CITY OF DELANO COMMUNITY DEVELOPMENT DEPARTMENT
1015 11th Avenue
Delano CA 93215

CEQA MITIGATED NEGATIVE DECLARATION, INITIAL STUDY AND MITIGATION MONITORING REPORT AND PLAN (MMRP) FOR TENTATIVE TRACT MAP 7379

September 30, 2020

CITY OF DELANO
NOTICE OF PUBLIC HEARING
NOTICE OF INTENT TO ADOPT MITIGATED NEGATIVE DECLARATION

Notice is hereby given that the City Council will conduct public hearing on Monday November 2, 2020 at or about 5:30 PM in the Delano City Council Chambers at City Hall at 1015 11th Avenue, Delano CA to consider approval of a development agreement and a tentative subdivision map to subdivide a 79-acre parcel into 281 single family residential lots and a 3.77-acre parcel for park purposes (Tentative Tract Map No. 7379 - File No. TSM 2020-001). Further notice is hereby given that an Initial Study and a Mitigated Negative Declaration has been prepared for the project in conformance with the requirements of CEQA. At the hearing, the City Council intends to adopt the CEQA Mitigated Negative Declaration proposed for the project. There are no anticipated significant effects on the environmental identified in the project Initial Study and Mitigated Negative Declaration. As mandated by the California Environmental Quality Act (CEQA), the public review period for this document is 30 days (CEQA §15073 (a). the public review period begins on October 1, 2020 and will end on November 1, 2020.

COVID-19 NOTICE
IN ACCORDANCE WITH THE GOVERNOR NEWSOM'S EXECUTIVE ORDER #N-29-20, THIS MEETING WILL BE CONDUCTED FULLY VIA TELECONFERENCE, DUE TO THE CURRENT RESTRICTIONS BY SAID ORDER AND CENTERS FOR DISEASES CONTROL AND PREVENTION (CDC) GUIDELINES. THE PUBLIC WILL HAVE ACCESS TO CALL IN, LISTEN TO THE MEETING AND PROVIDE PUBLIC COMMENT. IN ACCORDANCE WITH GOVERNOR NEWSOM'S EXECUTIVE ORDER N-29-20, THERE WILL NOT BE A PHYSICAL LOCATION FROM WHICH THE PUBLIC MAY ATTEND. IN ORDER TO CALL INTO THE MEETING, PLEASE SEE THE CITY COUNCIL MEETING AGENDA TO ACCESS THE MEETING VIA A LINK AND/OR INSTRUCTIONS TO CALL INTO THE MEETING.

Project Title: Tentative Tract Map No. 7379

Applicant's Name and Address: San Joaquin Valley Homes, 5607 Avenida de los Robles
Visalia CA 93291

Project Location: The site is generally located south of County Line Road, between Hiett and Melcher Avenues, westerly of Legacy Estates Subdivision. (APN 520-010-174). The property is currently unused agricultural land surrounded by existing agricultural uses with the exception of Legacy Estates Residential subdivision directly east of the site..

The project application, the Initial Study and Mitigated Negative Declaration are available for review at the Community Development Department at City of Delano City Hall, 2nd Floor, 1015 11th Avenue Delano, CA 93215.

For further information contact the Community Development Department, Planning Division at 661-720-2220 or by email at bcard@cityofdelano.org

Please note that if you challenge the above matter in court, you may be limited to raising only those issues which you or someone else raised at the public hearing described in this notice, or written correspondence delivered to the City Clerk at or prior to the public hearing. All comments regarding the project must be received by the City Clerk on or before November 2, 2020 All persons are invited to attend and will be given a full opportunity to be heard.

If you need special assistance to participate in this meeting, please contact the City Clerk's Office at (661) 720-2228 to make reasonable arrangements to ensure accessibility to this meeting. Telephone No. (661) 720-2228; or via California Relay Service (Hearing Impaired Only)

Type of Call	MCI California Relay Service	Sprint California Relay Service
TTY	1-800-735-2929	1-888-877-5378

Voice	1-800-735-2922	1-888-877-5379
Spanish	1-800-855-3000	1-888-877-5381
Speech to Speech		1-800-854-7784

Government Code, Section 65962.5 - Hazard Waste and Substances Statement

The project identified in this notice is not an “Identified Hazardous Waste Site” on the list shown on the latest information on the following website of the California Department of Toxic Substances Control; http://www.dtsc.ca.gov/SiteCleanup/Corteselist.cfm or http://www.envirostor.dtsc.ca.gov/public/

S:\CITY HALL\Community Development\2-22-13 Planning Division\PLANNING CASES\TRACT MAPS\TM 7379\PHN Tract 7379 Public Notice and Intent to Adopt MND 09-2020.docx

Environmental Checklist Form

Title of Proposal: Tentative Tract Map 7379

Date Checklist Submitted: 7/15/2020

Agency Requiring Checklist: Delano Community Development Department

Agency Contact: William Card, Senior Planner **Phone:** (661) 721-3340

Description of Initial Study/Requirement

The Initial Study is a public document used by the decision-making lead agency to determine whether a project may have significant effects on the environment. In the case of the proposed project, the Delano Community Development Department, acting as lead agency, will use the initial study to determine whether the project has a significant effect on the environment. In accordance with CEQA, Guidelines (Section 15063[a]), an environmental impact report (EIR) must be prepared if there is substantial evidence (such as results of the Initial Study) that a project may have significant effect on the environment. This is true regardless of whether the overall effect of the project would be adverse or beneficial. A negative declaration (ND) or mitigated negative declaration (MND) may be prepared if the lead agency determines that the project would have no potentially significant impacts or that revisions to the project, or measures agreed to by the applicant, mitigate the potentially significant impacts to a less-than-significant level.

The initial study considers and evaluates all aspects of the project which are necessary to support the proposal. The complete project description includes the site plan, operational statement, and other supporting materials which are available in the project file at the office of the Delano Community Development Department.

Description of Project:
Application No. TSM 2020-001 - Tentative Tract Map 7379. The applicant is requesting approval of tentative tract map to allow the division of 76.363 acres into 281 single family residential lots. The tract map also includes a park area of approximately 3.71 acres.

Project Location:
The site is located on fronting on the south side of County Line Road, between Hiett Road and Melcher Road (APN 520-010-174)

Applicant Name and Address:
San Joaquin Valley Homes
5607 Avenida de los Robles
Visalia CA 93291

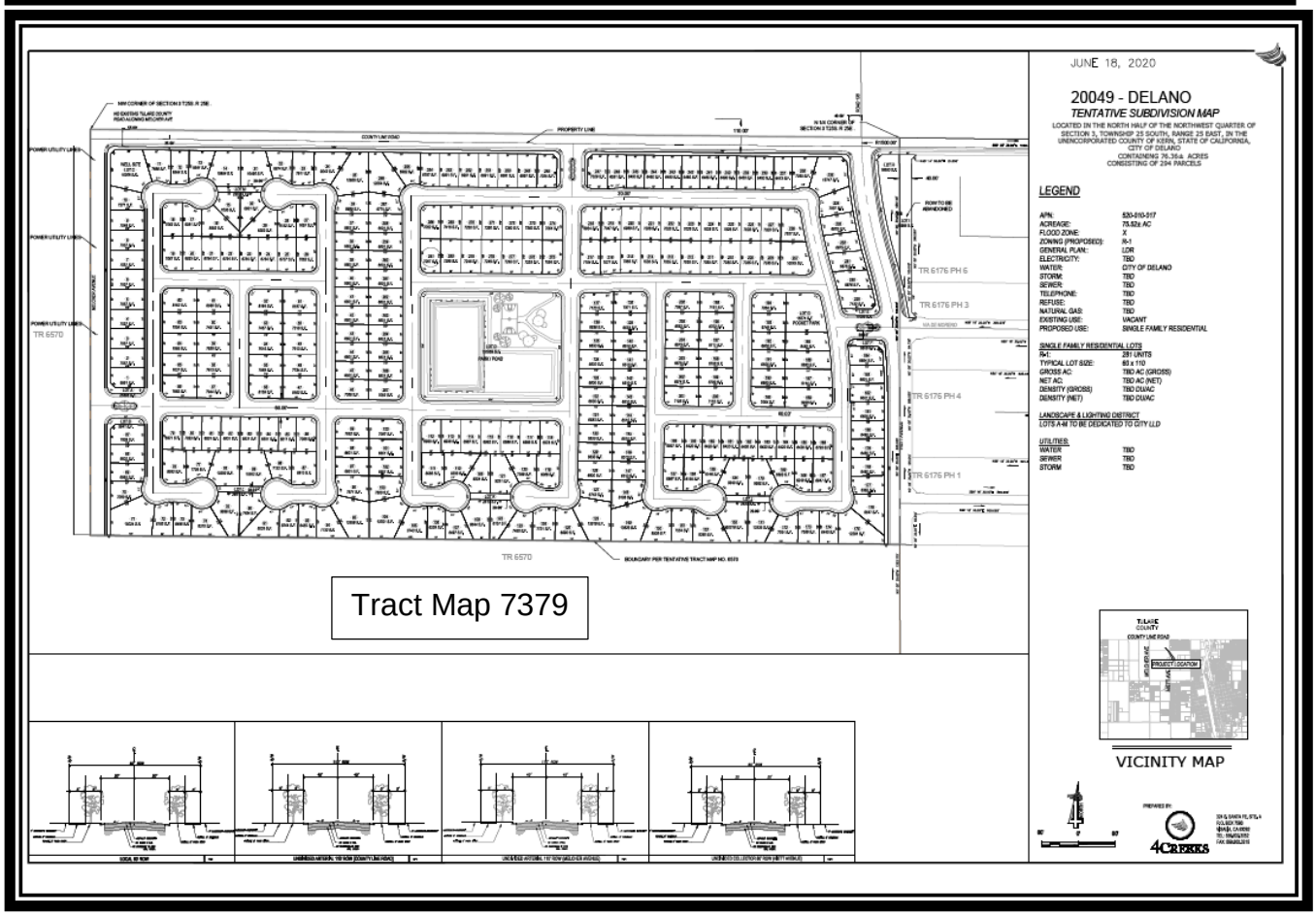
General Plan Designation:
LDR Low Density Residential

Zoning Designation:
Single Family Residential (R-1) District

Surrounding Land Uses and Setting:
The site in situated next to existing developed residential subdivision (Legacy Estates) to the east, The north, south and west of the project is existing agricultural land. The site's northerly boundary is Tulare County.

Other Public Agencies whose approval is required:


Project Location
44
44
County Line Rd Ave 0
Albery St
High St
TF Tire &
Alban


JUNE 18, 2020
20049 - DELANO
TENTATIVE SUBDIVISION MAP
LEGEND
Tract Map 7379
VICINITY MAP
4CREEKS

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

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

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

DETERMINATION: (To be completed by the Lead Agency)

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.

X 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.

☐ Click here to enter text.
Prior EIR or ND/MND Number

Wm. J. Card
Signature

September 29, 2020
Date

I. AESTHETICS -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	X
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	X
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	X
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	X	☐	☐

Discussion:

(a) No Impact
The proposed project is not is not in an identified scenic corridor. However, there are faint views of the Sierra Mountain Range east of the site. The construction of the project will partially block views of the mountain range. The project is of a similar size and scale of other existing single family developments in the area. Therefore, the project will not result in an adverse effect on a scenic vista. Therefore, there will be no impact to scenic vistas.

(b) No Impact
The development of a housing project on the site will not substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings. The site is generally level without trees, rock out croppings and devoid of any buildings, and is not adjacent to any State Scenic Highway as identified by Caltrans. There for there will be no impact to scenic resources.

(c) No Impact
The project will change the visual characteristics of the site from an existing vacant site to a single family (R-1) housing site. The project will comply with existing development and improvement requirements of the City. The development of the site from a vacant site into 172 single family dwellings and a city park which would not result in a degradation of the of the visual character of the site, but bring the site into compliance with city general plan and development codes for this type of development. Therefore, the project will not degrade the existing visual characteristics of the site, resulting in no impact.

(d) Less than Significant Impact
Development of the site will introduce a new source of light and glare in the area in the form of street lighting and outdoor lighting on the residential units. With implementation of the proposed project, it is expected to result in increased light and glare in comparison with the existing undeveloped nature of the project site. The introduction of lighting would be similar to residential uses which already surround the site on three sides; The proposed project will be conditioned upon approval to meet the city's lighting standards of the development code. Therefore, lighting and glare from the project will be a less than significant impact.

General Information:

A nighttime sky in which stars are readily visible is often considered a valuable scenic/visual resource. In urban areas, views of the nighttime sky are being diminished by "light pollution." Light pollution, as defined by the International dark-Sky Association, is any adverse effect of artificial light, including sky glow, glare, light trespass, light clutter, decreased visibility at night, and energy waste. Two elements of light pollution may affect city residents: sky glow and light trespass. Sky glow is a result of light fixtures that emit a portion of their light directly upward into the sky where light scatters, creating an orange-yellow glow above a city or town. This light can interfere with views of the nighttime sky and can diminish the number of stars that are visible. Light trespass occurs when poorly shielded or poorly aimed fixtures cast light into unwanted areas, such as neighboring property and homes.

Light pollution is a problem most typically associated with urban areas. Lighting is necessary for nighttime viewing and for security purposes. However, excessive lighting or inappropriately designed lighting fixtures can disturb nearby sensitive land uses through indirect illumination. Land uses which are considered "sensitive" to this unwanted light include residences, hospitals, and care homes.

Daytime sources of glare include reflections off of light-colored surfaces, windows, and metal details on cars traveling on nearby roadways. The amount of glare depends on the intensity and direction of sunlight, which is more acute at sunrise and subset because the angle of the sun is lower during these times.

III. AGRICULTURE AND FOREST RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	X	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	X
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resource Code section 12220(g)) or timberland (as defined by Public Resources Code section 4526) or timberland zoned Timberland Protection (as defined by Government Code section 51104(g))?	☐	☐	☐	X
d) Result in the loss of forest land or conversion of forest land to non-forest land?	☐	☐	☐	X
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?	☐	☐	☐	X

Discussion:

(a). Less than significant with incorporation of the mitigation measure.

(b) through (e) No Impact

(b) through (e) The proposed project will have not have an impact to agricultural resources, including. Prime Farmland, Unique Farmland, Farmland of Statewide Importance forest land, timberland, zoned for Timberland Resources. Therefore, there are no impacts.

MM AG-1 The applicant shall place comparable prime farmland at a ratio of 2 acres to 1 acre in a permanent trust or conservation easement to ensure the preservation of an equivalent amount of farmland in perpetuity.

General Information

The California Land Conservation Act of 1965--commonly referred to as the Williamson Act--enables local governments to enter into contracts with private landowners for restricting specific parcels of land to agricultural or related open space use. In return, landowners receive property tax assessments which are much lower than normal because they are based upon farming and open space uses as opposed to full market value.

The Department of Conservation oversee the Farmland Mapping and Monitoring Program. The Farmland Mapping and Monitoring Program (FMMP) produces maps and statistical data used for analyzing impacts on California's agricultural resources. Agricultural land is rated according to soil quality and irrigation status; the best quality land is called Prime Farmland. The maps are updated every two years with the use of a computer mapping system, aerial imagery, public review, and field reconnaissance. The program's definition of land is below:

PRIME FARMLAND (P): Farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during

the four years prior to the mapping date.

FARMLAND OF STATEWIDE IMPORTANCE (S): Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

UNIQUE FARMLAND (U): Farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include non- irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

FARMLAND OF LOCAL IMPORTANCE (L): Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.

GRAZING LAND (G): Land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities. The minimum mapping unit for Grazing Land is 40 acres.

URBAN AND BUILT-UP LAND (D): Land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. This land is used for residential, industrial, commercial, institutional, public administrative purposes, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.

OTHER LAND (X): Land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land.

III. AIR QUALITY -- Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	X	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	X	☐
c) 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	X	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	X	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	X	☐

Discussion:
Air pollution emissions can be estimated by using emission factors and examining the level of activity occurring. Emission factors are the emission rate of a pollutant given the activity over time; for example, grams of Nox per horsepower hour. The ARB has published emission factors for on-road equipment and vehicles in the OFFROAD emission 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.1

The California Emissions Estimator (CalEEMod) version version 2016.3.2 is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutants and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects. The model quantifies direct emissions from construction and operations, including vehicle use, as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. The model incorporates Pavley standards and Low Carbon Fuel standards into the mobile source emission factors. Further, the model identifies mitigation measures to reduce criteria pollutant and GHG emissions along with calculating the benefits achieved from measures chosen by the user

Significance thresholds are based on the CEQA Appendix G Environmental Checklist Form and thresholds established by the SJVAPCD. The CEQA Appendix G Environmental Checklist Form states that the project would have a potentially significant impact on air quality or greenhouse gases if the project would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations; and/or
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.
- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

The SJVAPCD has recommended the following thresholds of significance for criteria pollutant emissions from projects (Table 8). The SJVAPCD does not provide numeric thresholds for GHG emissions. Instead, the SJVAPCD "Guidance for Valley Land Use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA" states that projects which achieve a 29% GHG emission reduction compared to Business as Usual (BAU) would be determined to have a less than significant individual and cumulative impact on GHG

1 Air Quality/GHG Assessment by 4Creeks, Inc August 2020

emissions.

Pollutant/Precursor	Construction Emissions	Operational Emissions	
		Permitted Equipment and Activities	Non-Permitted Equipment and Activities
	Emissions (tpy)	Emissions (tpy)	Emissions (tpy)
CO	100	100	100
Nox	10	10	10
ROG	10	10	10
SOx	27	27	27
PM10	15	15	15
PM2.5	15	15	15

PROJECT-RELATED EMISSIONS

Short-Term Emissions

Project construction would generate pollutant emissions from the following construction activities: site preparation, grading, building construction, application of architectural coatings, and paving. The short- term emissions from these activities were calculated using CalEEMod. The full CalEEMod Report can be found in Attachment C. As shown in Table 9 below, project construction related emissions do not exceed the thresholds for criteria pollutants established by the SJVAPCD.

	CO (tpy)	ROG (tpy)	SOx (tpy)*	Nox (tpy)	PM10 (tpy)	PM2.5 (tpy)
Emissions Generated from Project Construction	**3.2697**	**4.8243**	**0.00742**	**4.4813**	**0.9994**	**0.5688**
SJVAPCD Thresholds of Significance	**100**	**10**	**27**	**10**	**15**	**15**
*Threshold established by SJVAPCD for SOx, however emissions are reported as SO2 by CalEEMod.						

Table 9. Projected Project Emissions Compared to SJVAPCD Thresholds of Significance for Criteria Pollutants related to Construction; Source: SJVAPCD, CalEEMod Analysis (Attachment C)

a. Less than significant impact

The primary way of determining consistency with the air quality plan's (AQP's) assumptions is determining consistency with the applicable General Plan to ensure that the Project's population density and land use are consistent with the growth assumptions used in the AQPs for the air basin.

As required by California law, city and county General Plans contain a Land Use Element that details the types and quantities of land uses that the city or county estimates will be needed for future growth, and that designate locations for land uses to regulate growth. Kern Council of Governments (Kern COG) uses the growth projections and land use information in adopted general plans to estimate future average daily trips and then Vehicle Miles Travelled (VMT), which are then provided to SJVAPCD to estimate future emissions in the AQPs. Existing and future pollutant emissions computed in the AQP are based on land uses from area general plans. AQPs detail the control measures and emission reductions required for reaching attainment of the air standards.

The applicable General Plan for the project is the 2005 City of Delano General Plan, which was adopted in December of 2005. The Project is consistent with the currently adopted General Plan Designation for the

site of Low Residential and is therefore consistent with the population growth and VMT applied in the plan. Therefore, the Project is consistent with the growth assumptions used in the applicable AQPs. As a result, the Project will not conflict with or obstruct implementation of any air quality plans. Therefore, no mitigation is needed.

No mitigation is required. Impacts would be *less than significant*.

Short-Term Impacts

b. Less than significant impact

The primary way of determining consistency with the air quality plan's (AQP's) assumptions is determining consistency with the applicable General Plan to ensure that the Project's population density and land use are consistent with the growth assumptions used in the AQPs for the air basin.

As required by California law, city and county General Plans contain a Land Use Element that details the types and quantities of land uses that the city or county estimates will be needed for future growth, and that designate locations for land uses to regulate growth. Kern Council of Governments (Kern COG) uses the growth projections and land use information in adopted general plans to estimate future average daily trips and then Vehicle Miles Travelled (VMT), which are then provided to SJVAPCD to estimate future emissions in the AQPs. Existing and future pollutant emissions computed in the AQP are based on land uses from area general plans. AQPs detail the control measures and emission reductions required for reaching attainment of the air standards.

The applicable General Plan for the project is the 2005 City of Delano General Plan, which was adopted in December of 2005. The Project is consistent with the currently adopted General Plan Designation for the site of Low Residential and is therefore consistent with the population growth and VMT applied in the plan. Therefore, the Project is consistent with the growth assumptions used in the applicable AQPs. As a result

c. Less than significant impact

The Kern County area is nonattainment for Federal and State air quality standards for ozone and nonattainment for Federal and State standards for PM2.5. Kern County is also nonattainment for State standards for PM10. The SJVAPCD has prepared the 2016 and 2013 Ozone Plans, 2007 PM10 Maintenance Plan, and 2012 PM2.5 Plan to achieve Federal and State standards for improved air quality in the SJVAB regarding ozone and PM. Individual projects contribute cumulatively to a regions' nonattainment status and inconsistency with any of the plans would be considered a cumulatively adverse air quality impact.

Project specific emissions that exceed the thresholds of significance for criteria pollutants would be expected to result in a cumulatively considerable net increase of any criteria pollutant for which the County is in nonattainment under applicable federal or state ambient air quality standards. It should be noted that a project isn't characterized as cumulatively insignificant when project emissions fall below thresholds of significance.

Air Quality Plan

The SJVAPCD has prepared the 2016 and 2013 Ozone Plans, 2007 PM10 Maintenance Plan, and 2012 PM2.5 Plan to achieve Federal and State standards for improved air quality in the SJVAB regarding ozone and PM. Existing and future pollutant emissions computed in the AQP are based on land uses from area general plans. The AQP details the control measures and emission reductions required for reaching attainment of the air standards.

The applicable General Plan for the project is the 2005 City of Delano General Plan, which was adopted in December of 2005. The Project is consistent with the currently adopted General Plan for the City of Delano and is therefore consistent with the population growth and VMT applied in the plan. Therefore, the Project is consistent with the growth assumptions used in the applicable AQP. As a result, the Project will not conflict with or obstruct implementation of any air quality plans.

Ozone/Particulate Matter

As discussed in Section 4.1.2 of the report, Project emissions would not exceed the project-level significance thresholds for ozone precursors ROG and NOx or PM10 and PM2.5 during construction and operation. The SJVAPCD considers projects that exceed the project-level thresholds of significance as cumulatively significant. The Project's emissions would not combine with other sources in the SJVAB to make a cumulatively

considerable contribution to a violation of the ozone standards. Therefore, this impact is less than significant. As such, there would not be a significant contribution to health effects from ozone and particulate matter.

Toxic Air Contaminants (TAC)

Based on the SJVAPCD's Guidance for Assessing and Mitigating Air Quality Impacts, from a health risk perspective, there are basically two types of land use projects that have the potential to cause long-term public health risk impacts:

- Type A Projects: Land use projects that will place new toxic sources in the vicinity of existing receptors, and
- Type B Projects: Land use projects that will place new receptors in the vicinity of existing toxics sources.

Examples of Type A projects (New project impacts existing receptors):
This category includes sources of air toxic emissions such as:

- Gasoline dispensing facilities,
- Asphalt batch plants,
- Warehouse distribution centers,
- New freeways or high traffic roads, and
- Other stationary sources that emit toxic substances.

Long-Term Emissions

Implementation of the proposed project would result in long-term emissions associated with mobile, energy, and area sources. Operational emissions from these factors were calculated using CalEEMod. The full CalEEMod Report can be found in Attachment C. Operational emission estimates include the following mitigation measures:

- Improve Walkability Design
- Improve Destination Accessibility
- Increase Transit Accessibility
- Improve Pedestrian Network
- Provide Traffic Calming Measures

As shown in Table 10 below, the project's operational emissions do not exceed the thresholds established by the SJVAPCD.

	CO (tpy)	ROG (tpy)	SOx (tpy)*	Nox (tpy)	PM10 (tpy)	PM2.5 (tpy)
Operational Emissions	**9.9878**	**3.3381**	**0.0515**	**9.7115**	**2.7749**	**0.7918**
SJVAPCD Thresholds of Significance	**100**	**10**	**27**	**10**	**15**	**15**
*Threshold established by SJVAPCD for SOx, however emissions are reported as SO2 by CalEEMod.						

Table 10. Projected Project Emissions Compared to SJVAPCD Thresholds of Significance for Criteria Pollutants related to Operations; Source: SJVAPCD, CalEEMod Analysis (Attachment C)

The Project will not conflict with or obstruct implementation of any air quality plans. Therefore, no mitigation is needed.

No mitigation is required. Impacts would be *less than significant*.

Short-Term Impacts

The annual emissions from the construction phase of the Project will be less than the applicable SJVAPCD emission thresholds for criteria pollutants as shown in Table 3-1. Therefore, Project emissions associated with construction of the Project are considered less than significant**.**

It should be noted that the Project is subject to the SJVAPCD's Regulation VIII control measures, which are provided below.

1. All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.
2. All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
3. All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
4. When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.
5. All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.
6. Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.
7. Within urban areas, track out shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.

Naturally Occurring Asbestos (NOA)

The proposed Project's construction phase may cause asbestos to become airborne due to the construction activities that will occur on site. In order to control naturally-occurring asbestos dust, the Project will be required to submit a Dust Control Plan under the SJVAPCD's Rule 8021. The Dust Control Plan may include the following measures:

1. Water wetting of road surfaces;
2. Rinse vehicles and equipment;
3. Wet loads of excavated material; and
4. Cover loads of excavated material.

Long-Term Impacts

Long-Term emissions from the Project are generated primarily by mobile source (vehicle) emissions from the Project site and area sources associated with lawn maintenance equipment. Emissions from long-term operations generally represent a project's most substantial air quality impact. Results from Table 3-2 indicate that the annual operational emissions from the Project will be less than the applicable SJVAPCD emission thresholds for criteria pollutants.

The Project's long-term emissions are considered less than significant. Therefore, no mitigation is needed.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be *less than significant*.

Examples of Type B projects (New project impacted by existing toxic sources):

This category includes residential, commercial, and institutional developments proposed to be located in the vicinity of existing toxic emission sources such as:

- Stationary sources,
- Freeways or high traffic roads
- Rail yards, and
- Warehouse distribution centers.

The proposed Project is not a Type A project and would not place new toxic sources in the vicinity of existing sources. An evaluation of nearby land uses shows that the Project will not place sensitive receptors in the vicinity of existing toxic sources, therefore, it would not be considered a Type B project as well. As such, there would not be a significant contribution to health effects from TAC.
Based on the assessment above, the Project will not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors) and any impacts would be less than significant.

d. Less than significant impact

The Sensitive receptors refer to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality). Land uses that have the greatest potential to attract these types of sensitive receptors include schools, parks, playgrounds, daycare centers, nursing homes, hospitals, and residential communities.

The first step in evaluating the potential for impacts to sensitive receptors for TACs from the Project is to perform a screening level analysis. One type of screening tool is found in the CARB Handbook: Air Quality and Land Use Handbook: A Community Perspective. The screening level analysis for the Project shows that TACs are not a concern. An evaluation of nearby land uses shows that the Project will not place sensitive receptors in the vicinity of existing toxic sources. Therefore, the Project will not expose sensitive receptors to substantial pollutant concentrations and any impacts would be less than significant. No mitigation is required. Impacts would be *less than significant*.

e. Less than significant impact

The proposed Project will not generate odorous emissions given the nature or characteristics of residential developments. It should be noted that there are no existing significant odor sources in the nearby vicinity that would significantly impact the Project. As a result, the Project will not be evaluated for its potential to place sensitive receptors near existing odor sources.

The intensity of an odor source's operations and its proximity to sensitive receptors influences the potential significance of odor emissions. The SJVAPCD has identified some common types of facilities that have been known to produce odors in the SJVAB. The types of facilities that are known to produce odors are shown in Table 3-3 below along with a reasonable distance from the source within which, the degree of odors could possibly be significant. None of the facilities shown in Table 3-3 of the AQIA fit the characteristics of the Project.

Table-3
Screening Levels for Potential Odor Sources

Type of Facility	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	1 mile
Food Processing Facility	1 mile
Feed Lot/Dairy	1 mile
Rendering Plant	1 mile

Source: 2015 GAMAQI

Based on the assessment above, the Project will not generate potential odorous emissions or attract receivers and other sensitive receptors near existing odor sources. No mitigation is required. Impacts would be *less than significant*

IV. BIOLOGICAL RESOURCES -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	X	☐	☐
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?	☐	☐	☐	X
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?	☐	☐	☐	X
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	X
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?	☐	☐	☐	X

Discussion:

(a) Less than Significant Impact with Mitigation Incorporated
The site is located within an area that has had occurrences of the San Joaquin Kit fox and Tipton kangaroo rat. Both species are federally listed as endangered and only the San Joaquin kit fox is state listed. 2

MM- Bio 1 (Preconstruction Surveys). Preconstruction surveys for the San Joaquin kit fox shall be conducted on and within 200 feet of the project site, no less than 14 days and no more than 30 days prior to the beginning of initial ground disturbance activities on the site. The primary objective is to identify kit fox habitat features (e.g., potential dens and refugia) on the project site and evaluate their use by kit foxes. If an active kit fox den is detected within or immediately adjacent to the area of work, the USFWS shall be contacted immediately to determine the best course of action. Preconstruction surveys will be repeated following any lapses in construction of 30 days or more

2 BIO Report by Live Oak Associates, Inc. September 10, 2020

MM-Bio 2 (Avoidance of Active Dens). Should active kit fox dens be detected during preconstruction surveys, the Sacramento Field Office of the USFWS and the Fresno Field Office of CDFW will be notified. A disturbance-free buffer will be established around the burrows in consultation with the USFWS and CDFW, to be maintained until an agency-approved biologist has determined that the burrows have been abandoned.

MM Bio 3 (Minimization). Future construction activities will observe all minimization measures presented in the *USFWS Standardized Recommendations*. Such measures include, but are not limited to: restriction of construction-related vehicle traffic to established roads, construction areas, and other designated areas; inspection and covering of structures (e.g., pipes), as well as installation of escape structures, to prevent the inadvertent entrapment of kit foxes; restriction of rodenticide and herbicide use; and proper disposal of food items and trash.

MM- Bio 4 (Employee Education Program). Prior to the start of future construction activities, the applicant will retain a qualified biologist to conduct a tailgate training for all construction staff on the San Joaquin kit fox. This training will include a description of the kit fox and its habitat needs; a report of the occurrence of kit fox in the project site; an explanation of the status of the species and its protection under the Endangered Species Act; and a list of the measures being taken to reduce impacts to the species during construction. Attendees will be provided a handout with all of the training information included in it. The applicant will use this handout to train any construction personnel that were not in attendance at the first meeting, prior to those personnel starting work on the site.

MM-Bio 5 (Mortality Reporting). The Sacramento Field Office of the USFWS and the Fresno Field Office of CDFW will be notified in writing within three working days in case of the accidental death or injury to a San Joaquin kit fox during construction. Notification must include the date, time, location of the incident or of the finding of a dead or injured animal, and any other pertinent information.

Mitigation. The following measures will be implemented in order to minimize construction disturbance to active migratory bird nests:

MM- Bio 6 (Avoidance). If feasible, future tree removal and residential buildout will occur outside of the avian nesting season, typically defined as February 1 to August 31.

***MM Bio 7 (Preconstruction Surveys*).** If future tree removal or construction activities are to occur between February 1 and August 31, a qualified biologist will conduct pre-construction surveys on and within 250 feet of the project area for active migratory bird nests within 30 days prior to the start of work. The survey will extend out to 500 feet for raptors, and ½ mile for Swainson's hawk, where accessible. Should any active nests be discovered in or near proposed construction zones, the biologist will identify a suitable construction-free buffer around the nest. This buffer will be identified on the ground with flagging or fencing, and will be maintained until the biologist has determined that the young have fledged and are capable of foraging independently.

Mitigation. The following measures will be implemented for the protection of roosting bats:

MM-Bio 8 (Temporal Avoidance). To avoid potential impacts to maternity bat roosts, and if feasible, future removal of the site's English walnut tree should occur outside of the period between April 1 and September 30, the time frame within which colony-nesting bats generally assemble, give birth, nurse their young, and ultimately disperse.

MM Bio 9 (Preconstruction Surveys). If removal of the walnut tree must occur between April 1 and September 30 (general maternity bat roost season), then within 30 days prior to scheduled removal, a qualified biologist will conduct a survey for roosting bats. The biologist will visually inspect all potential roost sites for individual bats, guano, and staining, and will listen for bat vocalizations. If necessary, the biologist will wait for nighttime emergence of bats from roost sites. If no ***Mitigation*** bats are observed to be roosting or breeding, then no further action would be required, and removal of the walnut tree could proceed.

MM Bio 10 (Minimization). If a non-breeding bat colony is found in the English walnut tree, the individuals will be humanely evicted from the tree, under the direction of a qualified biologist, to ensure that no harm or "take" of any bats occurs as a result of construction activities.

MM Bio 11 (Avoidance of Maternity Roosts). If a maternity colony is detected during preconstruction surveys, a disturbance-free buffer will be established around the colony and remain in place until a qualified biologist determines that the nursery is no longer active. The disturbance-free buffer will range from 50 to 100 feet as determined by the biologist.

(b) No Impact
The site is not located within proximity to any riparian habitat or natural community.

(c) No Impact
The site is not located within proximity to any federally or state protected wetland areas. The site is located within a partially developed neighborhood within the City.

(d) No Impact
There is not an existing Habitat Conservation Plan adopted or being implemented covering the project site. Therefore, there is no impact.

Wildlife corridors are established migration routes commonly used by resident and migratory species for passage from one geographic location to another. Corridors are present in a variety of habitats and link otherwise fragmented acres of undisturbed area. Maintaining the continuity of established wildlife corridors is important to sustain species with specific foraging requirements, preserve a species' distribution potential, and retain diversity among many wildlife populations. Therefore, resource agencies consider wildlife corridors to be a sensitive resource. The majority of the project site has been disturbed by previous and ongoing disking or some other form of disturbance and could occasionally provide opportunity for local wildlife movement, though adjacent lands are farther removed from anthropogenic activities and offer more optimal movement opportunities. The CDFW BIOS Viewer provided the data on movement corridors and linkages. Data reviewed included the Essential Connectivity Areas [ds620] layer and the Missing Linkages in California [ds420] layer. The project site is not within or adjacent to any Essential Connectivity Areas or Missing Linkages.

(e) No Impact
The City currently does not have any preservation policies protecting biological resources. Therefore, there is no impact.

(f) No Impact
There is not an existing Habitat Conservation Plan adopted or being implemented covering the project site. Therefore, there is no impact.

General Information
Special Status Species include:

- Plants and animals that are legally protected or proposed for protection under the California

Endangered Species Act (CESA) or Federal Endangered Species Act (FESA);

- Plants and animals defined as endangered or rare under the California Environmental Quality Act (CEQA) §15380;
- Animals designated as species of special concern by the U.S. Fish and Wildlife Service (USFWS) or California Department of Fish and Game (CDFG);
- Animals listed as "fully protected" in the Fish and Game Code of California (§3511, §4700, §5050 and §5515); and
- Plants listed in the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California.

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS (adapted from CDFW 2020)

Species Listed as Threatened or Endangered and/or Fully Protected

Species	Status	Habitat	Occurrence within the Project Site
Blunt-nosed Leopard Lizard (BNLL) (*Gambelia sila*)	FE, CE, CFP	Frequents grasslands, alkali meadows and chenopod scrub of the San Joaquin Valley. Prefers flat areas with open space for running. Takes cover under large shrubs and in small mammal burrows.	**Absent.** The BNLL was historically known from the project vicinity. There are five occurrence records within 3 miles of the project site, all from the 1970s and 1980s; the closest of these is approximately 1-2 miles west of the site (Figure 4). However, suitable habitat for the BNLL is absent from the site and surrounding lands.
Swainson's Hawk (*Buteo swainsoni*)	CT	This breeding migrant to California nests in mature trees in riparian areas and oak savannah, and occasionally in lone trees at the margins of agricultural fields. Requires adjacent suitable foraging areas such as grasslands or alfalfa fields supporting rodent populations.	**Unlikely.** Although the site's English walnut tree is structurally suitable for nesting by this species, Swainson's hawks do not typically nest in orchards, and foraging habitat in the project vicinity is both marginal and extremely limited. The closest known nesting occurrences of Swainson's hawks are 8.5 to 10 miles north of the project site (Figure 5).
Western Snowy Plover (*Charadrius alexandrines nivosus*)	FT, CSC	Breeds on barren to sparsely vegetated ground at alkaline or saline lakes, reservoirs, ponds, dunes and riverine sand bars.	**Absent.** Suitable habitat for the western snowy plover is absent from the project site. The closest known occurrence of this species is a 1983 record located 13 miles to the west.
Tricolored Blackbird (*Agelaius tricolor*)	CT	Nests colonially near fresh water in dense cattails or tules, or in thickets of willows or shrubs. In the San Joaquin Valley, has increasingly been documented nesting in wheat fields. Forages in grassland and cropland areas.	**Unlikely.** The project site does not offer suitable foraging or nesting habitat for the tricolored blackbird. The nearest extant nesting occurrence of this species is located approximately 7.5 miles southwest of the site.
Tipton Kangaroo Rat (*Dipodomys nitratoides nitratoides*)	FE, CE	This nocturnal rodent occupies underground burrows in valley saltbush scrub and valley sink scrub habitats in the southern San Joaquin Valley east of the California Aqueduct.	**Absent.** This species is known from natural lands in the vicinity (Figure 4); however, the site's, and surrounding lands, intensively maintained habitats are unsuitable for the Tipton kangaroo rat.

Nelson's Antelope Squirrel (*Ammospermophilus nelsoni*)	CT	Occurs in the San Joaquin Valley in broken terrain with small gullies and washes. Suitable habitats include widely spaced alkali scrub and annual grassland. Occupies modified kangaroo rat burrows or self-constructed burrows.	**Absent.** The site's, and surrounding lands, intensively maintained habitats are unsuitable for Nelson's antelope squirrel. The closest know occurrence is approximately 7 miles to the southwest, recorded in 1988.

Species	Status	Habitat	Occurrence within the Project Site
Subtle Orache (*Atriplex subtilis*)	CNPS 1B	Occurs in valley and foothill grassland in alkaline soils; blooms August-October; elevation 130-	**Absent.** Suitable habitat for this species is absent from the project site. The closest known occurrences are approximately 7 miles to the north.
Alkali Mariposa-lily (*Calochortus striatus*)	CNPS 1B	Occurs in alkaline meadows and ephemeral washes within chaparral and scrub habitats between 230 and 5,200 feet in elevation. Blooms April-June.	**Absent.** Suitable habitat for this species is absent from the project site. The closest known occurrence is approximately 5 miles to the northwest at the Allensworth Ecological Reserve, recorded in 1995.
Recurved Larkspur (*Delphinium recurvatum*)	CNPS 1B	Occurs in cismontane woodland and valley and foothill grasslands; blooms March-June; alkaline soils; elevations below 2,500 feet.	**Absent.** There is an historic occurrence of this species from on or very near the site from 1958 (Figure 4). However, the site was converted to agriculture decades ago, eliminating suitable habitat for this species.
Spiny-sepaled Button Celery (*Eryngium spinosepalum*)	CNPS 1B	Occurs in vernal pools, swales and roadside ditches of the San Joaquin Valley and Sierra Nevada foothills between 330 and 4200 feet. Blooms April – July.	**Absent**. Suitable habitat is absent from the site. The site was converted to agriculture many decades ago, eliminating suitable habitat for this species. There is a historic occurrence of this species approximately 2.5 miles south of the site, recorded in 1965 (Figure 4).
Munz's Tidy-tips (*Layia munzii*)	CNPS 1B	Occurs in chenopod scrub and valley and foothill grassland; alkaline clay soils; blooms March-April; elevation 150-2,500 feet.	**Absent.** Suitable habitat for this species is absent from the project site, and there are no known extant populations in the vicinity.
Alkali-sink Goldfields (*Lasthenia chrysantha*)	CNPS 1B	Occurs in vernal pools or wet saline flats of valley grassland, alkali sink, or wetland-riparian habitats below 330 feet. Blooms February – April.	**Absent.** There is a 1979 occurrence of this species from on or very near the site, and several others in the immediate vicinity (Figure 4). However, the site was converted to agriculture decades ago, eliminating suitable habitat for this species.
Coulter's Goldfields (*Lasthenia glabrata spp. coulteri*)	CNPS 1B	Occurs in alkaline soils of playas and vernal pools; elevations below 4,000 feet. Blooms February-June.	**Absent.** Suitable habitat for this species is absent from the project site, and there are no known populations in the vicinity. The closest known occurrence is approximately 5 miles northwest of the site, recorded in 2016.

Species	Status	Habitat	Occurrence within the Project Site
Blunt-nosed Leopard Lizard (BNLL) (*Gambelia sila*)	FE, CE, CFP	Frequents grasslands, alkali meadows and chenopod scrub of the San Joaquin Valley. Prefers flat areas with open space for running. Takes cover under large shrubs and in small mammal burrows.	**Absent.** The BNLL was historically known from the project vicinity. There are five occurrence records within 3 miles of the project site, all from the 1970s and 1980s; the closest of these is approximately 1-2 miles west of the site (Figure 4). However, suitable habitat for the BNLL is absent from the site and surrounding lands.

Swainson's Hawk (*Buteo swainsoni*)	CT	This breeding migrant to California nests in mature trees in riparian areas and oak savannah, and occasionally in lone trees at the margins of agricultural fields. Requires adjacent suitable foraging areas such as grasslands or alfalfa fields supporting rodent populations.	**Unlikely.** Although the site's English walnut tree is structurally suitable for nesting by this species, Swainson's hawks do not typically nest in orchards, and foraging habitat in the project vicinity is both marginal and extremely limited. The closest known nesting occurrences of Swainson's hawks are 8.5 to 10 miles north of the project site (Figure 5).
Western Snowy Plover (*Charadrius alexandrines nivosus*)	FT, CSC	Breeds on barren to sparsely vegetated ground at alkaline or saline lakes, reservoirs, ponds, dunes and riverine sand bars.	**Absent.** Suitable habitat for the western snowy plover is absent from the project site. The closest known occurrence of this species is a 1983 record located 13 miles to the west.
Tricolored Blackbird (*Agelaius tricolor*)	CT	Nests colonially near fresh water in dense cattails or tules, or in thickets of willows or shrubs. In the San Joaquin Valley, has increasingly been documented nesting in wheat fields. Forages in grassland and cropland areas.	**Unlikely.** The project site does not offer suitable foraging or nesting habitat for the tricolored blackbird. The nearest extant nesting occurrence of this species is located approximately 7.5 miles southwest of the site.
Tipton Kangaroo Rat (*Dipodomys nitratoides nitratoides*)	FE, CE	This nocturnal rodent occupies underground burrows in valley saltbush scrub and valley sink scrub habitats in the southern San Joaquin Valley east of the California Aqueduct.	**Absent.** This species is known from natural lands in the vicinity (Figure 4); however, the site's, and surrounding lands, intensively maintained habitats are unsuitable for the Tipton kangaroo rat.
Nelson's Antelope Squirrel (*Ammospermophilus nelsoni*)	CT	Occurs in the San Joaquin Valley in broken terrain with small gullies and washes. Suitable habitats include widely spaced alkali scrub and annual grassland. Occupies modified kangaroo rat burrows or self-constructed burrows.	**Absent.** The site's, and surrounding lands, intensively maintained habitats are unsuitable for Nelson's antelope squirrel. The closest know occurrence is approximately 7 miles to the southwest, recorded in 1988.
Species	**Status**	**Habitat**	**Occurrence within the Project Site**
San Joaquin Kit Fox (SJKF) (*Vulpes macrotis mutica*)	FE, CT	Frequents desert alkali scrub annual grasslands and may forin adjacent agricultural habi- Utilizes enlarged (5 to 8 inches diameter) ground squirrel burras denning habitat.	**Possible.** The site's, and surroundlands, intensively maintained habitats marginal to unsuitable for the Joaquin kit fox. Nonetheless, a substantial number of burrows occur the orchard. Two burrows of suitadimensions for kit fox were observed the southeastern portion of the site, near the basin and the other in understory of the orchard. The site offoraging and denning opportunities any wandering SJKF that might hapto pass through the site. This species historically well documented in project vicinity, with 45 CNDDB occurrences within 10 miles of the (Figure 5). Only two such occurare from the last 20 years, however.
Western Spadefoot (*Spea hammondii*)	CSC	Occurs in grasslands of Joaquin Valley, where it breeds vernal pools or other seawetlands and aestivates in underground refugia such rodent burrows. Baumberger et (2019) recorded a maxidistance of around 890 between breeding and aestivasites.	**Absent.** Suitable aquatic habitat for species is absent from the project site adjacent lands. The closest occurrence of the western spadefoot approximately 4 miles northwest of site, recorded in 1992.
Western Pond Turtle (*Actinemys marmorata*)	CSC	Found in streams, marshes, rivponds, and lakes pos-	**Absent.** Suitable habitat for this spe- is absent from the project site

		basking habitat.	adjacent lands. The on-site basin is perennial and is regularly maintained.
San Joaquin Coachwhip (*Coluber flagellum ruddocki*)	CSC	Occurs in open, dry, treeless ar- with little or no cover, including valley grassland and salt- scrub. Avoids dense vegeta- where it cannot move quickly, including mixed oak chapar- woodland. Takes refuge in ro- burrows, under shaded vegeta- and under surface objects.	**Absent.** Although small mammal burrows were prevalent, the main- orchard and associated ruderal and are marginal to unsuitable for species. The nearest docu- occurrence is approximately 6 northwest of the site, recorded in 1992.

Species	Status	Habitat	Occurrence within the Project Site
Bakersfield Legless Liz- ard (*Anniella grinnelli*)	CSC	Occurs in sparsely vegetated ar- eas of beach dunes, chaparral, pine- oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Requires moist soils.	**Absent.** The site's maintained orchard, ruderal lands, and basin are unsuitable for this species. Adjacent lands are also highly maintained and unsuitable. The closest known occurrence is approxi- mately 8.5 miles to the northwest, rec- orded in 2017.
Coast Horned Lizard (*Phrynosoma blainvillii*)	CSC	Occurs in the lower Si- foothills and throughout the central and southern Califor- coast in relatively open areas. the early morning, may be basking on the ground or on or boulders. Escapes heat burying itself in loose soil. During periods of inactivity and winter hibernation, lives underground small mammal burrows or crevices, or under rocks or logs.	**Absent.** The site's maintained or- ruderal lands, and basin are unsuitable this species. Adjacent lands are highly maintained and unsuitable.
Kern Brook Lamprey (*Lampetra hubbsi*)	CSC	First discovered in the Fri- Kern Canal, it inhabits silty backwaters of large rivers foothill regions the lower of the Merced River, River, Kings River, and San Joaquin River, as well as in Kings River above Pine Reservoir and the San River above Millerton Reservoir, but below Redinger Dam.	**Absent.** Suitable habitat is absent the site.
Burrowing Owl (*Athene cunicularia*)	CSC	Frequents open, dry annual perennial grasslands, deserts, scrublands characterized by growing vegetation. Depend- upon burrowing mammals, most notably the California ground squirrel, for nest burrows.	**Unlikely.** The burrowing owl is from the vicinity, with two documented occurrences within 3 miles of the recorded in 1992 and 2003 (Figure The site consists primarily of or- land unsuitable for this species, and adjoined by similarly incompatible including orchards, vineyards, and residential development. Although outside berms of the site's agricul- basin contain California ground squir- burrows theoretically suitable for burrowing owl nesting and roost- burrowing owls would be ex- unlikely to access this area, given small size and orchard setting.
Mountain Plover (*Charadrius montanus*)	CSC	Forages in short grasslands freshly plowed fields of the Central Valley. This species not breed in California.	**Absent.** Suitable habitat for this spe- is absent from the project site.

