised Appendix G Checklist questions to include a new question specifically on energy conservation. CEQA emphasizes that the effects of GHG emissions are cumulative and should be analyzed in the context of CEQA's requirements for cumulative impacts analysis (see CEQA Guidelines Section 15130(f)).

California Supreme Court GHG Ruling

A November 30, 2015 ruling, the *California Supreme Court in Center for Biological Diversity (CBD) v. California Department of Fish and Wildlife (CDFW)* on the Newhall Ranch project, concluded that whether the project was consistent with meeting statewide emission reduction goals is a legally permissible criterion of significance, but the significance finding for the project was not supported by a reasoned explanation based on substantial evidence. The Court offered potential solutions on pages 25 to 27 of the ruling to address this issue summarized below.

Specifically, the Court advised that:

- **Substantiation of Project Reductions from BAU**. A lead agency may use a BAU comparison based on the Scoping Plan's methodology if it also substantiates the reduction a particular project must achieve to comply with statewide goals. The Court suggested a lead agency could examine the "data behind the Scoping Plan's business-as-usual model" to determine the necessary project-level reductions from new land use development at the proposed location (p. 25).
- **Compliance with Regulatory Programs or Performance Based Standards**. "A lead agency might assess consistency with A.B. 32's goal in whole or part by looking to compliance with regulatory programs designed to reduce greenhouse gas emissions from particular activities. (See Final Statement of Reasons, supra, at p. 64 [greenhouse gas emissions 'may be best analyzed and mitigated at a programmatic level.'].) To the extent a project's design features comply with or exceed the regulations outlined in the Scoping Plan and adopted by the Air Resources Board or other state agencies, a lead agency could appropriately rely on their use as showing compliance with 'performance based standards' adopted to fulfill 'a statewide . . . plan for the reduction or mitigation of greenhouse gas emissions.' (CEQA Guidelines § 15064.4(a)(2), (b)(3); see also id., § 15064(h)(3) [determination that impact is not cumulatively considerable may rest on compliance with previously adopted plans or regulations, including 'plans or regulations for the reduction of greenhouse gas emissions'].)" (p. 26).
- **Compliance with GHG Reduction Plans or Climate Action Plans (CAPs)**. A lead agency may utilize "geographically specific GHG emission reduction plans" such as climate action plans or greenhouse gas emission reduction plans to provide a basis for the tiering or streamlining of project-level CEQA analysis (p. 26).
- **Compliance with Local Air District Thresholds**. A lead agency may rely on "existing numerical thresholds of significance for greenhouse gas emissions" adopted by, for example, local air districts (p. 27).

Therefore, consistent with CEQA Guidelines Appendix G, the three factors identified in CEQA Guidelines Section 15064.4 and the recently issued Newhall Ranch opinion, the GHG impacts would be considered significant if the project would:

- Conflict with a compliant GHG Reduction Plan if adopted by the lead agency;
- Exceed the SJVAPCD GHG Reduction Threshold; or
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of GHGs.

3.3.4 - San Joaquin Valley Air Pollution Control District

Climate Change Action Plan

On August 21, 2008, the SJVAPCD Governing Board approved a proposal called the Climate Change Action Plan (CCAP). The CCAP began with a public process bringing together stakeholders, land use agencies, environmental groups, and business groups to conduct public workshops to develop comprehensive policies for CEQA guidelines, a carbon exchange bank, and voluntary GHG emissions mitigation agreements for the Board's consideration. The CCAP contains the following goals and actions:

- Develop GHG significance thresholds to address CEQA projects with GHG emission increases.
- Develop the San Joaquin Valley Carbon Exchange for banking and trading GHG reductions.
- Authorize use of the SJVAPCD's existing inventory reporting system to allow use for GHG reporting required by AB 32 regulations.
- Develop and administer GHG reduction agreements to mitigate proposed emission increases from new projects.
- Support climate protection measures that reduce greenhouse gas emissions as well as toxic and criteria pollutants. Oppose measures that result in a significant increase in toxic or criteria pollutant emissions in already impacted areas.

On December 17, 2009, the SJVAPCD Governing Board adopted "Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA," and the policy "District Policy—Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency." The SJVAPCD concluded that the existing science is inadequate to support quantification of the impacts that project-specific GHG emissions have on global climatic change. The SJVAPCD found the effects of project-specific emissions to be cumulative, and without mitigation, their incremental contribution to global climatic change could be considered cumulatively considerable. The SJVAPCD found that this cumulative impact is best addressed by requiring all projects to reduce their GHG emissions, whether through project design elements or mitigation.

The SJVAPCD's approach is intended to streamline the process of determining if project-specific GHG emissions would have a significant effect. Projects exempt from the requirements of CEQA, and projects complying with an approved plan or mitigation program would be determined to have a less than significant cumulative impact. Such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources, and must have a certified final CEQA document.

For non-exempt projects, those projects for which there is no applicable approved plan or program, or those projects not complying with an approved plan or program, the lead agency must evaluate the project against performance-based standards and would require the adoption of design elements, known as a Best Performance Standard, to reduce GHG emissions. The Best Performance Standards (BPS) have not yet fully been established, though they must be designed to achieve a 29 percent reduction when compared with the BAU projections identified in ARB's AB 32 Scoping Plan.

BAU represents the emissions that would occur in 2020 if the average baseline emissions during the 2002–2004 period were grown to 2020 levels, without control. Thus, these standards would carry with them pre-quantified emissions reductions, eliminating the need for project-specific quantification. Therefore, projects incorporating BPS would not require specific quantification of GHG emissions, and automatically would be determined to have a less than significant cumulative impact for GHG emissions.

For stationary source permitting projects, BPS means, "The most stringent of the identified alternatives for control of GHG emissions, including type of equipment, design of equipment and operational and maintenance practices, which are achieved-in-practice for the identified service, operation, or emissions unit class." The SJVAPCD has identified BPS for the following sources: boilers; dryers and dehydrators; oil and gas extraction; storage, transportation, and refining operations; cogeneration; gasoline dispensing facilities; volatile organic compound control technology; and steam generators.

For development projects, BPS means, "Any combination of identified GHG emission reduction measures, including project design elements and land use decisions that reduce project-specific GHG emission reductions by at least 29 percent compared with business as usual."

Projects not incorporating BPS would require quantification of GHG emissions and demonstration that BAU GHG emissions have been reduced or mitigated by 29 percent. As stated earlier, ARB's adjusted inventory reduced the amount required by the State to achieve 1990 emission levels from 29 percent to 21.7 percent to account for slower growth experienced since the 2008 recession. According to SJVAPCD guidance, quantification of GHG emissions would be required for all projects for which the lead agency has determined that an environmental impact report is required, regardless of whether the project incorporates BPS. The SJVAPCD has not yet adopted BPS for development projects, so quantification of project emissions is required.

San Joaquin Valley Carbon Exchange

The SJVAPCD initiated work on the San Joaquin Valley Carbon Exchange in November 2008. The purpose of the carbon exchange is to quantify, verify, and track voluntary GHG emissions reductions generated within the San Joaquin Valley. However, the SJVAPCD has pursued an alternative strategy that incorporates the GHG emissions into its existing Rule 2301—Emission Reduction Credit Offset Banking that formerly only addressed criteria pollutants. The SJVAPCD is also participating with the California Air Pollution Control Officers Association (CAPCOA), of which it is a member, in the CAPCOA Greenhouse Gas Reduction Exchange (GHG Rx). The GHG Rx is operated cooperatively by air districts that have elected to participate. Participating districts have signed a Memorandum of Understanding (MOU) with CAPCOA and agree to post only those credits that meet the Rx standards for quality. The objective is to provide a secure, low-cost, high-quality greenhouse gas exchange for credits created in California. The GHG Rx is intended to help fulfill compliance obligations or mitigation needs of local projects subject to environmental review, reducing the uncertainty of using credits generated in distant locations. The SJVAPCD currently has no credits posted to the GHG Rx website as of this writing (CAPCOA 2018).

Rule 2301

While the Climate Change Action Plan indicated that the GHG emission reduction program would be called the San Joaquin Valley Carbon Exchange, the District incorporated a method to register voluntary GHG emission reductions into its existing Rule 2301—Emission Reduction Credit Banking through amendments of the rule. Amendments to the rule were adopted on January 19, 2012. The purposes of the amendments to the rule include the following:

- Provide an administrative mechanism for sources to bank voluntary GHG emission reductions for later use.
- Provide an administrative mechanism for sources to transfer banked GHG emission reductions to others for any use.
- Define eligibility standards, quantitative procedures, and administrative practices to ensure that banked GHG emission reductions are real, permanent, quantifiable, surplus, and enforceable.

Fresno Council of Governments

Regional Transportation Plan

The Fresno Council of Governments (Fresno COG) is the Regional Transportation Planning Agency (RTPA) for the Fresno County region. The Fresno COG adopted the 2014 Regional Transportation Plan/Sustainable Community Strategy (RTP/SCS) that included the County's first Sustainable Community Strategy to comply with SB 375. The RTP is a planning document prepared in cooperation with the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), the California Department of Transportation (Caltrans), and other stakeholders, including transportation system users. The SCS is intended to show how integrated land use and transportation planning can lead to lower greenhouse gas (GHG) emissions from autos and light trucks. SB 375 includes the following four primary findings related to the RTP/SCS development process:

- SB 375 required the ARB to develop regional GHG emission reduction targets for cars and light trucks for each of the 18 MPOs in California, including Fresno COG. ARB approved targets for the San Joaquin Valley in January 2013. The target for Fresno is a per capita reduction in GHG emissions from passenger vehicle travel of five percent by 2020 and 10 percent by 2035 relative to 2005 levels. The 2018 RTP indicates that the County continues to pursue the 5 percent reduction by 2020 and 10 percent reduction by 2035 (Fresno COG 2018).
- SB 375 required the preparation of an SCS. Fresno COG included a SCS that specifies how the GHG emission reduction target set by ARB will be achieved in the RTP. If the target cannot be met through the SCS, then an Alternative Planning Strategy (APS) shall be prepared by Fresno COG. Chapter 4 of the 2014 RTP includes the SCS for Fresno COG. Chapter 3 of the 2018 RTP includes the updated SCS.
- SB 375 streamlines CEQA requirements for specific residential and mixed-use developments that are consistent with the Fresno County SCS or APS (as determined by ARB) to achieve regional GHG emissions reduction target.

The 2018 RTP/SCS was adopted by Fresno COG on July 26, 2018 and reflects its latest per capita GHG reduction targets of 5 percent by 2020, 10 percent by 2035, and 12 percent by 2042 (Fresno COG 2018).

3.3.5 - Local

The City of Kerman has not adopted a Climate Action Plan or Greenhouse Gas Reduction Plan. The 2007 General Plan does not include goals and policies directly related to CEQA; however, land use policies and conservation policies aimed at reducing motor vehicle use or conserving natural resources would provide some GHG emission reductions.

Waste Diversion

With the passage of SB 1016, the Per Capita Disposal Measurement System, only per capita disposal rates are measured. Targets are based on the per capita disposal rates. The City's disposal rate for 2017 was 3.7 pounds per person per day, which is equal to the target of 3.7 pounds per person per day (CalRecycle 2019).

SECTION 4: MODELING PARAMETERS AND ASSUMPTIONS

4.1—Model Selection and Guidance

Air pollutant emissions can be estimated by using emission factors and a level of activity. Emission factors represent the emission rate of a pollutant given the activity over time; for example, grams of NO_X per horsepower-hour or grams of NO_X per vehicle mile traveled. The ARB has published emission factors for on-road mobile vehicles/trucks in the EMFAC mobile source emissions model and emission factors for off-road equipment and vehicles in the OFFROAD emissions model. An air emissions model (or calculator) combines the emission factors and the various levels of activity and outputs the emissions for the various pieces of equipment.

The California Emissions Estimator Model (CalEEMod) version 2016.3.2 was developed by the South Coast Air Quality Management District in cooperation with other air districts throughout the State. CalEEMod is designed as a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with construction and operation from a variety of land uses.

The modeling follows District guidance where applicable from its GAMAQI. The models used in this analysis are summarized as follows:

- Construction emissions: CalEEMod, version 2016.3.2
- Operational emissions: CalEEMod, version 2016.3.2

4.2—Air Pollutants and GHGs Assessed

4.2.1 - Criteria Pollutants Assessed

The following air pollutants are assessed in this analysis:

- Reactive organic gases (ROG)
- Nitrogen oxides (NO_X)
- Carbon monoxide (CO)
- Sulfur dioxide (SO_2)
- Particulate matter less than 10 microns in diameter (PM_{10})
- Particulate matter less than 2.5 microns in diameter ($PM_{2.5}$)

Note that the project would emit ozone precursors ROG and NO_X. However, the project would not directly emit ozone, since it is formed in the atmosphere during the photochemical reaction of ozone precursors. Other criteria pollutants such as vinyl chloride, hydrogen sulfide, lead, and sulfates were not included because of their low levels of emissions from the project.

As noted previously, the project would emit ultrafine particles. However, there is currently no standard separate from the $PM_{2.5}$ standards for ultrafine particles and there is no accepted methodology to quantify or assess the significance of such particles.

4.2.2 - Greenhouse Gases Assessed

This analysis is restricted to GHGs identified by AB 32, which include: carbon dioxide, methane, NO_X, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The project would generate a variety of GHGs, including several defined by AB 32 such as carbon dioxide, methane, and NO_X.

The project may emit GHGs that are not defined by AB 32. For example, the project may generate aerosols through emissions of DPM from the vehicles and trucks that would access the project site. Aerosols are short-lived particles, as they remain in the atmosphere for about one week. Black carbon is a component of aerosol. Studies have indicated that black carbon has a high global warming potential; however, the Intergovernmental Panel on Climate Change states that it has a low level of scientific certainty (IPCC 2007a).

Water vapor could be emitted from evaporated water used for landscaping, but this is not a significant impact because water vapor concentrations in the upper atmosphere are primarily due to climate feedbacks rather than emissions from project-related activities.

The project would emit nitrogen oxides and volatile organic compounds, which are ozone precursors. Ozone is a GHG; however, unlike the other GHGs, ozone in the troposphere is relatively short-lived and can be reduced in the troposphere on a daily basis. Stratospheric ozone can be reduced through reactions with other pollutants.

Certain GHGs defined by AB 32 would not be emitted by the project. Perfluorocarbons and sulfur hexafluoride are typically used in industrial applications, none of which would be used by the project. Therefore, it is not anticipated that the project would emit perfluorocarbons or sulfur hexafluoride.

4.3—Construction Modeling Assumptions

Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and prevailing weather conditions. Construction emissions result from on-site and off-site activities. On-site emissions principally consist of exhaust emissions from the activity levels of heavy-duty construction equipment, motor vehicle operation, and fugitive dust (mainly PM_{10}) from disturbed soil. Additionally, paving operations and application of architectural coatings would release VOC emissions. Off-site emissions are caused by motor vehicle exhaust from delivery vehicles, worker traffic, and road dust (PM_{10} and $PM_{2.5}$).

4.3.1 - Project Schedule

The project is expected to begin grading activities as early as January 2021. First occupancy was assumed to occur in February 2022. The project was assumed to be completed in a single phase. Actual buildout timing is subject to market conditions. The CalEEMod default schedule for construction was used for the project using the January 15, 2021 construction start date.

The analysis uses CalEEMod default assumptions for the equipment used during construction. CalEEMod default construction equipment and equipment activity are based on surveys of construction projects of various sizes conducted for development in Southern California and may overstate equipment use for larger project sites in regions outside of Southern California and should

be considered highly conservative. The modeling assumptions can be reviewed in the modeling results included in Appendix A of this report.

4.3.2 - Construction Equipment Emission Factors

CalEEMod contains an inventory of construction equipment that incorporates estimates of the number of equipment, age, horsepower, and equipment emission control level or tier from which rates of emissions are developed. The CalEEMod default equipment assumptions were used in this analysis for the estimation of emissions from on-site construction equipment. CalEEMod's off-road emission factors and load factors are from the ARB OFFROAD model.

4.3.3 - Demolition

No structures will be demolished to accommodate project construction.

4.3.4 - Site Preparation

Site preparation involves clearing vegetation (grubbing and tree/stump removal) and removing stones and other unwanted material or debris prior to grading. During site preparation, emissions are generated from the use of diesel construction equipment. Fugitive dust is generated during soil-disturbing activities and truck loading and unloading.

4.3.5 - Grading

During grading activities, fugitive dust can be generated from the movement of dirt on the project site. CalEEMod estimates dust from dozers moving dirt around, dust from graders or scrapers leveling the land, and loading or unloading dirt into haul trucks. Each activity is calculated differently in CalEEMod, based on the number of acres traversed by the grading equipment.

Only some pieces of equipment generate fugitive dust in CalEEMod. The CalEEMod manual identifies various equipment and the acreage disturbed in an 8-hour day:

- Crawler tractors, graders, and rubber-tired dozers: 0.5 acre per 8-hour day
- Scrapers: 1 acre per 8-hour day

Therefore, the following acres are the total quantities disturbed per day, per phase, according to the acreage disturbed quantities listed above:

- Site preparation = 1.03 acres per day
- Grading = 2.06 acres per day

4.3.6 - Building Construction, Paving, and Architectural Coatings

The analysis uses the default modeling assumptions from CalEEMod for construction equipment during building construction, paving, and application of architectural coatings. The coatings used for the project are required to comply with the SJVAPCD Rule 4601—Architectural Coatings. The rule required flat paints to meet a standard of 50 grams per liter (g/l) and gloss paints 100 g/l by 2012 for an average rate of 65 g/l. Most of the coatings used for residential painting are flat paints.

4.3.7 - Construction Off-site Trips

Worker trips are accounted for during the construction phases, based on 1.25 trips per piece of equipment (the CalEEMod default). The CalEEMod default worker trip length of 10.8 miles was retained. The CalEEMod default vehicle fleet (LD Mix) was used for employee trips.

Vendor trips for the building construction phase are calculated from a study performed by the Sacramento Metropolitan Air Quality Management District (SMAQMD) based on land use and size. The CalEEMod defaults for vendor trips, trip length, and vehicle fleet (Heavy Duty Truck Vehicle Fleet Mix) were used.

The project is expected to import 41,000 cubic yards of soil during grading. This would require 2,733 haul truck trips using trucks with a 15 cubic yard capacity.

4.4—Operation

Operational emissions are those emissions that occur when the project is occupied by the future residents. The major sources are summarized below.

4.4.1 - Motor Vehicles

Motor vehicle emissions refer to exhaust and road dust emissions from the automobiles that would travel to and from the project residences.

Project trip generation rates were obtained from the *Institute of Transportation Engineers Trip Generation Manual, 10th Edition* for single-family dwelling units.

A pass-by trip accounts for vehicles already on the roadway network that stop at the project site as they pass-by; the pass-by trips are existing vehicle trips in the community. CalEEMod default rates of three percent pass-by trips were used in this analysis.

The vehicle fleet mix is defined as the mix of motor vehicle classes active during the operation of the project. Emission factors are assigned to the expected vehicle mix as a function of vehicle class, speed, and fuel use (gasoline and diesel-powered vehicles). The CalEEMod default vehicle fleet mix overstates the percentage of heavy-duty trucks for residential development projects; therefore, the SJVAPCD-approved Residential Fleet Mix was used for the analysis.

4.4.2 - Architectural Coatings (Painting)

Paints release VOC emissions during application and drying. The buildings in the project would be repainted on occasion. The project is required to comply with the SJVAPCD Rule 4601—Architectural Coatings. The rule required flat paints to meet a standard of 50 grams per liter (g/l) and gloss paints 100 g/l by 2012 for an average rate of 65 g/l. Most of the coatings used for residential painting are flat paints.

4.4.3 - Consumer Products

Consumer products are various solvents used in non-industrial applications, which emit VOCs during their product use. “Consumer Product” means a chemically formulated product used by household

and institutional consumers, including but not limited to: detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn, and garden products; disinfectants; sanitizers; aerosol paints; and automotive specialty products. It does not include other paint products, furniture coatings, or architectural coatings (ARB 2011). The default emission factor developed for CalEEMod was used.

4.4.4 - Landscape Equipment

CalEEMod estimated the landscaping equipment using the default assumptions in the model.

4.4.5 - Electricity

Electricity used by the project (for lighting, etc.) would result in emissions from the power plants that would generate electricity distributed on the electrical power grid. Electricity emissions estimates are only used in the GHG analysis. CalEEMod was used to estimate these emissions from the project.

Electricity Emission Factor

The default CalEEMod emission factors for Pacific Gas & Electric (from the CEC's year 2006 data) are as follows:

- Carbon dioxide: 641.35 pounds per megawatt hour (lbs/MWh)
- Methane: 0.029 lb/MWh
- Nitrous oxide: 0.006 lb/MWh

It is assumed that the Renewable Electricity Standards would have been achieved by 2020. The Renewable Electricity Standard requires that electricity providers include a minimum of 33 percent renewable energy in their portfolios by the year 2020. Pacific Gas & Electric provides estimates of its emission factor per megawatt hour of electricity delivered to its customers. The Pacific Gas and Electric Company (PG&E) emissions factor for 2020 for CO_2 is provided below. No projections have been made by PG&E for later years, so the rate is assumed to remain constant through 2030. The rates for methane and nitrous oxide are based on compliance with the Renewable Portfolio Standard.

- Carbon dioxide: 290 lbs/MWh
- Methane: 0.022 lb/MWh
- Nitrous oxide: 0.005 lb/MWh

4.4.6 - Electricity Consumption

CalEEMod has three categories for electricity consumption: electricity that is impacted by Title 24 regulations, non-Title 24 electricity, and lighting. The Title 24 uses are defined as the major building envelope systems covered by California's Building Code Title 24 Part 6, such as space heating, space cooling, water heating, and ventilation. Lighting is separate since it can be both part and not part of Title 24. Since lighting is not considered as part of the building envelope energy budget, CalEEMod does not consider lighting to have any further association with Title 24 references in the program. Non-Title 24 includes everything else such as appliances and electronics. Total electricity consumption in CalEEMod is divided into the three categories. The percentage for each category is determined by

using percentages derived from the CalEEMod default electricity intensity factors. The percentages are then applied to the electricity consumption to result in the values used in the analysis.

4.4.7 - Natural Gas

The project would generate emissions from the combustion of natural gas for water heaters, heat, etc. CalEEMod has two categories for natural gas consumption: Title 24 and non-Title 24. CalEEMod defaults were used.

4.4.8 - Water and Wastewater

GHG emissions are emitted from the use of electricity to pump water to the project and to treat wastewater. CalEEMod defaults were used.

4.4.9 - Refrigerants

During operation, air conditioners and refrigeration systems may leak refrigerants (hydrofluorocarbons). Hydrofluorocarbons are typically used for refrigerants, which are long-lived GHGs. Residential uses of refrigerants are minor; therefore, they were not estimated.

4.4.10 - Solid Waste

GHG emissions would be generated from the decomposition of solid waste generated by the project. CalEEMod was used to estimate the GHG emissions from this source. The CalEEMod default for the mix of landfill types is as follows:

- Landfill no gas capture: 6%
- Landfill capture gas flare: 94%
- Landfill capture gas energy recovery: 0%

4.4.11 - Vegetation

There is currently limited carbon sequestration occurring on-site from existing vegetation. The project would plant trees and integrate landscaping into the project design, which would provide carbon sequestration. However, the number of trees to be planted is unknown and data are insufficient to accurately determine the impact that existing plants have on carbon sequestration. For this analysis, it was assumed that the loss and addition of carbon sequestration that are due to the project would be balanced; therefore, emissions due to carbon sequestration were not included.

SECTION 5: AIR QUALITY IMPACT ANALYSIS

This section calculates the expected emissions from construction and operation of the project as a necessary requisite for assessing the regulatory significance of project emissions on a regional and localized level.

5.1—CEQA Guidelines

The CEQA Guidelines define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in the environment." To determine if a project would have a significant impact on air quality, the type, level, and impact of emissions generated by the project must be evaluated.

The following air quality significance thresholds are contained in Appendix G of the CEQA Guidelines effective December 28, 2018. A significant impact would occur if the project would:

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 nonattainment under an applicable national or state ambient air quality standard;

c) Expose sensitive receptors to substantial pollutant concentrations; or

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

While the final determination of whether a project is significant is within the purview of the lead agency pursuant to Section 15064(b) of the CEQA Guidelines, the District recommends that its quantitative air pollution thresholds be used to determine the significance of project emissions. If the lead agency finds that the project has the potential to exceed these air pollution thresholds, the project should be considered to have significant air quality impacts. The applicable District thresholds and methodologies are contained under each impact statement below.

5.2—Impact Analysis

5.2.1 - Consistency with Air Quality Plan

Impact AIR-1: The project would not conflict with or obstruct implementation of the applicable air quality plan.

Impact Analysis

The CEQA Guidelines indicate that a significant impact would occur if the project would conflict with or obstruct implementation of the applicable air quality plan. The GAMAQI indicates that projects that do not exceed SJVAPCD regional criteria pollutant emissions quantitative thresholds would not conflict with or obstruct the applicable air quality plan (AQP). An additional criterion regarding the project's implementation of control measures was assessed to provide further evidence of the

project's consistency with current AQPs. This document proposes the following criteria for determining project consistency with the current AQPs:

1. Will the project 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 AQPs? This measure is determined by comparison to the regional and localized thresholds identified by the District for Regional and Local Air Pollutants.
2. Will the project comply with applicable control measures in the AQPs? The primary control measures applicable to development projects is Regulation VIII—Fugitive PM_{10} Prohibitions and Rule 9510 Indirect Source Review.

Contribution to Air Quality Violations

A measure for determining if the project is consistent with the air quality plans is if the project would not result in an increase in the frequency or severity of existing air quality violations, cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the air quality plans. Regional air quality impacts and attainment of standards are the result of the cumulative impacts of all emission sources within the air basin. Individual projects are generally not large enough to contribute measurably to an existing violation of air quality standards. Therefore, the cumulative impact of the project is based on its cumulative contribution. Because of the region's nonattainment status for ozone, $PM_{2.5}$, and PM_{10}—if project-generated emissions of either of the ozone precursor pollutants (ROG and NO_X), PM_{10}, or $PM_{2.5}$ would exceed the District's significance thresholds—then the project would be considered to contribute to violations of the applicable standards and conflict with the attainment plans.

As discussed in Impact AIR-2 below, emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ associated with the construction and operation of the project would not exceed the District's significance thresholds. As shown in Impact AIR-2, the project would not result in CO hotspots that would violate CO standards. Therefore, the project would not contribute to air quality violations.

Compliance with Applicable Control Measures

The AQP contains a number of control measures, which are enforceable requirements through the adoption of rules and regulations. A description of rules and regulations that apply to this project is provided below.

SJVAPCD Rule 9510—Indirect Source Review (ISR) is a control measure in the 2006 PM_{10} Plan that requires NO_X and PM_{10} emission reductions from development projects in the San Joaquin Valley. The NO_X emission reductions help reduce the secondary formation of PM_{10} in the atmosphere (primarily ammonium nitrate and ammonium sulfate) and also reduce the formation of ozone. Reductions in directly emitted PM_{10} reduce particles such as dust, soot, and aerosols. Rule 9510 is also a control measure in the 2016 Plan for the 2008 8-Hour Ozone Standard. Developers of projects subject to Rule 9510 must reduce emissions occurring during construction and operational phases through on-site measures, or pay off-site mitigation fees. The project is required to comply with Rule 9510.

Regulation VIII—Fugitive PM_{10} Prohibitions is a control measure that is one main strategies from the 2006 PM_{10} for reducing the PM_{10} emissions that are part of fugitive dust. Residential projects over 10 acres are required to file a Dust Control Plan (DCP) containing dust control practices sufficient to comply with Regulation VIII. The project is required to prepare a DCP to comply with Regulation VIII.

Other control measures that apply to the project are Rule 4641—Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operation that requires reductions in VOC emissions during paving and Rule 4601—Architectural Coatings that limits the VOC content of all types of paints and coatings sold in the San Joaquin Valley. These measures apply at the point of sale of the asphalt and the coatings, so project compliance is ensured.

The project would comply with all applicable SJVAPCD rules and regulations. Therefore, the project complies with this criterion and would not conflict with or obstruct implementation of the applicable air quality attainment plan.

Conclusion

The project's emissions are less than significant for all criteria pollutants and would not result in inconsistency with the AQP for this criterion. The project complies with applicable control measures of the AQP. Therefore, the project is consistent with the AQP, and the impact would be less than significant.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

5.2.2 - Cumulative Criteria Pollutant Impacts

Impact AIR-2: The project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard.

Impact Analysis

To result in a less than significant impact, the following criteria must be true:

1. Regional analysis: emissions of nonattainment pollutants must be below the District's regional significance thresholds. This is an approach recommended by the District in its GAMAQI.
2. Summary of projections: the project must be consistent with current air quality attainment plans including control measures and regulations. This is an approach consistent with Section 15130(b) of the CEQA Guidelines.

3. Cumulative health impacts: the project must result in less than significant cumulative health effects from the nonattainment pollutants. This approach correlates the significance of the regional analysis with health effects, consistent with the court decision, *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1219-20.

Regional Emissions

Air pollutant emissions have both regional and localized effects. This analysis assesses the regional effects of the project's criteria pollutant emissions in comparison to SJVAPCD thresholds of significance for short-term construction activities and long-term operation of the project. Localized emissions from project construction and operation are assessed under Impact AIR-3—Sensitive Receptors using concentration-based thresholds that determine if the project would result in a localized exceedance of any ambient air quality standards or would make a cumulatively considerable contribution to an existing exceedance.

The primary pollutants of concern during project construction and operation are ROG, NO_X, PM_{10}, and $PM_{2.5}$. The SJVAPCD GAMAQI adopted in 2015 contains thresholds for CO, NO_X, ROG, SO_X, PM_{10}, and $PM_{2.5}$.

Ozone is a secondary pollutant that can be formed miles from the source of emissions, through reactions of ROG and NO_X emissions in the presence of sunlight. Therefore, ROG and NO_X are termed ozone precursors. The Air Basin often exceeds the state and national ozone standards. Therefore, if the project emits a substantial quantity of ozone precursors, the project may contribute to an exceedance of the ozone standard. The Air Basin also exceeds air quality standards for PM_{10}, and $PM_{2.5}$; therefore, substantial project emissions may contribute to an exceedance for these pollutants. The District's annual emission significance thresholds used for the project define the substantial contribution for both operational and construction emissions as follows:

- 100 tons per year CO
- 10 tons per year NO_X
- 10 tons per year ROG
- 27 tons per year SO_X
- 15 tons per year PM_{10}
- 15 tons per year $PM_{2.5}$

The project does not contain sources that would produce substantial quantities of SO_2 emissions during construction and operation. Modeling conducted for the project show that SO_2 emissions are well below the SJVAPCD GAMAQI thresholds, as shown in the modeling results contained in Appendix A. No further analysis of SO_2 is required.

Construction Emissions

Construction emissions were modeled using the CalEEMod version 2016.3.2. The results of the modeling are presented in Table 8. The highest emissions that would occur in any year of construction activity were compared with the significance threshold. For assumptions in estimating the emissions, please refer to Section 4, Modeling Parameters and Assumptions. As shown in Table 8, the emissions are below the significance thresholds in each construction year. Therefore, the emissions are less than significant on a project basis.

Table 8: Construction Air Pollutant Emissions Summary (Unmitigated)

Year	Emissions (tons per year)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Construction 2021	0.32	3.30	2.53	0.45	0.27
Construction 2022	0.93	1.51	1.59	0.11	0.08
Grand Total for All Years of Construction	**1.25**	**4.81**	**4.12**	**0.56**	**0.34**
Highest Construction Emissions in Any Year	***0.93***	***3.30***	***2.53***	***0.45***	***0.27***
Significance threshold (tons/year)	10	10	100	15	15
Exceed threshold—significant impact?	No	No	No	No	No

Notes:
PM_{10} and $PM_{2.5}$ emissions are from the mitigated output to reflect compliance with Regulation VIII—Fugitive PM_{10} Prohibitions.
ROG = reactive organic gases NO_X = nitrogen oxides PM_{10} and $PM_{2.5}$ = particulate matter
Calculations use unrounded numbers.
Source: CalEEMod output (Appendix A).

Operational Emissions

Operational emissions occur over the lifetime of the project and are from three main sources: area sources, energy, and motor vehicles, or mobile sources. Construction of the project is expected to begin as early as January 2021 with first occupancy expected in February 2022. Project buildout was based on the CalEEMod default construction schedule. The actual buildout date is dependent on market forces. The SJVAPCD considers construction and operational emissions separately when making significance determinations.

For assumptions in estimating the emissions, please refer to Section 4, Modeling Parameters and Assumptions and Appendix A. The emissions modeling results for project operation are summarized in Table 9.

Credit for project design features and compliance with regulations not accounted for in CalEEMod default assumption are addressed using the CalEEMod mitigation component and are reflected in the mitigated results. As shown in Table 9, the emissions are below the SJVAPCD significance thresholds prior to accounting for regulations not included in CalEEMod defaults and design features; therefore, the project would result in a less than significant impact.

Table 9: Operational Air Pollutant Emissions (2022 Unmitigated)

Source	Emissions (tons per year)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Area	1.25	0.11	4.58	0.63	0.63
Energy	0.01	0.13	0.05	0.01	0.01
Mobile	0.31	1.12	3.47	1.08	0.29
Total Project Emissions	**1.57**	**1.36**	**8.10**	**1.71**	**0.93**

Table 9 (cont.): Operational Air Pollutant Emissions (2022 Unmitigated)

Source	Emissions (tons per year)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Significance threshold	10	10	100	15	15
Exceed threshold—significant impact?	No	No	No	No	No

Notes:
ROG = reactive organic gases NO_X = nitrogen oxides PM_{10} and $PM_{2.5}$ = particulate matter
Area source emissions include emissions from natural gas, landscape, and painting.
Source: CalEEMod output (Appendix A).

Step 2: Plan Approach

Section 15130(b) of the CEQA Guidelines states the following:

> The following elements are necessary to an adequate discussion of significant cumulative impacts: 1) Either: (A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or (B) A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact.

In accordance with CEQA Guidelines 15130(b), this analysis of cumulative impacts is based on a summary of projections analysis. The District attainment plans are based on a summary of projections that accounts for projected growth throughout the Air Basin, and the controls needed to achieve ambient air quality standards. This analysis considers the current CEQA Guidelines, which includes the amendments approved by the Natural Resources Agency, effective on December 28, 2018. The Air Basin is in nonattainment or maintenance status for ozone and particulate matter (PM_{10} and $PM_{2.5}$), which means that concentrations of those pollutants currently exceed the ambient air quality standards for those pollutants, or that the standards have recently been attained in the case of pollutants with maintenance status. When concentrations of ozone, PM_{10}, or $PM_{2.5}$ exceed the ambient air quality standard, then those sensitive to air pollution (such as children, the elderly, and the infirm) could experience health effects such as: decrease of pulmonary function and localized lung edema in humans and animals; increased mortality risk; and risk to public health, implied by altered connective tissue metabolism, altered pulmonary morphology in animals after long-term exposures, and pulmonary function decrements in chronically exposed humans. See Section 2.3—Existing Air Quality Conditions for additional correlation of the health impacts with the existing pollutant concentrations experienced in the Kerman area.

Under the CEQA Guidelines, cumulative impacts may be analyzed using other plans that evaluate relevant cumulative effects. The geographic scope for cumulative criteria pollution from air quality impacts is the Air Basin, because that is the area in which the air pollutants generated by the sources within the Air Basin circulate and are often trapped. The SJVAPCD is required to prepare and maintain air quality attainment plans and a State Implementation Plan to document the strategies

and measures to be undertaken to reach attainment of ambient air quality standards. While the SJVAPCD does not have authority over land use decisions, it is recognized that changes in land use and circulation planning would help the Air Basin achieve clean air mandates. The District evaluated emissions from land uses and transportation in the entire Air Basin when it developed its attainment plans. Emission inventories used to predict attainment of NAAQS must be based on the latest planning assumptions for mobile sources.

In accordance with CEQA Guidelines Section 15064, subdivision (h)(3), a lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project complies with the requirements in a previously approved plan or mitigation program.

The history and development of the SJVAPCD's current Ozone Attainment Plan is described in Section 2.4, Air Quality Plans. The 2007 8-Hour Ozone Plan contains measures to achieve reductions in emissions of ozone precursors, and sets plans towards attainment of ambient ozone standards by 2023. The 2012 $PM_{2.5}$ Plan and the 2015 $PM_{2.5}$ Plan for the 1997 $PM_{2.5}$ Standard require fewer NO_X reductions to attain the $PM_{2.5}$ standard than the Ozone Plan, so the Ozone Plan is considered the applicable plan for reductions of the ozone precursors NO_X and ROG. The 2012 $PM_{2.5}$ Plan requires reductions in directly emitted $PM_{2.5}$ from combustion sources, such as diesel engines and fireplaces, and from fugitive dust to attain the ambient standard and is the applicable plan for $PM_{2.5}$ emissions. $PM_{2.5}$ is also formed in secondary reactions in the atmosphere involving NO_X and ammonia to form nitrate particles. Reductions in NO_X required for ozone attainment are also sufficient for $PM_{2.5}$ attainment. As discussed in Impact AIR-1, the project is consistent with all applicable control measures in the air quality attainment plans. The project would comply with any District rules and regulations that may pertain to implementation of the AQPs. Therefore, impacts would be less than significant with regard to compliance with applicable rules and regulations.

This project does not exceed SJVAPCD thresholds and will reduce its cumulative impact through compliance with Rule 9510; therefore, the project is considered less than significant for this criterion.

Project Health Impacts

In the 5th District Court of Appeal case *Sierra Club v. County of Fresno (Friant Ranch, L.P.)*, the Court found the project EIR deficient because it did not identify specific health-related effects resulting from the estimated amount of pollutants generated by the project. The ruling stated that the EIR should give a "sense of the nature and magnitude of the 'health and safety problems' caused by a project's air pollution. The EIR should translate the emission numbers into adverse impacts or to understand why such translation is not possible at this time (and what limited translation is, in fact, possible)."

The standard measure of the severity of impact is the concentration of pollutant in the atmosphere compared to the ambient air quality standard for the pollutant for a specified period of time. The severity of the impact increases with the concentration and the amount of time that people are exposed to the pollutant. The change in health impacts with concentration is described in Table 3 and Table 4 using the EPA's Air Quality Index. The pollutants of concern in the Friant Ranch ruling were regional criteria pollutants ozone, and PM_{10}. It is important to note that the potential for localized impacts can be addressed through dispersion modeling. The SJVAPCD includes screening

criteria that if exceeded would require dispersion modeling to determine if project emissions would result in a significant health impact. For this project, no significant localized health impacts would occur. Regional pollutants require more complex modeling as described below.

Ozone concentrations are estimated using regional photochemical models because ozone formation is subject to temperature, inversion strength, sunlight, emissions transport over long distances, dispersion, and the regional nature of the precursor emissions. The emissions from individual projects are too small to produce a measurable change in ozone concentrations – it is the cumulative contribution of emissions from existing and new development that is accounted for in the photochemical model. Ozone concentrations vary widely throughout the day and year even with the same amount of daily emissions. The SJVAPCD indicated in an Amicus Brief on Friant Ranch that running the photochemical model with just Friant Ranch emissions (109.5 tons/year NO_X) is not likely to yield valid information given the relative scale involved. A copy of the SJVAPCD brief is included in Appendix B. The NO_X inventory for the San Joaquin Valley is 224 tons per day in 2019 or 81,760 tons per year. Friant Ranch would result in 0.13 percent increase in NO_X emissions. A project emitting at the SJVAPCD CEQA threshold of 10 tons per year would result in a 0.01 percent increase in NO_X emissions. Most project emissions are generated by motor vehicle travel distributed on regional roadways miles from the project site, and these emissions are not conducive to project-level modeling.

Emissions throughout the San Joaquin Valley are projected to markedly decline in the coming decade. The SJVAPCD 2016 Ozone Plan predicts NO_X emissions will decline to 103 tons per day by 2029 or 54 percent from 2019 levels through implementation of control measures included in the plan. This means that ozone health impacts to residents of the San Joaquin Valley will be lower than currently experienced and most areas of the San Joaquin Valley will have attained ozone air quality standards. The plan accounts for growth in population at rates projected by the State of California for the San Joaquin Valley, so only cumulative projects that would exceed regional growth projections would potentially delay attainment and prolong the time and the number of people would experience health impacts. It is unlikely that anyone would experience greater impacts from regional emissions than currently occur. The federal transportation conformity regulation provides a means of ensuring growth in emissions does not exceed emission budgets for each County. Regional Transportation Plans and Regional Transportation Improvement Plans must provide a conformity analysis based on the latest planning assumptions that demonstrates that budgets will be not be exceeded. If budgets are exceeded, the San Joaquin Valley may be subject to Clean Air Act sanctions until the deficiency is addressed.

Particulate emission impacts can be localized and regional. Particulates can be directly emitted and can be formed in the atmosphere with chemical reactions. Small directly emitted particles such as diesel emissions and other combustion emissions can remain in the atmosphere for a long time and can be transported over long distances. Large particles such as fugitive dust tend to be deposited a short distance from where emitted but can also travel long distances during periods of high winds. Particulates can be washed out of the atmosphere by rain and deposited on surfaces. Secondary particulates formed in the atmosphere such as ammonium nitrate require NO_X and ammonia, and they require low inversion levels and certain ranges of temperature and humidity to result in substantial concentrations. These complications make modeling project particulate emissions to determine concentration feasible only for directly emitted particles at receptor locations close to the

project site. Regional particulate concentrations in the San Joaquin Valley are modeled using a gridded inventory (emissions in tons/day are placed a 4-kilometer, three-dimensional grid to spatially allocate the emissions geographically and vertically in the atmosphere) and an atmospheric chemistry component to simulate the chemical reactions. The model uses relative reduction factors to determine the amount of reductions of each PM component will be needed to attain the air quality standards on the days with the conditions most favorable to high particulate concentrations. A small project would not produce sufficient emissions to determine a project's individual contribution to the particulate concentration.

Step 3: Cumulative Health Impacts

The Air Basin is in nonattainment for ozone, PM_{10} (State only), and $PM_{2.5}$, which means that the background levels of those pollutants are at times higher than the ambient air quality standards. The air quality standards were set to protect public health, including the health of sensitive individuals (such as children, the elderly, and the infirm). Therefore, when the concentration of those pollutants exceeds the standard, it is likely that some sensitive individuals in the population would experience health effects that were described in Table 1. However, the health effects are a factor of the dose-response curve. Concentration of the pollutant in the air (dose), the length of time exposed, and the response of the individual are factors involved in the severity and nature of health impacts. If a significant health impact results from project emissions, it does not mean that 100 percent of the population would experience health effects. Table 2, Table 3, and Table 4 relate the pollutant concentration experienced by residents using air quality data for the nearest air monitoring station to the health impacts ascribed to those concentrations by the EPA Air Quality Index. This provides a more detailed look at the actual impacts currently experienced by area residents.

Since the Basin is nonattainment for ozone, PM_{10}, and $PM_{2.5}$, it is considered to have an existing significant cumulative health impact without the project. When this occurs, the analysis considers whether the project's contribution to the existing violation of air quality standards is cumulatively considerable. The SJVAPCD regional thresholds for NO_X, VOC, PM_{10}, or $PM_{2.5}$ are applied as cumulative contribution thresholds. Projects that exceed the regional thresholds would have a cumulatively considerable health impact. As shown in Table 8 and Table 9, the regional analysis of construction and operational emissions indicates that the project would not exceed the District's significance thresholds and the project is consistent with the applicable Air Quality Plan.

The SJVAPCD Air Quality Attainment Plans predict that nonattainment pollutant emissions will continue to decline each year as regulations adopted to reduce these emissions are implemented, accounting for growth projected for the region. Therefore, the cumulative health impact will also decline even with the project's emission contribution.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

5.2.3 - Sensitive Receptors

Impact AIR-3: The project would not expose sensitive receptors to substantial pollutant concentrations.

Impact Analysis

Sensitive Receptors

Those who are sensitive to air pollution include children, the elderly, and persons with pre-existing respiratory or cardiovascular illness. The District considers a sensitive receptor a location that houses or attracts children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants. Examples of sensitive receptors include hospitals, residences, convalescent facilities, and schools. The closest off-site sensitive receptors are existing residences located adjacent to the project site to the north, south, and west. As a residential land use development project, proposed residences included as part of the project would be considered sensitive receptors once occupied.

Off-site Sensitive Receptors

Impacts to receptors located outside the project boundaries would occur primarily during project construction. Construction emissions commencing with the year 2021 and continue until project buildout. Construction activities are expected to occur over several years as the subdivision is gradually built out; however, most emissions are expected to occur during the initial site preparation and grading activities and to a lesser extent during ground up construction. For criteria pollutants, impacts to receptors located outside of the project are based on emissions during the highest emissions during any construction year. As shown in Table 10 and Table 11, emissions generated from construction and operation of the project are less than SJVAPCD screening criteria. Therefore, this impact would be less than significant.

On-site Sensitive Receptors

The project is not a significant source of TAC emissions. Construction activities produce short-term emissions that would not contribute substantially to cancer risk, which is estimated on a 70-year exposure period.

Construction: ROG

ROG is emitted during the application of architectural coatings (painting). The amount emitted is dependent on the amount of ROG (or VOC) in the paint. ROG emissions are typically an indoor air quality health hazard concern rather than an outdoor air quality health hazard concern. Therefore, exposure to ROG during architectural coatings is a less than significant health impact.

There are three types of asphalt that are typically used in paving: asphalt cements, cutback asphalts, and emulsified asphalts. However, SJVAPCD Rule 4641 prohibits the use of the following types of asphalt: rapid cure cutback asphalt; medium cure cutback asphalt; slow cure asphalt that contains more than one-half (0.5) percent of organic compounds that evaporate at 500 degrees Fahrenheit (°F) or lower; and emulsified asphalt containing organic compounds, in excess of 3 percent by

volume, that evaporate at 500°F or lower. An exception to this is medium cure asphalt when the National Weather Service official forecast of the high temperature for the 24-hour period following application is below 50°F.

The acute (short-term) health effects from worker direct exposure to asphalt fumes include irritation of the eyes, nose, and throat. Other effects include respiratory tract symptoms and pulmonary function changes. The studies were based on occupational exposure of fumes. Residents are not in the immediate vicinity of the fumes; therefore, they would not be subjected to concentrations high enough to evoke a negative response. In addition, the restrictions that are placed on asphalt in the San Joaquin Valley reduce ROG emissions from asphalt and exposure. The impact to nearby sensitive receptors from ROG during construction would be less than significant.

Localized Pollutant Screening Analysis

Emissions occurring at or near the project have the potential to create a localized impact, also referred to as an air pollutant hotspot. Localized emissions are considered significant if, when combined with background emissions, they would result in exceedance of any health-based air quality standard. The impact from localized pollutants is based on the impact to the nearest sensitive receptor.

The SJVAPCD's GAMAQI includes screening thresholds for identifying projects that need detailed analysis for localized impacts. Projects with on-site emission increases from construction activities or operational activities that exceed the 100 pounds per day screening level of any criteria pollutant after compliance with Rule 9510 and implementation of all enforceable mitigation measures would require preparation of an ambient air quality analysis. The criteria pollutants of concern for localized impact in the SJVAB are PM_{10}, $PM_{2.5}$, NO_X, and CO. There is no localized emission standard for ROG and most types of ROG are not toxic and have no health-based standard; however, ROG was included for informational purposes only.

The highest daily emissions occur during project grading activities except for ROG emissions, which are highest during application of architectural coatings. The results of the construction screening analysis are presented in Table 10.

Table 10: Maximum Daily Air Pollutant Emissions during Construction

Maximum Daily Emissions by Year	Emissions (pounds per day)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Construction 2021	4.86	66.72	34.16	10.32	6.39
Construction 2022	76.37	16.87	17.51	1.19	0.87
Highest Emissions in Any Year	**76.37**	**66.72**	**34.16**	**10.32**	**6.39**
Screening Thresholds	100	100	100	100	100
Exceeds Threshold (Yes or No)	No	No	No	No	No

Notes:
NO_X = nitrogen oxides CO = carbon monoxide PM_{10} and $PM_{2.5}$ = particulate matter
N/A = Not applicable
Emissions were highest in the summer run for ROG and CO, while emissions for NO_X were higher in the winter run. There is no ambient air quality standard for ROG.
Source: CalEEMod output (Appendix A).

Maximum Daily Operational Emissions

An analysis of maximum daily emissions during operation was conducted to determine if emissions would exceed 100 pounds per day for any pollutant of concern. The maximum daily operational emissions would occur at project buildout. The project at buildout was modeled for 2022, which is the estimated year of first occupancy. This is considered conservative because emissions decline each year and will be lower if a later buildout year is assumed. Operational emissions include emissions generated on-site by area sources such as natural gas combustion and landscape maintenance, and off-site by motor vehicles accessing the project. Most motor vehicle emissions would occur distant from the site and would not contribute to a violation of ambient air quality standards; therefore, operational emissions reflect a very conservative assumption. The results of the screening analysis are presented in Table 11.

Table 11: Maximum Daily Air Pollutant Emissions during Operations

Maximum Daily Emissions per Source Category and Phase	Emissions (pounds per day)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Area	4.79	1.05	9.00	0.12	0.12
Energy	0.08	0.65	0.27	0.05	0.05
Mobile	2.21	6.21	20.64	5.78	1.58
Total	**7.08**	**7.90**	**29.91**	**5.96**	**1.75**
Screening threshold	100	100	100	100	100
Exceed screening threshold?	No	No	No	No	No

Notes:
NO_X = nitrogen oxides CO = carbon monoxide PM_{10} and $PM_{2.5}$ = particulate matter
N/A = Not applicable
Emissions were highest in the summer run for ROG and CO, while emissions for NO_X were higher in the winter run. There is no ambient air quality standard for ROG.
Source: CalEEMod output (Appendix A).

The project would not exceed SJVAPCD screening thresholds for localized operational criteria pollutant impacts; therefore, the project's localized criteria pollutant impacts would be less than significant.

Operation: ROG

During operation, ROG would be emitted primarily from motor vehicles. Direct exposure to ROG from project motor vehicles would not result in health effects, because the ROG would be distributed across miles and miles of roadway and in the air. The concentrations would not be great enough to result in direct health effects.

Operation: PM_{10}, $PM_{2.5}$, CO, NO_2

As shown in Table 11, localized emissions of PM_{10}, $PM_{2.5}$, CO, and NO_2 would not exceed the SJVAPCD screening thresholds at full project build-out. Residential development is an insignificant source of these pollutants, except for projects that allow woodburning devices that emit PM_{10}, $PM_{2.5}$ in wood

smoke. The project will include only natural gas-fueled fireplaces and inserts that are insignificant sources of $PM_{2.5}$ and PM_{10}. Therefore, the project would not expose sensitive receptors to substantial criteria air pollutant concentrations during operation.

Carbon Monoxide Hot Spot Analysis

Localized high levels of CO are associated with traffic congestion and idling or slow-moving vehicles. The SJVAPCD provides screening criteria to determine when to quantify local CO concentrations based on impacts to the level of service (LOS) of intersections in the project vicinity.

Construction of the project would result in minor increases in traffic for the surrounding road network during the duration of construction. Motor vehicles accessing the site when it becomes operational would result in a minor increase in daily trips that would not substantially reduce the LOS on roads serving the site. The highest background 8-hour average CO concentration during the latest year it was monitored is 2.06 ppm, which is 78 percent lower than the CAAQS of 9.0 ppm or the NAAQS of 9 ppm.

A sensitivity analysis using the CALINE4 CO Hotspot model was run for the nearby City of Fresno for its General Plan Master EIR to determine the volume of trips that would be required to exceed the most stringent CO standard. At triple the predicted peak for General Plan buildout of 36,000 peak-hour trips, the hourly concentration was 7.5 ppm and an 8-hour concentration of 6.0 ppm. Based on this analysis, it is extremely unlikely that a CO hotspot will occur even in the most populous city in the region. CO emissions are predicted to continue to decline as old vehicles are retired and cleaner new motor vehicles take their place.

Therefore, no CO hotspot modeling is required for new projects unless intersection volumes exceed 36,000 peak-hour trips, which is not projected to occur with the project. The highest volume road in vicinity of the project with trip data available is Whitesbridge Road (State Route 180) east of Madera Avenue (State Route 145) with 14,700 trips per day in 2017 (Caltrans 2018). The peak-hour rates would be a small fraction of the daily rates.

Operation: Toxic Air Contaminants

The ARB Air Quality and Land Use Handbook contains recommendations that will “help keep California’s children and other vulnerable populations out of harm’s way with respect to nearby sources of air pollution” (ARB 2005), including recommendations for distances between sensitive receptors and certain land uses. In the *California Building Industry Association v. Bay Area Air Quality Management District*, 62 Cal.4th 369 (2015) (Case No. S213478) the California Supreme Court held that “agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project’s future users or residents. But when a proposed project risks exacerbating those environmental hazards or conditions that already exist, an agency must analyze the potential impact of such hazards on future residents or users. In those specific instances, it is the project’s impact on the environment—and not the environment’s impact on the project—that compels an evaluation of how future residents or users could be affected by exacerbated conditions.” Although the Court ruled that impacts from the existing environment on projects are not required to be addressed under CEQA, land uses such as gasoline stations, dry cleaners, distribution centers, and auto body shops can expose residents to high levels of TAC emissions if they

are in close proximity to the project site. Information regarding the location of existing TAC sources is provided for disclosure purposes only and not as a measure of the project's significance under CEQA.

Consistency with these recommendations is assessed as follows:

- Heavily traveled roads. ARB recommends avoiding new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day. Epidemiological studies indicate that the distance from the roadway and truck traffic densities were key factors in the correlation of health effects, particularly in children. The project is located at the northeast corner of East Butler Avenue and South Armstrong Avenue. The traffic volumes on the road segments nearest the project are available for Whitesbridge Road east of Madera Avenue with 14,400 trips per day. No roads serving the project would exceed this criterion (Caltrans 2018).
- Distribution centers. ARB also recommends avoiding siting new sensitive land uses within 1,000 feet of a distribution center. The project is not located within 1,000 feet of a distribution center.
- Fueling stations. ARB recommends avoiding new sensitive land uses within 300 feet of a large fueling station (a facility with a throughput of 3.6 million gallons per year or greater). ARB recommends a 50-foot separation for typical gas dispensing facilities. The nearest gas station is located at 200 S. Madera Avenue, approximately 0.58 mile west of the project site.
- Dry cleaning operations. ARB recommends avoiding siting new sensitive land uses within 300 feet of any dry-cleaning operation that uses perchloroethylene. For operations with two or more machines, ARB recommends a buffer of 500 feet. For operations with three or more machines, ARB recommends consultation with the local air district. There are no dry-cleaning operations located in the City of Kerman.
- Auto body shops. Auto body shops have the potential to emit TACs related to painting. The nearest auto body shop is located at 14703 W. Whitesbridge Avenue approximately 0.36 mile west of the project site, which is beyond the distance that would result in a measurable impact.

Valley Fever

Valley fever, or coccidioidomycosis, is an infection caused by inhalation of the spores of the fungus, *Coccidioides immitis* (*C. immitis*). The spores live in soil and can live for an extended time in harsh environmental conditions. Activities or conditions that increase the amount of fugitive dust contribute to greater exposure, and they include dust storms, grading, and recreational off-road activities.

The San Joaquin Valley is considered an endemic area for Valley fever. By geographic region, hospitalizations for Valley fever in the San Joaquin Valley increased from 230 (6.9 per 100,000 population) in 2000 to 701 (17.7 per 100,000 population) in 2007. Within the region, Kern County reported the highest hospitalization rates, increasing from 121 (18.2 per 100,000 population) in 2000 to 285 (34.9 per 100,000 population) in 2007, and peaking in 2005 at 353 hospitalizations (45.8 per 100,000 population). The Centers for Disease Control and Prevention indicates that 752 of the 8,657 persons (8.7 percent) hospitalized in California between 2000 and 2007 for Valley fever died (CDC

2009). California experienced 7,466 new cases of Valley fever in 2017. A total of 275 Valley fever cases were reported in Fresno County in 2017 for a rate of 82.4 per 100,000 people (CDPH 2018).

The distribution of *C. immitis* within endemic areas is not uniform and growth sites are commonly small (a few tens of meters) and widely scattered. Known sites appear to have some ecological factors in common suggesting that certain physical, chemical, and biological conditions are more favorable for *C. immitis* growth. Avoidance, when possible, of sites favorable for the occurrence of *C. immitis* is a prudent risk management strategy. Listed below are ecologic factors and sites favorable for the occurrence of *C. immitis*:

1) Rodent burrows (often a favorable site for *C. immitis*, perhaps because temperatures are more moderate and humidity higher than on the ground surface)
2) Old (prehistoric) Indian campsites near fire pits
3) Areas with sparse vegetation and alkaline soils
4) Areas with high salinity soils
5) Areas adjacent to arroyos (where residual moisture may be available)
6) Packrat middens
7) Upper 30 centimeters of the soil horizon, especially in virgin undisturbed soils
8) Sandy, well-aerated soil with relatively high water-holding capacities

Sites within endemic areas less favorable for the occurrence of *C. immitis* include:

1) Cultivated fields
2) Heavily vegetated areas (e.g. grassy lawns)
3) Higher elevations (above 7,000 feet)
4) Areas where commercial fertilizers (e.g. ammonium sulfate) have been applied
5) Areas that are continually wet
6) Paved (asphalt or concrete) or oiled areas
7) Soils containing abundant microorganisms
8) Heavily urbanized areas where there is little undisturbed virgin soil (USGS 2000).