EXPLANATION OF OCCURRENCE DESIGNATIONS AND STATUS CODES

Present: Species observed on the site at time of field surveys or during recent past.
Likely: Species not observed on the site, but it may reasonably be expected to occur there on a regular

basis. Possible: Species not observed on the site, but it could occur there from time to time. Unlikely: Species not observed on the site, and would not be expected to occur there except, perhaps, as a transient. Absent: Species not observed on the site, and precluded from occurring there because habitat requirements not met.

STATUS CODES

FE	Federally Endangered	CE	California Endangered
FT	Federally Threatened	CT	California Threatened
FPE	Federally Endangered (Proposed)	CFP	California Protected
FC	Federal Candidate	CSC	California Species of Special Concern
CNP S 1A	California Native Plant Society Listing Plants Presumed Extinct in California	3	Plants about which we need more information – a review list
1B	Plants Rare, Threatened, or Endangered in California and elsewhere	4	Plants of limited distribution – a watch list
2	Plants Rare, Threatened, or Endangered in California, but more common		

V. CULTURAL RESOURCES -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	X	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	X	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	X	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	X	☐	☐

Discussion:

(a) Less than Significant Impact with Mitigation Incorporated
The project site is a disturbed, undeveloped, infill property located within a residentially developed area. No surveys or record searches have been conducted on the site, so it is unknown if any cultural or historical resources are located on-site. As a result, although unlikely, the following mitigation measures shall be applied:

MM CUL-1 – If prehistoric or historic-era cultural materials are encountered during construction activities, all work in the immediate vicinity of the find shall halt until a qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeologist, can evaluate the significance of the find and make recommendations. Cultural resource materials may include prehistoric resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock as well as historic resources such as glass, metal, wood, brick, or structural remnants. If the qualified professional archaeologist determines that the discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from project implementation. These additional studies may include avoidance, testing, and evaluation or data recovery excavation.
If a potentially-eligible resource is encountered, then the qualified professional archaeologist, the Lead Agency, and the project proponent shall arrange for either 1) total avoidance of the resource or 2) test excavations to evaluate eligibility and, if eligible, total data recovery. The determination shall be formally documented in writing and submitted to the Lead Agency as verification that the provisions for managing unanticipated discoveries have been met.

(b) Less than Significant Impact with Mitigation Incorporated
The project site is a disturbed, undeveloped, infill property located within a residential and industrially developed area. No surveys or record searches have been conducted on the site, so it is unknown if any archeological resources are located on-site. As a result, although unlikely, **MM CUL-1** shall be applied as the mitigation for this impact.

(c) Less than Significant Impact with Mitigation Incorporated
There are no unique geological features or known fossil-bearing sediments in the vicinity of the project site. It is

unlikely that any ground disturbance activities would be of a depth to uncover paleontological resources. However, there remains the possibility for previously unknown, buried paleontological resources or unique geological sites to be uncovered during subsurface construction activities. Therefore, this would be a potentially significant impact. Mitigation is proposed requiring standard inadvertent discovery procedures to be implemented to reduce this impact to a level of less than significant.

MM CUL-2 – During any ground disturbance activities, if paleontological resources are encountered, all work within 25 feet of the find shall halt until a qualified paleontologist as defined by the Society of Vertebrate Paleontology Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (2010), can evaluate the find and make recommendations regarding treatment. Paleontological resource materials may include resources such as fossils, plant impressions, or animal tracks preserved in rock. The qualified paleontologist shall contact the Natural History Museum of Los Angeles County or other appropriate facility regarding any discoveries of paleontological resources.
If the qualified paleontologist determines that the discovery represents a potentially significant paleontological resource, additional investigations and fossil recovery may be required to mitigate adverse impacts from project implementation. If avoidance is not feasible, the paleontological resources shall be evaluated for their significance. If the resources are not significant, avoidance is not necessary. If the resources are significant, they shall be avoided to ensure no adverse effects, or such effects must be mitigated. Construction in that area shall not resume until the resource appropriate measures are recommended or the materials are determined to be less than significant. If the resource is significant and fossil recovery is the identified form of treatment, then the fossil shall be deposited in an accredited and permanent scientific institution. Copies of all correspondence and reports shall be submitted to the Lead Agency.

(d) Less than Significant Impact with Mitigation Incorporated
As previously noted, a search or survey has not been conducted so it is not known if sensitive cultural resources exist in the vicinity of the project area. Human remains are not known to exist within the project area. However, construction would involve earth-disturbing activities, and it is still possible that human remains may be discovered, possibly in association with archaeological sites. MM CUL-3 has been included in the unlikely event that human remains are found during ground-disturbing activities. Impacts would be less than significant with implementation of mitigation.

MM CUL-3 – If human remains are discovered during construction or operational activities, further excavation or disturbance shall be prohibited pursuant to Section 7050.5 of the California Health and Safety Code. The specific protocol, guidelines, and channels of communication outlined by the Native American Heritage Commission, in accordance with Section 7050.5 of the Health and Safety Code, Section 5097.98 of the Public Resources Code (Chapter 1492, Statutes of 1982, Senate Bill 297), and Senate Bill 447 (chapter 44, Statutes of 1987), shall be followed. Section 7050.5(c) shall guide the potential Native American involvement, in the event of discovery of human remains, at the direction of the county coroner.

General Information

Public Resource Code 5021.1(b) defines a historic resource as “any object building, structure, site, area or place which is historically significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California.” These resources are of such import, that it is codified in CEQA (PRC Section 21000) which prohibits actions that “disrupt, or adversely affect a prehistoric or historic archaeological site or a property of historical or cultural significance to a community or ethnic or social groups; or a paleontological site except as part of a scientific study.”

Archaeological importance is generally, although not exclusively, a measure of the archaeological research value of a site which meets one or more of the following criteria:

- Is associated with an event or person of recognized significance in California or American history or of recognized scientific importance in prehistory.
- Can provide information which is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable archaeological research questions.
- Has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind.
- Is at least 100 years old and possesses substantial stratigraphic integrity (i.e. it is essentially undisturbed and intact).

- Involves important research questions that historic research has shown can be answered only with archaeological methods.

Reference CEQA Guidelines §15064.5 for definitions.

VI. GEOLOGY AND SOILS -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Expose people or structures to 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.	☐	☐	☐	X
ii) Strong seismic ground shaking?	☐	☐	☐	X
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	X
iv) Landslides?	☐	☐	☐	X
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	X
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?	☐	X	☐	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	X	☐	☐
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?	☐	☐	☐	X

Discussion:

(a-i) No Impact
There are no known faults within the direct proximity of the project site. The nearest faults are located over 10 miles away from the project site to both the southwest and southeast.

(a-ii) No Impact
There are no faults within the direct proximity of the project site that would expose people or structures to strong seismic ground shaking. The nearest faults are located over 10 miles away from the project site to both the southwest and southeast.

(a-iii) Less than Significant Impact with Mitigation Incorporated
It is not clear whether the project is within an area prone to liquefaction or ground failure. Therefore, the following mitigation measure will be applied:

MM GEO-1 – Prior to final design and issuance of grading permits, a geotechnical study shall be prepared for the project site and recommendations of the study shall be incorporated into final design of the project. A copy of the report shall be submitted to the Community Development Department for review.

(a-iv) No Impact
The project site is extremely flat and not an area prone to any sort of landslides. Therefore, there is no impact.

(b) No Impact

The project tract map is proposed to develop an area of town that is not currently farmed. The proposal would develop the entirety of the approximately 40 acre site for residential use. The development of the proposed project is not expected to subject the site to any extreme erosion problems. As is noted in Response 3.4.9 (a), the State Water Resources Control Board's (SWRCB) National Pollutant Discharge Elimination System (NPDES) General Permit (No. 2012-0006-DWQ) for stormwater discharges associated with construction and land disturbance activities, The project applicant must develop and implement a Stormwater Pollution Prevention Plan (SWPPP) that specifies best management practices (BMPs) to prevent construction pollutants, including erosion of soils (such as topsoil), from moving offsite. MM HYD-1 within the Hydrology section below requires the preparation and implementation of a SWPPP to comply with the Construction General Permit requirements. Therefore, the project would have a less-than-significant impact on soil erosion and loss of topsoil with implementation of both **GEO-1** and **HYD-1.**

(c) Less than Significant Impact with Mitigation Incorporated
The project site soils are considered stable in that there is not a potential of on- or offsite landslides, lateral spreading, subsidence or collapse. However, as discussed in Impact 4.4.6.a.iii, the project site soils could be subject to potential liquefaction. The project is potentially 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 liquefaction. Furthermore, the structures would be subject to all applicable ordinances of the DMC Title 14 – Building and Construction, as well as all applicable IBC and CBC earthquake construction standards, including those relating to soil characteristics. In addition, the implementation of **MM GEO-1**, which requires the preparation of a geotechnical study, would reduce project impacts to a less than significant.

(d) Less than Significant Impact with Mitigation Incorporated
Expansive clay soils are subject to shrinking and swelling due to changes in moisture content over the seasons. These changes can cause damage or failure of foundations, utilities, and pavements. During periods of high moisture content, expansive soils under foundations can heave and result in structures lifting. In dry periods, the same soils can collapse and result in settlement of structures. Implementation of **MM GEO-1** would reduce potential site-specific impacts to less than significant levels.

(e) No Impact
The project would be served by existing sewer which is located within the adjacent right of way. Therefore, there is no impact.

General Information

Delano is located in the northwestern part of Kern County. According to Delano's General Plan, three minor earthquake epicenters have been designated ten miles southwest of the City. The Pond-Poso Fault Line has been identified six miles southwest of the City. This fault line traverses the area in a northwesterly-southeasterly direction. Although the Pond-Poso Fault has been associated with seismic activity, all of the recorded activity has been to the southwest of the fault line and, therefore, not in the Delano area. The magnitude of these tremors has been in the relatively mild range of 3 to 4 on the Richter Scale. It is thought that this fault represents no serious threat to the activities in the area.

Two minor sub-surface faults running in a northwest-southeast direction through Delano have been identified by William H. Park, Registered Geologist. These two sub-surface faults are located 6,000 and 7,000 feet below sea level. There is no evidence that either of these faults exists on the surface or will have any adverse effects on urban development. As a result, ground shaking potential and fault displacement potential are both low.

Liquefaction is a process whereby soil is temporarily transformed to a fluid form during intense and prolonged ground shaking. Liquefaction does not pose a serious threat in the Delano area. There are no known shallow water tables in the area and no significant ground motion activity. There have been no reported incidents of liquefaction hazards in the Delano Planning Area.

According to Delano's General Plan, the hazardous potential of soil erosion is minimized by the low slope grades in the Delano area. The land is flat and no hills or mountains are found in the immediate area. Most of the land has been cultivated and used for urban development or agricultural production. However, wind erosion is prominent in the area due to the agricultural activities in the area.

Delano is situated at the base of the Sierra Nevada Foothills. While the geographical setting of the community reduces the significance of flood hazard in the area, flooding problems do exist in certain sections of the community. According to Delano's General Plan, ponding is the major flooding problem in Delano with the High Street Pool, the 20th Avenue Pool, the Rag Gulch being identified as flood hazard areas. As the storm water flows

through the city in an east to west direction, the elevated Southern Pacific Railroad that runs north to south obstructs water movement from continuing westward. Thus, water is collected in these areas east of the railroad tracks.

The 20th Avenue Pool is located between 18th Avenue and County Line Road while the High School Pool is bounded by 8th Avenue and Cecil Avenue. Conversely, the Rag Gulch flows to the west through the agricultural land from the Friant-Kern Canal. As the water flow approaches Delano, it produces shallow sheet flooding across the airport during high flow periods.

According to Delano's General Plan, land subsidence activity in the Delano area is quite limited. Of the four identified subsidence classifications, only subsidence caused by withdrawal of groundwater is significant. Tectonic subsidence, oil and gas-extracted subsidence, and subsidence caused by hydro compaction of moisture-deficient alluvial deposits is minimal or non-existent.

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

(a)

Less than Significant Impact

The SJVAPCD does not provide numeric thresholds to assess the significance of greenhouse gas emissions. Instead, the SJVAPCD "Guidance for Valley Land Use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA" states that projects which achieve a 29% GHG emission reduction compared to Business as Usual (BAU) would be determined to have a less than significant individual and cumulative impact for GHG. "Business as usual" (BAU) conditions are defined based on the year 2005 building energy efficiency, average vehicle emissions, and electricity energy conditions. The BAU conditions assume no improvements in energy efficiency, fuel efficiency, or renewable energy generation beyond that existing today.

The project's operational GHG emissions and 2005 BAU GHG emissions were estimated using CalEEMod (Attachment C). The Project's annual GHG emissions are less than the 2005 BAU emissions by 2,798 MT CO2e, which is a 34.8% reduction. Therefore, the Project would not generate a cumulatively considerable GHG impact nor would it conflict with any applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions.

	CO2 (MT/year)	CH4 (MT/year)	N2O (MT/year)	CO2e (MT/year)
2023 Project Opera-	**5,104.4**	**4.8**	**0.02**	**5,231.4**
2005 BAU	**7,820.3**	**8.0**	**0.03**	**8,029.4**
% Reduction from BAU				**34.8%**

Table 11. Projected Project Operational GHG Emissions Compared to 2005 BAU

Potential Impacts to Sensitive Receptors

Sensitive receptors are defined as areas where young children, chronically ill individuals, the elderly, or people who are more sensitive than the general population reside, such as schools, hospitals, nursing homes, and daycare centers. Albany Park Elementary School is the nearest sensitive receptor and is located approximately 0.29 miles from the proposed project site.

The project does not include any project components identified by the California Air Resources Board that could potentially impact any sensitive receptors (such as heavily traveled roads, distribution centers, fueling stations,

and dry-cleaning operations). Based on the operational emissions estimates and nature of the proposed project, the proposed project is not anticipated to negatively impact any sensitive receptors.

Potential Odor Impacts
Although some typical construction-related odors would be generated during project construction, these odors are not anticipated to affect a substantial number of people or be particularly adverse. The project does not include any uses known to be a source of nuisance odors (listed in Table 6 of the SJVAPCD's GAMAQI). The impact is expected to be less than significant.

CONCLUSIONS

Construction and operation of the proposed project would result in criteria pollutant and GHG emissions, however these emissions would not exceed the thresholds of significance established by the SJVAPCD. Impacts to air quality from the proposed project would be less than significant.

(a) Less than Significant Impact

No mitigation is required. There would be a *less than significant impact*.

(b) Less than Significant Impact

Based on the assessment above, the Project will not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. The Project would further the achievement of the City's and the County's greenhouse gas reduction goals. Therefore, any impacts would be less than significant. .No mitigation is required. There would be a *less than significant impact*.

VIII. HAZARDS AND HAZARDOUS MATERIALS – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	X	☐	☐
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?	☐	X	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	X
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?	☐	☐	☐	X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	X
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	X

h)	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?	☐	☐	☐	X

Discussion:

(a) Less than Significant Impact with Mitigation Incorporated
The project includes the construction of a residential subdivision which will likely use and/or sell various chemicals in volumes above 55 gallons that may be hazardous. As a result, the project shall comply with MM HAZ-1. **MM HAZ-1**: Prior to commencement of construction, the project proponent shall submit to Kern County Department of Environmental Health Services, a Hazardous Materials Business Plan (HMBP) pursuant to Health and Safety Code Chapter 6.95, sections 25500 to 25520. The HMBP shall outline the types and quantities of hazardous materials used onsite and indicate onsite safety measures to ensure such materials are properly handled and stored. A copy of the approved HMBP shall be submitted to the Community Development Department.

(b) Less than Significant Impact with Mitigation Incorporated
As discussed above, the storage of chemicals and other items at the retail store for use or purchase could foreseeably upset and accident conditions that involve the release of potentially hazardous chemicals that impact the environment. The implementation of **MM HAZ-1** would mitigate these associated impacts.

(c) No Impact
The project is located approximately 0.5 miles north of the nearest existing school, Fremont Elementary. As a result, there is no potential impact.

(d) No Impact
The project site is not listed on the hazardous material sites (Cortese List) associated with Government Code Section 65962.5. The nearest hazardous materials site, which is still currently active, is located at 811 Main Street at the former National Cleaners site.

e) No Impact
The project site is not located within the locally adopted local airport land use plan. Therefore, there is no impact.

(f) No Impact
The site is not located in the vicinity of a local private airstrip. The City's Municipal Airport is located approximately 1.5 miles for the project site. Therefore, there is no impact

(g) No Impact
The City currently is subject to the County's Hazard Mitigation Response Plan. However, the development of this site would no conflict with any aspects of that plan's implementation. Therefore, there is no impact.

(h) No Impact
The project site is an zoned for residential use within the city limits of Delano. The surrounding area does not consist of wildlands and is not subject to wildfires. Therefore, there is no impact.

General Information

Any hazardous material because of its quantity, concentration, physical or chemical properties, pose a significant present or potential hazard to human health and safety, or the environment the California legislature adopted Article I, Chapter 6.95 of the Health and Safety Code, Sections 25500 to 25520 that requires any business handling or storing a hazardous material or hazardous waste to establish a Business Plan. The information obtained from the completed Business Plans will be provided to emergency response personnel for a better-prepared emergency response due to a release or threatened release of a hazardous material and/or hazardous waste.

Business owners that handle or store a hazardous material or mixtures containing a hazardous material, which has a quantity at any one time during the year, equal to or greater than:

1) A total of 55 gallons,
2) A total of 500 pounds,
3) 200 cubic feet at standard temperature and pressure of compressed gas,
4) Any quantity of Acutely Hazardous Material (AHM).

Assembly Bill AB 2286 requires all business and agencies to report their Hazardous Materials Business Plans to the Certified Unified Program Agency (CUPA) information electronically at http://cers.calepa.ca.gov

IX. HYDROLOGY AND WATER QUALITY – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?	☐	☐	X	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	X	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	X	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	X
e) 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?	☐	X	☐	☐
f) Otherwise substantially degrade water quality?	☐	☐	☐	X
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	X
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	X
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	X
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	X

Discussion:

(a) **Less than Significant Impact**
The project site is not proposing to discharge any water that violate the standards allowed by the local or state agencies. Therefore, the impact is considered less than significant.

(b) **Less than Significant Impact**
The proposed project will connect to the City of Delano municipal systems, which is regulated by the Regional Water Quality Control Board (RWQCB) and the State Water Resources Control Board (SWRCB). The City, as the water purveyor, provides domestic water service to residential, commercial, and industrial users within the City. As an urban community, the City is required to prepare an Urban Water Management Plan (UWMP) that develops long-term planning strategies and discusses the deliveries and uses of water including supply sources, efficiencies, and demands. The City developed the 2010 UWMP (2011), to comply with the Urban Water Management Plan Act (California Water Code Section A0610) and the Water Conservation Bill of 2009 (SB X7-7) requirements (City of Delano, 2011b; pg. ix). The City water system consists of groundwater wells, a treatment facility, storage tanks, and distribution lines. Water is supplied entirely by groundwater, which is extracted from

the Kern County sub basin groundwater aquifers and then is treated, stored, and delivered through a grid distribution system.

The RWQCB is responsible for protecting water resources in the region. As such, the project would be required to comply with State Water Resource regulations including preparation of a Storm water Pollution Prevention Plan. The proposed project would not include activities that would substantially deplete groundwater Supplies or interfere substantially with groundwater recharge resulting in a net deficit of the local groundwater table level. Impacts would be considered less than significant.

(c) **Less than Significant Impact**
The project site is relatively flat. There are no streams, rivers, or other waterways on site. Runoff from precipitation currently percolates into the ground or drains into the City's storm drains. According to the Natural Resources Conservation Service Web Soil Survey website, the soils on the project site have a ponding frequency class of "none" meaning that ponding is not probable; the chance of ponding is nearly 0 percent in any year. All drainage generated will be collected within the city's stormwater drainage system and comply with all local development and operational standards.

(d) **No Impact**
Due to the proposed project site's level terrain, existing drainage patterns will not be altered in a manner which would result in substantial erosion, siltation or flooding on or off-site. Watercourses (streams/rivers) do not exist within, or near the project site.

(e) **No Impact**
The project will not create or contribute to runoff water which would exceed the capacity of existing or planned storm water drainage systems. In addition, the proposed project will not provide substantial sources of polluted runoff to the adjacent areas. Therefore, there is no impact.

(f) **Less than Significant Impact with Mitigation Incorporated**
Construction activities are subject to National Pollutant Discharge Elimination System (NPDES) general permit regulations, which include clearing, grading, stockpiling, and excavation that would result in soil disturbances to at least 1 acre of the total land area. The grading permit requires the development and implementation of a Storm water Pollution Prevention Plan (SWPPP) that specifies best management practices (BMPs) to prevent construction pollutants from contacting storm water, with the intent of keeping all products of erosion from moving off site. Construction-related erosion and sedimentation impacts as a result of soil disturbance would also be considered less than significant after implementation of a SWPPP.

MM HYD-1 – Prior to issuance of grading or building permits, the applicant must obtain an approved SWPPP from the Regional Water Control Board.

(g) **No Impact**
The proposed project is located outside the 100-year flood plain; therefore, there is no impact.

(h) **No Impact**
The proposed project is located outside the 100-year flood plain, therefore, there is no impact.

(i) **No Impact**
The project area has appropriate flood infrastructure, is located outside a significant flood plain, and does not propose to house people in an area prone to flooding. Therefore, there is no impact.

(j) **No Impact**
Tsunamis, seiche or mudflows are not likely to occur at the proposed project site. The project site is located over 60.0 miles away from the Pacific Ocean. The proposed project area is flat thus eliminating the possibility of mudflow. Therefore, there is no impact.

<u>General Information</u>

The primary source of domestic water for the City of Delano is groundwater. According to the Delano General Plan, in general, the groundwater quality of the City is relatively high. Production is generally low east of the community based on recent test wells east of Browning Road. Two existing wells and new well sites in the City will require treatment to remove DBCP, most likely using carbon filters. Other than this contaminant, the City's groundwater supply is suitable for domestic purposes without treatment. Prior to agricultural and urban development, groundwater moved from areas of recharge along the eastern rim of the Valley to areas of discharge along

the Valley axis. Recharge was primarily by seepage from stream flows. Under present conditions, groundwater is recharged primarily from stream flow percolation, from percolation basins developed by agricultural irrigation districts, by percolation from treated wastewater disposal facilities and from percolation attributed to excess applied surface irrigation water. Data from the regional map produced by the State of California, Department of Water Resources (DWR), San Joaquin District, entitled Lines of Equal Depth to Water in Wells, San Joaquin Valley, depicts groundwater flowing toward the southwest.

A seiche is an occasional and sudden oscillation of the water of a lake, bay or estuary producing fluctuations in the water level and caused by wind, earthquakes or changes in barometric pressure. A tsunami is an unusually large sea wave produced by seaquake or undersea volcanic eruption (from the Japanese language, roughly translated as “harbor wave”). According to Delano’s General Plan, the Pond-Poso Fault Line has been identified six miles southwest of the City. Although the Pond-Poso Fault has been associated with seismic activity, all of the recorded activity has been to the southwest of the fault line and, therefore, not in the Delano area.

Flood hazard areas are determined by calculating the number of occurrences of flood events at a certain magnitude during designated recurrence intervals. Subsequently, the recurrence interval represents the long-term, average period between floods of a specific magnitude. Hence, a flood hazard area denoted as having 100-year flood capabilities is expected to be equaled or exceeded once on the average during a 100-year period. As the City of Delano is not located near any bodies of water, no seiche, tsunami, or mudflow impacts are identified.

X. LAND USE AND PLANNING – Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	X
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?	☐	☐	☐	X
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	X

Discussion:

(a) No Impact
The project is located on a single piece of property and therefore could not divide an established community.

(b) No Impact
The project tract map proposes to subdivide the property into 172 R-1 parcels abd a small park. This project is consistent with development policies of the City General Plan Designation for residential uses The project proposal, if approved, would be consistent with applicable policies and regulations of the general plan and zoning ordinance. The project would need to implement all recommended mitigation measures identified in this environmental document in order to mitigate impacts to a less than significant level.

(c) No Impact
As stated previously, there is currently no habitat conservation or natural community conservation plan that covers that project. Therefore, there is no impact.

XI. MINERAL RESOURCES – Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	X
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?	☐	☐	☐	X

Discussion:

(a) No Impact
The project site is a designated area for development of a single facility residential site that is surrounded on two sides by existing residential. Additionally, the area is not a known for extraction for any mineral resources.

(b) No Impact
The project site was not identified in the general plan as a mineral resource deposit area. Therefore, there is no impact.

XII. NOISE – Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies?	☐	☐	X	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	X	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	X	☐
d) A substantial temporary or periodic increase in ambient levels in the project vicinity above levels existing without the project?	☐	☐	X	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	X
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	X

Discussion:

(a) Less than Significant Impact
The project is located adjacent to residential properties. The construction of the site will temporary increase ambient noise levels to the adjacent properties. The Delano Municipal Code limits the time which construction may occur, which mitigates the associated temporary noise increases. Therefore, this impact is considered less than significant.

(b) Less than Significant Impact
The project is located adjacent to residential properties. The construction of the site will temporary increase in vibration levels to the adjacent properties. The Delano Municipal Code limits the time which construction may occur, which mitigates the associated temporary vibration increases. Therefore, this impact is considered less than significant.

(c) Less than Significant Impact
The project proposes to observe normal construction hours for the construction of the project subject to Delano Municipal code. The site is adjacent to residential homes on north and east side of the project.. In addition, the project proposes the construction of permanent block walls to mitigate the increases in noise levels. Therefore, this impact is considered less than significant.

(d) Less than Significant Impact
The project area is developing, and some ambient noise levels would still increase in the area without the project, as other, more intensive uses (such as the southerly multifamily residential use and the commercial center located easterly of the site. Therefore, there is no impact.

(e) No Impact
The City has an adopted airport land use plan, the site of the project is located approximately 1.5 miles from the airport and not within any of the designated safety zone near the airport. Therefore, there is no impact.

(f) No Impact
The project is not within the vicinity of a private airstrip. Therefore, there is no impact.

General Discussion
The Noise Element of the Delano General Plan provides the ranges of noise exposure from transportation and non-transportation noise sources, which are considered acceptable, conditionally acceptable, or conditionally unacceptable for the development of different land uses.

Construction noise typically occurs intermittently and varies depending upon the nature or phase of construction (e.g. demolition/land clearing, grading and excavation, erection). The United States Environmental Protection Agency has found that the average noise levels associated with construction activities typically range from approximately 76 dBA to 84 dBA Leq, with intermittent individual equipment noise levels ranging from approximately 75 dBA to more than 88 dBA for brief periods.

Short Term Noise

Noise from localized point sources (such as construction sites) typically decreases by approximately 6 dBA with each doubling of distance from source to receptor. Given the noise attenuation rate and assuming no noise shielding from either natural or human-made features (e.g. trees, buildings, fences), outdoor receptors within approximately 400 feet of construction site could experience maximum noise levels of greater than 70 dBA when onsite construction-related noise levels exceed approximately 89 dBA at the project site boundary. Construction activities that occur during the more noise-sensitive eighteen hours could result in increased levels of annoyance and sleep disruption for occupants of nearby existing residential dwellings. As a result, noise-generating construction activities would be considered to have a potentially significant short-term impact. However with implementation of mitigation measures, this impact would be considered less than significant.

Long Term Noise

Mechanical building equipment (e.g. heating, ventilation and air conditioning systems, and boilers), associated with the proposed structures, could generate noise levels of approximately 90 dBA at 3 feet from the source. However, such mechanical equipment systems are typically shielded from direct public exposure and usually housed on rooftops, within equipment rooms, or within exterior enclosures.

Landscape maintenance equipment, such as leaf blowers and gasoline powered mowers, associated with the proposed operations could result in intermittent noise levels that range from approximately 80 to 100 dBA at 3 feet, respectively. Based on an equipment noise level of 100 dBA, landscape maintenance equipment (assuming a noise attenuation rate of 6 dBA per doubling of distance from the source) may result in exterior noise levels of approximately 75 dBA at 50 feet.

MAXIMUM ALLOWABLE NOISE EXPOSURE FOR
NON-TRANSPORTATION NOISE SOURCES*

		Residential	Commercial	Industrial (L)	Industrial (H)	Agricultural
Residential	AM	50	60	55	60	60
	PM	45	55	50	55	55
Commercial	AM	60	60	60	65	60
	PM	55	55	55	60	55
Industrial (L)	AM	55	60	60	65	60
	PM	50	55	55	60	55
Industrial (H)	AM	60	65	65	70	65
	PM	55	60	60	65	60
Agricultural	AM	60	60	60	65	60
	PM	55	55	55	60	55

*As determined at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards may be applied on the receptor side of noise barriers at the property line.

AM = 7:00 AM to 10:00 PM
PM = 10:00 PM to 7:00 AM
L = Light
H = Heavy

Note: Each of the noise levels specified above shall be lowered by 5 dB for pure tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g. caretaker dwellings).

Vibration perception threshold: The minimum ground or structure-borne vibrational motion necessary to cause

a normal person to be aware of the vibration by such direct means as, but not limited to, sensation by touch or visual observation of moving objects. The perception threshold shall be presumed to be a motion velocity of one-tenth (0.1) inches per second over the range of one to one hundred Hz.

Reaction of People and Damage to Buildings from Continuous Vibration Levels		
Velocity Level, PPV (in/sec)	**Human Reaction**	**Effect on Buildings**
0.006 to 0.019	Threshold of perception; possibility of intrusion	Damage of any type unlikely
0.08	Vibration readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10	Continuous vibration begins to annoy people	Virtually no risk of architectural damage to normal buildings
0.20	Vibration annoying to people in buildings	Risk of architectural damage to normal dwellings such as plastered walls or ceilings
0.4 to 0.6	Vibration considered unpleasant by people subjected to continuous vibrations vibration	Architectural damage and possibly minor structural damage
Source: Whiffen and Leonard 1971		

XIII. POPULATION AND HOUSING -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	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)?	☐	☐	X	☐
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	X

Discussion:

(a) Less than Significant Impact
The proposed project is intended to construct 172 single residential units and a small park. These new dwelling units would induce population growth in the area. The site is designated by the City General Plan for this type of residential use. The new units will aid in the City's Housing Element's Goal to meet its portion of their Regional Housings Needs Allocation (RHNA). This site has been anticipated to accommodate the type of housing proposed by the project in the City's General Plan Land Use Element and as such including the above stated, the impact is less than significant.

(b) No Impact
The site is currently devoid of any existing residential units and therefore no displacement of housing units resulting in no impact.

(c) No Impact
As noted the site is vacant of any existing housing units, so no persons will be displaced because of implementation of the project. No impact to substantial numbers of people requiring the construction of any replacement housing.

General Information

According to American Fact Finder- Quick Facts, as of July 2017, the City's population is 55,041 with a total of 11,046 housing units. This works out to an average of 3.96 persons per owner-occupied unit. Homeowner occupied housing units for 2012-2016 is 55.8%.

Click here to enter text.

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

Discussion:

(a-i) Less than Significant Impact
The project will be required to pay impact fees during the building permit review process. These fees along with the property and sales tax revenue generated by the project will provide ample funding for these services. Therefore, impacts are considered less than significant.

a-ii) Less than Significant Impact
The project will be required to pay impact fees during the building permit review process. These fees along with the property and sales tax revenue generated by the project will provide ample funding for these services. Therefore, impacts are considered less than significant.

(a-iii) Less than Significant Impact
The project will be required to pay impact fees during the building permit review process. These fees along with the property and sales tax revenue generated by the project will provide ample funding for these services. Therefore, impacts are considered less than significant.

(a-iv) Less than Significant Impact
The project will be required to its fair share portion of park impact fees.. In addition, the project will dedicate 2.00 acres for park use and pay impact fees during the building permit review process. These fees along with the a two acre park area will provide ample funding for these services. Therefore, impacts are considered less than significant.

a-v) Less than Significant Impact
The project will be required to pay impact fees during the building permit review process. These fees along with the property and sales tax revenue generated by the project will provide ample funding for any other services. Therefore, impacts are considered less than significant.

General Information

The proposed project site is within the jurisdiction of the Kern County Fire Department. Crime and emergency response is provided by the Delano Police Department.

The Kern County Fire Department is an organization comprised of over 625 permanent employees serving an area which spans over 8,000 square miles. They provide fire protection services for over 500,000 citizens living in the unincorporated areas of Kern County and the cities of Arvin, Delano, Maricopa, McFarland, Ridgecrest, Shafter, Taft, Tehachapi and Wasco. Over 546 uniformed firefighters are stationed in 46 fire stations throughout Kern County.

Single Family Residences have the potential for adding to school populations. The average per Single Family Residence is:

Grade	Student Generation per Single Family Residence
K – 6	0.425
7 – 8	0.139
9 – 12	0.214

The Delano General Plan allocates three acres of park available land per 1,000 residents' population.

Click here to enter text.

XV. RECREATION	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	X	☐
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?	☐	☐	X	☐

Discussion:

(a) Less than Significant Impact
The proposed residential project will generate an estimated population of 685 persons. There will be less than significant impact due to the payment of park facilities fee plus the addition of a new neighborhood park.

(b) No Impact
The project will construct a 2.5 acre neighborhood park/drainage basin with the project. Therefore, there is no impact.

General Information

The Delano General Plan allocates three acres of park available land per 1,000 residents' population.

Click here to enter text.

XVI. TRANSPORTATION/TRAFFIC -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	X	☐
b) Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures or other standards, established by the county congestion management agency for designated roads or highways?	☐	☐	X	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	X
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	X
e) Result in inadequate emergency access?	☐	☐	☐	X
f) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	X	☐

Discussion:

A traffic study was conducted by Ruettgers and Schuler, Civil Engineers to report upon the impacts of traffic in the vicinity and found that the project would have a less than significant impact to the surrounding area as long as mitigations measure are met. Propsed mitigation are included at the end of this section

(a) Less than Significant Impact
The project will be required to pay impact fees during the building permit review process. These fees along with the property and sales tax revenue generated by the project will provide ample funding for traffic improvements needed to serve the project. .

(b) Less than Significant Impact
The level of service standard for the City is typically a “D” near high traffic areas and interchange ramps to the highway. The project will be required to pay a fair share contribution of this fee to offset its impacts and allow for the construction of the intersection. Therefore, impacts are considered less than significant.

(c) Less than Significant Impact
The project is a residential project use that will generate approximately 9.57 trips per household (or total daily trips of 1656 (50% entering and 50% exiting) to the site. The increase in trips is not considered substantial and traffic will not alter air patterns in the vicinity that create safety risks. Therefore, the impacts are considered less than significant.

(d) No Impact
The site does not require the improvement or alteration of any design features that would increase hazards or include sharp curves in the roadway or streets. Additionally, the site already proposes to improve adjacent off-street requirements which would improve compatibility for road circulation with adjacent residential and commercial uses. Therefore, there is no impact.

(e) No Impact
The project will provide appropriate emergency access to the site in accordance with fire and building code requirements. The site will not impede pedestrian or vehicular access along any of the adjacent roadways and would likely improve some access to the area through additional paving of local roadways and construction of sidewalks. Therefore, there is no impact.

(f) Less than Significant Impact
The project is required to comply with both the payment of impact fees as well as compliance with the building code for alternative transportation programs. This would include the inclusion of bicycle racks and the improvement of the roadway to accommodate pedestrians and cyclists as well. Therefore, the impact is considered less than significant.

General Information

According to the Institute of Traffic Engineers (7th Edition, pg. 268-9) the trips per day for one single-family residence are 9.57.

According to the Delano General Plan, the City has set its level of service standard at LOS "C," except at freeway interchanges and other high volume locations, where LOS "D" is used. CalTrans adopted level of service standard is LOS "D." The following charts show the significance of those levels.

Level of Service	Description	Average Control Delay (sec./car)
A	Little or no delay	0 – 10
B	Short traffic delay	>10 – 15
C	Medium traffic delay	> 15 – 25
D	Long traffic delay	> 25 – 35
E	Very long traffic delay	> 35 – 50
F	Excessive traffic delay	> 50

Unsignalized intersections.

Level of Service	Description	Average Control Delay (sec./car)
A	Uncongested operations, all queues clear in single cycle	< 10
B	Very light congestion, an occasional phase is fully utilized	>10 – 20
C	Light congestion; occasional queues on approach	> 20 – 35
D	Significant congestion on critical approaches, but intersection is functional. Vehicles required to wait through more than one cycle during short peaks. No long-standing queues formed.	> 35 – 55
E	Severe congestion with some long-standing queues on critical approaches. Traffic queues may block nearby intersection(s) upstream of critical approach(es)	> 55-80
F	Total breakdown, significant queuing	> 80

Signalized intersections.

Level of service	Freeways	Two-lane rural highway	Multi-lane rural highway	Expressway	Arterial	Collector
A	700	120	470	720	450	300
B	1,100	240	945	840	525	350
C	1,550	395	1,285	960	600	400
D	1,850	675	1,585	1,080	675	450
E	2,000	1,145	1,800	1,200	750	500

Capacity per hour per lane for various highway facilities

According to Delano's General Plan, growth projections adopted by the Kern Council of Governments (COG) indicates that population growth in Delano will be greater than occurred in the 1990s (1,602 persons annually or 6.8%). Kern COG's population projections show the City growing by approximately 3,668 persons annually through 2020, more than double the average annual population growth of the 1990s. Additionally, the City's population growth includes the growth of the prison population within the City. The number of housing units will also increase accordingly (930 housing units annually or 10.5 percent).

Emissions of CO (Carbon Monoxide) are the primarily mobile-source criteria pollutant of local concern. Local mobile-source CO emissions near roadway intersections are a direct function of traffic volume, speed and delay. Carbon monoxide transport is extremely limited; it disperses rapidly with distance from the source under normal meteorological conditions. Under certain meteorological conditions, however, CO concentrations close to congested roadway or intersection may reach unhealthy levels, affecting local sensitive receptors (residents, school children, hospital patients, the elderly, etc.). As a result, the SJVAPCP recommends analysis of CO emissions of at a local rather than regional level. Local CO concentrations at intersections projected to operate at level of service (LOS) D or better do not typically exceed national or state ambient air quality standards. In addition, non-signalized intersections located within areas having relatively low background concentrations do not typically have sufficient traffic volumes to warrant analysis of local CO concentrations.

VMT Analysis

An evaluation of vehicle miles traveled (VMT) for project traffic was conducted based on applicable California Environmental Quality Act (CEQA) guidelines. The analysis involved comparing an estimate of VMT attributable to the project to a baseline VMT for the greater Delano area and assessing whether project VMT would result in a significant transportation impact.

VMT data was obtained from the Kern Council of Governments (KernCOG) in order to establish a baseline for daily vehicle miles traveled in the Kern County area. Based on household and employment populations in the greater Kern County area, as well as travel patterns throughout the region, KernCOG data shows an average VMT per trip of 9.76 miles.

Several factors were taken into consideration when estimating project VMT, including project trip generation and distribution, trip type and probable trip destination. As shown in Table 9, it is anticipated that the project would result in an average VMT per trip of 6.61 miles.

Trip Type	Daily Project Trips	Avg Trip Length (miles)	Daily Miles Traveled
AM Commuter Trips	204	21	4,284
PM Commuter Trips	274	21	5,754
Other Trips	2,212	4	7,742
		Average:	6.61

Average commuter trip length based on trip generation/distribution and probable destinations
Assumed majority of commuter trips are work trips and half of work trips travel outside of Delano
Average trip length for other trips assumes majority of trips remain within greater Delano area

The project average VMT of 6.61 miles is approximately 32% lower than the average regional VMT of 9.76 miles. Therefore, the project will not result in a significant transportation impact under CEQA.

MM T-1 Intersection and roadway improvements needed by the year 2040 to maintain or improve the operational level of service of the street system in the vicinity of the project. All improvements recommended as mitigation are included in the Delano Transportation Impact Fee Program.

XVIII. TRIBAL CULTURAL RESOURCES – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	☐	☐	☐	X
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	☐	☐	☐	X
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.	☐	☐	☐	X

Discussion:

(a-i) No Impact
The project site is not listed on the California Register of Historical Resources or in any local register of historical resources in Public Resources Code Section 5020.1(k). The site is a fallow, vacant piece of land that has not had any structures built and is regularly disked for weed management purposes.

(a-ii) Less than Significant Impact
The project site is not listed as being a historical resource. Additionally, cultural records search within the area have not revealed any resources in need of preservations (Delano Vineyard EIR). Therefore, the project would have no impact.

XIX. UTILITIES AND SERVICE SYSTEMS – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	X
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	X	☐
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	X	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	X	☐
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	X	☐
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	X	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	X	☐

Discussion:

(a) No Impact
The project is a residential project that would discharge into the City's wastewater treatment infrastructure. The discharge of wastewater would comply with these requirements as the City's treatment facility is currently in compliance with the Regional Water Quality Control Board and no violations are active. Therefore, the impact is considered less than significant.

(b) Less than Significant Impact
The project will be required to construction appropriate wastewater and water facilities within proximity of the project. This construction likely includes installation of appropriate sewer and water laterals and/or lines to existing systems in proximity to the project. Therefore, the impact is considered less than significant.

(c) Less than Significant Impact
The project will be required to construction appropriate storm water facilities within proximity of the project. This construction likely includes curb and gutter only as this area is a surface draining zone of the City. Therefore, the impact is considered less than significant.

(d) Less than Significant Impact
The project would be serviced by the existing water system of the City of Delano. According to recent project analysis, the City has supplies to service the site and will issue appropriate permits and/or will serve letters to the site. Therefore, the impact is considered less than significant.

(e) Less than Significant Impact
The project would be serviced by the existing wastewater system of the City of Delano. According to recent project analysis, the City has ample capacity to service the site and will issue appropriate permits and/or will serve letters to the site. Therefore, the impact is considered less than significant.

(f) Less than Significant Impact
The site would be required to implement a recycling program and provide a refuse container in accordance with Delano Municipal Code requirements. The site is serviced by multiple landfills in the area and would be subject to the requirements of the franchise hauler for the City. Therefore, the impact is considered less than significant.
(
g) Less than Significant Impact
The project, as stated previously, is required to comply with all local requirements for refuse disposal of solid waste. The project is a typical residential use that would be required to have weekly pickups by the City's franchise hauler. Therefore, this impact is considered less than significant.

<u>General Discussion</u>

Edison International is the primary provider of electricity for the City of Delano. All electrical services for the City are provided by a combination of inter-ties and substations. There are currently no locally-produced power sources in Delano. Natural gas is provided to urbanized areas of Delano by The Gas Company of Southern California. This service can be provided only where natural gas pipelines have been installed. The rural outskirts of the City do not have this service.

The City of Delano is the water purveyor within the City. The Kern County Water Basin is the subbasin from which the City draws its water. This portion of the water basin historically has been considered to be in an overdraft condition. According to the most recently adopted Delano General Plan, the City currently has nine wells in production, but only eight are available to meet the water needs of the general City population. The ninth, Well 23, located at North Kern State Prison, serves only the prison and is not connected to the City system. Capacities range from 775 gallons per minute (gpm) to 2,000 gpm with an average of 1,284 gpm. Recently, two wells, Well 5 and Well 18 have been taken out of production due to the presence of DBCP and hydrogen sulfide, respectively, in the water. This creates an odor and taste problem that requires treatment with chlorination prior to being distributed for use.

According to Delano's General Plan, the City of Delano well system has the capacity of pumping 14.8 million gallons per day (mgd; the equivalent of 10,275 gpm) for domestic use and fire suppression. The current water

demand of the City is 220 gallons per capita per day. The City is able of storing 4.6 million gallons in above-ground storage tanks. In addition, 4.4 million gallons of storage is located at North Kern Prison.

The City of Delano collects and transmits all domestic and industrial wastewater to the City's wastewater treatment plant located west of Delano on Lytle Avenue between Garces Highway and Cecil Avenue. The plant also accepts the influent from North Kern State Prison, who funded a 0.8 mgd expansion to the treatment plant in the early 1990s. The current treatment plant, which provides primary and secondary treatment of wastewater, has a capacity of 4.4 mgd and receives 3.9 mgd from both the City of Delano and North Kern State Prison. The City of Delano generates 114 gallons per capita per day of wastewater to be treated.

According to Delano's General Plan, the City of Delano provides twice-a-week pickup of solid waste within the City limits. Further, the possible closure of the McFarland/Delano Transfer Station at Stradley and Woollomes Avenues will require the city to deliver its solid waste to the Shafter Landfill.

XIV. MANDATORY FINDINGS OF SIGNIFICANCE	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the project have the potential to 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?	☐	X	☐	☐
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)?	☐	X	☐	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	X	☐	☐

Discussion:

(a) Less than Significant Impact with Mitigation Incorporated
Mitigation measures have been included to lessen the significance of potential impacts. The developer has as has agreed to implement all required mitigation measures; therefore, less than significant impacts from the Project implementation would occur.

(b) Less than Significant Impact with Mitigation Incorporated
As described in the impact analyses in Sections 3.1 through 3.17 of this IS, any potentially significant impacts of the proposed Project would be reduced to a less than significant level following incorporation of the mitigation measures listed herein. Projects completed in the past have also implemented mitigation as necessary. Accordingly, the proposed project would not otherwise combine with impacts of related development to add considerably to any cumulative impacts in the region, and impacts would be considered less than significant.

(c) Less than Significant Impact with Mitigation Incorporated
The proposed project would not directly or indirectly cause substantial adverse effects on human beings. All identified impacts within the IS which all could have a substantial effect on human beings have been mitigated to a less than significant impact.

General Information

CEQA defines three types of impacts or effects:

- Direct impacts are caused by a project and occur at the same time and place (CEQA §15358(a)(1).
- Indirect or secondary impacts are reasonably foreseeable and are caused by a project but occur at a different time or place. They may include growth inducing effects and other effects related to changes in the pattern of land use, population density or growth rate and related effects on air, water and other natural systems, including ecosystems (CEQA §15358(a)(2).
- Cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts (CEQA §15355(b)). Impacts from individual projects may be considered minor, but considered retroactively with other projects over a period of time; those impacts could be significant, especially where listed or sensitive species are involved.

Documents/Organizations/Individuals Consulted
In Preparation of this
Initial Study

2005 Delano General Plan

2015-2023 City of Delano Housing Element

2018 California Environmental Quality Act Guidelines

2019 Fact Finder “American Community Survey” http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml###

2014 Kern County Regional Transportation Plan

California Department of Fish and Game “California Natural Diversity Database” http://www.dfg.ca.gov/biogeodata/cnddb/

California Department of Finance

California Integrated Waste Management Board

Caltrans website http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm

United States Environmental Protection Agency

ITE Trip Generation 6th Edition

ENVIROSTOR.com

Traffic Study Prepared by Ruettgers and Schuler Civil Engineers - August 2020

Air Quality/ GHG Assessment by 4Creeks, Inc. - August 2020

Biological Evaluation by Live Oak Associaites, Inc. – September 2020

Colin Rambo - Tribal Historic Preservation, Tejon Indian Tribe

Impact	Mitigation Measures	Implementation	Monitoring
Agricultural Resources	**MM-AG- 1** The applicant shall place comparable prime farmland at a ratio of 2 acres to 1 acre in a permanent trust or conservation easement to ensure the preservation of an equivalent amount of farmland in perpetuity.	Project Applicant	City of Delano Community Development
Biological Resources	***MM- Bio 1 (Preconstruction Surveys).*** Preconstruction surveys for the San Joaquin kit fox shall be conducted on and within 200 feet of the project site, no less than 14 days and no more than 30 days prior to the beginning of initial ground disturbance activities on the site. The primary objective is to identify kit fox habitat features (e.g., potential dens and refugia) on the project site and evaluate their use by kit foxes. If an active kit fox den is detected within or immediately adjacent to the area of work, the USFWS shall be contacted immediately to determine the best course of action. Preconstruction surveys will be repeated following any lapses in construction of 30 days or more ***MM-Bio 2 (Avoidance of Active Dens).*** Should active kit fox dens be detected during preconstruction surveys, the Sacramento Field Office of the USFWS and the Fresno Field Office of CDFW will be notified. A disturbance-free buffer will be established around the burrows in consultation with the USFWS and CDFW, to be maintained until an agency-approved biologist has determined that the burrows have been abandoned.	Project Applicant	City of Delano Community Development

	MM Bio 3 (Minimization). Future construction activities will observe all minimization measures presented in the *USFWS Standardized Recommendations*. Such measures include, but are not limited to: restriction of construction-related vehicle traffic to established roads, construction areas, and other designated areas; inspection and covering of structures (e.g., pipes), as well as installation of escape structures, to prevent the inadvertent entrapment of kit foxes; restriction of rodenticide and herbicide use; and proper disposal of food items and trash. ***MM- Bio 4 (Employee Education Program).*** Prior to the start of future construction activities, the applicant will retain a qualified biologist to conduct a tailgate training for all construction staff on the San Joaquin kit fox. This training will include a description of the kit fox and its habitat needs; a report of the occurrence of kit fox in the project site; an explanation of the status of the species and its protection under the Endangered Species Act; and a list of the measures being taken to reduce impacts to the species during construction. Attendees will be provided a handout with all of the training information included in it. The applicant will use this handout to train any construction personnel that were not in attendance at the first meeting, prior to those personnel starting work on the site. ***MM-Bio 5 (Mortality Reporting).*** The Sacramento Field Office of the USFWS and the Fresno Field Office of CDFW will be notified in writing within three working days in case of the accidental death or injury to a San Joaquin kit fox during construction. Notification must include the date, time, location of the incident or of the finding of a dead or injured animal, and any other pertinent information.		

	Mitigation. The following measures will be implemented in order to minimize construction disturbance to active migratory bird nests: ***MM- Bio 6 (Avoidance).*** If feasible, future tree removal and residential buildout will occur outside of the avian nesting season, typically defined as February 1 to August 31. ***MM Bio 7 (Preconstruction Surveys*).** If future tree removal or construction activities are to occur between February 1 and August 31, a qualified biologist will conduct pre-construction surveys on and within 250 feet of the project area for active migratory bird nests within 30 days prior to the start of work. The survey will extend out to 500 feet for raptors, and ½ mile for Swainson's hawk, where accessible. Should any active nests be discovered in or near proposed construction zones, the biologist will identify a suitable construction-free buffer around the nest. This buffer will be identified on the ground with flagging or fencing, and will be maintained until the biologist has determined that the young have fledged and are capable of foraging independently. **Mitigation.** The following measures will be implemented for the protection of roosting bats: ***MM-Bio 8 (Temporal Avoidance).*** To avoid potential impacts to maternity bat roosts, and if feasible, future removal of the site's English walnut tree should occur outside of the period between April 1 and September 30, the time frame within which colony-nesting bats generally		

	assemble, give birth, nurse their young, and ultimately disperse. ***MM Bio 9 (Preconstruction Surveys).*** If removal of the walnut tree must occur between April 1 and September 30 (general maternity bat roost season), then within 30 days prior to scheduled removal, a qualified biologist will conduct a survey for roosting bats. The biologist will visually inspect all potential roost sites for individual bats, guano, and staining, and will listen for bat vocalizations. If necessary, the biologist will wait for nighttime emergence of bats from roost sites. If no ***Mitigation*** bats are observed to be roosting or breeding, then no further action would be required, and removal of the walnut tree could proceed. ***MM Bio 10 (Minimization).*** If a non-breeding bat colony is found in the English walnut tree, the individuals will be humanely evicted from the tree, under the direction of a qualified biologist, to ensure that no harm or "take" of any bats occurs as a result of construction activities. ***MM Bio 11 (Avoidance of Maternity Roosts)***. If a maternity colony is detected during preconstruction surveys, a disturbance-free buffer will be established around the colony and remain in place until a qualified biologist determines that the nursery is no longer active. The disturbance-free buffer will range from 50 to 100 feet as determined by the biologist.		
Cultural Resources	**MM CUL-1** – If prehistoric or historic-era cultural materials are encountered during construction activities, all work in the immediate vicinity of the find shall halt until a qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for	Project Applicant and Construction Company	City of Delano Community Development

	prehistoric and historic archaeologist, can evaluate the significance of the find and make recommendations. Cultural resource materials may include prehistoric resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock as well as historic resources such as glass, metal, wood, brick, or structural remnants. If the qualified professional archaeologist determines that the discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from project implementation. These additional studies may include avoidance, testing, and evaluation or data recovery excavation. If a potentially-eligible resource is encountered, then the qualified professional archaeologist, the Lead Agency, and the project proponent shall arrange for either 1) total avoidance of the resource or 2) test excavations to evaluate eligibility and, if eligible, total data recovery. The determination shall be formally documented in writing and submitted to the Lead Agency as verification that the provisions for managing unanticipated discoveries have been met. **MM CUL-2** – During any ground disturbance activities, if paleontological resources are encountered, all work within 25 feet of the find shall halt until a qualified paleontologist as defined by the Society of Vertebrate Paleontology Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (2010), can evaluate the find and make recommendations regarding treatment. Paleontological resource materials may include resources such as fossils, plant impressions, or animal tracks preserved in rock. The qualified paleontologist shall contact the Natural History Museum of Los Angeles County		

	or other appropriate facility regarding any discoveries of paleontological resources. If the qualified paleontologist determines that the discovery represents a potentially significant paleontological resource, additional investigations and fossil recovery may be required to mitigate adverse impacts from project implementation. If avoidance is not feasible, the paleontological resources shall be evaluated for their significance. If the resources are not significant, avoidance is not necessary. If the resources are significant, they shall be avoided to ensure no adverse effects, or such effects must be mitigated. Construction in that area shall not resume until the resource appropriate measures are recommended or the materials are determined to be less than significant. If the resource is significant and fossil recovery is the identified form of treatment, then the fossil shall be deposited in an accredited and permanent scientific institution. Copies of all correspondence and reports shall be submitted to the Lead Agency. **MM CUL-3** – If human remains are discovered during construction or operational activities, further excavation, or disturbance shall be prohibited pursuant to Section 7050.5 of the California Health and Safety Code. The specific protocol, guidelines, and channels of communication outlined by the Native American Heritage Commission, in accordance with Section 7050.5 of the Health and Safety Code, Section 5097.98 of the Public Resources Code (Chapter 1492, Statutes of 1982, Senate Bill 297), and Senate Bill 447 (chapter 44, Statutes of 1987), shall be followed. Section 7050.5(c) shall guide the potential Native American involvement, in the event of discovery of human remains, at the direction of the county coroner.		

Hazardous Materials	**MM HAZ-1**: Prior to commencement of construction, the project proponent shall submit to Kern County Department of Environmental Health Services, a Hazardous Materials Business Plan (HMBP) pursuant to Health and Safety Code Chapter 6.95, sections 25500 to 25520. The HMBP shall outline the types and quantities of hazardous materials used onsite and indicate onsite safety measures to ensure such materials are properly handled and stored. A copy of the approved HMBP shall be submitted to the Community Development Department	Project Applicant	
Geology And Soils	**MM GEO-1** – Prior to final design and issuance of grading permits, a geotechnical study shall be prepared for the project site and recommendations of the study shall be incorporated into final design of the project. A copy of the report shall be submitted to the Community Development Department for review	Project Applicant and Construction Company	City of Delano Community Development
Traffic	**MM T-1** Intersection and roadway improvements needed by the year 2040 to maintain or improve the operational level of service of the street system in the vicinity of the project. All improvements recommended as mitigation are included in the Delano Transportation Impact Fee Program.		
Hydrology	**MM HYD-1** – Prior to issuance of grading or building permits, the applicant must obtain an approved SWPPP from the Regional Water Control Board.		

CEQA MITIGATED NEGATIVE DECLARATION AND INITIAL STUDY FOR TENTATIVE TRACT MAP 7379

APPENDIX

Consultation Request to Colin Rambo Tribal Historic Preservation
Tejon Indian Tribe - August 8, 2020

Air Quality/ GHG Assessment by 4Creeks, Inc. - August 2020

Biological Evaluation by Live Oak Associaites, Inc. – September 2020

Traffic Study Prepared by Ruettgers Schuler Civil Engineers - August 2020

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED 20049 DELANO SUBDIVISION
SWC COUNTY LINE ROAD AND HIETT AVENUE
DELANO, CALIFORNIA

PROJECT No. 022-20062
JULY2, 2020

Prepared for:

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GEOTECHNICAL ENGINEERING• ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

July 2, 2020 Project No. 022-20062

Mr. Jim Robinson
San Joaquin Valley Homes
5607 Avenida de los Robles
California 93291

\Ji (CL

RE: Geotechnical Engineering Investigation
Proposed 20049 Delano Subdivision
SWC County Line Road and Hiett Avenue
Delano, California

Dear Mr. Robinson:

In accordance with your request, we have completed a Geotechnical Engineering Investigation for the above-referenced site. The results of our investigation are presented in the attached report.

If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office at (661) 837-9200.

Respectfully submitted,
KRAZAN &ASSOCIAT ES, INC.

Ry K. Privett, PE
· ect Engineer
No. 59372

REGISTERED PROFESSIONAL ENGINEER
RYAN K. PRIVETT
NO. 59372
CIVIL
STATE OF CALIFORNIA

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July 2, 2020 Project No. 022-20062

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED 20049 DELANO SUBDIVISION
SWC COUNTY LINE ROAD AND HIETT AVENUE
DELANO, CALIFORNIA

INTRODUCTION

This report presents the results of our Geotechnical Engineering Investigation for the proposed 20049 Delano Subdivision to be located at the southwest comer of County Line Road and Hiett Avenue, in Delano, California. Discussions regarding site conditions are presented herein, together with conclusions and recommendations pertaining to site preparation, Engineered Fill, utility trench backfill, drainage and landscaping, foundations, concrete floor slabs and exterior flatwork, retaining walls, pavement design, and soil cement reactivity.

A site plan showing the approximate boring locations is presented following the text of this report. A description of the field investigation, boring logs, and the boring log legend are presented in Appendix A. Appendix A also contains a description of the laboratory testing phase of this study, along with the laboratory test results. Appendices B and C contain guides to earthwork and pavement specifications. When conflicts in the text of the report occur with the general specifications in the appendices, the recommendations in the text of the report have precedence.

PURPOSE AND SCOPE

This investigation was conducted to evaluate the soil and groundwater conditions at the site, to make geotechnical engineering recommendations for use in design of specific construction elements, and to provide criteria for site preparation and Engineered Fill construction.

Our scope of services was outlined in our proposal dated May 20, 2020 (KA Proposal No. P326-20) and included the following:

- A site reconnaissance by a member of our engineering staff to evaluate the surface conditions at the project site.
- A field investigation consisting of drilling 18 borings to depths ranging from approximately 10 to 20 feet for evaluation of the subsurface conditions at the project site. Four borings were drilled due to limited site access. Prior to construction, the additional borings should be drilled to verify the soil conditions.

- Performing laboratory tests on representative soil samples obtained from the borings to evaluate the physical and index properties of the subsurface soils.

- Evaluation of the data obtained from the investigation and an engineering analysis to provide recommendations for use in the project design and preparation of construction specifications.

- Preparation of this report summarizing the results, conclusions, recommendations, and findings of our investigation.

PROPOSED CONSTRUCTION

We understand that design of the proposed development is currently underway; structural load information and other final details pertaining to the structure are unavailable. On a preliminary basis, it is understood that the proposed development will include the construction of a new residential subdivision comprised of 282 lots. The new buildings are planned to be single- and two-story wood-framed structures utilizing concrete slab-on-grade construction. Foundation loads are anticipated to be light. On-site paved roadways and landscaping are also planned for the development. A proposed park will be located in the central of the site.

In the event, these structural or grading details are inconsistent with the final design criteria, the Soils Engineer should be notified so that we may update this writing as applicable.

SITE LOCATION, SITE IDSTORY AND SITE DESCRIPTION

The site is rectangular in shape and encompasses approximately 75 acres. The site is located at the southwest comer of County Line Road and Hiett Avenue in Delano, California. The site is identified as Assessor's Parcel Number 520-010-017. Residential properties are located east of the site. The remainder of the surrounding properties are predominately existing agricultural developments.

Review of historical aerial photographs indicates the site has been utilized as agricultural land since at least 1994. In addition, several rural residential buildings and related out-buildings were formerly located along the eastern boundary of the site, and along the northern site boundary. These buildings were surrounded by mature trees and have since been removed from the site. A sump remains in the southeast area of the site. A former sump near the center of the site has since been removed.

Presently, the area of proposed development is agricultural land that is utilized as an almond orchard. In addition to the orchard, the site contains scattered weeds and the surface soils have a loose consistency. An existing sump is located near the southeast comer of the site. Buried and overhead utilities are located along the edges of the site and may extend into the site. The site is relatively flat and level with no major changes in grade.

GEOLOGIC SETTING

Geologically, the property is situated on the eastern flank, near the south end of the Great Valley Geomorphic Province. This province is a large northwesterly trending geosyncline or structural trough between the Coast Range Mountains and the Sierra Nevada Mountains. Erosion from both of these mountain systems has resulted in the deposition of immense thickness of sediments in the Valley floor.

Heavily-laden streams from the Sierra Nevada have built very prominent alluvial fans along the margins of the San Joaquin Valley. This has resulted in a rather flat topography in the vicinity of the project site. The site is composed of alluvial deposits which are mostly cohesionless sands and silts.

The south end of the San Joaquin Valley is surrounded on all sides, excluding the north, by active fault systems (San Andreas, White Wolf-Breckenridge-Kem Canyon and Garlock Faults). Numerous smaller faults exist within the valley floor.

There is on-going seismic activity in the Kem County area, with the most noticeable earthquake being the July 21, 1952 Kem County Earthquake. The initial shock was 7.7 magnitude shake with the epicenter near Wheeler Ridge. Vertical displacements of as much as three feet occurred at the fault line. Estimated average value of the maximum bedrock accelerations from the 1952 event are about 0.25 gravity at the project site.

The closest known faults to the property are subsurface faults located at the Fruitvale Oil Field. These faults cut the older sediments and, although numerous, are not thought to be active in the last two million years.

No evidence was observed that indicated surface faulting has occurred across the property during the Holocene time. Faults not yet identified, however, may exist. The site is not within an Earthquake Fault Zone (special studies zone).

FIELD AND LABORATORY INVESTIGATIONS

Subsurface soil conditions were explored by drilling 4 borings to depths ranging from approximately 10 to 20 feet below existing site grade, using a truck-mounted drill rig. Four borings were drilled due to limited site access. Prior to construction, the additional borings should be drilled to verify the soil conditions. In addition, 2 bulk subgrade samples were obtained from the site for laboratory R-value testing. The approximate boring and bulk sample locations are shown on the site plan. During drilling operations, penetration tests were performed at regular intervals to evaluate the soil consistency and to obtain information regarding the engineering properties of the subsoils. Soil samples were retained for laboratory testing. The soils encountered were continuously examined and visually classified in accordance with the Unified Soil Classification System. A more detailed description of the field investigation is presented in Appendix A.

Laboratory tests were performed on selected soil samples to evaluate their physical characteristics and engineering properties. The laboratory testing program was formulated with emphasis on the evaluation of natural moisture, density, gradation, shear strength, consolidation potential, R-value and moisture-

density relationships of the materials encountered. In addition, chemical tests were performed to evaluate the soil-cement reactivity. Details of the laboratory test program and results of the laboratory tests are summarized in Appendix A. This information, along with the field observations, was used to prepare the final boring logs in Appendix A.

SOIL PROFILE AND SUBSURFACE CONDITIONS

Based on our findings, the subsurface conditions encountered appear typical of those found in the geologic region of the site. In general, the upper soils consisted of approximately 6 to 12 inches of very loose silty sand. These soils are disturbed, have low strength characteristics, and are highly compressible when saturated.

Below the loose surface soils, approximately 4 to *4Yi* feet of loose to medium dense silty sand was encountered. Field and laboratory tests suggest that these soils are moderately strong and slightly compressible. Penetration resistance ranged from 5 to 18 blows per foot. Dry densities ranged from 115 to 120 pcf. Representative soil samples consolidated approximately 2 to 3% percent under a 2 ksf load when saturated. A representative soil sample had an angle of internal friction of 36 degrees.

Below 5 feet, predominately loose to dense silty sand, sandy silt, silty sand/sandy silt, or silty sand/sand were encountered. Field and laboratory tests suggest that these soils are moderately strong and slightly compressible. Penetration resistance ranged from 15 to 42 blows per foot. Dry densities ranged from 95 to 119 pcf. A representative soil sample consolidated approximately 1*Yi* percent under a 2 ksf load when saturated. These soils had similar strength characteristics as the upper soils and extended to the termination depth of our borings.

For additional information about the soils encountered, please refer to the boring logs in Appendix A.

GROUNDWATER

Test boring locations were checked for the presence of groundwater during and immediately following the drilling operations. Free groundwater was not encountered.

It should be recognized that water table elevations may fluctuate with time, being dependent upon seasonal precipitation, irrigation, land use, and climatic conditions, as well as other factors. Therefore, water level observations at the time of the field investigation may vary from those encountered during the construction phase of the project. The evaluation of such factors is beyond the scope of this report.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of our field and laboratory investigations, along with previous geotechnical experience in the project area, the following is a summary of our evaluations, conclusions, and recommendations.

Administrative Summary

fu brief, the subject site and soil conditions, with the exception of the loose surface soils and existing development, appear to be conducive to the development of the project. The upper soils within the project site are disturbed, have low strength characteristics, and are highly compressible when saturated. Accordingly, it is recommended that the surface soils be recompacted. This compaction effort should stabilize the surface soils and locate any unsuitable or pliant areas not found during our field investigation.

fu order to reduce the amount of differential settlement and provide uniform building support for the proposed buildings, it is recommended following stripping operations and demolition activities, the exposed subgrade within proposed building areas be excavated an additional depth of 12 inches, worked until uniform and free from large clods, moisture-conditioned to at or above optimum moisture content and recompacted to a minimum of 90 percent of maximum density based on the ASTM Test Method D1557. fu addition, it is recommended the proposed structure foundations be supported by a minimum of 12 inches of Engineered Fill. Over-excavation should extend to a minimum of 5 feet beyond structural elements. The on-site, native soils will be suitable for reuse as Engineered Fill, provided they are cleansed of excessive organics, debris, and fragments larger than 4 inches in maximum dimension. Prior to backfilling, the bottom of the excavation should be proof-rolled and observed by Krazan & Associates to verify stability. This compaction effort should stabilize the surface soils and locate any unsuitable or pliant areas not found during our field investigation. Fill material should be moisture-conditioned to at or above optimum moisture content and compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

The site was formerly occupied by rural residential buildings. In addition, structures are located within the project site vicinity. Associated with these developments are buried structures, such as utility lines that extend into the project site. Demolition activities should include proper removal of any buried structures. Any buried structures, including utilities, concrete irrigation pipe, or loosely backfilled excavations encountered during construction should be properly removed and the resulting excavations backfilled. It is suspected that demolition activities of the existing structures will disturb the upper soils. After demolition activities, it is recommended that these disturbed soils be removed and/or recompacted. This compaction effort should stabilize the upper soils and locate any unsuitable or pliant areas not found during our field investigation.

Trees are located throughout the site. Tree removal operations should include roots greater than 1 inch in diameter. The resulting excavations should be cleaned to firm native ground and backfilled with Engineered Fill compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

Sandy soil conditions were encountered at the site. These cohesionless soils have a tendency to cave in trench wall excavations. Shoring or sloping back trench sidewalls may be required within these sandy soils.

After completion of the recommended site preparation, the site should be suitable for shallow footing support. The proposed structure footings may be designed utilizing an allowable bearing pressure of 2,000 psf for dead-plus-live loads. Footings should have a minimum embedment of 12 inches.

Groundwater Influence on Structures/Construction

Based on our findings and historical records, it is not anticipated that groundwater will rise within the zone of structural influence or affect the construction of foundations and pavements for the project. However, if earthwork is performed during or soon after periods of precipitation, the subgrade soils may become saturated, "pump," or not respond to densification techniques. Typical remedial measures include: discing and aerating the soil during dry weather; mixing the soil with dryer materials; removing and replacing the soil with an approved fill material; or mixing the soil with an approved lime or cement product. Our firm should be consulted prior to implementing remedial measures to observe the unstable subgrade conditions and provide appropriate recommendations.

Site Preparation

General site clearing should include removal of vegetation; debris; existing utilities; structures including foundations; basement walls and floors; existing stockpiled soil; trees and associated root systems; rubble; rubbish; and any loose and/or saturated materials. Site stripping should extend to a minimum depth of 2 to 4 inches, or until all organics in excess of 3 percent by volume are removed. Deeper stripping may be required in localized areas. These materials will not be suitable for use as Engineered Fill. However, stripped topsoil may be stockpiled and reused in landscape or non-structural areas.

The site was formerly occupied by rural residential buildings. In addition, several structures are located in the vicinity of the site. Associated with these developments are buried structures, such as utility lines that extend into the project site. Any buried structures, including utilities or loosely backfilled excavations, encountered during construction should be properly removed and the resulting excavations backfilled. It is suspected that demolition activities of the existing structures will disturb the upper soils. After demolition activities, it is recommended that these disturbed soils be removed and/or recompacted. Excavations, depressions, or soft and pliant areas extending below planned finished subgrade levels should be cleaned to firm undisturbed soil and backfilled with Engineered Fill. In general, any septic tanks, debris pits, cesspools, or similar structures should be entirely removed. Water wells should be abandoned in accordance with local regulatory agency requirements. Existing concrete footings should be removed to an equivalent depth of at least 3 feet below proposed footing elevations or as recommended by the Soils Engineer. Any other buried structures should be removed in accordance with the recommendations of the Soils Engineer. The resulting excavations should be backfilled with Engineered Fill.

In order to reduce the amount of differential settlement and provide uniform building support for the structures, it is recommended following stripping operations and demolition activities, the exposed subgrade within proposed building areas be excavated an additional depth of 12 inches, worked until uniform and free from large clods, moisture-conditioned to at or above optimum moisture content and recompacted to a minimum of 90 percent of maximum density based on the ASTM Test Method D1557.

In addition, it is recommended the proposed structure foundations be supported by a minimum of 12 inches of Engineered Fill. Over-excavation should extend to a minimum of 5 feet beyond structural elements. The on-site soils will be suitable for reuse as Engineered Fill, provided they are cleansed of excessive organics, debris, and fragments larger than 4 inches in maximum dimension. Prior to backfilling, the bottom of the excavation should be proof-rolled and observed by Krazan & Associates to verify stability. This compaction effort should stabilize the surface soils and locate any unsuitable or pliant areas not found during our field investigation. Soft or pliant areas should be excavated to firm native ground. Fill material should be moisture-conditioned to at or above optimum moisture content and compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

Following stripping operations and demolition activities, it is recommended that at a minimum, the upper 12 inches of exposed subgrade soils beneath the exterior flatwork and pavement areas be excavated/scarified, worked until uniform and free from large clods, moisture-conditioned to at or above optimum moisture content, and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method Dl557. Limits of recompaction should extend a minimum of 2 feet beyond flatwork and pavements. This compaction effort should stabilize the upper soils and locate any unsuitable or pliant areas not found during our field investigation.

It is recommended that any uncertified fill material encountered within pavement areas be removed and/or recompacted. The fill material should be moisture-conditioned to at or above optimum moisture and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. As an alternative, the Owner may elect not to recompact the existing fill within paved areas. However, the Owner should be aware that the paved areas may settle, which may require annual maintenance. At a minimum, it is recommended that the upper 12 inches of subgrade soil be moisture-as necessary and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method Dl557.

Trees are located throughout the site. Tree removal operations should include roots greater than 1 inch in diameter. The resulting excavations should be cleaned to firm native ground and backfilled with Engineered Fill compacted to a minimum of 90 percent of maximum density based on **ASTM** Test MethodD1557.

The upper soils, during wet winter months, become very moist due to the absorptive characteristics of the soil. Earthwork operations performed during winter months may encounter very moist unstable soils, which may require removal to grade a stable building foundation. Project site winterization consisting of placement of aggregate base and protecting exposed soils during the construction phase should be performed.

A representative of our firm should be present during all site clearing and grading operations to test and observe earthwork construction. This testing and observation is an integral part of our service as acceptance of earthwork construction is dependent upon compaction of the material and the stability of the material. The Soils Engineer may reject any material that does not meet compaction and stability

requirements. Further recommendations of this report are predicated upon the assumption that earthwork construction will conform to recommendations set forth in this section and the Engineered Fill section.

Engineered Fill

The organic-free, on-site, upper native soils are predominately silty sand. Preliminary testing indicates that these soils will be suitable for reuse as Engineered Fill, provided they are cleansed of excessive organics, debris, and fragments larger than 4 inches in maximum dimension. Soils with an expansion index of 20 or greater should not be used within the upper 12 inches of soil supporting slabs-on-grade or exterior flatwork.

The preferred materials specified for Engineered Fill are suitable for most applications with the exception of exposure to erosion. Project site winterization and protection of exposed soils during the construction phase should be the sole responsibility of the Contractor, since he has complete control of the project site at that time.

Imported Fill material should be predominately non-expansive granular material with a plasticity index less than 10 and an expansion index less than 15. Imported Fill should be free from rocks and lumps greater than 4 inches in diameter. All Imported Fill material should be submitted for approval to the Soils Engineer at least 48 hours prior to delivery to the site.

Fill soils should be placed in lifts approximately 6 inches thick, moisture-conditioned to at or above optimum moisture content, and compacted to achieve at least 90 percent of maximum density based on ASTM Test Method D1557. Additional lifts should not be placed if the previous lift did not meet the required dry density or if soil conditions are not stable.

Drainage and Landscapin g

The ground surface should slope away from building pad and pavement areas toward appropriate drop inlets or other surface drainage devices. In accordance with Section 1804 of the 2019 California Building Code, it is recommended that the ground surface adjacent to foundations be sloped a minimum of 5 percent for a minimum distance of 10 feet away from structures, or to an approved alternative means of drainage conveyance. Swales used for conveyance of drainage and located within 10 feet of foundations should be sloped a minimum of 2 percent. Impervious surfaces, such as pavement and exterior concrete flatwork, within 10 feet of building foundations should be sloped a minimum of 1 percent away from the structure. Drainage gradients should be maintained to carry all surface water to collection facilities and off-site. These grades should be maintained for the life of the project.

Utility Trench Backfill

Utility trenches should be excavated according to accepted engineering practices following OSHA (Occupational Safety and Health Administration) standards by a Contractor experienced in such work. The responsibility for the safety of open trenches should be borne by the Contractor. Traffic and vibration adjacent to trench walls should be minimized; cyclic wetting and drying of excavation side

slopes should be avoided. Depending upon the location and depth of some utility trenches, groundwater flow into open excavations could be experienced, especially during or shortly following periods of precipitation.

Sandy soil conditions were encountered at the site. These cohesionless soils have a tendency to cave in trench wall excavations. Shoring or sloping back trench sidewalls may be required within these sandy soils.

Utility trench backfill placed in or adjacent to buildings and exterior slabs should be compacted to at least 90 percent of maximum density based on ASTM Test Method Dl557. The utility trench backfill placed in pavement areas should be compacted to at least 90 percent of maximum density based on ASTM Test Method Dl557. Pipe bedding should be in accordance with pipe manufacturer's recommendations.

The Contractor is responsible for removing all water-sensitive soils from the trench regardless of the backfill location and compaction requirements. The Contractor should use appropriate equipment and methods to avoid damage to the utilities and/or structures during fill placement and compaction.

Foundations - Conventional

After completion of the recommended site preparation, the site should be suitable for shallow footing support. The proposed structures may be supported on a shallow foundation system bearing on a minimum of 12 inches of Engineered Fill. Spread and continuous footings can be designed for the following maximum allowable soil bearing pressures:

Load	Allowable Soil Bearin2 Capacity
Dead Load Only	1,500 psf
Dead-Plus-Live Load	2,000 psf
Total Load, including wind or seismic loads	2,650 psf

Footings should have a minimum depth of 12 inches below pad subgrade (soil grade) or adjacent exterior grade, whichever is lower. Footings should have a minimum width of 12 inches, regardless of load. Ultimate design of foundations and reinforcement should be performed by the project Structural Engineer.

The footing excavations should not be allowed to dry out any time prior to pouring concrete. It is recommended that footings be reinforced by at least one No. 4, reinforcing bar in both top and bottom.

The total settlement is not expected to exceed 1 inch. Differential settlement should be less than *Yi* inch. Most of the settlement is expected to occur during construction, as the loads are applied. However, additional post-construction settlement may occur if the foundation soils are flooded or saturated.

Resistance to lateral footing displacement can be computed using an allowable friction factor of 0.40 acting between the base of foundations and the supporting subgrade. Lateral resistance for footings can alternatively be developed using an allowable equivalent fluid passive pressure of 350 pounds per cubic foot acting against the appropriate vertical footing faces. The frictional and passive resistance of the soil may be combined without reduction in determining the total lateral resistance. A increase in the value above may be used for short duration, wind, or seismic loads.

Floor Slabs and Exterior Flatwork

In areas that will utilize moisture-sensitive floor coverings, concrete slab-on-grade floors should be underlain by a water vapor retarder. The water vapor retarder should be installed in accordance with accepted engineering practice. The water vapor retarder should consist of a vapor retarder sheeting underlain by a minimum of 3 inches of compacted, clean, gravel of %-inch maximum size. To aide in concrete curing an optional 2 to 4 inches of granular fill may be placed on top of the vapor retarder. The granular fill should consist of damp clean sand with at least 10 to 30 percent of the sand passing the 100 sieve. The sand should be free of clay, silt, or organic material. Rock dust which is manufactured sand from rock crushing operations is typically suitable for the granular fill. This granular fill material should be compacted.

The exterior floors should be poured separately in order to act independently of the walls and foundation system. All fills required to bring the building pads to grade should be Engineered Fills.

Moisture within the structure may be derived from water vapors, which were transformed from the moisture within the soils. This moisture vapor can travel through the vapor membrane and penetrate the slab-on-grade. This moisture vapor penetration can affect floor coverings and produce mold and mildew in the structure. To reduce moisture vapor intrusion, it is recommended that a vapor retarder be installed. It is recommended that the utility trenches within the structure be compacted, as specified in our report, to reduce the transmission of moisture through the utility trench backfill. Special attention to the immediate drainage and irrigation around the building is recommended. Positive drainage should be established away from the structure and should be maintained throughout the life of the structure. Ponding of water should not be allowed adjacent to the structure. Over-irrigation within landscaped areas adjacent to the structure should not be performed. In addition, ventilation of the structure (i.e. ventilation fans) is recommended to reduce the accumulation of interior moisture.

Excavation Stability

Temporary excavations planned for the construction of the building and other associated structures may be excavated, according to the accepted engineering practices following Occupational Safety and Health Administration (OSHA) standards by a Contractor experienced in such work. Open, unbraced excavations in undisturbed soils should be made according to the table below.

Recommended Excavation Slopes	
Depth of Excavation (ft)	**Slope (Horizontal:Vertical)**
	Temporary
0-5	1:1
5-10	lYd
10-15	1%:1
15+	2:1

If, due to space limitation, excavation near existing structures or roads is performed in a vertical position, braced shorings or shields may be used for supporting vertical excavations. Therefore, in order to comply with the local and state safety regulations, a properly designed and installed shoring system would be required to accomplish planned excavation and installation. A specialty Shoring Contractor should be responsible for the design and installation of such a shoring system during construction. The lateral pressures provided below may be used in the design of a braced-type shoring system.

Recommended Lateral Earth Pressure for Braced Shoring	
Depth of Excavation Below Ground Surface (feet)	**Lateral Soil Pressure (osf)**
0	35H
0.25H	35H
H	35H
Where H is the total depth of the excavation in feet.	

The foregoing does not include excess hydrostatic pressure or surcharge loading. Fifty percent of any surcharge load, such as construction equipment weight, should be added to the lateral load given above.

Since the Contractor has the ultimate responsibility for excavation stability, he may design a different shoring system for the excavation.

The excavation/shoring recommendations provided herein are based on soil characteristics derived from limited test borings within the site. Variations in soil conditions will likely be encountered during the excavations. Krazan & Associates, fuc. should be afforded the opportunity to provide field review to evaluate the actual conditions and account for field condition variations not otherwise anticipated in the preparation of this recommendation.

Lateral Earth Pressures and Retaining Walls

Walls retaining horizontal backfill and capable of deflecting a minimum of 0.1 percent of its height at the top may be designed using an equivalent fluid active pressure of 35 pounds per square foot per foot of depth. Walls that are incapable of this deflection or walls that are fully constrained against deflection

may be designed for an equivalent fluid at-rest pressure of 55 pounds per square foot per foot per depth. Expansive soils should not be used for backfill against walls. The wedge of non-expansive backfill material should extend from the bottom of each retaining wall outward and upward at a slope of 2:1 (horizontal to vertical) or flatter. The stated lateral earth pressures do not include the effects of hydrostatic water pressures generated by infiltrating surface water that may accumulate behind the retaining walls; or loads imposed by construction equipment, foundations, or roadways.

Retaining and/or below grade walls should be drained with either perforated pipe encased in free-draining gravel or a prefabricated drainage system. The gravel zone should have a minimum width of 12 inches wide and should extend upward to within 12 inches of the top of the wall. The upper 12 inches of backfill should consist of native soils, concrete, asphaltic concrete or other suitable backfill to minimize surface drainage into the wall drain system. The aggregate should conform to Class 2 permeable materials graded in accordance with the CalTrans Standard Specifications (2018). Prefabricated drainage systems, such as Miradrain®, Enkadrain®, or an equivalent substitute, are acceptable alternatives in lieu of gravel provided they are installed in accordance with the manufacturer's recommendations. If a prefabricated drainage system is proposed, our firm should review the system for final acceptance prior to installation.

During grading and backfilling operations adjacent to any walls, heavy equipment should not be allowed to operate within a lateral distance of 5 feet from the wall or within a lateral distance equal to the wall height, whichever is greater, to avoid developing excessive lateral pressures. Within this zone, only hand operated equipment ("whackers," vibratory plates, or pneumatic compactors) should be used to compact the backfill soils.

R-Value Test Results and Pavement Design

Two subgrade soil samples were obtained from the project site for R-value testing at the locations shown on the attached site plan. The samples were tested in accordance with the State of California Materials Manual Test Designation 301. Results of the tests are as follows:

Sample	Depth	Description	R-Value at Equilibrium
1	12-24"	Silty Sand **(SM)**	52
2	12-24"	Silty Sand **(SM)**	56

The test results are moderate and indicate good subgrade support characteristics under dynamic traffic loads. The following table shows the recommended pavement sections for various traffic indices.

Traffic Index	Asphaltic Concrete	Class II Aggregate Base*	Compacted Subgrade**
4.0	2.0"	4.0"	12.0"
4.5	2.5"	4.0"	12.0"
5.0	2.5"	4.0"	12.0"

5.5	3.0"	4.0"	12.0"
6.0	3.0"	4.0"	12.0"
6.5	3.5"	4.0"	12.0"
7.0	4.0"	4.0"	12.0"
7.5	4.0"	4.0"	12.0"

** 95% compaction based on ASTM Test Method D1557 or CAL 216*
*** 90% compaction based on ASTM Test Method D1557 or CAL 216*

If traffic indices are not available, an estimated (typical value) index of 4.5 may be used for light automobile traffic, and an index of 7.0 may be used for light truck traffic.

The following recommendations are for light-duty and heavy-duty Portland Cement Concrete Pavement Sections based on the design procedures developed by the Portland Cement Association.

PORTLAND CEMENT PAVEMENT
LIGHT DUTY

Traffic Index	Portland Cement Concrete***	Class II Aggregate Base*	Compacted Subgrade**
4.5	5.0"	--	12.0"

HEAVYDUTY

Traffic Index	Portland Cement Concrete***	Class II Aggregate Base*	Compacted Subgrade**
7.0	6.5"	--	12.0"

** 95% compaction based on ASTM Test Method DJ 557 or CAL 216*
*** 90% compaction based on ASTM Test Method D1557 or CAL 216*
****Minimum compressive strength of 3000 psi*

It is recommended that any uncertified fill material encountered within pavement areas be removed and/or recompacted. The fill material should be moisture-conditioned to at or above optimum moisture and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. As an alternative, the Owner may elect not to recompact the existing fill within paved areas. However, the Owner should be aware that the paved areas may settle, which may require annual maintenance. At a minimum, it is recommended that the upper 12 inches of subgrade soil be moisture-as necessary and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

Seismic Parameters - 2019 California Building Code

The Site Class per Section 1613 of the 2019 California Building Code (2019 CBC) and ASCE 7-16, Chapter 20 is based upon the site soil conditions. It is our opinion that a Site Class D is most consistent with the subject site soil conditions. For seismic design of the structures based on the seismic provisions of the 2019 CBC, we recommend the following parameters:

Seismic Item	Value	CBC Reference
Site Class	D	Section 1613.2.2
Site Coefficient Fa	1.228	Table 1613.2.3 (1)
Ss	0.715	Section 1613.2.1
SMs	0.878	Section 1613.2.3
Sos	0.585	Section 1613.2.4
Site Coefficient Fv	2.060	Table 1613.2.3 (2)
S1	0.270	Section 1613.2.1
SM!	0.556	Section 1613.2.3
Sm	0.371	Section 1613.2.4
Ts	0.634	Section 1613.2

* Based on Equivalent Lateral Force {ELF) Design Procedure being used.

Soil Cement Reactivity

Excessive sulfate in either the soil or native water may result in an adverse reaction between the cement in concrete (or stucco) and the soil. HUD/FHA and CBC have developed criteria for evaluation of sulfate levels and how they relate to cement reactivity with soil and/or water.

Soil samples were obtained from the site and tested in accordance with State of California Materials Manual Test Designation 417. The sulfate concentrations detected from these soil samples were greater than 150 ppm (212 ppm) and are above the maximum allowable values established by HUD/FHA and CBC. Therefore, it is recommended that Type II cement be used in formulation of concrete to compensate for sulfate reactivity with the cement.

Compacted Material Acceptance

Compaction specifications are not the only criteria for acceptance of the site grading or other such activities. However, the compaction test is the most universally recognized test method for assessing the performance of the Grading Contractor. The numerical test results from the compaction test cannot be used to predict the engineering performance of the compacted material. Therefore, the acceptance of compacted materials will also be dependent on the stability of that material. The Soils Engineer has the option of rejecting any compacted material regardless of the degree of compaction if that material is considered to be unstable or if future instability is suspected. A specific example of rejection of fill material passing the required percent compaction is a fill which has been compacted with an in situ moisture content significantly less than optimum moisture. This type of dry fill (brittle fill) is susceptible to future settlement if it becomes saturated or flooded.

Testing and Inspection

A representative of Krazan & Associates, Inc. should be present at the site during the earthwork activities to confirm that actual subsurface conditions are consistent with the exploratory fieldwork. This activity is an integral part of our service, as acceptance of earthwork construction is dependent upon compaction testing and stability of the material. This representative can also verify that the intent of these recommendations is incorporated into the project design and construction. Krazan & Associates, Inc. will not be responsible for grades or staking, since this is the responsibility of the Prime Contractor.

LIMITATIONS

Soils Engineering is one of the newest divisions of Civil Engineering. This branch of Civil Engineering is constantly improving as new technologies and understanding of earth sciences advance. Although your site was analyzed using the most appropriate and most current techniques and methods, undoubtedly there will be substantial future improvements in this branch of engineering. In addition to advancements in the field of Soils Engineering, physical changes in the site, either due to excavation or fill placement, new agency regulations, or possible changes in the proposed structure after the soils report is completed may require the soils report to be professionally reviewed. In light of this, the Owner should be aware that there is a practical limit to the usefulness of this report without critical review. Although the time limit for this review is strictly arbitrary, it is suggested that 2 years be considered a reasonable time for the usefulness of this report.

Foundation and earthwork construction is characterized by the presence of a calculated risk that soil and groundwater conditions have been fully revealed by the original foundation investigation. This risk is derived from the practical necessity of basing interpretations and design conclusions on limited sampling of the earth. The recommendations made in this report are based on the assumption that soil conditions do not vary significantly from those disclosed during our field investigation. If any variations or undesirable conditions are encountered during construction, the Soils Engineer should be notified so that supplemental recommendations may be made.

The conclusions of this report are based on the information provided regarding the proposed construction. If the proposed construction is relocated or redesigned, the conclusions in this report may not be valid. The Soils Engineer should be notified of any changes so the recommendations may be reviewed and re-evaluated.

This report is a Geotechnical Engineering Investigation with the purpose of evaluating the soil conditions in terms of foundation design. The scope of our services did not include any Environmental Site Assessment for the presence or absence of hazardous and/or toxic materials in the soil, groundwater, or atmosphere; or the presence of wetlands. Any statements, or absence of statements, in this report or on any boring log regarding odors, unusual or suspicious items, or conditions observed, are strictly for descriptive purposes and are not intended to convey engineering judgment regarding potential hazardous and/or toxic assessment.

The geotechnical engineering information presented herein is based upon professional interpretation utilizing standard engineering practices and a degree of conservatism deemed proper for this project. It is not warranted that such information and interpretation cannot be superseded by future geotechnical engineering developments. We emphasize that this report is valid for the project outlined above and should not be used for any other sites.

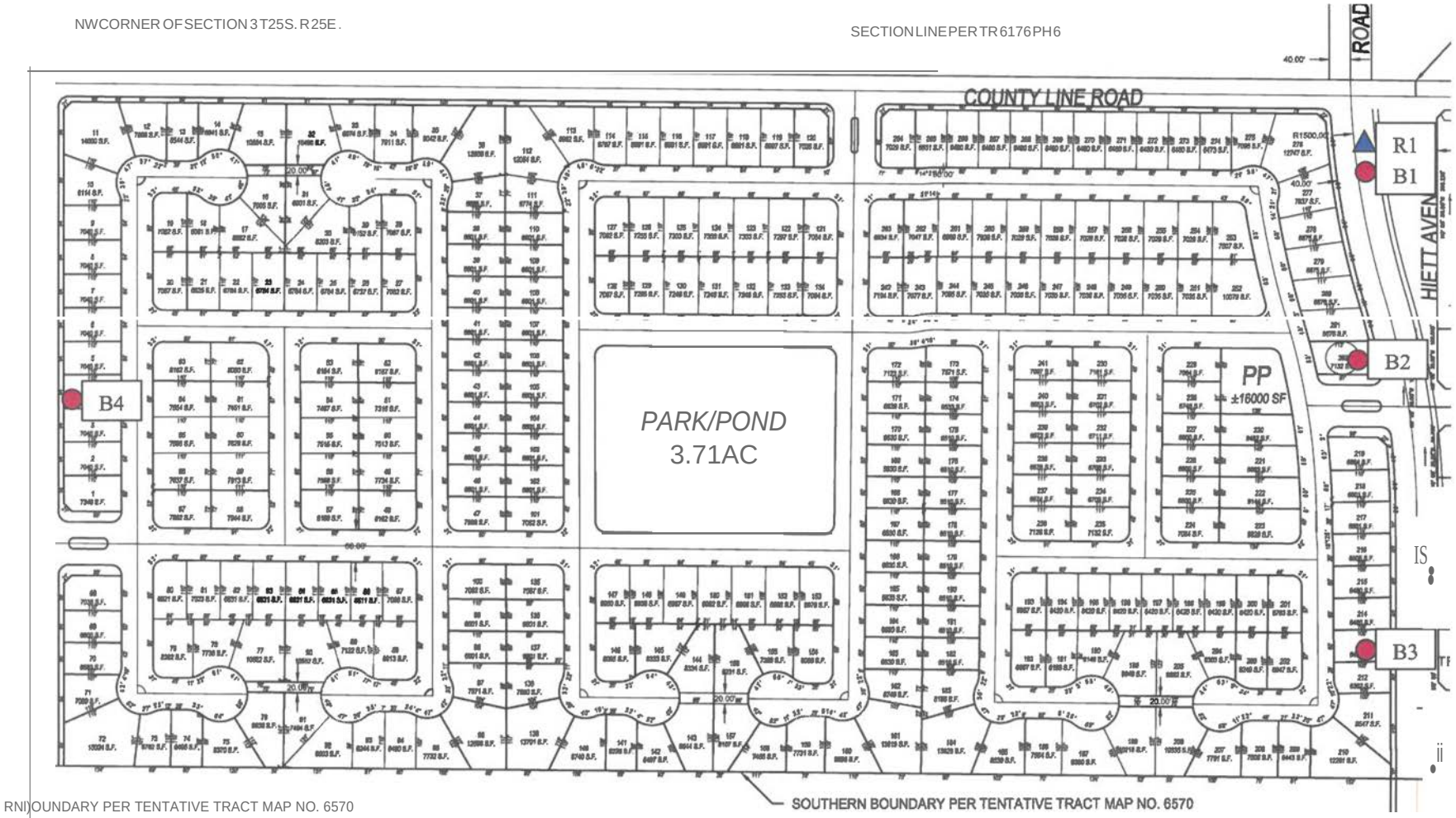
If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office at (661) 837-9200.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

Ry K. Privett, PE
Pr· ct Engineer
RCE No. 59372

David R. Jarosz, II
Managing Engineer
RGENo. 2698/RCE No. 60185

RKP/DRJ:ht



- APPROXIMATE R-VALUE LOCATION
- APPROXIMATE BORING LOCATION

SITE MAP	Scale: NTS	Date: Julv 2020	Krazan GEOTECHNICAL ENGINEERING
20049 Delano Subdivision SWC County Line Road and Hiett Avenue Clovis, California	Drawn by: HT	Approved by: DJ	
	Project No. 022-20062	Figure No. 1	

APPENDIX A

FIELD AND LABORATORY INVESTIGATIONS

Field Investigation

The field investigation consisted of a surface reconnaissance and a subsurface exploratory program. Four 4Yi-inch exploratory borings were advanced. The boring locations are shown on the site plan.