The project site is situated in a city growth area. The project includes urbanization of a site that was formerly used for agricultural purposes. Therefore, implementation of the project would have a low probability of the site having *C. immitis* growth sites and exposure to the spores from disturbed soil.

Construction activities would generate fugitive dust that could contain *C. immitis* spores. The project will minimize the generation of fugitive dust during construction activities by complying with the District's Regulation VIII. Therefore, this regulation, combined with the relatively low probability of the presence of *C. immitis* spores, would reduce Valley fever impacts to less than significant.

During operations, dust emissions are anticipated to be negligible, because most of the project area would be occupied by buildings, pavement, and landscaped areas. This condition would preclude the possibility of the project from providing habitat suitable for *C. immitis* spores and for generating fugitive dust that may contribute to Valley fever exposure. Impacts would be less than significant.

Naturally Occurring Asbestos

According to a map of areas where naturally occurring asbestos in California are likely to occur (U.S. Geological Survey 2011), there are no such areas in the project area. Therefore, development of the project is not anticipated to expose receptors to naturally occurring asbestos. Impacts would be less than significant.

In summary, the project would not exceed SJVAPCD localized emission daily screening levels for any criteria pollutant. The project is not a significant source of TAC emissions during construction or operation. The project is not in an area with suitable habitat for Valley fever spores and is not in area known to have naturally occurring asbestos. Therefore, the project would not result in significant impacts to sensitive receptors.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

5.2.4 - Objectionable Odors

Impact AIR-4: The project would not create objectionable odors affecting a substantial number of people.

Impact Analysis

Thresholds of Significance

Odor impacts on residential areas and other sensitive receptors, such as hospitals, day-care centers, schools, etc. warrant the closest scrutiny, but consideration should also be given to other land uses where people may congregate, such as recreational facilities, worksites, and commercial areas.

Two situations create a potential for odor impact. The first occurs when a new odor source is located near an existing sensitive receptor. The second occurs when a new sensitive receptor locates near an existing source of odor. According to the *CBIA v. BAAQMD* ruling, impacts of existing sources of odors on the project are not subject to CEQA review. Therefore, the analysis to determine if the project would locate new sensitive receptors near an existing source of odor is provided for information only. The District has determined the common land use types that are known to produce odors in the Air Basin. These types are shown in Table 12.

Table 12: Screening Levels for Potential Odor Sources

Odor Generator	Screening Distance
Wastewater Treatment Facilities	2 miles
Sanitary Landfill	1 mile
Transfer Station	1 mile
Composting Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plant	1 mile
Chemical Manufacturing	1 mile
Fiberglass Manufacturing	1 mile
Painting/Coating Operations (e.g., auto body shop)	1 mile
Food Processing Facility	1 mile
Feed Lot/Dairy	1 mile
Rendering Plant	1 mile
Source: SJVAPCD 2015a.	

According to the SJVAPCD GAMAQI, analysis of potential odor impacts should be conducted for the following two situations:

- **Generators:** projects that would potentially generate odorous emissions proposed to locate near existing sensitive receptors or other land uses where people may congregate, and
- **Receivers:** residential or other sensitive receptor projects or other projects built for the intent of attracting people located near existing odor sources.

Project Analysis

Project as a Generator

Land uses that are typically identified as sources of objectionable odors include landfills, transfer stations, sewage treatment plants, wastewater pump stations, composting facilities, feed lots, coffee roasters, asphalt batch plants, and rendering plants. The project would not engage in any of these activities. Therefore, the project would not be considered a generator of objectionable odors during operations.

During construction, the various diesel-powered vehicles and equipment in use on-site would create localized odors. These odors would be temporary and would not likely be noticeable for extended periods of time beyond the project's site boundaries. The potential for diesel odor impacts would therefore be less than significant.

Project as a Receiver

With the *CBIA v. BAAQMD* ruling, analysis of odor impacts on receivers is not required for CEQA compliance. Therefore, the following analysis is provided for information only.

As a residential development, the project has the potential to place sensitive receptors near existing odor sources. The project is approximately 1.75 miles northeast of the City's wastewater treatment plant; however, the prevailing wind direction is from the northwest and would result in infrequent periods when potential odor problems would exist at the project site. No other major odor-generating sources (as listed in Table 12) within screening distance of the site. Therefore, the uses in the vicinity of the project would not cause substantial odor impacts to the project.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

SECTION 6: GREENHOUSE GAS IMPACT ANALYSIS

6.1—CEQA Guidelines

CEQA Guidelines define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in the environment." To determine if a project would have a significant impact on GHGs, the type, level, and impact of emissions generated by the project must be evaluated.

The following GHG significance thresholds are contained in Appendix G of the CEQA Guidelines, which were amendments adopted into the Guidelines on March 18, 2010, pursuant to SB 97 and most recently amended December 28, 2018. A significant impact would occur if the project would:

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

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

6.2—Impact Analysis

6.2.1 - Greenhouse Gas Inventory

Impact GHG-1: The project would generate direct and indirect greenhouse gas emissions; however, these emissions would not result in a significant impact on the environment.

Impact Analysis

Threshold of Significance

Section 15064.4(b) of the CEQA Guidelines' 2018 amendments for GHG emissions states that a lead agency may take into account the following three considerations in assessing the significance of impacts from GHG emissions.

- **Consideration #1**: The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting.
- **Consideration #2**: Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
- **Consideration #3**: The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project. In determining the significance of impacts, the lead agency may consider a project's consistency with the State's long-term

climate goals or strategies, provided that substantial evidence supports the agency's analysis of how those goals or strategies address the project's incremental contribution to climate change and its conclusion that the project's incremental contribution is not cumulatively considerable.

The City of Kerman has not adopted its own GHG thresholds or prepared a Climate Action Plan that can be used as a basis for determining project significance; however, the SJVAPCD's *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* includes thresholds based on whether the project will reduce or mitigate GHG levels by 29 percent from BAU levels compared with 2005 levels (SJVAPCD 2009b). This level of GHG reduction is based on the target established by ARB's AB 32 Scoping Plan, approved in 2008.

The First Update to the Climate Change Scoping Plan adopted in May 2014 provided revised inventory projections to reflect slower growth in emissions during the recession and lower future year projections. The State's 2020 BAU inventory was reduced from 596 $MMTCO_2e$ to 545 $MMTCO_2e$ (ARB 2014b). The new GHG reduction level for the State to reach 1990 emission levels by 2020 is 21.7 percent from BAU in 2020. The First Update to the Climate Change Scoping Plan also confirmed that the State is on track to achieve the 2020 target and to maintain and continue reductions beyond 2020 as required by AB 32 (ARB 2014). In addition, the State has reported that the 2016 greenhouse gas inventory was below the 2020 target for the first time (ARB 2018b). Furthermore, the 2017 Scoping Plan states that California is on track to achieve the 2020 target (ARB 2017c). Therefore, based on these factors, the analysis uses a threshold based achieving a 21.7 percent reduction from BAU to demonstrate consistency with AB 32 and the approach recommended by the SJVAPCD. The SJVAPCD defines BAU as the total baseline emissions for all emissions sources within the development type, projected for the year 2020, assuming no change in GHG emissions per unit of activity as established for the baseline period.

A quantitative analysis was prepared for this project to determine the extent to which it may increase or reduce greenhouse gas emissions as compared to the existing environmental setting to fulfill Consideration 1.

Consideration 2 requires the identification of BPS that are determined to meet the 29 percent reduction from BAU. The SJVAPCD intended to develop a list of BPS for development projects that were pre-determined to achieve a 29 percent reduction from BAU, but has not completed the list. However, since the SJVAPCD guidance was adopted in 2009, regulations on sources of GHG emissions applicable to development projects have been implemented that will achieve in excess of a 29 percent reduction from BAU for most projects. A BAU analysis is provided to demonstrate that the project would exceed the current 21.7 percent reduction and the previous SJVAPCD 29 percent reduction threshold.

The analysis also addresses consistency with the SB 32 targets and the 2017 Scoping Plan Update with an assessment of the project's reduction from BAU based on emissions in 2030 compared with the 21.7 percent reduction and with a consistency analysis. This approach provides estimates of project emissions in the new 2030 milestone year with the existing threshold to address Considerations 1 and 2 above.

The ARB adopted the 2017 Scoping Plan Update on December 14, 2017. The plan provides the State's strategy to achieve the SB 32 2030 target of a 40 percent reduction in emissions compared to 1990 levels. The plan includes existing and new measures that when implemented are expected to achieve the SB 32 2030 target. The 2017 Scoping Plan achieves substantial reductions beyond 2020 through continued implementation of existing regulations. Other regulations will be adopted to implement recently enacted legislation including SB 350, which requires an increase in renewable energy from 33 percent to 50 percent and doubling the efficiency of existing buildings by 2030. The Legislature extended the Cap-and-Trade Program through 2030. Cap-and-Trade provides a mechanism to make up shortfalls in other strategies if they occur (ARB 2017c). In addition, the strategy relies on reductions achieved in implementing the ARB Short-Lived Climate Pollutant (SLCP) Reduction Strategy to reduce pollutants not previously controlled for climate change such as black carbon, CH_4, and hydrofluorocarbons (ARB 2017b). A qualitative assessment of compliance with the 2008 and the 2017 Scoping Plan measures is provided under Impact GHG-2 to comply with Consideration 3.

Newhall Ranch

On November 30, 2015, the California Supreme Court issued its decision in *Newhall Ranch,* invalidating the GHG analysis for a large master planned residential development in Los Angeles County consisting of over 20,000 residential dwelling units and other uses. In particular, the Court upheld: (1) use of the statewide emissions reduction goal in AB 32 as a significance criterion (pp. 15–19), (2) use of the Scoping Plan's BAU model "as a comparative tool for evaluating efficiency and conservation efforts" of the Project (pp. 18–19), and (3) a comparison of the project's expected emissions to a BAU model rather than a baseline of pre-project conditions (pp. 15–19). The Court invalidated the GHG analysis on the grounds that the "administrative record discloses no substantial evidence that the Newhall Ranch's project-level reduction of 31 percent in comparison to [BAU] is consistent with achieving AB 32's statewide goal of a 29 percent reduction from [BAU]." The Court indicated that a lead agency may use a BAU comparison based on the Scoping Plan's methodology if it also substantiates the reduction a particular project must achieve to comply with statewide goals. The Court suggested a lead agency could examine the "data behind the Scoping Plan's business-as-usual model" to determine the necessary project-level reductions from new land use development at the proposed location (p. 25). A lead agency "might assess consistency with A.B. 32's goal in whole or part by looking to compliance with regulatory programs designed to reduce greenhouse gas emissions from particular activities."

The substantial evidence needed to support a project BAU threshold can be derived from data used to develop the Scoping Plan inventory and control strategy, and from analysis conducted by the ARB to track progress in achieving the AB 32 2020 target. The critical factor in determining the appropriate project threshold is whether the State requires additional reductions beyond those achieved by existing regulations in order to achieve its target. If no additional reductions are required from individual projects, no nexus exists to require a project to mitigate its emissions. In that case, the percentage reductions achieved by projects through compliance with regulations is the amount needed to reach the AB 32 target.

The State's regulatory program implementing the 2008 Scoping Plan is now fully mature. All regulations envisioned in the Scoping Plan have been adopted by the responsible agencies and the effectiveness of those regulations have been estimated by the agencies during the adoption process and then are tracked to verify their effectiveness after implementation. The combined effect of this

successful effort is that the State now projects that it will meet the 2020 target and achieve continued progress toward meeting post-2020 targets. Governor Brown, in the introduction to Executive Order B-30-15, states "California is on track to meet or exceed the current target of reducing greenhouse gas emissions to 1990 levels by 2020, as established in the California Global Warming Solutions Act of 2006 (AB 32)."

The Supreme Court was concerned that new development may need to do more than existing development to reduce GHGs to demonstrate that it is doing its fair share of reductions. As will be shown below, new development does do more than existing development and, because of the nature of the sources of GHG emissions related to development, existing development is equally responsible for reducing emissions from the most important sources of emissions. It is important to note that most of the State's regulatory program applies to both new and existing development.

The Scoping Plan reduction from BAU accounts for growth projected in the State and assumes that existing development would continue to emit GHGs at the same rate that occurred in the base year (2002-2004 average). The California Department of Finance (DOF) Report E-5 predicts that population growth in California from 2005 to 2020 will be 13.2 percent. This means that development that existed in 2005 will produce nearly 87 percent of the State's emissions in 2020. Conversely, new development is only responsible for about 13 percent of the emissions generated during this timeframe. If measures to reduce emissions from existing development were not available, new development could not provide sufficient reductions to reach the 2020 target even if their emissions were reduced to net zero. This continues to apply to the 2030 target. The DOF forecasts California's population will grow by 8.1 percent between 2020 and 2030, so existing development will be responsible for 92 percent of the emissions that occur in 2030.

The State's regulatory program is able to target both new and existing development because the two most important strategies—motor vehicle fuel efficiency and emissions from electricity generation—obtain reductions equally from existing and new sources. This is because all vehicle operators use cleaner low carbon fuels and buy vehicles subject to the fuel efficiency regulations, and all building owners or operators purchase cleaner energy from the grid that is produced by increasing percentages of renewable fuels. This includes regulations on mobile sources such as: The Pavley standards that apply to all vehicles purchased in California, the Low Carbon Fuel Standard (LCFS) that applies to all fuel used in California, and the Renewable Portfolio Standard and Renewable Energy Standard that apply to utilities providing electricity to all California homes and businesses. The reduction strategy where new development is required to do more than existing development is building energy efficiency and energy use related to water conservation regulations. For example, new projects are subject to Title 24 Energy Efficiency standards and CALGreen Code and Model Water Efficient Landscape Ordinance (MWELO) water conservation requirements. Residential buildings constructed to the 2013 Title 24 standards use 25 percent less energy than buildings complying with the 2008 standards. The version of Title 24 effective January 1, 2017 improves energy efficiency in residential buildings by 28 percent compared to the 2013 Title 24 standards and 46 percent compared with 2008 Title 24 standards. New buildings and landscapes are much more energy efficient and water efficient than the development that has been built over the past decades and will require much less energy. The 2019 Title 24 standards which became effective in January 2020 makes progress toward achieving net zero energy use through requirements for on-site renewable generation for most projects and exceeds the 2016 Title 24 standards by 7 percent for residential projects.

As described above, the State requires an average reduction from all sources of the emission inventory of 21.7 percent to achieve the 2020 target. The Scoping Plan strategy will achieve greater than average reductions from energy and mobile source sectors that are the primary sources related to development projects, and lower than average reductions from other sources such as agriculture. The amount of reduction estimated by the ARB for each sector was based on technical feasibility and cost effectiveness. Review of the 2008 Scoping Plan inventory and strategy shows that the reduction from all development related sources is approximately 29 percent from BAU in order to make up for the below average sectors and achieve the required 21.7 percent average reduction. Achieving the SB 32 2030 target will require an approximate 40 percent reduction from 2020 levels assuming the State achieves the AB 32 target. The 2017 Scoping Plan Update identifies a range of reduction amounts expected from each emission sector, but an amount needed for development's fair share of reductions have not been determined.

As suggested by the Court, a project BAU analysis was prepared for this project that assesses "consistency with AB 32's goal in whole or part by looking to compliance with regulatory programs designed to reduce greenhouse gas emissions from particular activities." The analysis shows the extent to which the project complies with adopted regulations and the additional amount that will be achieved through project design features. At this point in time, no additional reductions are required from new development beyond regulations for the State to achieve its 2020 target. The recently adopted 2030 target will require a reduction from 431 $MTCO_2e$ to 260 $MTCO_2e$ or 40 percent from 1990 levels. After accounting for projected growth of approximately 0.8 percent per year an average decrease of 5.2 percent per year from the State GHG inventory will be required to achieve the target. The 2017 Scoping Plan Update includes a strategy for achieving the needed reductions, but does not identify an amount required specifically from new development. However, all GHG emission sources within development projects are subject to GHG regulations.

Therefore, this analysis demonstrates consistency with the existing 2020 target and shows progress toward achieving the 2030 target. The quantitative analysis prepared for the project provides the reduction from BAU in the 2030 target year to show the progress anticipated prior to applying reductions from new strategies contained in the 2017 Scoping Plan Update. The new reduction strategies from the plan are designed to close the gap between existing commitments and those needed to achieve the 2030 target, but many of the strategies must go through a regulatory process to be implemented. Therefore, the amount of reductions needed from new development beyond regulations, if any, is uncertain.

To determine significance, the analysis first quantifies project-related GHG emissions under a BAU scenario, and then compares these emissions with emissions that would occur when all project-related design features are accounted for, and when compliance with applicable regulatory measures is assumed. The standard and methodology is explained in further detail below.

Impact Analysis

Construction

Total GHG emissions generated during all phases of construction were combined and are presented in Table 13. The SJVAPCD does not recommend assessing the significance of construction-related emissions. However, other jurisdictions, such as the SCAQMD and the SMAQMD, have concluded that construction emissions should be included since they may remain in the atmosphere for years after construction is complete. In order to account for the construction emissions, amortization of

the total emissions generated during construction were based on the life of the development (residential—30 years) and added to the operational emissions.

Table 13: Construction Greenhouse Gas Emissions

Year	$MTCO_2e$ per year
2021	514.84
2022	258.81
Total	**773.65**
Amortized over 30 years	***25.79***

Notes:
Calculation totals use unrounded numbers from CalEEMod output.
$MTCO_2e$ = metric tons of carbon dioxide equivalents
Source: CalEEMod output (Appendix A).

Operation

Operational or long-term emissions occur over the life of the project. Sources of emissions may include motor vehicles and trucks, energy usage, water usage, waste generation, and area sources, such as landscaping activities and residential wood burning.

Business As Usual Operational Emissions

Operational emissions under the BAU scenario were modeled using CalEEMod 2016.3.2. Modeling assumptions for the year 2005 were used to represent 2022 and 2030 BAU conditions (without the benefit of regulations adopted to reduce GHG emissions). The SJVAPCD guidance recommends using emissions in 2002–2004 in the baseline scenario to represent conditions—as if regulations had not been adopted—to allow the effect of projected growth on achieving reduction targets to be clearly defined. CalEEMod defaults were used for project energy usage, water usage, waste generation, and area sources (architectural coating, consumer products, and landscaping). The vehicle fleet mix was revised to reflect the residential fleet mix approved by SJVAPCD for the year of first occupancy, which is expected to occur in 2022. Full assumptions and CalEEMod model outputs are provided in Appendix A.

2022 and 2030 Operational Emissions

Operational emissions were modeled for the years 2022 and 2030 using CalEEMod. CalEEMod assumes compliance with some, but not all, applicable rules and regulations regarding energy efficiency, vehicle fuel efficiency, renewable energy usage, and other GHG reduction policies, as described in the CalEEMod User's Guide (SCAQMD 2017). The reductions obtained from each regulation and the source of the reduction amount used in the analysis are described below.

Emissions Accounting for Applicable Regulations

The following regulations are incorporated into the CalEEMod emission factors:

- Pavley I and Pavley II (LEV III) motor vehicle emission standards
- ARB Medium and Heavy-Duty Vehicle Regulation
- 2005, 2008, 2013, and 2016 Title 24 Energy Efficiency Standards

The following regulations have not been incorporated into the CalEEMod emission factors and require alternative methods to account for emission reductions provided by the regulations:

- Renewable Portfolio Standards (RPS)
- Low Carbon Fuel Standard (LCFS)
- Green Building Code Standards (indoor water use)
- California Model Water Efficient Landscape Ordinance (Outdoor Water)

Pavley II/LEV III standards have been incorporated in the latest version of CalEEMod. ARB estimates a 3 percent reduction in 2020 and a 19 percent reduction from the vehicle categories subject to the regulation by 2030 (ARB 2010b and ARB 2013d).

The ARB GHG Regulation for Medium and Heavy-Duty Engines and Vehicles applies to trucks that will be accessing the project site. The benefits of the regulation were incorporated into CalEEMod 2016.3.2. The ARB estimates that this regulation will reduce GHG emissions from the affected vehicles by 7.2 percent (ARB 2013f).

The Low Carbon Fuel Standard (LCFS) is estimated to achieve a 10 percent reduction in emissions by 2020 and a 20 percent reduction by 2030 (ARB 2010). CalEEMod does not include credit for the LCFS.

Title 24 reductions for 2013 and 2016 updates were added to CalEEMod 2016.3.2. The California Energy Commission (CEC) estimates that 2013 Title 24 standards would result in an increase in energy efficiency of 25 percent in residential buildings compared to 2008 Title 24 (CEC 2014a). An additional 28 percent reduction from the 2008 standards have been claimed for compliance with 2016 Title 24. This results in a combined reduction of 46 percent (CEC 2015). Compliance with 2019 Title 24 is expected to reduce residential energy use by 7 percent beyond 2016 Title 24 (CEC 2018). 2019 Title 24 requires new residential development include solar panels to generate electricity. The project will include solar panels on each residential unit in quantities that meet or exceed Title 24 requirements.

RPS is not accounted for in CalEEMod 2016.3.2. Reductions from RPS are addressed by revising the electricity emission intensity factor in CalEEMod to account for the utility RPS rate forecast for 2020 (CPUC 2016). PG&E provides emission factors for the electricity it provides to customers and projections for its energy portfolio for 2020 that is used to estimate project emissions. No data to reflect compliance in 2030 was included in the PG&E projections. The utilities will be required by SB 350 to increase the use of renewable energy sources to 50 percent, but details on individual utility compliance have not been determined.

Energy savings from water conservation resulting from the Green Building Code Standards for indoor water use and California Model Water Efficient Landscape Ordinance for outdoor water use are not included in CalEEMod. The Water Conservation Act of 2009 mandates a 20 percent reduction in urban water use that is implemented with these regulations (CDWR 2013). Benefits of the water conservation regulations are applied in the CalEEMod mitigation component.

Reductions in emissions from solid waste are based on the City achieving the CalRecycle 75 Percent Initiative by 2020 compared with a 50 percent baseline for 2005. Reductions are taken using the CalEEMod mitigation component.

Regulations applicable to project sources and the percent reduction anticipated from each source are shown in Table 14. The percentage reductions are only applied to the specific sources subject to the regulations. For example, the Pavley LEV Standards apply only to light duty cars and trucks.

Table 14: Reductions from Greenhouse Gas Regulations

Regulation	Project Applicability	Reduction Source	Percent Reduction in 2020 and 2030
Pavley Low Emission Vehicle Standards	Light-duty cars and trucks accessing the site are subject to the regulation.	CalEEMod defaults (Pavley I)	25.1[1]
		Adjusted GHG emission factor (Pavley II/LEV III) in CalEEMod.	3% 2020 19.5% 2030[2]
Truck and Bus Regulation	Heavy-duty trucks accessing the site for deliveries and services are subject to the regulation.	Adjusted GHG emission factors for the regulation in CalEEMod	7.2%[3]
Low Carbon Fuel Standard (LCFS)	Vehicles accessing the site will use fuel subject to the LCFS	CalEEMod defaults	10% 2020 18% 2030[1]
Title 24 Energy Efficiency Standards	Project buildings will be constructed to meet the latest version of Title 24 (currently 2019). Reduction applies only to energy consumption subject to the regulation.	CalEEMod defaults CalEEMod mitigation component for 2019 standards	35%[4,5] 7%[10]
Green Building Code Standards	The project will include water conservation features required by the standard	CalEEMod mitigation component	20%[6]
Water Efficient Land Use Ordinance	The project landscaping will comply with the regulation	CalEEMod mitigation component	20%[7]
Renewable Portfolio Standard (RPS)	Electricity purchased for use at the project site is subject to the 33 percent RPS mandate	CalEEMod adjusted energy intensity factors with PG&E emission factors that show the company will exceed the 33 percent mandate.	54.5%[8]
Solid waste	The solid waste service provider will need to provide programs to increase diversion and recycling to meet the 75 percent mandate.	CalEEMod mitigation component	25%[9]

Table 14 (cont.): Reductions from Greenhouse Gas Regulations

Regulation	Project Applicability	Reduction Source	Percent Reduction in 2020 and 2030

Notes:
Regulations are described in Section 2.3 Regulatory Environment. The source of the percentage reductions from each measure are from the following sources:
[1] Pavley 1 + Low Carbon Fuel Standard Postprocessor Version 1.0 User's Guide (ARB 2010b)
[2] ARB Staff Report for LEV III Amendments (ARB 2013e)
[3] ARB Staff Report for GHG Regulations for Medium and Heavy-Duty Engines and Vehicles (ARB 2013f)
[4] California Energy Commission News Release: New Title 24 Standards Will Cut Residential Energy Use by 25 Percent, Save Water, and Reduce Greenhouse Gas Emissions (CEC 2014b)
[5] California Energy Commission Adoption Hearing Presentation: 2016 Buildings Energy Efficiency Standards (CEC 2015)
[6] 2013 California Green Building Standards Code Section 5.303.2
[7] California Water Plan Update 2013 (CDWR 2013)
[8] Based on CalEEMod default PG&E rate for 2005 and PG&E projected emission factor for 2020
[9] CalRecycle 75 Percent Initiative: Defining the Future (CalRecycle 2016b)
[10] 2019 Building Energy Efficiency Standards Frequently Asked Questions (CEC 2018).

In addition to rules and regulations, the project would incorporate design features and would obtain benefits from its location and infrastructure that would reduce project vehicle miles traveled (VMT) compared with default values. The project would construct pedestrian infrastructure connecting to adjacent land uses. The project is located approximately 1.6 miles from existing development in Downtown Kerman providing shorter than average trip lengths to important destinations.

Note that CalEEMod nominally treats these design elements and conditions as "mitigation measures," despite their inclusion in the project description. Therefore, reported operational emissions are considered to represent unmitigated project conditions. Full assumptions and model outputs are provided in Appendix A and results of this analysis for 2022 are presented in Table 15. A second analysis for 2030 is presented in Table 16.

Table 15: Project Operational Greenhouse Gases 2022

Source	Emissions ($MTCO_2e$ per year)		
	Business as Usual	2022 (with Regulation and Design Features)	Percent Reduction
Area	138.65	46.61	66.4%
Energy	412.06	256.93	37.6%
Mobile	1,278.46	862.88	32.5%
Water	24.30	12.85	47.1%
Amortized Construction Emissions	25.79	25.79	0.0%
Total	**1,933.03**	**1,245.39**	**35.6%**
	Reduction from BAU	**687.64**	—
	Percent Reduction	**35.6%**	—

Table 15 (cont.): Project Operational Greenhouse Gases 2022

Source	Emissions ($MTCO_2e$ per year)		
	Business as Usual	2022 (with Regulation and Design Features)	Percent Reduction
Waste	53.77	40.33	25.0%
Significance Threshold		**21.7%**	—
Are emissions significant?		**No**	

Notes:
$MTCO_2e$ = metric tons of carbon dioxide equivalents
The project achieves the SJVAPCD 29 percent reduction from BAU threshold and the 21.7 percent required to show consistency with AB 32 targets.
Source: CalEEMod output (Appendix A).

As shown in Table 15, the project operations in 2022 would achieve a reduction from BAU of 35.6 percent which exceeds the 21.7 percent reduction required by the State to achieve the 2020 target by 13.9 percent and the SJVAPCD 29.0 percent target by 6.6 percent. No threshold has been adopted by the City of Kerman for the 2030 target, so in the interim the project must make continued progress toward the 2030 goal.

The ARB originally identified a reduction of 29 percent from BAU as needed to achieve AB 32 targets. The 2008 recession and slower growth in the years since 2008 have reduced the growth forecasted for 2020, and the amount needed to be reduced to achieve 1990 levels as required by AB 32. The California Department of Finance (DOF) population forecast for 2020 to 2030 predicts growth in the State of 8.1 percent by the 2030 target year or 0.8 percent per year (DOF 2017).

The project includes design features that would result in reductions in energy use and support walking and bicycling. Measures that are part of the project design do not require additional mitigation measures to ensure they are accomplished.

The 35.6 percent reduction from BAU is 13.9 percent beyond the average reduction required by the State from all sources to achieve the AB 32 2020 target and therefore addresses the concern expressed in Newhall Ranch that projects should likely do more than the average to ensure they are providing a fair share of emission reductions.

Since the project buildout would occur after 2020, additional analysis summarized in Table 16 was prepared to show consistency with SB 32 2030 target.

Table 16: Project Operational Greenhouse Gases 2030

Source	Emissions ($MTCO_2e$ per year)		
	Business as Usual	2030 (with Regulation and Design Features)	Percent Reduction
Area	138.65	46.61	66.4%
Energy	412.06	256.93	37.6%
Mobile	1,278.46	608.65	52.4%
Waste	53.77	40.33	25.0%
Water	24.30	12.85	47.1%
Amortized Construction Emissions	25.79	25.79	0.0%
Total	**1,933.03**	**991.16**	**48.7%**
Reduction from BAU		**941.87**	—
Percent Reduction		**48.7%**	—
Significance Threshold		**21.7%**	—
Are emissions significant?		**No**	

Notes:
$MTCO_2e$ = metric tons of carbon dioxide equivalents
The project achieves the SJVAPCD 29 percent reduction from BAU threshold and the 21.7 percent required to show consistency with AB 32 targets. No new target has been set for 2030.
Source: CalEEMod output (Appendix A).

As shown in Table 16, the project would exceed the 21.7 percent reduction required by the State to achieve the 2020 target by 27.0 percent and the SJVAPCD 29.0 percent target by 19.7 percent.

The analysis presented above does not include new strategies proposed in the 2017 Scoping Plan Update. The update was adopted in December 2017. The update provides alternatives in terms of their likelihood of implementation and ranges of reduction from the strategies. Measures already authorized by legislation are highly likely to be implemented, while measures requiring new legislation are less likely to go forward. The State is highly likely to incorporate zero net energy buildings in future updates to Title 24 and now requires solar panels in most residential development. The developer indicates that homes will come with solar panels as a standard feature that will meet the new requirement. A new round of motor vehicle fuel efficiency standards beyond 2025 when LEV III standards are at their maximum reduction level is highly likely. Changing heavy-duty trucks and off-road equipment to alternative fuels face greater technological hurdles and are less likely to provide dramatic reductions by 2030.

The 2030 emission limit is 260 $MMTCO_2e$. The ARB estimates that the 2030 BAU (reference) Inventory will be 392 $MMTCO_2e$—a reduction of 132 $MMCO_2e$, including existing policies and programs but not including known commitments that are already underway. The 2017 Scoping Plan Update includes the estimated GHG emissions by sector compared with 1990 levels that is presented in Table 17. The proposed plan would achieve the bulk of the reductions from Electric Power, Industrial fuel

combustion, and Transportation. Cap-and-Trade would provide between 10 and 20 percent of the required reductions depending on the amounts achieved by the other reduction measures.

Table 17: 2017 Scoping Plan Update Estimated Change in GHG Emissions by Sector

Scoping Plan Sector	Emissions ($MMTCO_2e$ per year)		
	1990	2030 Proposed Plan Ranges	Percent Change form 1990
Agriculture	26	24–25	-4 to -8
Residential and Commercial	44	38–40	-9 to -14
Electric Power	108	42–62	-43 to -61
High GWP	3	8–11	167 to 267
Industrial	98	77–87	-11 to -21
Recycling and Waste	7	8–9	14 to 29
Transportation (including TCU)	152	103–111	-27 to -32
Net Sink	-7	TBD	TBD
Subtotal	**431**	**300–345**	**-20 to -30**
Cap-and-Trade Program	N/A	40–85	N/A
Total	**431**	**260**	**-40**
Source: ARB 2017 Scoping Plan Update (ARB 2017c).			

Although 2017 Scoping Plan Update focuses on state agency actions necessary to achieve the 2030 GHG limit, the ARB considers local governments essential partners in achieving California's goals to reduce GHG emissions. The 2030 target will require an increase in the rate of emission reductions compared to what was needed to achieve the 2020 limit, and this will require action and collaboration at all levels, including local government action to complement and support State-level actions. For individual projects, the 2017 Scoping Plan Update suggests that all new land use development implement all feasible measures to reduce GHG emissions. The Scoping Plan does not define all feasible measures or attribute an amount of reductions required from new development beyond compliance with regulations. When requiring mitigation of a project's fair share of a cumulative impact, the Lead Agency must show the nexus between the project contribution and its fair share of mitigation to reduce the impact to less than cumulatively considerable. A threshold based on local support and collaboration with State actions as described in the 2017 Scoping Plan Update does not lend itself to a quantitative determination of fair share. Requiring developers and future residents of the development to fully mitigate emissions without accounting for compliance with regulations would result in double mitigation, first by the developer and then by the residents purchasing electricity, fuel, and vehicles compliant with regulations in effect at the time of purchase and beyond that would violate constitutional nexus requirements.

In conclusion, the project would achieve reductions 13.9 percent beyond the ARB 2020 21.7 percent target and 6.6 percent beyond the SJVAPCD 29 percent reduction from BAU requirements from adopted regulations and on-site design features. No threshold has been adopted by the City for the

SB 32 2030 target; however, the 48.7 percent reduction from BAU by 2030 is 27.0 percent beyond the 21.7 percent required for the 2020 target. Based on this progress and the strong likelihood that the measures included in the 2017 Scoping Plan Update will be implemented, it is reasonable to conclude that the project is consistent with the 2017 Scoping Plan and will contribute a reasonable fair-share contribution to achieving the 2030 target. The fair share may very well be achieved through compliance with increasingly stringent state regulations that apply to new development, such as Title 24 and CALGreen; regulations on energy production, fuels, and motor vehicles that apply to both new and existing development; and voluntary actions to improve energy efficiency in existing development. In addition, compliance with the VMT targets adopted to comply with SB 375 and implemented through the RTP/SCS may be considered to adequately address GHG emissions from passenger cars and light-duty trucks. As shown in Table 17, the state strategy relies on the Cap-and-Trade Program to make up any shortfalls that may occur from the other regulatory strategies. The costs of Cap-and-Trade emission reductions will ultimately be passed on to the consumers of fuels, electricity, and products produced by regulated industries, which include future residents of development projects and other purchasers of products and services. Therefore, the impact in terms of Considerations #1 and #2 would be less than significant.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

6.2.2 - Greenhouse Gas Reduction Plans

Impact GHG-2: The project would not conflict with any applicable plan, policy, or regulation of an agency adopted to reduce the emissions of greenhouse gases.

Impact Analysis

The following analysis assesses the project's compliance with Consideration #3 regarding consistency with adopted plans to reduce GHG emissions. The City of Kerman has not adopted a GHG reduction plan. In addition, the City has not completed the GHG inventory, benchmarking, or goal-setting process required to identify a reduction target and take advantage of the streamlining provisions contained in the CEQA Guidelines amendments adopted for SB 97 and clarifications provided in the CEQA Guidelines amendments adopted on December 28, 2018. The SJVAPCD has adopted a Climate Action Plan, but it does not contain measures that are applicable to the project. Therefore, the SJVAPCD Climate Action Plan cannot be applied to the project. Since no other local or regional Climate Action Plan is in place, the project is assessed for its consistency with ARB's adopted Scoping Plan. This would be achieved with an assessment of the project's compliance with Scoping Plan measures.

AB 32 Scoping Plan

The California State Legislature adopted AB 32 in 2006. AB 32 focuses on reducing GHGs (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) to 1990 levels by the year 2020. Pursuant to the requirements in AB 32, the ARB adopted the Climate Change Scoping Plan (Scoping Plan) in 2008, which outlines actions recommended to obtain that goal. The Scoping Plan calls for an "ambitious but achievable" reduction in California's GHG emissions, cutting approximately 30 percent from BAU emission levels projected for 2020, or about 10 percent from 2008 levels. On a per-capita basis, that means reducing annual emissions of 14 tons of carbon dioxide for every man, woman, and child in California down to about 10 tons per person by 2020. As stated earlier, the ARB has updated its emission inventory forecasts and now estimates a reduction of 21.7 percent is required from BAU in 2020 to achieve AB 32 targets.

The Scoping Plan contains a variety of strategies to reduce the State's emissions. As shown in Table 18, the project is consistent with most of the strategies, while others are not applicable to the project.

Table 18: Project Consistency with AB 32 Scoping Plan

Scoping Plan Sector	Scoping Plan Measure	Implementing Regulations	Project Consistency
Transportation	California Cap-and-Trade Program Linked to Western Climate Initiative	Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanism October 20, 2015 (CCR 95800)	**Consistent.** The Cap-and-Trade Program applies to large industrial sources such as power plants, refineries, and cement manufacturers. However, the regulation indirectly affects people who use the products and services produced by these industrial sources when increased cost of products or services (such as electricity and fuel) are transferred to the consumers. The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. Accordingly, GHG emissions associated with CEQA projects' electricity usage are covered by the Cap-and-Trade Program. The Cap-and-Trade Program also covers fuel suppliers (natural gas and propane fuel providers and transportation fuel providers) to address emissions from such fuels and from combustion of other fossil fuels not directly covered at large sources in the Program's first compliance period.
	California Light-Duty Vehicle Greenhouse Gas Standards	Pavley I 2005 Regulations to Control GHG Emissions from Motor Vehicles 2012 LEV III Amendments to the California Greenhouse Gas and Criteria Pollutant Exhaust and Evaporative Emission Standards	**Consistent**. This measure applies to all new vehicles starting with model year 2012. The project would not conflict with its implementation as it would apply to all new passenger vehicles purchased in California. Passenger vehicles, model year 2012 and later, associated with construction and operation of the project would be required to comply with the Pavley emissions standards.
	Low Carbon Fuel Standard.	2009 readopted in 2015. Regulations to Achieve Greenhouse Gas Emission Reductions Subarticle 7. Low Carbon Fuel Standard CCR 95480	**Consistent.** This measure applies to transportation fuels utilized by vehicles in California. The project would not conflict with implementation of this measure. Motor vehicles associated with construction and operation of the project would utilize low carbon transportation fuels as required under this measure.

Table 18 (cont.): Project Consistency with AB 32 Scoping Plan

Scoping Plan Sector	Scoping Plan Measure	Implementing Regulations	Project Consistency
	Regional Transportation-Related Greenhouse Gas Targets.	SB 375. Cal. Public Resources Code §§ 21155, 21155.1, 21155.2, 21159.28	**Consistent**. The project will provide residential development in the region that is consistent with the increased development densities promoted in the 2018 Regional Transportation Plan/Sustainable Communities Strategy (SCS). The project is not within an SCS priority area and so is not subject to requirements applicable to those areas.
	Goods Movement	Goods Movement Action Plan January 2007.	**Not applicable**. The project does not propose any changes to maritime, rail, or intermodal facilities or forms of transportation.
	Medium/Heavy-Duty Vehicles	2010 Amendments to the Truck and Bus Regulation, the Drayage Truck Regulation and the Tractor-Trailer Greenhouse Gas Regulation	**Consistent**. This measure applies to medium- and heavy-duty vehicles that operate in the State. The project would not conflict with implementation of this measure. Medium- and heavy-duty vehicles associated with construction and operation of the project would be required to comply with the requirements of this regulation.
	High Speed Rail	Funded under SB 862	**Not applicable**. This is a statewide measure that cannot be implemented by a project applicant or lead agency.
Electricity and Natural Gas	Energy Efficiency	Title 20 Appliance Efficiency Regulation	**Consistent.** The project would not conflict with implementation of this measure. The project will comply with the latest energy efficiency standards and incorporate applicable energy efficiency features designed to reduce project energy consumption.
		Title 24 Part 6 Energy Efficiency Standards for Residential and Non-Residential Building	
		Title 24 Part 11 California Green Building Code Standards	
	Renewable Portfolio Standard/Renewable Electricity Standard.	2010 Regulation to Implement the Renewable Electricity Standard (33% 2020)	**Consistent**. PG&E obtained 33 percent of its power supply from renewable sources such as solar and geothermal in 2017, and about 70 percent of the electricity it delivers is carbon-free, including nuclear and large hydroelectric facilities. The owners of residences within the project would purchase power that consists of a greater percentage of renewable sources and could install renewable solar power systems that will assist the utility in achieving exceeding the renewable mandate.
		SB 350 Clean Energy and Pollution Reduction Act of 2015 (50% 2030)	

Table 18 (cont.): Project Consistency with AB 32 Scoping Plan

Scoping Plan Sector	Scoping Plan Measure	Implementing Regulations	Project Consistency
	Million Solar Roofs Program	Tax incentive program	**Consistent.** This measure is intended to increase solar throughout California by means of a variety of electricity providers and existing solar programs. Projects within the plan area will be able to take advantage of incentives that are in place at the time of construction. The project includes installation of solar panels.
Water	Water	Title 24 Part 11 California Green Building Code Standards	**Consistent.** The project will comply with the California Green Building Standards Code, which requires a 20 percent reduction in indoor water use. The project will also comply with the MWELO as required by the City's development code and water ordinance.
		SBX 7-7—The Water Conservation Act of 2009	
		Model Water Efficient Landscape Ordinance	
Green Buildings	Green Building Strategy	Title 24 Part 11 California Green Building Code Standards	**Consistent.** The State will increase the use of green building practices. The project would implement required green building strategies through existing regulation that requires the project to comply with various CALGreen requirements. The project includes sustainability design features that support the Green Building Strategy.
Industry	Industrial Emissions	2010 ARB Mandatory Reporting Regulation	**Not applicable.** The project is not an industrial land use.
Recycling and Waste Management	Recycling and Waste	Title 24 Part 11 California Green Building Code Standards	**Consistent.** The project would not conflict with implementation of these measures. The project is required to achieve the recycling mandates via compliance with the CALGreen code. The project would utilize recycling services by waste hauling services contracted by the City of Kerman.
		AB 341 Statewide 75 Percent Diversion Goal	

Table 18 (cont.): Project Consistency with AB 32 Scoping Plan

Scoping Plan Sector	Scoping Plan Measure	Implementing Regulations	Project Consistency
Forests	Sustainable Forests	Cap-and-Trade Offset Projects	**Not applicable.** The project site is in an area designated for urban uses. No forested lands exist on-site.
High Global Warming Potential	High Global Warming Potential Gases	ARB Refrigerant Management Program CCR 95380	**Not applicable**. The regulations are applicable to refrigerants used by large air conditioning systems and large commercial and industrial refrigerators and cold storage system. Homes do not use large systems subject to the refrigerant management regulations adopted by ARB.
Agriculture	Agriculture	Cap-and-Trade Offset Projects for Livestock and Rice Cultivation	**Not applicable**. The project site is proposed for urban development. No grazing, feedlot, or other agricultural activities that generate manure occur currently exist on-site or are proposed to be implemented by the project.
Source of ARB Scoping Plan Reduction Measures: California Air Resources Board 2008.			

In summary, the project complies with applicable regulations adopted to achieve the AB 32 2020 target and would not interfere or hinder the State's ability to implement regulations and programs to reduce GHG emissions.

As demonstrated in the impact analysis above, the project would achieve a 35.6 percent reduction from the BAU inventory by 2022 and 48.7 percent from the BAU inventory by 2030, therefore, the project would not significantly hinder or delay the State's ability to meet the reduction targets contained in AB 32 or SB 32 or conflict with implementation of the Scoping Plan. The project promotes the goals of the Scoping Plan through implementation of design measures that reduce energy consumption, water consumption, and reduction in VMT. Therefore, the project does not conflict with any plans to reduce GHG emissions. The impact would be less than significant.

Consistency with California's Post-2020 Targets

The State's executive branch adopted several Executive Orders related to GHG emissions. Executive Orders S-3-05 and B-30-15 are two examples. Executive Order S-3-05 sets goals to reduce emissions to 1990 levels by 2020 and 80 percent below 1990 levels by 2050. The goal of Executive Order S-3-05 to reduce GHG emissions to 1990 levels by 2020 was codified by AB 32. The project, as analyzed above, is consistent with AB 32. Therefore, the project does not conflict with this component of Executive Order S-3-05. Executive Order B-30-15 establishes an interim goal to reduce GHG emissions to 40 percent below 1990 levels by 2030.

The 2030 goal was codified under SB 32 and is now addressed by the 2017 Scoping Plan Update. The new plan provides a strategy that is capable of reaching the SB 32 target if the measures included in the plan are implemented and achieve reductions within the ranges expected. Under the Scoping Plan Update, local government plays a supporting role through its land use authority and control over local transportation infrastructure. The Plan Update includes reductions from implementation of SB 375 that applies to VMT from passenger vehicles. Fresno County targets for SB 375 are a 5 percent reduction by 2020 and a 10 percent reduction by 2035. SB 375 is implemented with the Fresno COG Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). The RTP/SCS envisions an increase in development density that would encourage fewer and shorter trips and more trips by transit, walking, and bicycling in amounts sufficient to achieve the SB 375 targets.

Now that the 2017 Scoping Plan has been adopted, new methodologies and threshold approaches are required to determine the fair-share contributions City development projects would need to make to achieve the 2030 target. In the meantime, however, the discussion under "Consistency with SB 32" below addresses the consistency of the proposed project with SB 32, which provides the statutory underpinning of the 2017 Scoping Plan. The SB 32 target requires GHG emissions to be reduced from 1990 levels. No consensus has been reached around the State on a new quantitative target for new development based on consistency with the SB 32 targets.

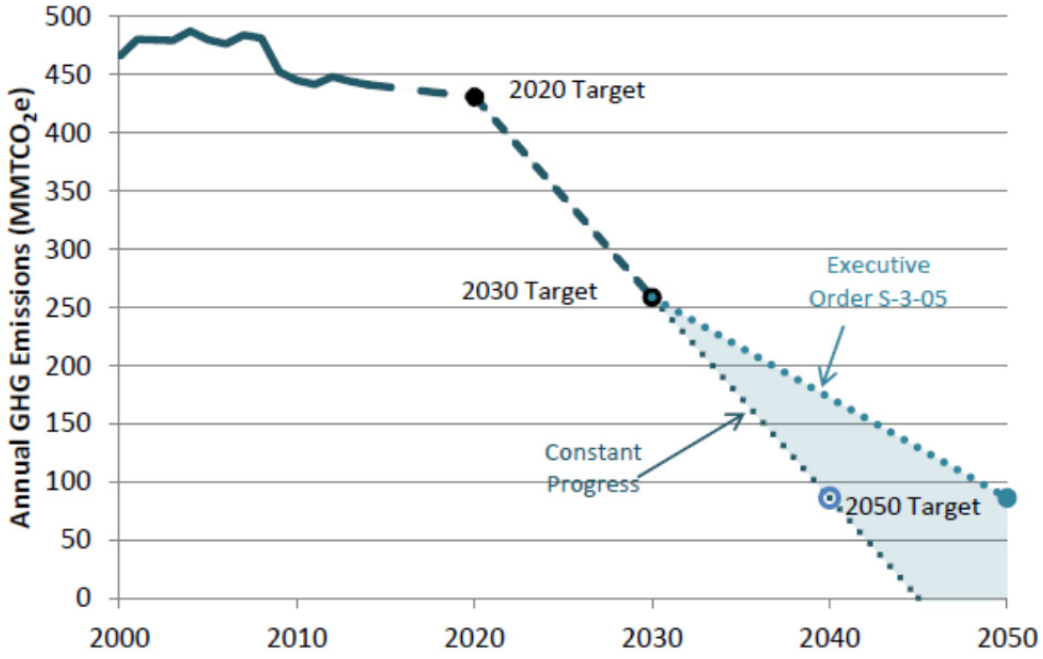
The Executive Order S-3-05 2050 target has not been codified by legislation. Studies have shown that, in order to meet the 2050 target, aggressive pursuit of technologies in the transportation and energy sectors, including electrification and the decarbonization of fuel, will be required. Because of the technological shifts required and the unknown parameters of the regulatory framework in 2050, quantitatively analyzing the project's impacts further relative to the 2050 goal is speculative for purposes of CEQA (ARB 2014b).

The ARB recognized that AB 32 established an emissions reduction trajectory that will allow California to achieve the more stringent 2050 target: "These [greenhouse gas emission reduction] measures also put the State on a path to meet the long-term 2050 goal of reducing California's GHG emissions to 80 percent below 1990 levels. This trajectory is consistent with the reductions that are needed globally to stabilize the climate." In addition, ARB's First Update "lays the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050," and many of the emission reduction strategies recommended by ARB would serve to reduce the proposed project's post-2020 emissions level to the extent applicable by law:

- **Energy Sector:** Continued improvements in California's appliance and building energy efficiency programs and initiatives, such as the State's zero net energy building goals, would serve to reduce the proposed project's emissions level. Additionally, further additions to California's renewable resource portfolio would favorably influence the project's emissions level.
- **Transportation Sector:** Anticipated deployment of improved vehicle efficiency, zero emission technologies, lower carbon fuels, and improvement of existing transportation systems all will serve to reduce the project's emissions level.
- **Water Sector:** The project's emissions level will be reduced as a result of further desired enhancements to water conservation technologies.
- **Waste Management Sector:** Plans to further improve recycling, reuse and reduction of solid waste will beneficially reduce the project's emissions level.

For the reasons described above, the project's post-2020 emissions trajectory is expected to follow a declining trend, consistent with the 2030 and 2050 targets. The trajectory required to achieve the post-2020 targets is shown in Figure 8.

Figure 8: California's Path to Achieving the 2050 Target



Source: ARB 2017 Scoping Plan Update (ARB 2017c)

In his January 2015 inaugural address, Governor Brown expressed a commitment to achieve "three ambitious goals" that he would like to see accomplished by 2030 to reduce the State's GHG emissions:

- Increasing the State's Renewable Portfolio Standard from 33 percent in 2020 to 50 percent in 2030;
- Cutting the petroleum use in cars and trucks in half; and
- Doubling the efficiency of existing buildings and making heating fuels cleaner.

These expressions of executive branch policy may be manifested in adopted legislative or regulatory action through the state agencies and departments responsible for achieving the State's environmental policy objectives, particularly those relating to global climate change (Brown 2015). Further, recent studies show that the State's existing and proposed regulatory framework will allow the State to reduce its GHG emissions level to 40 percent below 1990 levels by 2030, and to 80 percent below 1990 levels by 2050. Even though these studies did not provide an exact regulatory and technological roadmap to achieve the 2030 and 2050 goals, they demonstrated that various combinations of policies could allow the statewide emissions level to remain very low through 2050, suggesting that the combination of new technologies and other regulations not analyzed in the studies could allow the State to meet the 2050 target (Energy and Economics 2015).

Given the proportional contribution of mobile source-related GHG emissions to the State's inventory, recent studies also show that relatively new trends—such as the increasing importance of web-based shopping, the emergence of different driving patterns by the "millennial" generation, and the increasing effect of web-based applications on transportation choices—are beginning to substantially influence transportation choices and the energy used by transportation modes. These factors have changed the direction of transportation trends in recent years and will require the creation of new models to effectively analyze future transportation patterns and the corresponding effect on GHG emissions. For the reasons described above, the proposed project's post-2020 emissions trajectory is expected to follow a declining trend, consistent with the 2030 and 2050 targets.

Consistency with SB 32

The 2017 Climate Change Scoping Plan Update (2017 Scoping Plan) includes the strategy that the State intends to pursue to achieve the 2030 targets of Executive Order S-3-05 and SB 32. The 2017 Scoping Plan includes the following summary of its overall strategy for reaching the 2030 target:

- SB 350
  - Achieve 50 percent Renewables Portfolio Standard (RPS) by 2030.
  - Doubling of energy efficiency savings by 2030.
- Low Carbon Fuel Standard (LCFS)
  - Increased stringency (reducing carbon intensity 18 percent by 2030, up from 10 percent in 2020).
- Mobile Source Strategy (Cleaner Technology and Fuels Scenario)
  - Maintaining existing GHG standards for light- and heavy-duty vehicles.
  - Put 4.2 million zero-emission vehicles (ZEVs) on the roads.
  - Increase ZEV buses, delivery and other trucks.

- Sustainable Freight Action Plan
  - Improve freight system efficiency.
  - Maximize use of near-zero emission vehicles and equipment powered by renewable energy.
  - Deploy over 100,000 zero-emission trucks and equipment by 2030.
- Short-Lived Climate Pollutant (SLCP) Reduction Strategy
  - Reduce emissions of methane and hydrofluorocarbons 40 percent below 2013 levels by 2030.
  - Reduce emissions of black carbon 50 percent below 2013 levels by 2030.
- SB 375 Sustainable Communities Strategies
  - Increased stringency of 2035 targets.
- Post-2020 Cap-and-Trade Program
  - Declining caps, continued linkage with Québec, and linkage to Ontario, Canada.
  - ARB will look for opportunities to strengthen the program to support more air quality co-benefits, including specific program design elements. In Fall 2016, ARB staff described potential future amendments including reducing the offset usage limit, redesigning the allocation strategy to reduce free allocation to support increased technology and energy investment at covered entities and reducing allocation if the covered entity increases criteria or toxics emissions over some baseline.
- By 2018, develop Integrated Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

Table 19 provides an analysis of the project's consistency with the 2017 Scoping Plan Update measures.

Table 19: Consistency with SB 32 2017 Scoping Plan Update

Scoping Plan Measure	Project Consistency
SB 350 50% Renewable Mandate. Utilities subject to the legislation will be required to increase their renewable energy mix from 33% in 2020 to 50% in 2030.	**Consistent**: The project will purchase electricity from a utility subject to the SB 350 Renewable Mandate.
SB 350 Double Building Energy Efficiency by 2030. This is equivalent to a 20 percent reduction from 2014 building energy usage compared to current projected 2030 levels	**Not Applicable**. This measure applies to existing buildings. New structures are required to comply with Title 24 Energy Efficiency Standards that are expected to increase in stringency until residential housing achieves zero net energy.
Low Carbon Fuel Standard. This measure requires fuel providers to meet an 20 percent reduction in carbon content by 2030.	**Consistent**. Vehicles accessing the project site will use fuel containing lower carbon content as the fuel standard is implemented.
Mobile Source Strategy (Cleaner Technology and Fuels Scenario) Vehicle manufacturers will be required to meet existing regulations mandated by the LEV III and Heavy-Duty Vehicle programs. The strategy includes a goal of having 4.2 million ZEVs on the road by 2030 and increasing numbers of ZEV trucks and buses.	**Consistent**. Project residents can be expected to purchase increasing numbers of more fuel efficient and zero emission cars and trucks each year. The 2016 CALGreen Code requires electrical service in new single-family housing to be EV charger-ready. Home deliveries will be made by increasing numbers of ZEV delivery trucks.

Table 19 (cont.): Consistency with SB 32 2017 Scoping Plan Update

Scoping Plan Measure	Project Consistency
Sustainable Freight Action Plan The plan's target is to improve freight system efficiency 25 percent by increasing the value of goods and services produced from the freight sector, relative to the amount of carbon that it produces by 2030. This would be achieved by deploying over 100,000 freight vehicles and equipment capable of zero emission operation and maximize near-zero emission freight vehicles and equipment powered by renewable energy by 2030.	**Not Applicable**. The measure applies to owners and operators of trucks and freight operations. However, home deliveries are expected to be made by increasing number of ZEV delivery trucks.
Short-Lived Climate Pollutant (SLCP) Reduction Strategy. The strategy requires the reduction of SLCPs by 40 percent from 2013 levels by 2030 and the reduction of black carbon by 50 percent from 2013 levels by 2030.	**Consistent**. The project will include only natural gas hearths that produce very little black carbon compared to woodburning fireplaces and heaters.
SB 375 Sustainable Communities Strategies. Requires Regional Transportation Plans to include a sustainable communities strategy for reduction of per capita vehicle miles traveled. The targets for Fresno County are 5 percent for 2020 and 10 percent for 2035.	**Consistent**. The project will provide residential development in the region that is consistent with the Regional Transportation Plan/Sustainable Communities Strategy (SCS) strategy to increase development densities to reduce VMT. The project is not within an SCS priority area and so is not subject to requirements applicable to those areas.
Post-2020 Cap-and-Trade Program. The Post 2020 Cap-and-Trade Program continues the existing program for another 10 years. The Cap-and-Trade Program applies to large industrial sources such as power plants, refineries, and cement manufacturers.	**Consistent.** The post-2020 Cap-and-Trade Program indirectly affects people who use the products and services produced by the regulated industrial sources when increased cost of products or services (such as electricity and fuel) are transferred to the consumers. The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. Accordingly, GHG emissions associated with CEQA projects' electricity usage are covered by the Cap-and-Trade Program. The Cap-and-Trade Program also covers fuel suppliers (natural gas and propane fuel providers and transportation fuel providers) to address emissions from such fuels and from combustion of other fossil fuels not directly covered at large sources in the program's first compliance period.
Natural and Working Lands Action Plan. The ARB is working in coordination with several other agencies at the federal, state, and local levels, stakeholders, and with the public, to develop measures as outlined in the Scoping Plan Update and the governor's Executive Order B-30-15 to reduce GHG emissions and to cultivate net carbon sequestration potential for California's natural and working land.	**Not Applicable**. The project is residential development and will not be considered natural or working lands.
Source: ARB 2017 Scoping Plan Update.	