The soils encountered were logged in the field during the exploration and, with supplementary laboratory test data, are described in accordance with the Unified Soil Classification System.

Modified standard penetration tests were performed at selected depths. This test represents the resistance to driving a 2Yi-inch diameter core barrel sampler. The driving energy was provided by a hammer weighing 140 pounds, falling 30 inches. Relatively undisturbed soil samples were obtained while performing this test. Bag samples of the disturbed soil were obtained from the auger cuttings. All samples were returned to our Clovis laboratory for evaluation.

Laboratory Investigation

The laboratory investigation was programmed to determine the physical and mechanical properties of the foundation soil underlying the site. Test results were used as criteria for determining the engineering suitability of the surface and subsurface materials encountered.

In-situ moisture content, dry density, consolidation, direct shear, and sieve analysis tests were completed for the undisturbed samples representative of the subsurface material. R-value tests were completed for select bag samples obtained from the auger cuttings. These tests, supplemented by visual observation, comprised the basis for our evaluation of the site material.

The logs of the exploratory borings and laboratory determinations are presented in this Appendix.

UNIFIED SOIL CLASSIFICATION SYSTEM

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

COARSE-GRAINED SOILS
(more than 50% of material Is larger than No. 200 sieve size.)

GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	Clean Gravels (Less than 5% fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)	GM	Slity gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	Clean Sands (Less than 5% fines)	SW	Well-graded sands, gravelly sands, little or no fines
		SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines <More than 12% fines)	SM	Silty sands, sand-slit mixtures
		SC	Clayey sands, sand-clay mixtures

FINE-GRAINED SOILS
(50% or more of material ls smaller than No. 200 sieve size.)

SILTS AND CLAYS Liquid limit less than 50%	ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with slight plasticity
	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	OL	Organic slits and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater	MH	Inorganic silts, mlcaceous or diatomaceous fine sandy or sllty soils, elastic silts
	CH	Inorganic clays of high plasticity, fat clays
	OH	Organic clays of medium to high plasticity, organic slits
HIGHLY ORGANIC SOILS	PT	Peat and other highly organic soils

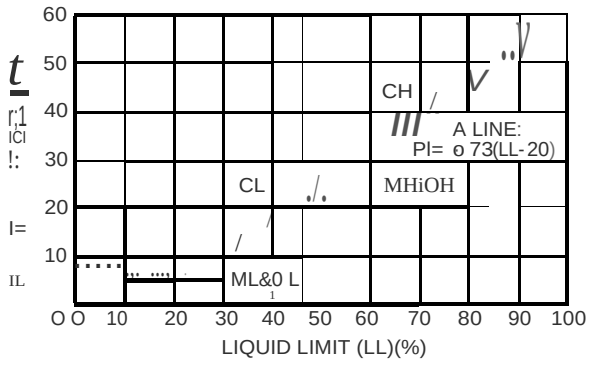
CONSISTENCY CLASSIFICATION

Description	Blows per Foot
Granular Soils	
Very Loose	<5
Loose	5-15
Medium Dense	16-40
Dense	41-65
Very Dense	>65
Cohesive Soils	
Very Soft	<3
Soft	3-5
Finn	6-10
Stiff	11-20
Very Stiff	21-40
Hard	>40

GRAIN SIZE CLASSIFICATION

Grain Type	*Standard Sieve Size*	*Grain Size in Millimeters*
Boulders	Above 12 inches	Above 305
Cobbles	12 to 13 inches	305 to 76.2
Gravel	3 inches to No. 4	76.2 to 4.76
Coarse-grained	3 to% inches	76.2 to 19.1
Fine-grained	% inches to No. 4	19.1 to 4.76
Sand	No. 4 to No. 200	4.76 to 0.074
Coarse-grained	No. 4 to No. 10	4.76 to 2.00
Medium-grained	No. 10 to No. 40	2.00 to 0.042
Fine-grained	No. 40 to No. 200	0.042 to 0.074
Silt and Clay	Below No. 200	Below 0.074

PLASTICITY CHART



Log of Boring B1

Project: 20049 Delano Subdivision

Project No: 022-20062

Client: San Joaquin Valley Homes

Figure No.: A-1

Location: SWC County Line Road and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content(%)
Depth (ft)		Description					20 40 60	10 20 30 40
0		Ground Surface						
2		***SILTY SAND (SM)*** Very loose, fine- to medium-grained; brown, moist, drills easily Loose below 12 inches				10		
4			120.9	5.8				•
6						14		
8			115.5	5.7				•
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 6-10-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4Y:z Inches

Driller: Jim Watts

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring 82

Project: 20049 Delano Subdivision

Project No: 022-20062

Client: San Joaquin Valley Homes

Figure No.: A-2

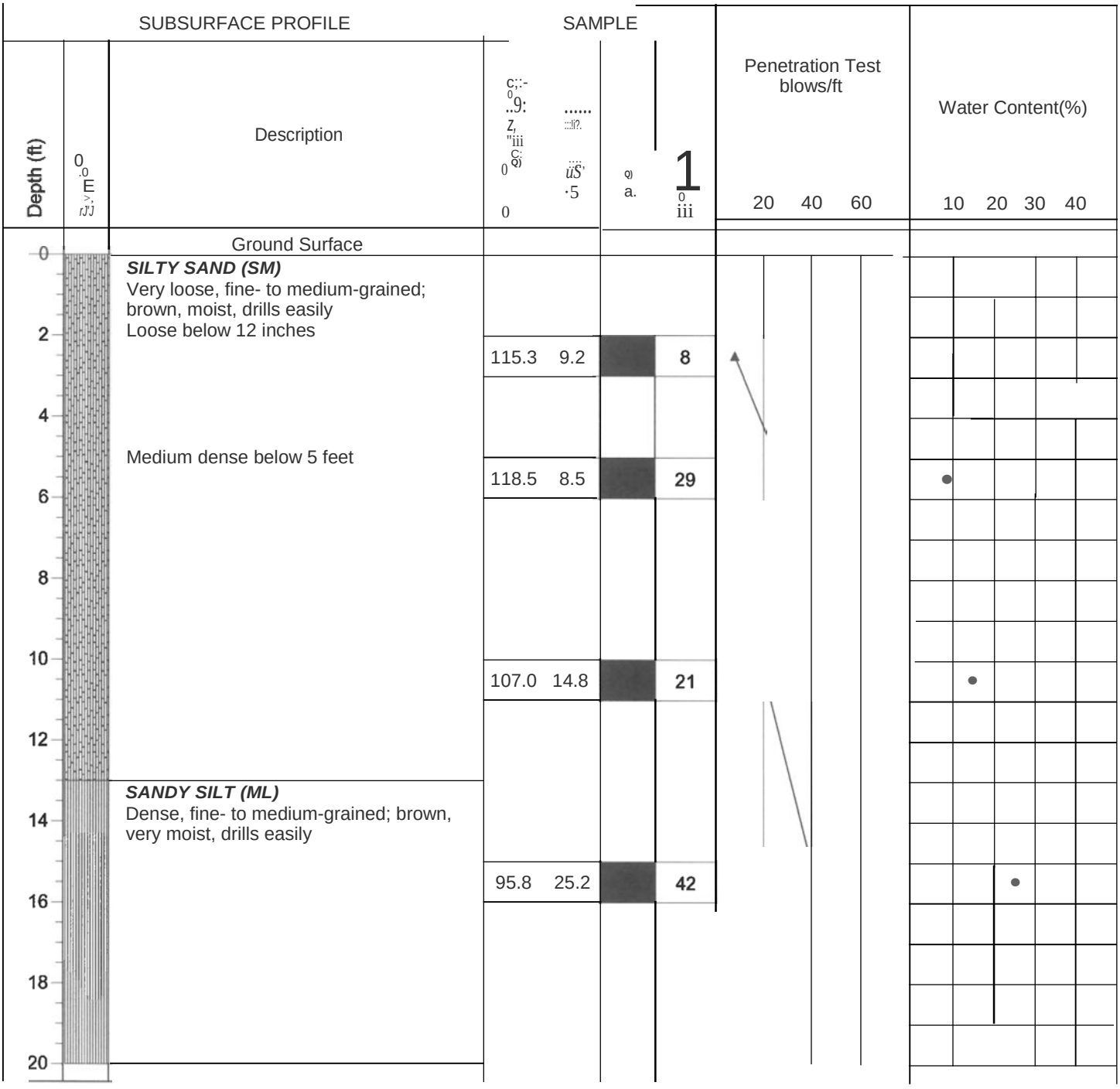
Location: SWC County Line Road and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Date: 6-10-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4% Inches

Driller: Jim Watts

Elevation: 20 Feet

Log of Boring B3

Project: 20049 Delano Subdivision

Project No: 022-20062

Client: San Joaquin Valley Homes

Figure No.: A-3

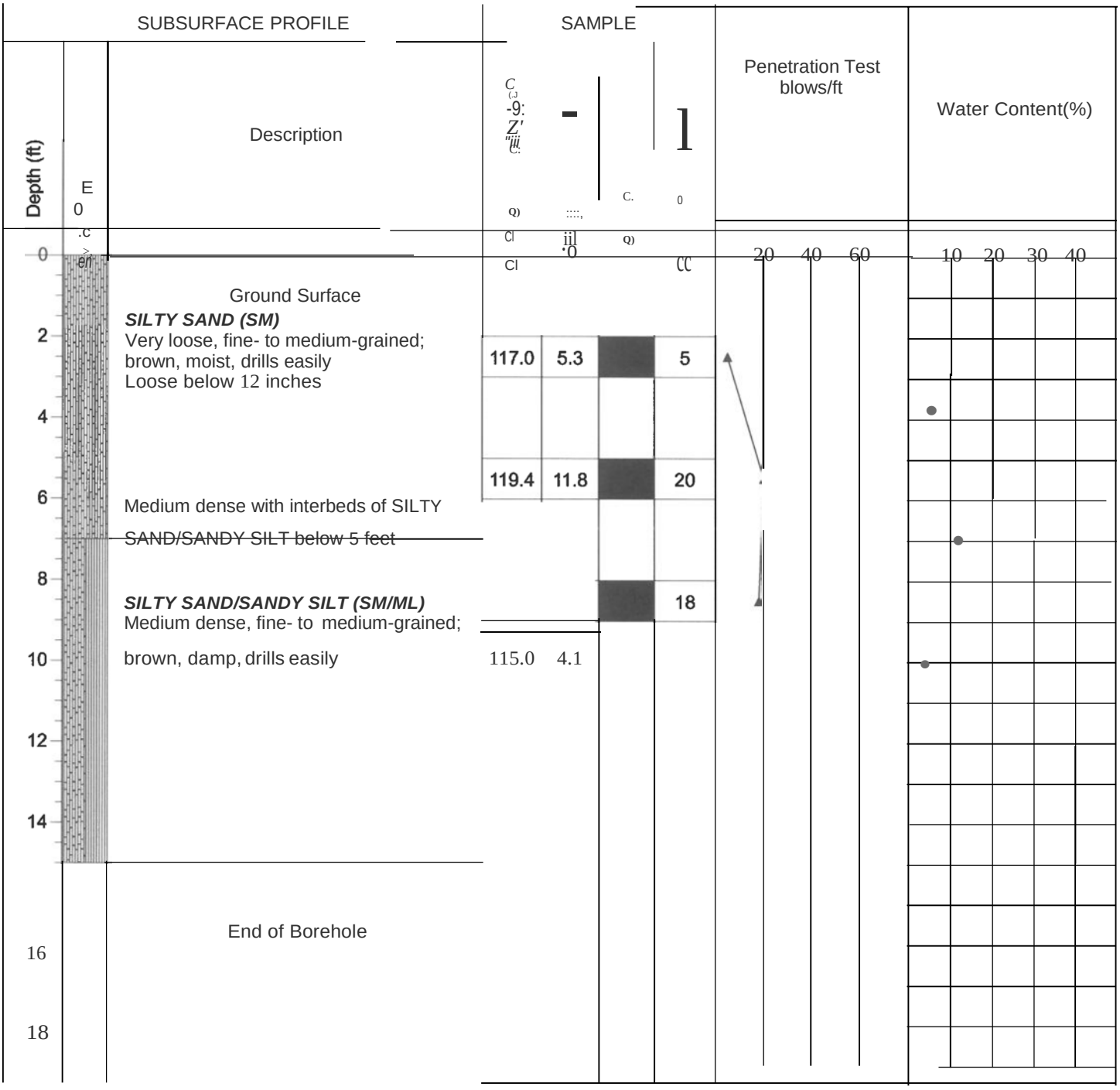
Location: SWC County Line Road and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Date: 6-10-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4% Inches

Driller: Jim Watts

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B3

Project: 20049 Delano Subdivision

Project No: 022-20062

20

Client: San Joaquin Valley Homes

Figure No.: A-3

Location: SWC County Line Road and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water> **Initial:** None

At Completion: None

Drill Method: Solid Flight

Drill Date: 6-10-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4% Inches

Driller: Jim Watts

Elevation: 20 Feet

Log of Boring B4

Project: 20049 Delano Subdivision

Project No: 022-20062

Client: San Joaquin Valley Homes

Figure No.: A-4

Location: SWC County Line Road and Hiett Avenue, Delano, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content(%)
Depth		Description					20 40 60	10 20 30 40
0		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained with thin lenses of SANDY SILT; brown, moist, drills easily						
2		Loose below 12 inches Medium dense below 2 feet	119.7	5.3		18		•
4								
6		Loose below 5 feet	96.2	19.9		15		
8								
10		***SILTY SAND/SANDY SILT (SM/ML)*** Dense, fine- to medium-grained; brown, moist, drills easily	113.5	17.9		44		•
12								
14		***SILTY SAND/SAND (SM/SP)*** Medium dense, fine- to medium-grained; brown, moist, drills easily						
16			109.0	6.6		22		•
18								
20								

Drill Method: Solid Flight

Drill Date: 6-10-20

Drill Rig: CME 45C-4

Krazan and Associates

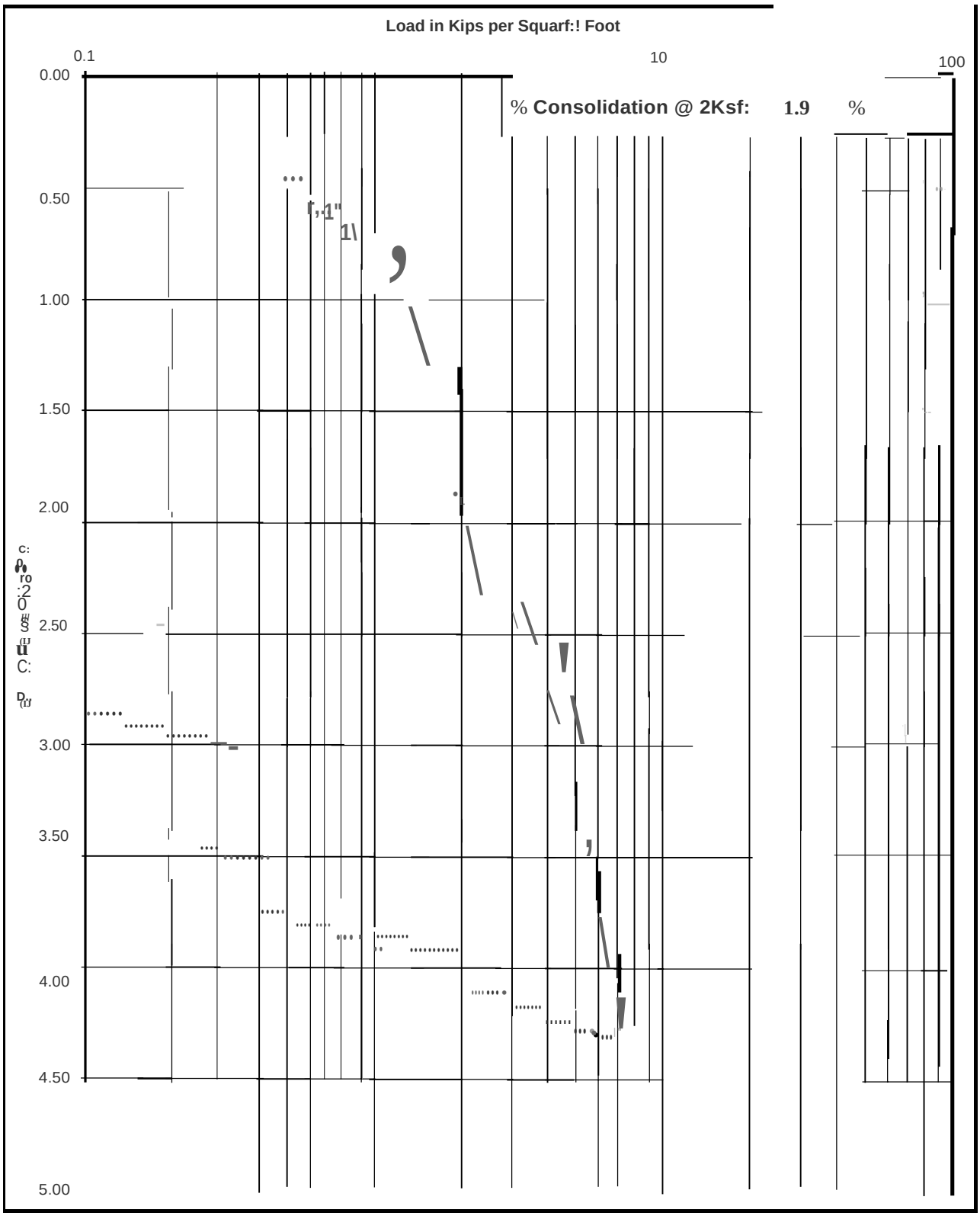
Hole Size: 4% Inches

Driller: Jim Watts

Elevation: 30 Feet

Consolidation Test

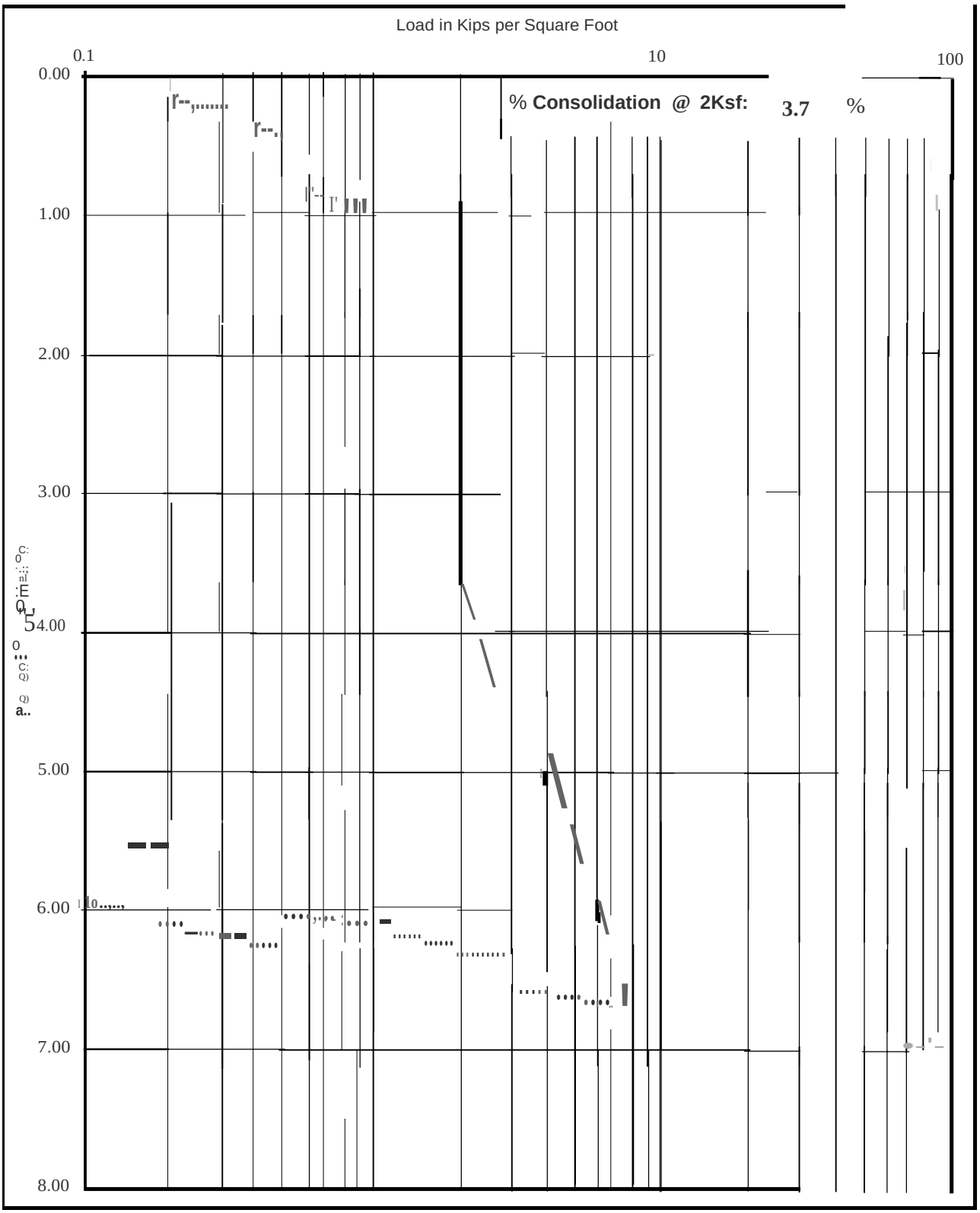
Pro·ect No	Boring No. & Depth	Date	Soil Classification
022-20062	B2 @ 2-3'	6/17/2020	**SM**



Krazan Testing Laboratory

Consolidation Test

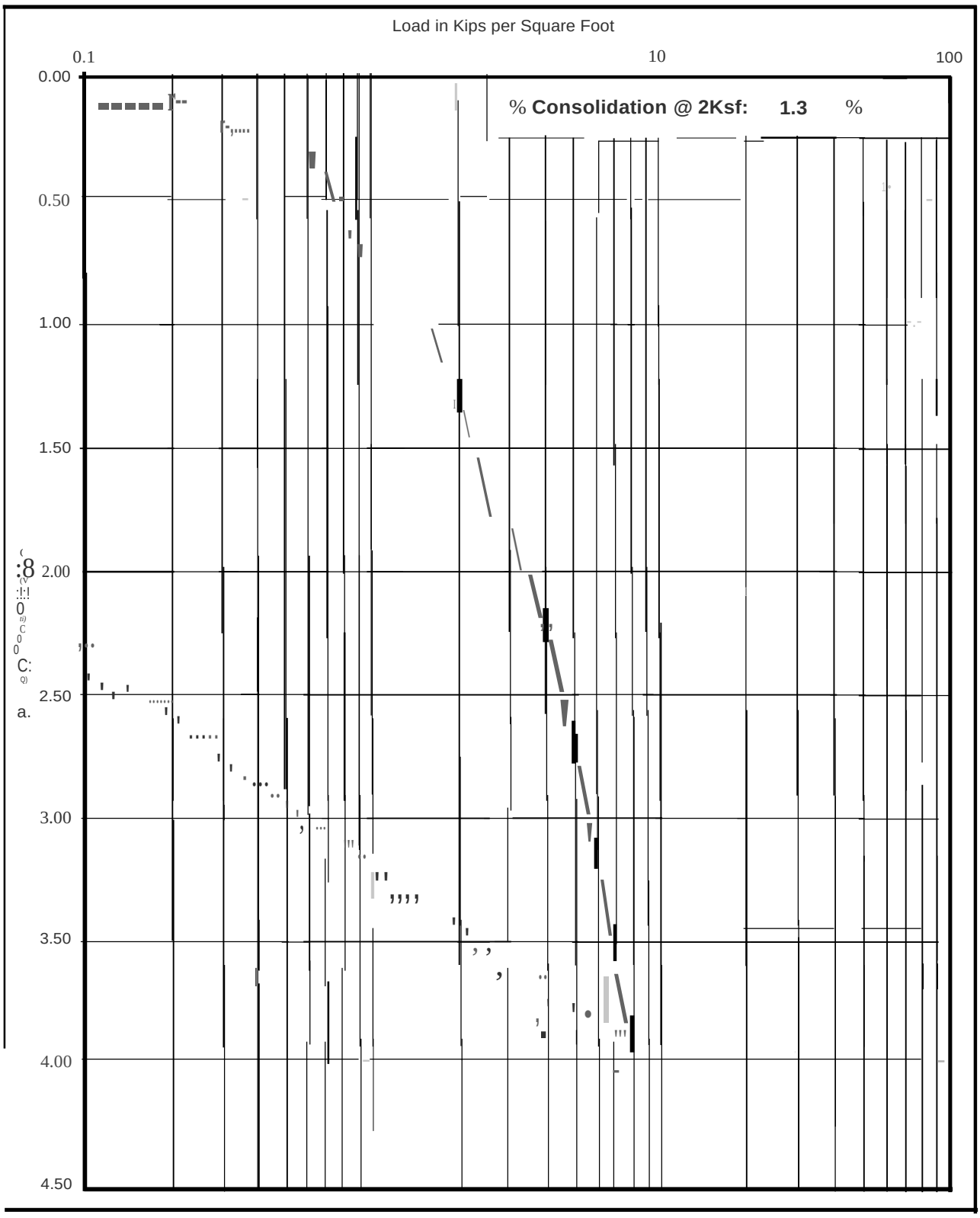
Pro ect No	Boring No. & Depth	Date	Soil Classification
022-20062	83@2-3'	6/17/2020	SM



Krazan Testing Laboratory

Consolidation Test

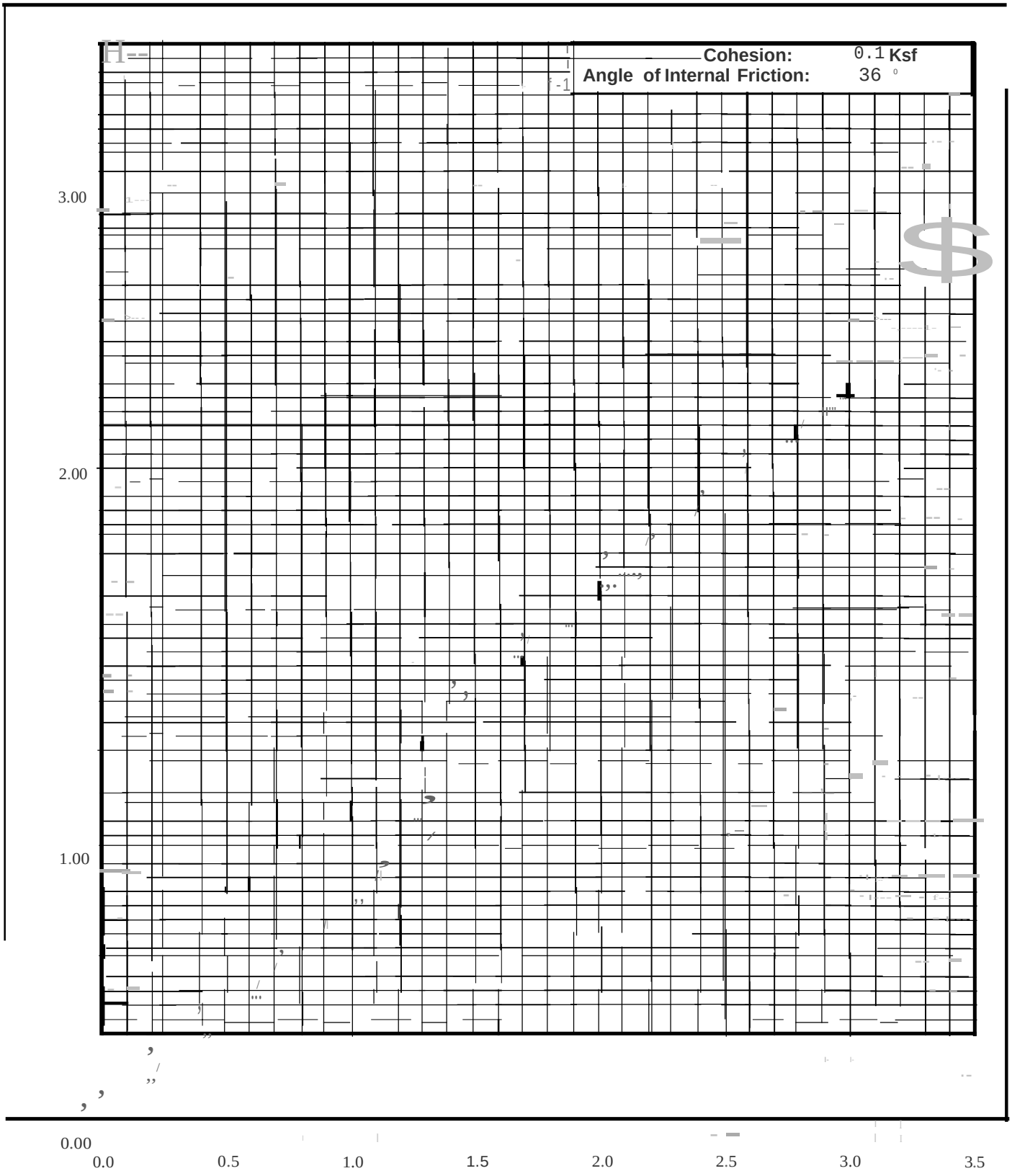
Pro·ect No	Borin No. & Depth	Date	Soil Classification
022-20062	B3@ 5-6'	6/17/2020	SM-ML



Krazan Testing Laboratory

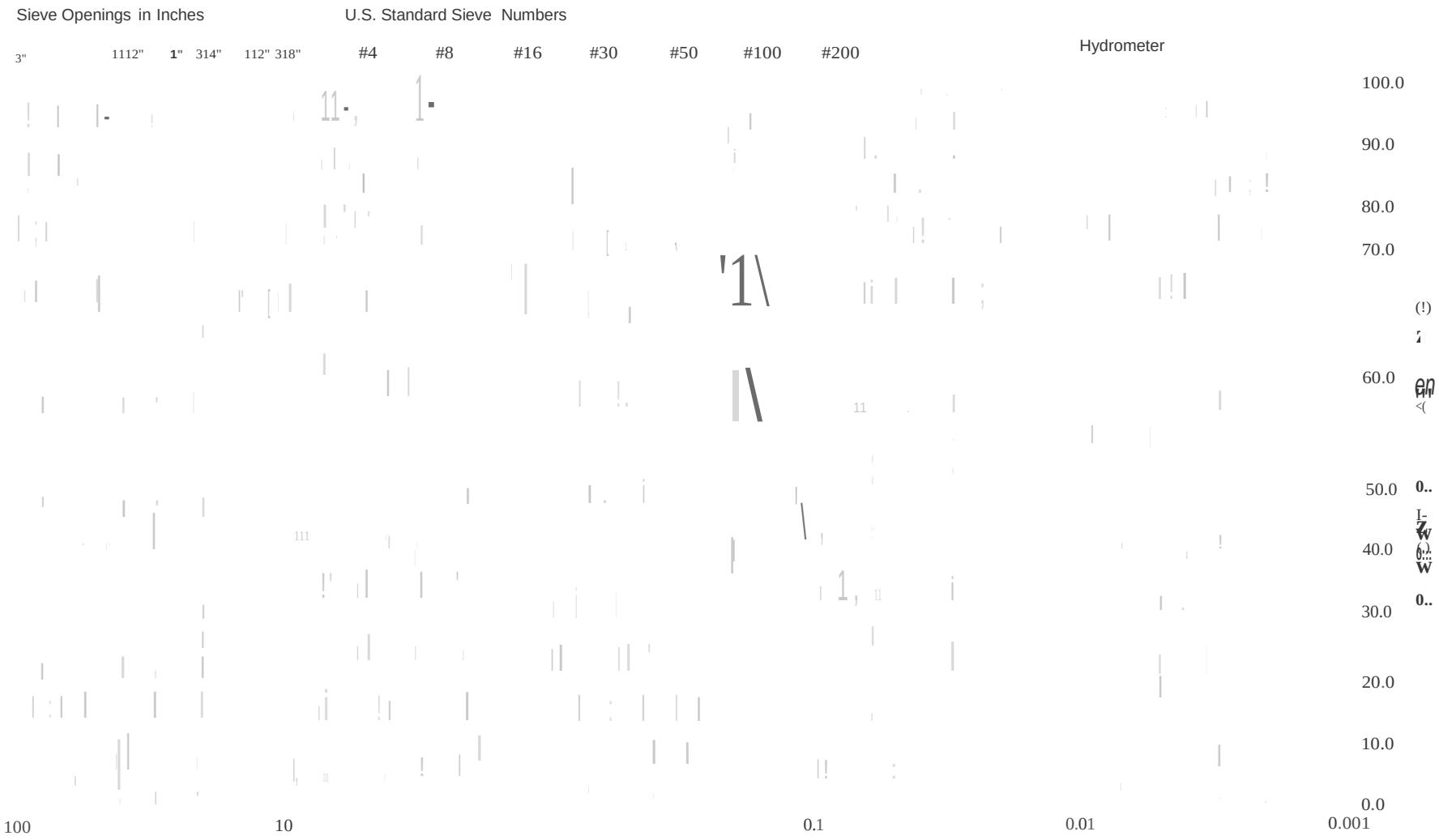
Shear Strength Diagram (Direct Shear)
ASTM D - 3080 / AASHTO T - 236

Pro·ect Number	Sorin No. & Depth	SoilT e	Date
022-20062	81 @2-3'	SM	6/17/2020



Krazan Testing Laboratory

Grain Size Analysis

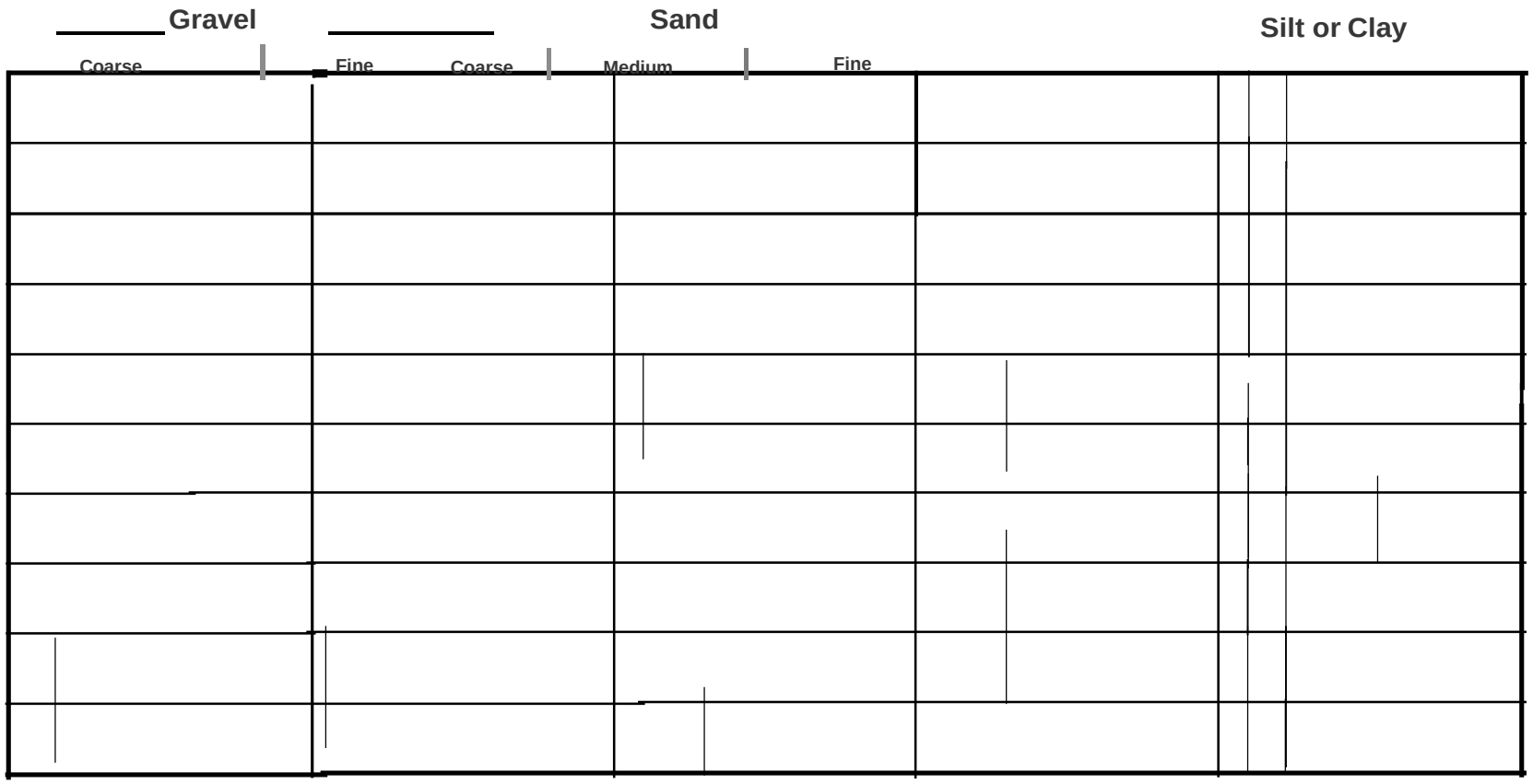


(Unified Soils Classification)

Project Name	20049 Delano Subdivision
Project Number	022-20062
Soil Classification	**SM**
Sample Number	82@2-3'

Krazan Testing Laboratory

Grain Size Analysis

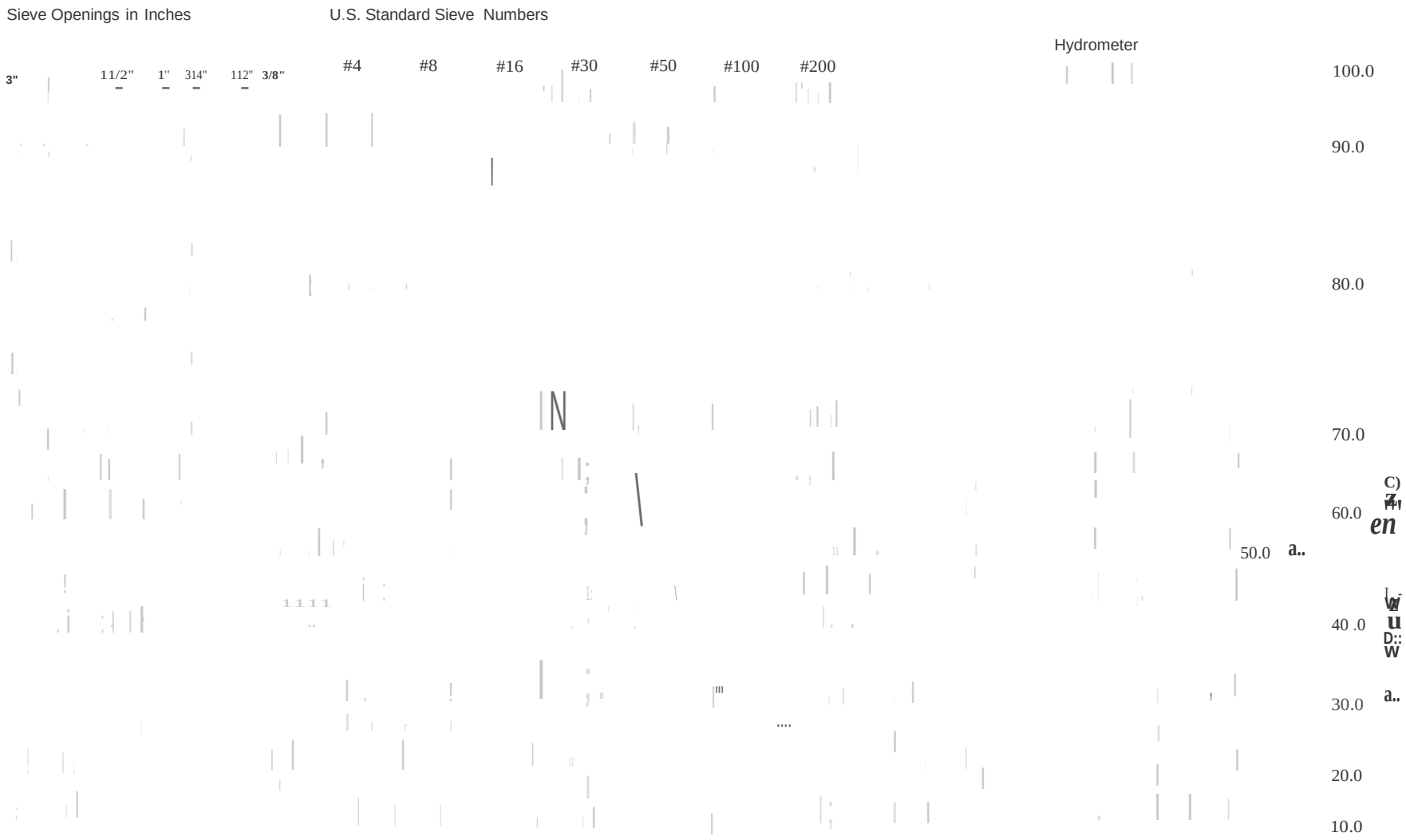


(Unified Soils Classification)

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Project Number	022-20062
Soil Classification	**SM**
Sample Number	83@2-3'

Krazan Testing Laboratory

Grain Size Analysis

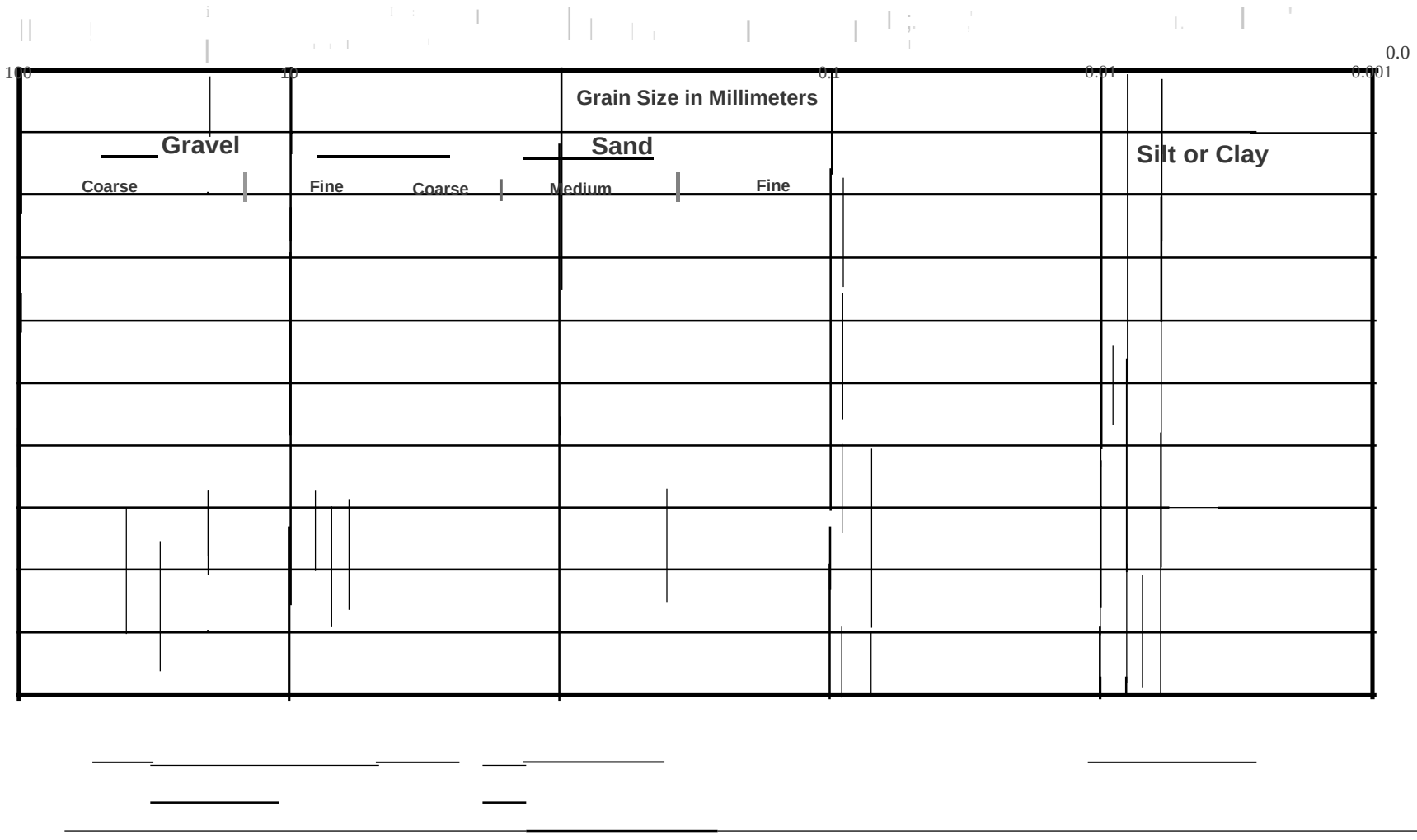


(Unified Soils Classification)

Project Name	20049 Delano Subdivision
Project Number	022-20062
Soil Classification	**SM**
Sample Number	84@2-3'

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Grain Size Analysis



(Unified Soils Classification)

Project Name	20049 Delano Subdivision
Project Number	022-20062
Soil Classification	**SM**
Sample Number	85@2-3'

Krazan Testing Laboratory

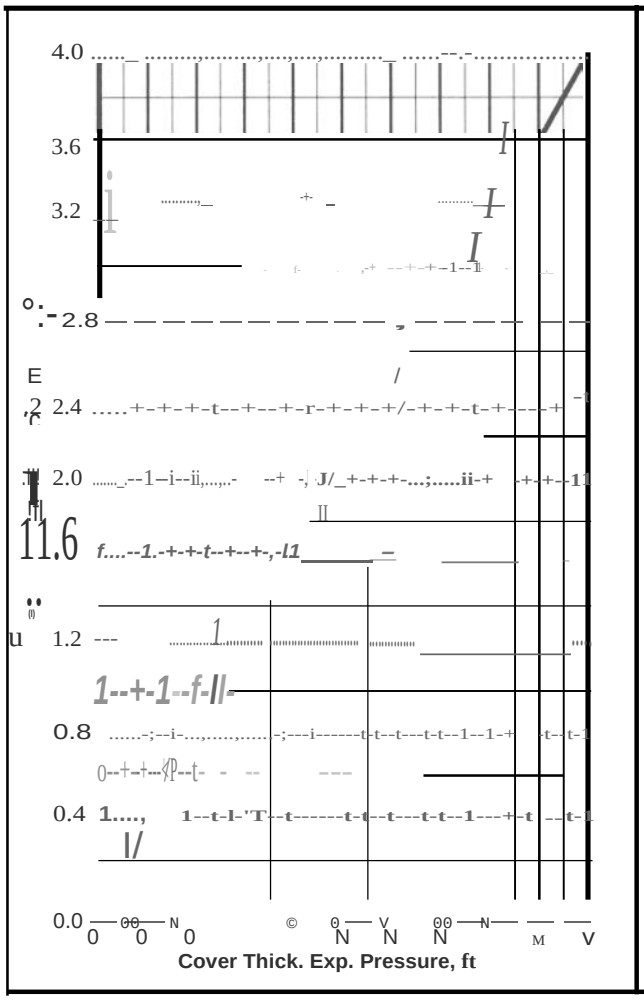
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ASTM D - 2844 / CAL 301