Regarding goals for 2050 under Executive Order S-3-05, at this time it is not possible to quantify the emissions savings from future regulatory measures, as they have not yet been developed; nevertheless, it can be anticipated that operation of the project would comply with whatever measures are enacted that state lawmakers decide would lead to an 80 percent reduction below 1990 levels by 2050. In its 2008 Scoping Plan, ARB acknowledged that the "measures needed to meet the 2050 are too far in the future to define in detail." In the First Scoping Plan Update; however, ARB generally described the type of activities required to achieve the 2050 target: "energy demand reduction through efficiency and activity changes; large scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and rapid market penetration of efficiency and clean energy technologies that requires significant efforts to deploy and scale markets for the cleanest technologies immediately." The 2017 Scoping Plan provides an intermediate target that is intended to achieve reasonable progress toward the 2050 target.

Accordingly, taking into account the proposed project's emissions, project design features, and the progress being made by the State towards reducing emissions in key sectors such as transportation, industry, and electricity, the project would be consistent with State GHG Plans and would further the State's goals of reducing GHG emissions to 1990 levels by 2020, 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050, and does not obstruct their attainment.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

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Appendix A: Modeling Assumptions and Results

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Appendix A: Modeling Assumptions and Results

Modeling Assumptions for Omni Land Development Tract 6302

Operational Schedule

Single Family Homes	104	
Start Construction	1/15/2021	
Land Development End	8/31/2021	
First Occupancy	2/1/2022	
Buildout		

APN		
023-220-23s	0.41	
023-220-34s	10.91	Portion
023-220-35s	18.66	Portion
023-330-51s	1.13	
	31.11	

Property Owner SA Group Properties, Inc.

Acres (gross) 20.38

Disturbed Area

Zoning

Density (DU/Acre

PG&E Emission Factor for 2020 MTCO2/MWh

2020 290

PG&E Greenhouse Gas Emission Factors:
Guidance for PG&E Customers
November 2015

Nearest Gas Station	200 S. Madera Avenue	0.58	Miles
Nearest Dry Cleaner	None located in Kerman		
Autobody Shop	14703 W. Whitesbridge Ave.	0.36	
Mon Station	Madera Pump House	9.36	N
	Fresno Garland	12.11	E
WWTP		1.75	SW

Distance to Downtown Kerman 1.6

	CY	**Truck Capacity (CY)**	**Truck Loads**
Soil Import	41,000	15	2,733

Solar Panels 3.5-6.3 kW/home

2017 Caltrans Road Counts				AADT Back West	AADT Ahead East
180	42.639	KERMAN, JCT. RTE. 145		16300	14700
180	43.63	GOLDENROD AVENUE		15500	12100

Caltrans 2018 Traffic Volumes
https://dot.ca.gov/programs/traffic-operations/census/traffic-volumes
Accessed March 26, 2020

Omni Development Tract 6302 Kerman Construction Assumptions

Default Construction Schedule

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	Site Preparation	Site Preparation	2021/02/01	2021/02/12	5	10
2	Grading	Grading	2021/02/13	2021/04/02	5	35
3	Building Constructio	Building Constructi	2021/04/03	2022/09/02	5	370
4	Paving	Paving	2022/09/03	2022/09/30	5	20
5	Architectural Coatin	Architectural Coatir	2022/10/01	2022/10/28	5	20

Ajdusted Equipment Usage

PhaseName	OffRoad Equipment Type	OffRoad Equipment Unit Amount	UsageHours	Days/Phase	Hours Per Phase	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8	10	240	247	0.4
Site Preparation	Tractors/Loaders/Ba	4	8	10	320	97	0.37
Grading	Excavators	2	8	35	560	158	0.38
Grading	Graders	1	8	35	280	187	0.41
Grading	Rubber Tired Dozers	1	8	35	280	247	0.4
Grading	Scrapers	2	8	35	560	367	0.48
Grading	Tractors/Loaders/Ba	2	8	35	560	97	0.37
Building Construction	Cranes	1	7	370	2590	231	0.29
Building Construction	Forklifts	3	8	370	8880	89	0.2
Building Construction	Generator Sets	1	8	370	2960	84	0.74
Building Construction	Tractors/Loaders/Ba	3	7	370	7770	97	0.37
Building Construction	Welders	1	8	370	2960	46	0.45
Paving	Pavers	2	8	20	320	130	0.42
Paving	Paving Equipment	2	8	20	320	132	0.36
Paving	Rollers	2	8	20	320	80	0.38
Architectural Coating	Air Compressors	1	6	20	120	78	0.48
					29040		

Appendix A: Emission Summary

Omni Development Tract 6302 Emissions Summary

				Tons/Year		
Construction Emissions		**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
	2021	0.32	3.30	2.53	0.45	0.27
	2022	0.93	1.51	1.59	0.11	0.08
Total		**1.25**	**4.81**	**4.12**	**0.56**	**0.34**
Highest Emissions in Any Year		**0.93**	**3.30**	**2.53**	**0.45**	**0.27**

			Tons/Year		
Unmitigated Operational Emissions 2022	**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
Area	1.25	0.11	4.58	0.63	0.63
Energy	0.01	0.13	0.05	0.01	0.01
Mobile	0.31	1.12	3.47	1.08	0.29
Total	**1.57**	**1.36**	**8.10**	**1.71**	**0.93**

Construction Summer Daily			Pound/Day			
Maximum Daily Emission		**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
	2021	4.86	66.20	34.16	10.32	6.39
	2022	76.37	16.85	17.51	1.19	0.87
Max Daily any Year		**76.37**	**66.20**	**34.16**	**10.32**	**6.39**

Construction Winter Daily			Pound/Day			
Maximum Daily Emission		**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
	2021	4.87	**66.72**	**34.42**	**10.32**	**6.39**
	2022	76.37	16.87	17.39	1.19	0.87
Max Daily Any Year		**76.37**	**66.72**	**34.42**	**10.32**	**6.39**

Operations 2022 Summer			Pound/Day			
Maximum Daily Emissions		**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
Area		4.79	1.05	9.00	0.12	0.12
Energy		0.08	0.65	0.27	0.05	0.05
Mobile		2.21	5.89	20.64	5.78	1.58
Total		**7.08**	**7.58**	**29.91**	**5.96**	**1.75**

Mitigated run used to reflect woodburning regulation and design features.

Operations 2022 Winter		Pound/Day			
Maximum Daily Emissions	**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
Area	4.79	1.05	8.99	0.12	0.12
Energy	0.08	0.65	0.27	0.05	0.05
Mobile	1.53	6.21	18.64	5.78	1.58
	6.40	**7.90**	**27.91**	**5.96**	**1.75**

Area emissions are from mitigated report to reflect no woodburning devices.

Construction GHG Emissions

Year		**MTCO2e**
	2021	514.84
	2022	258.81
2020-2022 Total		**773.65**
Amortized over 30 years		**25.79**

Operational GHG Emissions 2022

	BAU (MTCO2e)	**2022 (MTCO2e)**	**Percent Reduction**	
Area	138.65	46.61	66.4%	
Energy	412.06	256.93	37.6%	
Mobile	1,278.46	862.88	32.5%	
Waste	53.77	40.33	25.0%	
Water	24.30	12.85	47.1%	
Total	**1,907.24**	**1,219.60**	**36.1%**	
Construction	25.79	25.79	0.0%	
Total with Amortized Construction	**1,933.03**	**1,245.39**	**35.6%**	35.6%
			21.7%	29.0%
Reduction from BAU		**687.64**	13.9%	6.6%

LCFS 10% reduction for 2020 for calculated by multiplying mitigated mobile by 0.90

Mobile without LCFS	958.75
Mobile with LCFS	862.88

Operational GHG Emissions 2030

	BAU (MTCO2e)	**2030 (MTCO2e)**	**Percent Reduction**	
Area	138.65	46.61	66.4%	
Energy	412.06	256.93	37.6%	
Mobile	1,278.46	608.65	52.4%	
Waste	53.77	40.33	25.0%	
Water	24.30	12.85	47.1%	
Total	**1,907.24**	**965.37**	**49.4%**	
Construction	25.79	25.79	0.0%	
Total with Amortized Construction	**1,933.03**	**991.16**	**48.7%**	48.7%
			21.7%	29.0%
Reduction from BAU		**941.87**	27.0%	19.7%

LCFS 20% reduction for 2030 for calculated by multiplying mitigated mobile by 0.80

Mobile without LCFS	760.81	
Mobile with LCFS	608.65	
Solar Panel Reduction	119.73	CO2e Electriciy Use
	903867	kWh/year
	7993	kWh/house/year
	104	
	831272	5 kW System

Appendix A: CalEEMod Output

CalEEMod Output

Construction and Operations (Annual)

Omni Development Tract 6302 Construction and Ops

Fresno County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	104.00	Dwelling Unit	20.38	187,200.00	297

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.022	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Omni Development Tract 6302 Construction and Ops - Fresno County, Annual

Project Characteristics - PG&E Intensity Factors

Land Use - Site Plan Acreage

Construction Phase -

Trips and VMT - 47,000 cy of soil import.

Architectural Coating - Rule 4601 Architectural Coatings compliance

Vehicle Trips - ITE 10th Edition rates 9.44, 9.54, 8.55

Area Coating - Rule 4601 Architectural Coatings

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation - Rule 4601 compliant coatings

Energy Mitigation - Comply with 2019 Title 24

Water Mitigation - MWELO and CalGreen requirements.

Waste Mitigation - 75 percent State recycling mandate

Fleet Mix - SJVAPCD Residential Fleet Mix 2022

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Residential_Exterior	150.00	65.00
tblArchitecturalCoating	EF_Residential_Interior	150.00	65.00
tblAreaCoating	Area_EF_Residential_Exterior	150	65
tblAreaCoating	Area_EF_Residential_Interior	150	65
tblFleetMix	HHD	0.13	0.02
tblFleetMix	LDA	0.49	0.53
tblFleetMix	LDT1	0.03	0.20
tblFleetMix	LDT2	0.17	0.17
tblFleetMix	LHD1	0.02	1.3000e-003
tblFleetMix	LHD2	4.5020e-003	9.0000e-004
tblFleetMix	MCY	5.0620e-003	2.5000e-003

tblFleetMix	MDV	0.12	0.05
tblFleetMix	MH	5.9400e-004	1.8000e-003
tblFleetMix	MHD	0.03	8.6000e-003
tblFleetMix	OBUS	2.3630e-003	0.00
tblFleetMix	SBUS	1.0830e-003	7.0000e-004
tblFleetMix	UBUS	1.5190e-003	4.4000e-003
tblLandUse	LotAcreage	33.77	20.38
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.022
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblTripsAndVMT	HaulingTripNumber	0.00	2,733.00
tblVehicleTrips	ST_TR	9.91	9.54
tblVehicleTrips	SU_TR	8.62	8.55
tblVehicleTrips	WD_TR	9.52	9.44
tblWoodstoves	NumberCatalytic	20.38	20.49
tblWoodstoves	NumberNoncatalytic	20.38	20.49

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.3192	3.3017	2.5297	5.7600e-003	0.3070	0.1454	0.4524	0.1302	0.1358	0.2661	0.0000	512.1624	512.1624	0.1071	0.0000	514.8391
2022	0.9290	1.5091	1.5949	2.9500e-003	0.0320	0.0732	0.1052	8.6400e-003	0.0688	0.0775	0.0000	257.4251	257.4251	0.0555	0.0000	258.8118
Maximum	**0.9290**	**3.3017**	**2.5297**	**5.7600e-003**	**0.3070**	**0.1454**	**0.4524**	**0.1302**	**0.1358**	**0.2661**	**0.0000**	**512.1624**	**512.1624**	**0.1071**	**0.0000**	**514.8391**

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					
2021	0.3192	3.3017	2.5297	5.7600e-003	0.1738	0.1454	0.3192	0.0683	0.1358	0.2041	0.0000	512.1619	512.1619	0.1071	0.0000	514.8387
2022	0.9290	1.5091	1.5949	2.9500e-003	0.0320	0.0732	0.1052	8.6400e-003	0.0688	0.0775	0.0000	257.4249	257.4249	0.0555	0.0000	258.8115
Maximum	**0.9290**	**3.3017**	**2.5297**	**5.7600e-003**	**0.1738**	**0.1454**	**0.3192**	**0.0683**	**0.1358**	**0.2041**	**0.0000**	**512.1619**	**512.1619**	**0.1071**	**0.0000**	**514.8387**

	ROG	NOx	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**	**39.29**	**0.00**	**23.88**	**44.60**	**0.00**	**18.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-15-2021	4-14-2021	1.6765	1.6765
2	4-15-2021	7-14-2021	0.6773	0.6773
3	7-15-2021	10-14-2021	0.6849	0.6849
4	10-15-2021	1-14-2022	0.6748	0.6748
5	1-15-2022	4-14-2022	0.6028	0.6028
6	4-15-2022	7-14-2022	0.6092	0.6092
7	7-15-2022	9-30-2022	0.7743	0.7743
		Highest	1.6765	1.6765

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	1.2527	0.1097	4.5818	0.0127		0.6261	0.6261		0.6261	0.6261	82.8354	46.3150	129.1504	0.3893	8.3000e-004	139.1295
Energy	0.0147	0.1253	0.0533	8.0000e-004		0.0101	0.0101		0.0101	0.0101	0.0000	264.9518	264.9518	0.0119	4.7300e-003	266.6571
Mobile	0.3074	1.1217	3.4672	0.0111	1.0658	9.7100e-003	1.0755	0.2852	9.0700e-003	0.2943	0.0000	1,023.1147	1,023.1147	0.0688	0.0000	1,024.8345
Waste						0.0000	0.0000		0.0000	0.0000	21.7038	0.0000	21.7038	1.2827	0.0000	53.7702
Water						0.0000	0.0000		0.0000	0.0000	2.1497	6.7897	8.9394	0.2213	5.3300e-003	16.0607
Total	**1.5748**	**1.3567**	**8.1023**	**0.0246**	**1.0658**	**0.6459**	**1.7117**	**0.2852**	**0.6453**	**0.9305**	**106.6889**	**1,341.1712**	**1,447.8601**	**1.9740**	**0.0109**	**1,500.4521**

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	0.8352	0.0478	0.7896	2.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003	0.0000	46.3150	46.3150	2.0800e-003	8.3000e-004	46.6131
Energy	0.0138	0.1178	0.0501	7.5000e-004		9.5200e-003	9.5200e-003		9.5200e-003	9.5200e-003	0.0000	255.2872	255.2872	0.0116	4.5500e-003	256.9341
Mobile	0.3018	1.0779	3.2836	0.0104	0.9922	9.1300e-003	1.0013	0.2655	8.5200e-003	0.2741	0.0000	957.1078	957.1078	0.0658	0.0000	958.7528
Waste						0.0000	0.0000		0.0000	0.0000	16.2779	0.0000	16.2779	0.9620	0.0000	40.3277
Water						0.0000	0.0000		0.0000	0.0000	1.7198	5.4318	7.1516	0.1771	4.2600e-003	12.8486
Total	**1.1507**	**1.2435**	**4.1234**	**0.0115**	**0.9922**	**0.0261**	**1.0183**	**0.2655**	**0.0255**	**0.2910**	**17.9976**	**1,264.1418**	**1,282.1394**	**1.2186**	**9.6400e-003**	**1,315.4763**

	ROG	NOx	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	**26.93**	**8.34**	**49.11**	**53.44**	**6.90**	**95.96**	**40.51**	**6.90**	**96.05**	**68.73**	**83.13**	**5.74**	**11.45**	**38.27**	**11.48**	**12.33**

3.0 Construction Detail

Construction Phase

Omni Development Tract 6302 Construction and Ops - Fresno County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/15/2021	1/28/2021	5	10	
2	Grading	Grading	1/29/2021	3/18/2021	5	35	
3	Building Construction	Building Construction	3/19/2021	8/18/2022	5	370	
4	Paving	Paving	8/19/2022	9/15/2022	5	20	
5	Architectural Coating	Architectural Coating	9/16/2022	10/13/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 87.5

Acres of Paving: 0

Residential Indoor: 379,080; Residential Outdoor: 126,360; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Omni Development Tract 6302 Construction and Ops - Fresno County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	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	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	2,733.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	37.00	11.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	7.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0194	0.2025	0.1058	1.9000e-004		0.0102	0.0102		9.4000e-003	9.4000e-003	0.0000	16.7179	16.7179	5.4100e-003	0.0000	16.8530
Total	**0.0194**	**0.2025**	**0.1058**	**1.9000e-004**	**0.0903**	**0.0102**	**0.1006**	**0.0497**	**9.4000e-003**	**0.0591**	**0.0000**	**16.7179**	**16.7179**	**5.4100e-003**	**0.0000**	**16.8530**

3.2 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.2000e-004	2.2700e-003	1.0000e-005	7.2000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6014	0.6014	1.0000e-005	0.0000	0.6018
Total	**3.6000e-004**	**2.2000e-004**	**2.2700e-003**	**1.0000e-005**	**7.2000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6014**	**0.6014**	**1.0000e-005**	**0.0000**	**0.6018**

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					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0194	0.2025	0.1058	1.9000e-004		0.0102	0.0102		9.4000e-003	9.4000e-003	0.0000	16.7178	16.7178	5.4100e-003	0.0000	16.8530
Total	**0.0194**	**0.2025**	**0.1058**	**1.9000e-004**	**0.0407**	**0.0102**	**0.0509**	**0.0223**	**9.4000e-003**	**0.0317**	**0.0000**	**16.7178**	**16.7178**	**5.4100e-003**	**0.0000**	**16.8530**

3.2 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.2000e-004	2.2700e-003	1.0000e-005	7.2000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6014	0.6014	1.0000e-005	0.0000	0.6018
Total	**3.6000e-004**	**2.2000e-004**	**2.2700e-003**	**1.0000e-005**	**7.2000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6014**	**0.6014**	**1.0000e-005**	**0.0000**	**0.6018**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1518	0.0000	0.1518	0.0629	0.0000	0.0629	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0734	0.8120	0.5404	1.0900e-003		0.0347	0.0347		0.0320	0.0320	0.0000	95.3662	95.3662	0.0308	0.0000	96.1373
Total	**0.0734**	**0.8120**	**0.5404**	**1.0900e-003**	**0.1518**	**0.0347**	**0.1865**	**0.0629**	**0.0320**	**0.0949**	**0.0000**	**95.3662**	**95.3662**	**0.0308**	**0.0000**	**96.1373**

3.3 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0103	0.3538	0.0497	1.0800e-003	0.0234	1.1600e-003	0.0245	6.4200e-003	1.1100e-003	7.5300e-003	0.0000	102.8179	102.8179	8.9100e-003	0.0000	103.0405
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-003	8.5000e-004	8.8300e-003	3.0000e-005	2.8000e-003	2.0000e-005	2.8200e-003	7.4000e-004	2.0000e-005	7.6000e-004	0.0000	2.3388	2.3388	6.0000e-005	0.0000	2.3402
Total	**0.0117**	**0.3547**	**0.0585**	**1.1100e-003**	**0.0262**	**1.1800e-003**	**0.0274**	**7.1600e-003**	**1.1300e-003**	**8.2900e-003**	**0.0000**	**105.1567**	**105.1567**	**8.9700e-003**	**0.0000**	**105.3808**

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					0.0683	0.0000	0.0683	0.0283	0.0000	0.0283	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0734	0.8120	0.5404	1.0900e-003		0.0347	0.0347		0.0320	0.0320	0.0000	95.3661	95.3661	0.0308	0.0000	96.1372
Total	**0.0734**	**0.8120**	**0.5404**	**1.0900e-003**	**0.0683**	**0.0347**	**0.1030**	**0.0283**	**0.0320**	**0.0603**	**0.0000**	**95.3661**	**95.3661**	**0.0308**	**0.0000**	**96.1372**

3.3 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0103	0.3538	0.0497	1.0800e-003	0.0234	1.1600e-003	0.0245	6.4200e-003	1.1100e-003	7.5300e-003	0.0000	102.8179	102.8179	8.9100e-003	0.0000	103.0405
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-003	8.5000e-004	8.8300e-003	3.0000e-005	2.8000e-003	2.0000e-005	2.8200e-003	7.4000e-004	2.0000e-005	7.6000e-004	0.0000	2.3388	2.3388	6.0000e-005	0.0000	2.3402
Total	**0.0117**	**0.3547**	**0.0585**	**1.1100e-003**	**0.0262**	**1.1800e-003**	**0.0274**	**7.1600e-003**	**1.1300e-003**	**8.2900e-003**	**0.0000**	**105.1567**	**105.1567**	**8.9700e-003**	**0.0000**	**105.3808**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1958	1.7955	1.7073	2.7700e-003		0.0987	0.0987		0.0928	0.0928	0.0000	238.5864	238.5864	0.0576	0.0000	240.0254
Total	**0.1958**	**1.7955**	**1.7073**	**2.7700e-003**		**0.0987**	**0.0987**		**0.0928**	**0.0928**	**0.0000**	**238.5864**	**238.5864**	**0.0576**	**0.0000**	**240.0254**

3.4 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.4200e-003	0.1275	0.0194	3.2000e-004	7.5100e-003	3.4000e-004	7.8500e-003	2.1700e-003	3.3000e-004	2.5000e-003	0.0000	30.2677	30.2677	3.6500e-003	0.0000	30.3590
Worker	0.0152	9.2800e-003	0.0961	2.8000e-004	0.0305	1.9000e-004	0.0307	8.1000e-003	1.7000e-004	8.2700e-003	0.0000	25.4661	25.4661	6.3000e-004	0.0000	25.4819
Total	**0.0186**	**0.1368**	**0.1155**	**6.0000e-004**	**0.0380**	**5.3000e-004**	**0.0385**	**0.0103**	**5.0000e-004**	**0.0108**	**0.0000**	**55.7338**	**55.7338**	**4.2800e-003**	**0.0000**	**55.8408**

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	0.1958	1.7955	1.7072	2.7700e-003		0.0987	0.0987		0.0928	0.0928	0.0000	238.5861	238.5861	0.0576	0.0000	240.0251
Total	**0.1958**	**1.7955**	**1.7072**	**2.7700e-003**		**0.0987**	**0.0987**		**0.0928**	**0.0928**	**0.0000**	**238.5861**	**238.5861**	**0.0576**	**0.0000**	**240.0251**

3.4 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.4200e-003	0.1275	0.0194	3.2000e-004	7.5100e-003	3.4000e-004	7.8500e-003	2.1700e-003	3.3000e-004	2.5000e-003	0.0000	30.2677	30.2677	3.6500e-003	0.0000	30.3590
Worker	0.0152	9.2800e-003	0.0961	2.8000e-004	0.0305	1.9000e-004	0.0307	8.1000e-003	1.7000e-004	8.2700e-003	0.0000	25.4661	25.4661	6.3000e-004	0.0000	25.4819
Total	**0.0186**	**0.1368**	**0.1155**	**6.0000e-004**	**0.0380**	**5.3000e-004**	**0.0385**	**0.0103**	**5.0000e-004**	**0.0108**	**0.0000**	**55.7338**	**55.7338**	**4.2800e-003**	**0.0000**	**55.8408**

3.4 Building Construction - 2022

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	0.1399	1.2805	1.3418	2.2100e-003		0.0663	0.0663		0.0624	0.0624	0.0000	190.0147	190.0147	0.0455	0.0000	191.1528
Total	**0.1399**	**1.2805**	**1.3418**	**2.2100e-003**		**0.0663**	**0.0663**		**0.0624**	**0.0624**	**0.0000**	**190.0147**	**190.0147**	**0.0455**	**0.0000**	**191.1528**

3.4 Building Construction - 2022

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	2.5400e-003	0.0962	0.0143	2.5000e-004	5.9800e-003	2.3000e-004	6.2100e-003	1.7300e-003	2.2000e-004	1.9500e-003	0.0000	23.8666	23.8666	2.8200e-003	0.0000	23.9371
Worker	0.0112	6.6000e-003	0.0698	2.2000e-004	0.0243	1.5000e-004	0.0244	6.4500e-003	1.3000e-004	6.5800e-003	0.0000	19.5458	19.5458	4.5000e-004	0.0000	19.5569
Total	**0.0138**	**0.1028**	**0.0841**	**4.7000e-004**	**0.0302**	**3.8000e-004**	**0.0306**	**8.1800e-003**	**3.5000e-004**	**8.5300e-003**	**0.0000**	**43.4123**	**43.4123**	**3.2700e-003**	**0.0000**	**43.4940**

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	0.1399	1.2805	1.3418	2.2100e-003		0.0663	0.0663		0.0624	0.0624	0.0000	190.0145	190.0145	0.0455	0.0000	191.1525
Total	**0.1399**	**1.2805**	**1.3418**	**2.2100e-003**		**0.0663**	**0.0663**		**0.0624**	**0.0624**	**0.0000**	**190.0145**	**190.0145**	**0.0455**	**0.0000**	**191.1525**

3.4 Building Construction - 2022

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	2.5400e-003	0.0962	0.0143	2.5000e-004	5.9800e-003	2.3000e-004	6.2100e-003	1.7300e-003	2.2000e-004	1.9500e-003	0.0000	23.8666	23.8666	2.8200e-003	0.0000	23.9371
Worker	0.0112	6.6000e-003	0.0698	2.2000e-004	0.0243	1.5000e-004	0.0244	6.4500e-003	1.3000e-004	6.5800e-003	0.0000	19.5458	19.5458	4.5000e-004	0.0000	19.5569
Total	**0.0138**	**0.1028**	**0.0841**	**4.7000e-004**	**0.0302**	**3.8000e-004**	**0.0306**	**8.1800e-003**	**3.5000e-004**	**8.5300e-003**	**0.0000**	**43.4123**	**43.4123**	**3.2700e-003**	**0.0000**	**43.4940**

3.5 Paving - 2022

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	0.0110	0.1113	0.1458	2.3000e-004		5.6800e-003	5.6800e-003		5.2200e-003	5.2200e-003	0.0000	20.0276	20.0276	6.4800e-003	0.0000	20.1895
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0110**	**0.1113**	**0.1458**	**2.3000e-004**		**5.6800e-003**	**5.6800e-003**		**5.2200e-003**	**5.2200e-003**	**0.0000**	**20.0276**	**20.0276**	**6.4800e-003**	**0.0000**	**20.1895**

3.5 Paving - 2022

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	5.6000e-004	3.3000e-004	3.4500e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.9663	0.9663	2.0000e-005	0.0000	0.9669
Total	**5.6000e-004**	**3.3000e-004**	**3.4500e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.9663**	**0.9663**	**2.0000e-005**	**0.0000**	**0.9669**

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	0.0110	0.1113	0.1458	2.3000e-004		5.6800e-003	5.6800e-003		5.2200e-003	5.2200e-003	0.0000	20.0275	20.0275	6.4800e-003	0.0000	20.1895
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0110**	**0.1113**	**0.1458**	**2.3000e-004**		**5.6800e-003**	**5.6800e-003**		**5.2200e-003**	**5.2200e-003**	**0.0000**	**20.0275**	**20.0275**	**6.4800e-003**	**0.0000**	**20.1895**

3.5 Paving - 2022

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	5.6000e-004	3.3000e-004	3.4500e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.9663	0.9663	2.0000e-005	0.0000	0.9669
Total	**5.6000e-004**	**3.3000e-004**	**3.4500e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.9663**	**0.9663**	**2.0000e-005**	**0.0000**	**0.9669**

3.6 Architectural Coating - 2022

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	0.7614					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0500e-003	0.0141	0.0181	3.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total	**0.7634**	**0.0141**	**0.0181**	**3.0000e-005**		**8.2000e-004**	**8.2000e-004**		**8.2000e-004**	**8.2000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.7000e-004**	**0.0000**	**2.5574**

3.6 Architectural Coating - 2022

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	2.6000e-004	1.5000e-004	1.6100e-003	0.0000	5.6000e-004	0.0000	5.6000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4510	0.4510	1.0000e-005	0.0000	0.4512
Total	**2.6000e-004**	**1.5000e-004**	**1.6100e-003**	**0.0000**	**5.6000e-004**	**0.0000**	**5.6000e-004**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.4510**	**0.4510**	**1.0000e-005**	**0.0000**	**0.4512**

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	0.7614					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0500e-003	0.0141	0.0181	3.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total	**0.7634**	**0.0141**	**0.0181**	**3.0000e-005**		**8.2000e-004**	**8.2000e-004**		**8.2000e-004**	**8.2000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.7000e-004**	**0.0000**	**2.5574**

3.6 Architectural Coating - 2022

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	2.6000e-004	1.5000e-004	1.6100e-003	0.0000	5.6000e-004	0.0000	5.6000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4510	0.4510	1.0000e-005	0.0000	0.4512
Total	**2.6000e-004**	**1.5000e-004**	**1.6100e-003**	**0.0000**	**5.6000e-004**	**0.0000**	**5.6000e-004**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.4510**	**0.4510**	**1.0000e-005**	**0.0000**	**0.4512**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive 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	0.3018	1.0779	3.2836	0.0104	0.9922	9.1300e-003	1.0013	0.2655	8.5200e-003	0.2741	0.0000	957.1078	957.1078	0.0658	0.0000	958.7528
Unmitigated	0.3074	1.1217	3.4672	0.0111	1.0658	9.7100e-003	1.0755	0.2852	9.0700e-003	0.2943	0.0000	1,023.1147	1,023.1147	0.0688	0.0000	1,024.8345

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	981.76	992.16	889.20	2,841,846	2,645,759
Total	981.76	992.16	889.20	2,841,846	2,645,759

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
Single Family Housing	10.80	7.30	7.50	48.40	15.90	35.70	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.534300	0.203000	0.167300	0.054500	0.001300	0.000900	0.008600	0.020700	0.000000	0.004400	0.002500	0.000700	0.001800

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive 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	118.8962	118.8962	9.0200e-003	2.0500e-003	119.7326
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	119.8500	119.8500	9.0900e-003	2.0700e-003	120.6930
NaturalGas Mitigated	0.0138	0.1178	0.0501	7.5000e-004		9.5200e-003	9.5200e-003		9.5200e-003	9.5200e-003	0.0000	136.3910	136.3910	2.6100e-003	2.5000e-003	137.2015
NaturalGas Unmitigated	0.0147	0.1253	0.0533	8.0000e-004		0.0101	0.0101		0.0101	0.0101	0.0000	145.1018	145.1018	2.7800e-003	2.6600e-003	145.9641

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					
Single Family Housing	2.7191e+006	0.0147	0.1253	0.0533	8.0000e-004		0.0101	0.0101		0.0101	0.0101	0.0000	145.1018	145.1018	2.7800e-003	2.6600e-003	145.9641
Total		**0.0147**	**0.1253**	**0.0533**	**8.0000e-004**		**0.0101**	**0.0101**		**0.0101**	**0.0101**	**0.0000**	**145.1018**	**145.1018**	**2.7800e-003**	**2.6600e-003**	**145.9641**

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					
Single Family Housing	2.55587e+006	0.0138	0.1178	0.0501	7.5000e-004		9.5200e-003	9.5200e-003		9.5200e-003	9.5200e-003	0.0000	136.3910	136.3910	2.6100e-003	2.5000e-003	137.2015
Total		**0.0138**	**0.1178**	**0.0501**	**7.5000e-004**		**9.5200e-003**	**9.5200e-003**		**9.5200e-003**	**9.5200e-003**	**0.0000**	**136.3910**	**136.3910**	**2.6100e-003**	**2.5000e-003**	**137.2015**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	911117	119.8500	9.0900e-003	2.0700e-003	120.6930
Total		**119.8500**	**9.0900e-003**	**2.0700e-003**	**120.6930**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	903867	118.8962	9.0200e-003	2.0500e-003	119.7326
Total		**118.8962**	**9.0200e-003**	**2.0500e-003**	**119.7326**

6.0 Area Detail

6.1 Mitigation Measures Area

Omni Development Tract 6302 Construction and Ops - Fresno County, Annual

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive 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	0.8352	0.0478	0.7896	2.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003	0.0000	46.3150	46.3150	2.0800e-003	8.3000e-004	46.6131
Unmitigated	1.2527	0.1097	4.5818	0.0127		0.6261	0.6261		0.6261	0.6261	82.8354	46.3150	129.1504	0.3893	8.3000e-004	139.1295

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	0.0761					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7311					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.4221	0.1008	3.8088	0.0126		0.6218	0.6218		0.6218	0.6218	82.8354	45.0536	127.8890	0.3881	8.3000e-004	137.8377
Landscaping	0.0234	8.9200e-003	0.7730	4.0000e-005		4.2700e-003	4.2700e-003		4.2700e-003	4.2700e-003	0.0000	1.2614	1.2614	1.2200e-003	0.0000	1.2918
Total	**1.2527**	**0.1097**	**4.5818**	**0.0127**		**0.6261**	**0.6261**		**0.6261**	**0.6261**	**82.8354**	**46.3150**	**129.1504**	**0.3893**	**8.3000e-004**	**139.1295**

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	0.0761					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7311					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	4.5500e-003	0.0389	0.0166	2.5000e-004		3.1500e-003	3.1500e-003		3.1500e-003	3.1500e-003	0.0000	45.0536	45.0536	8.6000e-004	8.3000e-004	45.3213
Landscaping	0.0234	8.9200e-003	0.7730	4.0000e-005		4.2700e-003	4.2700e-003		4.2700e-003	4.2700e-003	0.0000	1.2614	1.2614	1.2200e-003	0.0000	1.2918
Total	**0.8352**	**0.0478**	**0.7896**	**2.9000e-004**		**7.4200e-003**	**7.4200e-003**		**7.4200e-003**	**7.4200e-003**	**0.0000**	**46.3150**	**46.3150**	**2.0800e-003**	**8.3000e-004**	**46.6131**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	7.1516	0.1771	4.2600e-003	12.8486
Unmitigated	8.9394	0.2213	5.3300e-003	16.0607

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	6.77602 / 4.27184	8.9394	0.2213	5.3300e-003	16.0607
Total		**8.9394**	**0.2213**	**5.3300e-003**	**16.0607**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	5.42081 / 3.41747	7.1516	0.1771	4.2600e-003	12.8486
Total		**7.1516**	**0.1771**	**4.2600e-003**	**12.8486**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	16.2779	0.9620	0.0000	40.3277
Unmitigated	21.7038	1.2827	0.0000	53.7702

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	106.92	21.7038	1.2827	0.0000	53.7702
Total		**21.7038**	**1.2827**	**0.0000**	**53.7702**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	80.19	16.2779	0.9620	0.0000	40.3277
Total		**16.2779**	**0.9620**	**0.0000**	**40.3277**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CalEEMod Output

Construction and Operations

(Summer Daily)

Omni Development Tract 6302 Construction and Ops

Fresno County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	104.00	Dwelling Unit	20.38	187,200.00	297

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.022	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Omni Development Tract 6302 Construction and Ops - Fresno County, Summer

Project Characteristics - PG&E Intensity Factors

Land Use - Site Plan Acreage

Construction Phase -

Trips and VMT - 47,000 cy of soil import.

Architectural Coating - Rule 4601 Architectural Coatings compliance

Vehicle Trips - ITE 10th Edition rates 9.44, 9.54, 8.55

Area Coating - Rule 4601 Architectural Coatings

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation - Rule 4601 compliant coatings

Energy Mitigation - Comply with 2019 Title 24

Water Mitigation - MWELO and CalGreen requirements.

Waste Mitigation - 75 percent State recycling mandate

Fleet Mix - SJVAPCD Residential Fleet Mix 2022

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Residential_Exterior	150.00	65.00
tblArchitecturalCoating	EF_Residential_Interior	150.00	65.00
tblAreaCoating	Area_EF_Residential_Exterior	150	65
tblAreaCoating	Area_EF_Residential_Interior	150	65
tblFleetMix	HHD	0.13	0.02
tblFleetMix	LDA	0.49	0.53
tblFleetMix	LDT1	0.03	0.20
tblFleetMix	LDT2	0.17	0.17
tblFleetMix	LHD1	0.02	1.3000e-003
tblFleetMix	LHD2	4.5020e-003	9.0000e-004
tblFleetMix	MCY	5.0620e-003	2.5000e-003

tblFleetMix	MDV	0.12	0.05
tblFleetMix	MH	5.9400e-004	1.8000e-003
tblFleetMix	MHD	0.03	8.6000e-003
tblFleetMix	OBUS	2.3630e-003	0.00
tblFleetMix	SBUS	1.0830e-003	7.0000e-004
tblFleetMix	UBUS	1.5190e-003	4.4000e-003
tblLandUse	LotAcreage	33.77	20.38
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.022
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblTripsAndVMT	HaulingTripNumber	0.00	2,733.00
tblVehicleTrips	ST_TR	9.91	9.54
tblVehicleTrips	SU_TR	8.62	8.55
tblVehicleTrips	WD_TR	9.52	9.44
tblWoodstoves	NumberCatalytic	20.38	20.49
tblWoodstoves	NumberNoncatalytic	20.38	20.49

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					
2021	4.8606	66.1980	34.1551	0.1259	18.2141	2.0520	20.2595	9.9699	1.8902	11.8516	0.0000	12,704.1718	12,704.1718	2.4787	0.0000	12,766.1380
2022	76.3722	16.8514	17.5125	0.0329	0.3785	0.8136	1.1921	0.1021	0.7655	0.8676	0.0000	3,167.6139	3,167.6139	0.7167	0.0000	3,183.9747
Maximum	**76.3722**	**66.1980**	**34.1551**	**0.1259**	**18.2141**	**2.0520**	**20.2595**	**9.9699**	**1.8902**	**11.8516**	**0.0000**	**12,704.1718**	**12,704.1718**	**2.4787**	**0.0000**	**12,766.1380**

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					
2021	4.8606	66.1980	34.1551	0.1259	8.2777	2.0520	10.3230	4.5080	1.8902	6.3898	0.0000	12,704.1718	12,704.1718	2.4787	0.0000	12,766.1380
2022	76.3722	16.8514	17.5125	0.0329	0.3785	0.8136	1.1921	0.1021	0.7655	0.8676	0.0000	3,167.6139	3,167.6139	0.7167	0.0000	3,183.9747
Maximum	**76.3722**	**66.1980**	**34.1551**	**0.1259**	**8.2777**	**2.0520**	**10.3230**	**4.5080**	**1.8902**	**6.3898**	**0.0000**	**12,704.1718**	**12,704.1718**	**2.4787**	**0.0000**	**12,766.1380**

	ROG	NOx	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**	**53.44**	**0.00**	**46.32**	**54.23**	**0.00**	**42.94**	**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	14.9786	2.5568	101.4865	0.3083		15.2128	15.2128		15.2128	15.2128	2,227.0827	1,226.7436	3,453.8263	10.4493	0.0222	3,721.6760
Energy	0.0803	0.6865	0.2921	4.3800e-003		0.0555	0.0555		0.0555	0.0555		876.4238	876.4238	0.0168	0.0161	881.6320
Mobile	2.2426	6.1198	21.8857	0.0677	6.1521	0.0545	6.2066	1.6429	0.0509	1.6937		6,849.2167	6,849.2167	0.4301		6,859.9700
Total	**17.3015**	**9.3631**	**123.6643**	**0.3804**	**6.1521**	**15.3228**	**21.4749**	**1.6429**	**15.3192**	**16.9621**	**2,227.0827**	**8,952.3841**	**11,179.4668**	**10.8962**	**0.0383**	**11,463.2779**

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	4.7938	1.0479	8.9931	6.5100e-003		0.1242	0.1242		0.1242	0.1242	0.0000	1,226.7436	1,226.7436	0.0381	0.0222	1,234.3143
Energy	0.0755	0.6453	0.2746	4.1200e-003		0.0522	0.0522		0.0522	0.0522		823.8102	823.8102	0.0158	0.0151	828.7057
Mobile	2.2086	5.8878	20.6358	0.0633	5.7276	0.0512	5.7788	1.5295	0.0478	1.5773		6,406.1709	6,406.1709	0.4105		6,416.4341
Total	**7.0779**	**7.5810**	**29.9035**	**0.0739**	**5.7276**	**0.2275**	**5.9552**	**1.5295**	**0.2241**	**1.7536**	**0.0000**	**8,456.7247**	**8,456.7247**	**0.4644**	**0.0373**	**8,479.4540**

	ROG	NOx	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	**59.09**	**19.03**	**75.82**	**80.56**	**6.90**	**98.52**	**72.27**	**6.90**	**98.54**	**89.66**	**100.00**	**5.54**	**24.35**	**95.74**	**2.53**	**26.03**

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	1/15/2021	1/28/2021	5	10	
2	Grading	Grading	1/29/2021	3/18/2021	5	35	
3	Building Construction	Building Construction	3/19/2021	8/18/2022	5	370	
4	Paving	Paving	8/19/2022	9/15/2022	5	20	
5	Architectural Coating	Architectural Coating	9/16/2022	10/13/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 87.5

Acres of Paving: 0

Residential Indoor: 379,080; Residential Outdoor: 126,360; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Omni Development Tract 6302 Construction and Ops - Fresno County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	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	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	2,733.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	37.00	11.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	7.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.2 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0816	0.0409	0.5263	1.4600e-003	0.1479	9.0000e-004	0.1488	0.0392	8.2000e-004	0.0401		145.4060	145.4060	3.6300e-003		145.4967
Total	**0.0816**	**0.0409**	**0.5263**	**1.4600e-003**	**0.1479**	**9.0000e-004**	**0.1488**	**0.0392**	**8.2000e-004**	**0.0401**		**145.4060**	**145.4060**	**3.6300e-003**		**145.4967**

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					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**8.1298**	**2.0445**	**10.1743**	**4.4688**	**1.8809**	**6.3497**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.2 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0816	0.0409	0.5263	1.4600e-003	0.1479	9.0000e-004	0.1488	0.0392	8.2000e-004	0.0401		145.4060	145.4060	3.6300e-003		145.4967
Total	**0.0816**	**0.0409**	**0.5263**	**1.4600e-003**	**0.1479**	**9.0000e-004**	**0.1488**	**0.0392**	**8.2000e-004**	**0.0401**		**145.4060**	**145.4060**	**3.6300e-003**		**145.4967**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.3 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5787	19.7528	2.6919	0.0623	1.3672	0.0657	1.4328	0.3749	0.0628	0.4377		6,535.5662	6,535.5662	0.5318		6,548.8616
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0454	0.5847	1.6200e-003	0.1643	1.0000e-003	0.1653	0.0436	9.2000e-004	0.0445		161.5622	161.5622	4.0300e-003		161.6630
Total	**0.6694**	**19.7982**	**3.2766**	**0.0639**	**1.5315**	**0.0667**	**1.5981**	**0.4185**	**0.0637**	**0.4822**		**6,697.1283**	**6,697.1283**	**0.5359**		**6,710.5245**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**3.9030**	**1.9853**	**5.8883**	**1.6184**	**1.8265**	**3.4449**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.3 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5787	19.7528	2.6919	0.0623	1.3672	0.0657	1.4328	0.3749	0.0628	0.4377		6,535.5662	6,535.5662	0.5318		6,548.8616
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0454	0.5847	1.6200e-003	0.1643	1.0000e-003	0.1653	0.0436	9.2000e-004	0.0445		161.5622	161.5622	4.0300e-003		161.6630
Total	**0.6694**	**19.7982**	**3.2766**	**0.0639**	**1.5315**	**0.0667**	**1.5981**	**0.4185**	**0.0637**	**0.4822**		**6,697.1283**	**6,697.1283**	**0.5359**		**6,710.5245**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.4 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0326	1.2239	0.1738	3.1300e-003	0.0745	3.2700e-003	0.0778	0.0215	3.1300e-003	0.0246		328.2444	328.2444	0.0370		329.1687
Worker	0.1678	0.0840	1.0817	3.0000e-003	0.3040	1.8400e-003	0.3058	0.0806	1.7000e-003	0.0823		298.8900	298.8900	7.4600e-003		299.0765
Total	**0.2004**	**1.3079**	**1.2555**	**6.1300e-003**	**0.3785**	**5.1100e-003**	**0.3836**	**0.1021**	**4.8300e-003**	**0.1069**		**627.1344**	**627.1344**	**0.0444**		**628.2452**

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	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.4 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0326	1.2239	0.1738	3.1300e-003	0.0745	3.2700e-003	0.0778	0.0215	3.1300e-003	0.0246		328.2444	328.2444	0.0370		329.1687
Worker	0.1678	0.0840	1.0817	3.0000e-003	0.3040	1.8400e-003	0.3058	0.0806	1.7000e-003	0.0823		298.8900	298.8900	7.4600e-003		299.0765
Total	**0.2004**	**1.3079**	**1.2555**	**6.1300e-003**	**0.3785**	**5.1100e-003**	**0.3836**	**0.1021**	**4.8300e-003**	**0.1069**		**627.1344**	**627.1344**	**0.0444**		**628.2452**

3.4 Building Construction - 2022

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	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0304	1.1608	0.1608	3.1000e-003	0.0745	2.8100e-003	0.0773	0.0215	2.6900e-003	0.0242		325.1395	325.1395	0.0358		326.0354
Worker	0.1556	0.0750	0.9884	2.8900e-003	0.3040	1.7900e-003	0.3057	0.0806	1.6500e-003	0.0823		288.1408	288.1408	6.6500e-003		288.3071
Total	**0.1860**	**1.2358**	**1.1491**	**5.9900e-003**	**0.3785**	**4.6000e-003**	**0.3831**	**0.1021**	**4.3400e-003**	**0.1064**		**613.2803**	**613.2803**	**0.0425**		**614.3425**

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	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0304	1.1608	0.1608	3.1000e-003	0.0745	2.8100e-003	0.0773	0.0215	2.6900e-003	0.0242		325.1395	325.1395	0.0358		326.0354
Worker	0.1556	0.0750	0.9884	2.8900e-003	0.3040	1.7900e-003	0.3057	0.0806	1.6500e-003	0.0823		288.1408	288.1408	6.6500e-003		288.3071
Total	**0.1860**	**1.2358**	**1.1491**	**5.9900e-003**	**0.3785**	**4.6000e-003**	**0.3831**	**0.1021**	**4.3400e-003**	**0.1064**		**613.2803**	**613.2803**	**0.0425**		**614.3425**

3.5 Paving - 2022

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	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1028**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.5 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0631	0.0304	0.4007	1.1700e-003	0.1232	7.2000e-004	0.1240	0.0327	6.7000e-004	0.0334		116.8138	116.8138	2.7000e-003		116.8813
Total	**0.0631**	**0.0304**	**0.4007**	**1.1700e-003**	**0.1232**	**7.2000e-004**	**0.1240**	**0.0327**	**6.7000e-004**	**0.0334**		**116.8138**	**116.8138**	**2.7000e-003**		**116.8813**

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	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1028**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.5 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0631	0.0304	0.4007	1.1700e-003	0.1232	7.2000e-004	0.1240	0.0327	6.7000e-004	0.0334		116.8138	116.8138	2.7000e-003		116.8813
Total	**0.0631**	**0.0304**	**0.4007**	**1.1700e-003**	**0.1232**	**7.2000e-004**	**0.1240**	**0.0327**	**6.7000e-004**	**0.0334**		**116.8138**	**116.8138**	**2.7000e-003**		**116.8813**

3.6 Architectural Coating - 2022

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	76.1382					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**76.3428**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.6 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0294	0.0142	0.1870	5.5000e-004	0.0575	3.4000e-004	0.0578	0.0153	3.1000e-004	0.0156		54.5131	54.5131	1.2600e-003		54.5446
Total	**0.0294**	**0.0142**	**0.1870**	**5.5000e-004**	**0.0575**	**3.4000e-004**	**0.0578**	**0.0153**	**3.1000e-004**	**0.0156**		**54.5131**	**54.5131**	**1.2600e-003**		**54.5446**

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	76.1382					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**76.3428**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.6 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0294	0.0142	0.1870	5.5000e-004	0.0575	3.4000e-004	0.0578	0.0153	3.1000e-004	0.0156		54.5131	54.5131	1.2600e-003		54.5446
Total	**0.0294**	**0.0142**	**0.1870**	**5.5000e-004**	**0.0575**	**3.4000e-004**	**0.0578**	**0.0153**	**3.1000e-004**	**0.0156**		**54.5131**	**54.5131**	**1.2600e-003**		**54.5446**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive 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	2.2086	5.8878	20.6358	0.0633	5.7276	0.0512	5.7788	1.5295	0.0478	1.5773		6,406.1709	6,406.1709	0.4105		6,416.4341
Unmitigated	2.2426	6.1198	21.8857	0.0677	6.1521	0.0545	6.2066	1.6429	0.0509	1.6937		6,849.2167	6,849.2167	0.4301		6,859.9700

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	981.76	992.16	889.20	2,841,846	2,645,759
Total	981.76	992.16	889.20	2,841,846	2,645,759

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
Single Family Housing	10.80	7.30	7.50	48.40	15.90	35.70	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.534300	0.203000	0.167300	0.054500	0.001300	0.000900	0.008600	0.020700	0.000000	0.004400	0.002500	0.000700	0.001800

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0755	0.6453	0.2746	4.1200e-003		0.0522	0.0522		0.0522	0.0522		823.8102	823.8102	0.0158	0.0151	828.7057
NaturalGas Unmitigated	0.0803	0.6865	0.2921	4.3800e-003		0.0555	0.0555		0.0555	0.0555		876.4238	876.4238	0.0168	0.0161	881.6320

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					
Single Family Housing	7449.6	0.0803	0.6865	0.2921	4.3800e-003		0.0555	0.0555		0.0555	0.0555		876.4238	876.4238	0.0168	0.0161	881.6320
Total		**0.0803**	**0.6865**	**0.2921**	**4.3800e-003**		**0.0555**	**0.0555**		**0.0555**	**0.0555**		**876.4238**	**876.4238**	**0.0168**	**0.0161**	**881.6320**

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					
Single Family Housing	7.00239	0.0755	0.6453	0.2746	4.1200e-003		0.0522	0.0522		0.0522	0.0522		823.8102	823.8102	0.0158	0.0151	828.7057
Total		**0.0755**	**0.6453**	**0.2746**	**4.1200e-003**		**0.0522**	**0.0522**		**0.0522**	**0.0522**		**823.8102**	**823.8102**	**0.0158**	**0.0151**	**828.7057**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive 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	4.7938	1.0479	8.9931	6.5100e-003		0.1242	0.1242		0.1242	0.1242	0.0000	1,226.7436	1,226.7436	0.0381	0.0222	1,234.3143
Unmitigated	14.9786	2.5568	101.4865	0.3083		15.2128	15.2128		15.2128	15.2128	2,227.0827	1,226.7436	3,453.8263	10.4493	0.0222	3,721.6760

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	0.4172					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.0061					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	10.2959	2.4577	92.8971	0.3078		15.1654	15.1654		15.1654	15.1654	2,227.0827	1,211.2941	3,438.3768	10.4344	0.0222	3,705.8539
Landscaping	0.2594	0.0991	8.5894	4.5000e-004		0.0475	0.0475		0.0475	0.0475		15.4495	15.4495	0.0149		15.8221
Total	**14.9786**	**2.5568**	**101.4865**	**0.3083**		**15.2128**	**15.2128**		**15.2128**	**15.2128**	**2,227.0827**	**1,226.7436**	**3,453.8263**	**10.4493**	**0.0222**	**3,721.6760**

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	0.4172					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.0061					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1110	0.9489	0.4038	6.0600e-003		0.0767	0.0767		0.0767	0.0767	0.0000	1,211.2941	1,211.2941	0.0232	0.0222	1,218.4922
Landscaping	0.2594	0.0991	8.5894	4.5000e-004		0.0475	0.0475		0.0475	0.0475		15.4495	15.4495	0.0149		15.8221
Total	**4.7938**	**1.0479**	**8.9931**	**6.5100e-003**		**0.1242**	**0.1242**		**0.1242**	**0.1242**	**0.0000**	**1,226.7436**	**1,226.7436**	**0.0381**	**0.0222**	**1,234.3143**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CalEEMod Output

Construction and Operations

(Winter Daily)

Omni Development Tract 6302 Construction and Ops

Fresno County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	104.00	Dwelling Unit	20.38	187,200.00	297

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.022	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Omni Development Tract 6302 Construction and Ops - Fresno County, Winter

Project Characteristics - PG&E Intensity Factors

Land Use - Site Plan Acreage

Construction Phase -

Trips and VMT - 47,000 cy of soil import.

Architectural Coating - Rule 4601 Architectural Coatings compliance

Vehicle Trips - ITE 10th Edition rates 9.44, 9.54, 8.55

Area Coating - Rule 4601 Architectural Coatings

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation - Rule 4601 compliant coatings

Energy Mitigation - Comply with 2019 Title 24

Water Mitigation - MWELO and CalGreen requirements.