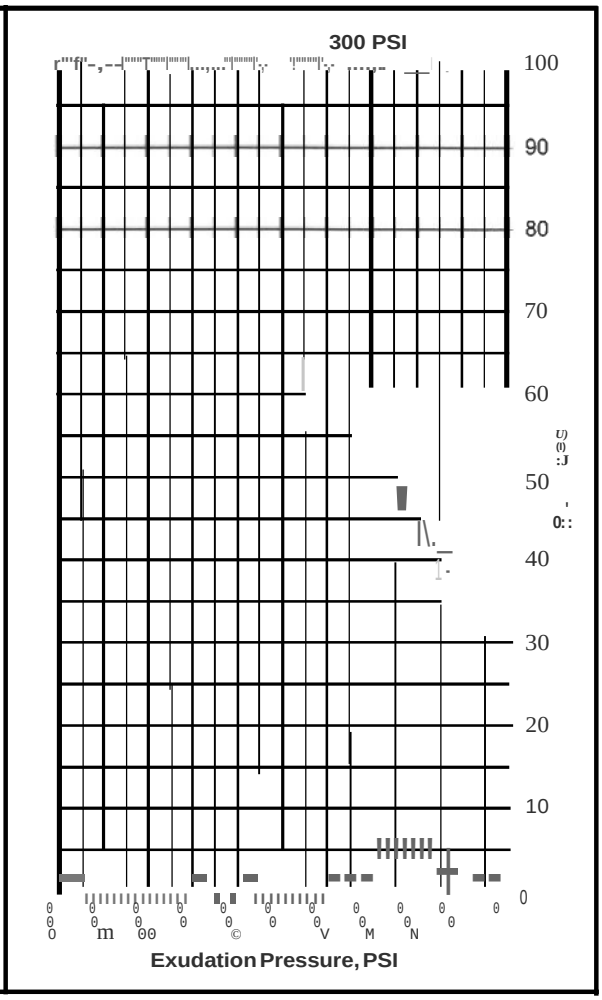
Project Number	022-20062
Project Name	20049 Delano Subdivision
Date	6/19/2020
Sample Location/Curve Number	RV#1
Soil Classification	**SM**

TEST	A	B	C
Percent Moisture @ Compaction, %	10.0	10.4	10.9
Dry Density, lbm/cu.ft.	125.1	124.6	123.6
Exudation Pressure, psi	490	300	120
Expansion Pressure, (Dial Reading)	0	0	0
Expansion Pressure, psf	0	0	0
Resistance Value R	59	52	40

R Value at 300 PSI Exudation Pressure **52**

R Value by Expansion Pressure (TI =): 5 **Expansion Pressure nil**





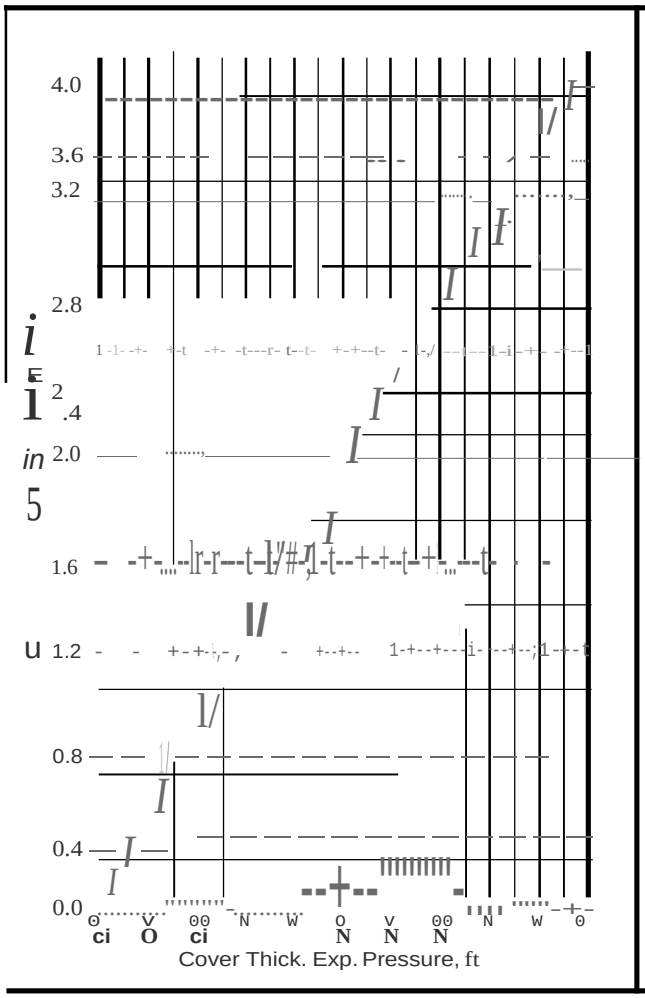
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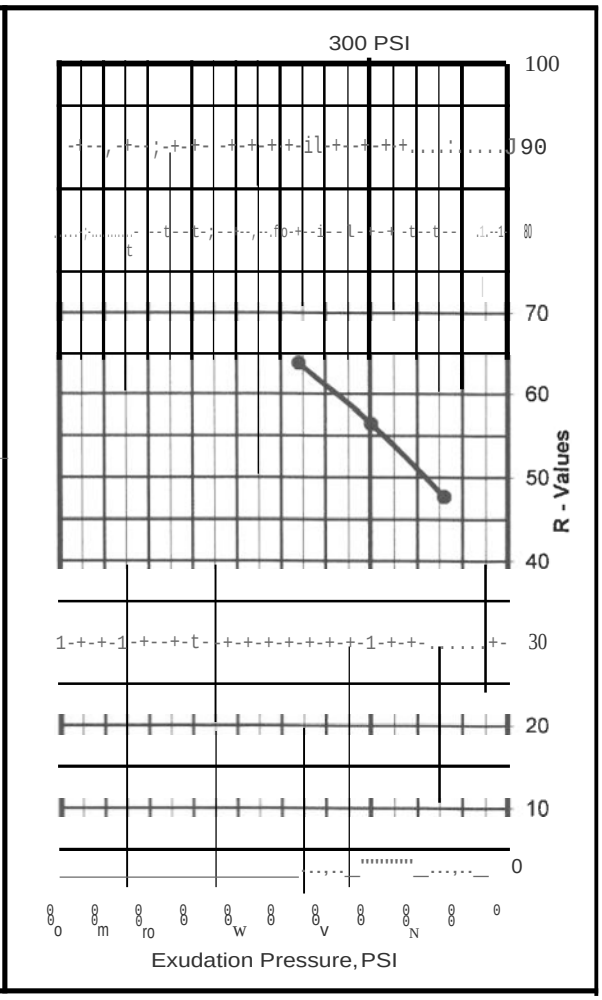
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ASTM D - 2844 / CAL 301

Project Number	022-20062
Project Name	20049 Delano Subdivision
Date	6/19/2020
Sample Location/Curve Number	RV#2
Soil Classification	SM

TEST	A	B	C
Percent Moisture @ Compaction, %	9.7	10.4	10.9
Dry Density, lbm/cu.ft.	126.6	125.5	125.0
Exudation Pressure, psi	460	300	140
Expansion Pressure, (Dial Reading)	0	0	0
Expansion Pressure, psf	0	0	0
Resistance Value R	64	56	48

R Value at 300 PSI Exudation Pressure	**56**
R Value by Expansion Pressure (TI =): 5	**Expansion Pressure nil**





Krazan Testing Laboratory

APPENDIXB

EARTHWORK SPECIFICATIONS

GENERAL

When the text of the report conflicts with the general specifications in this appendix, the recommendations in the report have precedence.

SCOPE OF WORK: These specifications and applicable plans pertain to and include all earthwork associated with the site rough grading, including but not limited to the furnishing of all labor, tools, and equipment necessary for site clearing and grubbing, stripping, preparation of foundation materials for receiving fill, excavation, processing, placement and compaction of fill and backfill materials to the lines and grades shown on the project grading plans, and disposal of excess materials.

PERFORMANCE: The Contractor shall be responsible for the satisfactory completion of all earthwork in accordance with the project plans and specifications. This work shall be inspected and tested by a representative of Krazan and Associates, Inc., hereinafter known as the Soils Engineer and/or Testing Agency. Attainment of design grades when achieved shall be certified by the project Civil Engineer. Both the Soils Engineer and the Civil Engineer are the Owner's representatives. If the Contractor should fail to meet the technical or design requirements embodied in this document and on the applicable plans, he shall make the necessary readjustments until all work is deemed satisfactory as determined by both the Soils Engineer and the Civil Engineer. No deviation from these specifications shall be made except upon written approval of the Soils Engineer, Civil Engineer or project Architect.

No earthwork shall be performed without the physical presence or approval of the Soils Engineer. The Contractor shall notify the Soils Engineer at least 2 working days prior to the commencement of any aspect of the site earthwork.

The Contractor agrees that he shall assume sole and complete responsibility for job site conditions during the course of construction of this project, including safety of all persons and property; that this requirement shall apply continuously and not be limited to normal working hours; and that the Contractor shall defend, indemnify and hold the Owner and the Engineers harmless from any and all liability, real or alleged, in connection with the performance of work on this project, except for liability arising from the sole negligence of the Owner or the Engineers.

TECHNICAL REQUIREMENTS: All compacted materials shall be densified to a density not less than 90 percent relative compaction based on ASTM Test Method D1557 or CAL-216, as specified in the technical portion of the Soil Engineer's report. The location and frequency of field density tests shall be as determined by the Soils Engineer. The results of these tests and compliance with these specifications shall be the basis upon which satisfactory completion of work will be judged by the Soils Engineer.

SOILS AND FOUNDATION CONDITIONS: The Contractor is presumed to have visited the site and to have familiarized himself with existing site conditions and the contents of the data presented in the soil report.

The Contractor shall make his own interpretation of the data contained in said report, and the Contractor shall not be relieved of liability under the Contract documents for any loss sustained as a result of any variance between conditions indicated by or deduced from said report and the actual conditions encountered during the progress of the work.

DUST CONTROL: The work includes dust control as required for the alleviation or prevention of any dust nuisance on or about the site or the borrow area, or off-site if caused by the Contractor's operation either during the performance of the earthwork or resulting from the conditions in which the Contractor leaves the site. The Contractor shall assume all liability, including court costs of codefendants, for all claims related to dust or windblown materials attributable to his work.

SITE PREPARATION

Site preparation shall consist of site clearing and grubbing and the preparations of foundation materials for receiving fill.

CLEARING AND GRUBBING: The Contractor shall accept the site in this present condition and shall demolish and/or remove from the area of designated project earthwork all structures, both surface and subsurface, trees, brush, roots, debris, organic matter, and all other matter determined by the Soils Engineer to be deleterious or otherwise unsuitable. Such materials shall become the property of the Contractor and shall be removed from the site.

Tree root systems in proposed building areas should be removed to a minimum depth of 3 feet and to such an extent which would permit removal of all roots larger than 1 inch. Tree roots removed in parking areas may be limited to the upper 1*Yi* feet of the ground surface. Backfill of tree root excavations should not be permitted until all exposed surfaces have been inspected and the Soils Engineer is present for the proper control of backfill placement and compaction. Burning in areas which are to receive fill materials shall not be permitted.

SUBGRADE PREPARATION: Surfaces to receive Engineered Fill, building or slab loads shall be prepared as outlined above, excavated/scarified to a depth of 12 inches, moisture-conditioned as necessary, and compacted to 90 percent relative compaction.

Loose soil areas, areas of uncertified fill, and/or areas of disturbed soils shall be moisture-conditioned as necessary and recompacted to 90 percent relative compaction. All ruts, hummocks, or other uneven surface features shall be removed by surface grading prior to placement of any fill materials. All areas which are to receive fill materials shall be approved by the Soils Engineer prior to the placement of any of the fill material.

EXCAVATION: All excavation shall be accomplished to the tolerance normally defined by the Civil Engineer as shown on the project grading plans. All over-excavation below the grades specified shall be backfilled at the Contractor's expense and shall be compacted in accordance with the applicable technical requirements.

FILL AND BACKFILL MATERIAL: No material shall be moved or compacted without the presence of the Soils Engineer. Material from the required site excavation may be utilized for construction site fills provided prior approval is given by the Soils Engineer. All materials utilized for constructing site fills shall be free from vegetation or other deleterious matter as determined by the Soils Engineer.

PLACEMENT, SPREADING AND COMPACTION: The placement and spreading of approved fill materials and the processing and compaction of approved fill and native materials shall be the responsibility of the Contractor. However, compaction of fill materials by flooding, ponding, or jetting shall not be permitted unless specifically approved by local code, as well as the Soils Engineer.

Both cut and fill areas shall be surface-compacted to the satisfaction of the Soils Engineer prior to final acceptance.

SEASONAL LIMITS: No fill material shall be placed, spread, or rolled while it is frozen or thawing or during unfavorable wet weather conditions. When the work is interrupted by heavy rains, fill operations shall not be resumed until the Soils Engineer indicates that the moisture content and density of previously placed fill are as specified.

APPENDIXC

PAVEMENT SPECIFICATIONS

1. DEFINITIONS - The term "pavement" shall include asphaltic concrete surfacing, untreated aggregate base, and aggregate subbase. The term "subgrade" is that portion of the area on which surfacing, base, or subbase is to be placed.

The term "Standard Specifications": hereinafter referred to is the 2018 Standard Specifications of the State of California, Department of Transportation, and the "Materials Manual" is the Materials Manual of Testing and Control Procedures, State of California, Department of Public Works, Division of Highways. The term "relative compaction" refers to the field density expressed as a percentage of the maximum laboratory density as defined in the applicable tests outlined in the Materials Manual.

2. SCOPE OF WORK - This portion of the work shall include all labor, materials, tools, and equipment necessary for, and reasonably incidental to the completion of the pavement shown on the plans and as herein specified, except work specifically noted as "Work Not Included."

3. PREPARATION OF THE SUBGRADE - The Contractor shall prepare the surface of the various subgrades receiving subsequent pavement courses to the lines, grades, and dimensions given on the plans. The upper 12 inches of the soil subgrade beneath the pavement section shall be compacted to a minimum relative compaction of 90 percent. The finished subgrades shall be tested and approved by the Soils Engineer prior to the placement of additional pavement courses.

4. UNTREATED AGGREGATE BASE -The aggregate base material shall be spread and compacted on the prepared subgrade in conformity with the lines, grades, and dimensions shown on the plans. The aggregate base material shall conform to the requirements of Section 26 of the Standard Specifications for Class 2 material, 1'l1 inches maximum size. The aggregate base material shall be spread and compacted in accordance with Section 26 of the Standard Specifications. The aggregate base material shall be spread in layers not exceeding 6 inches and each layer of aggregate material course shall be tested and approved by the Soils Engineer prior to the placement of successive layers. The aggregate base material shall be compacted to a minimum relative compaction of 95 percent.

5. AGGREGATE SUBBASE -The aggregate subbase shall be spread and compacted on the prepared subgrade in conformity with the lines, grades, and dimensions shown on the plans. The aggregate subbase material shall conform to the requirements of Section 25 of the Standard Specifications for Class 2 material. The aggregate subbase material shall be compacted to a minimum relative compaction of 95 percent, and it shall be spread and compacted in accordance with Section 25 of the Standard Specifications. Each layer of aggregate subbase shall be tested and approved by the Soils Engineer prior to the placement of successive layers.

6. ASPHALTIC CONCRETE SURFACING-Asphaltic concrete surfacing shall consist of a mixture of mineral aggregate and paving grade asphalt, mixed at a central mixing plant and spread and compacted on a prepared base in conformity with the lines, grades and dimensions shown on the plans. The viscosity grade of the asphalt shall be PG 64-10. The mineral aggregate shall be Type B, *Yi* inch maximum size, medium grading and shall conform to the requirements set forth in Section 39 of the Standard Specifications. The drying, proportioning and mixing of the materials shall conform to Section 39.

The prime coat, spreading and compacting equipment and spreading and compacting mixture shall conform to the applicable chapters of Section 39, with the exception that no surface course shall be placed when the atmospheric temperature is below 50° F. The surfacing shall be rolled with a combination of steel wheel and pneumatic rollers, as described in Section 39-6. The surface course shall be placed with an approved self-propelled mechanical spreading and finishing machine.

7. FOG SEAL COAT -The fog seal (mixing type asphaltic emulsion) shall conform to and be applied in accordance with the requirements of Section 37.

August 2020

Tentative Tract Map 7379
Air Quality/GHG Assessment



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Attachments

Attachment A: Vicinity Map
Attachment B: Site Plan
Attachment C: CalEEMod Emissions Estimates Output Files

Section 1 – Introduction

1.1 Project Description

This document provides an air quality and greenhouse gas assessment for the Tentative Tract Map 7379 project in Kern County, CA. The project involves construction and operation of 281 single-family residential units, a 15,574 s.f. pocket park and a 161,959 s.f. park/pond on approximately 75.52 gross acres in Kern County, CA. A Vicinity Map and Site Plan are provided in Attachments A and B, respectively.

1.2 Project Setting

The proposed project site is located within the City of Delano, immediately south of the Kern County/Tulare County border (See Attachment A). APN 520-010-017 is the only parcel involved with the proposed project. The site is zoned R-1 by the City of Delano Zoning Map and is designated Low Residential by the City of Delano General Plan. The site is currently under agricultural use.

1.3 Summary of CEQA Requirements

CEQA is required by Section 21000 et seq. of the California Public Resources Code and Title 14 of the California Code of Regulations, Section 15000 *et seq.* Section 15002(a) of the CEQA Guidelines describes the basic purposes of CEQA as follows.

(1) Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities.
(2) Identify the ways that environmental damage can be avoided or significantly reduced.
(3) Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
(4) Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

The City of Delano will act as Lead Agency for this project pursuant to the California Environmental Quality Act (CEQA) and the CEQA Guidelines.

Section 2 – Background Information

2.1 Air Quality

A Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI) has been developed by the Air District to act as an advisory document for addressing air quality in environmental documents. The San Joaquin Valley Air Pollution Control District is comprised of the San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, and Tulare Counties and the Valley portion of Kern County and has jurisdiction over most air quality matters in the San Joaquin Valley Air Basin (SJVAB).

The SJVAB has one of the most severe air pollution problems in the State of California and the nation. Air pollution is hazardous to health, reduces visibility, degrades or soils materials, and can damage native vegetation. State and national ambient air quality standards were created to protect the health and welfare, and to minimize other impacts. The ambient air quality standards are outlined in the Regulatory Setting section.

Ozone is not emitted directly into the environment, but is generated from complex chemical reactions between reactive organic gases (ROG), or non-methane hydrocarbons, and oxides of nitrogen (NOX) that occur in the presence of sunlight. ROG and NOX generators in Tulare County include motor vehicles, recreational boats, other transportation sources, and industrial processes.

PM10, or particulate matter, is a complex mixture of primary or directly emitted particles, and secondary particles or aerosol droplets formed in the atmosphere by precursor chemicals.

Carbon Monoxide (CO) is a colorless, odorless and poisonous gas produced by incomplete burning of carbon in fuels. When CO enters the bloodstream, it reduces the delivery of oxygen to the body's organs and tissues. Health threats are most serious for those who suffer from cardiovascular disease, particularly those with angina or peripheral vascular disease. Exposure to elevated CO levels can cause impairment of visual perception, manual dexterity, learning ability and performance of complex tasks. The primary source of carbon monoxide is automobile use.

Nitrogen Dioxide (NO2) is a brownish, highly reactive gas that is present in all urban atmospheres. NO2 can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. Nitrogen oxides are an important precursor both to ozone (O3) and acid rain, and may affect both terrestrial and aquatic ecosystems.

The major mechanism for the formation of NO2 in the atmosphere is the oxidation of the primary air pollutant nitric oxide (NO). NO2 plays a major role, together with VOCs, in the atmospheric reactions that produce O3. NO2 forms when fuel is burned at high temperatures. The two major emission sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers.

Sulfur Dioxide (SO2) affects breathing and may aggravate existing respiratory and cardiovascular disease in high doses. Sensitive populations include asthmatics, individuals with bronchitis or emphysema, children and the elderly. SO2 is also a primary contributor to acid deposition, or acid rain, which causes acidification of lakes and streams and can damage trees, crops, historic buildings and statues. In addition, sulfur compounds in the air contribute to visibility impairment in large parts of the country. This is especially noticeable in national parks. Ambient SO2 results largely from stationary sources such as coal and oil combustion, steel mills, refineries, pulp and paper mills and from nonferrous smelters.

2.2 Greenhouse Gases

Climate Change is a change in the average weather of the earth that may be measured by alterations in wind patterns, storms, precipitation, and temperatures. 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 a 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 GHG needed to stabilize global temperatures and climate change impacts. The IPCC predicted that global mean temperatures change from 1990 to 2100, given six scenarios, could range from 1.1 degree Celsius (ºC) to 6.4ºC. Regardless of analytical methodology, global average temperatures and sea levels are expected to rise under all scenarios (IPCC 2007). In California, climate change may result in consequences such as the following from (CCCC 2006 and Moser et al. 2009).

1. A reduction in the quality and supply of water to the State from the Sierra snowpack.
2. Increased risk of large wildfires.
3. Reduction in the quality and quantity of certain agriculture products.
4. Exacerbation of air quality problems.
5. A rise in sea levels resulting in the displacement of coastal businesses and residence.
6. Damage to marine ecosystems and that natural environment.
7. An increase in infections, disease, asthma, and other health-related problems.
8. A decrease in the health and productivity of California's forest. (CCCC 2006 and Moser et al. 2009)

Greenhouse Gases (GHG) are gases that trap heat in the atmosphere and the presence of GHGs in the atmosphere affects the earth's temperature. The effect is equivalent to the way a greenhouse retains heat. Natural processes and human activities emit greenhouse gases. Common GHGs include water vapor, carbon dioxide, methane, nitrous oxide, ozone, chlorofluorocarbons, hydro chlorofluorocarbons, and hydro fluorocarbons, per fluorocarbons, sulfur and hexafluoride. 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. Some greenhouse gases can remain in the atmosphere for over hundreds of years.

Some GHGs have a greater impact on climate change than others. In order to accurately compare GHG emissions, a Global Warming Potential (GWP) has been calculated for each greenhouse gas based on how long it remains in the atmosphere, on average, and how strongly it absorbs energy. Gases with a higher GWP absorb more energy, per pound, than gases with a lower GWP, and thus contribute more to global warming. For example one pound of methane is equivalent to twenty-one pounds of carbon dioxide.

In regards to the quantity of these gases are in the atmosphere, we first must establish the amount of particular gas in the air, known as Concentration, or abundance, which are measured in parts per million, parts per billion and even parts per trillion. To put these measurement in more relatable terms, one part per million is equivalent to one drop of water diluted into about 13 gallons of water, roughly a full tank of gas in a compact car. Therefore, it can be assumed larger emission of greenhouse gases lead to a higher concentration in the atmosphere.

GHGs as defined by AB 32 include the following gases: carbon dioxide, methane, nitrous oxide, hydruocarbons, perfluorocarbons, and sulfur hexafluoride. GHGs as defined by AB 32 and sources are summarized in Table 1.

Greenhouse Gas	Description and Physical Properties	Lifetime	GWP	Sources
Methane (CH4)	Is a flammable gas and is the main component of natural gas	12 years	21	Emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
Carbon dioxide (CO2)	An odorless, colorless, natural greenhouse gas.	30-95 years	1	Enters the atmosphere through burning fossil fuels (coal, natural gas and oil), solid waste, trees and wood products, and also as a result of certain chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
Chloro-fluorocarbons	Gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are non-toxic nonflammable, insoluble and chemically unreactive in the troposphere (the level of air at the earth's surface).	55-140 years	3,800 to 8,100	Were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone.
Hydro-fluorocarbons	A man-made greenhouse gas. It was developed to replace ozone-depleting gases found in a variety of appliances. Composed of a group of greenhouse gases containing carbon, chlorine an at least one hydrogen atom.	14 years	140 to 11,700	Powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for stratospheric ozone-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases.
Nitrous oxide (N2O)	Commonly known as laughing gas, is a chemical compound with the formula N2O. It is an oxide of nitrogen. At room temperature, it is a colorless, non-flammable gas, with a slightly sweet odor and taste. It is used in surgery and dentistry for its anesthetic and analgesic effects.	120 years	310	Emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
Pre-fluorocarbons	Has a stable molecular structure and only breaks down by ultraviolet rays about 60 kilometers above Earth's surface.	50,000 years	6,500 to 9,200	Two main sources of pre-fluorocarbons are primary aluminum production and semiconductor manufacturing.

Greenhouse Gas	Description and Physical Properties	Lifetime	GWP	Sources
Sulfur hexafluoride	An inorganic, odorless, colorless, and nontoxic nonflammable gas.	3,200 years	23,900	This gas is manmade and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing and as a tracer gas.

Table 1. Greenhouse Gasses; Source: EPA, Intergovernmental Panel on Climate Change

Each of the designated gases described above can reside in the atmosphere for different amounts of time, ranging from a few years to thousands of years. All of these gases remain in the atmosphere long enough to become well mixed, meaning that the amount that is measured in the atmosphere is roughly the same all over the world regardless of the source of the emission

Section 3 – Regional Attainment Status and Regulatory Setting

3.1 Regional Attainment Status

The State of California is divided into regional air basins based on topographic air drainage features. The proposed project site is within the San Joaquin Valley Air Basin, which is bordered by the Sierra Nevada Mountains to the east, Coastal Ranges to the west, and the Tehachapi Mountains to the south.
The mountain ranges surrounding the San Joaquin Valley Air Basin (SJVAB) serve to restrict air movement and prevent the dispersal of pollution. As a result, the SJVAB is highly susceptible to pollution accumulation over time. As shown in the Table 2, the SJVAB is in nonattainment for several pollutant standards.

Pollutant	Designation/Classification	
	Federal Standards	State Standards
Ozone – One hour	No Federal Standard[f]	Nonattainment/Severe
Ozone – Eight hour	Nonattainment/Extreme[e]	Nonattainment
PM 10	Attainment[c]	Nonattainment
PM 2.5	Nonattainment[d]	Nonattainment
Carbon Monoxide	Attainment/Unclassified	Attainment/Unclassified
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Sulfur Dioxide	Attainment/Unclassified	Attainment
Lead (Particulate)	No Designation/Classification	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment

[a] See 40 CFR Part 81
[b] See CCR Title 17 Sections 60200-60210
[c] On September 25, 2008, EPA redesignated the San Joaquin Valley to attainment for the PM10 National Ambient Air Quality Standard (NAAQS) and approved the PM10 Maintenance Plan.
[d] The Valley is designated nonattainment for the 1997 PM2.5 NAAQS. EPA designated the Valley as nonattainment for the 2006 PM2.5 NAAQS on November 13, 2009 (effective December 14, 2009).
[e] Though the Valley was initially classified as serious nonattainment for the 1997 8-hour ozone standard, EPA approved Valley reclassification to extreme nonattainment in the Federal Register on May 5, 2010 (effective June 4, 2010).
[f] Effective June 15, 2005, the U.S. Environmental Protection Agency (EPA) revoked the federal 1-hour ozone standard, including associated designations and classifications. EPA had previously classified the SJVAB as extreme nonattainment for this standard. EPA approved the 2004 Extreme Ozone Attainment Demonstration Plan on March 8, 2010 (effective April 7, 2010). Many applicable requirements for extreme 1-hour ozone nonattainment areas continue to apply to the SJVAB.

Table 2. San Joaquin Valley Attainment Status; Source: SJVAPCD

The state and federal standards for the criteria pollutants are presented in Section 8.4 of The San Joaquin Valley Unified Air Pollution Control District's 2015 "Guidance for Assessing and Mitigating Air Quality Impacts". These standards are designed to protect public health and welfare. The "primary" standards have been established to protect the public health. The "secondary" standards are intended to protect the nation's welfare and account for air pollutant effects on soils, water, visibility, materials, vegetation and other aspects of general welfare. The U.S. EPA revoked the national 1-hour ozone standard on June 15, 2005, and the annual PM_{10} standard on September 21, 2006, when a new $PM_{2.5}$ 24-hour standard was established.

Pollutant	Averaging Time	California Standards[1]		National Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (03)	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	--	Same as Primary Standard	Ultraviolet 8 Hour Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM_{10})	24 Hour	50 µg/m	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Annual Analysis
	Annual Arithmetic Mean	20 µg/m3		--		
Fine Particulate Matter ($PM_{2.5}$)	24 Hour		Gravimetric or Beta Attenuation	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Annual Analysis
	Annual Arithmetic Mean	12 µg/m^3		15 µg/m^3		
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	--	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	--	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		--	--	
Nitrogen Dioxide (NO_2) [8]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	--	Gas Phase Annual Chemiluminescence
	Arithmetic Mean	0.030 ppm (57 µg/m^3)		53 ppb (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	--	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	--		--	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)9	--	
	Annual Arithmetic Mean	--		0.030 ppm (for	--	

Pollutant	Averaging Time	California Standards[1]		National Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
				certain areas)9		
Lead[10,11]	30 Day Average	1.5 µg/m^3	Atomic Absorption	--	--	High Volume Sampler and Atomic Absorption
	Calendar Quarter	--		1.5 µg/m3 (for certain areas)11	Same as Primary Standard	
	Rolling 3-Month Average	--		0.15 µg/m^3		
Visibility Reducing Particles[12]	8 Hour	See footnote 12	Beta Attenuation and Transmittance through Filter Tape	No National Standard		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[10]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
8. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national standards are in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standards of 53 ppb and 100 ppb are identical to 0.053 ppm and 0.100 ppm, respectively.
9. On June 2, 2010, a new 1-hour SO2 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 SO2 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. Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
10. 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.
11. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
12. 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.

Table 3. Ambient Air Quality Standards; Source: SJVAPCD

3.2 Regulatory Setting

The California Environmental Quality Act (CEQA) requires lead agencies to determine if each project of a certain threshold has an impact on the air quality of the area. The Air Quality standards and Greenhouse Gas guidance measures are used to establish levels of air quality impact of a project. The following regulatory background represents global, federal, state, and local standards and guidance that have been reviewed in this study.

Federal Clean Air Act**:** The 1977 Federal Clean Air Act (CAA) authorized the establishment of the National Ambient Air Quality Standards (NAAQS) and set deadlines for their attainment. The Clean Air Act identifies specific emission reduction goals, requires both a demonstration of reasonable further progress and an attainment demonstration, and incorporates more stringent sanctions for failure to meet interim milestones. The U.S. EPA is the federal agency charged with administering the Act and other air quality-related legislation. EPA's principal functions include setting NAAQS; establishing minimum national emission limits for major sources of pollution; and promulgating regulations. Under CAA, the NCCAB is identified as an attainment area for all pollutants.

California Clean Air Act: California Air Resources Board coordinates and oversees both state and federal air pollution control programs in California. As part of this responsibility, California Air Resources Board monitors existing air quality, establishes California Ambient Air Quality Standards, and limits allowable emissions from vehicular sources. Regulatory authority within established air basins is provided by air pollution control and management districts, which control stationary-source and most categories of area-source emissions and develop regional air quality plans. The project is located within the jurisdiction of the San Joaquin Valley Air Pollution Control District.

San Joaquin Valley Air Pollution Control District (SJVAPCD): The SJVAPCD is responsible for enforcing air quality standards in the project area. The following SJVAPCD rules and regulations may apply to the proposed project:

- **Rule 3135:** Dust Control Plan Fee. All projects which include construction, demolition, excavation, extraction, and/or other earth moving activities as defined by Regulation VIII (Described below) are required to submit a Dust Control Plan and required fees to mitigate impacts related to dust.
- **Rule 4101:** Visible Emissions. District Rule 4101 prohibits visible emissions of air contaminants that are dark in color and/or have the potential to obstruct visibility.
- **Rule 9510:** Indirect Source Review (ISR). This rule reduces the impact PM10 and NOX emissions from growth on the SJVB. This rule places application and emission reduction requirements on applicable development projects in order to reduce emissions through onsite mitigation, offsite SJVAPCD administered projects, or a combination of the two. This project will submit an Air Impact Assessment (AIA) application in accordance with Rule 9510's requirements.
- **Regulation VIII:** Fugitive PM10 Prohibitions. Regulation VIII is composed of eight rules which together aim to limit PM10 emissions by reducing fugitive dust. These rules contain required management practices to limit PM10 emissions during construction, demolition, excavation, extraction, and/or other earth moving activities.

Greenhouse Gases: Climate changes is a global, national, state and local issue involving greenhouse gas emissions from all around the world; therefore countries around the world, including the United States, have established regulations to assist in the emissions of GHGs. Tables 4-7 give a brief explanation of international, national, state and local regulations.

Regulation	Adopted	Protocol
Intergovernmental Panel on Climate Change	1998	The United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change to assess the scientific, technical and socio-economical information relevant to understanding the scientific basis of risk of human-induced climate change and its potential impacts.

United Nations Framework Convention on Climate Change	March 21, 1994	Governments gather and share information on GHG emissions, national polices and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts.
Kyoto Protocol	Adopted: December 1, 1997 Entered into Force: February 16, 2005	Sets binding targets for 37 industrialized countries and the European community for reducing GHG emissions at an average of 5% against 1990 levels over the five-year period of 2008-2012
Paris Climate Agreement	Adopted: December 12, 2015 Entered into Force: November 4 2016	The Paris Climate Agreement an agreement within the United UNFCCC to limit global temperature rise to 2 degrees Celsius above pre industrial levels. Under the agreement, each country determines, plans, and regularly reports its own contribution to mitigate global warming. The agreement is voluntary and is not legally binding.

Table 4. International Greenhouse Gas Regulations

Regulation	Adopted	Protocol
Greenhouse Gas Endangerment	December 7, 2009	The EPA Administrator signed two distinct findings regarding GHG emissions under section 2029(a) of the Clean Air Act. 1. Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed greenhouse gases — carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6) 2. 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.
Corporate Average Fuel Economy (CAFE)	Adopted: 1975 Revised: July 29, 2011	An agreement between thirteen large automakers (accounting for 90% of all vehicles sold in the United States), the United Auto Workers, and the State of California to increase fuel economy to 54.5 miles per gallon for cars and light-duty trucks by model year 2025.
Greenhouse Gas Reporting Program	September 22, 2009	Requires reporting of GHG emissions from large sources and suppliers in the United States. Any facility that emits 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to the EPA.
New Source Review	May 13, 2013	Tailors the requirements of the Clean Air Act permitting programs to limit which facilities will be required to obtain Prevention of Significant Deterioration and Title V permits.
Standards of Performance for GHG Emissions for New Stationary Sources: Electrical Utility Generating Units	March 27, 2012	The EPA proposed new performance standards for emissions of carbon dioxide for new affected fossil fuel-fired electrical utility generated units. New sources greater than 25 megawatt would be required to meet an output-based standard of 1,000 pound of carbon dioxide per megawatt-hour, based on the performance of widely used natural gas combined cycle technology
Western Climate Initiative Partner	*Yet to be formally adopted*	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. Its cap and trade program is estimated to be fully implemented by 2012

Table 5. Federal Greenhouse Gas Regulations

Regulation	Adopted	Protocol
Title 24	Adopted: 1978 2008 Standards Effective: January 1, 2010	California's Energy Efficiency Standards for Residential and Non-Residential Buildings. Their standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods
California Green Building Standards	January 12, 2010	A comprehensive and uniform regulatory code for all residential, commercial and K-14 school buildings.

Pavley Regulations, AB 1493	July 22, 2002	Reduce GHG emissions in new passenger vehicles from 2009 through 2016. These amendments are part of California's commitment toward a nation-wide program to reduce new passenger vehicle GHGs from 2012 through 2016. ARB's September amendments will cement California's enforcement of the Pavley rule starting in 2009 while providing vehicle manufacturers with new compliance flexibility.
Low Carbon Fuel Standard-Executive Order S-01-07	January 18, 2007	Calls for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020. It instructed the California Environmental Protection Agency to develop and propose a draft compliance schedule to meet the 2020 target.
SB 1368	2006	The law limits long-term investments in base load generation by the state's utilities to power plants that meet an emissions performance standard (EPS)..
SB 97	February 16, 2010	The Natural Resources Agency adopted Amendments to the CEQA Guidelines for greenhouse gas emissions.
AB 32	2006	Set the 2020 greenhouse gas emissions reduction goal into law. It directed the California Air Resources Board to begin developing discrete early actions to reduce greenhouse gases while also preparing a scoping plan to identify how best to reach the 2020 limit. The reduction measures to meet the 2020 target are to be adopted by the start of 2011.
SB 375	August 30, 2008	Enhances California's ability to reach its AB 32 goals by promoting good planning with the goal of more sustainable communities. Sustainable Communities requires ARB to develop regional greenhouse gas emission reduction targets for passenger vehicles. ARB is to establish targets for 2020 and 2035 for each region covered by one of the State's 18 metropolitan planning organizations
Executive Order S-13-08	2009	A comprehensive "Climate Adaptation Strategy" that would identify the state's vulnerabilities and plan accordingly. State agencies will take this report into account, due in December 2010, when planning new infrastructure such as roads, bridges, and water treatment facilities. The executive order noted that the country's longest continuously operating sea level gauge, San Francisco Bay's Fort Point, recorded a seven-inch rise in sea level over the 20th century.
SB 1078, SB 107 and Executive Order S-14-08	September 12, 2002	Requires California to generate 20% of its electricity from renewable energy by 2017. SB 107 then changes the 2017 deadline ot 2010. Executive Order S-14-08 required that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020.
CEQA Guidelines Update	Adopted: April 13, 2009 Updated: May 2011	These Thresholds are designed to establish the level at which the District believed air pollution emissions would cause significant environmental impacts under CEQA and were posted on the Air District's website and included in the Air District's updated CEQA Guidelines
Executive Order B-30-15	April 20, 2015	Establishes a California GHG reduction target of 40 percent below 1990 levels by 2030.
AB 398	July 17, 2017	Extended the California Cap and Trade program through 2030.

Table 6. State Greenhouse Gas Regulations

Regulation	Adopted	Protocol
San Joaquin Valley Air Pollution Control District		The San Joaquin Valley Air Pollution Control District is made up of eight counties in California's Central Valley: San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare and Kern. The Valley Air District is governed by a Governing Board consisting of representatives from the Board of Supervisors of all eight counties, one Health and Science member, one Physician, and five Valley city representatives.
SJVAPCD CEQA Greenhouse Gas Guidance	December 2009	The SJVAPCD approach is intended to streamline the process of determining if project specific GHG emissions would have a significant effect. Best Performance Standards would be established according to performance-based determinations.

San Joaquin Valley Carbon Exchange	November 2008	Intended to quantify, verify, and track voluntary GHG emissions reductions generated within the San Joaquin Valley
Rule 2301	January 19, 2012	Emission Reduction Credit Banking. Provided an administrative mechanism for sources to bank GHG emissions, mechanism for sources to transfer GHG reductions to other users and defines eligibility standards, quantitative and procedures.

Table 7. Regional Greenhouse Gas Regulations

Section 4 – Air Quality Impacts Thresholds and Evaluation Methodology

Air pollution emissions can be estimated by using emission factors and examining the level of activity occurring. Emission factors are the emission rate of a pollutant given the activity over time; for example, grams of Nox per horsepower hour. The ARB has published emission factors for on-road equipment and vehicles in the OFFROAD emission 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 (CalEEMod) version version 2016.3.2 is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutants and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects. The model quantifies direct emissions from construction and operations, including vehicle use, as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. The model incorporates Pavley standards and Low Carbon Fuel standards into the mobile source emission factors. Further, the model identifies mitigation measures to reduce criteria pollutant and GHG emissions along with calculating the benefits achieved from measures chosen by the user

Significance thresholds are based on the CEQA Appendix G Environmental Checklist Form and thresholds established by the SJVAPCD. The CEQA Appendix G Environmental Checklist Form states that the project would have a potentially significant impact on air quality or greenhouse gases if the project would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations; and/or
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.
- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

The SJVAPCD has recommended the following thresholds of significance for criteria pollutant emissions from projects (Table 8). The SJVAPCD does not provide numeric thresholds for GHG emissions. Instead, the SJVAPCD "Guidance for Valley Land Use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA" states that projects which achieve a 29% GHG emission reduction compared to Business as Usual (BAU) would be determined to have a less than significant individual and cumulative impact on GHG emissions.

Pollutant/Precursor	Construction Emissions	Operational Emissions	
		Permitted Equipment and Activities	Non-Permitted Equipment and Activities
	Emissions (tpy)	Emissions (tpy)	Emissions (tpy)
CO	100	100	100
Nox	10	10	10
ROG	10	10	10
SOx	27	27	27
PM10	15	15	15
PM2.5	15	15	15

Table 8. SJVAPCD Thresholds of Significance for Criteria Pollutants; Source: SJVAPCD

Section 5 – Project-Related Emissions

5.1 Short-Term Emissions

Project construction would generate pollutant emissions from the following construction activities: site preparation, grading, building construction, application of architectural coatings, and paving. The short-term emissions from these activities were calculated using CalEEMod. The full CalEEMod Report can be found in Attachment C. As shown in Table 9 below, project construction related emissions do not exceed the thresholds for criteria pollutants established by the SJVAPCD.

	CO (tpy)	ROG (tpy)	SOx (tpy)*	Nox (tpy)	PM10 (tpy)	PM2.5 (tpy)
Emissions Generated from Project Construction	**3.2697**	**4.8243**	**0.00742**	**4.4813**	**0.9994**	**0.5688**
SJVAPCD Thresholds of Significance	**100**	**10**	**27**	**10**	**15**	**15**
*Threshold established by SJVAPCD for SOx, however emissions are reported as SO2 by CalEEMod.						

Table 9. Projected Project Emissions Compared to SJVAPCD Thresholds of Significance for Criteria Pollutants related to Construction; Source: SJVAPCD, CalEEMod Analysis (Attachment C)

5.2 Long-Term Emissions

Implementation of the proposed project would result in long-term emissions associated with mobile, energy, and area sources. Operational emissions from these factors were calculated using CalEEMod. The full CalEEMod Report can be found in Attachment C. Operational emission estimates include the following mitigation measures:

- Improve Walkability Design
- Improve Destination Accessibility
- Increase Transit Accessibility
- Improve Pedestrian Network
- Provide Traffic Calming Measures

As shown in Table 10 below, the project's operational emissions do not exceed the thresholds established by the SJVAPCD.

	CO (tpy)	ROG (tpy)	SOx (tpy)*	Nox (tpy)	PM10 (tpy)	PM2.5 (tpy)
Operational Emissions	**9.9878**	**3.3381**	**0.0515**	**9.7115**	**2.7749**	**0.7918**
SJVAPCD Thresholds of Significance	**100**	**10**	**27**	**10**	**15**	**15**
*Threshold established by SJVAPCD for SOx, however emissions are reported as SO2 by CalEEMod.						

Table 10. Projected Project Emissions Compared to SJVAPCD Thresholds of Significance for Criteria Pollutants related to Operations; Source: SJVAPCD, CalEEMod Analysis (Attachment C)

5.3 Greenhouse Gas Emissions

The SJVAPCD does not provide numeric thresholds to assess the significance of greenhouse gas emissions. Instead, the SJVAPCD "Guidance for Valley Land Use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA" states that projects which achieve a 29% GHG emission reduction compared to Business as Usual (BAU) would be determined to have a less than significant individual and cumulative impact for GHG. "Business as usual" (BAU) conditions are defined based on the year 2005 building energy efficiency, average vehicle emissions, and electricity energy conditions. The BAU conditions assume no improvements in energy efficiency, fuel efficiency, or renewable energy generation beyond that existing today.

The project's operational GHG emissions and 2005 BAU GHG emissions were estimated using CalEEMod (Attachment C). The Project's annual GHG emissions are less than the 2005 BAU emissions by 2,798 MT CO2e, which is a 34.8% reduction. Therefore, the Project would not generate a cumulatively considerable GHG impact nor would it conflict with any applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions.

	CO2 (MT/year)	CH4 (MT/year)	N2O (MT/year)	CO2e (MT/year)
2023 Project Operations	**5,104.4**	**4.8**	**0.02**	**5,231.4**
2005 BAU	**7,820.3**	**8.0**	**0.03**	**8,029.4**
% Reduction from BAU				**34.8%**

Table 11. Projected Project Operational GHG Emissions Compared to 2005 BAU

5.4 Potential Impacts to Sensitive Receptors

Sensitive receptors are defined as areas where young children, chronically ill individuals, the elderly, or people who are more sensitive than the general population reside, such as schools, hospitals, nursing homes, and daycare centers. Albany Park Elementary School is the nearest sensitive receptor and is located approximately 0.29 miles from the proposed project site.

The project does not include any project components identified by the California Air Resources Board that could potentially impact any sensitive receptors (such as heavily traveled roads, distribution centers, fueling stations, and dry-cleaning operations). Based on the operational emissions estimates and nature

of the proposed project, the proposed project is not anticipated to negatively impact any sensitive receptors.

5.5 Potential Odor Impacts

Although some typical construction-related odors would be generated during project construction, these odors are not anticipated to affect a substantial number of people or be particularly adverse. The project does not include any uses known to be a source of nuisance odors (listed in Table 6 of the SJVAPCD's GAMAQI). The impact is expected to be less than significant.

Section 6 – Conclusions

Construction and operation of the proposed project would result in criteria pollutant and GHG emissions, however these emissions would not exceed the thresholds of significance established by the SJVAPCD. Impacts to air quality from the proposed project would be less than significant.

Section 7 – References

California Environmental Quality Act (CEQA). 2019. (Public Resources Code 21000 - 21189) and CEQA Guidelines (California Code of Regulations Title 14, Division 6, Chapter 3, Sections 15000 – 15387).

California Environmental Quality Act (CEQA). 2019. CEQA, Appendix G – Environmental Checklist Form, Final Text.