Waste Mitigation - 75 percent State recycling mandate

Fleet Mix - SJVAPCD Residential Fleet Mix 2022

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Residential_Exterior	150.00	65.00
tblArchitecturalCoating	EF_Residential_Interior	150.00	65.00
tblAreaCoating	Area_EF_Residential_Exterior	150	65
tblAreaCoating	Area_EF_Residential_Interior	150	65
tblFleetMix	HHD	0.13	0.02
tblFleetMix	LDA	0.49	0.53
tblFleetMix	LDT1	0.03	0.20
tblFleetMix	LDT2	0.17	0.17
tblFleetMix	LHD1	0.02	1.3000e-003
tblFleetMix	LHD2	4.5020e-003	9.0000e-004
tblFleetMix	MCY	5.0620e-003	2.5000e-003

tblFleetMix	MDV	0.12	0.05
tblFleetMix	MH	5.9400e-004	1.8000e-003
tblFleetMix	MHD	0.03	8.6000e-003
tblFleetMix	OBUS	2.3630e-003	0.00
tblFleetMix	SBUS	1.0830e-003	7.0000e-004
tblFleetMix	UBUS	1.5190e-003	4.4000e-003
tblLandUse	LotAcreage	33.77	20.38
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.022
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblTripsAndVMT	HaulingTripNumber	0.00	2,733.00
tblVehicleTrips	ST_TR	9.91	9.54
tblVehicleTrips	SU_TR	8.62	8.55
tblVehicleTrips	WD_TR	9.52	9.44
tblWoodstoves	NumberCatalytic	20.38	20.49
tblWoodstoves	NumberNoncatalytic	20.38	20.49

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					
2021	4.8733	66.7193	34.4179	0.1244	18.2141	2.0534	20.2595	9.9699	1.8915	11.8516	0.0000	12,543.3775	12,543.3775	2.5474	0.0000	12,607.0615
2022	76.3702	16.8727	17.3916	0.0325	0.3785	0.8137	1.1922	0.1021	0.7656	0.8677	0.0000	3,121.7759	3,121.7759	0.7164	0.0000	3,138.2394
Maximum	**76.3702**	**66.7193**	**34.4179**	**0.1244**	**18.2141**	**2.0534**	**20.2595**	**9.9699**	**1.8915**	**11.8516**	**0.0000**	**12,543.3775**	**12,543.3775**	**2.5474**	**0.0000**	**12,607.0615**

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					
2021	4.8733	66.7193	34.4179	0.1244	8.2777	2.0534	10.3230	4.5080	1.8915	6.3898	0.0000	12,543.3775	12,543.3775	2.5474	0.0000	12,607.0615
2022	76.3702	16.8727	17.3916	0.0325	0.3785	0.8137	1.1922	0.1021	0.7656	0.8677	0.0000	3,121.7759	3,121.7759	0.7164	0.0000	3,138.2394
Maximum	**76.3702**	**66.7193**	**34.4179**	**0.1244**	**8.2777**	**2.0534**	**10.3230**	**4.5080**	**1.8915**	**6.3898**	**0.0000**	**12,543.3775**	**12,543.3775**	**2.5474**	**0.0000**	**12,607.0615**

	ROG	NOx	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**	**53.44**	**0.00**	**46.32**	**54.23**	**0.00**	**42.94**	**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	14.9786	2.5568	101.4865	0.3083		15.2128	15.2128		15.2128	15.2128	2,227.0827	1,226.7436	3,453.8263	10.4493	0.0222	3,721.6760
Energy	0.0803	0.6865	0.2921	4.3800e-003		0.0555	0.0555		0.0555	0.0555		876.4238	876.4238	0.0168	0.0161	881.6320
Mobile	1.5642	6.4661	19.6093	0.0605	6.1521	0.0549	6.2070	1.6429	0.0513	1.6941		6,127.8211	6,127.8211	0.4359		6,138.7183
Total	**16.6231**	**9.7094**	**121.3879**	**0.3731**	**6.1521**	**15.3232**	**21.4753**	**1.6429**	**15.3196**	**16.9624**	**2,227.0827**	**8,230.9885**	**10,458.0712**	**10.9020**	**0.0383**	**10,742.0262**

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	4.7938	1.0479	8.9931	6.5100e-003		0.1242	0.1242		0.1242	0.1242	0.0000	1,226.7436	1,226.7436	0.0381	0.0222	1,234.3143
Energy	0.0755	0.6453	0.2746	4.1200e-003		0.0522	0.0522		0.0522	0.0522		823.8102	823.8102	0.0158	0.0151	828.7057
Mobile	1.5333	6.2081	18.6406	0.0566	5.7276	0.0516	5.7792	1.5295	0.0482	1.5777		5,731.9471	5,731.9471	0.4177		5,742.3892
Total	**6.4026**	**7.9013**	**27.9083**	**0.0672**	**5.7276**	**0.2279**	**5.9555**	**1.5295**	**0.2245**	**1.7540**	**0.0000**	**7,782.5008**	**7,782.5008**	**0.4716**	**0.0373**	**7,805.4091**

	ROG	NOx	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	**61.48**	**18.62**	**77.01**	**81.99**	**6.90**	**98.51**	**72.27**	**6.90**	**98.53**	**89.66**	**100.00**	**5.45**	**25.58**	**95.67**	**2.53**	**27.34**

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	1/15/2021	1/28/2021	5	10	
2	Grading	Grading	1/29/2021	3/18/2021	5	35	
3	Building Construction	Building Construction	3/19/2021	8/18/2022	5	370	
4	Paving	Paving	8/19/2022	9/15/2022	5	20	
5	Architectural Coating	Architectural Coating	9/16/2022	10/13/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 87.5

Acres of Paving: 0

Residential Indoor: 379,080; Residential Outdoor: 126,360; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Omni Development Tract 6302 Construction and Ops - Fresno County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	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	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	2,733.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	37.00	11.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	7.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.2 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0758	0.0480	0.4465	1.2800e-003	0.1479	9.0000e-004	0.1488	0.0392	8.2000e-004	0.0401		127.4382	127.4382	3.1900e-003		127.5179
Total	**0.0758**	**0.0480**	**0.4465**	**1.2800e-003**	**0.1479**	**9.0000e-004**	**0.1488**	**0.0392**	**8.2000e-004**	**0.0401**		**127.4382**	**127.4382**	**3.1900e-003**		**127.5179**

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					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**8.1298**	**2.0445**	**10.1743**	**4.4688**	**1.8809**	**6.3497**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.2 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0758	0.0480	0.4465	1.2800e-003	0.1479	9.0000e-004	0.1488	0.0392	8.2000e-004	0.0401		127.4382	127.4382	3.1900e-003		127.5179
Total	**0.0758**	**0.0480**	**0.4465**	**1.2800e-003**	**0.1479**	**9.0000e-004**	**0.1488**	**0.0392**	**8.2000e-004**	**0.0401**		**127.4382**	**127.4382**	**3.1900e-003**		**127.5179**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6733**	**1.9853**	**10.6587**	**3.5965**	**1.8265**	**5.4230**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.3 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5979	20.2661	3.0434	0.0609	1.3672	0.0670	1.4342	0.3749	0.0641	0.4390		6,394.7361	6,394.7361	0.6010		6,409.7615
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0842	0.0534	0.4961	1.4200e-003	0.1643	1.0000e-003	0.1653	0.0436	9.2000e-004	0.0445		141.5980	141.5980	3.5500e-003		141.6866
Total	**0.6821**	**20.3194**	**3.5395**	**0.0623**	**1.5315**	**0.0680**	**1.5995**	**0.4185**	**0.0650**	**0.4835**		**6,536.3341**	**6,536.3341**	**0.6046**		**6,551.4481**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**3.9030**	**1.9853**	**5.8883**	**1.6184**	**1.8265**	**3.4449**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.3 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5979	20.2661	3.0434	0.0609	1.3672	0.0670	1.4342	0.3749	0.0641	0.4390		6,394.7361	6,394.7361	0.6010		6,409.7615
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0842	0.0534	0.4961	1.4200e-003	0.1643	1.0000e-003	0.1653	0.0436	9.2000e-004	0.0445		141.5980	141.5980	3.5500e-003		141.6866
Total	**0.6821**	**20.3194**	**3.5395**	**0.0623**	**1.5315**	**0.0680**	**1.5995**	**0.4185**	**0.0650**	**0.4835**		**6,536.3341**	**6,536.3341**	**0.6046**		**6,551.4481**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.4 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0343	1.2342	0.2087	3.0300e-003	0.0745	3.4000e-003	0.0779	0.0215	3.2500e-003	0.0247		317.9650	317.9650	0.0420		319.0143
Worker	0.1558	0.0987	0.9177	2.6300e-003	0.3040	1.8400e-003	0.3058	0.0806	1.7000e-003	0.0823		261.9563	261.9563	6.5600e-003		262.1202
Total	**0.1901**	**1.3329**	**1.1264**	**5.6600e-003**	**0.3785**	**5.2400e-003**	**0.3837**	**0.1021**	**4.9500e-003**	**0.1070**		**579.9212**	**579.9212**	**0.0485**		**581.1346**

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	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.4 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0343	1.2342	0.2087	3.0300e-003	0.0745	3.4000e-003	0.0779	0.0215	3.2500e-003	0.0247		317.9650	317.9650	0.0420		319.0143
Worker	0.1558	0.0987	0.9177	2.6300e-003	0.3040	1.8400e-003	0.3058	0.0806	1.7000e-003	0.0823		261.9563	261.9563	6.5600e-003		262.1202
Total	**0.1901**	**1.3329**	**1.1264**	**5.6600e-003**	**0.3785**	**5.2400e-003**	**0.3837**	**0.1021**	**4.9500e-003**	**0.1070**		**579.9212**	**579.9212**	**0.0485**		**581.1346**

3.4 Building Construction - 2022

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	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0320	1.1690	0.1934	3.0000e-003	0.0745	2.9300e-003	0.0775	0.0215	2.8000e-003	0.0243		314.8901	314.8901	0.0408		315.9089
Worker	0.1448	0.0881	0.8348	2.5300e-003	0.3040	1.7900e-003	0.3057	0.0806	1.6500e-003	0.0823		252.5522	252.5522	5.8400e-003		252.6982
Total	**0.1767**	**1.2571**	**1.0282**	**5.5300e-003**	**0.3785**	**4.7200e-003**	**0.3832**	**0.1021**	**4.4500e-003**	**0.1065**		**567.4424**	**567.4424**	**0.0466**		**568.6072**

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	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0320	1.1690	0.1934	3.0000e-003	0.0745	2.9300e-003	0.0775	0.0215	2.8000e-003	0.0243		314.8901	314.8901	0.0408		315.9089
Worker	0.1448	0.0881	0.8348	2.5300e-003	0.3040	1.7900e-003	0.3057	0.0806	1.6500e-003	0.0823		252.5522	252.5522	5.8400e-003		252.6982
Total	**0.1767**	**1.2571**	**1.0282**	**5.5300e-003**	**0.3785**	**4.7200e-003**	**0.3832**	**0.1021**	**4.4500e-003**	**0.1065**		**567.4424**	**567.4424**	**0.0466**		**568.6072**

3.5 Paving - 2022

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	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1028**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.5 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0587	0.0357	0.3384	1.0300e-003	0.1232	7.2000e-004	0.1240	0.0327	6.7000e-004	0.0334		102.3860	102.3860	2.3700e-003		102.4452
Total	**0.0587**	**0.0357**	**0.3384**	**1.0300e-003**	**0.1232**	**7.2000e-004**	**0.1240**	**0.0327**	**6.7000e-004**	**0.0334**		**102.3860**	**102.3860**	**2.3700e-003**		**102.4452**

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	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1028**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.5 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0587	0.0357	0.3384	1.0300e-003	0.1232	7.2000e-004	0.1240	0.0327	6.7000e-004	0.0334		102.3860	102.3860	2.3700e-003		102.4452
Total	**0.0587**	**0.0357**	**0.3384**	**1.0300e-003**	**0.1232**	**7.2000e-004**	**0.1240**	**0.0327**	**6.7000e-004**	**0.0334**		**102.3860**	**102.3860**	**2.3700e-003**		**102.4452**

3.6 Architectural Coating - 2022

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	76.1382					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**76.3428**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.6 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0274	0.0167	0.1579	4.8000e-004	0.0575	3.4000e-004	0.0578	0.0153	3.1000e-004	0.0156		47.7802	47.7802	1.1000e-003		47.8078
Total	**0.0274**	**0.0167**	**0.1579**	**4.8000e-004**	**0.0575**	**3.4000e-004**	**0.0578**	**0.0153**	**3.1000e-004**	**0.0156**		**47.7802**	**47.7802**	**1.1000e-003**		**47.8078**

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	76.1382					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**76.3428**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.6 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0274	0.0167	0.1579	4.8000e-004	0.0575	3.4000e-004	0.0578	0.0153	3.1000e-004	0.0156		47.7802	47.7802	1.1000e-003		47.8078
Total	**0.0274**	**0.0167**	**0.1579**	**4.8000e-004**	**0.0575**	**3.4000e-004**	**0.0578**	**0.0153**	**3.1000e-004**	**0.0156**		**47.7802**	**47.7802**	**1.1000e-003**		**47.8078**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive 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	1.5333	6.2081	18.6406	0.0566	5.7276	0.0516	5.7792	1.5295	0.0482	1.5777		5,731.9471	5,731.9471	0.4177		5,742.3892
Unmitigated	1.5642	6.4661	19.6093	0.0605	6.1521	0.0549	6.2070	1.6429	0.0513	1.6941		6,127.8211	6,127.8211	0.4359		6,138.7183

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	981.76	992.16	889.20	2,841,846	2,645,759
Total	981.76	992.16	889.20	2,841,846	2,645,759

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
Single Family Housing	10.80	7.30	7.50	48.40	15.90	35.70	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.534300	0.203000	0.167300	0.054500	0.001300	0.000900	0.008600	0.020700	0.000000	0.004400	0.002500	0.000700	0.001800

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0755	0.6453	0.2746	4.1200e-003		0.0522	0.0522		0.0522	0.0522		823.8102	823.8102	0.0158	0.0151	828.7057
NaturalGas Unmitigated	0.0803	0.6865	0.2921	4.3800e-003		0.0555	0.0555		0.0555	0.0555		876.4238	876.4238	0.0168	0.0161	881.6320

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					
Single Family Housing	7449.6	0.0803	0.6865	0.2921	4.3800e-003		0.0555	0.0555		0.0555	0.0555		876.4238	876.4238	0.0168	0.0161	881.6320
Total		**0.0803**	**0.6865**	**0.2921**	**4.3800e-003**		**0.0555**	**0.0555**		**0.0555**	**0.0555**		**876.4238**	**876.4238**	**0.0168**	**0.0161**	**881.6320**

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					
Single Family Housing	7.00239	0.0755	0.6453	0.2746	4.1200e-003		0.0522	0.0522		0.0522	0.0522		823.8102	823.8102	0.0158	0.0151	828.7057
Total		**0.0755**	**0.6453**	**0.2746**	**4.1200e-003**		**0.0522**	**0.0522**		**0.0522**	**0.0522**		**823.8102**	**823.8102**	**0.0158**	**0.0151**	**828.7057**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive 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	4.7938	1.0479	8.9931	6.5100e-003		0.1242	0.1242		0.1242	0.1242	0.0000	1,226.7436	1,226.7436	0.0381	0.0222	1,234.3143
Unmitigated	14.9786	2.5568	101.4865	0.3083		15.2128	15.2128		15.2128	15.2128	2,227.0827	1,226.7436	3,453.8263	10.4493	0.0222	3,721.6760

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	0.4172					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.0061					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	10.2959	2.4577	92.8971	0.3078		15.1654	15.1654		15.1654	15.1654	2,227.0827	1,211.2941	3,438.3768	10.4344	0.0222	3,705.8539
Landscaping	0.2594	0.0991	8.5894	4.5000e-004		0.0475	0.0475		0.0475	0.0475		15.4495	15.4495	0.0149		15.8221
Total	**14.9786**	**2.5568**	**101.4865**	**0.3083**		**15.2128**	**15.2128**		**15.2128**	**15.2128**	**2,227.0827**	**1,226.7436**	**3,453.8263**	**10.4493**	**0.0222**	**3,721.6760**

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	0.4172					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.0061					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1110	0.9489	0.4038	6.0600e-003		0.0767	0.0767		0.0767	0.0767	0.0000	1,211.2941	1,211.2941	0.0232	0.0222	1,218.4922
Landscaping	0.2594	0.0991	8.5894	4.5000e-004		0.0475	0.0475		0.0475	0.0475		15.4495	15.4495	0.0149		15.8221
Total	**4.7938**	**1.0479**	**8.9931**	**6.5100e-003**		**0.1242**	**0.1242**		**0.1242**	**0.1242**	**0.0000**	**1,226.7436**	**1,226.7436**	**0.0381**	**0.0222**	**1,234.3143**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CalEEMod Output

GHG Business as Usual

Omni Development Tract 6302 GHG BAU

Fresno County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	104.00	Dwelling Unit	20.38	187,200.00	297

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2005
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E Intensity Factors

Land Use - Site Plan Acreage

Construction Phase - GHG Ops only

Trips and VMT - 47,000 cy of soil import.

Architectural Coating - Rule 4601 Architectural Coatings compliance

Vehicle Trips - ITE 10th Edition rates 9.44, 9.54, 8.55

Area Coating - Rule 4601 Architectural Coatings

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation - Rule 4601 compliant coatings

Energy Mitigation - Comply with 2019 Title 24

Water Mitigation - MWELO and CalGreen requirements.

Waste Mitigation - 75 percent State recycling mandate

Fleet Mix - SJVAPCD Residential Fleet Mix 2022

Woodstoves -

Omni Development Tract 6302 GHG BAU - Fresno County, Annual

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Residential_Exterior	150.00	65.00
tblArchitecturalCoating	EF_Residential_Interior	150.00	65.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	150
tblAreaCoating	Area_EF_Nonresidential_Interior	250	150
tblAreaCoating	Area_EF_Residential_Exterior	250	65
tblAreaCoating	Area_EF_Residential_Interior	250	65
tblFleetMix	HHD	0.11	0.02
tblFleetMix	LDA	0.42	0.53
tblFleetMix	LDT1	0.06	0.20
tblFleetMix	LDT2	0.15	0.17
tblFleetMix	LHD1	0.04	1.3000e-003
tblFleetMix	LHD2	6.9730e-003	9.0000e-004
tblFleetMix	MCY	5.2690e-003	2.5000e-003
tblFleetMix	MDV	0.18	0.05
tblFleetMix	MH	1.5690e-003	1.8000e-003
tblFleetMix	MHD	0.03	8.6000e-003
tblFleetMix	OBUS	2.0990e-003	0.00
tblFleetMix	SBUS	1.2120e-003	7.0000e-004
tblFleetMix	UBUS	1.7870e-003	4.4000e-003
tblLandUse	LotAcreage	33.77	20.38
tblVehicleTrips	ST_TR	9.91	9.54
tblVehicleTrips	SU_TR	8.62	8.55
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022											0.0000	3.0042	3.0042	1.8000e-004	0.0000	3.0086
Maximum											**0.0000**	**3.0042**	**3.0042**	**1.8000e-004**	**0.0000**	**3.0086**

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					
2022											0.0000	3.0042	3.0042	1.8000e-004	0.0000	3.0086
Maximum											**0.0000**	**3.0042**	**3.0042**	**1.8000e-004**	**0.0000**	**3.0086**

	ROG	NOx	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**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											82.3907	46.3150	128.7057	0.3880	8.3000e-004	138.6529
Energy											0.0000	410.1562	410.1562	0.0148	5.1400e-003	412.0570
Mobile											0.0000	1,273.1272	1,273.1272	0.2135	0.0000	1,278.4639
Waste											21.7038	0.0000	21.7038	1.2827	0.0000	53.7702
Water											2.1497	15.0158	17.1655	0.2215	5.3500e-003	24.2979
Total											**106.2442**	**1,744.6141**	**1,850.8584**	**2.1204**	**0.0113**	**1,907.2419**

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											0.0000	46.3150	46.3150	2.8800e-003	8.3000e-004	46.6332
Energy											0.0000	399.3362	399.3362	0.0145	4.9600e-003	401.1770
Mobile											0.0000	1,190.0872	1,190.0872	0.2050	0.0000	1,195.2117
Waste											16.2779	0.0000	16.2779	0.9620	0.0000	40.3277
Water											1.7198	12.0127	13.7324	0.1772	4.2800e-003	19.4383
Total											**17.9976**	**1,647.7510**	**1,665.7486**	**1.3615**	**0.0101**	**1,702.7879**

	ROG	NOx	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**	**83.06**	**5.55**	**10.00**	**35.79**	**11.04**	**10.72**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Architectural Coating	Architectural Coating	9/16/2022	10/13/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 379,080; Residential Outdoor: 126,360; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	7.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Architectural Coating - 2022

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											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total											**0.0000**	**2.5533**	**2.5533**	**1.7000e-004**	**0.0000**	**2.5574**

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
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	0.4510	0.4510	1.0000e-005	0.0000	0.4512
Total											**0.0000**	**0.4510**	**0.4510**	**1.0000e-005**	**0.0000**	**0.4512**

3.2 Architectural Coating - 2022

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											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total											**0.0000**	**2.5533**	**2.5533**	**1.7000e-004**	**0.0000**	**2.5574**

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
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	0.4510	0.4510	1.0000e-005	0.0000	0.4512
Total											**0.0000**	**0.4510**	**0.4510**	**1.0000e-005**	**0.0000**	**0.4512**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	1,190.0872	1,190.0872	0.2050	0.0000	1,195.2117
Unmitigated											0.0000	1,273.1272	1,273.1272	0.2135	0.0000	1,278.4639

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	981.76	992.16	889.20	2,841,846	2,645,759
Total	981.76	992.16	889.20	2,841,846	2,645,759

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
Single Family Housing	10.80	7.30	7.50	48.40	15.90	35.70	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.534300	0.203000	0.167300	0.054500	0.001300	0.000900	0.008600	0.020700	0.000000	0.004400	0.002500	0.000700	0.001800

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive 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	262.9452	262.9452	0.0119	2.4600e-003	263.9755
Electricity Unmitigated											0.0000	265.0544	265.0544	0.0120	2.4800e-003	266.0929
NaturalGas Mitigated											0.0000	136.3910	136.3910	2.6100e-003	2.5000e-003	137.2015
NaturalGas Unmitigated											0.0000	145.1018	145.1018	2.7800e-003	2.6600e-003	145.9641

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					
Single Family Housing	2.7191e+006											0.0000	145.1018	145.1018	2.7800e-003	2.6600e-003	145.9641
Total												**0.0000**	**145.1018**	**145.1018**	**2.7800e-003**	**2.6600e-003**	**145.9641**

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					
Single Family Housing	2.55587e+006											0.0000	136.3910	136.3910	2.6100e-003	2.5000e-003	137.2015
Total												**0.0000**	**136.3910**	**136.3910**	**2.6100e-003**	**2.5000e-003**	**137.2015**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	911117	265.0544	0.0120	2.4800e-003	266.0929
Total		**265.0544**	**0.0120**	**2.4800e-003**	**266.0929**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	903867	262.9452	0.0119	2.4600e-003	263.9755
Total		**262.9452**	**0.0119**	**2.4600e-003**	**263.9755**

6.0 Area Detail

6.1 Mitigation Measures Area

Omni Development Tract 6302 GHG BAU - Fresno County, Annual

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	46.3150	46.3150	2.8800e-003	8.3000e-004	46.6332
Unmitigated											82.3907	46.3150	128.7057	0.3880	8.3000e-004	138.6529

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											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											82.3907	45.0536	127.4443	0.3860	8.3000e-004	137.3410
Landscaping											0.0000	1.2614	1.2614	2.0200e-003	0.0000	1.3119
Total											**82.3907**	**46.3150**	**128.7057**	**0.3880**	**8.3000e-004**	**138.6529**

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											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	45.0536	45.0536	8.6000e-004	8.3000e-004	45.3213
Landscaping											0.0000	1.2614	1.2614	2.0200e-003	0.0000	1.3119
Total											**0.0000**	**46.3150**	**46.3150**	**2.8800e-003**	**8.3000e-004**	**46.6332**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	13.7324	0.1772	4.2800e-003	19.4383
Unmitigated	17.1655	0.2215	5.3500e-003	24.2979

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	6.77602 / 4.27184	17.1655	0.2215	5.3500e-003	24.2979
Total		**17.1655**	**0.2215**	**5.3500e-003**	**24.2979**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	5.42081 / 3.41747	13.7324	0.1772	4.2800e-003	19.4383
Total		**13.7324**	**0.1772**	**4.2800e-003**	**19.4383**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	16.2779	0.9620	0.0000	40.3277
Unmitigated	21.7038	1.2827	0.0000	53.7702

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	106.92	21.7038	1.2827	0.0000	53.7702
Total		**21.7038**	**1.2827**	**0.0000**	**53.7702**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	80.19	16.2779	0.9620	0.0000	40.3277
Total		**16.2779**	**0.9620**	**0.0000**	**40.3277**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CalEEMod Output

GHG 2030 Mitigated

Omni Development Tract 6302 GHG 2030

Fresno County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	104.00	Dwelling Unit	20.38	187,200.00	297

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2030
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.022	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Omni Development Tract 6302 GHG 2030 - Fresno County, Annual

Project Characteristics - PG&E Intensity Factors

Land Use - Site Plan Acreage

Construction Phase - GHG Ops only

Trips and VMT - 47,000 cy of soil import.

Architectural Coating - Rule 4601 Architectural Coatings compliance

Vehicle Trips - ITE 10th Edition rates 9.44, 9.54, 8.55

Area Coating - Rule 4601 Architectural Coatings

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation - Rule 4601 compliant coatings

Energy Mitigation - Comply with 2019 Title 24

Water Mitigation - MWELO and CalGreen requirements.

Waste Mitigation - 75 percent State recycling mandate

Fleet Mix - SJVAPCD Residential Fleet Mix 2022

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Residential_Exterior	150.00	65.00
tblArchitecturalCoating	EF_Residential_Interior	150.00	65.00
tblAreaCoating	Area_EF_Residential_Exterior	150	65
tblAreaCoating	Area_EF_Residential_Interior	150	65
tblFleetMix	HHD	0.13	0.02
tblFleetMix	LDA	0.52	0.53
tblFleetMix	LDT1	0.03	0.20
tblFleetMix	LDT2	0.18	0.17
tblFleetMix	LHD1	9.7000e-003	1.3000e-003
tblFleetMix	LHD2	3.4040e-003	9.0000e-004
tblFleetMix	MCY	4.5630e-003	2.5000e-003

tblFleetMix	MDV	0.09	0.05
tblFleetMix	MH	4.3600e-004	1.8000e-003
tblFleetMix	MHD	0.03	8.6000e-003
tblFleetMix	OBUS	2.3060e-003	0.00
tblFleetMix	SBUS	9.9800e-004	7.0000e-004
tblFleetMix	UBUS	1.1850e-003	4.4000e-003
tblLandUse	LotAcreage	33.77	20.38
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.022
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblVehicleTrips	HO_TTP	35.70	36.00
tblVehicleTrips	HS_TTP	15.90	16.00
tblVehicleTrips	HW_TTP	48.40	48.00
tblVehicleTrips	ST_TR	9.91	9.54
tblVehicleTrips	SU_TR	8.62	8.55
tblVehicleTrips	WD_TR	9.52	9.44
tblWoodstoves	NumberCatalytic	20.38	20.49
tblWoodstoves	NumberNoncatalytic	20.38	20.49

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022											0.0000	3.0042	3.0042	1.8000e-004	0.0000	3.0086
Maximum											**0.0000**	**3.0042**	**3.0042**	**1.8000e-004**	**0.0000**	**3.0086**

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					
2022											0.0000	3.0042	3.0042	1.8000e-004	0.0000	3.0086
Maximum											**0.0000**	**3.0042**	**3.0042**	**1.8000e-004**	**0.0000**	**3.0086**

	ROG	NOx	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**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											82.8354	46.3150	129.1504	0.3893	8.3000e-004	139.1291
Energy											0.0000	264.9518	264.9518	0.0119	4.7300e-003	266.6571
Mobile											0.0000	811.9476	811.9476	0.0422	0.0000	813.0014
Waste											21.7038	0.0000	21.7038	1.2827	0.0000	53.7702
Water											2.1497	6.7897	8.9394	0.2213	5.3300e-003	16.0607
Total											**106.6889**	**1,130.0040**	**1,236.6929**	**1.9473**	**0.0109**	**1,288.6186**

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											0.0000	46.3150	46.3150	2.0700e-003	8.3000e-004	46.6127
Energy											0.0000	255.2872	255.2872	0.0116	4.5500e-003	256.9341
Mobile											0.0000	759.7987	759.7987	0.0404	0.0000	760.8077
Waste											16.2779	0.0000	16.2779	0.9620	0.0000	40.3277
Water											1.7198	5.4318	7.1516	0.1771	4.2600e-003	12.8486
Total											**17.9976**	**1,066.8327**	**1,084.8303**	**1.1931**	**9.6400e-003**	**1,117.5308**

	ROG	NOx	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**	**83.13**	**5.59**	**12.28**	**38.73**	**11.48**	**13.28**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Architectural Coating	Architectural Coating	9/16/2022	10/13/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 379,080; Residential Outdoor: 126,360; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	7.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Architectural Coating - 2022

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											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total											**0.0000**	**2.5533**	**2.5533**	**1.7000e-004**	**0.0000**	**2.5574**

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
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	0.4510	0.4510	1.0000e-005	0.0000	0.4512
Total											**0.0000**	**0.4510**	**0.4510**	**1.0000e-005**	**0.0000**	**0.4512**

3.2 Architectural Coating - 2022

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											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total											**0.0000**	**2.5533**	**2.5533**	**1.7000e-004**	**0.0000**	**2.5574**

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
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	0.4510	0.4510	1.0000e-005	0.0000	0.4512
Total											**0.0000**	**0.4510**	**0.4510**	**1.0000e-005**	**0.0000**	**0.4512**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	759.7987	759.7987	0.0404	0.0000	760.8077
Unmitigated											0.0000	811.9476	811.9476	0.0422	0.0000	813.0014

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	981.76	992.16	889.20	2,837,647	2,641,850
Total	981.76	992.16	889.20	2,837,647	2,641,850

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
Single Family Housing	10.80	7.30	7.50	48.00	16.00	36.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.534300	0.203000	0.167300	0.054500	0.001300	0.000900	0.008600	0.020700	0.000000	0.004400	0.002500	0.000700	0.001800

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive 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	118.8962	118.8962	9.0200e-003	2.0500e-003	119.7326
Electricity Unmitigated											0.0000	119.8500	119.8500	9.0900e-003	2.0700e-003	120.6930
NaturalGas Mitigated											0.0000	136.3910	136.3910	2.6100e-003	2.5000e-003	137.2015
NaturalGas Unmitigated											0.0000	145.1018	145.1018	2.7800e-003	2.6600e-003	145.9641

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					
Single Family Housing	2.7191e+006											0.0000	145.1018	145.1018	2.7800e-003	2.6600e-003	145.9641
Total												**0.0000**	**145.1018**	**145.1018**	**2.7800e-003**	**2.6600e-003**	**145.9641**

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					
Single Family Housing	2.55587e+006											0.0000	136.3910	136.3910	2.6100e-003	2.5000e-003	137.2015
Total												**0.0000**	**136.3910**	**136.3910**	**2.6100e-003**	**2.5000e-003**	**137.2015**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	911117	119.8500	9.0900e-003	2.0700e-003	120.6930
Total		**119.8500**	**9.0900e-003**	**2.0700e-003**	**120.6930**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	903867	118.8962	9.0200e-003	2.0500e-003	119.7326
Total		**118.8962**	**9.0200e-003**	**2.0500e-003**	**119.7326**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	46.3150	46.3150	2.0700e-003	8.3000e-004	46.6127
Unmitigated											82.8354	46.3150	129.1504	0.3893	8.3000e-004	139.1291

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											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											82.8354	45.0536	127.8890	0.3881	8.3000e-004	137.8377
Landscaping											0.0000	1.2614	1.2614	1.2000e-003	0.0000	1.2914
Total											**82.8354**	**46.3150**	**129.1504**	**0.3893**	**8.3000e-004**	**139.1291**

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											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	45.0536	45.0536	8.6000e-004	8.3000e-004	45.3213
Landscaping											0.0000	1.2614	1.2614	1.2000e-003	0.0000	1.2914
Total											**0.0000**	**46.3150**	**46.3150**	**2.0600e-003**	**8.3000e-004**	**46.6127**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	7.1516	0.1771	4.2600e-003	12.8486
Unmitigated	8.9394	0.2213	5.3300e-003	16.0607

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	6.77602 / 4.27184	8.9394	0.2213	5.3300e-003	16.0607
Total		**8.9394**	**0.2213**	**5.3300e-003**	**16.0607**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	5.42081 / 3.41747	7.1516	0.1771	4.2600e-003	12.8486
Total		**7.1516**	**0.1771**	**4.2600e-003**	**12.8486**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	16.2779	0.9620	0.0000	40.3277
Unmitigated	21.7038	1.2827	0.0000	53.7702

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	106.92	21.7038	1.2827	0.0000	53.7702
Total		**21.7038**	**1.2827**	**0.0000**	**53.7702**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	80.19	16.2779	0.9620	0.0000	40.3277
Total		**16.2779**	**0.9620**	**0.0000**	**40.3277**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

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Appendix B: San Joaquin Valley Air Pollution Control District Amicus Brief on Friant Ranch Supreme Court Decision

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SUPREME COURT COPY

CASE NO. S219783

IN THE SUPREME COURT OF CALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,
Plaintiffs and Appellants

v.

COUNTY OF FRESNO,
Defendant and Respondent

FRIANT RANCH, L.P.,
Real Party in Interest and Respondent

SUPREME COURT
FILED
APR 13 2015
Frank A. McGuire Clerk
Deputy

After a Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726

APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO AND REAL PARTY IN INTEREST AND RESPONDENT, FRIANT RANCH, L.P.

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APPLICATION

Pursuant to California Rules of Court 8.520(f)(1), proposed Amicus Curiae San Joaquin Valley Unified Air Pollution Control District hereby requests permission from the Chief Justice to file an amicus brief in support of Defendant and Respondent, County of Fresno, and Defendant and Real Parties in Interest Friant Ranch, L.P. Pursuant to Rule 8.520(f)(5) of the California Rules of Court, the proposed amicus curiae brief is combined with this Application. The brief addresses the following issue certified by this Court for review:

> Is an EIR adequate when it identifies the health impacts of air pollution and quantifies a project's expected emissions, or does CEQA further require the EIR to *correlate* a project's air quality emissions to specific health impacts?

As of the date of this filing, the deadline for the final reply brief on the merits was March 5, 2015. Accordingly, under Rule 8.520(f)(2), this application and brief are timely.

1. Background and Interest of San Joaquin Valley Unified Air Pollution Control District

The San Joaquin Valley Unified Air Pollution Control District ("Air District") regulates air quality in the eight counties comprising the San Joaquin Valley ("Central Valley"): Kern, Tulare, Madera, Fresno, Merced, San Joaquin, Stanislaus, and Kings, and is primarily responsible for attaining air quality standards within its jurisdiction. After billions of dollars of investment by Central Valley businesses, pioneering air quality regulations, and consistent efforts by residents, the Central Valley air basin has made historic improvements in air quality.

The Central Valley's geographical, topographical and meteorological features create exceptionally challenging air quality

conditions. For example, it receives air pollution transported from the San Francisco Bay Area and northern Central Valley communities, and the southern portion of the Central Valley includes three mountain ranges (Sierra, Tehachapi, and Coastal) that, under some meteorological conditions, effectively trap air pollution. Central Valley air pollution is only a fraction of what the Bay Area and Los Angeles produce, but these natural conditions result in air quality conditions that are only marginally better than Los Angeles, even though about ten times more pollution is emitted in the Los Angeles region. Bay Area air quality is much better than the Central Valley's, even though the Bay Area produces about six times more pollution. The Central Valley also receives air pollution transported from the Bay Area and northern counties in the Central Valley, including Sacramento, and transboundary anthropogenic ozone from as far away as China.

Notwithstanding these challenges, the Central Valley has reduced emissions at the same or better rate than other areas in California and has achieved unparalleled milestones in protecting public health and the environment:

- In the last decade, the Central Valley became the first air basin classified by the federal government under the Clean Air Act as a "serious nonattainment" area to come into attainment of health-based National Ambient Air Quality Standard ("NAAQS") for coarse particulate matter (PM10), an achievement made even more notable given the Valley's extensive agricultural sector. Unhealthy levels of particulate matter can cause and exacerbate a range of chronic and acute illnesses.
- In 2013, the Central Valley became the first air basin in the country to improve from a federal designation of "extreme" nonattainment to

actually attain (and quality for an attainment designation) of the 1-hour ozone NAAQS; ozone creates "smog" and, like PM10, causes adverse health impacts.

- The Central Valley also is in full attainment of federal standards for lead, nitrogen dioxide, sulfur dioxide, and carbon monoxide.
- The Central Valley continues to make progress toward compliance with its last two attainment standards, with the number of exceedences for the 8-hour ozone NAAQS reduced by 74% (for the 1997 standard) and 38% (for the 2008 standard) since 1991, and for the small particulate matter (PM2.5) NAAQS reduced by 85% (for the 1997 standard) and 61% (for the 2006 standard).

Sustained improvement in Central Valley air quality requires a rigorous and comprehensive regulatory framework that includes prohibitions (e.g., on wood-burning fireplaces in new residences), mandates (e.g., requiring the installation of best available pollution reduction technologies on new and modified equipment and industrial operations), innovations (e.g., fees assessed against residential development to fund pollution reduction actions to "offset" vehicular emissions associated with new residences), incentive programs (e.g., funding replacements of older, more polluting heavy duty trucks and school buses)[1], ongoing planning for continued air quality improvements, and enforcement of Air District permits and regulations.

The Air District is also an expert air quality agency for the eight counties and cities in the San Joaquin Valley. In that capacity, the Air District has developed air quality emission guidelines for use by the Central

[1] San Joaquin's incentive program has been so successful that through 2012, it has awarded over $ 432 million in incentive funds and has achieved 93,349 tons of lifetime emissions reductions. *See* SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 2012 PM2.5 PLAN, 6-6 (2012) *available at* http://www.valleyair.org/Workshops/postings/2012/12-20-12PM25/FinalVersion/06%20Chapter%206%20Incentives.pdf.

Valley counties and cities that implement the California Environment Quality Act (CEQA).[2] In its guidance, the Air District has distinguished between toxic air contaminants and criteria air pollutants.[3] Recognizing this distinction, the Air District's CEQA Guidance has adopted distinct thresholds of significance for *criteria* pollutants (i.e., ozone, PM2.5 and their respective precursor pollutants) based upon scientific and factual data which demonstrates the level that can be accommodated on a cumulative basis in the San Joaquin Valley without affecting the attainment of the applicable NAAQS.[4] For *toxic air* pollutants, the District has adopted different thresholds of significance which scientific and factual data demonstrates has the potential to expose sensitive receptors (i.e., children, the elderly) to levels which may result in localized health impacts.[5]

The Air District's CEQA Guidance was followed by the County of Fresno in its environment review of the Friant Ranch project, for which the Air District also served as a commenting agency. The Court of Appeal's holding, however, requiring correlation between the project's criteria

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[2] *See, e.g.*, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, PLANNING DIVISION, GUIDE FOR ASSESSING AND MITIGATING AIR QUALITY IMPACTS (2015), *available at* http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf ("CEQA Guidance").

[3] Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health, they are distinguishable from toxic air contaminants and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of toxic air contaminants occurs solely under section 112 of the Act. Compare 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 with 42 U.S.C. § 7411.

[4] See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 64-66, 80.

[5] See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 66, 99-101.

pollutants and local health impacts, departs from the Air District's Guidance and approved methodology for assessing criteria pollutants. A close reading of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants (for which a local health risk assessment is feasible and routinely performed) and criteria air pollutants (for which a local health risk assessment is not feasible and would result in speculative results).[6] The Air District has a direct interest in ensuring the lawfulness and consistent application of its CEQA Guidance, and will explain how the Court of Appeal departed from the Air District's long-standing CEQA Guidance in addressing criteria pollutants and toxic air contaminants in this amicus brief.

2. How the Proposed Amicus Curiae Brief Will Assist the Court

As counsel for the proposed amicus curiae, we have reviewed the briefs filed in this action. In addition to serving as a "commentary agency" for CEQA purposes over the Friant Ranch project, the Air District has a strong interest in assuring that CEQA is used for its intended purpose, and believes that this Court would benefit from additional briefing explaining the distinction between criteria pollutants and toxic air contaminants and the different methodologies employed by local air pollution control agencies such as the Air District to analyze these two categories of air pollutants under CEQA. The Air District will also explain how the Court of Appeal's opinion is based upon a fundamental misunderstanding of these two different approaches by requiring the County of Fresno to correlate the project's *criteria* pollution emissions with *local* health impacts. In doing

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[6] CEQA does not require speculation. *See, e.g.*, *Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.*, 6 Cal. 4th 1112, 1137 (1993) (upholding EIR that failed to evaluate cumulative toxic air emission increases given absence of any acceptable means for doing so).

so, the Air District will provide helpful analysis to support its position that at least insofar as criteria pollutants are concerned, CEQA does not require an EIR to correlate a project's air quality emissions to specific health impacts, because such an analysis is not reasonably feasible.

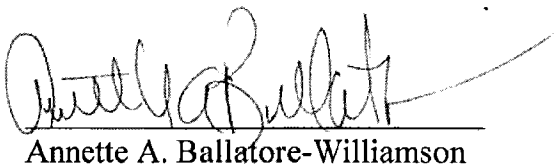
Rule 8.520 Disclosure

Pursuant to Cal. R. 8.520(f)(4), neither the Plaintiffs nor the Defendant or Real Party In Interest or their respective counsel authored this brief in whole or in part. Neither the Plaintiffs nor the Defendant or Real Party in Interest or their respective counsel made any monetary contribution towards or in support of the preparation of this brief.

CONCLUSION

On behalf of the San Joaquin Valley Unified Air Pollution Control District, we respectfully request that this Court accept the filing of the attached brief.

Dated: April 2, 2015



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SAN JOAQUIN VALLEY UNIFIED
AIR POLLUTION CONTROL
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I. INTRODUCTION.

The San Joaquin Valley Unified Air Pollution Control District ("Air District") respectfully submits that the Court of Appeal erred when it held that the air quality analysis contained in the Environmental Impact Report ("EIR") for the Friant Ranch development project was inadequate under the California Environmental Quality Act ("CEQA") because it did not include an analysis of the correlation between the project's criteria air pollutants and the potential adverse human health impacts. A close reading of the portion of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants and criteria air pollutants.

Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants (hereinafter referred to as "TACs") regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health,

they are distinguishable from TACs and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of TACs occurs solely under section 112 of the Act. *Compare* 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 *with* 42 U.S.C. § 7411.

The most relevant difference between criteria pollutants and TACs for purposes of this case is the manner in which human health impacts are accounted for. While it is common practice to analyze the correlation between an individual facility's TAC emissions and the expected localized human health impacts, such is not the case for criteria pollutants. Instead, the human health impacts associated with criteria air pollutants are analyzed and taken into consideration when EPA sets the national ambient air quality standard ("NAAQS") for each criteria pollutant. 42 U.S.C. § 7409(b)(1). The health impact of a particular criteria pollutant is analyzed on a regional and not a facility level based on how close the area is to complying with (attaining) the NAAQS. Accordingly, while the type of individual facility / health impact analysis that the Court of Appeal has required is a customary practice for TACs, it is not feasible to conduct a similar analysis for criteria air pollutants because currently available computer modeling tools are not equipped for this task.

It is clear from a reading of both the administrative record and the Court of Appeal's decision that the Court did not have the expertise to fully

appreciate the difference between TACs and criteria air pollutants. As a result, the Court has ordered the County of Fresno to conduct an analysis that is not practicable and not likely yield valid information. The Air District respectfully requests that this portion of the Court of Appeal's decision be reversed.

II. THE COURT OF APPEAL ERRED IN FINDING THE FRIANT RANCH EIR INADEQUATE FOR FAILING TO ANALYZE THE SPECIFIC HUMAN HEALTH IMPACTS ASSOCIATED CRITERIA AIR POLLUTANTS.

Although the Air District does not take lightly the amount of air emissions at issue in this case, it submits that the Court of Appeal got it wrong when it required Fresno County to revise the Friant Ranch EIR to include an analysis correlating the criteria air pollutant emissions associated with the project with specific, localized health-impacts. The type of analysis the Court of Appeal has required will not yield reliable information because currently available modeling tools are not well suited for this task. Further, in reviewing this issue de novo, the Court of Appeal failed to appreciate that it lacked the scientific expertise to appreciate the significant differences between a health risk assessment commonly performed for toxic air contaminants and a similar type of analysis it felt should have been conducted for criteria air pollutants.

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A. Currently Available Modeling Tools are not Equipped to Provide a Meaningful Analysis of the Correlation between an Individual Development Project's Air Emissions and Specific Human Health Impacts.

In order to appreciate the problematic nature of the Court of Appeals' decision requiring a health risk type analysis for criteria air pollutants, it is important to understand how the relevant criteria pollutants (ozone and particulate matter) are formed, dispersed and regulated.

Ground level ozone (smog) is not directly emitted into the air, but is formed when precursor pollutants such as oxides of nitrogen (NOx) and volatile organic compounds (VOCs) are emitted into the atmosphere and undergo complex chemical reactions in the process of sunlight.[1] Once formed, ozone can be transported long distances by wind.[2] Because of the complexity of ozone formation, a specific tonnage amount of NOx or VOCs emitted in a particular area does not equate to a particular concentration of ozone in that area. In fact, even rural areas that have relatively low tonnages of emissions of NOx or VOCs can have high levels of ozone concentration simply due to wind transport.[3] Conversely, the San Francisco Bay Area has six times more NOx and VOC emissions per square mile than the San Joaquin Valley, but experiences lower

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[1] *See* United States Environmental Protection Agency, *Ground-level Ozone: Basic Information*, available at: http://www.epa.gov/airquality/ozonepollution/basic.html (visited March 10, 2015).
[2] *Id.*
[3] *Id.*

concentrations of ozone (and better air quality) simply because sea breezes disperse the emissions.[4]

Particulate matter ("PM") can be divided into two categories: directly emitted PM and secondary PM.[5] While directly emitted PM can have a localized impact, the tonnage emitted does not always equate to the local PM concentration because it can be transported long distances by wind.[6] Secondary PM, like ozone, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as sulfur dioxides (SOx) and NOx.[7] Because of the complexity of secondary PM formation, the tonnage of PM-forming precursor emissions in an area does not necessarily result in an equivalent concentration of secondary PM in that area.

The disconnect between the *tonnage* of precursor pollutants (NOx, SOx and VOCs) and the *concentration* of ozone or PM formed is important because it is not necessarily the tonnage of precursor pollutants that causes human health effects, but the concentration of resulting ozone or PM. Indeed, the national ambient air quality standards ("NAAQS"), which are statutorily required to be set by the United States Environmental Protection

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[4] *San Joaquin Valley Air Pollution Control District 2007 Ozone Plan*, Executive Summary p. ES-6, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/03%20Executive%20Summary.pdf (visited March 10, 2015).

[5] United States Environmental Protection Agency, *Particulate Matter: Basic Information*, available at: http://www.epa.gov/airquality/particlepollution/basic.html (visited March 10, 2015).

[6] *Id.*

[7] *Id.*

Agency ("EPA") at levels that are "requisite to protect the public health," 42 U.S.C. § 7409(b)(1), are established as concentrations of ozone or particulate matter and not as tonnages of their precursor pollutants.[8]

Attainment of a particular NAAQS occurs when the concentration of the relevant pollutant remains below a set threshold on a consistent basis throughout a particular region. For example, the San Joaquin Valley attained the 1-hour ozone NAAQS when ozone concentrations remained at or below 0.124 parts per million Valley-wide on 3 or fewer days over a 3-year period.[9] Because the NAAQS are focused on achieving a particular concentration of pollution region-wide, the Air District's tools and plans for attaining the NAAQS are regional in nature.

For instance, the computer models used to simulate and predict an attainment date for the ozone or particulate matter NAAQS in the San Joaquin Valley are based on regional inputs, such as regional inventories of precursor pollutants (NOx, SOx and VOCs) and the atmospheric chemistry and meteorology of the Valley.[10] At a very basic level, the models simulate future ozone or PM levels based on predicted changes in precursor

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[8] See, e.g., United States Environmental Protection Agency, *Table of National Ambient Air Quality Standards*, available at: http://www.epa.gov/air/criteria.html#3 (visited March 10, 2015).

[9] *San Joaquin Valley Unified Air Pollution Control District 2013 Plan for the Revoked 1-Hour Ozone Standard*, Ch. 2 p. 2-16, available at: http://www.valleyair.org/Air_Quality_Plans/OzoneOneHourPlan2013/02Chapter2ScienceTrendsModeling.pdf (visited March 10, 2015).

[10] *Id.* at Ch. 2 p. 2-19 (visited March 12, 2015); *San Joaquin Valley Unified Air Pollution Control District 2008 PM2.5 Plan*, Appendix F, pp. F-2 – F-5, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Final_Adopted_PM2.5/20%20Appendix%20F.pdf (visited March 19, 2015).

emissions Valley wide.[11] Because the NAAQS are set levels necessary to protect human health, the closer a region is to attaining a particular NAAQS, the lower the human health impact is from that pollutant.

The goal of these modeling exercises is not to determine whether the emissions generated by a particular factory or development project will affect the date that the Valley attains the NAAQS. Rather, the Air District's modeling and planning strategy is regional in nature and based on the extent to which *all* of the emission-generating sources in the Valley (current and future) must be controlled in order to reach attainment.[12]

Accordingly, the Air District has based its thresholds of significance for CEQA purposes on the levels that scientific and factual data demonstrate that the Valley can accommodate without affecting the attainment date for the NAAQS.[13] The Air District has tied its CEQA significance thresholds to the level at which stationary pollution sources permitted by the Air District must "offset" their emissions.[14] This "offset"

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[11] *Id.*

[12] Although the Air District does have a dispersion modeling tool used during its air permitting process that is used to predict whether a particular project's directly emitted PM will either cause an exceedance of the PM NAAQS or contribute to an existing exceedance, this model bases the prediction on a worst case scenario of emissions and meteorology and has no provision for predicting any associated human health impacts. Further, this analysis is only performed for stationary sources (factories, oil refineries, etc.) that are required to obtain a New Source Review permit from the Air District and not for development projects such as Friant Ranch over which the Air District has no preconstruction permitting authority. *See* San Joaquin Valley Unified Air Pollution Control District Rule 2201 §§ 2.0; 3.3.9; 4.14.1, available at: http://www.valleyair.org/rules/currntrules/Rule2201041l.pdf (visited March 19, 2015).

[13] *San Joaquin Valley Unified Air Pollution Control District Guide to Assessing and Mitigating Air Quality Impacts*, (March 19, 2015) p. 22, available at: http://www.valleyair.org/transportation/CEQA%20Rules/GAMAQI%20Jan%202002%20Rev.pdf (visited March 30, 2015).

[14] *Id.* at pp. 22, 25.

level allows for growth while keeping the cumulative effects of all new sources at a level that will not impede attainment of the NAAQS.[15] In the Valley, these thresholds are 15 tons per year of PM, and 10 tons of NOx or VOC per year. *Sierra Club*, *supra*, 172 Cal.Rptr.3d at 303; AR 4554. Thus, the CEQA air quality analysis for criteria pollutants is not really a localized, project-level impact analysis but one of regional, "cumulative impacts."

Accordingly, the significance thresholds applied in the Friant Ranch EIR (15 tons per year of PM and 10 tons of NOx or VOCs) are not intended to be indicative of any localized human health impact that the project may have. While the health effects of air pollution are of primary concern to the Air District (indeed, the NAAQS are established to protect human health), the Air District is simply not equipped to analyze whether and to what extent the criteria pollutant emissions of an individual CEQA project directly impact human health in a particular area. This is true even for projects with relatively high levels of emissions of criteria pollutant precursor emissions.

For instance, according to the EIR, the Friant Ranch project is estimated to emit 109.52 tons per year of ROG (VOC), 102.19 tons per year of NOx, and 117.38 tons per year of PM. Although these levels well

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[15] [15] *San Joaquin Valley Unified Air Pollution Control District Environmental Review Guidelines* (Aug. 2000) p. 4-11, available at: http://www.valleyair.org/transportation/CEQA%20Rules/ERG%20Adopted%20_August%202000_.pdf (visited March 12, 2015).

exceed the Air District's CEQA significance thresholds, this does not mean that one can easily determine the concentration of ozone or PM that will be created at or near the Friant Ranch site on a particular day or month of the year, or what specific health impacts will occur. Meteorology, the presence of sunlight, and other complex chemical factors all combine to determine the ultimate concentration and location of ozone or PM. This is especially true for a project like Friant Ranch where most of the criteria pollutant emissions derive not from a single "point source," but from area wide sources (consumer products, paint, etc.) or mobile sources (cars and trucks) driving to, from and around the site.

In addition, it would be extremely difficult to model the impact on NAAQS attainment that the emissions from the Friant Ranch project may have. As discussed above, the currently available modeling tools are equipped to model the impact of *all* emission sources in the Valley on attainment. According to the most recent EPA-approved emission inventory, the NOx inventory for the Valley is for the year 2014 is 458.2 tons per day, or 167,243 tons per year and the VOC (or ROG) inventory is 361.7 tons per day, or 132,020.5 tons per year.[16] Running the photochemical grid model used for predicting ozone attainment with the

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[16] *San Joaquin Valley Unified Air Pollution Control District 2007 Ozone Plan*, Appendix B pp. B-6, B-9,
available at:
http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/19%20Appendix%20B%20April%202007.pdf (visited March 12, 2015).

emissions solely from the Friant Ranch project (which equate to less than one-tenth of one percent of the total NOx and VOC in the Valley) is not likely to yield valid information given the relative scale involved.

Finally, even once a model is developed to accurately ascertain local increases in concentrations of photochemical pollutants like ozone and some particulates, it remains impossible, using today's models, to correlate that increase in concentration to a specific health impact. The reason is the same: such models are designed to determine regional, population-wide health impacts, and simply are not accurate when applied at the local level.

For these reasons, it is not the norm for CEQA practitioners, including the Air District, to conduct an analysis of the localized health impacts associated with a project's criteria air pollutant emissions as part of the EIR process. When the accepted scientific method precludes a certain type of analysis, "the court cannot impose a legal standard to the contrary." *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 717 n. 8. However, that is exactly what the Court of Appeal has done in this case. Its decision upends the way CEQA air quality analysis of criteria pollutants occurs and should be reversed.

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B. The Court of Appeal Improperly Extrapolated a Request for a Health Risk Assessment for Toxic Air Contaminants into a Requirement that the EIR contain an Analysis of Localized Health Impacts Associated with Criteria Air Pollutants.

The Court of Appeal's error in requiring the new health impact analysis for criteria air pollutants clearly stems from a misunderstanding of terms of art commonly used in the air pollution field. More specifically, the Court of Appeal (and Appellants Sierra Club et al.) appear to have confused the health risk analysis ("HRA") performed to determine the health impacts associated with a project's toxic air contaminants ("TACs"), with an analysis correlating a project's criteria air pollutants (ozone, PM and the like) with specific localized health impacts.

The first type of analysis, the HRA, is commonly performed during the Air District's stationary source permitting process for projects that emit TACs and is, thus, incorporated into the CEQA review process. An HRA is a comprehensive analysis to evaluate and predict the dispersion of TACs emitted by a project and the potential for exposure of human populations. It also assesses and quantifies both the individual and population-wide health risks associated with those levels of exposure. There is no similar analysis conducted for criteria air pollutants. Thus, the second type of analysis (required by the Court of Appeal), is not currently part of the Air District's process because, as outlined above, the health risks associated

with exposure to criteria pollutants are evaluated on a regional level based on the region's attainment of the NAAQS.

The root of this confusion between the types of analyses conducted for TACs versus criteria air pollutants appears to stem from a comment that was presented to Fresno County by the City of Fresno during the administrative process.

In its comments on the draft EIR, the City of Fresno (the only party to raise this issue) stated:

> [t]he EIR must disclose the human health related effects of the Project's air pollution impacts. (CEQA Guidelines section 15126.2(a).) The EIR fails completely in this area. The EIR should be revised to disclose and determine the significance of TAC impacts, and of human health risks due to exposure to Project-related air emissions.

(AR 4602.)

In determining that the issue regarding the correlation between the Friant Ranch project's criteria air pollutants and adverse health impacts was adequately exhausted at the administrative level, the Court of Appeal improperly read the first two sentences of the City of Fresno's comment in isolation rather than in the context of the entire comment. *See Sierra Club v. County of Fresno* (2014) 172 Cal.Rptr.3d 271, 306. Although the comment first speaks generally in terms of "human health related effects" and "air pollution," it requests only that the EIR be revised to disclose "the significance of TACs" and the "human health risks due to exposure."

The language of this request in the third sentence of the comment is significant because, to an air pollution practitioner, the language would only have indicated only that a HRA for TACs was requested, and not a separate analysis of the health impacts associated with the project's criteria air pollutants. Fresno County clearly read the comment as a request to perform an HRA for TACs and limited its response accordingly. (AR 4602.)[17] The Air District submits that it would have read the City's comment in the same manner as the County because the City's use of the terms "human health risks" and "TACs" signal that an HRA for TACs is being requested. Indeed, the Air District was also concerned that an HRA be conducted, but understood that it was not possible to conduct such an analysis until the project entered the phase where detailed site specific information, such as the types of emission sources and the proximity of the sources to sensitive receptors became available. (AR 4553.)[18] The City of Fresno was apparently satisfied with the County's discussion of human health risks, as it did not raise the issue again when it commented on the final EIR. (AR 8944 – 8960.)

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[17] Appellants do not challenge the manner in which the County addressed TACs in the EIR. (Appellants' Answer Brief p. 28 fn. 7.)

[18] Appellants rely on the testimony of Air District employee, Dan Barber, as support for their position that the County should have conducted an analysis correlating the project's criteria air pollutant emissions with localized health impacts. (Appellants Answer Brief pp. 10-11; 28.) However, Mr. Barber's testimony simply reinforces the Air District's concern that a risk assessment (HRA) be conducted once the actual details of the project become available. (AR 8863.) As to criteria air pollutants, Mr. Barber's comments are aimed at the Air District's concern about the amount of emissions and the fact that the emissions will make it "more difficult for Fresno County and the Valley to reach attainment which means that the health of Valley residents maybe [sic] adversely impacted." Mr. Barber says nothing about conducting a separate analysis of the localized health impacts the project's emissions may have.

The Court of Appeal's holding, which incorrectly extrapolates a request for an HRA for TACs into a new analysis of the localized health impacts of the project's criteria air pollutants, highlights two additional errors in the Court's decision.

First, the Court of Appeal's holding illustrates why the Court should have applied the deferential substantial evidence standard of review to the issue of whether the EIR's air quality analysis was sufficient. The regulation of air pollution is a technical and complex field and the Court of Appeal lacked the expertise to fully appreciate the difference between TACs and criteria air pollutants and tools available for analyzing each type of pollutant.

Second, it illustrates that the Court likely got it wrong when it held that the issue regarding the criteria pollutant / localized health impact analysis was properly exhausted during the administrative process. In order to preserve an issue for the court, '[t]he "exact issue" must have been presented to the administrative agency....' [Citation.] *Citizens for Responsible Equitable Environmental Development v. City of San Diego*, (2011) 196 Cal.App.4th 515, 527 129 Cal.Rptr.3d 512, 521; *Sierra Club v. City of Orange* (2008) 163 Cal.App.4th 523, 535, 78 Cal.Rptr.3d 1, 13. "'[T]he objections must be sufficiently specific so that the agency has the

opportunity to evaluate and respond to them.' [Citation.]" *Sierra Club v. City of Orange*,163 Cal.App.4th at 536.[19]

As discussed above, the City's comment, while specific enough to request a commonly performed HRA for TACs, provided the County with no notice that it should perform a new type of analysis correlating criteria pollutant tonnages to specific human health effects. Although the parties have not directly addressed the issue of failure to exhaust administrative remedies in their briefs, the Air District submits that the Court should consider how it affects the issues briefed by the parties since "[e]xhaustion of administrative remedies is a jurisdictional prerequisite to maintenance of a CEQA action." *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1199, 22 Cal.Rptr.3d 203.

III. CONCLUSION

For all of the foregoing reasons, the Air District respectfully requests that the portion of the Court of Appeal's decision requiring an analysis correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

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[19] *Sierra Club v. City of Orange*, is illustrative here. In that case, the plaintiffs challenged an EIR approved for a large planned community on the basis that the EIR improperly broke up the various environmental impacts by separate project components or "piecemealed" the analysis in violation of CEQA. In evaluating the defense that the plaintiffs had failed to adequately raise the issue at the administrative level, the Court held that comments such as *"the use of a single document for both a project-level and a program-level EIR [is] 'confusing',"* and *"[t]he lead agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project,"* were too vague to fairly raise the argument of piecemealing before the agency. *Sierra Club v. City of Orange*, 163 Cal.App.4th at 537.

correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

Respectfully submitted,

Dated: April 2, 2015

Catherine T. Redmond
Attorney for Proposed Amicus Curiae

SAN JOAQUIN VALLEY
UNIFIED
AIR POLLUTION CONTROL
DISTRICT

CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.204 of the California Rules of Court, I hereby certify that this document, based on the Word County feature of the Microsoft Word software program used to compose and print this document, contains, exclusive of caption, tables, certificate of word count, signature block and certificate of service, 3806 words.