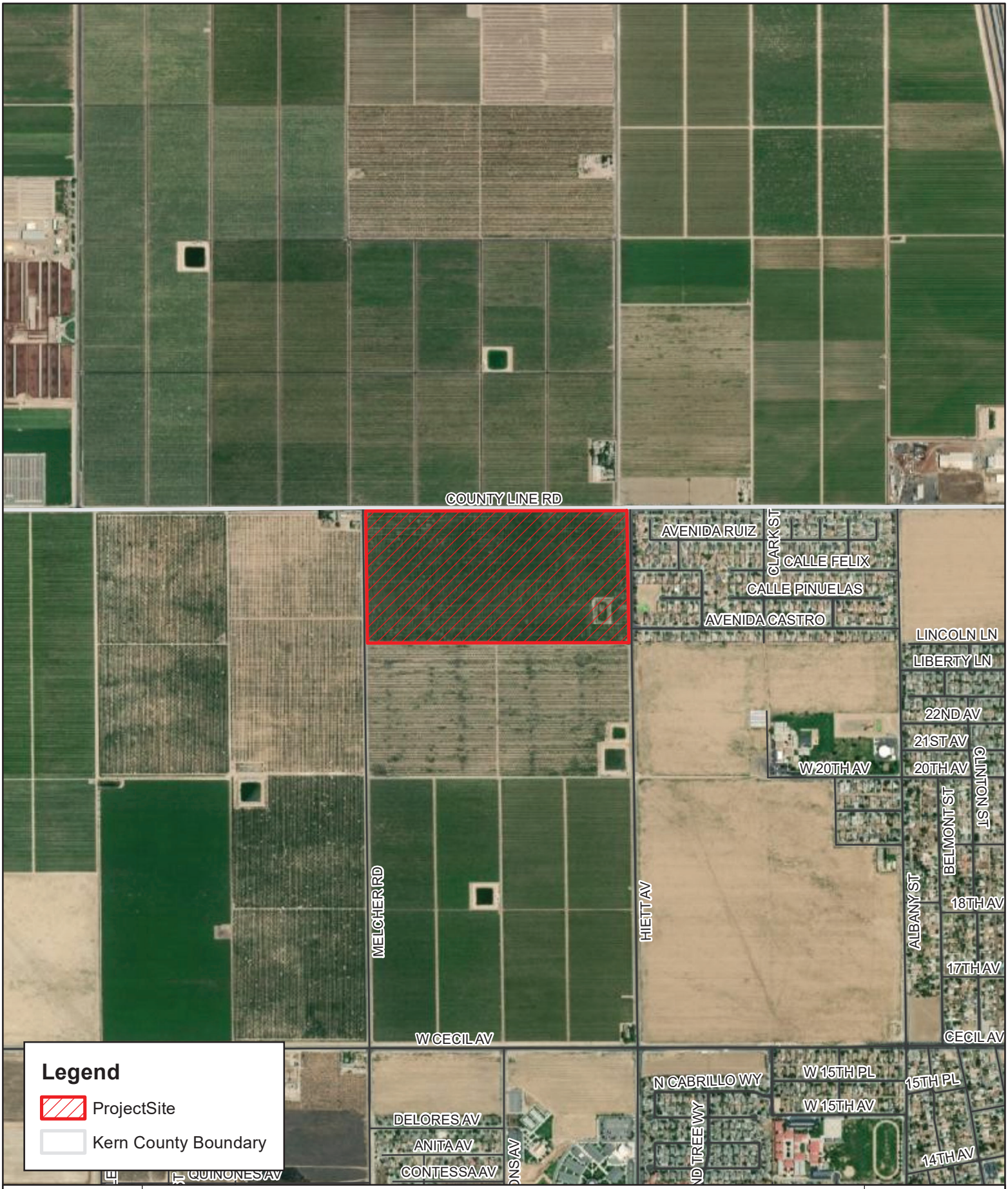
California Air Pollution Control Officers Association (CAPCOA). 2016. California Emissions Estimator Model tm (CalEEMod), version 2016.3.2.

San Joaquin Valley Air Pollution Control District (SJVAPCD). 2015. Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI). March 19, 2015.

San Joaquin Valley Air Pollution Control District (SJVAPCD). 2009. Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA. December 17, 2009.

Attachment A

Vicinity Map



4CREEKS

Vicinity Map

Tentative Tract Map 7379

Date: 8/22/2020

N

1 in = 1,500 ft

Attachment B

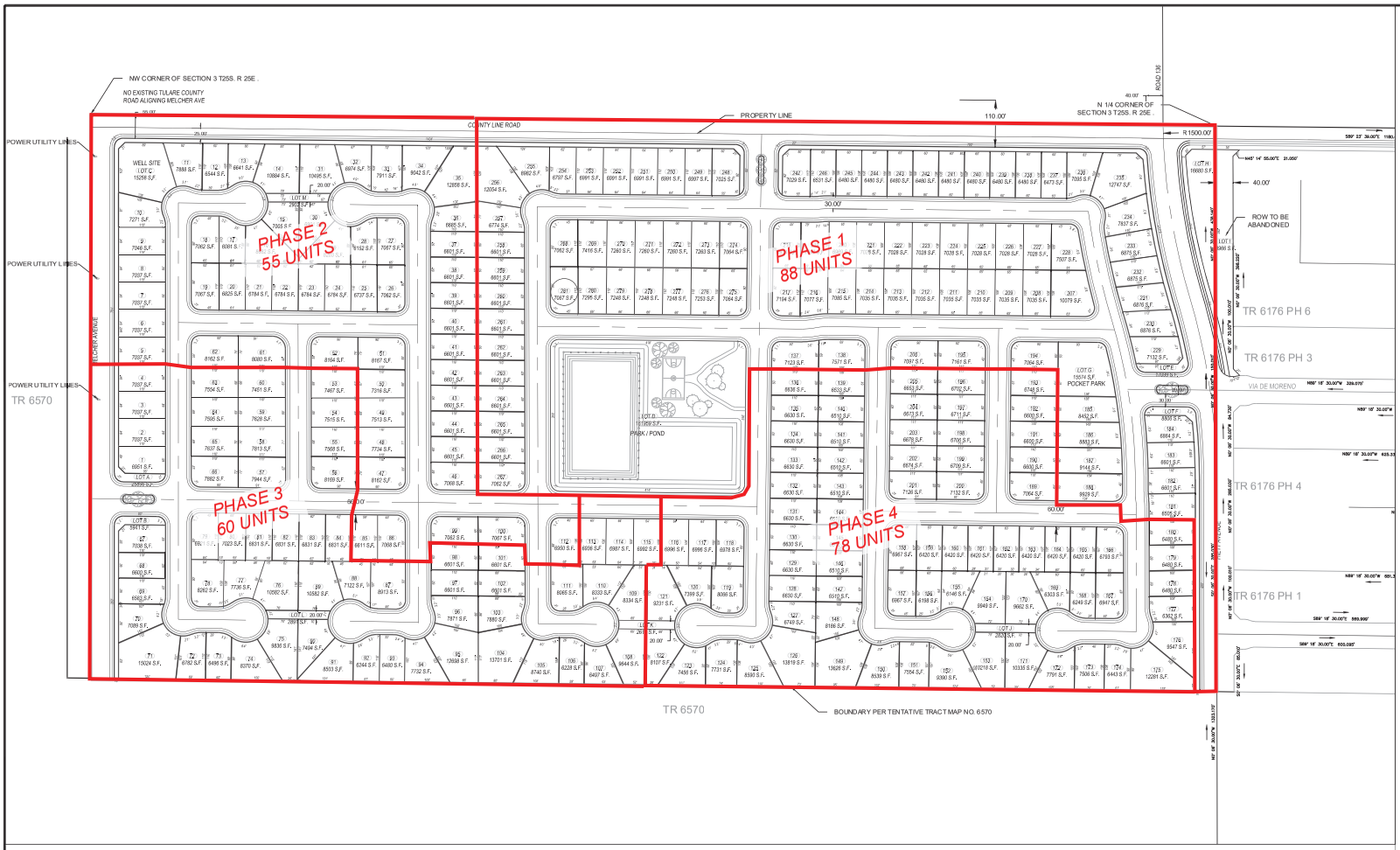
Site Plan

JUNE 18, 2020

20049 - DELANO

TENTATIVE SUBDIVISION MAP

LOCATED IN THE NORTH HALF OF THE NORTHWEST QUARTER OF SECTION 3, TOWNSHIP 25 SOUTH, RANGE 25 EAST, IN THE UNINCORPORATED COUNTY OF KERN, STATE OF CALIFORNIA, CITY OF DELANO
CONTAINING 76.36± ACRES
CONSISTING OF 294 PARCELS



LEGEND

APN:	520-010-017
ACREAGE:	75.52± AC
FLOOD ZONE:	X
ZONING (PROPOSED):	R-1
GENERAL PLAN::	LDR
ELECTRICITY:	TBD
WATER:	CITY OF DELANO
STORM:	TBD
SEWER:	TBD
TELEPHONE:	TBD
REFUSE:	TBD
NATURAL GAS:	TBD
EXISTING USE:	VACANT
PROPOSED USE:	SINGLE FAMILY RESIDENTIAL

SINGLE FAMILY RESIDENTIAL LOTS

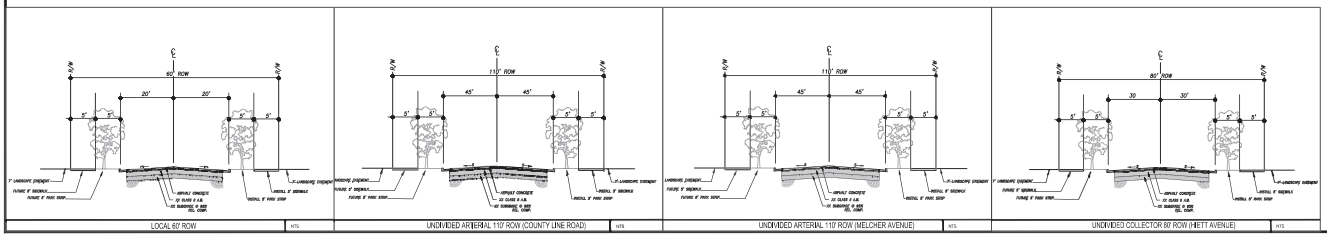
R-1:	281 UNITS
TYPICAL LOT SIZE:	60 x 110
GROSS AC:	TBD AC (GROSS)
NET AC:	TBD AC (NET)
DENSITY (GROSS)	TBD DU/AC
DENSITY (NET)	TBD DU/AC

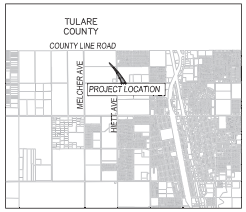
LANDSCAPE & LIGHTING DISTRICT
LOTS A-M TO BE DEDICATED TO CITY LLD

UTILITIES:

WATER	TBD
SEWER	TBD
STORM	TBD

PHASE 1 - 88 UNITSPHASE 2 - 55 UNITSPHASE 3 - 60 UNITSPHASE 4 - 78 UNITS





VICINITY MAP

NORTH
80' 0' 80'

PREPARED BY:
4CREEKS
324 S. SANTA FE, STE. A
P.O. BOX 7593
VISALIA, CA 93292
TEL: 559.802.3052
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Attachment C

CalEEMod Emissions Estimates Output Files

Tentative Tract Map 7379

Kern-San Joaquin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	4.08	Acre	4.08	177,724.80	0
Single Family Housing	281.00	Dwelling Unit	71.44	505,800.00	804

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	32
Climate Zone	7			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project site is approximately 75.52 acres

Construction Phase - Construction is expected to take approximately 30 months to complete.

Grading - Site is approximatly 75.52 acres

Mobile Land Use Mitigation - Mitigation measures per AIA application submitted August 2020

Area Mitigation - Mitigation measures per AIA Application submitted August 2020

Energy Mitigation - Mitigation Measures per AIA application submitted August 2020

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	60.00	41.00
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tblConstructionPhase	NumDays	110.00	43.00
tblConstructionPhase	NumDays	110.00	45.00
tblGrading	AcresOfGrading	220.00	75.52
tblLandUse	LotAcreage	91.23	71.44
tblWoodstoves	NumberCatalytic	71.44	0.00
tblWoodstoves	NumberNoncatalytic	71.44	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.4480	4.4813	3.2697	7.4200e-003	0.8050	0.1944	0.9994	0.3886	0.1802	0.5688	0.0000	659.1374	659.1374	0.1469	0.0000	662.8101
2022	0.3204	2.8767	2.7658	7.4200e-003	0.2356	0.1084	0.3439	0.0638	0.1020	0.1657	0.0000	665.7444	665.7444	0.0910	0.0000	668.0190
2023	4.8243	0.6580	0.8097	1.8200e-003	0.0470	0.0276	0.0746	0.0127	0.0258	0.0385	0.0000	161.9223	161.9223	0.0282	0.0000	162.6271
Maximum	**4.8243**	**4.4813**	**3.2697**	**7.4200e-003**	**0.8050**	**0.1944**	**0.9994**	**0.3886**	**0.1802**	**0.5688**	**0.0000**	**665.7444**	**665.7444**	**0.1469**	**0.0000**	**668.0190**

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	0.4480	4.4813	3.2697	7.4200e-003	0.8050	0.1944	0.9994	0.3886	0.1802	0.5688	0.0000	659.1369	659.1369	0.1469	0.0000	662.8096
2022	0.3204	2.8767	2.7658	7.4200e-003	0.2356	0.1084	0.3439	0.0638	0.1020	0.1657	0.0000	665.7441	665.7441	0.0910	0.0000	668.0187
2023	4.8243	0.6580	0.8097	1.8200e-003	0.0470	0.0276	0.0746	0.0127	0.0258	0.0385	0.0000	161.9222	161.9222	0.0282	0.0000	162.6270
Maximum	**4.8243**	**4.4813**	**3.2697**	**7.4200e-003**	**0.8050**	**0.1944**	**0.9994**	**0.3886**	**0.1802**	**0.5688**	**0.0000**	**665.7441**	**665.7441**	**0.1469**	**0.0000**	**668.0187**

Tentative Tract Map 7379 - Kern-San Joaquin County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	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)
1	1-1-2021	3-31-2021	1.4991	1.4991
2	4-1-2021	6-30-2021	1.6483	1.6483
3	7-1-2021	9-30-2021	0.8885	0.8885
4	10-1-2021	12-31-2021	0.8905	0.8905
5	1-1-2022	3-31-2022	0.7916	0.7916
6	4-1-2022	6-30-2022	0.7988	0.7988
7	7-1-2022	9-30-2022	0.8076	0.8076
8	10-1-2022	12-31-2022	0.8092	0.8092
9	1-1-2023	3-31-2023	0.5820	0.5820
10	4-1-2023	6-30-2023	4.7462	4.7462
		Highest	4.7462	4.7462

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	2.5270	0.1292	2.1317	7.8000e-004		0.0201	0.0201		0.0201	0.0201	0.0000	125.1395	125.1395	5.6100e-003	2.2300e-003	125.9449
Energy	0.0390	0.3332	0.1418	2.1300e-003		0.0269	0.0269		0.0269	0.0269	0.0000	1,155.3315	1,155.3315	0.0392	0.0137	1,160.3773
Mobile	0.8186	9.6734	8.3873	0.0535	3.0035	0.0283	3.0317	0.8079	0.0265	0.8344	0.0000	4,984.6207	4,984.6207	0.2650	0.0000	4,991.2460
Waste						0.0000	0.0000		0.0000	0.0000	66.9850	0.0000	66.9850	3.9587	0.0000	165.9525
Water						0.0000	0.0000		0.0000	0.0000	5.8084	49.8573	55.6656	0.5986	0.0145	74.9562
Total	**3.3846**	**10.1357**	**10.6608**	**0.0564**	**3.0035**	**0.0753**	**3.0787**	**0.8079**	**0.0735**	**0.8814**	**72.7934**	**6,314.9490**	**6,387.7423**	**4.8671**	**0.0304**	**6,518.4768**

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	2.5147	0.0241	2.0870	1.1000e-004		0.0116	0.0116		0.0116	0.0116	0.0000	3.4083	3.4083	3.2800e-003	0.0000	3.4902
Energy	0.0390	0.3332	0.1418	2.1300e-003		0.0269	0.0269		0.0269	0.0269	0.0000	385.5875	385.5875	7.3800e-003	7.0700e-003	387.8795
Mobile	0.7844	9.3542	7.7591	0.0493	2.7106	0.0258	2.7364	0.7291	0.0242	0.7533	0.0000	4,592.7222	4,592.7222	0.2571	0.0000	4,599.1487
Waste						0.0000	0.0000		0.0000	0.0000	66.9850	0.0000	66.9850	3.9587	0.0000	165.9525
Water						0.0000	0.0000		0.0000	0.0000	5.8084	49.8573	55.6656	0.5986	0.0145	74.9562
Total	**3.3381**	**9.7115**	**9.9878**	**0.0515**	**2.7106**	**0.0643**	**2.7749**	**0.7291**	**0.0627**	**0.7918**	**72.7934**	**5,031.5752**	**5,104.3685**	**4.8251**	**0.0216**	**5,231.4271**

	ROG	NOx	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	**1.37**	**4.19**	**6.31**	**8.67**	**9.75**	**14.63**	**9.87**	**9.75**	**14.77**	**10.17**	**0.00**	**20.32**	**20.09**	**0.86**	**28.99**	**19.74**

3.0 Construction Detail

Construction Phase

Tentative Tract Map 7379 - Kern-San Joaquin County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2021	2/28/2021	5	41	
2	Grading	Grading	3/1/2021	6/30/2021	5	88	
3	Building Construction	Building Construction	7/1/2021	2/28/2023	5	434	
4	Paving	Paving	3/1/2023	4/28/2023	5	43	
5	Architectural Coating	Architectural Coating	5/1/2023	6/30/2023	5	45	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75.52

Acres of Paving: 0

Residential Indoor: 1,024,245; Residential Outdoor: 341,415; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	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	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	176.00	59.00	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	35.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

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					0.3704	0.0000	0.3704	0.2036	0.0000	0.2036	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0797	0.8302	0.4337	7.8000e-004		0.0419	0.0419		0.0386	0.0386	0.0000	68.5432	68.5432	0.0222	0.0000	69.0974
Total	**0.0797**	**0.8302**	**0.4337**	**7.8000e-004**	**0.3704**	**0.0419**	**0.4123**	**0.2036**	**0.0386**	**0.2421**	**0.0000**	**68.5432**	**68.5432**	**0.0222**	**0.0000**	**69.0974**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3100e-003	8.5000e-004	8.6800e-003	3.0000e-005	2.9700e-003	2.0000e-005	2.9900e-003	7.9000e-004	2.0000e-005	8.1000e-004	0.0000	2.6317	2.6317	6.0000e-005	0.0000	2.6332
Total	**1.3100e-003**	**8.5000e-004**	**8.6800e-003**	**3.0000e-005**	**2.9700e-003**	**2.0000e-005**	**2.9900e-003**	**7.9000e-004**	**2.0000e-005**	**8.1000e-004**	**0.0000**	**2.6317**	**2.6317**	**6.0000e-005**	**0.0000**	**2.6332**

3.2 Site Preparation - 2021

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					0.3704	0.0000	0.3704	0.2036	0.0000	0.2036	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0797	0.8302	0.4337	7.8000e-004		0.0419	0.0419		0.0386	0.0386	0.0000	68.5431	68.5431	0.0222	0.0000	69.0973
Total	**0.0797**	**0.8302**	**0.4337**	**7.8000e-004**	**0.3704**	**0.0419**	**0.4123**	**0.2036**	**0.0386**	**0.2421**	**0.0000**	**68.5431**	**68.5431**	**0.0222**	**0.0000**	**69.0973**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3100e-003	8.5000e-004	8.6800e-003	3.0000e-005	2.9700e-003	2.0000e-005	2.9900e-003	7.9000e-004	2.0000e-005	8.1000e-004	0.0000	2.6317	2.6317	6.0000e-005	0.0000	2.6332
Total	**1.3100e-003**	**8.5000e-004**	**8.6800e-003**	**3.0000e-005**	**2.9700e-003**	**2.0000e-005**	**2.9900e-003**	**7.9000e-004**	**2.0000e-005**	**8.1000e-004**	**0.0000**	**2.6317**	**2.6317**	**6.0000e-005**	**0.0000**	**2.6332**

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					0.3050	0.0000	0.3050	0.1500	0.0000	0.1500	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1844	2.0416	1.3587	2.7300e-003		0.0874	0.0874		0.0804	0.0804	0.0000	239.7779	239.7779	0.0776	0.0000	241.7166
Total	**0.1844**	**2.0416**	**1.3587**	**2.7300e-003**	**0.3050**	**0.0874**	**0.3924**	**0.1500**	**0.0804**	**0.2303**	**0.0000**	**239.7779**	**239.7779**	**0.0776**	**0.0000**	**241.7166**

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	3.1200e-003	2.0300e-003	0.0207	7.0000e-005	7.0900e-003	5.0000e-005	7.1400e-003	1.8800e-003	4.0000e-005	1.9300e-003	0.0000	6.2761	6.2761	1.5000e-004	0.0000	6.2798
Total	**3.1200e-003**	**2.0300e-003**	**0.0207**	**7.0000e-005**	**7.0900e-003**	**5.0000e-005**	**7.1400e-003**	**1.8800e-003**	**4.0000e-005**	**1.9300e-003**	**0.0000**	**6.2761**	**6.2761**	**1.5000e-004**	**0.0000**	**6.2798**

3.3 Grading - 2021

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					0.3050	0.0000	0.3050	0.1500	0.0000	0.1500	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1844	2.0416	1.3587	2.7300e-003		0.0874	0.0874		0.0804	0.0804	0.0000	239.7776	239.7776	0.0776	0.0000	241.7164
Total	**0.1844**	**2.0416**	**1.3587**	**2.7300e-003**	**0.3050**	**0.0874**	**0.3924**	**0.1500**	**0.0804**	**0.2303**	**0.0000**	**239.7776**	**239.7776**	**0.0776**	**0.0000**	**241.7164**

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	3.1200e-003	2.0300e-003	0.0207	7.0000e-005	7.0900e-003	5.0000e-005	7.1400e-003	1.8800e-003	4.0000e-005	1.9300e-003	0.0000	6.2761	6.2761	1.5000e-004	0.0000	6.2798
Total	**3.1200e-003**	**2.0300e-003**	**0.0207**	**7.0000e-005**	**7.0900e-003**	**5.0000e-005**	**7.1400e-003**	**1.8800e-003**	**4.0000e-005**	**1.9300e-003**	**0.0000**	**6.2761**	**6.2761**	**1.5000e-004**	**0.0000**	**6.2798**

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	0.1255	1.1505	1.0940	1.7800e-003		0.0633	0.0633		0.0595	0.0595	0.0000	152.8806	152.8806	0.0369	0.0000	153.8027
Total	**0.1255**	**1.1505**	**1.0940**	**1.7800e-003**		**0.0633**	**0.0633**		**0.0595**	**0.0595**	**0.0000**	**152.8806**	**152.8806**	**0.0369**	**0.0000**	**153.8027**

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	0.0128	0.4293	0.0807	1.1200e-003	0.0260	1.1500e-003	0.0271	7.5000e-003	1.1000e-003	8.6000e-003	0.0000	106.1836	106.1836	8.1200e-003	0.0000	106.3867
Worker	0.0412	0.0269	0.2734	9.2000e-004	0.0936	6.4000e-004	0.0943	0.0249	5.9000e-004	0.0255	0.0000	82.8443	82.8443	1.9700e-003	0.0000	82.8936
Total	**0.0540**	**0.4561**	**0.3540**	**2.0400e-003**	**0.1196**	**1.7900e-003**	**0.1214**	**0.0324**	**1.6900e-003**	**0.0341**	**0.0000**	**189.0279**	**189.0279**	**0.0101**	**0.0000**	**189.2803**

3.4 Building Construction - 2021

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	0.1255	1.1505	1.0940	1.7800e-003		0.0633	0.0633		0.0595	0.0595	0.0000	152.8804	152.8804	0.0369	0.0000	153.8025
Total	**0.1255**	**1.1505**	**1.0940**	**1.7800e-003**		**0.0633**	**0.0633**		**0.0595**	**0.0595**	**0.0000**	**152.8804**	**152.8804**	**0.0369**	**0.0000**	**153.8025**

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	0.0128	0.4293	0.0807	1.1200e-003	0.0260	1.1500e-003	0.0271	7.5000e-003	1.1000e-003	8.6000e-003	0.0000	106.1836	106.1836	8.1200e-003	0.0000	106.3867
Worker	0.0412	0.0269	0.2734	9.2000e-004	0.0936	6.4000e-004	0.0943	0.0249	5.9000e-004	0.0255	0.0000	82.8443	82.8443	1.9700e-003	0.0000	82.8936
Total	**0.0540**	**0.4561**	**0.3540**	**2.0400e-003**	**0.1196**	**1.7900e-003**	**0.1214**	**0.0324**	**1.6900e-003**	**0.0341**	**0.0000**	**189.0279**	**189.0279**	**0.0101**	**0.0000**	**189.2803**

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	0.2218	2.0300	2.1272	3.5000e-003		0.1052	0.1052		0.0990	0.0990	0.0000	301.2428	301.2428	0.0722	0.0000	303.0471
Total	**0.2218**	**2.0300**	**2.1272**	**3.5000e-003**		**0.1052**	**0.1052**		**0.0990**	**0.0990**	**0.0000**	**301.2428**	**301.2428**	**0.0722**	**0.0000**	**303.0471**

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	0.0235	0.7995	0.1473	2.1800e-003	0.0512	1.9500e-003	0.0532	0.0148	1.8700e-003	0.0167	0.0000	207.2517	207.2517	0.0154	0.0000	207.6356
Worker	0.0751	0.0472	0.4912	1.7400e-003	0.1844	1.2300e-003	0.1856	0.0490	1.1300e-003	0.0501	0.0000	157.2500	157.2500	3.4600e-003	0.0000	157.3363
Total	**0.0986**	**0.8466**	**0.6385**	**3.9200e-003**	**0.2356**	**3.1800e-003**	**0.2388**	**0.0638**	**3.0000e-003**	**0.0668**	**0.0000**	**364.5016**	**364.5016**	**0.0188**	**0.0000**	**364.9720**

3.4 Building Construction - 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					
Off-Road	0.2218	2.0300	2.1272	3.5000e-003		0.1052	0.1052		0.0990	0.0990	0.0000	301.2425	301.2425	0.0722	0.0000	303.0467
Total	**0.2218**	**2.0300**	**2.1272**	**3.5000e-003**		**0.1052**	**0.1052**		**0.0990**	**0.0990**	**0.0000**	**301.2425**	**301.2425**	**0.0722**	**0.0000**	**303.0467**

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	0.0235	0.7995	0.1473	2.1800e-003	0.0512	1.9500e-003	0.0532	0.0148	1.8700e-003	0.0167	0.0000	207.2517	207.2517	0.0154	0.0000	207.6356
Worker	0.0751	0.0472	0.4912	1.7400e-003	0.1844	1.2300e-003	0.1856	0.0490	1.1300e-003	0.0501	0.0000	157.2500	157.2500	3.4600e-003	0.0000	157.3363
Total	**0.0986**	**0.8466**	**0.6385**	**3.9200e-003**	**0.2356**	**3.1800e-003**	**0.2388**	**0.0638**	**3.0000e-003**	**0.0668**	**0.0000**	**364.5016**	**364.5016**	**0.0188**	**0.0000**	**364.9720**

3.4 Building Construction - 2023

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	0.0330	0.3021	0.3411	5.7000e-004		0.0147	0.0147		0.0138	0.0138	0.0000	48.6790	48.6790	0.0116	0.0000	48.9685
Total	**0.0330**	**0.3021**	**0.3411**	**5.7000e-004**		**0.0147**	**0.0147**		**0.0138**	**0.0138**	**0.0000**	**48.6790**	**48.6790**	**0.0116**	**0.0000**	**48.9685**

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	2.6800e-003	0.0986	0.0199	3.4000e-004	8.2700e-003	1.0000e-004	8.3700e-003	2.3900e-003	9.0000e-005	2.4800e-003	0.0000	32.6524	32.6524	1.7000e-003	0.0000	32.6948
Worker	0.0113	6.8200e-003	0.0726	2.7000e-004	0.0298	1.9000e-004	0.0300	7.9100e-003	1.8000e-004	8.0900e-003	0.0000	24.4464	24.4464	5.0000e-004	0.0000	24.4589
Total	**0.0140**	**0.1055**	**0.0925**	**6.1000e-004**	**0.0381**	**2.9000e-004**	**0.0384**	**0.0103**	**2.7000e-004**	**0.0106**	**0.0000**	**57.0988**	**57.0988**	**2.2000e-003**	**0.0000**	**57.1537**

3.4 Building Construction - 2023

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	0.0330	0.3021	0.3411	5.7000e-004		0.0147	0.0147		0.0138	0.0138	0.0000	48.6789	48.6789	0.0116	0.0000	48.9684
Total	**0.0330**	**0.3021**	**0.3411**	**5.7000e-004**		**0.0147**	**0.0147**		**0.0138**	**0.0138**	**0.0000**	**48.6789**	**48.6789**	**0.0116**	**0.0000**	**48.9684**

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	2.6800e-003	0.0986	0.0199	3.4000e-004	8.2700e-003	1.0000e-004	8.3700e-003	2.3900e-003	9.0000e-005	2.4800e-003	0.0000	32.6524	32.6524	1.7000e-003	0.0000	32.6948
Worker	0.0113	6.8200e-003	0.0726	2.7000e-004	0.0298	1.9000e-004	0.0300	7.9100e-003	1.8000e-004	8.0900e-003	0.0000	24.4464	24.4464	5.0000e-004	0.0000	24.4589
Total	**0.0140**	**0.1055**	**0.0925**	**6.1000e-004**	**0.0381**	**2.9000e-004**	**0.0384**	**0.0103**	**2.7000e-004**	**0.0106**	**0.0000**	**57.0988**	**57.0988**	**2.2000e-003**	**0.0000**	**57.1537**

3.5 Paving - 2023

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	0.0222	0.2191	0.3136	4.9000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	43.0578	43.0578	0.0139	0.0000	43.4059
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0222**	**0.2191**	**0.3136**	**4.9000e-004**		**0.0110**	**0.0110**		**0.0101**	**0.0101**	**0.0000**	**43.0578**	**43.0578**	**0.0139**	**0.0000**	**43.4059**

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	9.9000e-004	6.0000e-004	6.3300e-003	2.0000e-005	2.6000e-003	2.0000e-005	2.6200e-003	6.9000e-004	2.0000e-005	7.1000e-004	0.0000	2.1331	2.1331	4.0000e-005	0.0000	2.1342
Total	**9.9000e-004**	**6.0000e-004**	**6.3300e-003**	**2.0000e-005**	**2.6000e-003**	**2.0000e-005**	**2.6200e-003**	**6.9000e-004**	**2.0000e-005**	**7.1000e-004**	**0.0000**	**2.1331**	**2.1331**	**4.0000e-005**	**0.0000**	**2.1342**

3.5 Paving - 2023

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	0.0222	0.2191	0.3136	4.9000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	43.0577	43.0577	0.0139	0.0000	43.4059
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0222**	**0.2191**	**0.3136**	**4.9000e-004**		**0.0110**	**0.0110**		**0.0101**	**0.0101**	**0.0000**	**43.0577**	**43.0577**	**0.0139**	**0.0000**	**43.4059**

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	9.9000e-004	6.0000e-004	6.3300e-003	2.0000e-005	2.6000e-003	2.0000e-005	2.6200e-003	6.9000e-004	2.0000e-005	7.1000e-004	0.0000	2.1331	2.1331	4.0000e-005	0.0000	2.1342
Total	**9.9000e-004**	**6.0000e-004**	**6.3300e-003**	**2.0000e-005**	**2.6000e-003**	**2.0000e-005**	**2.6200e-003**	**6.9000e-004**	**2.0000e-005**	**7.1000e-004**	**0.0000**	**2.1331**	**2.1331**	**4.0000e-005**	**0.0000**	**2.1342**

3.6 Architectural Coating - 2023

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	4.7474					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.3100e-003	0.0293	0.0408	7.0000e-005		1.5900e-003	1.5900e-003		1.5900e-003	1.5900e-003	0.0000	5.7448	5.7448	3.4000e-004	0.0000	5.7534
Total	**4.7517**	**0.0293**	**0.0408**	**7.0000e-005**		**1.5900e-003**	**1.5900e-003**		**1.5900e-003**	**1.5900e-003**	**0.0000**	**5.7448**	**5.7448**	**3.4000e-004**	**0.0000**	**5.7534**

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	2.4100e-003	1.4500e-003	0.0155	6.0000e-005	6.3500e-003	4.0000e-005	6.3900e-003	1.6900e-003	4.0000e-005	1.7200e-003	0.0000	5.2088	5.2088	1.1000e-004	0.0000	5.2114
Total	**2.4100e-003**	**1.4500e-003**	**0.0155**	**6.0000e-005**	**6.3500e-003**	**4.0000e-005**	**6.3900e-003**	**1.6900e-003**	**4.0000e-005**	**1.7200e-003**	**0.0000**	**5.2088**	**5.2088**	**1.1000e-004**	**0.0000**	**5.2114**

3.6 Architectural Coating - 2023

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	4.7474					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.3100e-003	0.0293	0.0408	7.0000e-005		1.5900e-003	1.5900e-003		1.5900e-003	1.5900e-003	0.0000	5.7448	5.7448	3.4000e-004	0.0000	5.7534
Total	**4.7517**	**0.0293**	**0.0408**	**7.0000e-005**		**1.5900e-003**	**1.5900e-003**		**1.5900e-003**	**1.5900e-003**	**0.0000**	**5.7448**	**5.7448**	**3.4000e-004**	**0.0000**	**5.7534**

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	2.4100e-003	1.4500e-003	0.0155	6.0000e-005	6.3500e-003	4.0000e-005	6.3900e-003	1.6900e-003	4.0000e-005	1.7200e-003	0.0000	5.2088	5.2088	1.1000e-004	0.0000	5.2114
Total	**2.4100e-003**	**1.4500e-003**	**0.0155**	**6.0000e-005**	**6.3500e-003**	**4.0000e-005**	**6.3900e-003**	**1.6900e-003**	**4.0000e-005**	**1.7200e-003**	**0.0000**	**5.2088**	**5.2088**	**1.1000e-004**	**0.0000**	**5.2114**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Walkability Design

Improve Destination Accessibility

Increase Transit Accessibility

Improve Pedestrian Network

Provide Traffic Calming Measures

	ROG	NOx	CO	SO2	Fugitive 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	0.7844	9.3542	7.7591	0.0493	2.7106	0.0258	2.7364	0.7291	0.0242	0.7533	0.0000	4,592.7222	4,592.7222	0.2571	0.0000	4,599.1487
Unmitigated	0.8186	9.6734	8.3873	0.0535	3.0035	0.0283	3.0317	0.8079	0.0265	0.8344	0.0000	4,984.6207	4,984.6207	0.2650	0.0000	4,991.2460

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	7.71	92.82	68.30	60,897	54,959
Single Family Housing	2,675.12	2,784.71	2422.22	7,719,781	6,967,102
Total	2,682.83	2,877.53	2,490.52	7,780,677	7,022,061

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
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Single Family Housing	10.80	7.30	7.50	46.40	16.40	37.20	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759
Single Family Housing	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	-0.2953	-0.2953	0.0000	0.0000	-0.2963
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	769.4487	769.4487	0.0318	6.5700e-003	772.2014
NaturalGas Mitigated	0.0390	0.3332	0.1418	2.1300e-003		0.0269	0.0269		0.0269	0.0269	0.0000	385.8828	385.8828	7.4000e-003	7.0700e-003	388.1759
NaturalGas Unmitigated	0.0390	0.3332	0.1418	2.1300e-003		0.0269	0.0269		0.0269	0.0269	0.0000	385.8828	385.8828	7.4000e-003	7.0700e-003	388.1759

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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	7.23117e+006	0.0390	0.3332	0.1418	2.1300e-003		0.0269	0.0269		0.0269	0.0269	0.0000	385.8828	385.8828	7.4000e-003	7.0700e-003	388.1759
Total		**0.0390**	**0.3332**	**0.1418**	**2.1300e-003**		**0.0269**	**0.0269**		**0.0269**	**0.0269**	**0.0000**	**385.8828**	**385.8828**	**7.4000e-003**	**7.0700e-003**	**388.1759**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	7.23117e+006	0.0390	0.3332	0.1418	2.1300e-003		0.0269	0.0269		0.0269	0.0269	0.0000	385.8828	385.8828	7.4000e-003	7.0700e-003	388.1759
Total		**0.0390**	**0.3332**	**0.1418**	**2.1300e-003**		**0.0269**	**0.0269**		**0.0269**	**0.0269**	**0.0000**	**385.8828**	**385.8828**	**7.4000e-003**	**7.0700e-003**	**388.1759**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	2.41493e+006	769.4487	0.0318	6.5700e-003	772.2014
Total		**769.4487**	**0.0318**	**6.5700e-003**	**772.2014**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	-463.35	-0.1476	0.0000	0.0000	-0.1482
Single Family Housing	-463.35	-0.1476	0.0000	0.0000	-0.1482
Total		**-0.2953**	**0.0000**	**0.0000**	**-0.2963**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive 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	2.5147	0.0241	2.0870	1.1000e-004		0.0116	0.0116		0.0116	0.0116	0.0000	3.4083	3.4083	3.2800e-003	0.0000	3.4902
Unmitigated	2.5270	0.1292	2.1317	7.8000e-004		0.0201	0.0201		0.0201	0.0201	0.0000	125.1395	125.1395	5.6100e-003	2.2300e-003	125.9449

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	0.4747					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.9771					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0123	0.1051	0.0447	6.7000e-004		8.5000e-003	8.5000e-003		8.5000e-003	8.5000e-003	0.0000	121.7313	121.7313	2.3300e-003	2.2300e-003	122.4547
Landscaping	0.0629	0.0241	2.0870	1.1000e-004		0.0116	0.0116		0.0116	0.0116	0.0000	3.4083	3.4083	3.2800e-003	0.0000	3.4902
Total	**2.5270**	**0.1292**	**2.1317**	**7.8000e-004**		**0.0201**	**0.0201**		**0.0201**	**0.0201**	**0.0000**	**125.1395**	**125.1395**	**5.6100e-003**	**2.2300e-003**	**125.9449**

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	0.4747					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.9771					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0629	0.0241	2.0870	1.1000e-004		0.0116	0.0116		0.0116	0.0116	0.0000	3.4083	3.4083	3.2800e-003	0.0000	3.4902
Total	**2.5147**	**0.0241**	**2.0870**	**1.1000e-004**		**0.0116**	**0.0116**		**0.0116**	**0.0116**	**0.0000**	**3.4083**	**3.4083**	**3.2800e-003**	**0.0000**	**3.4902**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	55.6656	0.5986	0.0145	74.9562
Unmitigated	55.6656	0.5986	0.0145	74.9562

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 4.86124	5.4211	2.2000e-004	5.0000e-005	5.4405
Single Family Housing	18.3083 / 11.5422	50.2445	0.5984	0.0145	69.5156
Total		**55.6657**	**0.5986**	**0.0145**	**74.9562**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 4.86124	5.4211	2.2000e-004	5.0000e-005	5.4405
Single Family Housing	18.3083 / 11.5422	50.2445	0.5984	0.0145	69.5156
Total		**55.6657**	**0.5986**	**0.0145**	**74.9562**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	66.9850	3.9587	0.0000	165.9525
Unmitigated	66.9850	3.9587	0.0000	165.9525

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.35	0.0711	4.2000e-003	0.0000	0.1760
Single Family Housing	329.64	66.9139	3.9545	0.0000	165.7765
Total		**66.9850**	**3.9587**	**0.0000**	**165.9525**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.35	0.0711	4.2000e-003	0.0000	0.1760
Single Family Housing	329.64	66.9139	3.9545	0.0000	165.7765
Total		**66.9850**	**3.9587**	**0.0000**	**165.9525**

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

Tentative Tract Map 7379 - BAU Operation (2005)

Kern-San Joaquin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	4.08	Acre	4.08	177,724.80	0
Single Family Housing	281.00	Dwelling Unit	71.44	505,800.00	804

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	32
Climate Zone	7			**Operational Year**	2005
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project site is approximately 75.52 acres

Construction Phase - Construction is expected to take approximately 30 months to complete.

Grading - Site is approximatly 75.52 acres

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	110.00	45.00
tblConstructionPhase	NumDays	1,550.00	434.00
tblConstructionPhase	NumDays	155.00	88.00
tblConstructionPhase	NumDays	110.00	43.00
tblConstructionPhase	NumDays	60.00	41.00
tblGrading	AcresOfGrading	220.00	75.52
tblLandUse	LotAcreage	91.23	71.44

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					
2021	0.4480	4.4813	3.2697	7.4200e-003	0.8050	0.1944	0.9994	0.3886	0.1802	0.5688	0.0000	659.1374	659.1374	0.1469	0.0000	662.8101
2022	0.3204	2.8767	2.7658	7.4200e-003	0.2356	0.1084	0.3439	0.0638	0.1020	0.1657	0.0000	665.7444	665.7444	0.0910	0.0000	668.0190
2023	4.8243	0.6580	0.8097	1.8200e-003	0.0470	0.0276	0.0746	0.0127	0.0258	0.0385	0.0000	161.9223	161.9223	0.0282	0.0000	162.6271
Maximum	**4.8243**	**4.4813**	**3.2697**	**7.4200e-003**	**0.8050**	**0.1944**	**0.9994**	**0.3886**	**0.1802**	**0.5688**	**0.0000**	**665.7444**	**665.7444**	**0.1469**	**0.0000**	**668.0190**

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	0.4480	4.4813	3.2697	7.4200e-003	0.8050	0.1944	0.9994	0.3886	0.1802	0.5688	0.0000	659.1369	659.1369	0.1469	0.0000	662.8096
2022	0.3204	2.8767	2.7658	7.4200e-003	0.2356	0.1084	0.3439	0.0638	0.1020	0.1657	0.0000	665.7441	665.7441	0.0910	0.0000	668.0187
2023	4.8243	0.6580	0.8097	1.8200e-003	0.0470	0.0276	0.0746	0.0127	0.0258	0.0385	0.0000	161.9222	161.9222	0.0282	0.0000	162.6270
Maximum	**4.8243**	**4.4813**	**3.2697**	**7.4200e-003**	**0.8050**	**0.1944**	**0.9994**	**0.3886**	**0.1802**	**0.5688**	**0.0000**	**665.7441**	**665.7441**	**0.1469**	**0.0000**	**668.0187**

Tentative Tract Map 7379 - BAU Operation (2005) - Kern-San Joaquin County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	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)
1	1-1-2021	3-31-2021	1.4991	1.4991
2	4-1-2021	6-30-2021	1.6483	1.6483
3	7-1-2021	9-30-2021	0.8885	0.8885
4	10-1-2021	12-31-2021	0.8905	0.8905
5	1-1-2022	3-31-2022	0.7916	0.7916
6	4-1-2022	6-30-2022	0.7988	0.7988
7	7-1-2022	9-30-2022	0.8076	0.8076
8	10-1-2022	12-31-2022	0.8092	0.8092
9	1-1-2023	3-31-2023	0.5820	0.5820
10	4-1-2023	6-30-2023	4.7543	4.7543
		Highest	4.7543	4.7543

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	4.3412	0.3537	15.6865	0.0439		2.1756	2.1756		2.1756	2.1756	288.8121	125.1395	413.9517	1.3579	2.2300e-003	448.5650
Energy	0.0390	0.3332	0.1418	2.1300e-003		0.0269	0.0269		0.0269	0.0269	0.0000	1,155.3315	1,155.3315	0.0392	0.0137	1,160.3773
Mobile	6.1939	46.5744	56.4418	0.3341	3.0162	1.0857	4.1020	0.8136	1.0372	1.8508	0.0000	6,128.3294	6,128.3294	2.0485	0.0000	6,179.5428
Waste						0.0000	0.0000		0.0000	0.0000	66.9850	0.0000	66.9850	3.9587	0.0000	165.9525
Water						0.0000	0.0000		0.0000	0.0000	5.8084	49.8573	55.6656	0.5986	0.0145	74.9562
Total	**10.5741**	**47.2613**	**72.2700**	**0.3801**	**3.0162**	**3.2883**	**6.3045**	**0.8136**	**3.2398**	**4.0534**	**361.6055**	**7,458.6577**	**7,820.2631**	**8.0030**	**0.0304**	**8,029.3937**

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	4.3412	0.3537	15.6865	0.0439		2.1756	2.1756		2.1756	2.1756	288.8121	125.1395	413.9517	1.3579	2.2300e-003	448.5650
Energy	0.0390	0.3332	0.1418	2.1300e-003		0.0269	0.0269		0.0269	0.0269	0.0000	1,155.3315	1,155.3315	0.0392	0.0137	1,160.3773
Mobile	6.1939	46.5744	56.4418	0.3341	3.0162	1.0857	4.1020	0.8136	1.0372	1.8508	0.0000	6,128.3294	6,128.3294	2.0485	0.0000	6,179.5428
Waste						0.0000	0.0000		0.0000	0.0000	66.9850	0.0000	66.9850	3.9587	0.0000	165.9525
Water						0.0000	0.0000		0.0000	0.0000	5.8084	49.8573	55.6656	0.5986	0.0145	74.9562
Total	**10.5741**	**47.2613**	**72.2700**	**0.3801**	**3.0162**	**3.2883**	**6.3045**	**0.8136**	**3.2398**	**4.0534**	**361.6055**	**7,458.6577**	**7,820.2631**	**8.0030**	**0.0304**	**8,029.3937**

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

3.0 Construction Detail

Construction Phase

Tentative Tract Map 7379 - BAU Operation (2005) - Kern-San Joaquin County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2021	2/28/2021	5	41	
2	Grading	Grading	3/1/2021	6/30/2021	5	88	
3	Building Construction	Building Construction	7/1/2021	2/28/2023	5	434	
4	Paving	Paving	3/1/2023	4/30/2023	5	43	
5	Architectural Coating	Architectural Coating	5/1/2023	6/30/2023	5	45	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75.52

Acres of Paving: 0

Residential Indoor: 1,024,245; Residential Outdoor: 341,415; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Tentative Tract Map 7379 - BAU Operation (2005) - Kern-San Joaquin 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	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	176.00	59.00	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	35.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

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					0.3704	0.0000	0.3704	0.2036	0.0000	0.2036	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0797	0.8302	0.4337	7.8000e-004		0.0419	0.0419		0.0386	0.0386	0.0000	68.5432	68.5432	0.0222	0.0000	69.0974
Total	**0.0797**	**0.8302**	**0.4337**	**7.8000e-004**	**0.3704**	**0.0419**	**0.4123**	**0.2036**	**0.0386**	**0.2421**	**0.0000**	**68.5432**	**68.5432**	**0.0222**	**0.0000**	**69.0974**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3100e-003	8.5000e-004	8.6800e-003	3.0000e-005	2.9700e-003	2.0000e-005	2.9900e-003	7.9000e-004	2.0000e-005	8.1000e-004	0.0000	2.6317	2.6317	6.0000e-005	0.0000	2.6332
Total	**1.3100e-003**	**8.5000e-004**	**8.6800e-003**	**3.0000e-005**	**2.9700e-003**	**2.0000e-005**	**2.9900e-003**	**7.9000e-004**	**2.0000e-005**	**8.1000e-004**	**0.0000**	**2.6317**	**2.6317**	**6.0000e-005**	**0.0000**	**2.6332**

3.2 Site Preparation - 2021

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					0.3704	0.0000	0.3704	0.2036	0.0000	0.2036	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0797	0.8302	0.4337	7.8000e-004		0.0419	0.0419		0.0386	0.0386	0.0000	68.5431	68.5431	0.0222	0.0000	69.0973
Total	**0.0797**	**0.8302**	**0.4337**	**7.8000e-004**	**0.3704**	**0.0419**	**0.4123**	**0.2036**	**0.0386**	**0.2421**	**0.0000**	**68.5431**	**68.5431**	**0.0222**	**0.0000**	**69.0973**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3100e-003	8.5000e-004	8.6800e-003	3.0000e-005	2.9700e-003	2.0000e-005	2.9900e-003	7.9000e-004	2.0000e-005	8.1000e-004	0.0000	2.6317	2.6317	6.0000e-005	0.0000	2.6332
Total	**1.3100e-003**	**8.5000e-004**	**8.6800e-003**	**3.0000e-005**	**2.9700e-003**	**2.0000e-005**	**2.9900e-003**	**7.9000e-004**	**2.0000e-005**	**8.1000e-004**	**0.0000**	**2.6317**	**2.6317**	**6.0000e-005**	**0.0000**	**2.6332**

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					0.3050	0.0000	0.3050	0.1500	0.0000	0.1500	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1844	2.0416	1.3587	2.7300e-003		0.0874	0.0874		0.0804	0.0804	0.0000	239.7779	239.7779	0.0776	0.0000	241.7166
Total	**0.1844**	**2.0416**	**1.3587**	**2.7300e-003**	**0.3050**	**0.0874**	**0.3924**	**0.1500**	**0.0804**	**0.2303**	**0.0000**	**239.7779**	**239.7779**	**0.0776**	**0.0000**	**241.7166**