Dated: April 2, 2015

Annette A. Ballatore-Williamson
District Counsel (SBN 192176)

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
Fresno County Superior Court Case No.: 11CECG00726

PROOF OF SERVICE

I am over the age of 18 years and not a p[arty to the above-captioned action; that my business address is San Joaquin Valley Unified Air Pollution Control District located at 1990 E. Gettysburg Avenue, Fresno, California 93726.

On April 2, 2015, I served the document described below:

APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO

On all parties to this action at the following addresses and in the following manner:

PLEASE SEE ATTACHED SERVICE LIST

(XX) **(BY MAIL)** I caused a true copy of each document(s) to be laced in a sealed envelope with first-class postage affixed and placed the envelope for collection. Mail is collected daily at my office and placed in a United State Postal Service collection box for pick-up and delivery that same day.

( ) **(BY ELECTRONIC MAIL)** I caused a true and correct scanned image (.PDF file) copy to be transmitted via electronic mail transfer system in place at the San Joaquin Valley Unified Air Pollution Control District ("District"), originating from the undersigned at 1990 E. Gettysburg Avenue, Fresno, CA, to the address(es) indicated below.

( ) **(BY OVERNIGHT MAIL)** I caused a true and correct copy to be delivered via Federal Express to the following person(s) or their representative at the address(es) listed below.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that I executed this document on April 2, 2015, at Fresno, California.

Esthela Soto

SERVICE LIST

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
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Appendix B

Biological Habitat Assessment

BIOLOGICAL HABITAT ASSESSMENT

Tract 6302 Development

Kerman, California

Prepared For:

Omni Land Development LLC

February 19, 2020

BIOLOGICAL HABITAT ASSESSMENT

Tract 6302 Development

Kerman, California

Prepared For:

Omni Land Development LLC

Prepared By:

ARGONAUT ECOLOGICAL CONSULTING, INC.

2377 Gold Meadow Way, Suite 100
Gold River, CA 95670

February 19, 2020

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1.0 EXECUTIVE SUMMARY AND INTRODUCTION

EXECUTIVE SUMMARY

Argonaut Ecological, Inc. conducted a biological review of Tract 6302 located south of W. Whitesbridge Avenue, between N. Vineland Avenue and N. Goldenrod Avenue. The Study Area encompasses approximately 30 acres of plan commercial retail (12 acres) and residential (18 acres) in the City of Kerman, California.

This biological study focused on mapping existing habitat types based on a field review aerial photographs, and other published reports and available data. The study included assessment of the types of habitats present and sensitive species that may be associated with those habitats. The study found that the majority of the Study Area has been used and managed for decades as agricultural land.

The findings of this report are that the likelihood of the Study Area to support special status species is low. The site does not support any aquatic habitat or suitable habitat for any special status species. There is no suitable raptor nesting habitat within or adjacent to the site. Our findings are that development of the Study Area will not result in any adverse biological impacts.

1.1 INTRODUCTION

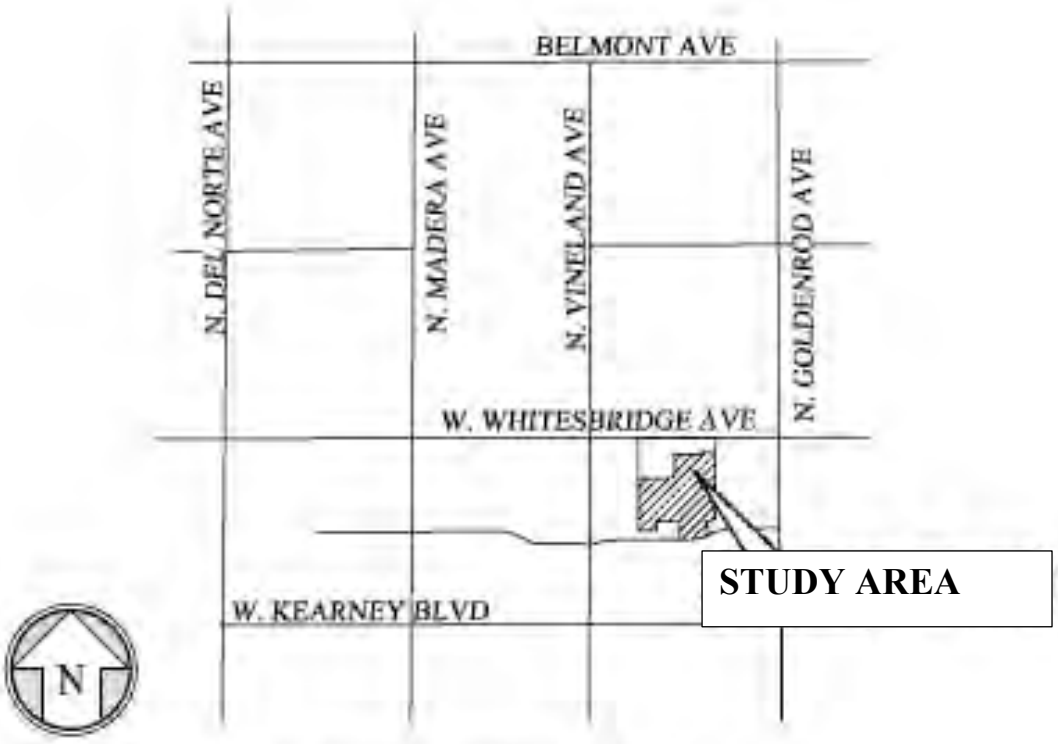
The project area lies in the south half of the north half of the southeast quarter of Section 7, Township 14 South, Range 18 East, mapped on the Kerman USGS topographic quadrangle (Figure 1).

1.2 STUDY OBJECTIVES

This biological assessment presents the findings of a biological study conducted within the study area. This report provides an overall assessment of the biological resources potentially present, describes the biological characteristics of the area, and the likelihood of the area to support sensitive biological resources (such as wetlands or creeks/drainages). This study used available literature, aerial photography, historic topographic and aerial maps, and a site visit to verify the aerial photography. The review focused on the potential for the study area to support habitat that may be used or occupied by special status species, especially within the Study Area. "Wetland habitat" for purposes of this study, includes those areas that may be considered both "Waters of the U.S., as defined by the U.S. Army Corps of Engineers, and or wetlands as defined by the Army

Corps and the State of California. As described in Section 1.2.1, wetlands are a subset of "Waters of the U.S." under the Federal Clean Water Act.

This report assesses the potential effects on biological resources if the current land use changes. The specific type of land use change would dictate the type of regulatory approvals or permits required. This review focused on the extent of the Waters of the U.S., including any wetlands or waters of the State. We considered any wetland that could be subject to regulation under Section 404 of the Clean Water Act or by the State of California. The review also focused on assessing and identifying any potential impacts site development may have o species protected by the Federal Endangered Species Act or protected under the California Environmental Quality Act or State Endangered Species.



LOCATION MAP

FIGURE 1

1.3 REGULATORY JURISDICTION AND BACKGROUND

Several agencies share regulatory jurisdiction over biological resources within the Study Area. The following is a brief description of the primary agencies and their respective jurisdictions.

Wetland Protection

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (Army Corps) and the U.S. Environmental Protection Agency regulates the placement of fill into the Waters of the U.S. under Section 404 of the Federal Clean Water Act and Section 10 of the Rivers and Harbor Act. The term "Waters of the U.S." includes wetlands, special aquatic sites, and other non-wetland waters such as bays, rivers, and lakes. The jurisdictional limit of tidal Waters of the U.S. under Section 10 of the Rivers and Harbor Act is the Mean High-Water line. However, Section 404 of the Federal Clean Water Act extends the jurisdictional limit to the High Tide line. The High Tide Line is the highest elevation of the tide in a normal year, excluding storm events. Wetlands adjacent to the Mean High-Water line or High Tide Line are also under the USACE jurisdiction. For purposes of this document, the term "Waters of the U.S." is legally defined under Section 404 of the Federal Clean Water Act. It includes seasonal drainages that have a defined channel and support wetland species but lack positive indicators of wetland soils.

As previously stated, Waters of the U.S. includes wetlands. The Army Corps defines wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (Environmental Laboratory 1987). Seasonally inundated areas that meet the criteria of all three wetland parameters, as defined in the recently issued Wetland Delineation Manual for the Arid West (USACE 2006), are also considered jurisdictional wetlands. However, drainage ditches excavated on dry land that does not convey flows from historical streams and/or channels are usually considered non-jurisdictional as defined in Title 33 CFR Part 328.3 (a). A determination of whether any particular area is considered non-jurisdictional varies on a case-by-case basis.

Since 2001, the U.S. Supreme Court found in several court rulings that regulation of isolated, intrastate waters by the Army Corps under the Migratory Bird Rule and other arguments is unconstitutional and impinges on state rights to regulate intrastate commerce. The decisions, which include both Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers (SWANCC) and Rapanos v. United States (Rapanos) limited the scope of federal jurisdiction and excluded many California wetlands from federal regulation.

In May 2015, the U.S. Environmental Protection Agency and the U.S. Army finalized the "Clean Water Rule "with the intent of clarifying what constitutes waters of the U.S., and presumably, acts to define and make permitting more predictable. The rule was not intended to create any new permitting requirements for agriculture and maintains all previous exemptions and exclusions. However, many in the regulated community believe the rule expands the definition of

waters/wetlands and broadens the Federal government's regulatory reach. The new Clean Water Rule went into effect at the end of August 2015. On October 9, 2015, the Sixth U.S. Circuit Court of Appeals issued a nationwide stay of the rule pending further court action. Therefore, currently, application of the Clean Water Rule is not enforced in 11 states, and the current regulatory definition of waters of the U.S. remains unchanged in 22 states. California is one of the states where the rule is in effect.

Executive Order 11990

Executive Order 11990 (signed May 24, 1977) directs all federal agencies to refrain from assisting in or giving financial support to projects that encroach on publicly or privately-owned wetlands. It requires federal agencies to support a policy to minimize the destruction, loss, or degradation of wetlands. A federal project that encroaches on wetlands may not be undertaken unless the agency in question has determined that: (1) there are no practicable alternatives to such construction; (2) the project includes all practicable measures to minimize harm to wetlands that would be affected by the project; and (3) the resulting impact will be minor.

The Executive Order does not apply to issuance by Federal Agencies of permits, licenses, or allocation to private parties for activities involving wetland on non-Federal property. Executive Order 1190 is also not intended to be applied on a project by project basis. Section 1 of the order states the following: "This Order does not apply to the issuance by Federal agencies of permits, licenses, or allocations to private parties for activities involving wetlands on non-Federal property."

California State Water Resources Control Board

Since 1993, California has had a Wetlands Conservation Policy (a.k.a., the Executive Order W-51 59-93). Commonly referred to as the No Net Loss Policy for wetlands, this order establishes for the State the mandate that it develops and adopt a policy framework and strategy to protect the State's wetland ecosystems. However, contrary to common belief, and the State Water Resources Control Board's insistence, this policy was only meant to be implemented voluntarily and is was expressly not to be implemented on a "project-by-project" basis (See EO W-59-93, Section III).

In April 2019, the State adopted its proposed State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. According to the State, these new procedures" (i.e., regulation by anyone's definition but the State's) conform with EO W-59-93. However, in conflict with EO W-59-93, there is nothing "voluntary" about the procedures, and they are applied on a project by project basis. The newly adopted "procedure" is intended to bring uniformity throughout the State concerning wetland regulation and to capture those waters/wetland not subject to jurisdiction under Section 404. The Procedure is also supposed to use the same definition of "wetlands" as the federal definition, but it does not (it's much broader).

The wetland fill procedures (the Procedure) was adopted by the State Water Quality Control Board on August 28, 2019 and will be in effect on May 28, 2020. The Procedures are implemented through the existing State permitting structures. Most often, they are applied through regional

water board sign-off (or "certification") of Corps of Engineers wetland permits. They are applied where the federal government has no jurisdiction.

Listed Protected Species and Habitat Protection

U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) implements the Migratory Bird Treaty Act (16 USC Section 703-711), Bald and Golden Eagle Protection Act (16 United States Code [USC] Section 668), and Federal Endangered Species Act (FESA; 16 USC § 153 et seq.). Authorization of "take" of any federally-listed threatened or endangered species is obtained from the USFWS through either Section 7 (interagency consultation) or Section 10(a) (incidental take permit) of FESA, depending on whether the federal government is involved in permitting or funding the project. The authorization process determines if a project would jeopardize the continued existence of a listed species and the mitigation measures required to avoid jeopardizing the species.

The Migratory Bird Treaty Act (MBTA) of 1916 protects migratory birds. The MBTA makes it illegal for anyone to take, possess, import, transport, purchase, barter, or offer for sale or purchase any migratory birds, its nests or eggs unless the federal agency has issued a permit. The USFWS has statutory authority and responsibility for enforcing the MBTA. Per the MBTA Reform Act (MBTARA) of 2004 protects all species native to the U.S. or its territories which occur as a result of natural biological or ecological processes (70 FR 12710, March 15, 2005) and does not include nonnative species whose occurrences in the U.S. are solely the result of intentional or unintentional human introduction. The USFWS maintains a list of bird species protected under the MCTA and the MBTRA. However, on December 22, 2017 the Deputy Solicitor General issued an opinion (Order 3345) that the MBTA does not prohibit the "incidental take" of a migratory bird as the result of an otherwise lawful activity.

Federal Endangered Species Act prohibits "take" of any federally listed species. "Take" under the federal definition means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. "Candidate species" do not have the full protection of FESA. However, the USFWS advises project applicants that it is prudent to address these species since they could be elevated to "listed status" before completion of projects with long planning or development schedules. "Incidental take" is defined as that that may occur during the implementation of an otherwise lawful activity.

Under the Endangered Species Act (federal or State), an Incidental Take Permit or Take Permit is required when an activity would either kill, harm, harass, or interrupt the breeding or nesting of a listed species or remove a known population of endangered plants. However, the ESA definition of "harm" has been somewhat less definitive since it captures ubiquitous activities. In 1999 the USFWS published in the Federal Register a clarification of the term "harm" as it applies to the ESA. As stated, the final ruled defined the term "harm" to include any act which kills or injures fish or wildlife and emphasizes that such acts may include significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife. Further clarification within the Federal Register includes the following: For a modification to be

significant, it must be capable of resulting in the death or injury of fish or wildlife. Habitat modification or degradation can be considered significant even if it is of limited physical extent, if it causes injury or death to fish or wildlife", however, the mere potential for harm is not in and of its "take." Assessing the significance of a given act of habitat modification or degradation depends on an evaluation of all the related factors.

There are two regulatory processes under the Federal ESA that allows an individual to obtain legal coverage from prosecution. A landowner/permittee can either obtain authorization for "take" under Section 7 or Section 10 of the ESA. Section 7 is triggered when there is a federal nexus that requires a federal agency to initiate consultation with the USFWS under Section 7 of the ESA. If there is no federal agency involvement (i.e., a landowner does not need a federal entitlement or is not receiving federal funding), then an Incidental Take permit can be obtained through Section 10(a)(1)(B) of the Act.

The USFWS cannot require or compel a landowner to obtain an Incidental Take permit, especially under Section 10. On April 25, 2018, the USFWS issued a guidance memorandum intended to help the USFWS' Regional Directors clarify the appropriate trigger for an incidental take permit (ITP) under the Endangered Species Act (ESA). While this guidance was directed internally to USFWS staff to aid in a determination of whether project-related habitat modification is likely to result in "take" of a listed species, it also provides a tool for project proponents to determine whether to seek an ITP. The guidance emphasizes that the decision to pursue an ITP or whether to cover a species is the project proponent's choice to make and is not up to the USFWS. Further, the guidance recognizes that "[t]he biological, legal, and economic risk assessment regarding whether to seek a permit belongs with the private party determining how to proceed."

Of significance is that the guidance provides that habitat modification, in and of itself, does not constitute "take" unless the three components of "harm" are met. Thus, to find that habitat modification constitutes an incidental take of listed species, the following questions must all be answered in the affirmative:

- Is the modification of habitat significant?
- Does that modification also significantly impair an essential behavior pattern of a listed species?
- Is the significant modification of the habitat likely to result in the actual killing or injury of wildlife?

California Department of Fish and Wildlife

The California Department of Fish and Wildlife (CDFW), formally known as the California Department of Fish and Game, is a Trustee Agency with responsibility under the CEQA for commenting/providing recommendations on projects that could impact plant and wildlife resources. Also, under the Fish and Game Code Section 1602, the CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of those species. The California Fish and Game Code also

provide authority for the CDFW to regulate projects that could result in the "take" of any species listed by the State as threatened or endangered (Section 2081). CDFW also has authority over all state streams, as described below.

Perennial and intermittent streams also fall under the jurisdiction of CDFW under Sections 1601-1603 of the Fish and Game Code (Streambed Alteration Agreements). The CDFW's jurisdiction includes work within the stream zone but is not limited to the diversion or obstruction of the natural flow or changes in the channel, bed, or bank of any river, stream or lake. Before issuing a 1601 or 1603 Streambed Alteration Agreement, the CDFW must demonstrate compliance with CEQA. In most cases, CDFW relies on the CEQA review performed by the local lead agency. However, if no CEQA review was completed, CDFW would act as the lead agency under CEQA.

The CDFW also has authority for protection state-listed species issues under Section 2081 Incidental Take Permit if a project has the potential to negatively affect state-protected plant or animal species or their habitats, either directly or indirectly. Protected species include those "listed" by the State as endangered or threatened. Besides listed species, there are other categories of species protection, including "fully protected" and California Species of Special Concern (CSC). Adverse impacts to species that have the "fully protected" designation are prohibited.

Under the current California Fish & Game Code (FGC Section 3503), "it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird…" Birds of prey (falcons, hawks, owls, and eagles) get extra protection under the law (FGC Section 3503.5). As is the case with USFW, CDFW does not have the authority to require a landowner to apply for an Incidental Take Permit (ITP) authorizing take. Instead, it is the landowner that has the legal obligation to avoid any take of CTS if it does not seek an ITP, or to apply for and receive an ITP which authorizes take. That said, CDFW (and USFWS) can initiate an enforcement action if they believe that illegal take has occurred or will occur.

California Endangered Species Act

The California Endangered Species Act (CESA) provides protection for candidate plants and animal species as well as those listed as rare, threatened, or endangered by the California Department of Fish and Game (CDFG). This Act prohibits the take of any such species unless authorized. Section 2081 authorizes the State to issue incidental take permits. The state definition of take applies only to acts that result in the death of or adverse impacts to protected species. The CAESA mirrors the federal regulation as it relates to "take"; however, there is no State equivalent definition of "harm" or "harass." Incidental take is also not defined by the CAESA statute or regulation. Unlike the federal ESA, CAESA does not exclude " take" that occurs as a result of normal farm or ranch activities in the course of an otherwise lawful routine and ongoing agricultural activity. Where disagreement occurs (and in some cases, this has been the subject of court cases) is in the common understanding of "routine and ongoing agricultural activity."

California Environmental Quality Act

The CEQA Guidelines require a review of projects to determine their environmental effects and to identify mitigation for significant effects. The Guidelines state an effect may be significant if it

affects rare and endangered species. Section 15380 of the Guidelines defines rare to include listed species and allows agencies to consider rare species other than those designated as State or Federal threatened or endangered, but that meet the standards for rare under the Federal or State endangered species acts. On this basis, plants designated as rare by non-regulatory organizations (e.g., California Native Plant Society), species of special concern as defined by CDFW, candidate species as defined by USFWS, and other designations are considered in the CEQA analyses.

Land Use Entitlements

City of Kerman

The City of Kerman is responsible for all local land use decisions and entitlements within its jurisdictional boundary. The City is also the local lead agency under CEQA. As the lead agency under CEQA, the Cit3 considers recommendations made by other responsible agencies during the CEQA review.

2.0 RESOURCES CONSULTED AND METHODS

The following section describes the methods used to assess the Study Area and includes a combination of data review and evaluation, field studies, and aerial photograph interpretations.

2.1 DATA AND LITERATURE REVIEW

The 36.76 acre Study Area is in a historically agricultural area in Fresno, California. The following documents and/or sources used in preparing this report.

- U.S. Department of Agricultural, Natural Resources Conservation Service, Soil Survey of Fresno Area (Soils mapper).
- Aerial photography (Google Earth®, Bing®, and historic aerials dating back to 1983).
- The California Department of Fish and Game, California Natural Diversity Database (CNDDB/RareFind - Recent version with updates)
- U.S. Fish and Wildlife Service National Wetland Inventory Map
- U.S. Geologic Survey, Historic topographic Map, Kerman Quadrangle, 1919, University of Texas, Austin, Perry-Castañeda Map Collection
- Henry Madden Library, Fresno State University. Historic Aerial Photography collection dating back to 1938.
- City of Kerman, Land Use Map and Zoning Map.
- City of Kerman, Draft Environmental Impact Report, November 2019.

2.2 AERIAL PHOTOGRAPHY

Aerial photographs of the Study Area were reviewed to assess changes in land use over time, dating back to the early 1940s. Both black and white and color aerial photographs ranging in resolution from 0.5 meters to 1.0 meter. We also reviewed historic aerial photographs to evaluate land use changes.

2.3 FIELD REVIEW

The Study Area was visited on February 6, 2020. Before conducting a site review, we reviewed the California Natural Diversity Database/ RareFind (CNDDB/RareFind). The CNDDB includes records of reported observations for special status plant and animal species. The results of the CNDDB/RareFind identify which species would present the highest likelihood of being present on the site based on the distance of the site from known records and the similarity in habitats between the Study Area and the habitats that the species required and/or preferred. High-resolution aerials were reviewed photographs to determine if any areas on the site appear to support waters of the U.S., or other water features. The site was walked identify and map habitat types, identify any wetlands potentially present, and assess habitat conditions and land use. This information formed the basis of our evaluation.

3.0 RESULTS AND CONCLUSIONS

This section describes the physical (i.e., topography, drainage, and soils) and the biological resources present, or potentially present, within the Study Area. Section 3.1 describes the physical components (i.e., soils, hydrology, etc.) of the Study Area. The physical components strongly influence the types of plants and animals present. Section 3.2 is an overview of the resources and habitats present within the Study Area, including descriptions of the specific biological resources observed.

The information presented is not an exhaustive inventory of plants or animals present. Rather provides sufficient information to identify what, if any, biological resources are present that may be considered unique, sensitive, or protected by current law and the potential impacts to those resources if the site is developed. This section also includes recommended avoidance and minimization measures to minimize potential impacts.

3.1 PHYSICAL RESOURCES AND NATURAL RESOUCES

Climate

Climate in the Study Area is typical of the central San Joaquin Valley with summers that are long, hot, and dry and winters that are cool and mild. Rainfall in the winter averages approximately 10.9 inches per year, falling mainly between November and April (Western Regional Climate Center, 2004). During this rainy season (Oct – May/to date) the total rainfall has been over 11 inches as recorded at California State University, Fresno.

Land Use and Habitat Types

The Study Area is located within the City of Kerman within a mixed agricultural/commercial/and residential environment. The land is currently zoned as General Commercial (2007 Kerman General Plan) and the land use is classified as Regional Commercial. The proposed 2040 General Plan land use designation for the Study Area is “General Commercial” and “Residential”.

Historically the Study Area has been in intensive agricultural production since at least 1945. The land remained in agricultural use from 1945 until at least 2012. In 2014 the property to east was developed for commercial use. Since 2012 the Study Area appears to be fallow and/or periodically disturbed (motor bikes, fire suppression/disking).

During the February 6, 2020 field review the land was tilled but not planted. A portion of the eastern edge of the Study Area is within a landscaped zone bordering an existing roadway.

See Figure 2, Habitat Map of the Study Area.

Figure 2
Habitat Map of Tract 6302 Kerman, CA

Topography, Drainage and Waters/Wetlands

Topography and Drainage

The property lies within the Central Valley. The Study Area site has historically been nearly level. (See right) Historically elevation within the area is around 222 ft (mean sea level). Current conditions do not appear to have significantly changed but, as mentioned previously, the eastern edge of the Study Area has been disturbed by an adjacent construction project.

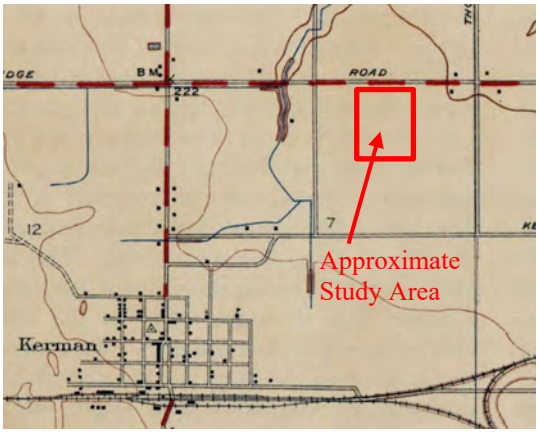


Figure 3
1919 USGS
Topographic Map

Historically (1919) no drainage facilities or creeks/streams were present within the Study Area. The Study Area is located within the Tulare Lake Hydrologic Region that includes all of Kings and Tulare counties and most of Fresno and Kern counties.

Waters/Wetland

A query of the National Wetland Inventory (NWI) Map (Figure 5, below) shows no wetlands, waters, or riparian areas within the Study Area but there is a farm ditch shown along the northern boundary. Th farm ditch is no longer present at the northern edge of the Study Area nor is it present on the land to the east of the Study Area. No other wetlands or ponds are within the Study Area. There is a drainage ditch located immediately south of the Study Area, but this ditch feature is not a regulated waters of the U.S./ or waters of the State.

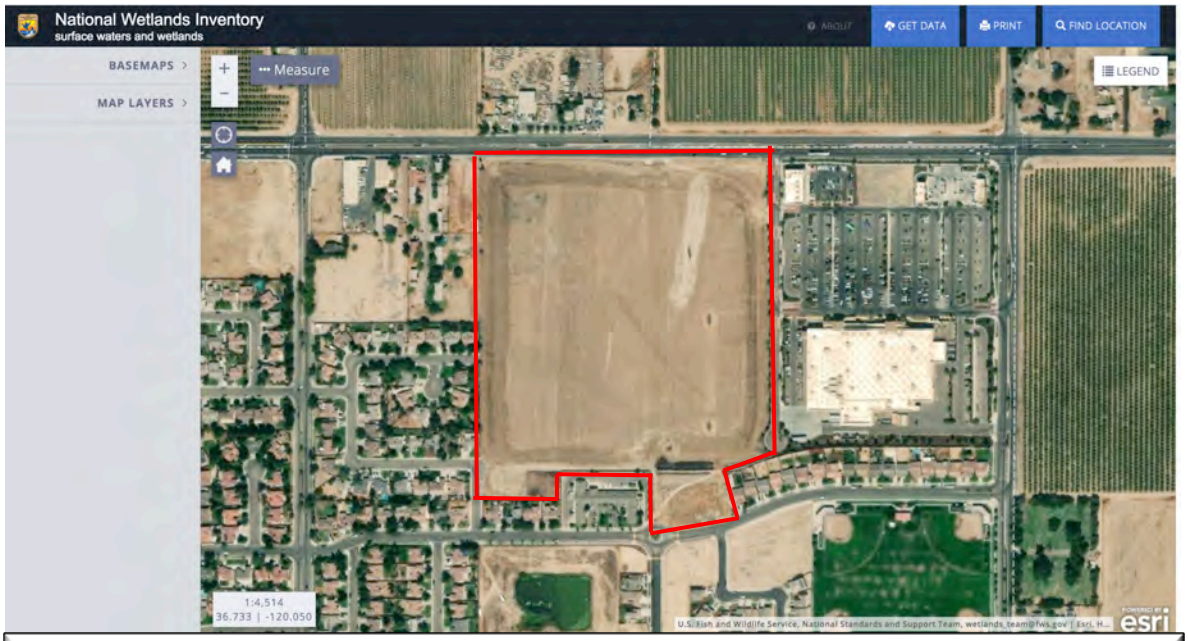


Figure 4
USFWS National Wetland Inventory Map

Soils

The Natural Resources Conservation Service (NRCS) soil survey mapped two soil types within the Study Area. Neither soil is mapped as hydric soils. Hydric soils area is readily formed under ponded conditions. The presence of mapped hydric soils may indicate that the soils could support wetlands but, there is no direct correlation. Wetlands can occur in areas where no hydric soil are mapped and may be absent in areas mapped as hydric soils. There was no indication of any wetlands/waters within the Study Area. The following is a summary of the soil type present.

Table 1
Tract 6302 Study Area - Mapped Soil Units

Soil Series	Map Symbol	Hydric Soil	% of Study Area
Hesperia sandy loam, deep	Hsm	N	100

Special Status Species

A search of the California Natural Diversity Database (CNDDB) was reviewed to determine whether special status species could be present within the Study Area. There is no critical habitat for any listed species within or near the Study Area. Table 2 provides a summary of the species identified in the CNDDB that would have the highest likelihood of being present based on habitat requirements. Species that only reside in aquatic habitat are not included in the table since there is no aquatic habitat within or near the Study Area. Figure 6 shows the location of known special status species records within the vicinity of the Study Area.

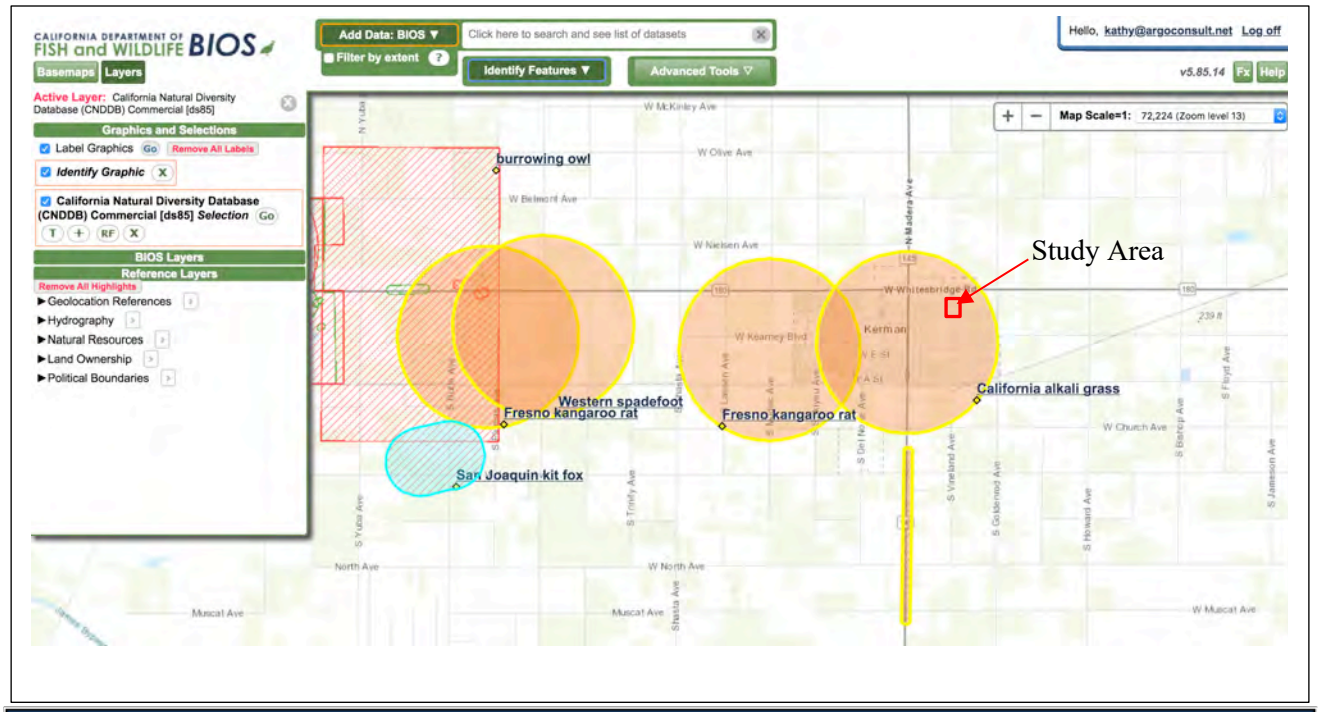


Figure 5
California Natural Diversity Database (CNDDB) Query Results

Table 2
Special Status Species Summary For Tract 6302 Study Area

Common Name	Scientific Name	Status[1]	Effects[2]	Occurrence in the Study Area[3]
Birds				
Burrowing owl	*Athene Cunicularia*	BCC	NE	**Absent**. No evidence of burrowing owl habitat is present. No ground squirrels are present, which would be indicative of potential suitable habitat.
Mammals, Amphibians, and Reptiles				
Fresno kangaroo rat	*Dipodomys nitratoides*	CE, FE	NE	**Absent**. Species requires a land surface with hummocks as sites for its extensive, but shallow burrow system, and a substrate of suitable compactness to permit burrowing. No suitable habitat is present.
San Joaquin kit fox	*Vulpes macrotis mutica*	CT, FE	NE	**Absent**. No suitable habitat present to support species, no dens and minimal prey base evident.
Western spadefoot	*Spea hammondii*	--, --	NE	**Absent.** Species requires aquatic breeding habitat and no breeding habitat is present within or near the Study Area. Upland habitat used by the species includes grassland and woodland where they dig burrows to escape the heat. The Study Area did not have any burrows.
Plants				
Heartscale	*Atriple cordulata var. cordulata*	--, -- 1B.2	NE	**Absent.** Found in chenepod scrib, valley and foothill grassland, meadows, alkaline flats, and sandy soils. The study area does not support grassland habitat. Habitat appears to be routinely disturbed by agricultural activities and likely precludes establishment.
Lesser saltscale	*Atriplex minuscula*	--, -- 1B.1	NE	**Absent.** Found in chenopod scrub, playas, valley grassland habitat. The study area does not support suitable habitat.
Hoover's eriastrum	*Eriastrum hooveri*	--, --	NE	**Absent.** Found in Chenopod scrub, valley and foothill grassland. Suitable habitat not present within or near Study Area.
Recurved larkspur	*Delphinium recurcatum*	--, --	NE	**Absent.** Occurs within Chenopod scrub, Valley and foothill grassland often in saltbush or valley chenopod scrub**.** No suitable present within the Study Area**.**

Palmate-bracted bird's beak	*Sagittaria sandordii*	E; E 1 B.1	NE	**Absent:** Occurs in chenopod scrub, valley and foothill grassland, usually on silty clay soil. Suitable habit or soils not present within Study Area.
California alkali grass	*Puccinellia simple*	--;-- 1B.2	NE	**Absent**. Meadows and seeps, chenopod scrub, valley and foothill grasslands, alkaline soils.

1 Status= Listing of special status species, unless otherwise indicated
- CE: California listed as Endangered
- CT: California listed as Threatened
- FE: Federally listed as Endangered
- FT: Federally listed as Threatened

2 Effects = Effect determination
- NE: No Effect
- ME: May effect, not likely to adversely affect

3 Definition Of Occurrence Indicators
- Present/Potentially: Species recorded in area
- Absent/Likely Absent: Species not recorded in study area and/or
- CNDDB = California Natural Diversity Database provided by CDFG

There is no critical habitat designated for any special-status plant and animal species within the Kerman city limits or within the sphere of influence. The nearest designated critical habitat is approximately 11 miles west of the city for the Fresno kangaroo rat.

Two State ecological reserves lie west of Kerman. The Kerman Ecological Reserve is seven miles west and contains annual grassland, though northern claypan vernal pool and alkali desert scrub habitats also occur on this site. The second reserve, Alkali Sink Ecological Reserve, is 12 miles west of Kerman which includes alkali sink scrub and annual grassland habitats. As described in the 2040 General Plan, these ecological reserves would not be directly impacted by implementation of the 2040 General Plan. No mitigation is proposed for development within the City of Kerman Planning Area related to special status species or any other biological resources.

The habitat is highly disturbed as a result of recurring heavy agricultural production and periodic disking. The vegetation is characteristic of fallow agricultural fields and or ruderal habitat. Species present includes wild mustard, and non-native wild oats, prickly oak tongue, geranium, and star thistle. The site was uniformly tilled. Soils were inspected to look for the potential presence of wetland soils, but none were found. No wildlife was observed and there is no ground squirrel population present, nor any ground squirrel burrows. There are also no potential nesting bird habitat (trees, shrubs) within the Study Area. There are landscape trees along the eastern edge of the Study Area in a landscape buffer.

Several plant species identified within the CNDDB occur within this region of Fresno County. Based on the habitat condition (ruderal, and fallow agricultural but no grassland component) the likelihood of any of the species identified in Table 2 is very low.

3.2 Conclusions And Recommendations

- Habitat within the Study Area consists of primarily of currently fallow agricultural land and ruderal habitat.
- There are no wetlands or waters of the U.S. or waters of the State present within the Study Area.
- There are no suitable nest trees for raptors or migratory birds.
- There is no suitable nesting habitat for migratory birds within the Study Area.
- There is no suitable habitat within or adjacent to the Study Area for any listed species of plants or animals.
- No avoidance or minimization measures are recommended.

Appendix A: Photographs

ARGONAUT ECOLOGICAL CONSULTING, INC.

Photographic Documentation

Client: Omni Land Development, LLC
Project: Tract 6302
Photographer: K. Kinsland

Date: February 6, 2020

Photograph No. 1:

View of southern edge of Study Area

Photograph 2:

View looking weest from the southeast corner of the Study Area.

ARGONAUT ECOLOGICAL CONSULTING, INC.

Photographic Documentation

Client: Omni Land Development, LLC
Project: Tract 6302
Photographer: K. Kinsland

Date: February 6, 2020

Photograph No 3:

View of center of the Study Area.

Photograph 4:

View looking north across disced area

ARGONAUT ECOLOGICAL CONSULTING, INC.

Photographic Documentation

Client: Omni Land Development, LLC
Project: Tract 6302
Photographer: K. Kinsland

Date: February 6, 2020

Photograph 5:

View along eastern edge of Study Area looking north.

Photo 6:

View of northern edge of Study Area looking east.

ARGONAUT ECOLOGICAL CONSULTING, INC.

Photographic Documentation

Client: Omni Land Development, LLC
Project: Tract 6302
Photographer: K. Kinsland

Date: February 6, 2020

Photo 7:

View of northern edge of Study Area looking west.

Photo 8:

View of southern edge of Study Area adjacent to existing homes.

Appendix B: Soils Report

United States Department of Agriculture

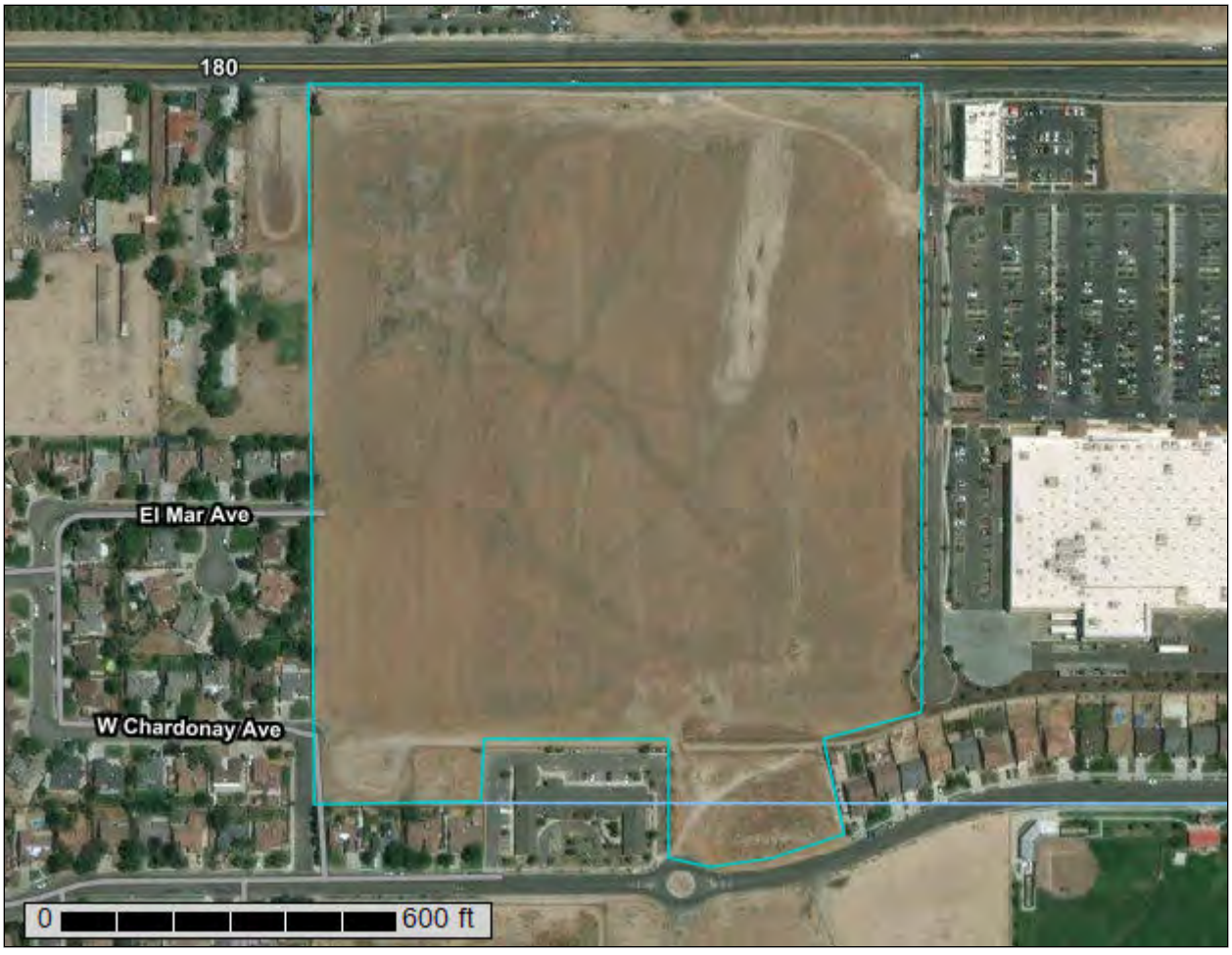
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Eastern Fresno Area, California

Tract 6302



February 19, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Hsm—Hesperia sandy loam, deep.....13
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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:2,590 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Eastern Fresno Area, California
Survey Area Data: Version 12, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 24, 2016—Oct 1, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Hsm	Hesperia sandy loam, deep	31.4	100.0%
Totals for Area of Interest		**31.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Eastern Fresno Area, California

Hsm—Hesperia sandy loam, deep

Map Unit Setting

National map unit symbol: 2yc9l
Elevation: 200 to 280 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 63 to 64 degrees F
Frost-free period: 304 to 318 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Hesperia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hesperia

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

Ap1 - 0 to 5 inches: sandy loam
Ap2 - 5 to 11 inches: sandy loam
Bt - 11 to 32 inches: sandy loam
Btk - 32 to 43 inches: sandy loam
2Bdk - 43 to 63 inches: stratified silt loam
2Cd - 63 to 79 inches: stratified silt loam

Properties and qualities

Slope: 0 percent
Depth to restrictive feature: 43 inches to densic material
Natural drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 2.0
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Unnamed, coarse sandy loam surface

Percent of map unit: 12 percent
Landform: Knolls on alluvial fans
Hydric soil rating: No

Unnamed, hydric

Percent of map unit: 3 percent
Landform: Swales on alluvial fans
Hydric soil rating: Yes

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Appendix C: CNDDB Data

Multiple Occurrences per Page

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Kerman (3612061))

Spea hammondii **Element Code:** AAABF02020

western spadefoot

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3
	State:	None		**State:**	S3
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened			
Habitat:	**General:**	OCCURS PRIMARILY IN GRASSLAND HABITATS, BUT CAN BE FOUND IN VALLEY-FOOTHILL HARDWOOD WOODLANDS.			
	Micro:	VERNAL POOLS ARE ESSENTIAL FOR BREEDING AND EGG-LAYING.			

Occurrence No.	1242	**Map Index:** B4643	**EO Index:** 117578	**Element Last Seen:**	1948-05-09
Occ. Rank:	Poor		**Presence:** Presumed Extant	**Site Last Seen:**	1948-05-09
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2019-12-31

Quad Summary: Kerman (3612061), Jamesan (3612062)

County Summary: Fresno

Lat/Long:	36.72899 / -120.13242	**Accuracy:**	1 mile
UTM:	Zone-10 N4068643 E756080	**Elevation (ft):**	202
PLSS:	T14S, R17E, Sec. 9 (M)	**Acres:**	1987.0

Location: 4 AIR MILES WEST OF KERMAN.

Detailed Location:

Ecological: COLLECTOR NOTED SPECIMEN WAS COLLECTED FROM A VERY MUDDY ROADSIDE POND, 4 INCHES DEEP AND RAPIDLY EVAPORATING. 2018 AERIAL IMAGERY SHOWS AREA IS COMPOSED OF AGRICULTURAL FIELDS.

General: LARVA COLLECTED ON 9 MAY 1948.

Owner/Manager: UNKNOWN

Athene cunicularia **Element Code:** ABNSB10010

burrowing owl

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S3
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern			
Habitat:	**General:**	OPEN, DRY ANNUAL OR PERENNIAL GRASSLANDS, DESERTS, AND SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.			
	Micro:	SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.			

Occurrence No.	1163	**Map Index:** 71587	**EO Index:** 72488	**Element Last Seen:**	2016-06-15
Occ. Rank:	Good		**Presence:** Presumed Extant	**Site Last Seen:**	2016-06-15
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2016-12-21

Quad Summary: Helm (3612051), Kerman (3612061)

County Summary: Fresno

Lat/Long:	36.62808 / -120.01648	**Accuracy:**	specific area
UTM:	Zone-10 N4057762 E766785	**Elevation (ft):**	208
PLSS:	T15S, R18E, Sec. 16, SW (M)	**Acres:**	29.0

Location: S MCMULLIN GRADE ROAD & VICINITY, 0.5 MI NE OF THE INTERSECTION OF S HOWARD AVE & W SOUTH AVE, 7.0 MI SSE OF KERMAN.

Detailed Location: 1986: OWLS DETECTED IN VICINITY, EXACT LOCATIONS UNKNOWN. 2008: BURROWS LOCATED WITHIN A THIN STRIP OF AN ELEVATED EARTHEN BERM BETWEEN MCMULLIN GRADE RD & JAMES IRRIGATION DISTRICT CANAL. 2016: MAPPED TO PROVIDED COORDINATES N OF THE ROAD.

Ecological: 2008: BURROWS ALONG A HEAVILY TRAVELED COUNTY ROAD, INTENSIVE AGRICULTURE (GRAPES & ROW CROPS) & SEVERAL OUTLYING FALLOW FIELDS; OWLS HIGHLY ACCLIMATED TO ROAD TRAFFIC. 2016: BURROWS ALONG IRRIGATION CANAL ADJACENT TO ROW CROPS & ORCHARDS.

General: UP TO 5 PAIRS OBSERVED IN 1986. 2 PAIRS OBS IN 2008; 1 PAIR WAS UNSUCCESSFUL IN BREEDING, THE 2ND HAD 5 YOUNG, 2 OF WHICH WERE FOUND DEAD AT THE BURROW, PRESUMABLY BY INFANTICIDE. 2 PAIRS IN 2016: 1 WITH 5 YOUNG, AND THE OTHER WITH 3 YOUNG.

Owner/Manager: FRE COUNTY, PVT

Occurrence No.	1992	**Map Index:** A3088	**EO Index:** 104713	**Element Last Seen:**	2016-06-01
Occ. Rank:	Good		**Presence:** Presumed Extant	**Site Last Seen:**	2016-06-01
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2017-01-25

Quad Summary: Kerman (3612061)

County Summary: Fresno

Lat/Long:	36.65341 / -120.02508	**Accuracy:**	80 meters
UTM:	Zone-10 N4060548 E765928	**Elevation (ft):**	213
PLSS:	T15S, R18E, Sec. 5, SE (M)	**Acres:**	5.0

Location: ABOUT 0.6 MI S OF S HOWARD AVE AT W AMERICAN AVE AND 1.1 MI NW OF S BISHOP AVE AT W LINCOLN AVE, 5 MI SSE OF KERMAN.

Detailed Location: MAPPED TO PROVIDED COORDINATES.

Ecological: BURROW NEXT TO IRRIGATION CANAL ADJACENT TO ROW CROPS AND ORCHARDS.

General: PAIR WITH 5 YOUNG OBSERVED AT BURROW SITE ON 1 JUN 2016.

Owner/Manager: PVT

Dipodomys nitratoides exilis **Element Code:** AMAFD03151

Fresno kangaroo rat

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G3TH
	State:	Endangered		**State:**	SH
	Other:	IUCN_VU-Vulnerable			
Habitat:	**General:**	ALKALI SINK-OPEN GRASSLAND HABITATS IN WESTERN FRESNO COUNTY.			
	Micro:	BARE ALKALINE CLAY-BASED SOILS SUBJECT TO SEASONAL INUNDATION, WITH MORE FRIABLE SOIL MOUNDS AROUND SHRUBS AND GRASSES.			

Occurrence No.	20	**Map Index:** 65385	**EO Index:** 65464	**Element Last Seen:**	1934-03-10
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1934-03-10
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2006-07-25

Quad Summary: Kerman (3612061)

County Summary: Fresno

Lat/Long:	36.72527 / -120.08752	**Accuracy:**	1 mile
UTM:	Zone-10 N4068351 E760102	**Elevation (ft):**	200
PLSS:	T14S, R17E, Sec. 11 (M)	**Acres:**	0.0

Location: 0.5 TO 1.5 MILES WEST OF KERMAN.

Detailed Location: 5 SDNHM SPECIMENS (3 MALES & 2 FEMALES) COLLECTED FROM 0.5 TO 1.5 MILES WEST OF KERMAN.

Ecological:

General: SDNHM #17703 COLLECTED 6 OCT 1933. #18683-18685 COLLECTED 6 OCT & 22 NOV 1933. #18689 COLLECTED 20 MAR 1934. ALL COLLECTIONS BY A. E. CULBERTSON.

Owner/Manager: UNKNOWN

Occurrence No.	21	**Map Index:** 65399	**EO Index:** 65478	**Element Last Seen:**	1934-06-25
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1934-06-25
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2006-07-26

Quad Summary: Kerman (3612061), Jamesan (3612062)

County Summary: Fresno

Lat/Long:	36.72730 / -120.14334	**Accuracy:**	1 mile
UTM:	Zone-10 N4068427 E755108	**Elevation (ft):**	200
PLSS:	T14S, R17E, Sec. 08 (M)	**Acres:**	0.0

Location: 5 MILES WEST OF KERMAN.

Detailed Location:

Ecological:

General: SDNHM #18686 COLLECTED 17 FEB 1934 & #18690 COLLECTED 25 JUN 1934. BOTH COLLECTIONS BY A. E. CULBERTSON.

Owner/Manager: UNKNOWN

Atriplex cordulata var. cordulata

Element Code: PDCHE040B0

heartscale

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3T2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.2, BLM_S-Sensitive			
Habitat:	**General:**	CHENOPOD SCRUB, VALLEY AND FOOTHILL GRASSLAND, MEADOWS AND SEEPS.			
	Micro:	ALKALINE FLATS AND SCALDS IN THE CENTRAL VALLEY, SANDY SOILS. 3-275 M.			

Occurrence No.	29	**Map Index:**	14246	**EO Index:**	6078	**Element Last Seen:**	1937-07-29
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	2009-09-02
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2009-11-02

Quad Summary: Kerman (3612061)

County Summary: Fresno

Lat/Long:	36.63993 / -120.06182	**Accuracy:**	1 mile
UTM:	Zone-10 N4058951 E762688	**Elevation (ft):**	200
PLSS:	T15S, R17E, Sec. 12 (M)	**Acres:**	0.0

Location: 6 MILES SOUTH OF KERMAN.

Detailed Location: MAPPED 6 MILES SOUTH OF KERMAN ALONG MADERA AVENUE, JUST SOUTH OF LINCOLN AVENUE.

Ecological:

General: ONLY SOURCE OF INFORMATION IS A 1937 HOOVER COLLECTION.

Owner/Manager: UNKNOWN

Atriplex minuscula

Element Code: PDCHE042M0

lesser saltscale

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.1			
Habitat:	**General:**	CHENOPOD SCRUB, PLAYAS, VALLEY AND FOOTHILL GRASSLAND.			
	Micro:	IN ALKALI SINK AND GRASSLAND IN SANDY, ALKALINE SOILS. 0-225 M.			

Occurrence No.	23	**Map Index:**	56426	**EO Index:**	56442	**Element Last Seen:**	1948-08-24
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1948-08-24
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2004-08-18

Quad Summary: Kerman (3612061)

County Summary: Fresno

Lat/Long:	36.69577 / -120.06023	**Accuracy:**	nonspecific area
UTM:	Zone-10 N4065153 E762640	**Elevation (ft):**	200
PLSS:	T14S, R18E, Sec. 19, NW (M)	**Acres:**	122.2

Location: ABOUT 2 MILES S OF KERMAN.

Detailed Location: MAPPED BY CNDDB APPROXIMATELY 1.2-3.8 MILES S OF KERMAN ALONG MADERA AVENUE (SR-145).

Ecological: SEMI-ALKALI FLATS. ALKALINE GRASSLANDS.

General: ONLY SOURCE OF INFORMATION IS A 1948 NOBS & SMITH COLLECTION. ORIGINALLY COLLECTED AS A. DEPRESSA. IDENTIFIED AS A. MINISCULA BY PRESTON IN 2003 AND ANNOTATED TO A. MINUSCULA BY ZACHARIAS IN 2010. FORMER A. DEPRESSA OCCURRENCE #38.

Owner/Manager: UNKNOWN

Eriastrum hooveri

Element Code: PDPLM03070

Hoover's eriastrum

Listing Status:	**Federal:**	Delisted	**CNDDB Element Ranks:**	**Global:**	G3
	State:	None		**State:**	S3
	Other:	Rare Plant Rank - 4.2, SB_RSABG-Rancho Santa Ana Botanic Garden			
Habitat:	**General:**	CHENOPOD SCRUB, VALLEY AND FOOTHILL GRASSLAND, PINYON AND JUNIPER WOODLAND.			
	Micro:	ON SPARSELY VEGETATED ALKALINE ALLUVIAL FANS; ALSO IN THE TEMBLOR RANGE ON SANDY SOILS. 50-915 M.			

Occurrence No.	7	**Map Index:** 14249	**EO Index:** 18406	**Element Last Seen:**	1979-08-01
Occ. Rank:	None		**Presence:** Extirpated	**Site Last Seen:**	1979-08-01
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2007-12-19

Quad Summary: Kerman (3612061)

County Summary: Fresno

Lat/Long:	36.65398 / -120.06106	**Accuracy:**	nonspecific area
UTM:	Zone-10 N4060512 E762708	**Elevation (ft):**	200
PLSS:	T15S, R17E, Sec. 01, E (M)	**Acres:**	69.0

Location: 4.7 MI S OF KERMAN RR STATION ALONG HWY 145 (MADERA AVE).

Detailed Location: MAPPED ALONG MADERA AVENUE ABOUT 4.7 MI SOUTH OF KERMAN.

Ecological: ON SLIGHT HUMMOCKS (WHERE LESS ALKALINE) IN ALKALINE PLAIN.

General: NEEDS FIELDWORK.

Owner/Manager: PVT

Delphinium recurvatum

Element Code: PDRAN0B1J0

recurved larkspur

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2?
	State:	None		**State:**	S2?
	Other:	Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_SBBG-Santa Barbara Botanic Garden			
Habitat:	**General:**	CHENOPOD SCRUB, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND.			
	Micro:	ON ALKALINE SOILS; OFTEN IN VALLEY SALTBUSH OR VALLEY CHENOPOD SCRUB. 3-790 M.			

Occurrence No.	89	**Map Index:** 66448	**EO Index:** 66551	**Element Last Seen:**	1956-03-02
Occ. Rank:	None		**Presence:** Extirpated	**Site Last Seen:**	1956-03-02
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2016-01-22

Quad Summary: Kerman (3612061)

County Summary: Fresno

Lat/Long:	36.66274 / -120.09726	**Accuracy:**	nonspecific area
UTM:	Zone-10 N4061387 E759442	**Elevation (ft):**	
PLSS:	T14S, R17E, Sec. 35 (M)	**Acres:**	39.0

Location: 200 FEET NORTH OF AMERICA N ROAD, 2 MILES WEST OF MADERA RD, 4 MILES SOUTH OF KERMAN.

Detailed Location: COULD NOT LOCATE AMERICA N ROAD; POSSIBLE TYPO. MAPPED AS BEST GUESS NORTH OF AMERICAN AVE.

Ecological: ALKALI SINK COMMUNITY IN FULL SUN AND DRY CLAY SOIL.

General: 1956 O'BERG COLLECTION IS THE ONLY SOURCE FOR THIS OCCURRENCE. SITE PRESUMED EXTIRPATED BY AGRICULTURAL CONVERSION.

Owner/Manager: UNKNOWN

Chloropyron palmatum **Element Code:** PDSCR0J0J0

palmate-bracted bird's-beak

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G1
	State:	Endangered		**State:**	S1
	Other:	Rare Plant Rank - 1B.1, SB_RSABG-Rancho Santa Ana Botanic Garden			
Habitat:	**General:**	CHENOPOD SCRUB, VALLEY AND FOOTHILL GRASSLAND.			
	Micro:	USUALLY ON PESCADERO SILTY CLAY WHICH IS ALKALINE, WITH DISTICHLIS, FRANKENIA, ETC. 5-155 M.			

Occurrence No.	4	**Map Index:** 14246	**EO Index:**	6077	**Element Last Seen:** 1937-07-29
Occ. Rank:	None		**Presence:**	Extirpated	**Site Last Seen:** 1983-07-02
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:** 2011-01-20

Quad Summary: Kerman (3612061)

County Summary: Fresno

Lat/Long:	36.63993 / -120.06182	**Accuracy:**	1 mile
UTM:	Zone-10 N4058951 E762688	**Elevation (ft):**	195
PLSS:	T15S, R17E, Sec. 12 (M)	**Acres:**	0.0

Location: 6 MILES SOUTH OF KERMAN (ON MADERA AVE).

Detailed Location:

Ecological:

General: SITE BASED ON A 1937 HOOVER COLLECTION. SITE VISITED IN 1965 AND 1983 AND PLANTS NOT OBSERVED. HABITAT LOSS DUE TO SOIL RECLAMATION AND AREA UNDER CULTIVATION.

Owner/Manager: UNKNOWN

Puccinellia simplex **Element Code:** PMPOA53110

California alkali grass

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.2			
Habitat:	**General:**	MEADOWS AND SEEPS, CHENOPOD SCRUB, VALLEY AND FOOTHILL GRASSLANDS, VERNAL POOLS.			
	Micro:	ALKALINE, VERNALLY MESIC. SINKS, FLATS, AND LAKE MARGINS. 1-915 M.			

Occurrence No.	19	**Map Index:**	14249	**EO Index:**	100170	**Element Last Seen:**	1963-05-06
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1963-05-06
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2016-01-22

Quad Summary: Kerman (3612061)

County Summary: Fresno

Lat/Long:	36.65398 / -120.06106	**Accuracy:**	nonspecific area
UTM:	Zone-10 N4060512 E762708	**Elevation (ft):**	200
PLSS:	T15S, R17E, Sec. 01, E (M)	**Acres:**	69.0

Location: 4.8 MILES SOUTH OF KERMAN, MADERA ROAD.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDB ALONG MADERA AVE AROUND 4.8 ROAD MILES SOUTH OF KERMAN.

Ecological: SANDY ALKALINE FLAT, VALLEY GRASSLAND.

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1963 CRAMPTON COLLECTION. THERE DOES NOT APPEAR TO BE ANY REMAINING NATURAL HABITAT IN THIS AREA BASED ON 2015 AERIAL PHOTOS; PRESUMED EXTIRPATED.

Owner/Manager: UNKNOWN

Occurrence No.	20	**Map Index:**	98707	**EO Index:**	100171	**Element Last Seen:**	1936-04-XX
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1936-04-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2016-01-22

Quad Summary: Kerman (3612061)

County Summary: Fresno

Lat/Long:	36.72641 / -120.06028	**Accuracy:**	1 mile
UTM:	Zone-10 N4068553 E762532	**Elevation (ft):**	220
PLSS:	T14S, R17E, Sec. 12 (M)	**Acres:**	1987.0

Location: KERMAN.

Detailed Location: EXACT LOCATION UNKNOWN, MAPPED IN GENERAL VICINITY OF KERMAN.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1936 HOOVER COLLECTION CITED IN HIS 1937 DISSERTATION. ANY REMAINING NATURAL HABITAT IN THIS AREA SHOULD BE SEARCHED.

Owner/Manager: UNKNOWN

Appendix C

Cultural Resource Assessment

CULTURAL RESOURCE ASSESSMENT FOR THE TENTATIVE VESTING TRACT 6302 PROJECT AREA, CITY OF KERMAN, CALIFORNIA

Prepared by

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Prepared for

Omni Land Development
2348 Whitendale Ave, Suite D
Visalia, CA 93277

February 6, 2020
(Job #20-009)

INTRODUCTION

The proposed Tentative Subdivision Map (TSM) would allow the applicant, Omni Development Group, the ability to construct a single-family residential subdivision. The TSM proposes to create individual legal lots along with appropriate infrastructure consistent with the proposed General Plan and Zoning designations of Low Density and SD-R-5, respectively. Future development of single-family homes will be consistent with these designations and would be evaluated by the City through subsequent building permit submittal.

As proposed, the TSM consists of approximately 20.38-acres and proposes 101 lots with five (5) out lots. The TSM proposes access from the existing roundabout located on West Stanislaus Avenue as well as extending West El Mar Avenue into the project. No vehicular access is proposed on the eastern edge of project (residential subdivision) due to existing Covenant, Conditions and Restrictions (CCRs). Pedestrian access is proposed via two paseos that will be located on the eastern edge of the project. This will allow access from the project to the adjacent commercial land uses to the east. A block wall is proposed along the eastern edge of the project. In addition, one paseo is proposed on the northern edge of the project to connect the commercial land uses to the project. The project area is located in the northeast quarter of section 7, Township 14 South, Range 18 East, mapped on the Kerman USGS topographic quadrangle (Figures 1 and 2).

The proposed TSM is consistent with the General Plan Designation of Low Density (LD) and the Zone District of Smart Development Combining District standards, which allow for a minimum lot size of 5,000 square feet. All lots meet or exceed this minimum lots size as well as maintain appropriate lot and width standards that allow for development to meet all setback requirements. The smallest lot configuration is 50 feet wide by 100 feet deep. The density of the proposed TSM would be approximately 4.96 units per acre which does not exceed the maximum density of nine (9) units per acre identified within the LD designation of the General Plan and is between the minimum density of four (4) units per acres and seven (7) units per acre within the SD-R-5 zone district.

No specific architectural style or elevation is proposed at this time. It is expected that a subsequent home builder would submit the elevations and design for Planning Commission approval. The project is proposed to have public streets built to a local street standard of 56 feet, consistent with City of Kerman Standard P-1. Streets are designed to provide maximum connectivity to adjacent access points and roadways. There is a single cul-de-sac proposed which provides access to the parcels that abut the entrance from the roundabout. The cul-de-sac allows for access to the subdivision that does not conflict with residents' ability to egress/ingress their lots

The proposed Rezone intends to change the approximate 20.38-acre portion from CG zoning to SDR-5 (Smart Development). Furthermore, there are two parcels that are included APNs: 023-220-23S and 51S, that are currently zoned R-2 (Two-Family Residential). The rezone also proposes to change the zoning of those parcels to SD-R-5. This proposal will make the entire project site homologous, so the applicant can provide exceptional homes. According to the City's General Plan Draft Background Report, the Smart Development zoning district promotes development designs that respond to significant planning-related issues facing the San Joaquin

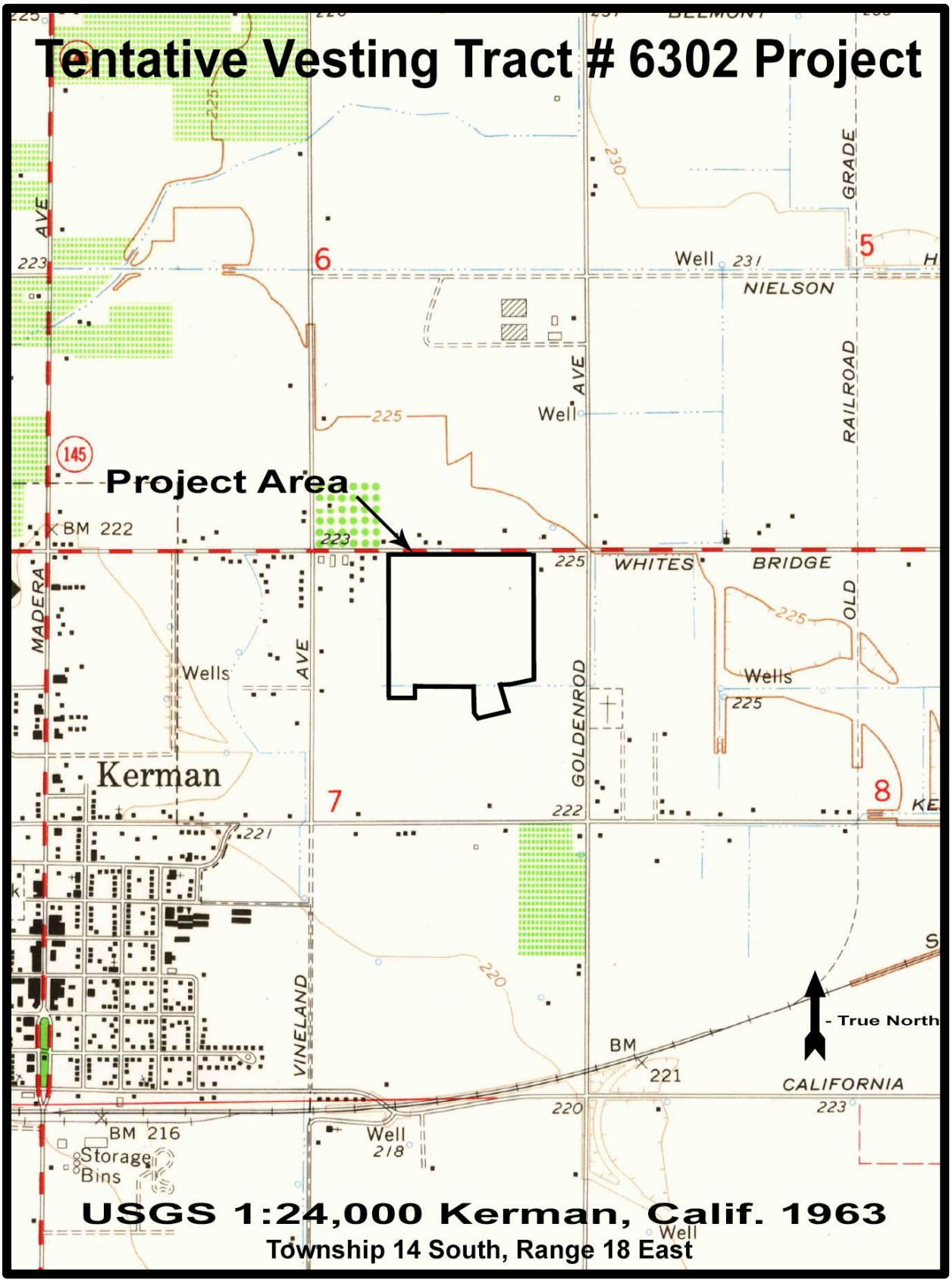

Tentative Vesting Tract # 6302 Project
Project Area
- True North
USGS 1:24,000 Kerman, Calif. 1963
Township 14 South, Range 18 East
Kerman
MADERA AVE
AVE
GOLDENROD
VINELAND
RAILROAD
GRADE
NIELSON
WHITES
BRIDGE
OLD
CALIFORNIA
Well
Wells
BM 222
BM 216
BM 221
Storage Bins
145

Figure 1

WHITESBRIDGE AVENUE (HIGHWAY 180)

PARCEL A
5.41± ACRES

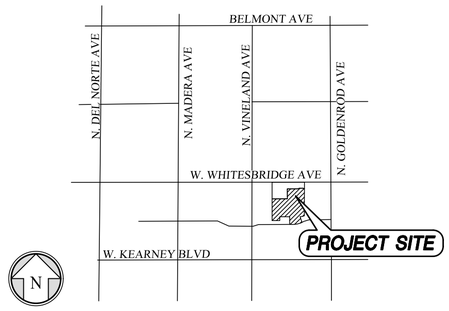
PARCEL B
1.39± ACRES

PARCEL C
1.39± ACRES

PARCEL D
1.08± ACRES

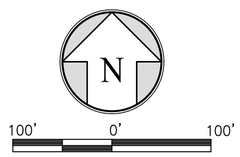
PARCEL E
1.55± ACRES

WEST STANISLAUS AVENUE



VICINITY MAP

NTS



SCALE: 1"= 100'

FIGURE 2

L:\PROJECTS\2019\190348\ACAD\EXHIBITS\190348-50FT LOT EXHIBIT.DWG 1/9/2020 8:28 AM

PROJECT NO.:	190348
DRAWN BY:	MG
QA/QC BY:	AW
SCALE:	AS SHOWN
SHEET NO.:	01 OF 01

TRACT 6302
50' LOT EXHIBIT

901 EAST MAIN STREET
VISALIA, CA 93292
TEL: (559) 733-0440
WWW.QKINC.COM

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Valley, including urbanization of agricultural land, air pollution, housing affordability, traffic, aesthetics, and neighborhood deterioration.

The proposed General Plan Amendment will result in the change of a portion of APNs: 023-220-34S and 35S from Regional Commercial to Low Density Residential. In addition, APNs: 023-220-23S and 51S will change from Medium Density Residential to Low Density Residential. The General Plan Amendment is largely consistent with the most recent draft Land Use Plan Map identified with the Draft General Plan Policy Document, dated November 2019. The only inconsistency with the proposed land use map within the Draft General Plan would be along the western portion of the property. This proposal would continue the existing row of residential lots along West El Mar Avenue and designate this area as Low Density Residential, as shown below. In short, the entirety of the TSM is proposed to be Low Density Residential (LDR) and Smart Development District Overlay, 5,000 square foot minimum lot size (SD-R-5). However, given that this proposal is likely to be considered prior to final approval of the City of Kerman General Plan, the applicant would like to make it clear of the proposed change to the Land Use Map for processing this application, as well as make a formal comment of the change during the public comment period of the General Plan adoption process in order to prevent any confusion or inconsistencies in the future.

Melinda A. Peak, senior historian/archeologist with Peak & Associates, Inc. served as principal investigator for the study with Michael Lawson (resumes, Appendix 1) completing the field survey.

STATE REGULATIONS

State historic preservation regulations affecting this project include the statutes and guidelines contained in the California Environmental Quality Act (CEQA; Public Resources Code sections 21083.2 and 21084.1 and sections 15064.5 and 15126.4 (b) of the CEQA Guidelines). CEQA Section 15064.5 requires that lead agencies determine whether projects may have a significant effect on archaeological and historical resources. Public Resources Code Section 21098.1 further cites: A project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.

An "historical resource" includes, but is not limited to, any object, building, structure, site, area, place, record or manuscript that is historically or archaeologically significant (Public Resources Code section 5020.1).

Advice on procedures to identify such resources, evaluate their importance, and estimate potential effects is given in several agency publications such as the series produced by the Governor's Office of Planning and Research (OPR), *CEQA and Archaeological Resources,* 1994. The technical advice series produced by OPR strongly recommends that Native American concerns and the concerns of other interested persons and corporate entities, including, but not limited to, museums, historical commissions, associations and societies be solicited as part of the process of cultural resources inventory. In addition, California law protects Native American burials, skeletal

remains, and associated grave goods regardless of the antiquity and provides for the sensitive treatment and disposition of those remains (California Health and Safety Code Section 7050.5, California Public Resources Codes Sections 5097.94 et al).

The California Register of Historical Resources (Public Resources Code Section 5020 et seq.)

The State Historic Preservation Office (SHPO) maintains the California Register of Historical Resources (CRHR). Properties listed, or formally designated as eligible for listing, on the National Register of Historic Places are automatically listed on the CRHR, as are State Landmarks and Points of Interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

For the purposes of CEQA, an historical resource is a resource listed in, or determined eligible for listing in the California Register of Historical Resources. When a project will impact a site, it needs to be determined whether the site is an historical resource. The criteria are set forth in Section 15064.5(a) (3) of the CEQA Guidelines, and are defined as any resource that does any of the following:

A. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

B. Is associated with the lives of persons important in our past;

C. 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

D. Has yielded, or may be likely to yield, information important in prehistory or history.

In addition, the CEQA Guidelines, Section 15064.5(a) (4) states:

The fact that a resource is not listed in, or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to section 5020.1(k) of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in section 5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code section 5020.1(j) or 5024.1.

California Health and Safety Code Sections 7050.5, 7051, and 7054

These sections collectively address the illegality of interference with human burial remains, as well as the disposition of Native American burials in archaeological sites. The law protects such remains from disturbance, vandalism, or inadvertent destruction, and establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project, including the treatment of remains prior to, during, and after evaluation, and reburial procedures.

California Public Resources Code Section 15064.5(e)

This law addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction. The section establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project and establishes the Native American Heritage Commission as the entity responsible to resolve disputes regarding the disposition of such remains.

Assembly Bill 52

Assembly Bill (AB) 52 establishes a formal consultation process for California tribes as part of CEQA and equates significant impacts on tribal cultural resources with significant environmental impacts. AB 52 defines a "California Native American Tribe" as a Native American tribe located in California that is on the contact list maintained by the Native American Heritage Commission. AB 52 requires formal consultation with California Native American Tribes prior to determining the level of environmental document if a tribe has requested to be informed by the lead agency of proposed projects. AB 52 also requires that consultation address project alternatives, mitigation measures, for significant effects, if requested by the California Native American Tribe, and that consultation be considered concluded when either the parties agree to measures to mitigate or avoid a significant effect, or the agency concludes that mutual agreement cannot be reached. Under AB 52, such measures shall be recommended for inclusion in the environmental document and adopted mitigation monitoring program if determined to avoid or lessen a significant impact on a tribal cultural resource.

CULTURAL SETTING

Archeology

The Central Valley region was among the first in the state to attract intensive fieldwork, and research has continued to the present day. This has resulted in a substantial accumulation of data, but the emphasis has been in the northern portion of the valley. In the early decades of the 1900s, E.J. Dawson explored numerous sites near Stockton and Lodi, later collaborating with W.E. Schenck (Schenck and Dawson 1929). By 1933, the focus of work was directed to the Cosumnes locality, where survey and excavation were conducted by the Sacramento Junior College (Lillard and Purves 1936). Excavation data, in particular from the stratified Windmiller site (CA-SAC-107), suggested two temporally distinct cultural traditions. Later work at other mounds by Sacramento Junior College and the University of California, Berkeley, enabled the investigators to identify a third cultural tradition, intermediate between the previously postulated Early and Late Horizons. The three-horizon sequence, based on discrete changes in ornamental artifacts and mortuary practices, as well as on observed differences in soils within sites (Lillard, Heizer and Fenenga 1939), was later refined by Beardsley (1954). An expanded definition of artifacts diagnostic of each time period was developed, and its application extended to parts of the central California coast. Traits held in common allow the application of this system within certain limits of time and space to other areas of prehistoric central California.

In the southern San Joaquin Valley, with the exception of Hewes's excavation at CA-FRE-48 (the Tranquility Site), the foci of early investigations have been the old shorelines of the interior lakes; Tulare, Kern, and Buena Vista. In 1899, Dr. P. M. Jones directed fieldwork in the Buena Vista-Tulare Lake area of Kern County. Jones investigated 150 mounds and conducted trenching of several sites including CA-KER-53. In 1909, N. C. Nelson investigated prehistoric Site CA-KER-49, which is located to the west of Buena Vista Lake. Later, four surveys and excavations were conducted in the same locale under the auspices of the University of California. A compilation of these investigation results was published in 1926 by Gifford and Schenck.

As a result of this early work, an elaborate culture complex was defined for the late prehistoric period. This complex can be ascribed probably to the Yokuts and their direct ancestors. The material culture of this late temporal period complex included steatite vessels and beads, finely-made projectile points, pottery, shaped stone mortars, *Tivela* disc beads, use of asphaltum, and the presence of metates and manos. Flexed burials were the predominant interment mode. Earlier complexes underlying the late cultural expressions were represented by chipped stone crescents, large projectile points, atlatl spurs, and weights. Mortuary practices, generally thought to be related, include extended rather than flexed burial position, a situation analogous to that of the northern valley (Gifford and Schenck 1926; Lillard, Heizer, and Fenenga 1939; Moratto 1972).

Presence of "Early Man," although not found in direct association with extinct animals, is demonstrated by the frequency of chipped stone crescents and fluted points similar to those of the Clovis-Folsom Complex in the American Southwest. Although fluted points have been found near the shores of Tulare Lake, an area that has also produced surface finds of extinct mammal bone of Pleistocene age, the association is not substantiated by controlled excavations and remains speculative (Riddell and Olsen 1969). Most of the point collection had been acquired by D. Witt over a period of 30 years.

Under the direction of Wedel (1941), the Civil Works Administration, in conjunction with the Smithsonian Institution, initiated the first major excavations using stratigraphic controls. Investigations of CA-KER-39 and CA-KER-60 as well as several smaller sites near Buena Vista Lake produced evidence of two distinct cultural entities or occupation periods. Wedel lacked methods for dating these two entities by cross-comparison of the assemblages, he tentatively stated that the early occupation at Buena Vista Lake appeared to be temporally older and less developed than the Early Horizon (Windmiller Pattern) of the Delta region. He compared this early component to the Oak Grove or Milling Stone culture of the Santa Barbara area (Rogers 1939). He divided the later cultural entity into two distinct phases, both clearly distinguished from the earlier cultural phase by artifact types. Wedel (1941:144-145) estimated that neither of these cultural periods exceeded 1500 B.P. (years Before the Present). Later, other investigators proposed far earlier ages for these early occupations, with dates ranging from 2000 to 7000 B.P. (Baumhoff and Olmstead 1963, 1964; Heizer 1964; Meighan 1959).

Later investigations in 1963 and 1964 at CA-KER-116 near Buena Vista Lake produced materials similar to Wedel's early occupation. These materials occurred in the lower levels of the "upper deposit," while an even deeper cultural deposit yielded materials similar to those of the San

Dieguito Complex. Artifacts included a chipped stone crescent, crude point fragments, and an atlatl spur. Radiocarbon age determinations on shell from the lowest cultural levels returned a date of circa 8200 B.P. (Fredrickson and Grossman 1966, 1977; Fredrickson 1967).

Despite the previously mentioned investigations, the prehistory of the southern San Joaquin remains as yet poorly understood, without a tightly defined chronological sequence of cultural development.

Ethnology

Ethnographic literature is often uncertain in definition of cultural boundaries for Indian groups. Early displacement by white intrusion resulted in population shifts to avoid conflict with the Spanish, and later with the miners and settlers. The ravages of disease and warfare decimated the native people, further weakening cultural identity. Informants were often uncertain of original territories of the various tribal groupings.

The Foothill Yokuts were members of the Penutian language family which held all of the Central Valley, San Francisco Bay Area, and the Pacific Coast from Marin County to near Point Sur. The Yokuts differed from other ethnographic groups in California as they had true tribal divisions with group names (Kroeber 1925). Each tribe spoke a particular dialect, common to its members, but similar enough to other Yokuts that they were mutually intelligible (Kroeber 1925).

The Foothill Yokuts were a group of about 15 named tribes who occupied the western Sierra Nevada foothills from the Fresno River to the Kern River. A further subdivision separated the groups into northern, central and southern groups. The area controlled by individual groups varied over time. There is no information to indicate that there was a village in the project vicinity, but this does not preclude the possibility.

Trade was well developed, with mutually beneficial interchange of needed or desired goods. Obsidian, rare in the San Joaquin Valley, was obtained by trade with Paiute and Shoshoni groups on the eastern side of the Sierra Nevada, where numerous sources of this material are located, and to some extent from the Napa Valley to the north. Shell beads, obtained by the Yokuts from coastal people, and acorns, rare in the Great Basin, were among many items exported to the east by Yokuts traders (Davis 1961).

Economic subsistence was based on the acorn, with substantial dependency on gathering and processing of wild seeds and other vegetable foods. The rivers, streams, and sloughs which formed a maze within the valley provided abundant food resources such as fish, shellfish, and turtles. Game, wild fowl, and small mammals were trapped and hunted to provide protein augmentation of the diet. In general, the eastern portion of the San Joaquin Valley provided a lush environment of varied food resources, with the estimated large population centers reflecting this abundance (Cook 1955; Baumhoff 1963).

Settlements were oriented along the water ways, with their village sites normally placed adjacent to these features for their nearby water and food resources. House structures varied in size and

shape (Latta 1949; Kroeber 1925). The housepit depressions ranged in diameter from between 3 to 18 meters.

Latta (1949:99) reported that a village of 200 to 300 Yokuts might have four or five large houses that were used for ten or twelve years or until a family member died, at which time the Indians burned the house in which the death had occurred. If a sick or aged person died outside the dwelling, the family did not burn the house. When a Northern Yokuts died, his body was cremated or buried in a flexed position. Southern tribes normally buried their dead, although they did cremate shamans, persons who died away from their village and, among the Tachi, persons of great importance.

The Yokuts experienced severe depopulation after contact with the Spanish and subsequent explores. The most devastating impacts of the Spanish colonization effort were not the result of military conflicts, but came from Old World diseases newly introduced to the native people.

Historical Context

Early Explorations

The early recorded inhabitants of the region were members of the Yokuts tribe. Although the Spanish missions were established closer to the Pacific coast between 1769 and 1817, the general project area was first visited in the early 1800s by Spanish explorers, who visited the San Joaquin Valley with three goals: to search for runaway neophytes from the missions in the coastal regions, to punish the Indian raiders, and to select sites for new missions. In 1806, a group led by Gabriel Moraga and Father Pedro Muñoz, left Mission San Juan Bautista heading north to about the Mokelumne River**.** They then turned south, and travelled along the edge of the mountains crossing the San Joaquin River and passing through Tejon Pass, arriving at Mission San Fernando. In 1815, José Dolores Pico marched an expedition group from Monterey into the region. Following the San Joaquin River, he passed through the area in search of runaways, traveling as far south as the Kern River. The expedition returned to the starting point in Monterey with nine prisoners and a number of horses.

After control of California passed from Spain to Mexico in 1822, Mexican explorations into the interior continued, with José Dolores Pico conducting a major expedition along the San Joaquin River in 1825-1826. This expedition was considered successful in that some neophytes were captured, hostile Indians killed, some of the tribal groups intimidated, and some stolen horses recovered. In 1828, Sebastián Rodríguez led a similar expedition into the same region. His expedition captured a number of neophytes as well as some of the stolen horses, an item that had become an important dietary staple for the Indian tribes in the San Joaquin Valley region (Beck and Haase 1974).

The expeditions did not leave physical evidence, but there were definitely effects to the Native American populations. Causing even more of an effect on the native population were the diseases brought in to the Native populations of the Central Valley in the early 1830s.

Ranchos

In Fresno County, there was only one early land grant, a rancho along the current southern border of the county: Laguna de Tache. The era of the Spanish and Mexican land grants did not directly affect the project area.

Kerman

An east-west connecting railroad line was built by the Southern Pacific from the main line through Fresno in 1895. This rail line provided a station for shipping the agricultural products of the interior lands of northern Fresno County, and providing supplies to the residents of the region. The Southern Pacific station in Kerman was first named "Collis" for Collis P. Huntington, one of the "Big Four." In 1894, a post office in that name was established at what later became "Kerman." In 1899, the post office was moved to Rolinda, moving back to Collis in 1904. Two years later, W.G. Kerckhoff and Jacob Mansar of Los Angeles established a colony of Germans and Scandinavians from the Midwest, and renamed the settlement "Kerman", using the combination of the first three letters of the surnames of the promoters of the colony. In 1906, the post office was renamed "Kerman" (Frickstad 1955; Gudde 1969).

RESEARCH

A record search was conducted for the project area and a 0,125-mile radius through the Southern San Joaquin Valley Archaeological Information Center of the California Historical Resources Information System on February 3, 2020 (RS#20-051, Appendix 2). The northern portion of the project area had been surveyed by Binning in 2008 (Report #FR-2501), with negative findings. Several other surveys have been conducted in the project area vicinity, outside the record search radius.

No sites have been recorded in the project area or within the 0.125-mile radius.

FIELD ASSESSMENT

Michael Lawson conducted a field survey of the project area on February 6, 2020, using complete inspection (Figure 3). The property is surrounded by roadways and houses.

The landform is flat with occasional undulations, and aside from emerging grasses is free of vegetation. No creeks or drainages or low areas were noted.

The sediments vary from very light tan sandy silt on the north quarter of the site, to a medium brown sandy loam near the center, and light tan sandy silt in the south quarter. Stone is scarce

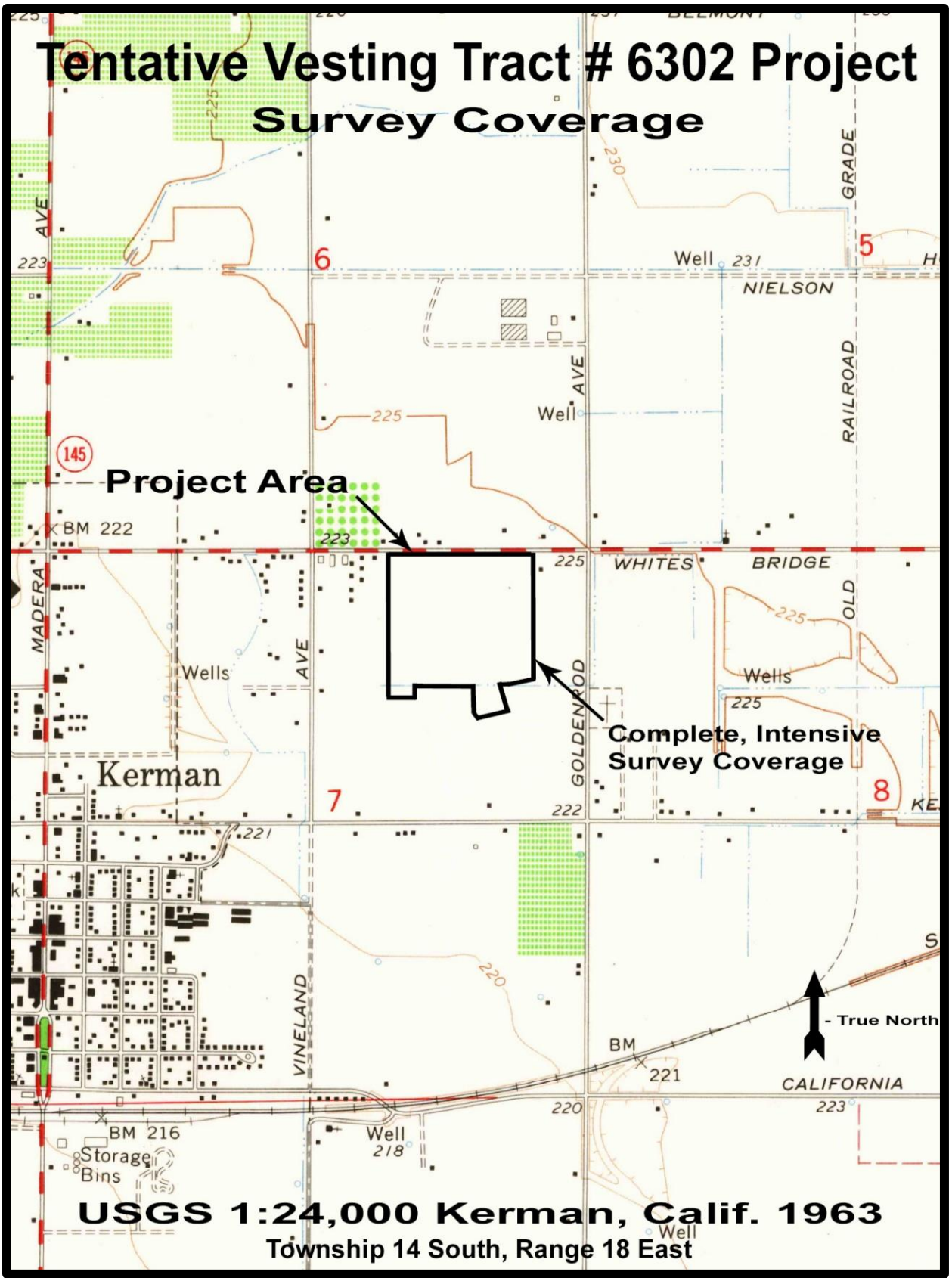
Tentative Vesting Tract # 6302 Project
Survey Coverage
Project Area
Complete, Intensive
Survey Coverage
- True North
USGS 1:24,000 Kerman, Calif. 1963
Township 14 South, Range 18 East
Kerman
NIELSON
RAILROAD
WHITES
BRIDGE
GOLDENROD
VINELAND
MADERA
CALIFORNIA
Well
Wells
BM 222
BM 221
BM 216
Storage
Bins

Figure 3

except where construction gravel has been intermittently dumped in several areas around the parcel.

Due to low sensitivity for prehistoric period resources and no evidence from maps for historic buildings and features, parallel transects of ten meters were used during the survey. Occasional meandering and pausing for close inspection of surface occurred at regular intervals.

The visibility was good, aided by at least 3 walking trails and common disturbance by burrowing animals.

There is no surface evidence of prehistoric period or historic period cultural resources within the project area.

RECOMMENDATIONS

Although no prehistoric sites were found during the survey, there is a slight possibility that a site may exist and be totally obscured by vegetation, fill, or other historic activities, leaving no surface evidence. Should artifacts or unusual amounts of stone, bone, or shell be uncovered during construction activities, an archeologist should be consulted for on-the-spot evaluation of the finding.

Discovery of Human Remains

In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area suspected to overlie adjacent remains until the Fresno County Coroner has determined that the remains are not subject to any provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative. The coroner shall make his or her determination within two working days from the time the person responsible for the excavation, or his or her authorized representative, notifies the coroner of the discovery or recognition of the human remains.

If the Fresno County Coroner determines that the remains are not subject to his or her authority and if the Coroner recognizes the human remains to be those of a Native American or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission (NAHC).

After notification, the NAHC will follow the procedures outlined in Public Resources Code Section 5097.98, that include notification of most likely descendants (MLDs), and recommendations for treatment of the remains. The MLDs will have 24 hours after notification by the NAHC to make their recommendations (PRC Section 5097.98).

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APPENDIX 1

Resumes

PEAK & ASSOCIATES, INC.
RESUME

MELINDA A. PEAK January 2020
Senior Historian/Archeologist
3941 Park Drive, Suite 20 #329
El Dorado Hills, CA 95762
(916) 939-2405

PROFESSIONAL EXPERIENCE

Ms. Peak has served as the principal investigator on a wide range of prehistoric and historic excavations throughout California. She has directed laboratory analyses of archeological materials, including the historic period. She has also conducted a wide variety of cultural resource assessments in California, including documentary research, field survey, Native American consultation and report preparation.

In addition, Ms. Peak has developed a second field of expertise in applied history, specializing in site-specific research for historic period resources. She is a registered professional historian and has completed a number of historical research projects for a wide variety of site types.
Through her education and experience, Ms. Peak meets the Secretary of Interior Standards for historian, architectural historian, prehistoric archeologist and historic archeologist.

EDUCATION

M.A. - History - California State University, Sacramento, 1989
Thesis: *The Bellevue Mine: A Historical Resources Management Site Study in Plumas and Sierra Counties, California*
B.A. - Anthropology - University of California, Berkeley

RECENT PROJECTS

Ms. Peak completed the cultural resource research and contributed to the text prepared for the DeSabla-Centerville PAD for the initial stage of the FERC relicensing. She also served cultural resource project manager for the FERC relicensing of the Beardsley-Donnells Project. For the South Feather Power Project and the Woodleaf-Palermo and Sly Creek Transmission Lines, her team completing the technical work for the project.

In recent months, Ms. Peak has completed several determinations of eligibility and effect documents in coordination with the Corps of Engineers for projects requiring federal permits, assessing the eligibility of a number of sites for the National Register of Historic Places. She has also completed historical research projects on a wide variety of topics for a number of projects including the development of navigation and landings on the Napa River, wineries, farmhouses dating to the 1860s, bridges, an early roadhouse, Folsom Dam and a section of an electric railway line.

In recent years, Ms. Peak has prepared a number of cultural resource overviews and predictive models for blocks of land proposed for future development for general and specific plans. She has been able to direct a number of surveys of these areas, allowing the model to be tested.

She served as principal investigator for the multi-phase Twelve Bridges Golf Club project in Placer County. She served as liaison with the various agencies, helped prepare the historic properties treatment plan, managed the various phases of test and data recovery excavations, and completed the final report on the analysis of the test phase excavations of a number of prehistoric sites. She is currently involved as the principal investigator for the Teichert Quarry project adjacent to Twelve Bridges in the City of Rocklin, coordinating contacts with Native Americans, the Corps of Engineers and the Office of Historic Preservation.

Ms. Peak has served as project manager for a number of major survey and excavation projects in recent years, including the many surveys and site definition excavations for the 172-mile-long Pacific Pipeline proposed for construction in Santa Barbara, Ventura and Los Angeles counties. She also completed an archival study in the City of Los Angeles for the project. She also served as principal investigator for a major coaxial cable removal project for AT&T.

Additionally, she completed a number of small surveys, served as a construction monitor at several urban sites, and conducted emergency recovery excavations for sites found during monitoring. She has directed the excavations of several historic complexes in Sacramento, Placer and El Dorado Counties.

Ms. Peak is the author of a chapter and two sections of a published history (1999) of Sacramento County, *Sacramento: Gold Rush Legacy, Metropolitan Legacy*. She served as the consultant for a children's book on California, published by Capstone Press in 2003 in the Land of Liberty series.

PEAK & ASSOCIATES, INC.
RESUME

MICHAEL LAWSON **January 2020**
Archeological Specialist
3941 Park Drive, Suite 20-329
El Dorado Hills, CA 95672
(916) 939-2405

PROFESSIONAL EXPERIENCE
Mr. Lawson has compiled an excellent record of supervision of excavation and survey projects for both the public and private sectors over the past twenty-two years. He has conducted a number of surveys throughout northern and central California, as well as serving as an archeological technician and crew chief for a number of excavation projects.

EDUCATION
B.A. - Anthropology - California State University, Sacramento

Special Course: Comparative Osteology. University of Tennessee, Knoxville. Forensic Anthropology Center. January 2018.

Intensive lab and outdoor study with human example from outdoor research facility, including typical and non-metric examples, compared with fifty non-human species most commonly confused with human remains. Outdoor research facility "The Body Farm" study included survey, photography, collection and identification of faunal and human bone fragments, with a Power Point presentation discussing finds.

EXPERIENCE
- Extensive monitoring of open space, streets and project development areas for prehistoric period and historic period resources. Areas monitored include Sutter Street in Folsom; Mud Creek Archeological District in Chico; Camp Roberts, San Luis Obispo County; Avila Beach, San Luis Obispo County; Edgewood Golf Course, South Lake Tahoe; Davis Water Project, Davis; Star Bend levee section, Sutter County; Feather River levees, Sutter County; Bodega Bay, Sonoma County; San Jose BART line extension, Santa Clara County; and numerous sites for PG&E in San Francisco.
- Over twenty years of experience working in CRM, volunteer, and academic settings in California historic, proto-historic, and prehistoric archaeology.
- Expertise in pedestrian survey, excavation, feature (including burial) exposure, laboratory techniques, research. Field positions include crew chief and lead technician.

APPENDIX 2

Record Search

California Historical Resources Information System

Fresno
Kern
Kings
Madera
Tulare

Southern San Joaquin Valley Information Center
California State University, Bakersfield
Mail Stop: 72 DOB
9001 Stockdale Highway
Bakersfield, California 93311-1022
(661) 654-2289
E-mail: ssjvic@csub.edu
Website: www.csub.edu/ssjvic

2/3/2020

Robert Gerry
Peak & Associates, Inc.
3941 Park Drive, Suite 20-0329
El Dorado Hills, CA 95762

Re: Kerman
Records Search File No.: 20-051

The Southern San Joaquin Valley Information Center received your record search request for the project area referenced above, located on the Kerman USGS 7.5' quad. The following reflects the results of the records search for the project area and the 0.125 mile radius:

As indicated on the data request form, the locations of resources and reports are provided in the following format: ☒ custom GIS maps ☐ shapefiles

Resources within project area:	None
Resources within 0.125 mile radius:	None
Reports within project area:	FR-02501
Reports within 0.125 mile radius:	FR-02414, 02505, 02506

Resource Database Printout (list):	☐ enclosed ☐ not requested ☒ nothing listed
Resource Database Printout (details):	☐ enclosed ☒ not requested ☐ nothing listed
Resource Digital Database Records:	☐ enclosed ☒ not requested ☐ nothing listed
Report Database Printout (list):	☒ enclosed ☐ not requested ☐ nothing listed
Report Database Printout (details):	☐ enclosed ☒ not requested ☐ nothing listed
Report Digital Database Records:	☐ enclosed ☒ not requested ☐ nothing listed
Resource Record Copies:	☐ enclosed ☐ not requested ☒ nothing listed
Report Copies:	☐ enclosed ☒ not requested ☐ nothing listed
OHP Built Environment Resources Directory:	☐ enclosed ☐ not requested ☒ nothing listed
Archaeological Determinations of Eligibility:	☐ enclosed ☐ not requested ☒ nothing listed
CA Inventory of Historic Resources (1976):	☐ enclosed ☒ not requested ☐ nothing listed

Caltrans Bridge Survey: Not available at SSJVIC; please see http://www.dot.ca.gov/hq/structur/strmaint/historic.htm

Ethnographic Information: Not available at SSJVIC

Historical Literature: Not available at SSJVIC

Historical Maps: Not available at SSJVIC; please see http://historicalmaps.arcgis.com/usgs/

Local Inventories: Not available at SSJVIC

GLO and/or Rancho Plat Maps: Not available at SSJVIC; please see http://www.glorecords.blm.gov/search/default.aspx#searchTabIndex=0&searchByTypeIndex=1 and/or http://www.oac.cdlib.org/view?docId=hb8489p15p;developer=local;style=oac4;doc.view=items

Shipwreck Inventory: Not available at SSJVIC; please see http://www.slc.ca.gov/Info/Shipwrecks.html

Soil Survey Maps: Not available at SSJVIC; please see http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

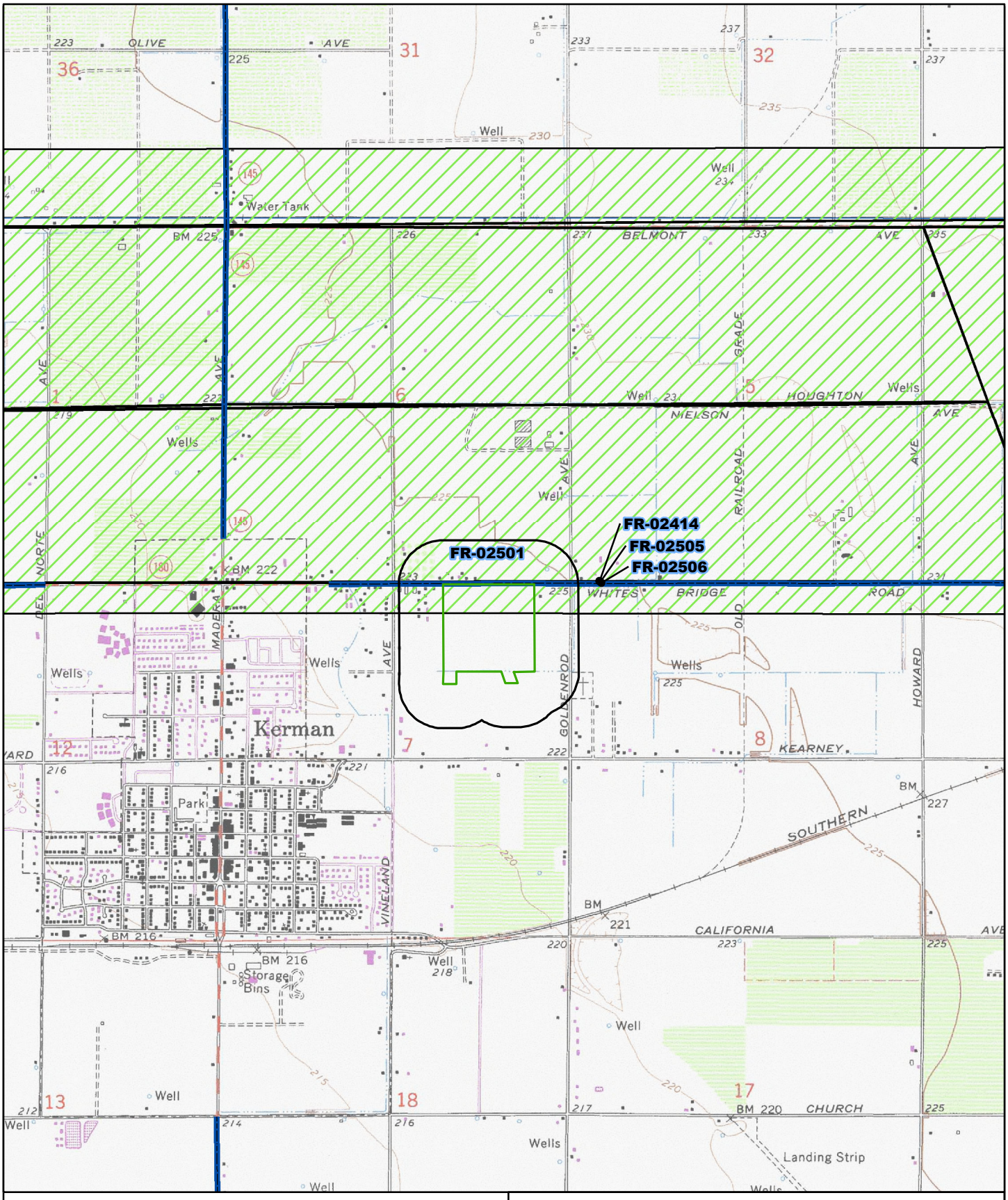
Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Invoices for Information Center services will be sent under separate cover from the California State University, Bakersfield Accounting Office.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

Celeste M. Thomson Digitally signed by Celeste M. Thomson
Date: 2020.02.03 10:18:54 -08'00'

Celeste M. Thomson
Coordinator



May depict confidential cultural resource locations.
Do not distribute.

0 0.125 0.25 0.5 Miles

0 0.175 0.35 0.7 Kilometers

N

Project Area

Record Search radius

SSJV Information Center Record Search 20-051
Requester: Robert Gerry, Peak & Associates, Inc.
Project Name: Kerman
USGS 7.5' Quad(s): Biola, Kerman
County: Fresno

Report List

SSJVIC Record Search 20-051

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
FR-02414	Submitter - Contract No. 06A1106; Submitter - Expenditure Authorization No. 06-0A7408	2010	Leach-Palm, Laura, Brandy, Paul, King, Jay, Mikkelson, Pat, Seil, Libby, Hartman, Lindsay, and Bradeen, Jill	Cultural Resources Inventory of Caltrans District 6 Rural Conventional Highways in Fresno, Western Kern, Kings, Madera, and Tulare Counties Summary of Methods and Findings	Far Western Anthrpological Research Group, Inc., Davis and JRP Historical Consulting, LLC, Davis	10-004703, 10-005797, 10-005809, 10-005810, 10-006207
FR-02501		2008	Binning, Jeanne	Historic Property Survey Report for Route 180 Planned Westside Expressway from I-5 to Valentine Ave, Fresno, Fresno County, California	California Department of Transportation	
FR-02505		2006	Leach-Palm, Laura, Rosenthal, Jeffrey, Byrd, Brian, Mikkelson, Pat, and Waechter, Sharon	Preliminary Assessment of the Archaeological Sensitivity for the Route 180 Westside Expressway Route Adoption Study Between Interstate 5 and the City of Fresno, Fresno County, California Interstate 5 PM 9.0 (KP 14.5) to 06-FRE-180 PM 54.2 (KP 87 Valentine Avenue) EA06-451400	Far Western Anthropological Research Group, Inc.	
FR-02506		2006	Brady, Jon and Bunse, Rebecca	Final Historic Resources Sensitivity Study Route 180 Westside Expressway Route Adoption Study	California Department of Transportation	

Appendix D

Acoustical Analysis

ACOUSTICAL ANALYSIS

TRACT 6302
KERMAN, CALIFORNIA

WJVA Project No. 20-006

PREPARED FOR

OMNI LAND DEVELOPMENT, LLC
2348 WHITENDALE AVENUE
VISALIA, CALIFORNIA 93277

PREPARED BY

WJV ACOUSTICS, INC.
VISALIA, CALIFORNIA

wjv acoustics

FEBRUARY 5, 2020

INTRODUCTION

The project is a proposed 104-lot single-family residential development to be located in Kerman, California. The project site is located south of State Route 180 (West Whitesbridge Avenue). The City of Kerman has requested an acoustical analysis to quantify project site noise exposure and determine noise mitigation requirements. This analysis, prepared by WJV Acoustics, Inc. (WJVA), is based upon a project lot layout site plan prepared by QK (dated 1/9/2020) traffic data provided by Caltrans and the Fresno Council of Governments (Fresno COG) and the findings of on-site noise level measurements. Revisions to the lot layout plan may affect the findings and recommendations of this report. The site plan is provided as Figure 1.

Appendix A provides a description of the acoustical terminology used in this report. Unless otherwise stated, all sound levels reported are in A-weighted decibels (dB). A-weighting de-emphasizes the very low and very high frequencies of sound in a manner similar to the human ear. Most community noise standards utilize A-weighting, as it provides a high degree of correlation with human annoyance and health effects. Appendix B provides typical A-weighted sound levels for common noise sources.

NOISE EXPOSURE CRITERIA

The City of Kerman 2040 General Plan (currently in Draft form, November 2019) sets noise compatibility standards for transportation noise sources in terms of the Day-Night Average Level (L_{dn}). Implementing Policy PH-8.2 of the Public Health and Safety Element establishes a land use compatibility criterion as 60 dB L_{dn} for exterior noise exposure within outdoor activity areas of residential land uses. Outdoor activity areas generally include backyards of single-family residences, individual patios or decks of multi-family developments and common outdoor recreation areas of multi-family developments. The intent of the exterior noise level requirement is to provide an acceptable noise environment for outdoor activities and recreation.

Additionally, Implementing Policy PH-8.2 of the Public Health and Safety Element requires that interior noise levels attributable to exterior transportation noise sources not exceed 45 dB L_{dn}. The intent of the interior noise level standard is to provide an acceptable noise environment for indoor communication and sleep.

PROJECT SITE NOISE EXPOSURE

The project site is located south of State Route 180 (West Whitesbridge Avenue), between South Vineland Avenue to the west and South Goldenrod Avenue to the east. The closest proposed single-family lots to the State Route (SR 180) are located approximately 300 feet south of the roadway. The project site is exposed to traffic noise associated with vehicles on SR 180.

Traffic Noise Exposure:

Noise exposure from traffic on SR 180 was calculated for existing and future (2035) conditions using the FHWA Traffic Noise Model and traffic data obtained from Caltrans and Fresno COG.

WJVA utilized the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108). The FHWA Model is a standard analytical method used for roadway traffic noise calculations. The model is based upon reference energy emission levels for automobiles, medium trucks (2 axles) and heavy trucks (3 or more axles), with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The FHWA Model was developed to predict hourly L_{eq} values for free-flowing traffic conditions, and is generally considered to be accurate within ±1.5 dB. To predict L_{dn} values, it is necessary to determine the hourly distribution of traffic for a typical day and adjust the traffic volume input data to yield an equivalent hourly traffic volume.

Noise level measurements and concurrent traffic counts were conducted by WJVA staff within the project site on January 29, 2020. The purpose of the measurement was to evaluate the accuracy of the FHWA Model in describing traffic noise exposure within the project site. The measurement site was located within the project site at a distance of approximately 60 feet from the centerline of SR 180. The speed limit posted in the project vicinity was 50 mph (miles per hour), however, it transitions to 55 mph near the eastern portion of the project site. The project vicinity and noise monitoring site location are provided as Figure 2. A photograph showing the noise measurement site is provided as Figure 3.

Noise monitoring equipment consisted of Larson-Davis Laboratories Model LDL-820 sound level analyzer equipped with a B&K Type 4176 1/2" microphone. The equipment complies with the specifications of the American National Standards Institute (ANSI) for Type I (Precision) sound level meters. The meter was calibrated in the field prior to use with a B&K Type 4230 acoustic calibrator to ensure the accuracy of the measurements. The microphone was located on a tripod at 5 feet above the ground. The project site presently consists of undeveloped land and a portion is currently used for industrial purposes.

Noise measurements were conducted in terms of the equivalent energy sound level (L_{eq}). Measured L_{eq} values were compared to L_{eq} values calculated (predicted) by the FHWA Model using as inputs the traffic volumes, truck mix and vehicle speed observed during the noise measurements. The results of the comparison are shown in Table I.

From Table I it may be determined that the traffic noise levels predicted by the FHWA Model were 1.3 dB lower than those measured for the traffic conditions observed at the time of the noise measurements for SR 180. This is considered to be reasonable agreement with the model and therefore no adjustments to the model are necessary.

TABLE I

COMPARISON OF MEASURED AND PREDICTED (FHWA MODEL) NOISE LEVELS TRACT 6302, KERMAN

	SR 180 (W. Whitesbridge Ave.)
Measurement Start Time	3:30 p.m.
Observed # Autos/Hr.	888
Observed # Medium Trucks/Hr.	60
Observed # Heavy Trucks/Hr.	24
Observed Speed (MPH)	55
Distance, ft. (from center of roadway)	60
L_{eq}, dBA (Measured)	70.6
L_{eq}, dBA (Predicted)	69.3
Difference between Measured and Predicted L_{eq}, dBA	**+1.3**

Note: FHWA "soft" site assumed for calculations.
Source: WJV Acoustics, Inc.

Annual Average Daily Traffic (AADT) data for SR 180 in the project vicinity was obtained from Fresno COG, and confirmed by Caltrans. Truck percentages along SR 180 in the project vicinity were obtained from Caltrans, and the day/night distribution of traffic were estimated by WJVA, based upon previous studies conducted in the project vicinity since project-specific data were not available from government sources. A speed limit of 55 mph was assumed for the roadway. Table II summarizes annual average traffic data used to model noise exposure within the project site.

TABLE II

TRAFFIC NOISE MODELING ASSUMPTIONS
TRACT 6302, KERMAN

	State Route 180 (W. Whitesbridge Ave.)	
	Existing	2035
Annual Avenue Daily Traffic (AADT)	14,815	18,420
Day/Night Split (%)	85/15	
Assumed Vehicle Speed (mph)	55	
% Medium Trucks (% AADT)	3.8	
% Heavy Trucks (% AADT)	4.7	

Sources: Fresno COG
Caltrans
WJV Acoustics, Inc.

Using data from Table II, the FHWA Traffic Noise Model, annual average traffic noise exposure was calculated for the closest proposed backyards to SR 180. The calculated noise exposures for existing and future (2035) traffic conditions for the closest proposed residential setbacks to SR 180 were approximately 61 dB L_{dn} and 62 dB L_{dn}, respectively. Noise exposure levels for existing and future (2035) traffic conditions at the closest proposed residences to SR 180 exceed the applicable City of Kerman exterior noise level standard of 60 dB L_{dn}, and further mitigation is required.

NOISE MITIGATION

Exterior Noise Mitigation:

The City of Kerman General Plan establishes a 60 dB L_{dn} criterion within outdoor activity areas (backyards) of single-family homes. The project site traffic noise exposure for future (2035) traffic conditions was calculated to be approximately 62 dB L_{dn} within the closest lots to SR 180. Such noise exposure levels exceed the City of Kerman exterior noise level standard and mitigation must be considered. Future (2035) traffic conditions represent a worst-case assessment of project-site noise exposure, and are therefore used within this analysis to demonstrate project compliance with applicable City of Kerman noise level standards.

To mitigate exterior traffic noise exposure along SR 180 it will be necessary to construct a sound wall along some of the northernmost lots. The sound wall would provide acoustical shielding of the outdoor activity areas (backyards) of the proposed single-family homes located closest to the roadway.

A sound wall insertion loss program based on the FHWA Model was used to calculate the insertion loss (noise reduction) provided by the proposed sound walls. The model calculates the insertion loss of a wall of given height based on the effective height of the noise source, height of the receiver, distance from the receiver to the wall, and distance from the noise source to the wall. The standard assumptions used in the sound wall calculations are effective source heights of 8, 2 and 0 feet above the roadway for heavy trucks, medium trucks and automobiles, respectively. The standard height of a residential receiver is five (5) feet above the ground elevation.

Based upon the above-described assumptions and method of analysis, the noise level insertion loss values for sound walls of various heights were calculated. The calculations indicated that a sound wall along northern lot boundaries of Lots 57-66 constructed to a minimum height of six (6) feet relative to the closest building pad elevations would reduce traffic noise exposure within individual backyards by approximately 6 dB, resulting in a projected future noise exposure of approximately 56 dB L_{dn}. Lots located at distances of greater than 400 feet from SR 180 would not require a sound wall, and would remain below the City's 60 dB L_{dn} exterior noise level standard. The location of the required sound wall is provided on Figure 1.

It should be noted, the above-described sound wall would be effective at first-floor receiver locations only, and would not provide acoustical shielding to any proposed second-floor receivers. Therefore, individual second-floor balconies should not be constructed facing SR 180 (north) for proposed Lots 57-66.