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	3.1200e-003	2.0300e-003	0.0207	7.0000e-005	7.0900e-003	5.0000e-005	7.1400e-003	1.8800e-003	4.0000e-005	1.9300e-003	0.0000	6.2761	6.2761	1.5000e-004	0.0000	6.2798
Total	**3.1200e-003**	**2.0300e-003**	**0.0207**	**7.0000e-005**	**7.0900e-003**	**5.0000e-005**	**7.1400e-003**	**1.8800e-003**	**4.0000e-005**	**1.9300e-003**	**0.0000**	**6.2761**	**6.2761**	**1.5000e-004**	**0.0000**	**6.2798**

3.3 Grading - 2021

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					0.3050	0.0000	0.3050	0.1500	0.0000	0.1500	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1844	2.0416	1.3587	2.7300e-003		0.0874	0.0874		0.0804	0.0804	0.0000	239.7776	239.7776	0.0776	0.0000	241.7164
Total	**0.1844**	**2.0416**	**1.3587**	**2.7300e-003**	**0.3050**	**0.0874**	**0.3924**	**0.1500**	**0.0804**	**0.2303**	**0.0000**	**239.7776**	**239.7776**	**0.0776**	**0.0000**	**241.7164**

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	3.1200e-003	2.0300e-003	0.0207	7.0000e-005	7.0900e-003	5.0000e-005	7.1400e-003	1.8800e-003	4.0000e-005	1.9300e-003	0.0000	6.2761	6.2761	1.5000e-004	0.0000	6.2798
Total	**3.1200e-003**	**2.0300e-003**	**0.0207**	**7.0000e-005**	**7.0900e-003**	**5.0000e-005**	**7.1400e-003**	**1.8800e-003**	**4.0000e-005**	**1.9300e-003**	**0.0000**	**6.2761**	**6.2761**	**1.5000e-004**	**0.0000**	**6.2798**

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	0.1255	1.1505	1.0940	1.7800e-003		0.0633	0.0633		0.0595	0.0595	0.0000	152.8806	152.8806	0.0369	0.0000	153.8027
Total	**0.1255**	**1.1505**	**1.0940**	**1.7800e-003**		**0.0633**	**0.0633**		**0.0595**	**0.0595**	**0.0000**	**152.8806**	**152.8806**	**0.0369**	**0.0000**	**153.8027**

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	0.0128	0.4293	0.0807	1.1200e-003	0.0260	1.1500e-003	0.0271	7.5000e-003	1.1000e-003	8.6000e-003	0.0000	106.1836	106.1836	8.1200e-003	0.0000	106.3867
Worker	0.0412	0.0269	0.2734	9.2000e-004	0.0936	6.4000e-004	0.0943	0.0249	5.9000e-004	0.0255	0.0000	82.8443	82.8443	1.9700e-003	0.0000	82.8936
Total	**0.0540**	**0.4561**	**0.3540**	**2.0400e-003**	**0.1196**	**1.7900e-003**	**0.1214**	**0.0324**	**1.6900e-003**	**0.0341**	**0.0000**	**189.0279**	**189.0279**	**0.0101**	**0.0000**	**189.2803**

3.4 Building Construction - 2021

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	0.1255	1.1505	1.0940	1.7800e-003		0.0633	0.0633		0.0595	0.0595	0.0000	152.8804	152.8804	0.0369	0.0000	153.8025
Total	**0.1255**	**1.1505**	**1.0940**	**1.7800e-003**		**0.0633**	**0.0633**		**0.0595**	**0.0595**	**0.0000**	**152.8804**	**152.8804**	**0.0369**	**0.0000**	**153.8025**

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	0.0128	0.4293	0.0807	1.1200e-003	0.0260	1.1500e-003	0.0271	7.5000e-003	1.1000e-003	8.6000e-003	0.0000	106.1836	106.1836	8.1200e-003	0.0000	106.3867
Worker	0.0412	0.0269	0.2734	9.2000e-004	0.0936	6.4000e-004	0.0943	0.0249	5.9000e-004	0.0255	0.0000	82.8443	82.8443	1.9700e-003	0.0000	82.8936
Total	**0.0540**	**0.4561**	**0.3540**	**2.0400e-003**	**0.1196**	**1.7900e-003**	**0.1214**	**0.0324**	**1.6900e-003**	**0.0341**	**0.0000**	**189.0279**	**189.0279**	**0.0101**	**0.0000**	**189.2803**

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	0.2218	2.0300	2.1272	3.5000e-003		0.1052	0.1052		0.0990	0.0990	0.0000	301.2428	301.2428	0.0722	0.0000	303.0471
Total	**0.2218**	**2.0300**	**2.1272**	**3.5000e-003**		**0.1052**	**0.1052**		**0.0990**	**0.0990**	**0.0000**	**301.2428**	**301.2428**	**0.0722**	**0.0000**	**303.0471**

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	0.0235	0.7995	0.1473	2.1800e-003	0.0512	1.9500e-003	0.0532	0.0148	1.8700e-003	0.0167	0.0000	207.2517	207.2517	0.0154	0.0000	207.6356
Worker	0.0751	0.0472	0.4912	1.7400e-003	0.1844	1.2300e-003	0.1856	0.0490	1.1300e-003	0.0501	0.0000	157.2500	157.2500	3.4600e-003	0.0000	157.3363
Total	**0.0986**	**0.8466**	**0.6385**	**3.9200e-003**	**0.2356**	**3.1800e-003**	**0.2388**	**0.0638**	**3.0000e-003**	**0.0668**	**0.0000**	**364.5016**	**364.5016**	**0.0188**	**0.0000**	**364.9720**

3.4 Building Construction - 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					
Off-Road	0.2218	2.0300	2.1272	3.5000e-003		0.1052	0.1052		0.0990	0.0990	0.0000	301.2425	301.2425	0.0722	0.0000	303.0467
Total	**0.2218**	**2.0300**	**2.1272**	**3.5000e-003**		**0.1052**	**0.1052**		**0.0990**	**0.0990**	**0.0000**	**301.2425**	**301.2425**	**0.0722**	**0.0000**	**303.0467**

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	0.0235	0.7995	0.1473	2.1800e-003	0.0512	1.9500e-003	0.0532	0.0148	1.8700e-003	0.0167	0.0000	207.2517	207.2517	0.0154	0.0000	207.6356
Worker	0.0751	0.0472	0.4912	1.7400e-003	0.1844	1.2300e-003	0.1856	0.0490	1.1300e-003	0.0501	0.0000	157.2500	157.2500	3.4600e-003	0.0000	157.3363
Total	**0.0986**	**0.8466**	**0.6385**	**3.9200e-003**	**0.2356**	**3.1800e-003**	**0.2388**	**0.0638**	**3.0000e-003**	**0.0668**	**0.0000**	**364.5016**	**364.5016**	**0.0188**	**0.0000**	**364.9720**

3.4 Building Construction - 2023

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	0.0330	0.3021	0.3411	5.7000e-004		0.0147	0.0147		0.0138	0.0138	0.0000	48.6790	48.6790	0.0116	0.0000	48.9685
Total	**0.0330**	**0.3021**	**0.3411**	**5.7000e-004**		**0.0147**	**0.0147**		**0.0138**	**0.0138**	**0.0000**	**48.6790**	**48.6790**	**0.0116**	**0.0000**	**48.9685**

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	2.6800e-003	0.0986	0.0199	3.4000e-004	8.2700e-003	1.0000e-004	8.3700e-003	2.3900e-003	9.0000e-005	2.4800e-003	0.0000	32.6524	32.6524	1.7000e-003	0.0000	32.6948
Worker	0.0113	6.8200e-003	0.0726	2.7000e-004	0.0298	1.9000e-004	0.0300	7.9100e-003	1.8000e-004	8.0900e-003	0.0000	24.4464	24.4464	5.0000e-004	0.0000	24.4589
Total	**0.0140**	**0.1055**	**0.0925**	**6.1000e-004**	**0.0381**	**2.9000e-004**	**0.0384**	**0.0103**	**2.7000e-004**	**0.0106**	**0.0000**	**57.0988**	**57.0988**	**2.2000e-003**	**0.0000**	**57.1537**

3.4 Building Construction - 2023

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	0.0330	0.3021	0.3411	5.7000e-004		0.0147	0.0147		0.0138	0.0138	0.0000	48.6789	48.6789	0.0116	0.0000	48.9684
Total	**0.0330**	**0.3021**	**0.3411**	**5.7000e-004**		**0.0147**	**0.0147**		**0.0138**	**0.0138**	**0.0000**	**48.6789**	**48.6789**	**0.0116**	**0.0000**	**48.9684**

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	2.6800e-003	0.0986	0.0199	3.4000e-004	8.2700e-003	1.0000e-004	8.3700e-003	2.3900e-003	9.0000e-005	2.4800e-003	0.0000	32.6524	32.6524	1.7000e-003	0.0000	32.6948
Worker	0.0113	6.8200e-003	0.0726	2.7000e-004	0.0298	1.9000e-004	0.0300	7.9100e-003	1.8000e-004	8.0900e-003	0.0000	24.4464	24.4464	5.0000e-004	0.0000	24.4589
Total	**0.0140**	**0.1055**	**0.0925**	**6.1000e-004**	**0.0381**	**2.9000e-004**	**0.0384**	**0.0103**	**2.7000e-004**	**0.0106**	**0.0000**	**57.0988**	**57.0988**	**2.2000e-003**	**0.0000**	**57.1537**

3.5 Paving - 2023

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	0.0222	0.2191	0.3136	4.9000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	43.0578	43.0578	0.0139	0.0000	43.4059
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0222**	**0.2191**	**0.3136**	**4.9000e-004**		**0.0110**	**0.0110**		**0.0101**	**0.0101**	**0.0000**	**43.0578**	**43.0578**	**0.0139**	**0.0000**	**43.4059**

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	9.9000e-004	6.0000e-004	6.3300e-003	2.0000e-005	2.6000e-003	2.0000e-005	2.6200e-003	6.9000e-004	2.0000e-005	7.1000e-004	0.0000	2.1331	2.1331	4.0000e-005	0.0000	2.1342
Total	**9.9000e-004**	**6.0000e-004**	**6.3300e-003**	**2.0000e-005**	**2.6000e-003**	**2.0000e-005**	**2.6200e-003**	**6.9000e-004**	**2.0000e-005**	**7.1000e-004**	**0.0000**	**2.1331**	**2.1331**	**4.0000e-005**	**0.0000**	**2.1342**

3.5 Paving - 2023

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	0.0222	0.2191	0.3136	4.9000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	43.0577	43.0577	0.0139	0.0000	43.4059
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0222**	**0.2191**	**0.3136**	**4.9000e-004**		**0.0110**	**0.0110**		**0.0101**	**0.0101**	**0.0000**	**43.0577**	**43.0577**	**0.0139**	**0.0000**	**43.4059**

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	9.9000e-004	6.0000e-004	6.3300e-003	2.0000e-005	2.6000e-003	2.0000e-005	2.6200e-003	6.9000e-004	2.0000e-005	7.1000e-004	0.0000	2.1331	2.1331	4.0000e-005	0.0000	2.1342
Total	**9.9000e-004**	**6.0000e-004**	**6.3300e-003**	**2.0000e-005**	**2.6000e-003**	**2.0000e-005**	**2.6200e-003**	**6.9000e-004**	**2.0000e-005**	**7.1000e-004**	**0.0000**	**2.1331**	**2.1331**	**4.0000e-005**	**0.0000**	**2.1342**

3.6 Architectural Coating - 2023

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	4.7474					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.3100e-003	0.0293	0.0408	7.0000e-005		1.5900e-003	1.5900e-003		1.5900e-003	1.5900e-003	0.0000	5.7448	5.7448	3.4000e-004	0.0000	5.7534
Total	**4.7517**	**0.0293**	**0.0408**	**7.0000e-005**		**1.5900e-003**	**1.5900e-003**		**1.5900e-003**	**1.5900e-003**	**0.0000**	**5.7448**	**5.7448**	**3.4000e-004**	**0.0000**	**5.7534**

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	2.4100e-003	1.4500e-003	0.0155	6.0000e-005	6.3500e-003	4.0000e-005	6.3900e-003	1.6900e-003	4.0000e-005	1.7200e-003	0.0000	5.2088	5.2088	1.1000e-004	0.0000	5.2114
Total	**2.4100e-003**	**1.4500e-003**	**0.0155**	**6.0000e-005**	**6.3500e-003**	**4.0000e-005**	**6.3900e-003**	**1.6900e-003**	**4.0000e-005**	**1.7200e-003**	**0.0000**	**5.2088**	**5.2088**	**1.1000e-004**	**0.0000**	**5.2114**

3.6 Architectural Coating - 2023

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	4.7474					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.3100e-003	0.0293	0.0408	7.0000e-005		1.5900e-003	1.5900e-003		1.5900e-003	1.5900e-003	0.0000	5.7448	5.7448	3.4000e-004	0.0000	5.7534
Total	**4.7517**	**0.0293**	**0.0408**	**7.0000e-005**		**1.5900e-003**	**1.5900e-003**		**1.5900e-003**	**1.5900e-003**	**0.0000**	**5.7448**	**5.7448**	**3.4000e-004**	**0.0000**	**5.7534**

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	2.4100e-003	1.4500e-003	0.0155	6.0000e-005	6.3500e-003	4.0000e-005	6.3900e-003	1.6900e-003	4.0000e-005	1.7200e-003	0.0000	5.2088	5.2088	1.1000e-004	0.0000	5.2114
Total	**2.4100e-003**	**1.4500e-003**	**0.0155**	**6.0000e-005**	**6.3500e-003**	**4.0000e-005**	**6.3900e-003**	**1.6900e-003**	**4.0000e-005**	**1.7200e-003**	**0.0000**	**5.2088**	**5.2088**	**1.1000e-004**	**0.0000**	**5.2114**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	6.1939	46.5744	56.4418	0.3341	3.0162	1.0857	4.1020	0.8136	1.0372	1.8508	0.0000	6,128.3294	6,128.3294	2.0485	0.0000	6,179.5428
Unmitigated	6.1939	46.5744	56.4418	0.3341	3.0162	1.0857	4.1020	0.8136	1.0372	1.8508	0.0000	6,128.3294	6,128.3294	2.0485	0.0000	6,179.5428

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	7.71	92.82	68.30	60,897	60,897
Single Family Housing	2,675.12	2,784.71	2422.22	7,719,781	7,719,781
Total	2,682.83	2,877.53	2,490.52	7,780,677	7,780,677

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
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Single Family Housing	10.80	7.30	7.50	46.40	16.40	37.20	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.394323	0.055127	0.150223	0.171506	0.046756	0.008777	0.022924	0.138429	0.001266	0.001220	0.006103	0.000952	0.002392
Single Family Housing	0.394323	0.055127	0.150223	0.171506	0.046756	0.008777	0.022924	0.138429	0.001266	0.001220	0.006103	0.000952	0.002392

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	769.4487	769.4487	0.0318	6.5700e-003	772.2014
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	769.4487	769.4487	0.0318	6.5700e-003	772.2014
NaturalGas Mitigated	0.0390	0.3332	0.1418	2.1300e-003		0.0269	0.0269		0.0269	0.0269	0.0000	385.8828	385.8828	7.4000e-003	7.0700e-003	388.1759
NaturalGas Unmitigated	0.0390	0.3332	0.1418	2.1300e-003		0.0269	0.0269		0.0269	0.0269	0.0000	385.8828	385.8828	7.4000e-003	7.0700e-003	388.1759

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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	7.23117e+006	0.0390	0.3332	0.1418	2.1300e-003		0.0269	0.0269		0.0269	0.0269	0.0000	385.8828	385.8828	7.4000e-003	7.0700e-003	388.1759
Total		**0.0390**	**0.3332**	**0.1418**	**2.1300e-003**		**0.0269**	**0.0269**		**0.0269**	**0.0269**	**0.0000**	**385.8828**	**385.8828**	**7.4000e-003**	**7.0700e-003**	**388.1759**

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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	7.23117e+006	0.0390	0.3332	0.1418	2.1300e-003		0.0269	0.0269		0.0269	0.0269	0.0000	385.8828	385.8828	7.4000e-003	7.0700e-003	388.1759
Total		**0.0390**	**0.3332**	**0.1418**	**2.1300e-003**		**0.0269**	**0.0269**		**0.0269**	**0.0269**	**0.0000**	**385.8828**	**385.8828**	**7.4000e-003**	**7.0700e-003**	**388.1759**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	2.41493e+006	769.4487	0.0318	6.5700e-003	772.2014
Total		**769.4487**	**0.0318**	**6.5700e-003**	**772.2014**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	2.41493e+006	769.4487	0.0318	6.5700e-003	772.2014
Total		**769.4487**	**0.0318**	**6.5700e-003**	**772.2014**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.3412	0.3537	15.6865	0.0439		2.1756	2.1756		2.1756	2.1756	288.8121	125.1395	413.9517	1.3579	2.2300e-003	448.5650
Unmitigated	4.3412	0.3537	15.6865	0.0439		2.1756	2.1756		2.1756	2.1756	288.8121	125.1395	413.9517	1.3579	2.2300e-003	448.5650

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	0.7912					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.9771					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.4682	0.3208	13.2666	0.0438		2.1654	2.1654		2.1654	2.1654	288.8121	121.7313	410.5434	1.3525	2.2300e-003	445.0202
Landscaping	0.1047	0.0329	2.4199	1.1000e-004		0.0102	0.0102		0.0102	0.0102	0.0000	3.4083	3.4083	5.4600e-003	0.0000	3.5447
Total	**4.3412**	**0.3537**	**15.6865**	**0.0439**		**2.1756**	**2.1756**		**2.1756**	**2.1756**	**288.8121**	**125.1395**	**413.9517**	**1.3579**	**2.2300e-003**	**448.5650**

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	0.7912					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.9771					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.4682	0.3208	13.2666	0.0438		2.1654	2.1654		2.1654	2.1654	288.8121	121.7313	410.5434	1.3525	2.2300e-003	445.0202
Landscaping	0.1047	0.0329	2.4199	1.1000e-004		0.0102	0.0102		0.0102	0.0102	0.0000	3.4083	3.4083	5.4600e-003	0.0000	3.5447
Total	**4.3412**	**0.3537**	**15.6865**	**0.0439**		**2.1756**	**2.1756**		**2.1756**	**2.1756**	**288.8121**	**125.1395**	**413.9517**	**1.3579**	**2.2300e-003**	**448.5650**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	55.6656	0.5986	0.0145	74.9562
Unmitigated	55.6656	0.5986	0.0145	74.9562

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 4.86124	5.4211	2.2000e-004	5.0000e-005	5.4405
Single Family Housing	18.3083 / 11.5422	50.2445	0.5984	0.0145	69.5156
Total		**55.6657**	**0.5986**	**0.0145**	**74.9562**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 4.86124	5.4211	2.2000e-004	5.0000e-005	5.4405
Single Family Housing	18.3083 / 11.5422	50.2445	0.5984	0.0145	69.5156
Total		**55.6657**	**0.5986**	**0.0145**	**74.9562**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	66.9850	3.9587	0.0000	165.9525
Unmitigated	66.9850	3.9587	0.0000	165.9525

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.35	0.0711	4.2000e-003	0.0000	0.1760
Single Family Housing	329.64	66.9139	3.9545	0.0000	165.7765
Total		**66.9850**	**3.9587**	**0.0000**	**165.9525**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.35	0.0711	4.2000e-003	0.0000	0.1760
Single Family Housing	329.64	66.9139	3.9545	0.0000	165.7765
Total		**66.9850**	**3.9587**	**0.0000**	**165.9525**

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

LIVE OAK ASSOCIATES, INC.

an Ecological Consulting Firm

TENTATIVE SUBDIVISION TRACT MAP 7379
BIOLOGICAL EVALUATION
DELANO, KERN COUNTY, CALIFORNIA

Prepared by

LIVE OAK ASSOCIATES, INC.

Austin Pearson, Director of Ecological Services
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September 10, 2020 PN 2496-01

EXECUTIVE SUMMARY

An approximately 75.5-acre property in Delano, APN 520-010-017, is proposed for subdivision into 281 single-family residential parcels ("project"). The site is located just within the northern limits of the City of Delano, southwest of the intersection of County Line Road and Hiett Avenue, in Kern County, California. Live Oak Associates, Inc. (LOA) investigated the biotic resources of the project site, and assessed potential impacts to those resources pursuant to the California Environmental Quality Act (CEQA).

The project site was surveyed at a reconnaissance level on August 11, 2020 for its biotic habitats, the plants and animals occurring in those habitats, and biological resources that may be protected by state and federal law. Three biotic habitat/land use types were identified within the project site: orchard, ruderal, and agricultural basin. All land uses/habitats of the project site are disturbed and of relatively low quality for most native wildlife.

Most regionally-occurring special status species are considered absent from, or unlikely to occur on, the site due to the absence of suitable habitat and/or the site being located outside of the known species distribution. Three special status animals, the San Joaquin kit fox, loggerhead shrike, and pallid bat, could forage and/or den, nest, or roost on the site. Individuals of these species are at some risk of construction-related injury or mortality, in the chance event they occur on site at the time of construction. Future construction activities also have the potential to result in the injury or mortality of other sensitive wildlife, including nesting migratory birds and roosting bats. Mortality of any of these animals would be considered a significant project-related impact under CEQA. By scheduling future construction activities for lower-risk times of year for these species, avoiding active nests, dens, and roost sites identified during preconstruction surveys, humanely evicting roosting bats, and providing environmental awareness training to construction workers, the magnitude of these potential impacts can be reduced to a less than significant level.

No other biological resources would be significantly impacted by the project as defined by CEQA. Impacts would be less than significant for all regionally occurring special status plant species, fifteen regionally occurring special status animal species that would not be expected to occur on the project site, wildlife movement corridors, designated critical habitat, and local policies and habitat conservation plans. Loss of habitat for special status animal species is not considered to be a significant project-related impact under CEQA. Impacts to the agricultural basin would not be considered significant per CEQA, but could be regulated by the Central Valley Regional Water Quality Control Board.

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1.0 INTRODUCTION

This technical report describes the biological resources of an approximately 75.5-acre property ("project site") proposed for a residential subdivision ("project"), and evaluates possible impacts to those resources that could result from project implementation. The project site is located just within the northern limits of the City of Delano, southwest of the intersection of County Line Road and Hiett Avenue, in Kern County, California (Figure 1). The site may be found on the *Delano West* U.S. Geological Survey (USGS) 7.5-minute quadrangle in the northwest quarter of Section 3, Township 25 South, Range 25 East, Mount Diablo Base and Meridian (Figure 2). The project site is ½ mile west of downtown Delano.

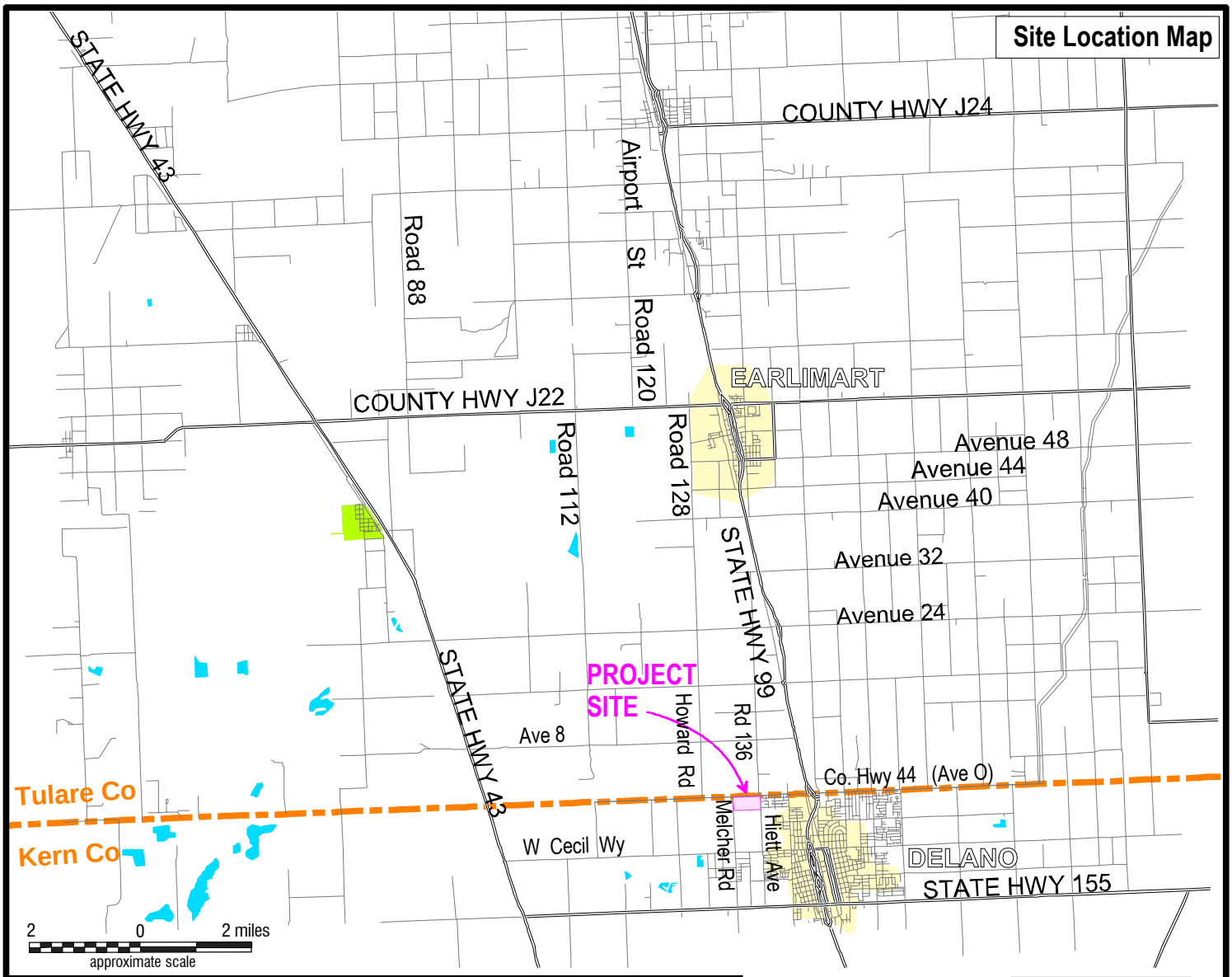
1.1 PROJECT DESCRIPTION

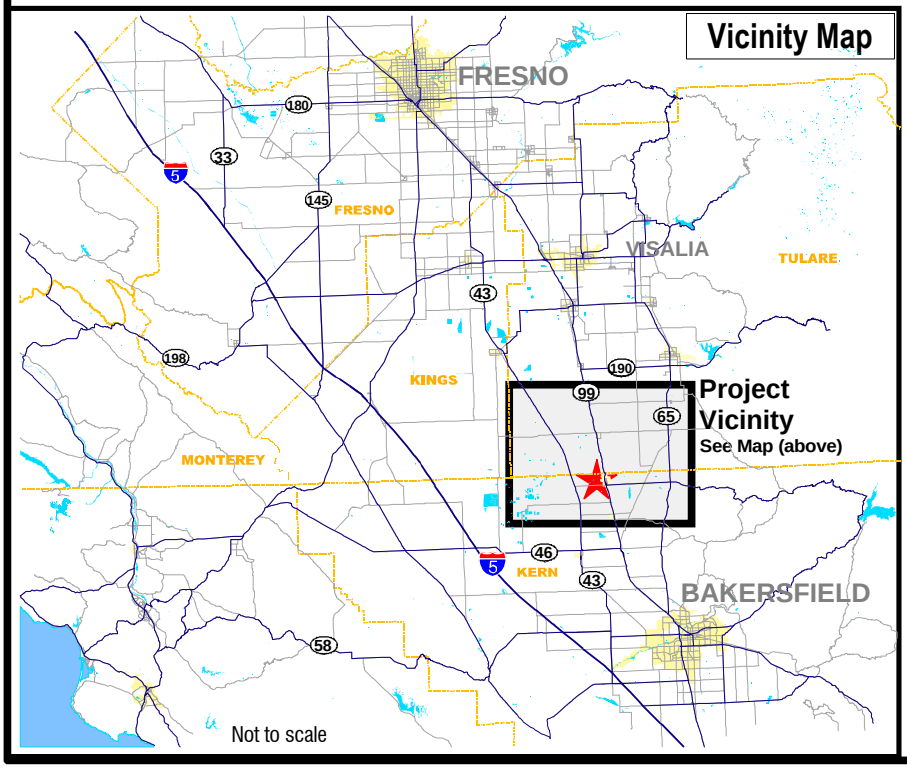
The Tract 7379 project is the subdivision of an approximately 75.5-acre parcel, APN 520-010-017, into 281 single-family residential parcels, with associated residential buildout in four phases. The property is currently zoned R-1, with a low density residential land use designation. Neither the zoning nor land use designation will need to be modified to accommodate the project. The property is presently being used for the cultivation of almonds; current farm operations are expected to continue until the build-out of the final phase. A 3.72-acre park/pond is included in the subdivision design for recreation and stormwater management. A City well site will be developed on-site near the intersection of Melcher & County Line Road. The tentative subdivision map for Tract 7379 is provided in Appendix A

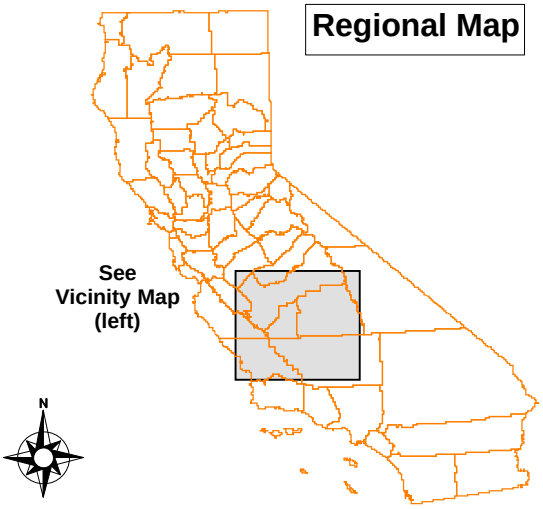
1.2 REPORT OBJECTIVES

This report addresses issues related to: 1) sensitive biological resources occurring within the project site; 2) the federal, state, and local laws regulating such resources; and 3) mitigation measures that may be required to reduce the magnitude of anticipated impacts and/or comply with permit requirements of state and federal resource agencies. As such, the objectives of this report are to:

- Summarize all site-specific information related to existing biological resources





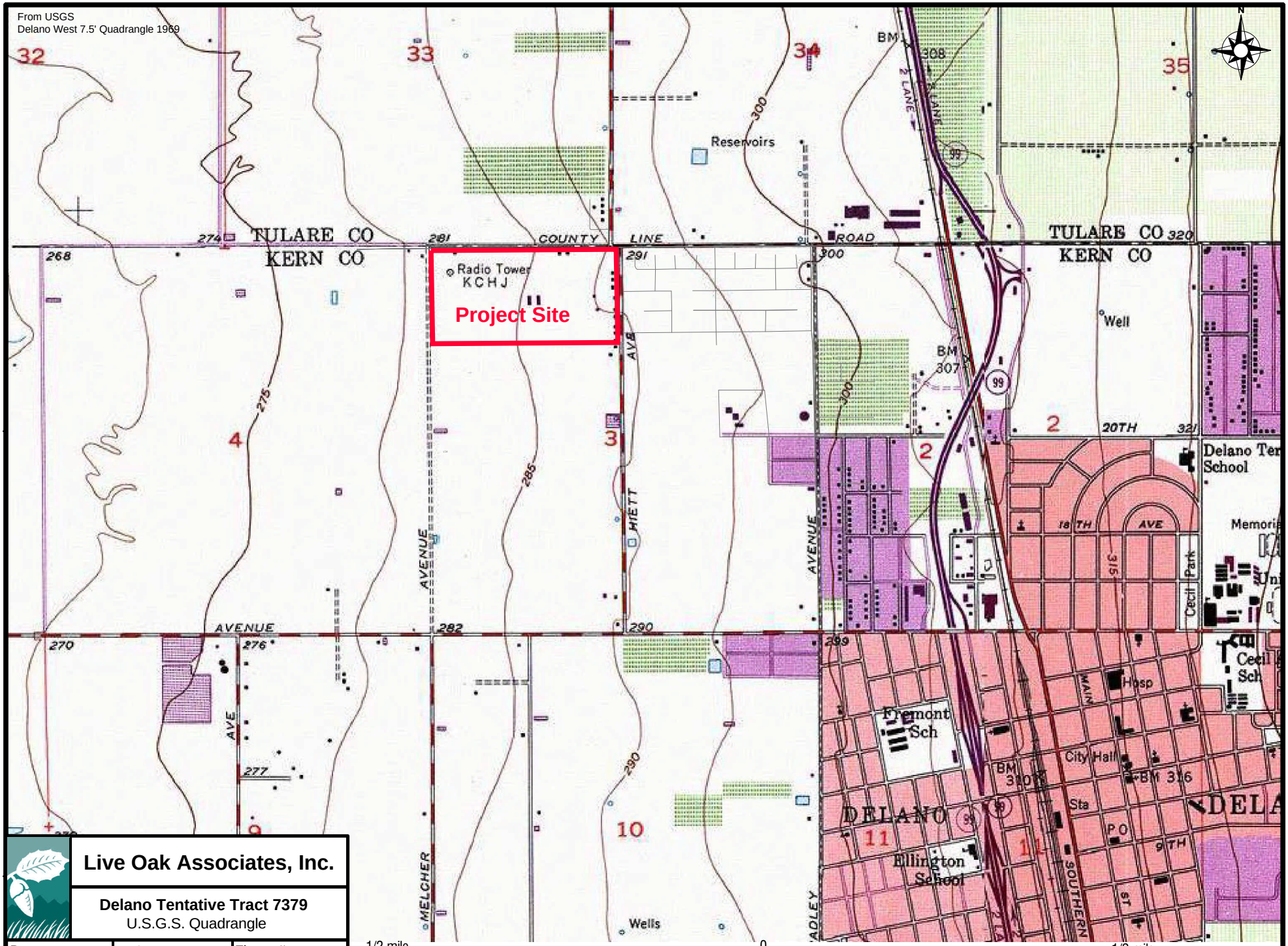


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Delano Tentative Tract 7379

Site / Vicinity Map

Date	Project #	Figure #
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Live Oak Associates, Inc.

Delano Tentative Tract 7379
U.S.G.S. Quadrangle

Date	Project #	Figure #
8/13/2020	**2496-01**	**2**

- Make reasonable inferences about the biological resources that could occur onsite based on habitat suitability and the proximity of the site to a species' known range
- Summarize all state and federal natural resource protection laws that may be relevant to future residential development
- Identify and discuss project impacts to biological resources that may occur on the site within the context of CEQA guidelines and relevant state and federal laws
- Identify avoidance and mitigation measures that would reduce the magnitude of project impacts in a manner consistent with the requirements of CEQA and that are generally consistent with recommendations of the resource agencies regulating affected biological resources

1.3 STUDY METHODOLOGY

A reconnaissance-level field survey of the project site was conducted on August 11, 2020 by Live Oak Associates, Inc. (LOA) ecologist Wendy Fisher. The survey consisted of walking within the project site and driving along its boundaries while identifying the principal land uses and biotic habitats, identifying plant and animal species encountered, and assessing the suitability of the project site's habitats for special status species.

LOA conducted an analysis of potential project impacts based on the known and potential biotic resources of the project site. Sources of information used in the preparation of this analysis included: (1) the *California Natural Diversity Data Base* (CDFW 2020), (2) the *Online Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2020), and (3) manuals, reports, and references related to plants and animals of the San Joaquin Valley region.

LOA's field investigation did not include a wetland delineation or focused surveys for special status species. The field survey was sufficient to generally describe the biological resources of the project site, and to identify the need for future focused and/or protocol-level surveys for sensitive biological resources.

2.0 EXISTING CONDITIONS

2.1 REGIONAL SETTING

The project site is located in the southern San Joaquin Valley in a region dominated by agricultural uses. The San Joaquin Valley is bordered by the Sierra Nevada to the east, the Tehachapi Mountains to the south, the California coastal ranges to the west, and the Sacramento-San Joaquin Delta to the north.

Like most of California, the southern San Joaquin Valley (and the project site) experiences a Mediterranean climate. Warm, dry summers are followed by cool, moist winters. Summer temperatures in the project vicinity commonly exceed 100 degrees Fahrenheit, and the relative humidity is generally very low. Winter temperatures rarely exceed 70 degrees Fahrenheit. Annual precipitation in the project vicinity is about 6.5 inches, most of which falls between the months of October and March. Nearly all precipitation falls in the form of rain.

The principal drainage of the project vicinity is Deer Creek, which originates in the Sierra Nevada and flows in an east-west direction approximately 8 miles north of the project site at its closest point. Since the late 19th century, Deer Creek and its tributaries and distributaries have been diverted for irrigation and aquifer recharge. The aquatic and riparian habitat once supported by these drainages has been greatly degraded, or eliminated altogether, by these practices.

Lands surrounding the project site consist of vineyard to the north, almond orchard to the west and south, residential to the northwest and east, and recently disked field to the southeast.

2.2 PROJECT SITE

At the time of the August 2020 survey, the project site consisted of a mature almond orchard, an agricultural basin, and disturbed areas surrounding these uses. The topography of the project site is relatively flat with elevations ranging from approximately 280 to 290 feet National Geodetic Vertical Datum (NGVD) (see Figure 2).

The project site contains three soil mapping units representing four unique soil series (NRCS 2020). These include:

Gareck-Garces silt loam, 0-2 percent slopes
Granoso loamy sand, 0-2 percent slopes
Kimberlina fine sandy loam, 0-2 percent slopes

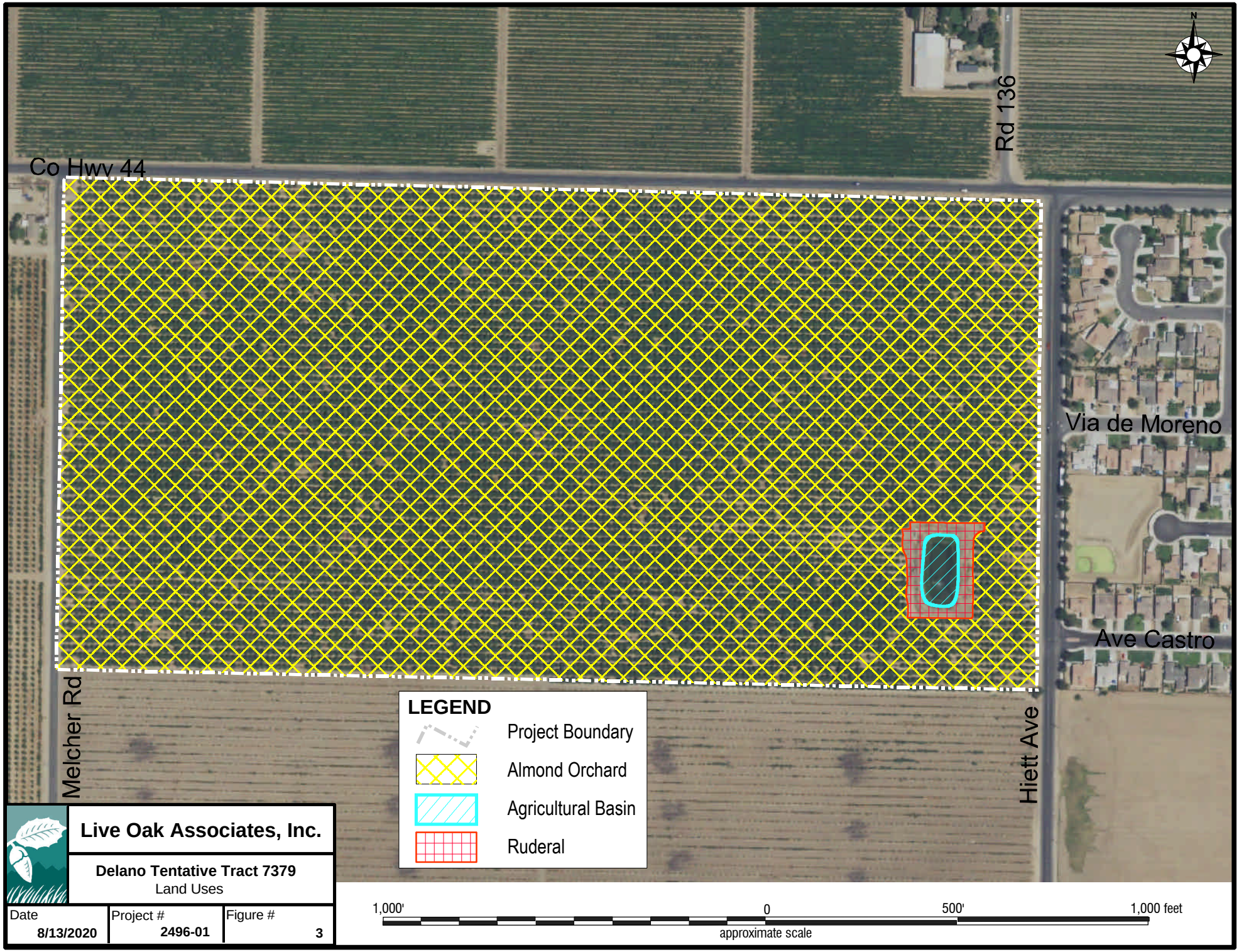
These soils are generally very well drained deep soils formed in granitic or mixed alluvium. The Soils of the Garces series are saline-sodic soils. All of these mapping units are mapped as hydric (NRCS 2020), meaning they have a tendency to pond water and support the growth of wetland vegetation. However, all soils of the project site have been significantly altered through agricultural practices such that native soil characteristics no longer exist.

2.3 BIOTIC HABITATS/LAND USES

Three biotic habitat/land use types were observed on the project site during the August 2020 field survey: orchard, ruderal, and agricultural basin (Figure 3). A list of the vascular plant species observed within the project site and the terrestrial vertebrates using, or potentially using, the site are provided in Appendices B and C, respectively. Photos of the project site are presented in Appendix D.

2.3.1 Orchard

At the time of the field survey, almond (*Prunus dulcis*) orchard accounted for the vast majority of the project site. The orchard consisted of mature trees in closed-canopy rows, approximately 15 feet in height. The trees were productive with fruit at the time of the August 2020 field survey, although there was little evidence of recent orchard maintenance (such as vegetation management and small mammal eradication). A single large English walnut (*Juglans regia*) was located in the southeast corner of the site. Vegetation observed within the sparse understory of the orchard included Bermuda grass (*Cynodon dactylon*), barnyard barley (*Hordeum murinum* spp. *leporinum*), Canada horseweed (*Erigeron canadensis*), and prostrate spurge (*Euphorbia prostrata*).



Live Oak Associates, Inc.

Delano Tentative Tract 7379
Land Uses

Date	Project #	Figure #
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Due to intensive disturbance and the lack of aquatic habitat, orchards provide marginal habitat for amphibians; however, Pacific chorus frogs (*Pseudacris regilla*) and western toads (*Bufo boreas*) may disperse through orchard lands during the winter and spring. A limited number of reptile species would be expected to forage in the site's orchards due to the lack of sun required by these species for thermal regulation; however, the western fence lizard (*Sceloporus occidentalis*), Pacific gopher snake (*Pituophis catenifer catenifer*), and western rattlesnake (*Crotalus viridis*) may occasionally occur here.

Orchards provide foraging and nesting habitat for a number of avian species. The site's mature orchard habitat could be used for nesting by the American robin (*Turdus migratorius*), mourning dove (*Zenaida macroura*), and California scrub jay (*Aphelocoma californica*). Winter migrants such as the white-crowned sparrow (*Zonotrichia leucophrys*) may forage on dormant buds in the orchards.

Small mammal species expected to occur within the site's orchard habitat include California ground squirrels (*Otospermophilus beecheyi*), deer mice (*Peromyscus maniculatus*), house mice (*Mus musculus*), Botta's pocket gophers (*Thomomys bottae*), and Audubon cottontail rabbits (*Sylvilagus audubonii*). At the time of the field survey, California ground squirrel burrows were frequently observed near tree bases and sporadically along irrigation lines within the orchard. Various species of bat may forage over the orchard for flying insects, or glean insects from the leaves of trees.

Foraging raptors and mammalian predators may occur in the site's orchard habitat from time to time. Raptors adapted to hunt within the tree canopy such as Cooper's hawks (*Accipiter cooperii*) and sharp-shinned hawks (*Accipiter striatus*) may forage for small birds in orchards. Mammalian predators potentially occurring in the site's orchard include the raccoon (*Procyon lotor*), coyote (*Canis latrans*), and gray fox (*Urocyon cinereoargenteus*). At the time of the field survey, several burrows observed in the orchard appeared large enough to accommodate the latter two species (see Photograph 2, Appendix D).

2.3.2 Ruderal

At the time of the field survey, the project site's ruderal habitats consisted of the berm around the agricultural basin. The site's ruderal habitats were characterized by compacted or filled material, with sporadic piles of manmade rubble and debris in ruderal areas around the basin (see Photograph 6, Appendix D). Occasional patches of late season weedy annuals such as annual sunflower (*Helianthus annuus*), ripgut (*Bromus diandrus*), Russian thistle (*Salsola tragus*), and puncture vine (*Tribulus terrestris*) were observed on both inner and outer berms of the basin and amongst agricultural debris in flatter areas around the basin.

Ruderal habitats of the project site are of relatively low value to native wildlife, in that they offer little vegetative cover and are subjected to regular human disturbance. However, some of the region's fauna certainly pass through or use these habitats from time to time. For example, common reptiles such as the side-blotched lizard (*Uta stansburiana*) and Pacific gopher snake may bask or forage in the site's ruderal areas. Species associated with adjacent land uses could make incidental use of ruderal habitats, and certain disturbance-tolerant species may actually be attracted to this habitat. For example, American robins and mourning doves using the site's orchard may occasionally occur within the ruderal areas. The killdeer (*Charadrius vociferus*) and Brewer's blackbird (*Euphagus cyanocephalus*) are common in degraded habitats, and would be expected to use the ruderal areas of the site.

Mammals expected to use the site's ruderal areas from time to time include the raccoon and opossum (*Didelphis virginiana*), both of which frequent human-altered habitats. Rodents expected to occur in this habitat type are the California ground squirrel, Botta's pocket gopher, and deer mouse. At the time of the field survey, rodent burrows were sporadically observed within ruderal habitats of the project site, including several California ground squirrel burrows on the outer berms of the agricultural basin.

2.3.3 Agricultural Basin

At the time of the field survey, the project site contained one agricultural basin (see Photograph 3, Appendix D). Based on LOA's field observations and analysis of aerial imagery (April 2017, December 2005, July 2005, September 2004), this basin appears to be inundated sporadically

throughout any given year. At the time of the survey, the basin floor was entirely unvegetated and dry. Some soil cracking and presence of dried algal mats on the barren basin floor indicated recent inundation or saturation, however. Lower inner banks of the basin were vegetated with a mix of wetland and upland species, including Bermuda grass, annual sunflower, rabbit's foot grass (*Polypogon monspeliensis*), bearded sprangletop (*Leptochloa fusca*), rough pigweed (*Amaranthus retroflexus*), and narrow-leaved milkweed (*Asclepias fascicularis*).