Interior Noise Exposure:

The City of Kerman interior noise level standard is 45 dB L_{dn}. The worst-case future noise exposure within the proposed residential development would be approximately 56 dB L_{dn} at first-floor receiver locations and approximately 62 dB L_{dn} at second-floor receiver locations. This means that the proposed residential construction must be capable of providing a minimum outdoor-to-indoor noise level reduction (NLR) of approximately 17 dB (62-45=17).

A specific analysis of interior noise levels was not performed. However, it may be assumed that residential construction methods complying with current building code requirements will reduce exterior noise levels by approximately 25 dB if windows and doors are closed. This will be sufficient for compliance with the City's 45 dB L_{dn} interior standard at all proposed lots. Requiring that it be possible for windows and doors to remain closed for sound insulation means that air conditioning or mechanical ventilation will be required.

CONCLUSIONS AND RECOMMENDATIONS

Exterior Noise Compliance:

The proposed 104-lot residential development will comply with applicable City of Kerman exterior noise level requirements provided the following mitigation measures are incorporated into final project design.

1. A sound wall with a minimum height of six (6) feet is constructed along the rear lot property lines of Lots 57-66. The location of the required 6-foot sound wall is provided on Figure 1. Suitable construction materials include concrete blocks, masonry or stucco on both sides of a wood or steel stud wall.

2. If two-story construction is proposed for Lots 57-66, rear of home second story balconies (facing SR 180) should not be incorporated into project design.

Interior Noise Compliance:

The proposed 104-lot residential development will comply with applicable City of Kerman interior noise level requirements provided the following mitigation measures are incorporated into final project design.

1. Mechanical ventilation or air conditioning must be provided for all homes so that windows and doors can remain closed for sound insulation purposes.

The conclusions and recommendations of this acoustical analysis are based upon the best information known to WJV Acoustics Inc. (WJVA) at the time the analysis was prepared concerning the proposed lot layout plan, project site elevation, traffic volumes and roadway configurations. Any significant changes in these factors will require a reevaluation of the findings of this report. Additionally, any significant future changes in motor vehicle technology, noise regulations or other factors beyond WJVA's control may result in long-term noise results different from those described by this analysis.

Respectfully submitted,

Walter J. Van Groningen
President

WJV:wjv

FIGURE 1: SITE PLAN

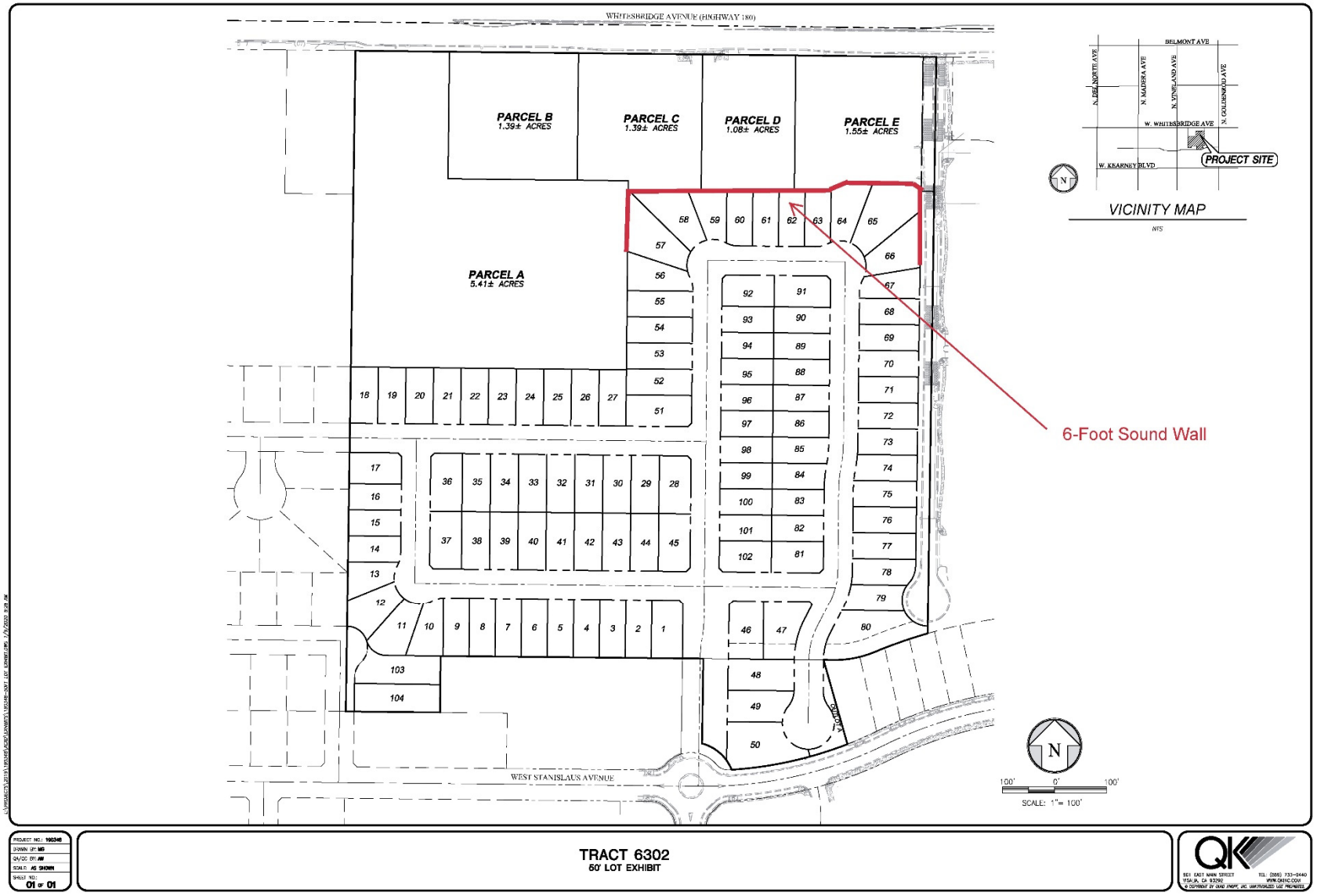


FIGURE 2: PROJECT SITE VICINITY AND NOISE MEASUREMENT LOCATION

FIGURE 3: NOISE MEASUREMENT SITE

APPENDIX A

ACOUSTICAL TERMINOLOGY

AMBIENT NOISE LEVEL: The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

CNEL: Community Noise Equivalent Level. The average equivalent sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.

DECIBEL, dB: A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).

DNL/L_{dn}: Day/Night Average Sound Level. The average equivalent sound level during a 24-hour day, obtained after addition of ten decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.

L_{eq}: Equivalent Sound Level. The sound level containing the same total energy as a time varying signal over a given sample period. L_{eq} is typically computed over 1, 8 and 24-hour sample periods.

NOTE: The CNEL and DNL represent daily levels of noise exposure averaged on an annual basis, while L_{eq} represents the average noise exposure for a shorter time period, typically one hour.

L_{max}: The maximum noise level recorded during a noise event.

L_n: The sound level exceeded "n" percent of the time during a sample interval (L_{90}, L_{50}, L_{10}, etc.). For example, L_{10} equals the level exceeded 10 percent of the time.

A-2

ACOUSTICAL TERMINOLOGY

NOISE EXPOSURE CONTOURS: Lines drawn about a noise source indicating constant levels of noise exposure. CNEL and DNL contours are frequently utilized to describe community exposure to noise.

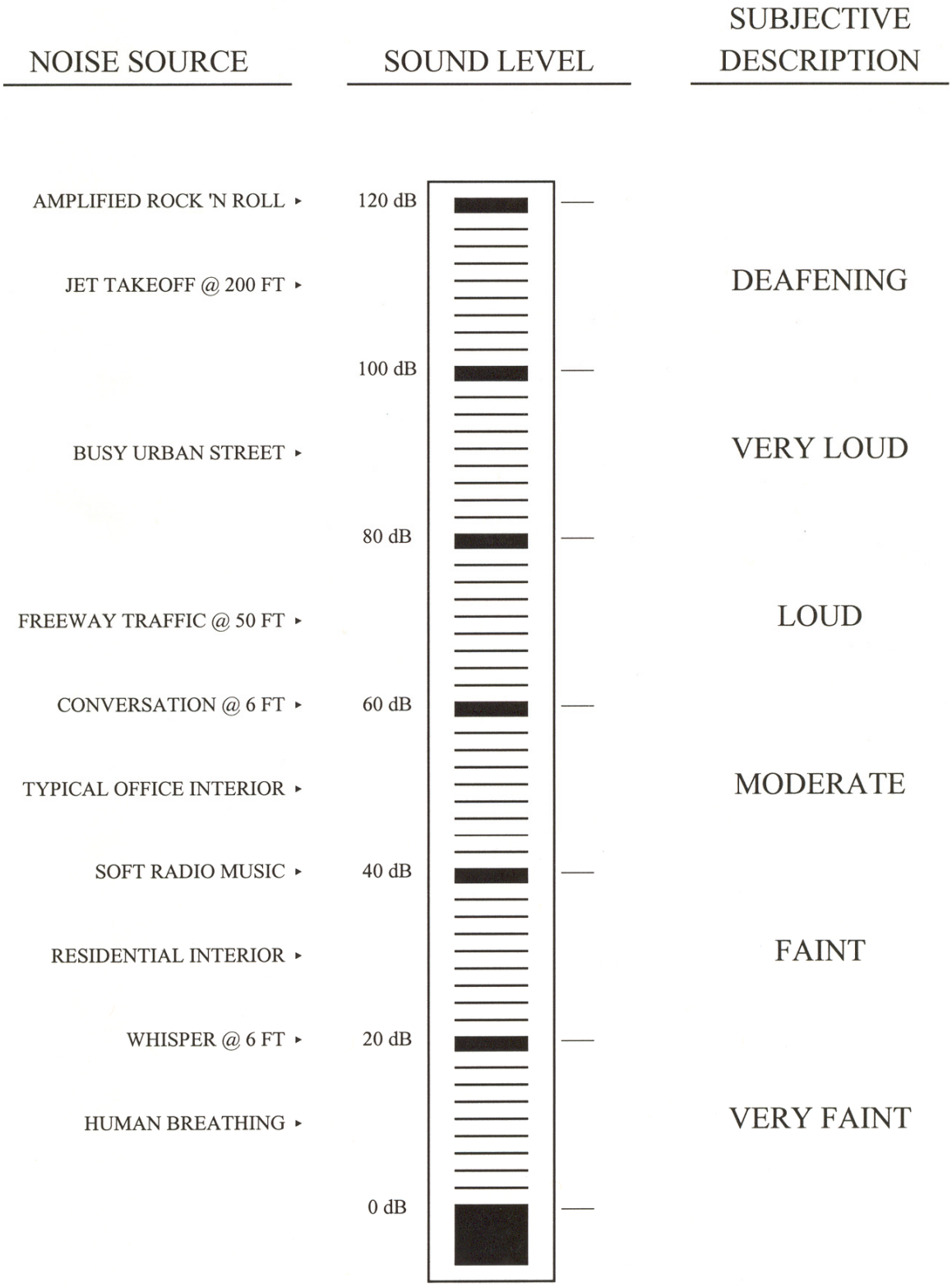
NOISE LEVEL REDUCTION (NLR): The noise reduction between indoor and outdoor environments or between two rooms that is the numerical difference, in decibels, of the average sound pressure levels in those areas or rooms. A measurement of "noise level reduction" combines the effect of the transmission loss performance of the structure plus the effect of acoustic absorption present in the receiving room.

SEL or SENEL: Sound Exposure Level or Single Event Noise Exposure Level. The level of noise accumulated during a single noise event, such as an aircraft overflight, with reference to a duration of one second. More specifically, it is the time-integrated A-weighted squared sound pressure for a stated time interval or event, based on a reference pressure of 20 micropascals and a reference duration of one second.

SOUND LEVEL: The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.

SOUND TRANSMISSION CLASS (STC): The single-number rating of sound transmission loss for a construction element (window, door, etc.) over a frequency range where speech intelligibility largely occurs.

APPENDIX B
EXAMPLES OF SOUND LEVELS



Appendix E

Draft Traffic Impact Analysis

Draft Traffic Impact Analysis

Tentative Tract 6302

Located on the Southwest Quadrant of Goldenrod Avenue and Whitesbridge Road

In the City of Kerman, California

Prepared for:

Omni Land Development, LLC
2348 Whitendale Ave, Ste D
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March 17, 2020

Project No. 025-003

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Traffic Engineering, Transportation Planning, & Parking Solutions

Draft Traffic Impact Analysis

For Tentative Tract 6302 located on the Southwest Quadrant of Goldenrod Avenue at Whitesbridge Road (State Route 180)

In the City of Kerman, CA

March 17, 2020

This Draft Traffic Impact Analysis has been prepared under the direction of a licensed Traffic Engineer. The licensed Traffic Engineer attests to the technical information contained therein and has judged the qualifications of any technical specialists providing engineering data from which recommendations, conclusions, and decisions are based.

Prepared by:

_____

Jose Luis Benavides, PE, TE

President

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Introduction and Summary

Introduction

This report describes a Draft Traffic Impact Analysis (TIA) prepared by JLB Traffic Engineering, Inc. (JLB) for the proposed Tentative Tract 6302 (Project) located on the southwest quadrant of Goldenrod Avenue and Whitesbridge Road, also known as State Route 180, in the City of Kerman. The Project proposes to construct up to 103 single-family residential units on 20.38 net acres. Based on information provided to JLB, 1.54 acres of the Project site is consistent with the City of Kerman draft 2040 General Plan Update, while the remaining 18.84 acres will undergo a General Plan Amendment through the City of Kerman to modify the land use from Regional Commercial to Medium Density Residential (5.0 - 12.0 dwelling units per acre). Figure 1 shows the location of the proposed Project site relative to the surrounding roadway network.

The purpose of the TIA is to evaluate the potential traffic impacts, identify short-term roadway and circulation needs, determine potential mitigation measures and identify any critical traffic issues that should be addressed in the on-going planning process. The TIA primarily focused on evaluating traffic conditions at study intersections that may potentially be impacted by the proposed Project. The Scope of Work was prepared via consultation with City of Kerman, County of Fresno and Caltrans staff.

Summary

The potential traffic impacts of the proposed Project were evaluated in accordance with the standards set forth by the Level of Service (LOS) policy of the City of Kerman, County of Fresno and Caltrans.

Existing Traffic Conditions

- At present, all study intersections operate at an acceptable LOS during both peak periods.

Existing plus Project Traffic Conditions

- JLB analyzed the location of the proposed access points relative to the existing local roads and driveways in the Project's vicinity. A review of the Project's local driveways and streets to be constructed indicates that they are located at points that minimize traffic operational impacts to the existing roadway network.
- At buildout, the proposed Project is estimated to generate a maximum of 982 daily trips, 77 AM peak hour trips and 103 PM peak hour trips. The Existing General Plan use is anticipated to generate a maximum of 7,915 daily trips, 206 AM peak hours trips and 800 PM peak hour trips. Compared to the Existing General Plan land use, the proposed Project is estimated to yield fewer traffic generation by 6,933 daily trips, 129 AM peak hour and 697 PM peak hour trips.
- It recommended that the Project implement a Class III bikeway along its frontage to Stanislaus Avenue.
- Based on the Fresno COG model run, the Project is anticipated to generate an average of 10.14 VMT per trip.
- Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peak periods.

Near Term plus Project Traffic Conditions

- The total trip generation for the Near Term Projects is 18,439 daily trips, 1,606 AM peak hour trips and 1,708 PM peak hour trips.
- Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peak periods.

Cumulative Year 2040 No Project Traffic Conditions

- Under this scenario, the intersection of Goldenrod Avenue and Kearney Boulevard is projected to exceed its LOS threshold during the AM peak period. To improve the LOS at this intersection, JLB considered two options for improvement. Additional details as to the recommended improvements for this intersection is presented later in this Report.

Cumulative Year 2040 plus Project Traffic Conditions

- Under this scenario, the intersection of Goldenrod Avenue and Kearney Boulevard is projected to exceed its LOS threshold during the AM peak period. To improve the LOS at this intersection, JLB considered two options for improvement. Additional details as to the recommended improvements for this intersection is presented later in this Report.

Queuing Analysis

- It is recommended that the City consider left-turn and right-turn lane storage lengths as indicated in the Queuing Analysis.

Project's Equitable Fair Share

- It is recommended that the Project contribute their equitable fair share as listed in Table XI for the future improvements necessary to maintain an acceptable LOS.

Scope of Work

The TIA primarily focused on evaluating traffic conditions at study intersections that may potentially be impacted by the proposed Project. On February 3, 2020, a Draft Scope of Work for the preparation of a TIA for this Project was provided to the City of Kerman, County of Fresno and Caltrans for their review and comment. Any comments to the proposed Scope of Work were to be provided by February 17, 2020.

On February 7, 2020, the County of Fresno responded to the Draft Scope of Work. The County requested that the analysis include the project trip distribution and the intersection of Vineland Avenue and Kearney Boulevard. Caltrans commented on February 12, 2020 recommending a VMT analysis recognizing the shopping centers near the Project. On February 14, 2020, the City of Kerman commented on the Draft Scope of Work. The City requested that the analysis include the intersection of Vineland Avenue and Kearney Boulevard, remove TT 5636 from the list of near term projects, modify TT 5831 to TT 6293 on the list of near term projects, and specified that the commercial part of the site plan shown in the Draft Scope of Work is not included in the TIA.

Based on the comments received, this TIA includes analysis of the additional intersection requested by the City of Kerman and County of Fresno. The Draft Scope of Work and the comments received from the lead agency and responsible agencies are included in Appendix A.

Study Facilities

The existing peak hour turning movement volume counts were conducted at the study intersections in February 2020, while schools in the vicinity of the proposed Project were in session. The intersection turning movement counts included pedestrian volumes. The traffic counts for the existing study intersections are contained in Appendix B. The existing intersection turning movement volumes, intersection geometrics and traffic controls are illustrated in Figure 2.

Study Intersections

1. Vineland Avenue / Whitesbridge Road
2. Goldenrod Avenue / Whitesbridge Road
3. Vineland Avenue / San Joaquin Avenue
4. Vineland Avenue / Stanislaus Avenue
5. 16th Street / Stanislaus Avenue
6. Goldenrod Avenue / Stanislaus Avenue
7. Vineland Avenue / Kearney Boulevard
8. 16th Street / Kearney Boulevard
9. Goldenrod Avenue / Kearney Boulevard

Study Scenarios

Existing Traffic Conditions

This scenario evaluates the Existing Traffic Conditions based on existing traffic volumes and roadway conditions from traffic counts and field surveys conducted in February 2020.

Existing plus Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Existing plus Project Traffic Conditions. The Existing plus Project traffic volumes were obtained by adding the Project Only Trips to the Existing traffic volumes. The Project Only Trips to the study facilities were developed based on existing travel patterns, the Fresno COG Project Select Zone, the existing roadway network, engineering judgment, data provided by the developer, knowledge of the study area, existing residential and commercial densities, and the City of Kerman draft 2040 General Plan Circulation Element in the vicinity of the Project. The Fresno COG Models for the Project Select Zone are contained in Appendix C.

Near Term plus Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Near Term plus Project Traffic Conditions. The Near Term plus Project traffic volumes were obtained by adding the Near Term related trips to the Existing plus Project traffic volumes.

Cumulative Year 2040 No Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Cumulative Year 2040 No Project Traffic Conditions. The Cumulative Year 2040 No Project traffic volumes were obtained by subtracting the Project Only Trips from the Cumulative Year 2040 plus Project Traffic Conditions scenario.

Cumulative Year 2040 plus Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Cumulative Year 2040 plus Project Traffic Conditions. The Cumulative Year 2040 plus Project traffic volumes were obtained from the Fresno COG traffic model runs (Base Year 2019 and Cumulative Year 2035) and existing traffic counts. Under this scenario, the increment method, as recommended by the Model Steering Committee, and an average annual growth rate of 1.99 percent were utilized to determine the Cumulative Year 2040 plus Project traffic volumes for all streets besides Whitesbridge Road. On Whitesbridge Road, JLB utilized an average annual growth rate of 3.27 percent. Since Fresno COG did not have a traffic model for the Cumulative Year 2040 at the time of the preparation of this TIA, JLB utilized the average annual growth rates to expand the increment volumes for five (5) years. The average annual growth rate of 1.99 percent was based on a review of the Base Year 2019 and Cumulative Year 2035 Fresno COG models. The average annual growth rate of 3.27 used for Whitesbridge Road was calculated using Caltrans historical count data for State Route 180 (Whitesbridge Road) between State Route 145 (Madera Avenue) and Goldenrod Avenue. The Fresno COG models are contained in Appendix C.

Level of Service Analysis Methodology

Level of Service (LOS) is a qualitative index of the performance of an element of the transportation system. LOS is measured on a rating scale running from "A" to "F", with "A" indicating no congestion of any kind and "F" indicating unacceptable congestion and delays. LOS in this study describes the operating conditions for signalized and unsignalized intersections.

The *Highway Capacity Manual* (HCM) 6th Edition is the standard reference published by the Transportation Research Board and contains the specific criteria and methods to be used in assessing LOS. U-turn movements were analyzed using HCM 2000 methodologies and would yield more accurate results for the reason that HCM 6th Edition methodologies do not allow the analysis of U-turns. Synchro software was used to define LOS in this study. Details regarding these calculations are included in Appendix D.

Criteria of Significance

The City of Kerman draft 2040 General Plan Update has established LOS C as the acceptable level of traffic congestion on its major streets controlled and operated by the City of Kerman.

The County of Fresno has established LOS C as the acceptable level of traffic congestion on county roads and streets that fall entirely outside the Sphere of Influence (SOI) of a City. For those areas that fall within the SOI of a City, the LOS criteria of the City are the criteria of significance used in this report. LOS C is used to evaluate the potential significance of LOS impacts to Fresno County intersections and segments, which fall outside the City of Kerman SOI. In this case, all the study facilities fall within City of Kerman SOI or within the jurisdiction of Caltrans, therefore the City of Kerman or Caltrans LOS is utilized, as appropriate.

Caltrans endeavors to maintain a target LOS at the transition between C and D on State highway facilities consistent with the *Caltrans Guide for the Preparation of Traffic Impact Studies* dated December 2002. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. In this TIA, the intersections of Vineland Avenue at Whitesbridge Road and Goldenrod Avenue at Whitesbridge Road fall within Caltrans Jurisdiction.

Operational Analysis Assumptions and Defaults

The following operational analysis values, assumptions and defaults were used in this study to ensure a consistent analysis of LOS among the various scenarios.

- Yellow time consistent with the California Manual of Uniform Traffic Control Devices (CA MUTCD) based on approach speeds
- Yellow time of 3.2 seconds for left-turn phases
- All-red clearance intervals of 1.0 second for all phases
- Walk intervals of 7.0 seconds
- Flashing Don't Walk based on 3.5 feet/second walking speed with yellow plus all-red clearance subtracted and 2.0 seconds added
- All new or modified signals utilize protective left-turn phasing
- A 3 percent heavy vehicle factor
- The number of observed pedestrians at existing intersections was utilized under all study scenarios
- An average of 3 pedestrian calls per hour at signalized intersections
- At existing intersections, the observed approach Peak Hour Factor (PHF) is utilized in the Existing, Existing plus Project, and Near Term plus Project scenarios
- A PHF of 0.92, or the existing PHF if higher, is utilized for the Cumulative Year 2040 scenarios

Existing Traffic Conditions

Roadway Network

The Project site and surrounding study area are illustrated in Figure 1. Important roadways serving the Project are discussed below.

Whitesbridge Road (State Route 180) is an existing east-west four-lane divided roadway in the vicinity of the proposed Project site. In this area, Whitesbridge Road is a two-lane undivided conventional highway west of Siskiyou Avenue, a two- to four-lane arterial divided predominately by a two-way left-turn lane between Siskiyou Avenue and Goldenrod Avenue, and a three-lane undivided conventional highway east of Goldenrod Avenue through the City of Kerman SOI. The City of Kerman draft 2040 General Plan Update Circulation Element designates Whitesbridge Road as an expressway within the City of Kerman.

San Joaquin Avenue is an existing east-west two-lane undivided local street in the vicinity of the proposed Project site. In this area, San Joaquin Avenue exists as a two-lane undivided local street through the City of Kerman SOI. The City of Kerman draft 2040 General Plan Update Circulation Element designates San Joaquin Avenue as a local street.

Stanislaus Avenue is an existing east-west two-lane undivided local street adjacent to the proposed Project site. In this area, Stanislaus Avenue exists as a two-lane undivided local street west of 1st Street, a two-lane undivided collector between 1st Street and Vineland Avenue, and a two-lane undivided local street east of Goldenrod Avenue through the City of Kerman SOI. The City of Kerman Circulation Element designates Stanislaus Avenue as a collector between 1st Street and Vineland Avenue. However, other segments of Stanislaus Avenue are designated as a local street.

Vineland Avenue is an existing north-south two-lane collector divided by a two-way left-turn lane in the vicinity to the proposed Project site. In this area, Vineland Avenue exists as a two-lane undivided local street between Belmont Avenue and Whitesbridge Road, a two-lane local collector divided by a two-way left-turn lane between Whitesbridge Road and A Street, and a two-lane undivided local street between A Street and Jensen Avenue. The City of Kerman draft 2040 General Plan Update Circulation Element designates Vineland Avenue as an arterial between Whitesbridge Road and Church Avenue.

16th Street is an existing north-south two-lane undivided local street in the vicinity of the proposed Project site. In this area, 16th Street exists as a local street between Stanislaus Avenue and A Street. The City of Kerman draft 2040 General Plan Update Circulation Element designates 16th Street as a local street.

Goldenrod Avenue is an existing north-south two to four-lane divided local street in the vicinity of the proposed Project site. In this area, Goldenrod Avenue exists as a two-lane undivided local street between Belmont Avenue and Whitesbridge Road, a four-lane divided arterial between Whitesbridge Road and Stanislaus Avenue, a two-lane divided arterial between Stanislaus Avenue and California Avenue, and a two-lane undivided arterial between California Avenue and Church Avenue. The City of Kerman draft 2040 General Plan Update Circulation Element designates Goldenrod Avenue as an arterial between Whitesbridge Avenue and Church Avenue.

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Existing Traffic Conditions scenario. These warrants are found in Appendix J. The effects of right-turning traffic from the minor approach onto the major approach were taken into account using engineering judgement pursuant to the CA MUTCD guidelines for the preparation of traffic signal warrants. Under this scenario, none of the unsignalized study intersections satisfy the peak hour signal warrant during either peak period.

Results of Existing Level of Service Analysis

Figure 2 illustrates the Existing Traffic Conditions turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Existing Traffic Conditions scenario are provided in Appendix E. Table I presents a summary of the Existing peak hour LOS at the study intersections.

At present, all study intersections operate at an acceptable LOS during both peak periods.

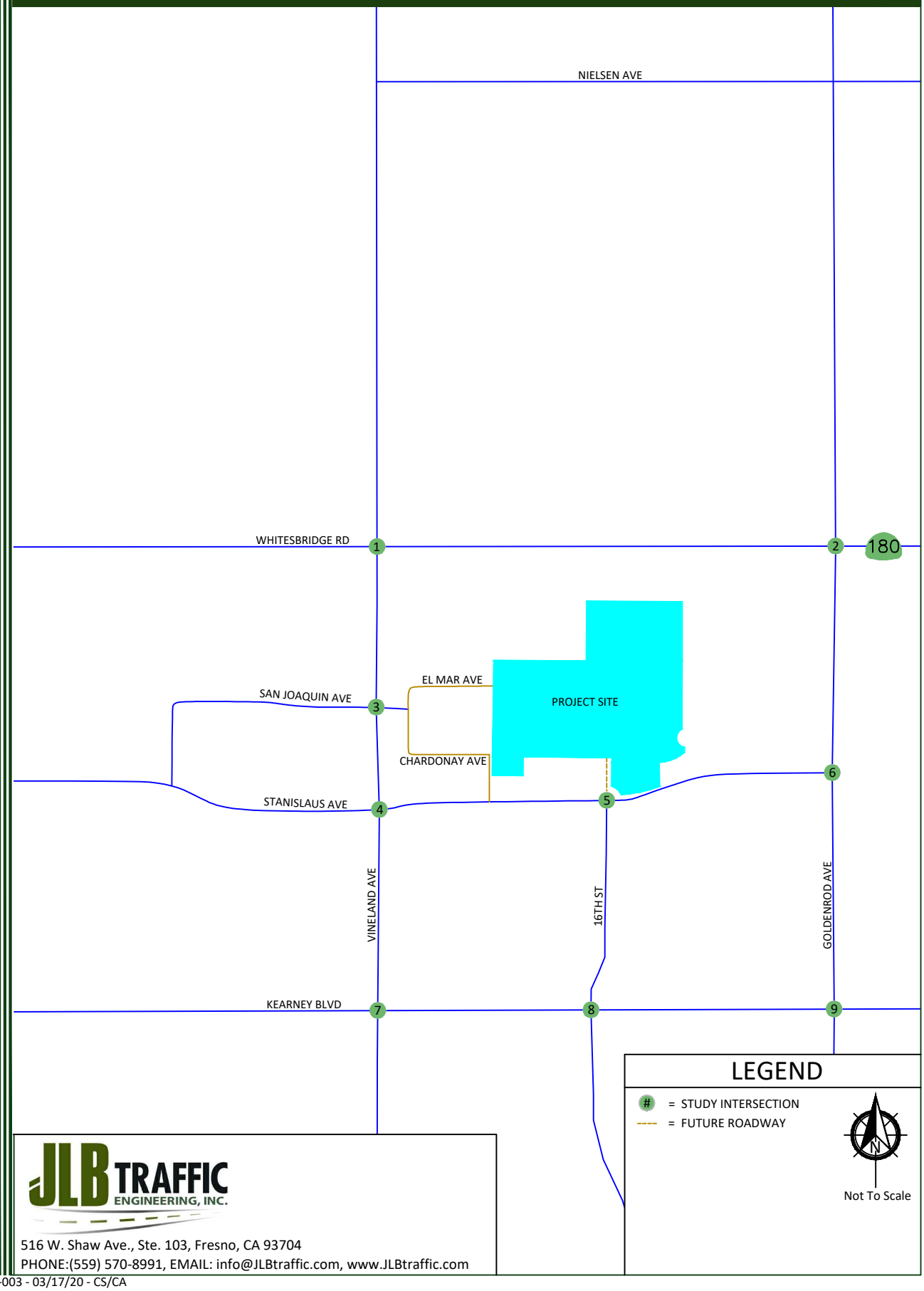
Table I: Existing Intersection LOS Results

ID	*Intersection*	*Intersection Control*	*AM (7 - 9) Peak Hour*		*PM (4 - 6) Peak Hour*	
			Average Delay (sec/veh)	*LOS*	*Average Delay (sec/veh)*	*LOS*
1	Vineland Avenue / Whitesbridge Road	Signalized	13.5	B	16.5	B
2	Goldenrod Avenue / Whitesbridge Road	Signalized	17.6	B	24.2	C
3	Vineland Avenue / San Joaquin Avenue	Two-Way Stop	10.7	B	10.4	B
4	Vineland Avenue / Stanislaus Avenue	All-Way Stop	10.2	B	8.4	A
5	16th Street / Stanislaus Avenue	Roundabout	4.0	A	3.2	A
6	Goldenrod Avenue / Stanislaus Avenue	All-Way Stop	10.9	B	9.5	A
7	Vineland Avenue / Kearney Boulevard	All-Way Stop	18.2	C	11.0	B
8	16th Street /Kearney Boulevard	All-Way Stop	11.9	B	9.0	A
9	Goldenrod Avenue / Kearney Boulevard	All-Way Stop	18.4	C	10.6	B

Note: LOS = Level of Service based on average delay on signalized intersections, roundabouts and All-Way STOP Controls
LOS for two-way and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Tentative Tract 6302 - City of Kerman
Vicinity Map

Figure 1



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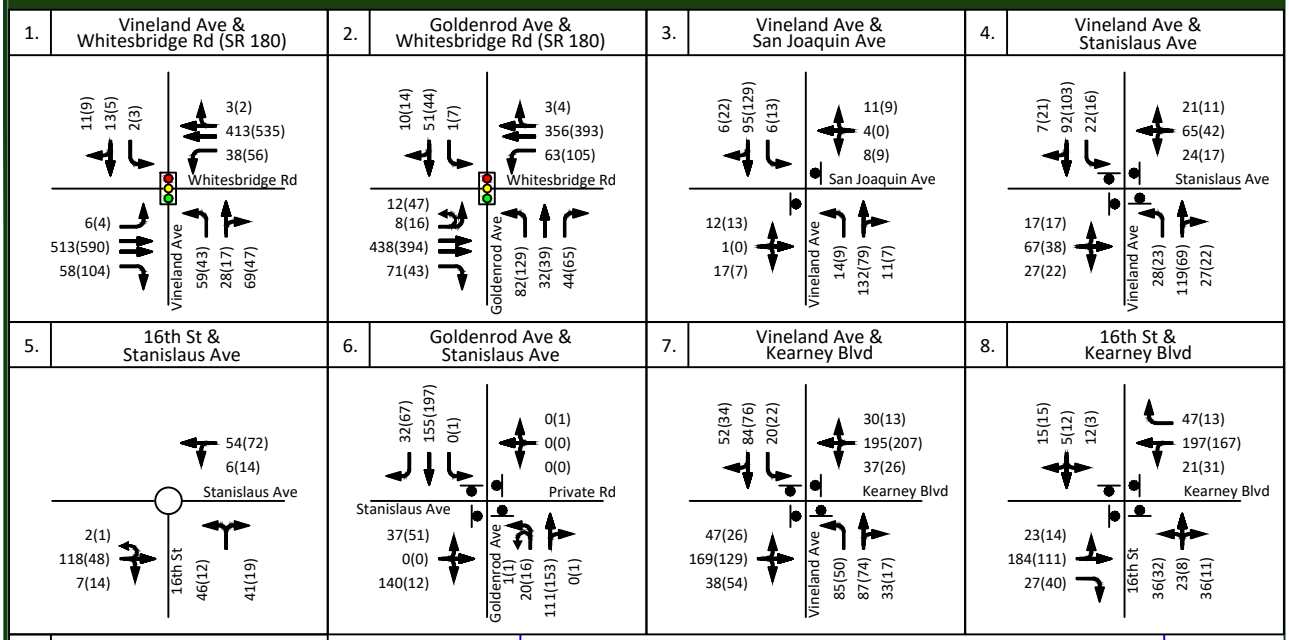
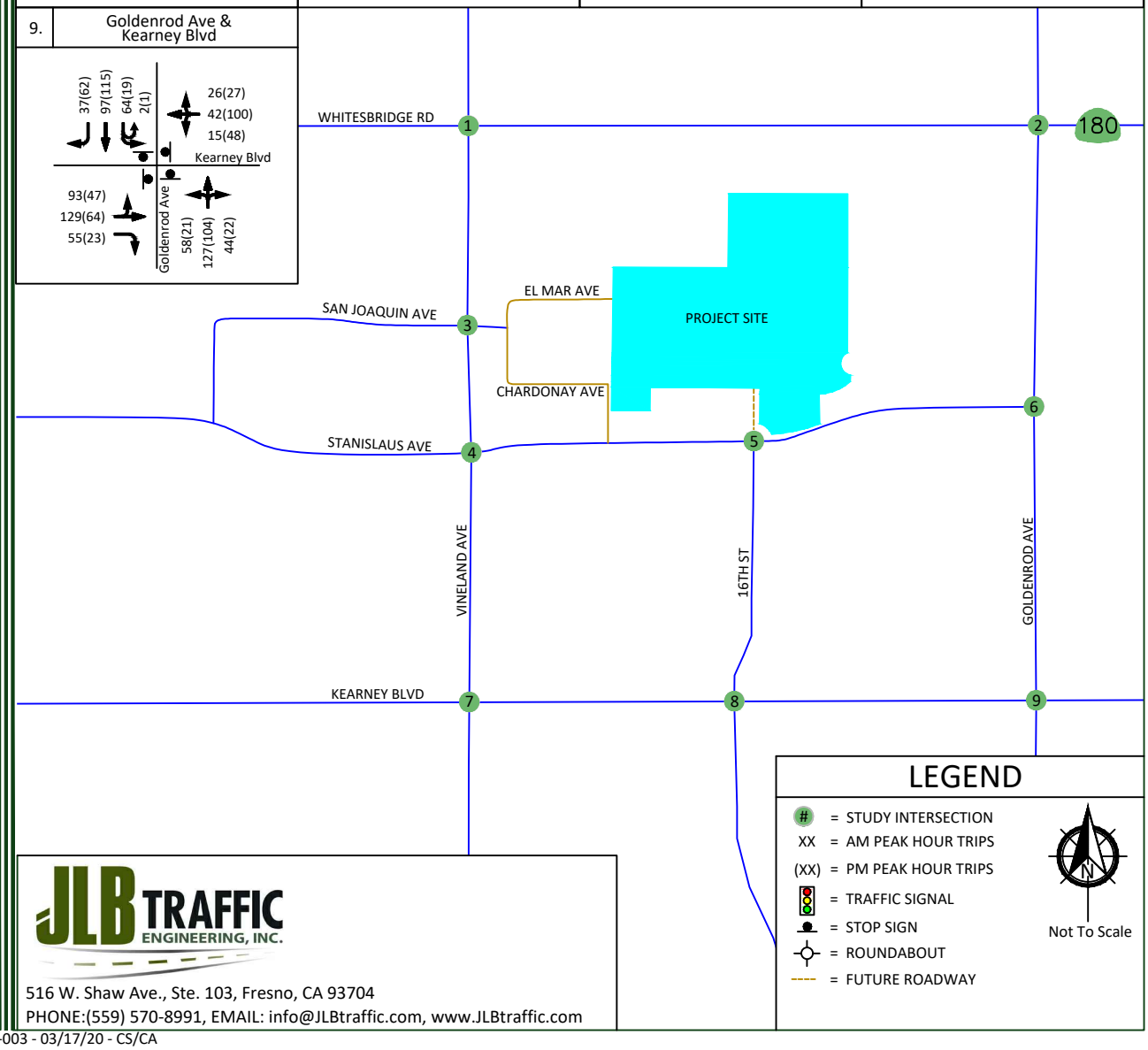
Tentative Tract 6302 - City of Kerman
Existing - Traffic Volumes, Geometrics and Controls

Figure 2





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Existing plus Project Traffic Conditions

Project Description

The Project proposes to construct up to 104 single-family residential units on 20.38 net acres. Based on information provided to JLB, 1.54 acres of the Project site are consistent with the City of Kerman draft 2040 General Plan Update ,while the remaining 18.84 acres will undergo a General Plan Amendment through the City of Kerman to modify the land use from Regional Commercial to Medium Density Residential (5.0 - 12.0 dwelling units per acre). Figure 3 illustrates the latest Project Site Plan.

Project Access

Based on latest Project Site Plan, access to and from the Project site will be from two (2) access points - one existing and one new. The existing access point is through a residential subdivision via the east leg of the intersection of Vineland Avenue and San Joaquin Avenue. This intersection is full access and is controlled by a two-way stop. The new access point will be built out as the north leg of the intersection of 16th Street and Stanislaus Avenue, a full-access roundabout. JLB analyzed the location of the proposed access points relative to the existing local roads and driveways in the Project's vicinity. A review of the Project's local driveways and streets to be constructed indicates that they are located at points that minimize traffic operational impacts to the existing roadway network.

Trip Generation

The trip generation rates for the proposed Project and the Existing General Plan land use designations were obtained from the 10th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). Table II presents the trip generation for the proposed Project. At buildout, the proposed Project is estimated to generate a maximum of 982 daily trips, 77 AM peak hour trips and 103 PM peak hour trips. It is important to note that the proposed Project is consistent with the City's draft 2040 General Plan Update. Table III presents the trip generation of that which could otherwise be developed for the Existing Land Use with trip generation rates for a single-family detached housing and shopping center. The Existing General Plan use is anticipated to generate a maximum of 7,915 daily trips, 206 AM peak hours trips and 800 PM peak hour trips. Compared to the Existing General Plan land use, the proposed Project is estimated to yield fewer traffic generation by 6,933 daily trips, 129 AM peak hour and 697 PM peak hour trips. The difference is summarized in Table IV.

Table II: Project Trip Generation

Land Use (ITE Code)	*Size*	*Unit*	*Daily*		*AM Peak Hour*						*PM Peak Hour*					
			Rate	*Total*	*Trip Rate*	*In*	*Out*	*In*	*Out*	*Total*	*Trip Rate*	*In*	*Out*	*In*	*Out*	*Total*
						%						*%*				
Single-Family Detached Housing (210)	104	d.u.	9.44	982	0.74	25	75	19	58	77	0.99	63	37	65	38	103
Total Project Trips				**982**				**19**	**58**	**77**				**65**	**38**	**103**

Note: d.u. = Dwelling Units

Table III: Existing General Plan Trip Generation

Land Use (ITE Code)	Size	Unit	Daily		AM Peak Hour						PM Peak Hour					
			Rate	Total	Trip Rate	In %	Out %	In	Out	Total	Trip Rate	In %	Out %	In	Out	Total
Single-Family Detached Housing (210)	18	d.u.	9.44	170	0.74	25	75	3	10	13	0.99	63	37	11	7	18
Shopping Center (820)	205.167	k.s.f.	37.75	7,745	0.94	62	38	120	73	193	3.81	48	52	375	407	782
Total Project Trips				**7,915**				**123**	**83**	**206**				**386**	**414**	**800**

Note: d.u. = Dwelling Units
k.s.f. = Thousand Square Feet

Table IV: Difference in Trip Generation

	Daily	AM (7-9) Peak Hour			PM (4-6) Peak Hour		
	Total	In	Out	Total	In	Out	Total
Project	982	19	58	77	65	38	103
Existing General Plan	7,915	123	83	206	386	414	800
Difference in Trip Generation	**-6,933**	**-104**	**-25**	**-129**	**-321**	**-376**	**-697**

Trip Distribution

The trip distribution assumptions were developed based on existing travel patterns, the Fresno COG Project Select Zone, the existing roadway network, engineering judgment, data provided by the developer, knowledge of the study area, existing residential and commercial densities, and the City of Kerman 2007 General Plan Update and the City of Kerman draft 2040 General Plan Circulation Element in the vicinity of the Project. Figure 4 illustrates the Project Only Trips to the study intersections.

Transit

The Fresno County Rural Transit Agency (FCRTA) is the only public transit operator in the City of Kerman. The Westside route runs between the City of Firebaugh and the City of Fresno making two stops in the City of Kerman. The closest bus stop to the Project is located on the west side of the south leg of the intersection of Goldenrod Avenue and Whitesbridge Road (SR 180). This route runs twice daily from Firebaugh to Fresno, stopping in the City of Kerman a total of eight (8) times a day. Retention of the existing and expansion of future transit routes is dependent on transit ridership demand and available funding.

Bikeways

Currently, bike lanes exist in the vicinity of the proposed Project site along Vineland Avenue and Goldenrod Avenue as Class II Bikeways and Kearney Boulevard as a Class III Bikeway. The proposed City of Kerman Active Transportation Plan recommends that bikeways be implemented on: 1) Whitesbridge Road as a Class III Bikeway between 1st Street and Vineland Avenue, 2) Whitesbridge Road as a Class II Bikeway between Vineland Avenue and Goldenrod Avenue and 3) Stanislaus Avenue as a Class III Bikeway between 1st Street and Goldenrod Avenue. Therefore, it recommended that the Project implement a Class III bikeway along its frontage to Stanislaus Avenue.

Vehicles Miles Traveled Evaluation

Senate Bill (SB) 743 (Steinberg 2013) was approved by then Governor Brown on September 27, 2013. SB 743 created a path to revise the definition of transportation impacts according to CEQA. The revised CEQA Guidelines requiring VMT analysis became effective December 28, 2018; however, agencies have until July 1, 2020 to finalize their local guidelines on VMT analysis. Therefore, as agencies finalize their VMT analysis protocol, CEQA transportation impacts are to be determined using a qualitative VMT Analysis. The intent of SB 743 is to align CEQA transportation study methodology with and promote the statewide goals and policies of reducing vehicle miles traveled (VMT) and greenhouse gases (GHG). Three objectives of SB 743 related to development are to reduce GHG, diversify land uses, and focus on creating a multimodal environment. It is hoped that this will spur infill development.

The Technical Advisory on Evaluating Transportation Impacts in CEQA published by the Governor's Office of Planning and Research (OPR) dated December 2018 acknowledges that lead agencies should set criteria and thresholds for VMT and transportation impacts. However, the Technical Advisory provides guidance to residential, office and retail uses, citing these as the most common land uses. Beyond these three land uses, there is no guidance provided for any other land use type. The Technical Advisory also notes that land uses may have a less than significant impact if located within low VMT areas of a region and suggests that screening maps be used for this determination.

VMT is simply the product of a number of trips and those trips' lengths. The first step in a VMT analysis is to establish the baseline average VMT, which requires the definition of a region. The Technical Advisory states that existing VMT may be measured at the regional or city level. On the contrary, the Technical Advisory also notes that VMT analyses should not be truncated due to "jurisdictional or other boundaries."

Currently, Fresno COG and its member agencies, which include the City of Kerman, have begun the process to develop recommended criteria and thresholds that balance the direction from OPR and the goals of SB 743 with the vision of Kerman and economic development, access to goods and services, and overall quality of life. While these regional recommended criteria are not anticipated to be completed until mid-2020, Fresno COG was able to provide estimated VMT data for the proposed Project. Based on the Fresno COG model run, the Project is anticipated to generate an average of 10.14 VMT per trip.

Safe Routes to School

Kindergarten through 12th grade students from the Project will be served by the Kerman Unified School District. The Kerman Unified School District provides transportation for students who live in excess of an established radius zone. The zone is a radius of 1.00 mile for grades Kindergarten through 6th, 1.5 miles for grades 7th and 8th, and 2.00 miles for grades 9th through 12th.

Based on the attendance area boundaries at the time of the preparation of this TIA, elementary school students would attend Goldenrod Elementary located on the northwest corner of Goldenrod Avenue at Kearney Boulevard. Goldenrod Elementary is located 0.24 and 0.43 from the nearest and farthest point of the Project. Therefore, it is anticipated that the majority of elementary school students will need to walk, bike or be driven to school. The most direct path from the Project to Goldenrod Elementary School campus would begin from the southernmost access of the Project site - the access point at 16th Street. Students would head south along the east side of 16th Street toward Stanislaus Avenue. Once on Stanislaus Avenue, students would proceed east along the north side of Stanislaus Avenue toward Goldenrod Avenue. The intersection of Stanislaus Avenue and Goldenrod Avenue is controlled by all-way stops and includes crosswalks across the west and south legs. Students would then proceed south across the west leg of Stanislaus Avenue along the west side of Goldenrod Avenue. Students would proceed south along the west side of Goldenrod Avenue to reach the nearest campus entrance.

Based on the attendance area boundaries at the time of the preparation of this TIA, middle school students would attend Kerman Middle School located on the northwest corner of E Street at 1st Street. Kerman Middle School is located 0.98 and 1.23 from the nearest and farthest point of the Project. Therefore, it is anticipated that the majority of middle school students will need to walk, bike or be driven to school. The most direct path from the Project to Kerman Middle School campus would begin from the southernmost access of the Project site - the access point at the intersection of 16th Street and Stanislaus Avenue. Students along Stanislaus would proceed west toward the intersection of Vineland Avenue at Stanislaus Avenue where they would cross to the south west corner. This intersection is controlled by an all-way stop with marked crosswalks. Students would proceed south along the west side of Vineland Avenue toward Kearney Boulevard. Once on Kearney Boulevard, students would proceed west along the north side of Kearney Boulevard toward Madera Avenue. The intersection of Kearney Boulevard and Madera Avenue is signalized with marked crosswalks across all legs. Students would then use the traffic signals to cross Madera Avenue and continue west along the north side of Kearney Boulevard until reaching the intersection Kearney Boulevard and 1st Street. At the intersection of 1st Street and Kearney Boulevard, students would cross to arrive at the southwest corner of the intersection. This intersection is controlled by all-way stops with marked high visibility crosswalks across all legs. Students would proceed south along the west side of 1st Street until reaching the nearest campus entrance.

Based on the attendance area boundaries at the time of the preparation of this TIA, high school students would attend Kerman High School located on the northwest corner of 1st Street and Middleton Avenue. Kerman High School is located 0.90 and 1.09 from the nearest and farthest point of the Project. Therefore, it is anticipated that the majority of high school students will need to walk, bike or be driven to school. The most direct path from the Project to Kerman High School campus would begin from the southernmost access of the Project site - the access point at the intersection of 16th Street and Stanislaus Avenue. Students along Stanislaus would proceed west toward the intersection of Vineland Avenue at Stanislaus Avenue where they would cross to the northwest corner. This intersection is controlled by an all-way stop with marked crosswalks. Students would proceed west along the north side of Stanislaus Avenue until reaching Madera Avenue where they would cross to the northwest corner. The intersection of Madera Avenue and Stanislaus is controlled by a traffic signal with marked crosswalks across all legs. Student would continue west along the north side of Stanislaus Avenue until reaching 1st Street where they would cross to northwest corner of the intersection. The intersection of 1st Street at Stanislaus is a three-legged intersection controlled by a one-way stop with marked high visibility crosswalks across the east and north legs. Students would arrive at Kerman High School upon crossing to the west of the intersection of 1st Street at Stanislaus Avenue.

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Existing plus Project Traffic Conditions scenario. These warrants are found in Appendix J. The effects of right-turning traffic from the minor approach onto the major approach were taken into account using engineering judgement pursuant to the CA MUTCD guidelines for the preparation of traffic signal warrants. Under this scenario, none of the unsignalized intersections are projected to satisfy the peak hour signal warrant during either peak period.

Results of Existing plus Project Level of Service Analysis

The Existing plus Project Traffic Conditions scenario assumes that the existing roadway geometrics and traffic controls will remain in place. Figure 5 illustrates the Existing plus Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Existing plus Project Traffic Conditions scenario are provided in Appendix F. Table V presents a summary of the Existing plus Project peak hour LOS at the study intersections.

Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peak periods.

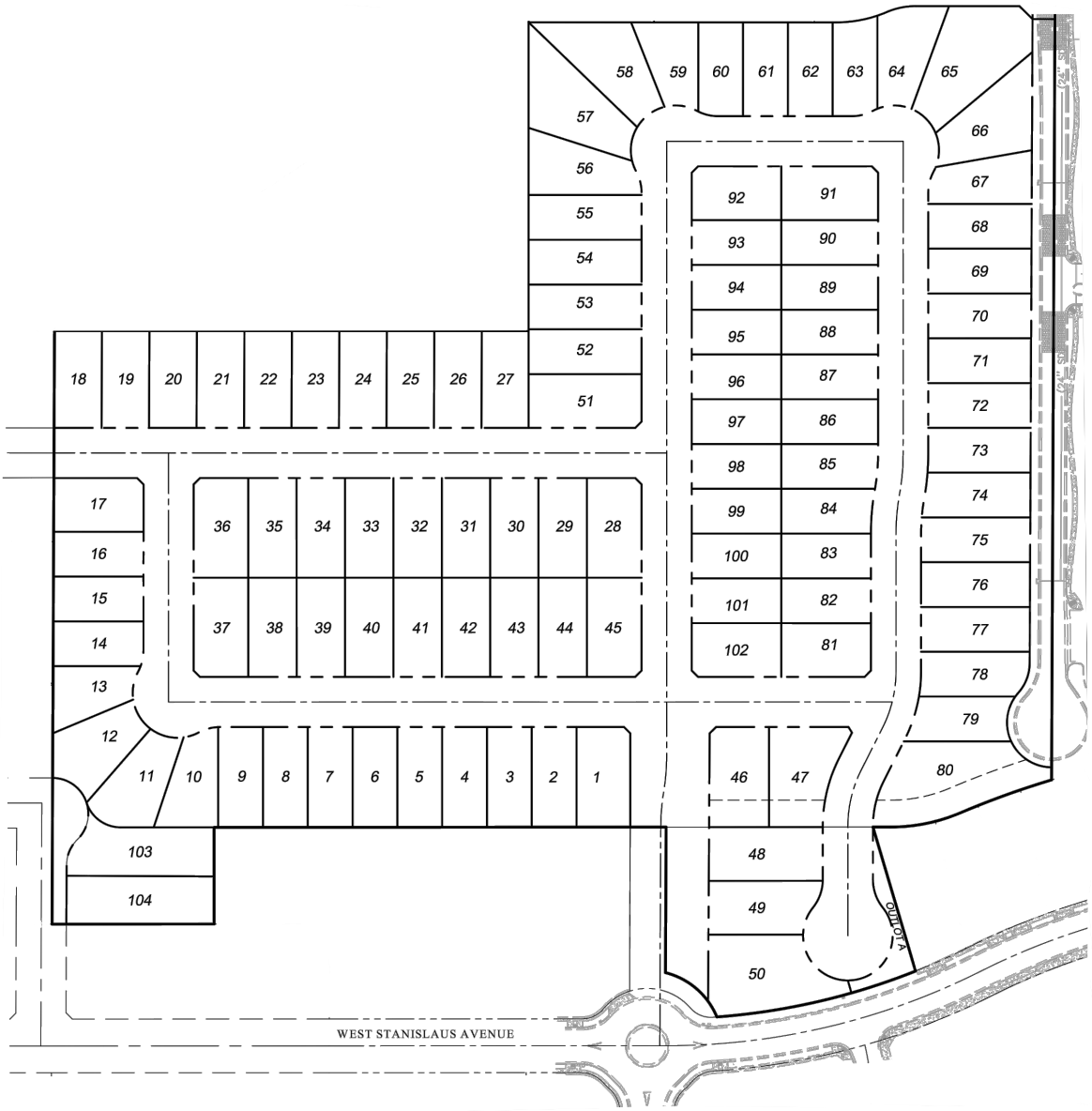
Table V: Existing plus Project Intersection LOS Results

ID	*Intersection*	*Intersection Control*	*AM (7 - 9) Peak Hour*		*PM (4 - 6) Peak Hour*	
			Average Delay (sec/veh)	*LOS*	*Average Delay (sec/veh)*	*LOS*
1	Vineland Avenue / Whitesbridge Road	Signalized	13.7	B	16.9	B
2	Goldenrod Avenue / Whitesbridge Road	Signalized	20.1	C	25.5	C
3	Vineland Avenue / San Joaquin Avenue	Two-Way Stop	10.9	B	10.6	B
4	Vineland Avenue / Stanislaus Avenue	All-Way Stop	10.5	B	8.5	A
5	16th Street / Stanislaus Avenue	Roundabout	4.2	A	3.5	A
6	Goldenrod Avenue / Stanislaus Avenue	All-Way Stop	11.9	B	9.7	A
7	Vineland Avenue / Kearney Boulevard	All-Way Stop	18.8	C	11.3	B
8	16th Street /Kearney Boulevard	All-Way Stop	11.9	B	9.0	A
9	Goldenrod Avenue / Kearney Boulevard	All-Way Stop	18.8	C	10.8	B

Note: LOS = Level of Service based on average delay on signalized intersections, roundabouts and All-Way STOP Controls
LOS for two-way and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Tentative Tract 6302 - City of Kerman
Project Site Plan

Figure 3



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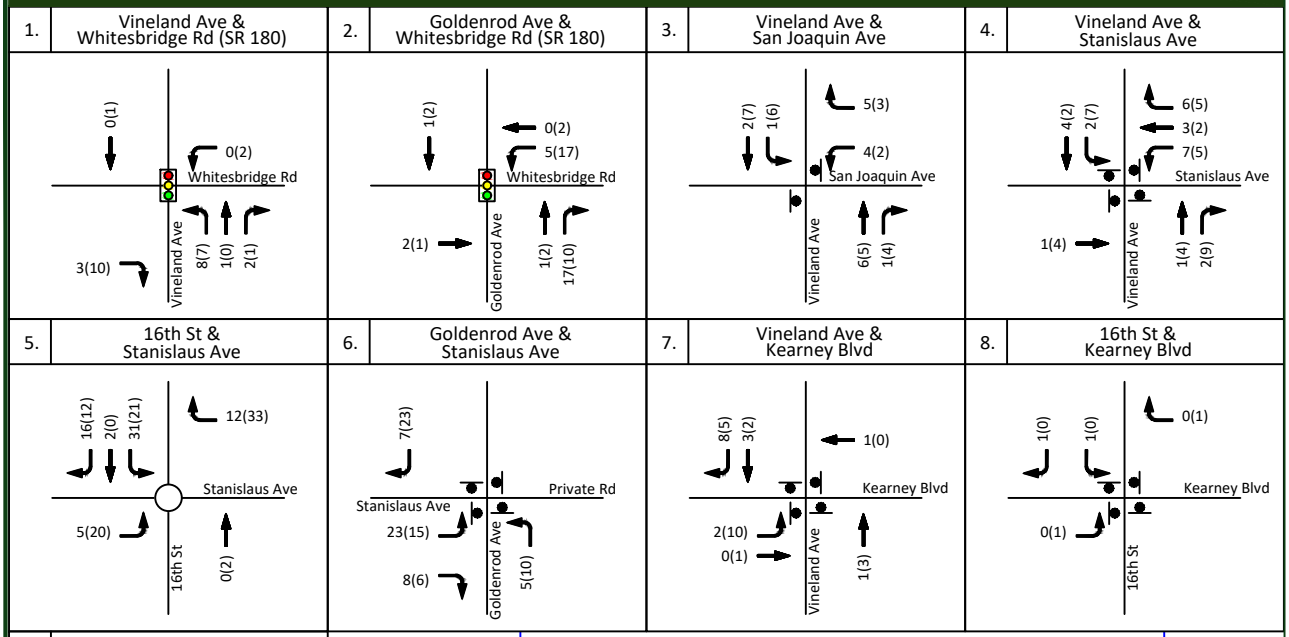
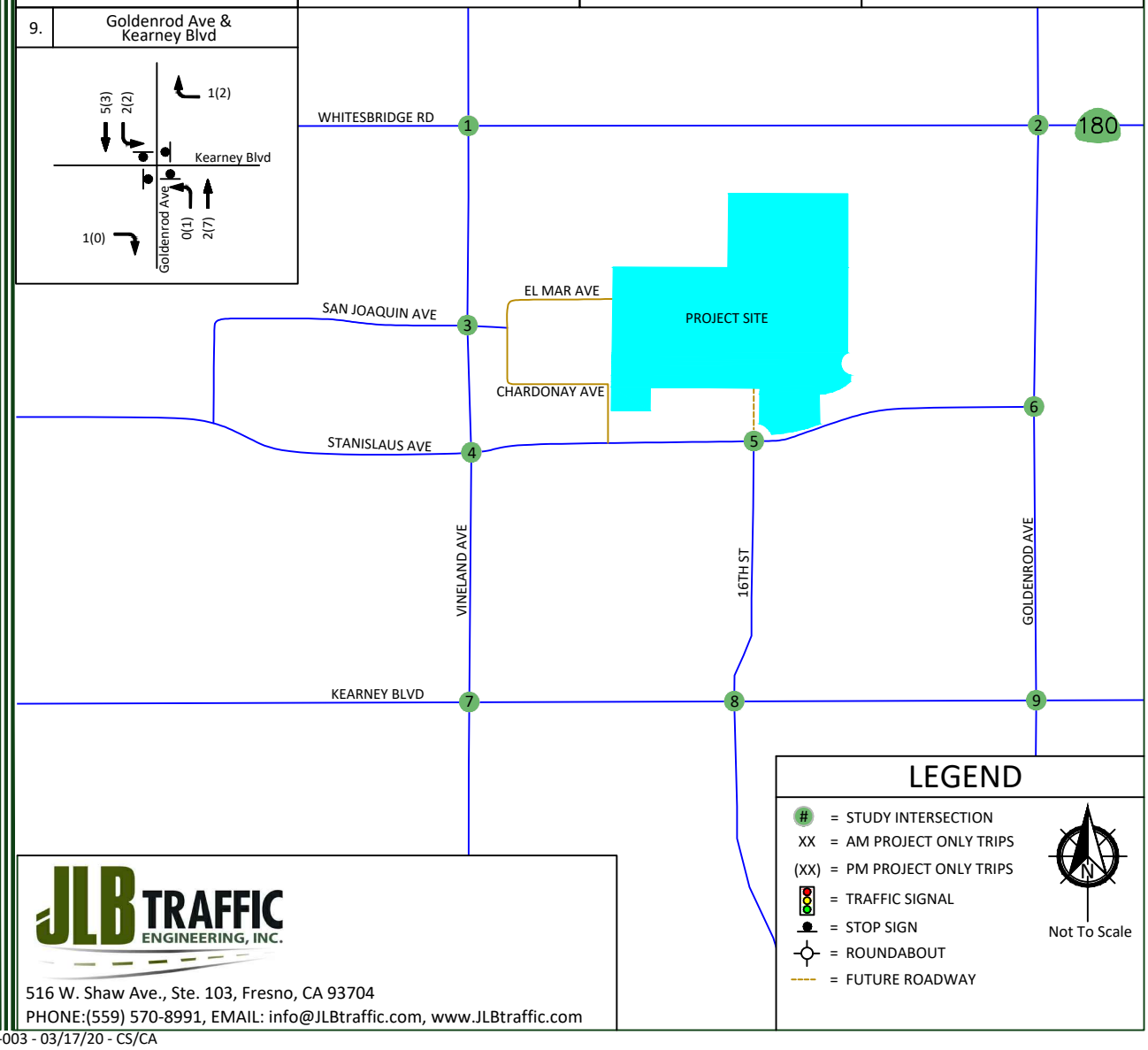
Not To Scale

Tentative Tract 6302 - City of Kerman
Project Only Trips

Figure 4





LEGEND

- # = STUDY INTERSECTION
- XX = AM PROJECT ONLY TRIPS
- (XX) = PM PROJECT ONLY TRIPS
- = TRAFFIC SIGNAL
- = STOP SIGN
- = ROUNDABOUT
- ---- = FUTURE ROADWAY

N

Not To Scale

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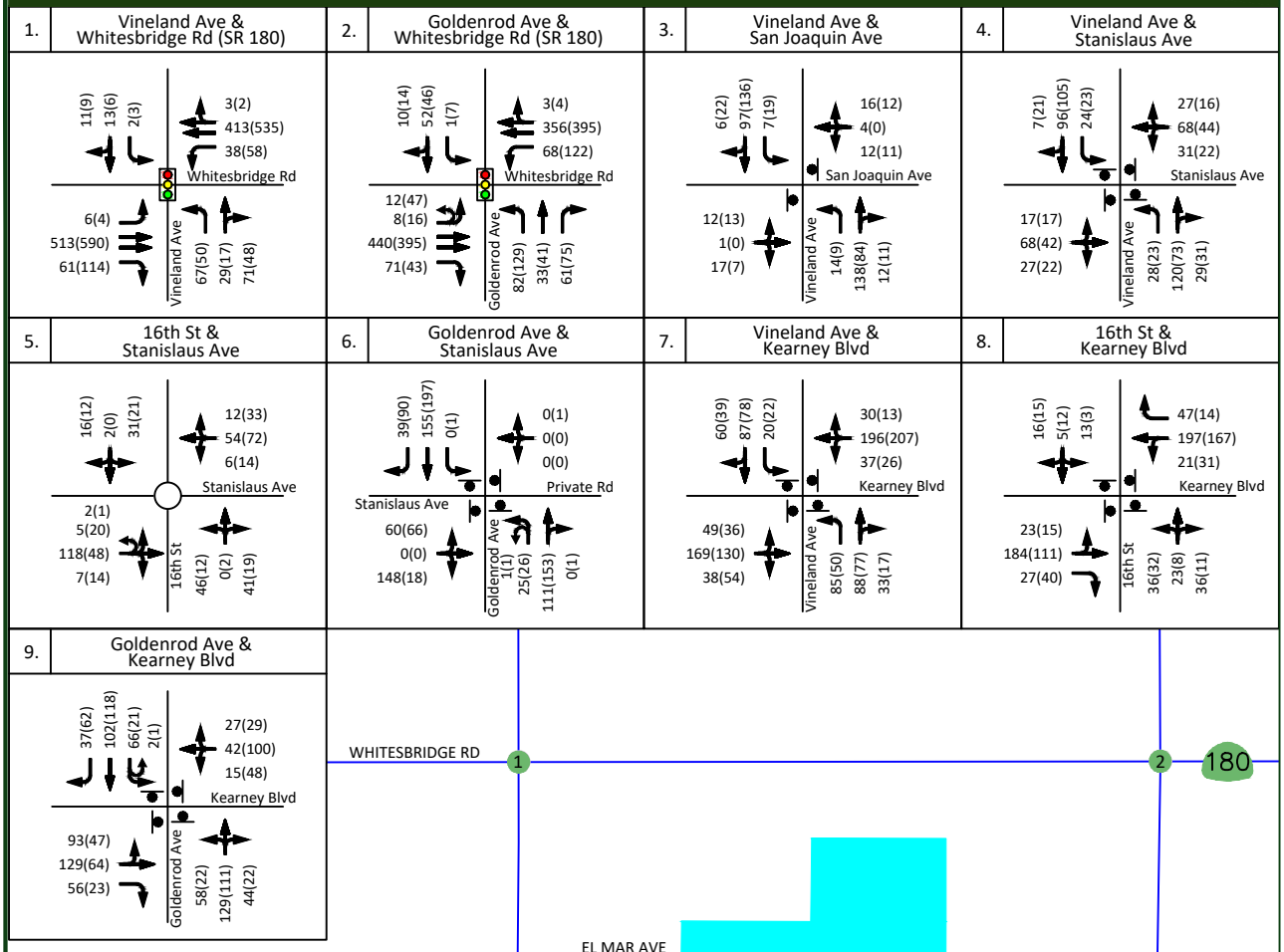
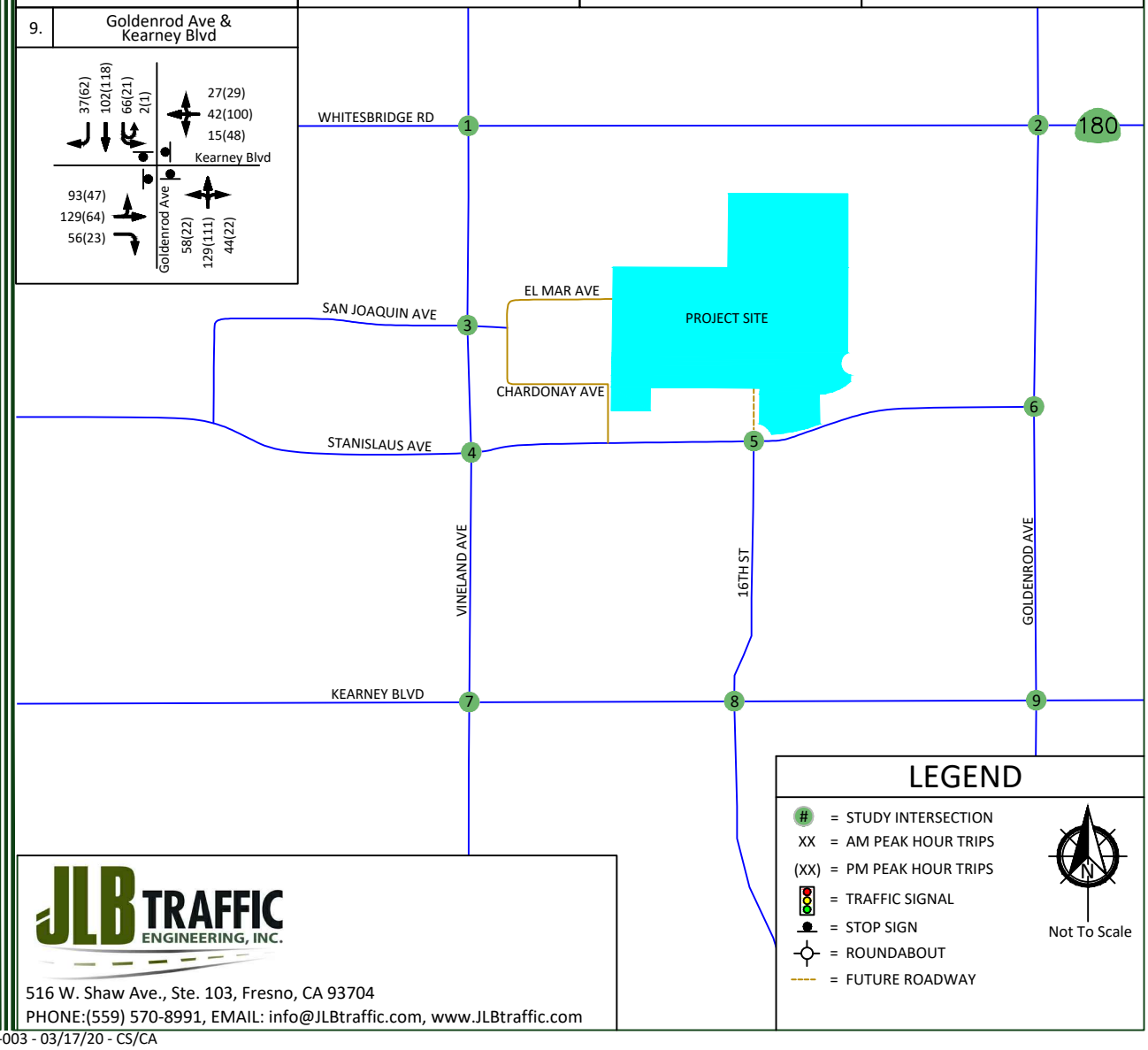
Tentative Tract 6302 - City of Kerman
Existing plus Project - Traffic Volumes, Geometrics and Controls

Figure 5





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Near Term plus Project Traffic Conditions

Description of Near Term Projects

Near Term Projects are approved and/or known projects that are either under construction, built but not fully occupied, are not built but have final site development review (SDR) approval, or for which the lead agency or responsible agencies have knowledge of. The City of Kerman, County of Fresno and Caltrans staff were consulted throughout the preparation of this TIA regarding near term projects that could potentially impact the study intersections. JLB staff conducted a reconnaissance of the surrounding area to confirm the near term projects. Subsequently, it was agreed that the projects listed in Table VI were approved, near approval, or in the pipeline within the proximity of the proposed Project.

The trip generation listed in Table VI is that which is anticipated to be added to the streets and highways by the near term projects between the time of the preparation of this report and five years from 2020. As shown in Table VI, the total trip generation for the Near Term Projects is 18,439 daily trips, 1,606 AM peak hour trips and 1,708 PM peak hour trips. Figure 6 illustrates the location of the approved, near approval, or pipeline projects and their combined trip assignment to the study intersections under the Near Term plus Project Traffic Conditions scenario.

Table VI: Near Term Projects' Trip Generation

Approved Project Location	*Near Term Project Name*	*Daily Trips*	*AM Peak Hour*	*PM Peak Hour*
A	TT 5291 & TT 5832[1]	208	16	22
B	TT 5480[1]	264	21	28
C	TT 6236[2]	6,868	452	564
D	TT 6293[1]	850	67	89
E	Apartments (SEC Siskiyou Ave / Whitesbridge Rd)[1]	447	28	34
F	KUSD Athletic Site[2]	1,897	563	365
G	Whitesbridge Commercial[1]	6,197	398	458
H	Grocery Outlet[1]	1,708	61	148
Total Near Term Project Trips		**18,439**	**1,606**	**1,708**

Note: 1 = Trip Generation prepared by JLB Traffic Engineering, Inc. based on readily available information
2 = Trip Generation based on JLB Traffic Engineering, Inc. Traffic Impact Analysis Report

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Near Term plus Project Traffic Conditions scenario. These warrants are found in Appendix J. The effects of right-turning traffic from the minor approach onto the major approach were taken into account using engineering judgement pursuant to the CA MUTCD guidelines for the preparation of traffic signal warrants. Under this scenario, none of the unsignalized intersections are projected to satisfy the peak hour signal warrant during either peak period.

Results of Near Term plus Project Level of Service Analysis

The Near Term plus Project Traffic Conditions scenario assumes that the existing roadway geometrics and traffic controls will remain in place. Figure 7 illustrates the Near Term plus Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Near Term plus Project Traffic Conditions scenario are provided in Appendix G. Table VII presents a summary of the Near term plus Project peak hour LOS at the study intersections.

Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peak periods.

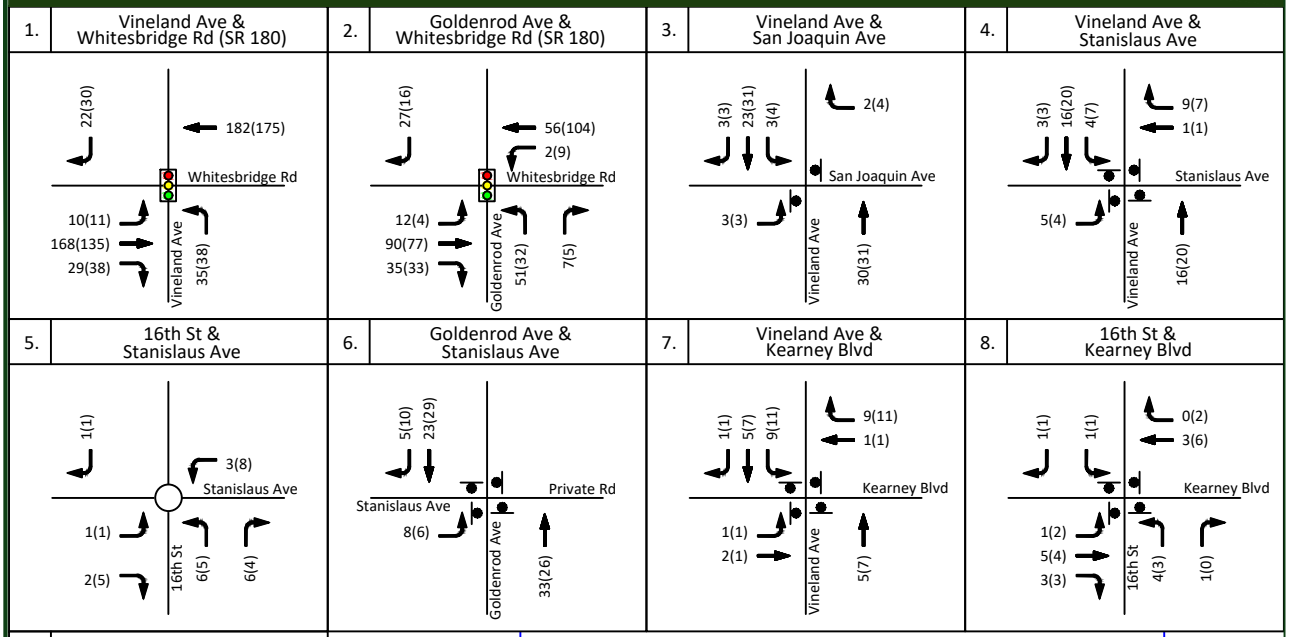
Table VII: Near Term plus Project Intersection LOS Results

ID	*Intersection*	*Intersection Control*	*AM (7 - 9) Peak Hour*		*PM (4 - 6) Peak Hour*	
			Average Delay (sec/veh)	*LOS*	*Average Delay (sec/veh)*	*LOS*
1	Vineland Avenue / Whitesbridge Road	Signalized	21.2	C	17.0	B
2	Goldenrod Avenue / Whitesbridge Road	Signalized	20.0	C	28.3	C
3	Vineland Avenue / San Joaquin Avenue	Two-Way Stop	11.4	B	11.5	B
4	Vineland Avenue / Stanislaus Avenue	All-Way Stop	11.2	B	8.8	A
5	16th Street / Stanislaus Avenue	Roundabout	4.3	A	3.6	A
6	Goldenrod Avenue / Stanislaus Avenue	All-Way Stop	13.2	B	10.3	B
7	Vineland Avenue / Kearney Boulevard	All-Way Stop	21.1	C	11.7	B
8	16th Street /Kearney Boulevard	All-Way Stop	12.1	B	9.1	A
9	Goldenrod Avenue / Kearney Boulevard	All-Way Stop	21.1	C	11.1	B

Note: LOS = Level of Service based on average delay on signalized intersections, roundabouts and All-Way STOP Controls
LOS for two-way and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Tentative Tract 6302 - City of Kerman
Near Term Projects' Trip Assignment

Figure 6



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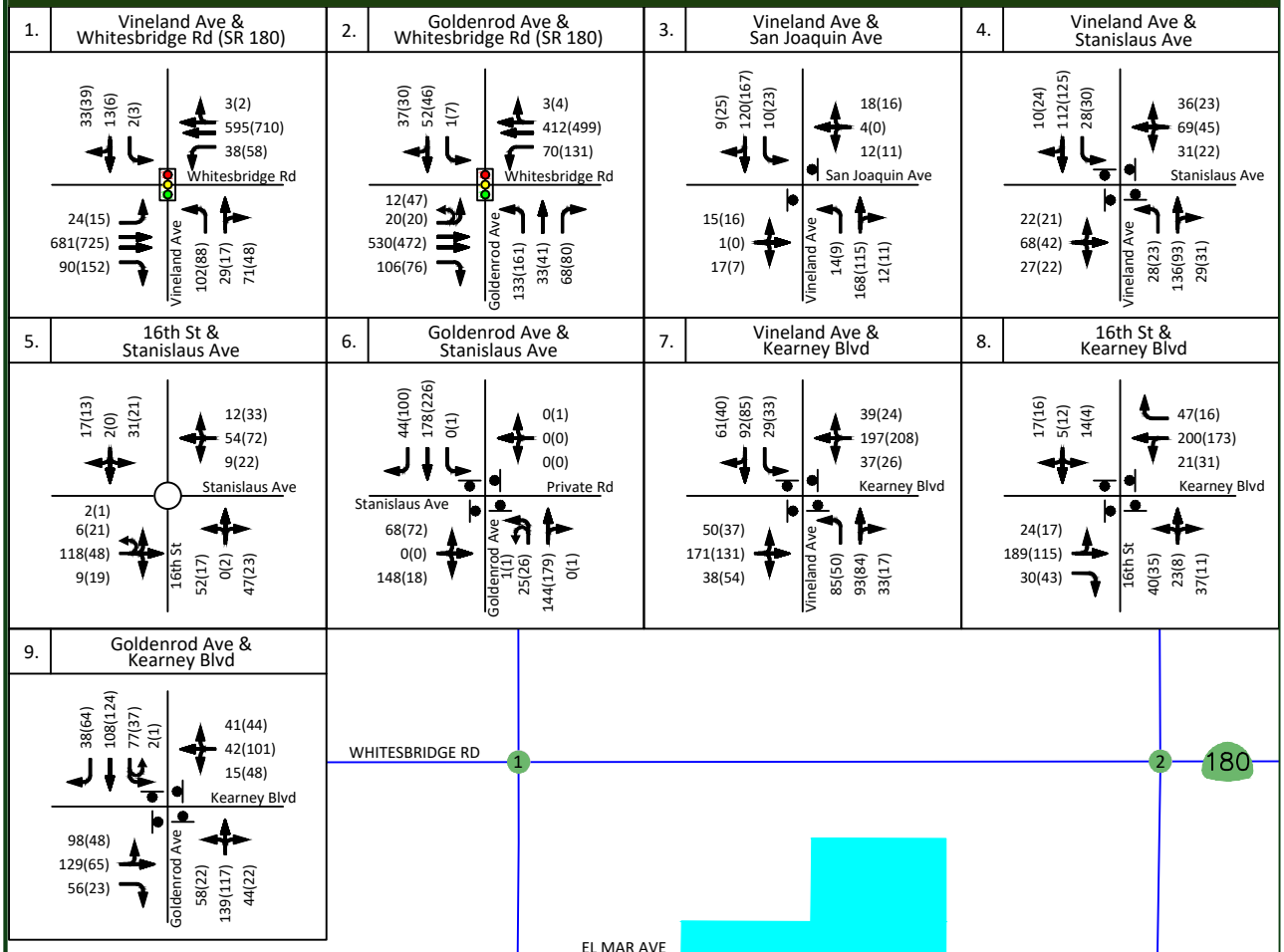
Tentative Tract 6302 - City of Kerman
Near Term plus Project - Traffic Volumes, Geometrics and Controls

Figure 7



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Cumulative Year 2040 No Project Traffic Conditions

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Cumulative Year 2040 No Project Traffic Conditions scenario. These warrants are found in Appendix J. The effects of right-turning traffic from the minor approach onto the major approach were taken into account using engineering judgement pursuant to the CA MUTCD guidelines for the preparation of traffic signal warrants. Under this scenario, the intersection of Goldenrod Avenue and Kearney Boulevard is projected to satisfy the peak hour signal warrant during both peak periods. Based on the signal warrant, the intersection operational analysis and engineering judgement, signalization of this intersection is recommended. However, implementation of a single-lane roundabout is also recommended.

Results of Cumulative Year 2040 No Project Level of Service Analysis

The Cumulative Year 2040 No Project Traffic Conditions scenario assumes that the existing roadway geometrics and traffic controls will remain in place. Figure 8 illustrates the Cumulative Year 2040 No Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Cumulative Year 2040 No Project Traffic Conditions scenario are provided in Appendix H. Table VIII presents a summary of the Cumulative Year 2040 No Project peak hour LOS at the study intersections.

Under this scenario, the intersection of Goldenrod Avenue and Kearney Boulevard is projected to exceed its LOS threshold during the AM peak period. To improve the LOS at this intersection, JLB considered two options for improvement. Option 1 consists of installing a traffic signal, while Option 2 consists of installing a roundabout. As can be seen from Table VIII, both options provide for an acceptable LOS at the intersection. Option 2 would provide for a more aesthetic intersection, but would require obtaining considerably more right-of-way and construction funds when compared to Option 1. Option 1 would be less costly, but would not be as eye-appealing when compared to Option 2. In this specific case, JLB recommends the implementation of Option 2 (roundabout) for the reason that it provides lower delay during the AM peak and reduced severity of future vehicular collisions. The recommended improvements for each option are described below.

- Goldenrod Avenue / Whitesbridge Road
  - Option 1: Signalization
    - Add an eastbound left-turn lane;
    - Modify the eastbound through-left lane to a through-right lane;
    - Remove the eastbound right-turn lane;
    - Add a westbound left-turn lane;
    - Modify the westbound left-through-right lane to a through-right lane;
    - Add a northbound left-turn lane;
    - Modify the northbound left-through-right lane to a through-right lane; and
    - Signalize the intersection with protective left-turn phasing in all directions.
  - Option 2: Roundabout
    - Install a single-lane roundabout; and
    - Modify the intersection to accommodate the change in lane geometrics.

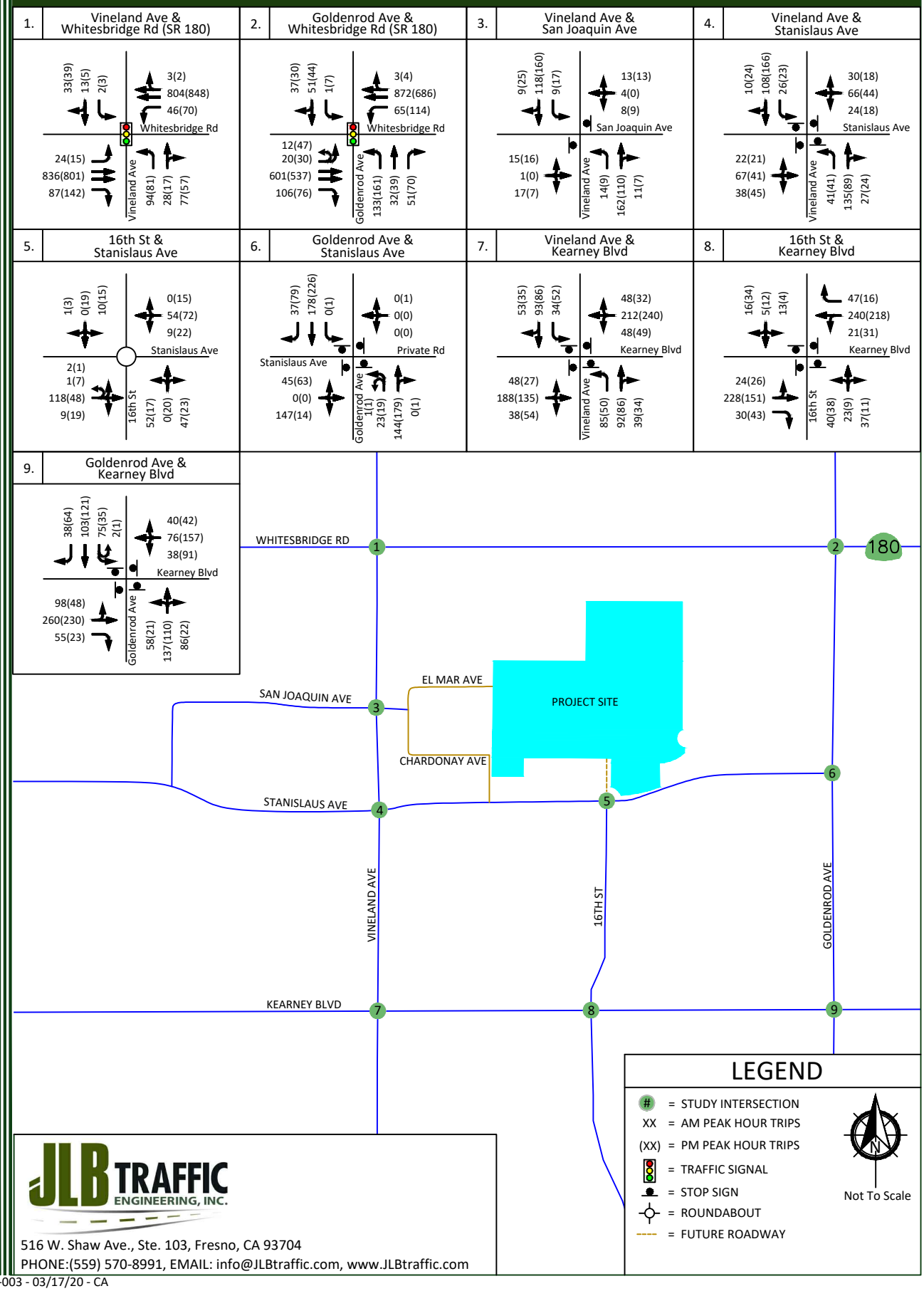
Table VIII: Cumulative Year 2040 No Project Intersection LOS Results

ID	Intersection	Intersection Control	AM (7 - 9) Peak Hour		PM (4 - 6) Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1	Vineland Avenue / Whitesbridge Road	Signalized	19.6	B	21.6	C
2	Goldenrod Avenue / Whitesbridge Road	Signalized	18.7	B	23.4	C
3	Vineland Avenue / San Joaquin Avenue	Two-Way Stop	10.5	B	11.3	B
4	Vineland Avenue / Stanislaus Avenue	All-Way Stop	9.4	A	9.2	A
5	16th Street / Stanislaus Avenue	Roundabout	3.6	A	3.4	A
6	Goldenrod Avenue / Stanislaus Avenue	All-Way Stop	10.4	B	10.0	A
7	Vineland Avenue / Kearney Boulevard	All-Way Stop	13.7	B	13.6	B
8	16th Street /Kearney Boulevard	All-Way Stop	10.9	B	10.9	B
9	Goldenrod Avenue / Kearney Boulevard	All-Way Stop	**31.2**	**D**	16.9	C
		Signalized (Improved Opt. 1)	23.6	C	20.9	C
		Roundabout (Improved Opt. 2)	8.0	A	6.1	A

Note: LOS = Level of Service based on average delay on signalized intersections, roundabouts and All-Way STOP Controls.
LOS for two-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Tentative Tract 6302 - City of Kerman
Cumulative Year 2040 No Project - Traffic Volumes, Geometrics and Controls

Figure 8



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Cumulative Year 2040 plus Project Traffic Conditions

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Cumulative Year 2040 plus Project Traffic Conditions scenario. These warrants are found in Appendix J. The effects of right-turning traffic from the minor approach onto the major approach were taken into account using engineering judgement pursuant to the CA MUTCD guidelines for the preparation of traffic signal warrants. Under this scenario, the intersection of Goldenrod Avenue and Kearney Boulevard is projected to satisfy the peak hour signal warrant during both peak periods. Based on the signal warrant, the intersection operational analysis and engineering judgement, signalization of this intersection is recommended. However, implementation of a single-lane roundabout is also recommended.

Results of Cumulative Year 2040 plus Project Level of Service Analysis

The Cumulative Year 2040 plus Project Traffic Conditions scenario assumes that the existing roadway geometrics and traffic controls will remain in place. Figure 9 illustrates the Cumulative Year 2040 plus Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Cumulative Year 2040 plus Project Traffic Conditions scenario are provided in Appendix I. Table IX presents a summary of the Cumulative Year 2040 plus Project peak hour LOS at the study intersections.

Under this scenario, the intersection of Goldenrod Avenue and Kearney Boulevard is projected to exceed its LOS threshold during the AM peak period. To improve the LOS at this intersection, JLB considered two options for improvement. Option 1 consists of installing a traffic signal, while Option 2 consists of installing a roundabout. As can be seen from Table VIII, both options provide for an acceptable LOS at the intersection. Option 2 would provide for a more aesthetic intersection, but would require obtaining considerably more right-of-way and construction funds when compared to Option 1. Option 1 would be less costly, but would not be as eye-appealing when compared to Option 2. In this specific case, JLB recommends the implementation of Option 2 (roundabout) for the reason that it provides lower delay during the AM peak and reduced severity of future vehicular collisions. The recommended improvements for each option are described below.

- Goldenrod Avenue / Whitesbridge Road
  - Option 1: Signalization
    - Add an eastbound left-turn lane;
    - Modify the eastbound through-left lane to a through-right lane;
    - Remove the eastbound right-turn lane;
    - Add a westbound left-turn lane;
    - Modify the westbound left-through-right lane to a through-right lane;
    - Add a northbound left-turn lane;
    - Modify the northbound left-through-right lane to a through-right lane; and
    - Signalize the intersection with protective left-turn phasing in all directions.
  - Option 2: Roundabout
    - Install a single-lane roundabout; and
    - Modify the intersection to accommodate the change in lane geometrics.

Table IX: Cumulative Year 2040 plus Project Intersection LOS Results

ID	Intersection	Intersection Control	AM (7 - 9) Peak Hour		PM (4 - 6) Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1	Vineland Avenue / Whitesbridge Road	Signalized	20.2	C	33.2	C
2	Goldenrod Avenue / Whitesbridge Road	Signalized	19.3	B	24.0	C
3	Vineland Avenue / San Joaquin Avenue	Two-Way Stop	10.7	B	11.5	B
4	Vineland Avenue / Stanislaus Avenue	All-Way Stop	9.5	A	9.3	A
5	16th Street / Stanislaus Avenue	Roundabout	3.8	A	3.7	A
6	Goldenrod Avenue / Stanislaus Avenue	All-Way Stop	10.9	B	10.2	B
7	Vineland Avenue / Kearney Boulevard	All-Way Stop	14.1	B	14.1	B
8	16th Street /Kearney Boulevard	All-Way Stop	10.9	B	10.9	B
9	Goldenrod Avenue / Kearney Boulevard	All-Way Stop	**31.7**	**D**	17.3	C
		Signalized (Mitigated Opt. 1)	23.7	C	21.6	C
		Roundabout (Mitigated Opt. 2)	8.1	A	6.2	A

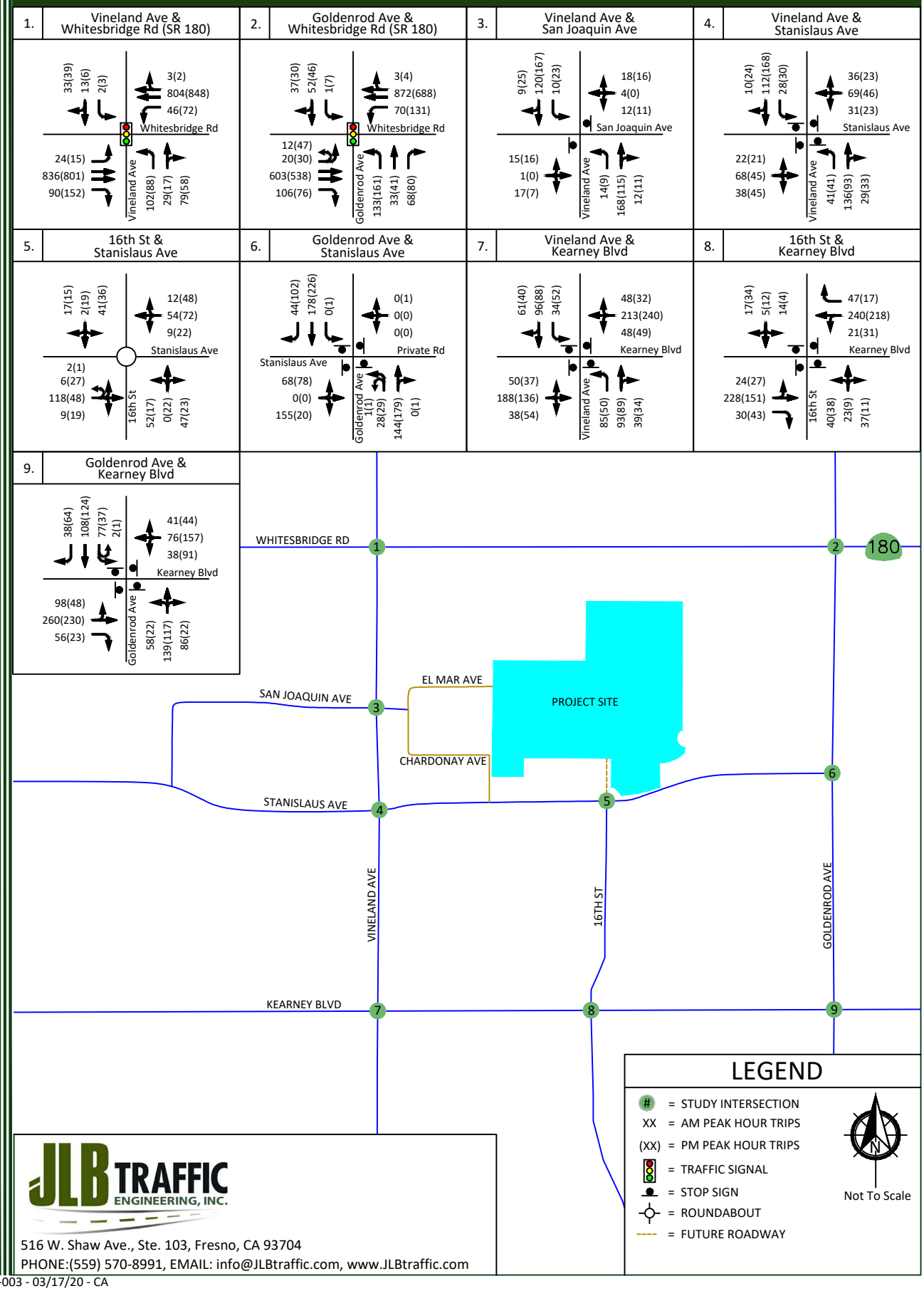
Note: LOS = Level of Service based on average delay on signalized intersections, roundabouts and All-Way STOP Controls.
LOS for two-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Project's Trip Assignment to Caltrans Facilities

The 2040 Project Only Trip assignment to the intersection of State Route 180 (Whitesbridge Road) at State Route 145 (Madera Avenue) is illustrated in Figure 10.

Tentative Tract 6302 - City of Kerman
Cumulative Year 2040 plus Project - Traffic Volumes, Geometrics and Controls

Figure 9



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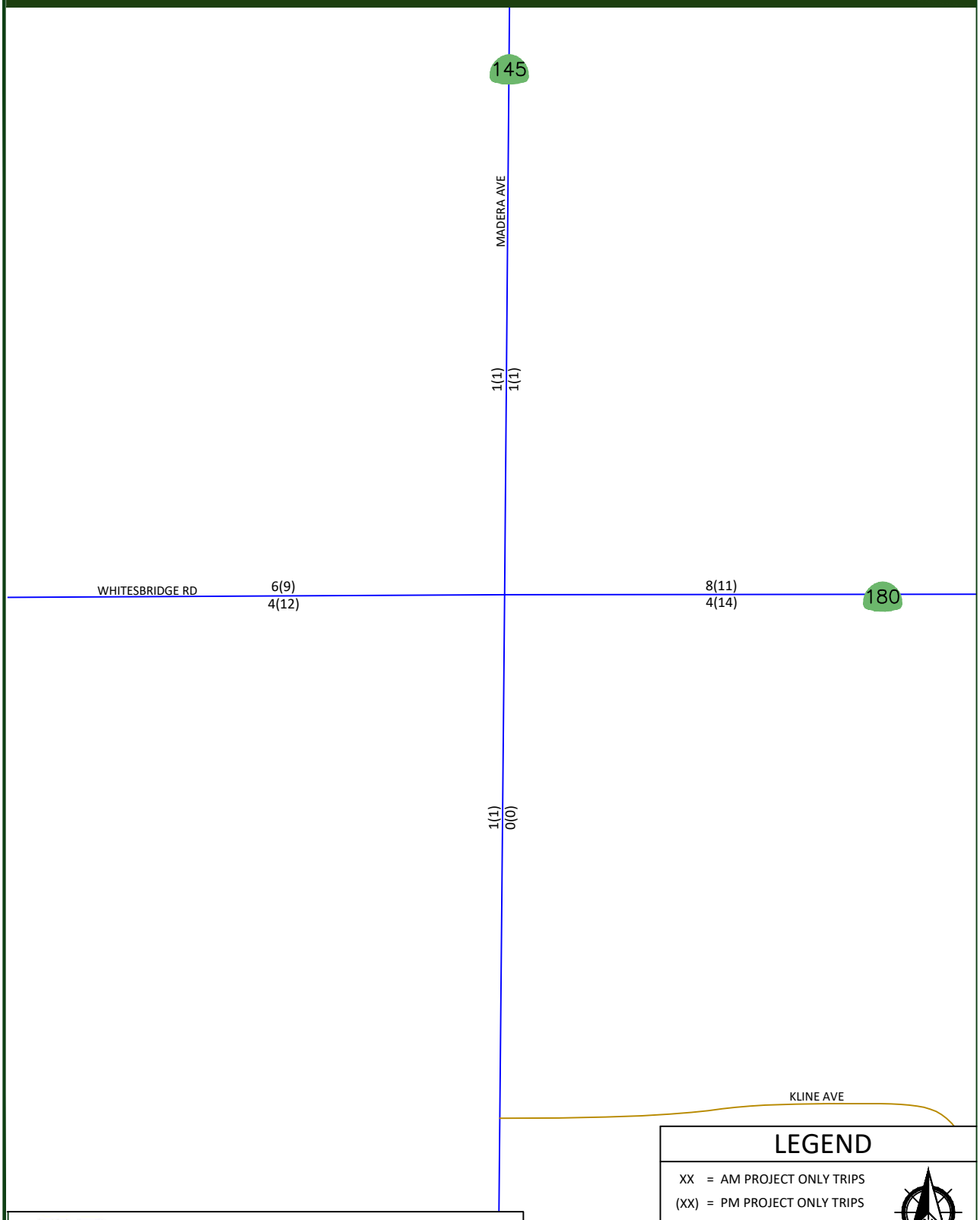
Tentative Tract 6302 - City of Kerman
State Route 145 at State Route 180 - 2040 Project Only Trips

Figure 10



LEGEND

XX = AM PROJECT ONLY TRIPS

(XX) = PM PROJECT ONLY TRIPS

N

Not To Scale

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Queuing Analysis

Table X provides a queue length summary for left-turn and right-turn lanes at the study intersections under all study scenarios. The queuing analyses for the study intersections are contained in the LOS worksheets for the respective scenarios. Appendix D contains the methodologies used to evaluate these intersections. Queuing analyses were completed using Sim Traffic output information. Synchro provides both 50th and 95th percentile maximum queue lengths (in feet). According to the Synchro manual, "the 50th percentile maximum queue is the maximum back of queue on a typical cycle and the 95th percentile queue is the maximum back of queue with 95th percentile volumes." The queues shown on Table X are the 95th percentile queue lengths for the respective lane movements.

The *Highway Design Manual* (HDM) provides guidance for determining deceleration lengths for the left-turn and right-turn lanes based on design speeds. Per the HDM criteria, "tapers for right-turn lanes are usually un-necessary since the main line traffic need not be shifted laterally to provide space for the right-turn lane. If, in some rare instances, a lateral shift were needed, the approach taper would use the same formula as for a left-turn lane." Therefore, a bay taper length pursuant to the Caltrans HDM would need to be added, as necessary, to the recommended storage lengths presented in Table X.

The storage capacity for the Cumulative Year 2040 plus Project Traffic Conditions shall be based on the SimTraffic output files and engineering judgement. The values in bold presented in Table X are the projected queue lengths that will likely need to be accommodated by the Cumulative Year 2040 plus Project Traffic Conditions scenario. At the remaining approaches of the study intersections, the existing storage capacity will be sufficient to accommodate the maximum queue.

Table X: Queuing Analysis

ID	*Intersection*	*Existing Queue Storage Length (ft.)*		*Existing*		*Existing plus Project*		*Near Term plus Project*		*Cumulative Year 2040 No Project*		*Cumulative Year 2040 plus Project*	
				AM	*PM*	*AM*	*PM*	*AM*	*PM*	*AM*	*PM*	*AM*	*PM*
1	Vineland Avenue / Whitesbridge Road (SR 180)	EB L	>325	12	21	20	21	43	43	63	47	47	39
		EB T	>500	144	120	110	122	117	174	155	206	185	221
		EB T	>500	116	102	91	87	120	155	167	183	180	196
		EB R	315	35	49	34	52	37	62	48	53	41	57
		WB L	415	48	56	50	49	57	75	75	86	94	91
		WB T	>500	96	107	56	94	131	144	158	160	216	215
		WB TR	>500	106	123	71	100	136	141	160	184	225	242
		NB L	165	102	55	110	94	108	119	150	78	137	114
		NB TR	>500	91	55	82	50	72	47	78	76	89	41
		SB L	100	0	15	18	14	10	20	10	8	14	19
		SB TR	>500	38	30	50	36	62	55	65	68	62	78

Note: * = Does not exist or is not projected to exist

Table X: Queuing Analysis (cont.)

ID	Intersection	Existing Queue Storage Length (ft.)		Existing		Existing plus Project		Near Term plus Project		Cumulative Year 2040 No Project		Cumulative Year 2040 plus Project	
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
2	Goldenrod Avenue / Whitesbridge Road (SR 180)	EB UL	>470	36	101	27	80	36	92	58	103	62	122
		EB T	>500	86	74	78	101	113	124	180	187	171	143
		EB T	>500	94	110	101	107	147	145	210	202	193	162
		EB R	>470	27	31	30	32	43	35	40	38	45	34
		WB L	>500	82	105	84	134	72	214	109	147	123	144
		WB T	>500	97	120	60	101	82	123	200	181	214	150
		WB TR	>500	96	81	45	86	74	121	192	154	188	140
		NB L	250	110	148	87	138	132	217	159	184	158	167
		NB T	>500	42	40	33	48	41	50	49	67	47	42
		NB R	>300	30	45	39	26	37	38	35	38	61	50
		SB L	150	12	24	0	21	0	17	10	31	10	46
		SB TR	>500	102	78	87	63	111	73	130	112	130	105
3	San Joaquin Avenue / Vineland Avenue	EB LTR	>500	51	43	48	42	51	42	44	33	43	39
		WB LTR	150	43	40	45	39	51	43	44	37	52	46
		NB L	75	12	19	13	0	17	9	16	18	13	13
		NB TR	>500	0	0	0	0	0	0	0	0	0	0
		SB L	75	9	0	9	15	0	16	0	14	0	17
		SB TR	>500	0	0	0	0	0	0	0	0	0	0
4	Vineland Avenue / Stanislaus Ave	EB LTR	>500	61	55	52	53	48	62	70	53	59	53
		WB LTR	>500	52	54	61	49	58	51	57	51	62	55
		NB L	70	40	41	38	37	43	30	45	44	47	41
		NB TR	>500	53	41	55	51	65	45	58	50	51	58
		SB L	70	41	36	39	42	42	42	42	39	41	51
		SB TR	>500	48	56	60	68	64	73	55	64	52	75
5	16th Street / Stanislaus Avenue	EB UTR	>500	10	10	*	*	*	*	*	*	*	*
		EB ULTR	>500	*	*	22	10	18	15	18	10	28	10
		WB LTR	>500	*	*	19	19	14	24	0	19	26	21
		NB LTR	>500	*	*	31	15	36	14	32	26	44	28
		NB LR	>500	32	18	*	*	*	*	*	*	*	*
		SB LTR	>500	*	*	41	10	14	15	10	21	18	32
6	Goldenrod Avenue / Stanislaus Avenue	EB LTR	>500	61	48	59	43	74	44	69	36	71	44
		WB LTR	>500	0	11	*	*	0	9	0	9	0	12
		NB UL	150	44	36	44	42	43	50	43	42	39	52
		NB TR	>500	53	53	50	46	57	56	66	64	58	65
		SB UL	105	0	0	0	0	0	10	0	0	0	0
		SB T	>500	78	72	69	69	69	93	70	80	75	81
		SB R	>500	39	49	44	58	39	62	39	50	47	54

Note: * = Does not exist or is not projected to exist

Table X: Queuing Analysis (cont.)

ID	Intersection	Existing Queue Storage Length (ft.)		Existing		Existing plus Project		Near Term plus Project		Cumulative Year 2040 No Project		Cumulative Year 2040 plus Project	
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
7	Vineland Avenue / Kearney Avenue	EB LTR	>500	84	74	86	79	103	73	90	88	105	102
		WB LTR	>500	80	86	71	73	86	91	83	75	93	109
		NB L	95	60	49	63	50	64	51	65	51	51	49
		NB TR	>500	65	53	66	66	79	56	61	84	79	70
		SB L	85	39	35	43	44	41	56	41	53	48	64
		SB TR	>500	53	56	71	51	73	67	51	55	60	66
8	16th Street / Kearney Avenue	EB LT	>500	65	49	71	48	59	52	72	81	65	74
		EB R	30	0	0	20	18	0	19	0	13	**37**	32
		WB LT	>500	66	73	63	61	81	62	78	72	83	77
		WB R	30	14	0	0	13	0	0	41	0	**37**	0
		NB LTR	>500	44	46	55	49	58	50	61	52	51	46
		SB LTR	>500	40	44	44	39	44	46	45	44	45	45
9	Goldenrod Avenue / Kearney Avenue	EB L	*	*	*	*	*	*	*	**108**	56	87	56
		EB LT	>500	53	40	49	39	46	32	*	*	*	*
		EB TR	*	*	*	*	*	*	*	161	118	143	127
		EB R	30	25	7	7	0	18	13	*	*	*	*
		WB L	*	*	*	*	*	*	*	71	87	44	**92**
		WB TR	*	*	*	*	*	*	*	82	92	94	92
		WB LTR	>500	55	64	41	65	48	76	*	*	*	*
		NB L	*	*	*	*	*	*	*	68	49	**82**	46
		NB TR	*	*	*	*	*	*	*	119	92	131	102
		NB LTR	>500	75	57	84	62	74	64	*	*	*	*
		SB UL	155	55	39	56	44	50	44	84	61	96	63
		SB T	>500	64	41	58	55	62	64	76	93	105	83
		SB R	100	43	50	42	48	46	50	43	46	44	58

Note: * = Does not exist or is not projected to exist

Project's Pro-Rata Fair Share of Future Transportation Improvements

The Project's fair share percentage impacts of Project to study intersections projected to fall below their LOS threshold are provided in Table XI. The Project's fair share percentage impacts were calculated pursuant to the Caltrans Guide for the Preparation of Traffic Impact Studies. The Project's pro-rata fair shares were calculated utilizing the Existing volumes, Project Only Trips and Cumulative Year 2040 plus Project volumes. Figure 2 illustrates the Existing traffic volumes, Figure 4 illustrates the Project Only Trips, and Figure 9 illustrates the Cumulative Year 2040 plus Project traffic volumes. Since the critical peak period for the study facilities was determined to be during the AM peak, the AM peak volumes are utilized to determine the Project's pro-rata fair share.

It is recommended that the Project contribute its equitable fair share as listed in Table XI for the future improvements necessary to maintain an acceptable LOS. However, fair share contributions should only be made for those facilities, or portion thereof, currently not funded by the responsible agencies roadway impact fee program(s) or grant funded projects, as appropriate. For those improvements not presently covered by local and regional roadway impact fee programs or grant funding, it is recommended that the Project contribute its equitable fair share. Payment of the Project's equitable fair share in addition to the local and regional impact fee programs would satisfy the Project's traffic mitigation measures.

This study does not provide construction costs for the recommended mitigation measures; therefore, if the recommended mitigation measures are implemented, it is recommended that the developer work with the City of Kerman to develop the estimated construction cost.

Table XI: Project's Fair Share of Future Roadway Improvements

ID	*Intersection*	*Existing Traffic Volumes (AM Peak)*	*Cumulative Year 2040 plus Project Traffic Volumes (AM Peak)*	*Project Only Trips (AM Peak)*	*Project's Fair Share (%)*
9	Goldenrod Avenue / Kearney Boulevard	789	1,077	11	3.82%

Note: Project Fair Share = ((Project Only Trips) / (Cumulative Year 2040 + Project Traffic Volumes - Existing Traffic Volumes)) x 100

Conclusions and Recommendations

Conclusions and recommendations regarding the proposed Project are presented below.

Existing Traffic Conditions

- At present, all study intersections operate at an acceptable LOS during both peak periods.

Existing plus Project Traffic Conditions

- JLB analyzed the location of the proposed access points relative to the existing local roads and driveways in the Project's vicinity. A review of the Project's local driveways and streets to be constructed indicates that they are located at points that minimize traffic operational impacts to the existing roadway network.
- At buildout, the proposed Project is estimated to generate a maximum of 982 daily trips, 77 AM peak hour trips and 103 PM peak hour trips. The Existing General Plan use is anticipated to generate a maximum of 7,915 daily trips, 206 AM peak hours trips and 800 PM peak hour trips. Compared to the Existing General Plan land use, the proposed Project is estimated to yield fewer traffic generation by 6,933 daily trips, 129 AM peak hour and 697 PM peak hour trips.
- It recommended that the Project implement a Class III bikeway along its frontage to Stanislaus Avenue.
- Based on the Fresno COG model run, the Project is anticipated to generate an average of 10.14 VMT per trip.
- Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peak periods.

Near Term plus Project Traffic Conditions

- The total trip generation for the Near Term Projects is 18,439 daily trips, 1,606 AM peak hour trips and 1,708 PM peak hour trips.
- Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peak periods.

Cumulative Year 2040 No Project Traffic Conditions

- Under this scenario, the intersection of Goldenrod Avenue and Kearney Boulevard is projected to exceed its LOS threshold during the AM peak period. To improve the LOS at this intersection, JLB considered two options for improvement. Option 1 consists of installing a traffic signal, while Option 2 consists of installing a roundabout. As can be seen from Table VIII, both options provide for an acceptable LOS at the intersection. Option 2 would provide for a more aesthetic intersection, but would require obtaining considerably more right-of-way and construction funds when compared to Option 1. Option 1 would be less costly, but would not be as eye-appealing when compared to Option 2. In this specific case, JLB recommends the implementation of Option 2 (roundabout) for the reason that it provides lower delay during the AM peak and reduced severity of future vehicular collisions. The recommended improvements for each option are described below.

- Goldenrod Avenue / Whitesbridge Road
  - Option 1: Signalization
    - Add an eastbound left-turn lane;
    - Modify the eastbound through-left lane to a through-right lane;
    - Remove the eastbound right-turn lane;
    - Add a westbound left-turn lane;
    - Modify the westbound left-through-right lane to a through-right lane;
    - Add a northbound left-turn lane;
    - Modify the northbound left-through-right lane to a through-right lane; and
    - Signalize the intersection with protective left-turn phasing in all directions.
  - Option 2: Roundabout
    - Install a single-lane roundabout; and
    - Modify the intersection to accommodate the change in lane geometrics.

Cumulative Year 2040 plus Project Traffic Conditions

- Under this scenario, the intersection of Goldenrod Avenue and Kearney Boulevard is projected to exceed its LOS threshold during the AM peak period. To improve the LOS at this intersection, JLB considered two options for improvement. Option 1 consists of installing a traffic signal, while Option 2 consists of installing a roundabout. As can be seen from Table VIII, both options provide for an acceptable LOS at the intersection. Option 2 would provide for a more aesthetic intersection, but would require obtaining considerably more right-of-way and construction funds when compared to Option 1. Option 1 would be less costly, but would not be as eye-appealing when compared to Option 2. In this specific case, JLB recommends the implementation of Option 2 (roundabout) for the reason that it provides lower delay during the AM peak and reduced severity of future vehicular collisions. The recommended improvements for each option are described below.
  - Goldenrod Avenue / Whitesbridge Road
    - Option 1: Signalization
      - Add an eastbound left-turn lane;
      - Modify the eastbound through-left lane to a through-right lane;
      - Remove the eastbound right-turn lane;
      - Add a westbound left-turn lane;
      - Modify the westbound left-through-right lane to a through-right lane;
      - Add a northbound left-turn lane;
      - Modify the northbound left-through-right lane to a through-right lane; and
      - Signalize the intersection with protective left-turn phasing in all directions.
    - Option 2: Roundabout
      - Install a single-lane roundabout; and
      - Modify the intersection to accommodate the change in lane geometrics.

Queuing Analysis

- It is recommended that the City consider left-turn and right-turn lane storage lengths as indicated in the Queuing Analysis.

Project's Equitable Fair Share

- It is recommended that the Project contribute their equitable fair share as listed in Table XI for the future improvements necessary to maintain an acceptable LOS.

Study Participants

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Dave Padilla	Caltrans, District 6
Kai Han	Fresno COG
Lang Yu	Fresno COG

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