During periods of inundation, amphibians expected to occur in this basin include Pacific chorus frogs and western toads. During dry periods, the basin would essentially function as ruderal habitat, and would have reptile and amphibian use similar to that described for other ruderal areas of the project site.

Birds expected to use the basin during periods of inundation include the great blue heron (*Ardea herodias*) and great egret (*Ardea alba*), assuming amphibian and/or invertebrate prey is present. Also when inundated, black phoebes (*Sayornis nigricans*) may glean insects from the surface of the water, or extract mud from the banks for nest-building. When the basin is saturated but not inundated, avian use may include those species that feed on mudflats, such as the killdeer. When the basin is dry, avian use would be similar to that described for ruderal habitats of the project site.

Periodic inundation of the basin would preclude occupation of the basin floor by burrowing rodents; however, Botta's pocket gophers and California ground squirrels could burrow on the banks. When the basin is dry, mammalian predator and raptor use would be similar to that described for other habitats of the project site.

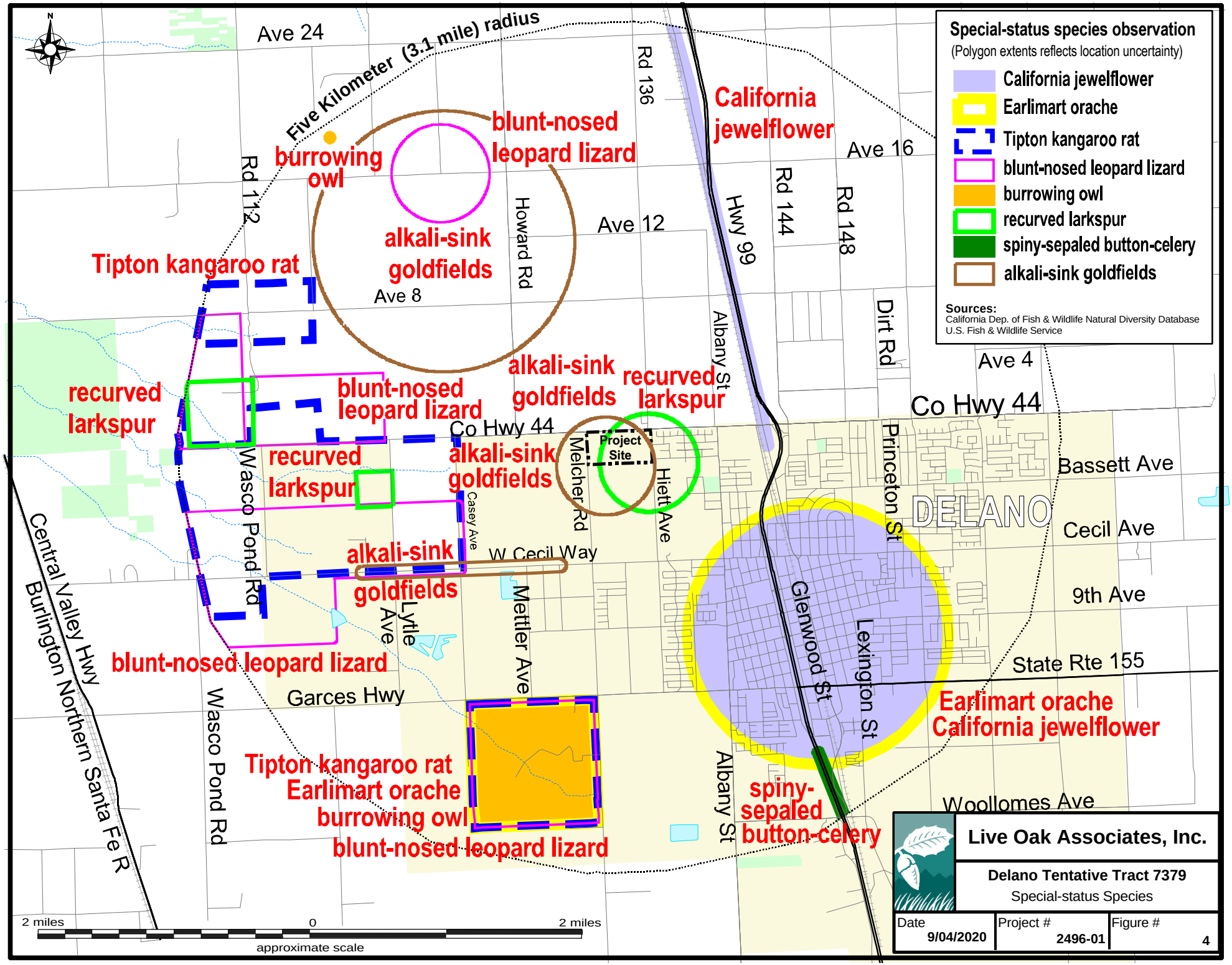
2.4 SPECIAL STATUS PLANTS AND ANIMALS

Several species of plants and animals within the state of California have low populations and/or limited distributions. Such species may be considered "rare" and are vulnerable to extirpation as the state's human population grows and the habitats these species occupy are converted to agricultural and urban uses. As described more fully in Section 3.2, state and federal laws have provided the CDFW and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting the diversity of plant and animal species native to the state. A sizable

number of native plants and animals have been formally designated as "threatened" or "endangered" under state and federal endangered species legislation. Others have been designated as candidates for such listing. Still others have been designated as "species of special concern" by the CDFW. The California Native Plant Society (CNPS) has developed its own set of lists of native plants considered rare, threatened, or endangered (CNPS 2020). Collectively, these plants and animals are referred to as "special status species."

The *California Natural Diversity Data Base* (CNDDB) (CDFW 2020) was queried for special status species occurrences in the nine USGS 7.5-minute quadrangles containing and immediately surrounding the project site (*Delano West, Pixley, Sausalito School, Delano East, McFarland, Pond, Wasco NW, Allensworth* and *Alpaugh*). These species, and their potential to occur within the project site, are listed in Table 1 on the following pages. Table 1 also contains several species not returned in the CNDDB query, but known by LOA to occur, or potentially occur, in the project vicinity. Sources of information for Table 1 included the CNDDB (CDFW 2020), *The California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2020), and *California's Wildlife, Volumes I, II, and III* (Zeiner et. al 1988-1990).

Special status species occurrences within 10 miles of the project site are depicted in Figure 4 and San Joaquin kit fox (*Vulpes macrotis mutica*) and Swainson's hawk (*Buteo swainsoni*) occurrences within 10 miles of the project site are depicted in Figure 5.


Special-status species observation
(Polygon extents reflects location uncertainty)
California jewelflower
Earlimart orache
Tipton kangaroo rat
blunt-nosed leopard lizard
burrowing owl
recurved larkspur
spiny-sepaled button-celery
alkali-sink goldfields
Sources:
California Dep. of Fish & Wildlife Natural Diversity Database
U.S. Fish & Wildlife Service
Five Kilometer (3.1 mile) radius
Ave 24
Ave 16
Ave 12
Ave 8
Ave 4
Rd 112
Rd 136
Rd 144
Rd 148
Howard Rd
Hwy 99
Albany St
Dirt Rd
Co Hwy 44
Project Site
Melcher Rd
Hiett Ave
Princeton St
DELANO
Bassett Ave
Cecil Ave
9th Ave
State Rte 155
W Cecil Way
Casey Ave
Wasco Pond Rd
Lytle Ave
Mettler Ave
Garces Hwy
Glenwood St
Lexington St
Woollomes Ave
Central Valley Hwy
Burlington Northern Santa Fe R
burrowing owl
blunt-nosed leopard lizard
alkali-sink goldfields
Tipton kangaroo rat
recurved larkspur
Earlimart orache
California jewelflower
spiny-sepaled button-celery
2 miles
0
2 miles
approximate scale
Live Oak Associates, Inc.
Delano Tentative Tract 7379
Special-status Species
Date 9/04/2020
Project # 2496-01
Figure # 4

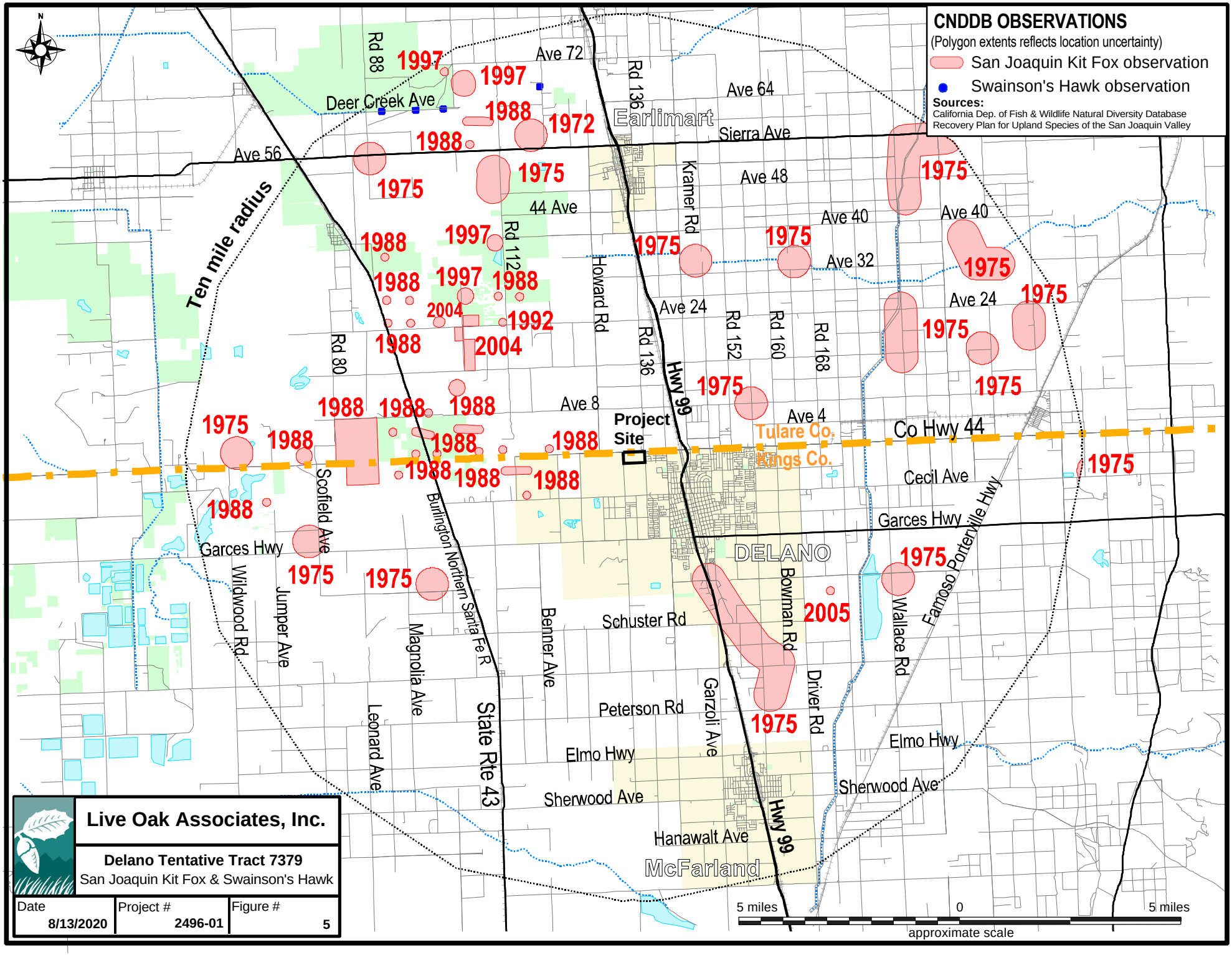

CNDDB OBSERVATIONS
(Polygon extents reflects location uncertainty)
San Joaquin Kit Fox observation
Swainson's Hawk observation
Sources:
California Dep. of Fish & Wildlife Natural Diversity Database
Recovery Plan for Upland Species of the San Joaquin Valley
Ten mile radius
Project Site
Earlimart
DELANO
McFarland
Deer Creek Ave
Ave 72
Ave 64
Sierra Ave
Ave 56
Ave 48
44 Ave
Ave 40
Ave 32
Ave 24
Ave 8
Ave 4
Co Hwy 44
Tulare Co.
Kings Co.
Cecil Ave
Garces Hwy
Schuster Rd
Peterson Rd
Elmo Hwy
Sherwood Ave
Hanawalt Ave
Rd 88
Rd 80
Rd 112
Rd 136
Rd 152
Rd 160
Rd 168
Kramer Rd
Howard Rd
Hwy 99
Scofield Ave
Wildwood Rd
Jumper Ave
Leonard Ave
Magnolia Ave
Burlington Northern Santa Fe R
State Rte 43
Benner Ave
Garzoli Ave
Bowman Rd
Driver Rd
Wallace Rd
Famoso Porterville Hwy
1997
1988
1972
1975
2004
1992
2005
5 miles
0
5 miles
approximate scale
Live Oak Associates, Inc.
Delano Tentative Tract 7379
San Joaquin Kit Fox & Swainson's Hawk
Date 8/13/2020
Project # 2496-01
Figure # 5

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

PLANTS (adapted from CDFW 2020 and CNPS 2020)

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Species	Status	Habitat	Occurrence within the Project Site
California Jewelflower (*Caulanthus californicus*)	FE, CE CNPS 1B	Occurs in chenopod scrub and valley and foothill grassland at elevations below 3,300 feet. Blooms February-May.	**Absent.** Suitable habitat for this species is absent from the project site. A 1914 occurrence of the California jewelflower was mapped less than 1 mile east of the site, along Highway 99 between Earlimart and Delano (Figure 4).
Kern Mallow (*Eremalche parryi* ssp. *kernensis*)	FE, CNPS 1B	Occurs in chenopod scrub and valley and foothill grassland between 230 and 4,200 feet in elevation. Blooms March – May.	**Absent.** Although the Kern mallow is historically known from the project vicinity, it hasn't been documented near Delano since 1962. The project site does not contain suitable habitat for this species.
San Joaquin Woollythreads (*Monolopia congdonii*)	FE CNPS 1B	Occurs in chenopod scrub and valley and foothill grassland habitats between 200 and 2,600 feet in elevation. Blooms February-May.	**Absent.** Suitable habitat for the San Joaquin woollythreads is absent from the project site, and there are no known extant populations of this species in the site's vicinity.

CNPS-Listed Plants

Earlimart Orache (*Atriplex cordulata* var. *erecticaulis*)	CNPS 1B	Occurs in valley and foothill grassland between 130 and 330 feet in elevation; blooms August-September.	**Absent.** Earlimart orache is known from the project vicinity, having been documented near the old Delano landfill site (now a transfer station) in 1989 and on natural lands south of Garces Highway in 2017 (Figure 4). However, suitable habitat for this species is absent from the project site.
Lost Hills Crownscale (*Atriplex coronata* ssp. *vallicola*)	CNPS 1B	Occurs in alkali soils within chenopod scrub, valley and foothill grassland, and vernal pool habitat at elevations up to 2,000 feet. Blooms April to August.	**Absent.** Suitable habitat for this species is absent from the project site. The nearest documented occurrence is approximately 11 miles to the southwest, recorded in 2010.
Brittlescale (*Atriplex depressa*)	CNPS 1B	Occurs in alkaline or clay soils of chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools. Less than 1,050 feet. Blooms April – October.	**Absent.** Suitable habitat for this species is absent from the project site. Known to occur near Allensworth and within the Pixley Preserve, approximately 5 miles northeast of Pixley.
Lesser Saltscale (*Atriplex minuscula*)	CNPS 1B	Occurs in alkali sink and grassland habitats in sandy, alkaline soils; elevations below 750 feet; blooms May-October.	**Absent.** Lesser saltscale is known from approximately 6 miles north of Delano, last documented in 1993. However, suitable habitat for this species is absent from the project site itself.
Vernal Pool Smallscale (*Atriplex persistens*)	CNPS 1B	Occurs in alkaline vernal pools lets than 350 feet in California's central valley. Blooms June – September.	**Absent.** Suitable habitat for this species is absent from the project site. The closest known occurrence is at the Pixley Preserve, nearly 14 miles northeast of the site. The vernal pool smallscale has not been documented within Kern County.

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

PLANTS (cont'd)

CNPS-Listed Plants

Species	Status	Habitat	Occurrence within the Project Site
Subtle Orache (*Atriplex subtilis*)	CNPS 1B	Occurs in valley and foothill grassland in alkaline soils; blooms August-October; elevation 130-330 feet.	**Absent.** Suitable habitat for this species is absent from the project site. The closest known occurrences are approximately 7 miles to the north.
Alkali Mariposa-lily (*Calochortus striatus*)	CNPS 1B	Occurs in alkaline meadows and ephemeral washes within chaparral and scrub habitats between 230 and 5,200 feet in elevation. Blooms April-June.	**Absent.** Suitable habitat for this species is absent from the project site. The closest known occurrence is approximately 5 miles to the northwest at the Allensworth Ecological Reserve, recorded in 1995.
Recurved Larkspur (*Delphinium recurvatum*)	CNPS 1B	Occurs in cismontane woodland and valley and foothill grasslands; blooms March-June; alkaline soils; elevations below 2,500 feet.	**Absent.** There is an historic occurrence of this species from on or very near the site from 1958 (Figure 4). However, the site was converted to agriculture decades ago, eliminating suitable habitat for this species.
Spiny-sepaled Button Celery (*Eryngium spinosepalum*)	CNPS 1B	Occurs in vernal pools, swales and roadside ditches of the San Joaquin Valley and Sierra Nevada foothills between 330 and 4200 feet. Blooms April – July.	**Absent**. Suitable habitat is absent from the site. The site was converted to agriculture many decades ago, eliminating suitable habitat for this species. There is a historic occurrence of this species approximately 2.5 miles south of the site, recorded in 1965 (Figure 4).
Munz's Tidy-tips (*Layia munzii*)	CNPS 1B	Occurs in chenopod scrub and valley and foothill grassland; alkaline clay soils; blooms March-April; elevation 150-2,500 feet.	**Absent.** Suitable habitat for this species is absent from the project site, and there are no known extant populations in the vicinity.
Alkali-sink Goldfields (*Lasthenia chrysantha*)	CNPS 1B	Occurs in vernal pools or wet saline flats of valley grassland, alkali sink, or wetland-riparian habitats below 330 feet. Blooms February – April.	**Absent.** There is a 1979 occurrence of this species from on or very near the site, and several others in the immediate vicinity (Figure 4). However, the site was converted to agriculture decades ago, eliminating suitable habitat for this species.
Coulter's Goldfields (*Lasthenia glabrata spp. coulteri*)	CNPS 1B	Occurs in alkaline soils of playas and vernal pools; elevations below 4,000 feet. Blooms February-June.	**Absent.** Suitable habitat for this species is absent from the project site, and there are no known populations in the vicinity. The closest known occurrence is approximately 5 miles northwest of the site, recorded in 2016.

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS (adapted from CDFW 2020)

Species Listed as Threatened or Endangered and/or Fully Protected

Species	Status	Habitat	Occurrence within the Project Site
Blunt-nosed Leopard Lizard (BNLL) (*Gambelia sila*)	FE, CE, CFP	Frequents grasslands, alkali meadows and chenopod scrub of the San Joaquin Valley. Prefers flat areas with open space for running. Takes cover under large shrubs and in small mammal burrows.	**Absent.** The BNLL was historically known from the project vicinity. There are five occurrence records within 3 miles of the project site, all from the 1970s and 1980s; the closest of these is approximately 1-2 miles west of the site (Figure 4). However, suitable habitat for the BNLL is absent from the site and surrounding lands.
Swainson's Hawk (*Buteo swainsoni*)	CT	This breeding migrant to California nests in mature trees in riparian areas and oak savannah, and occasionally in lone trees at the margins of agricultural fields. Requires adjacent suitable foraging areas such as grasslands or alfalfa fields supporting rodent populations.	**Unlikely.** Although the site's English walnut tree is structurally suitable for nesting by this species, Swainson's hawks do not typically nest in orchards, and foraging habitat in the project vicinity is both marginal and extremely limited. The closest known nesting occurrences of Swainson's hawks are 8.5 to 10 miles north of the project site (Figure 5).
Western Snowy Plover (*Charadrius alexandrines nivosus*)	FT, CSC	Breeds on barren to sparsely vegetated ground at alkaline or saline lakes, reservoirs, ponds, dunes and riverine sand bars.	**Absent.** Suitable habitat for the western snowy plover is absent from the project site. The closest known occurrence of this species is a 1983 record located 13 miles to the west.
Tricolored Blackbird (*Agelaius tricolor*)	CT	Nests colonially near fresh water in dense cattails or tules, or in thickets of willows or shrubs. In the San Joaquin Valley, has increasingly been documented nesting in wheat fields. Forages in grassland and cropland areas.	**Unlikely.** The project site does not offer suitable foraging or nesting habitat for the tricolored blackbird. The nearest extant nesting occurrence of this species is located approximately 7.5 miles southwest of the site.
Tipton Kangaroo Rat (*Dipodomys nitratoides nitratoides*)	FE, CE	This nocturnal rodent occupies underground burrows in valley saltbush scrub and valley sink scrub habitats in the southern San Joaquin Valley east of the California Aqueduct.	**Absent.** This species is known from natural lands in the vicinity (Figure 4); however, the site's, and surrounding lands, intensively maintained habitats are unsuitable for the Tipton kangaroo rat.
Nelson's Antelope Squirrel (*Ammospermophilus nelsoni*)	CT	Occurs in the San Joaquin Valley in broken terrain with small gullies and washes. Suitable habitats include widely spaced alkali scrub and annual grassland. Occupies modified kangaroo rat burrows or self-constructed burrows.	**Absent.** The site's, and surrounding lands, intensively maintained habitats are unsuitable for Nelson's antelope squirrel. The closest know occurrence is approximately 7 miles to the southwest, recorded in 1988.

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS (cont'd)

Species Listed as Threatened or Endangered and/or Fully Protected

Species	Status	Habitat	Occurrence within the Project Site
San Joaquin Kit Fox (SJKF) (*Vulpes macrotis mutica*)	FE, CT	Frequents desert alkali scrub and annual grasslands and may forage in adjacent agricultural habitats. Utilizes enlarged (5 to 8 inches in diameter) ground squirrel burrows as denning habitat.	**Possible.** The site's, and surrounding lands, intensively maintained habitats are marginal to unsuitable for the San Joaquin kit fox. Nonetheless, a substantial number of burrows occur in the orchard. Two burrows of suitable dimensions for kit fox were observed in the southeastern portion of the site, one near the basin and the other in the understory of the orchard. The site offers foraging and denning opportunities for any wandering SJKF that might happen to pass through the site. This species was historically well documented in the project vicinity, with 45 CNDDB occurrences within 10 miles of the site. (Figure 5). Only two such occurrences are from the last 20 years, however.

State Species of Special Concern

Western Spadefoot (*Spea hammondii*)	CSC	Occurs in grasslands of San Joaquin Valley, where it breeds in vernal pools or other seasonal wetlands and aestivates in underground refugia such as rodent burrows. Baumberger et al. (2019) recorded a maximum distance of around 890 feet between breeding and aestivation sites.	**Absent.** Suitable aquatic habitat for this species is absent from the project site and adjacent lands. The closest known occurrence of the western spadefoot is approximately 4 miles northwest of the site, recorded in 1992.
Western Pond Turtle (*Actinemys marmorata*)	CSC	Found in streams, marshes, rivers, ponds, and lakes possessing basking habitat.	**Absent.** Suitable habitat for this species is absent from the project site and adjacent lands. The on-site basin is not perennial and is regularly maintained.
San Joaquin Coachwhip (*Coluber flagellum ruddocki*)	CSC	Occurs in open, dry, treeless areas with little or no cover, including valley grassland and saltbush scrub. Avoids dense vegetation where it cannot move quickly, including mixed oak chaparral woodland. Takes refuge in rodent burrows, under shaded vegetation, and under surface objects.	**Absent.** Although small mammal burrows were prevalent, the maintained orchard and associated ruderal and basin are marginal to unsuitable for this species. The nearest documented occurrence is approximately 6 miles northwest of the site, recorded in 1992.

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS (cont'd)

State Species of Special Concern

Species	Status	Habitat	Occurrence within the Project Site
Bakersfield Legless Lizard (*Anniella grinnelli*)	CSC	Occurs in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Requires moist soils.	**Absent.** The site's maintained orchard, ruderal lands, and basin are unsuitable for this species. Adjacent lands are also highly maintained and unsuitable. The closest known occurrence is approximately 8.5 miles to the northwest, recorded in 2017.
Coast Horned Lizard (*Phrynosoma blainvillii*)	CSC	Occurs in the lower Sierra foothills and throughout the central and southern California coast in relatively open areas. In the early morning, may be found basking on the ground or on rocks or boulders. Escapes heat by burying itself in loose soil. During periods of inactivity and winter hibernation, lives underground in small mammal burrows or crevices, or under rocks or logs.	**Absent.** The site's maintained orchard, ruderal lands, and basin are unsuitable for this species. Adjacent lands are also highly maintained and unsuitable.
Kern Brook Lamprey (*Lampetra hubbsi*)	CSC	First discovered in the Friant Kern Canal, it inhabits silty backwaters of large rivers in foothill regions the lower reaches of the Merced River, Kaweah River, Kings River, and San Joaquin River, as well as in the Kings River above Pine Flat Reservoir and the San Joaquin River above Millerton Reservoir, but below Redinger Dam.	**Absent.** Suitable habitat is absent from the site.
Burrowing Owl (*Athene cunicularia*)	CSC	Frequents open, dry annual or perennial grasslands, deserts, and scrublands characterized by low growing vegetation. Dependent upon burrowing mammals, most notably the California ground squirrel, for nest burrows.	**Unlikely.** The burrowing owl is known from the vicinity, with two documented occurrences within 3 miles of the site, recorded in 1992 and 2003 (Figure 4). The site consists primarily of orchard land unsuitable for this species, and is adjoined by similarly incompatible uses including orchards, vineyards, and a residential development. Although the outside berms of the site's agricultural basin contain California ground squirrel burrows theoretically suitable for burrowing owl nesting and roosting, burrowing owls would be extremely unlikely to access this area, given its small size and orchard setting.
Mountain Plover (*Charadrius montanus*)	CSC	Forages in short grasslands and freshly plowed fields of the Central Valley. This species does not breed in California.	**Absent.** Suitable habitat for this species is absent from the project site.

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS (cont'd)

State Species of Special Concern

Species	Status	Habitat	Occurrence within the Project Site
Loggerhead Shrike (*Lanius ludovicianus*)	CSC	Frequents open habitats with sparse shrubs and trees, other suitable perches, bare ground, and low herbaceous cover. Often found in cropland.	**Possible.** The site consists primarily of orchard land unsuitable for this species. At most, loggerhead shrikes may forage over the site's agricultural basin during dry periods.
Western Mastiff Bat (*Eumops perotis* ssp. *californicus*)	CSC	Frequents open, semi-arid to arid habitats, including conifer, and deciduous woodlands, coastal scrub, grasslands, palm oasis, chaparral and urban. Roosts in cliff faces, high buildings, and tunnels.	**Possible.** The western mastiff bat may forage over the project site, but roosting habitat is absent. There are no known occurrences of this species within 10 miles of the project site.
Pallid Bat (*Antrozous pallidus*)	CSC	Found in grasslands, chaparral, and woodlands, where it feeds on ground- and vegetation-dwelling arthropods. Prefers to roost in rock crevices, but may also use tree cavities, caves, bridges, and buildings.	**Possible.** The pallid bat may forage on the project site and could roost in hollow stems or cavities of the mature English walnut tree located at the site's southeastern corner. There are no known occurrences of this species within 10 miles of the project site.
American Badger (*Taxidea taxus*)	CSC	Found in drier open stages of most shrub, forest, and herbaceous habitats with friable soils.	**Unlikely.** The intensively maintained habitats of the project site are unsuitable for foraging and denning by the American badger. Adjacent lands are also highly maintained and unsuitable.

EXPLANATION OF OCCURRENCE DESIGNATIONS AND STATUS CODES

Present: Species observed on the site at time of field surveys or during recent past.
Likely: Species not observed on the site, but it may reasonably be expected to occur there on a regular basis.
Possible: Species not observed on the site, but it could occur there from time to time.
Unlikely: Species not observed on the site, and would not be expected to occur there except, perhaps, as a transient.
Absent: Species not observed on the site, and precluded from occurring there because habitat requirements not met.

STATUS CODES

FE	Federally Endangered	CE	California Endangered
FT	Federally Threatened	CT	California Threatened
FPE	Federally Endangered (Proposed)	CFP	California Protected
FC	Federal Candidate	CSC	California Species of Special Concern

CNPS	California Native Plant Society Listing
1A	Plants Presumed Extinct in California
1B	Plants Rare, Threatened, or Endangered in California and elsewhere
2	Plants Rare, Threatened, or Endangered in California, but more common elsewhere
3	Plants about which we need more information – a review list
4	Plants of limited distribution – a watch list

2.5 ENDANGERED, THREATENED, OR SPECIAL STATUS PLANT AND ANIMAL SPECIES MERITING FURTHER DISCUSSION

2.5.1 San Joaquin Kit Fox (*Vulpes macrotus mutica*). Federal Listing Status: Endangered; State Listing Status: Threatened.

Ecology of the species. The San Joaquin kit fox (SJKF) historically occupied the dry plains of the San Joaquin Valley, from San Joaquin County to southern Kern County (Grinnell et al. 1937), but has been extirpated from much of its historical range. Today, it occurs in remnant grassland and scrub habitats of the San Joaquin Valley, and in three "core populations" identified as the natural lands of western Kern County, the Carrizo Plain Natural Area in San Luis Obispo County, and the Ciervo-Panoche Natural Area in western Fresno and eastern San Benito Counties (USFWS 1998). Kit fox may also be found in urban settings and in areas adjacent to tilled or fallow fields (USFWS 1998). Kit fox require underground dens to raise pups, regulate body temperature, and avoid predators and other adverse environmental conditions (Golightly and Ohmart 1984). In the central portion of their range, they usually occupy burrows excavated by small mammals such as California ground squirrels. The SJKF is primarily carnivorous, feeding on black-tailed hares, desert cottontails, rodents, insects, reptiles, and some birds.

Potential to occur onsite. The site's intensively maintained habitats are marginal to unsuitable for the San Joaquin kit fox. Nonetheless, a substantial number of burrows occur on site, including two that were observed to be of suitable dimensions for the kit fox during the field survey. There are 45 documented occurrences of SJKF within 10 miles of the project site (see Figure 5). Of these, only two occurrences were recorded in the last 20 years, one in 2004 and the other in 2005. The lack of recent detections, combined with the fact that the project site is situated approximately 30 miles northeast of the nearest kit fox core population in the Lokern Natural Area, suggests a fairly low potential for kit fox occurrence in the project vicinity. However, should dispersing individuals pass through the vicinity, they could potentially den or forage on site.

2.6 DESIGNATED CRITICAL HABITAT

The USFWS often designates areas of "critical habitat" when it lists species as threatened or endangered. Critical habitat is a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection.

Designated critical habitat is absent from the project site and immediately surrounding lands. The closest unit of critical habitat is located approximately 6 miles northwest of the site in the Pixley Wildlife Refuge, and is designated for the protection of the vernal pool fairy shrimp (*Branchinecta lynchi*) (USFWS 2020).

2.7 SENSITIVE NATURAL COMMUNITIES

California contains a wide range of natural communities, or unique assemblages of plants and animals. These communities have largely been classified and mapped by CDFW as part of its natural heritage program. Natural communities are assigned state and global ranks according to their rarity and the magnitude and trend of the threats they face. Any natural community with a state rank of 1 to 3 (on a 1 to 5 scale) is considered "sensitive" and must be considered in CEQA review. Examples of sensitive natural communities in the San Joaquin Valley are northern hardpan vernal pool, sycamore alluvial woodland, valley oak woodland, and valley sink scrub.

Sensitive natural communities are absent from the project site and neighboring lands.

2.8 JURISDICTIONAL WATERS

As will be discussed in greater detail in Section 3.2.4, the U.S. Army Corps of Engineers (USACE) has regulatory authority over certain rivers, creeks, lakes, ponds, reservoirs, wetlands, and in some cases irrigation canals ("Waters of the U.S."). The CDFW has jurisdiction over waters in California that have a defined bed and bank, including engineered channels that replace natural drainages. The State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs) assert jurisdiction over California's surface water and groundwater.

The site contains an agricultural basin that is unlikely to fall under the jurisdiction of the USACE due to its hydrologic isolation from a known or potential Waters of the U.S. It is unlikely to be regulated by the CDFW, since there is no channel or defined bed and bank present. However, the basin may fall under the jurisdiction of the RWQCB as a water of the state.

2.9 WILDLIFE MOVEMENT CORRIDORS

Wildlife movement corridors are routes that animals regularly and predictably follow during seasonal migration, dispersal from native ranges, daily travel within home ranges, and inter-population movements. Movement corridors in California are typically associated with valleys, ridgelines, and rivers and creeks supporting riparian vegetation.

The project site does not contain features that would be likely to function as wildlife movement corridors. However, the Pacific flyway, one of four major bird migration routes in North America, passes over the site and much of the rest of California.

3.0 IMPACTS AND MITIGATIONS

3.1 SIGNIFICANCE CRITERIA

In California, any project carried out or approved by a public agency that will result in a direct or reasonably foreseeable indirect physical change in the environment must comply with CEQA. The purpose of CEQA is to ensure that a project's potential impacts on the environment are evaluated, and methods for avoiding or reducing these impacts are considered, before the project is allowed to move forward. A secondary aim of CEQA is to provide justification to the public for the approval of any projects involving significant impacts on the environment.

According to Section 15382 of the CEQA Guidelines, a significant effect on the environment means a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic interest." Although the lead agency may set its own CEQA significance thresholds, project impacts to biological resources are generally considered to be significant if they would meet any of the following criteria established in Appendix G of the CEQA Guidelines:

- 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 CDFW or USFWS.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by CDFW or USFWS.
- Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Furthermore, CEQA Guidelines Section 15065(a) requires the lead agency to make "mandatory findings of significance" if there is substantial evidence that a project may:

- Substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of an endangered, rare or threatened species.

- Achieve short-term environmental goals to the detriment of long-term environmental goals.

- Produce environmental effects that are individually limited but cumulatively considerable, meaning that the incremental effects of the project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects.

3.2 RELEVANT GOALS, POLICIES, AND LAWS

3.2.1 Threatened and Endangered Species

In California, imperiled plants and animals may be afforded special legal protections under the California Endangered Species Act (CESA) and/or Federal Endangered Species Act (FESA). Species may be listed as "threatened" or "endangered" under one or both Acts, and/or as "rare" under CESA. Under both Acts, "endangered" means a species is in danger of extinction throughout all or a significant portion of its range, and "threatened" means a species is likely to become endangered within the foreseeable future. Under CESA, "rare" means a species may become endangered if their present environment worsens. Both Acts prohibit "take" of listed species, defined under CESA as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill" (California Fish and Game Code, Section 86), and more broadly defined under FESA to include "harm" (16 USC, Section 1532(19), 50 CFR, Section 17.3).

When state and federally listed species have the potential to be impacted by a project, the USFWS and CDFW must be included in the CEQA process. These agencies review the environmental document to determine the adequacy of its treatment of endangered species issues

and to make project-specific recommendations for the protection of listed species. Similarly, NEPA projects that may impact federally listed species must include the USFWS in the environmental review process. Projects that may result in the "take" of listed species must generally enter into consultation with the USFWS and/or CDFW pursuant to FESA and CESA, respectively. In some cases, incidental take authorization(s) from these agencies may be required before the project can be implemented.

3.2.2 California Fully Protected Species

The classification of certain animal species as "fully protected" was the State of California's initial effort in the 1960s, prior to the passage of the California Endangered Species Act, to identify and provide additional protection to those species that were rare or faced possible extinction. Following CESA enactment in 1970, many fully protected species were also listed as California threatened or endangered. The list of fully protected species are identified, and their protections stipulated, in California Fish and Game Code Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and fish (5515). Fully protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take, except in conjunction with necessary scientific research and protection of livestock.

3.2.3 Wetlands and Other Jurisdictional Waters

The USACE regulates the filling or grading of waters of the U.S. under the authority of Section 404 of the Clean Water Act (CWA). Drainage channels and adjacent wetlands may be considered "waters of the United States" or "jurisdictional waters" subject to the jurisdiction of the USACE.

Waters of the U.S. are defined by the Navigable Waters Protection Rule. The new rule was published in the Federal Register on April 21, 2020, and took effect on June 22, 2020.

The Navigable Waters Protection Rule (33 CFR Part 328) identifies four categories of Waters of the U.S.: (1) territorial seas and traditional navigable waters, (2) tributaries, (3) lakes, ponds, and impoundments of jurisdictional waters, and (4) adjacent wetlands. These categories are defined as follows:

Territorial Seas and Traditional Navigable Waters (TNWs)

- The territorial seas and traditional navigable waters include large rivers and lakes and tidally-influenced waterbodies used in interstate or foreign commerce.

Tributaries

- Tributaries include perennial and intermittent rivers and streams that contribute surface flow to traditional navigable waters in a typical year. These naturally occurring surface water channels must flow more often than just after a single precipitation event—that is, tributaries must be perennial or intermittent.

- Tributaries can connect to a traditional navigable water or territorial sea in a typical year either directly or through other "waters of the United States," through channelized non-jurisdictional surface waters, through artificial features (including culverts and spillways), or through natural features (including debris piles and boulder fields).

- Ditches are to be considered tributaries only where they satisfy the flow conditions of the perennial and intermittent tributary definition and either were constructed in or relocate a tributary or were constructed in an adjacent wetland and contribute perennial or intermittent flow to a traditional navigable water in a typical year.

Lakes, Ponds, and Impoundments of Jurisdictional Waters

- Lakes, ponds, and impoundments of jurisdictional waters are jurisdictional where they contribute surface water flow to a traditional navigable water or territorial sea in a typical year either directly or through other "waters of the United States," through channelized non-jurisdictional surface waters, through artificial features (including culverts and spillways), or through natural features (including debris piles and boulder fields).

- Lakes, ponds, and impoundments of jurisdictional waters are also jurisdictional where they are flooded by a "water of the United States" in a typical year, such as certain oxbow lakes that lie along the Mississippi River.

Adjacent Wetlands

- Wetlands that physically touch other jurisdictional waters are "adjacent wetlands,"

- Wetlands separated from a "water of the United States" by only a natural berm, bank or dune are also "adjacent."

- Wetlands inundated by flooding from a "water of the United States" in a typical year are "adjacent."

- Wetlands that are physically separated from a jurisdictional water by an artificial dike, barrier, or similar artificial structure are "adjacent" so long as that structure allows for a direct hydrologic surface connection between the wetlands and the jurisdictional water in

a typical year, such as through a culvert, flood or tide gate, pump, or similar artificial feature.

- An adjacent wetland is jurisdictional in its entirety when a road or similar artificial structure divides the wetland, as long as the structure allows for a direct hydrologic surface connection through or over that structure in a typical year.

The final rule also outlines what are not "waters of the United States." The following waters/features are not jurisdictional under the rule:

- Waterbodies that are not included in the four categories of "waters of the United States" listed above.

- Groundwater, including groundwater drained through subsurface drainage systems, such as drains in agricultural lands.

- Ephemeral features, including ephemeral streams, swales, gullies, rills, and pools.

- Diffuse stormwater run-off and directional sheet flow over upland.

- Many farm and roadside ditches.

- Prior converted cropland retains its longstanding exclusion, but is defined for the first time in the final rule. The agencies are clarifying that this exclusion will cease to apply when cropland is abandoned (i.e., not used for, or in support of, agricultural purposes in the immediately preceding five years) and has reverted to wetlands.

- Artificially irrigated areas, including fields flooded for agricultural production, that would revert to upland should application of irrigation water to that area cease.

- Artificial lakes and ponds, including water storage reservoirs and farm, irrigation, stock watering, and log cleaning ponds, constructed or excavated in upland or in non-jurisdictional waters.

- Water-filled depressions constructed or excavated in upland or in non-jurisdictional waters incidental to mining or construction activity, and pits excavated in upland or in non-jurisdictional waters for the purpose of obtaining fill, sand, or gravel.

- Stormwater control features excavated or constructed in upland or in non-jurisdictional waters to convey, treat, infiltrate, or store stormwater run-off.

- Groundwater recharge, water reuse, and wastewater recycling structures, including detention, retention and infiltration basins and ponds, that are constructed in upland or in non-jurisdictional waters.

- Waste treatment systems have been excluded from the definition of "waters of the United States" since 1979 and will continue to be excluded under the final rule. Waste treatment systems include all components, including lagoons and treatment ponds (such as settling or cooling ponds), designed to either convey or retain, concentrate, settle, reduce, or remove pollutants, either actively or passively, from wastewater or stormwater prior to discharge (or eliminating any such discharge).

All activities that involve the discharge of dredge or fill material into waters of the U.S. are subject to the permit requirements of the USACE. Such permits are typically issued on the condition that the applicant agrees to provide mitigation that result in no net loss of wetland functions or values. No permit can be issued until the RWQCB issues a Section 401 Water Quality Certification (or waiver of such certification) verifying that the proposed activity will meet state water quality standards.

Under the Porter-Cologne Water Quality Control Act of 1969, the State Water Resources Control Board has regulatory authority to protect the water quality of all surface water and groundwater in the State of California ("Waters of the State"). Nine RWQCBs oversee water quality at the local and regional level. The RWQCB for a given region regulates discharges of fill or pollutants into waters of the State through the issuance of various permits and orders. Discharges into waters of the State that are also waters of the U.S. require a Section 401 Water Quality Certification from the RWQCB as a prerequisite to obtaining certain federal permits, such as a Section 404 Clean Water Act permit. Discharges into all Waters of the State, even those that are not also waters of the U.S., require Waste Discharge Requirements (WDRs), or waivers of WDRs, from the RWQCB. The RWQCB also administers the Construction Storm Water Program and the federal National Pollution Discharge Elimination System (NPDES) program. Projects that disturb one or more acres of soil must obtain a Construction General Permit under the Construction Storm Water Program. A prerequisite for this permit is the development of a Storm Water Pollution Prevention Plan (SWPPP) by a certified Qualified SWPPP Developer. Projects that discharge wastewater, storm water, or other pollutants into a water of the U.S. may require a NPDES permit.

CDFW has jurisdiction over the bed and bank of natural drainages and lakes according to provisions of Section 1601 and 1602 of the California Fish and Game Code. Activities that may substantially modify such waters through the diversion or obstruction of their natural flow,

change or use of any material from their bed or bank, or the deposition of debris require a Notification of Lake or Streambed Alteration. If CDFW determines that the activity may adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will be prepared. Such an agreement typically stipulates that certain measures will be implemented to protect the habitat values of the lake or drainage in question.

3.2.4 Migratory Birds

The Federal Migratory Bird Treaty Act (FMBTA: 16 USC 703-712) prohibits killing, possessing, or trading in any bird species covered in one of four international conventions to which the United States is a party, except in accordance with regulations prescribed by the Secretary of the Interior. The name of the act is misleading, as it actually covers almost all birds native to the United States, even those that are non-migratory. The FMBTA encompasses whole birds, parts of birds, and bird nests and eggs.

Native birds are also protected under California state law. The California Fish and Game Code makes it unlawful to take or possess any non-game bird covered by the FMBTA (Section 3513), as well as any other native non-game bird (Section 3800), even if incidental to lawful activities. Moreover, the California Migratory Bird Protection Act, enacted in September 2019, clarifies native bird protection and increases protections where California law previously deferred to federal law.

3.2.5 Birds of Prey

Birds of prey are protected in California under provisions of the Fish and Game Code (Section 3503.5), which states that it is unlawful to take, possess, or destroy any birds in the order Falconiformes (hawks and eagles) or Strigiformes (owls), as well as their nests and eggs. The bald eagle and golden eagle are afforded additional protection under the federal Bald and Golden Eagle Protection Act (16 USC 668), which makes it unlawful to kill birds or their eggs.

3.2.6 Nesting Birds

In California, protection is afforded to the nests and eggs of all birds. California Fish and Game Code (Section 3503) states that it is "unlawful to take, possess, or needlessly destroy the nest or eggs of any bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Breeding-season disturbance that causes nest abandonment and/or loss of reproductive effort is considered a form of "take" by the CDFW.

3.2.7 General Plan Policies of Kern County

The Kern County General Plan (2009) provides the County direction in project planning and approval with respect to transportation, housing, energy, noise, safety, land use, open space, conservation, and the Kern River corridor. The Plan is implemented via a number of goals and corresponding policies. Goals and policies relevant to the current project are derived primarily from the Land Use, Open Space, and Conservation element of the General Plan, and include provisions to minimize the alteration of natural drainage areas, conserve areas along rivers and streams, protect threatened and endangered species, and educate property owners about endangered species laws and associated mitigation programs.

3.2.8 Habitat Conservation Plans and Natural Community Conservation Plans

Section 10 of the federal Endangered Species Act establishes a process by which non-federal projects can obtain authorization to incidentally take listed species, provided take is minimized and thoroughly mitigated. A Habitat Conservation Plan (HCP), developed by a project applicant in collaboration with the USFWS and/or NMFS, ensures that such minimization and mitigation will occur, and is a prerequisite to the issuance of a federal incidental take permit. Similarly, a Natural Community Conservation Plan (NCCP), developed by a project applicant in collaboration with CDFW, provides for the conservation of biodiversity within a project area, and permits limited incidental take of state-listed species.

3.3 POTENTIALLY SIGNIFICANT PROJECT IMPACTS AND ASSOCIATED MITIGATION

As described in Section 1.0 of this report, the project is the subdivision of a 75.5-acre property in Delano into 281 residential lots, with anticipated full buildout of the site.

3.3.1 Potential Project Impacts to San Joaquin Kit Fox

Potential Impacts. As discussed, the project site is marginal to unsuitable for the SJKF and there are no recent known kit fox occurrences in the vicinity. However, the kit fox is a wide-ranging species, and it is at least theoretically possible that individuals pass through the site from time to time. In the event that a kit fox were found on site at the time of future residential buildout, it could be at risk of construction-related injury or mortality. Mortality of kit fox individuals would be a violation of state and federal law, and would constitute a significant impact of the project under CEQA.

Because the intensively-maintained habitats of the project site are of low value for this species under existing conditions, and because similar to higher quality habitats are regionally abundant, kit fox individuals and populations will not be adversely affected from project-related loss of habitat. Loss of habitat for the SJKF is not considered a significant impact of the project under CEQA.

Mitigation. The following measures derived from the USFWS 2011 *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance* (Appendix E) will be implemented:

> ***Mitigation Measure 3.3.1a (Preconstruction Surveys).*** Preconstruction surveys for the San Joaquin kit fox shall be conducted on and within 200 feet of the project site, no less than 14 days and no more than 30 days prior to the beginning of initial ground disturbance activities on the site. The primary objective is to identify kit fox habitat features (e.g., potential dens and refugia) on the project site and evaluate their use by kit foxes. If an active kit fox den is detected within or immediately adjacent to the area of work, the USFWS shall be contacted immediately to determine the best course of action. Preconstruction surveys will be repeated following any lapses in construction of 30 days or more.

Mitigation Measure 3.3.1b (Avoidance of Active Dens). Should active kit fox dens be detected during preconstruction surveys, the Sacramento Field Office of the USFWS and the Fresno Field Office of CDFW will be notified. A disturbance-free buffer will be established around the burrows in consultation with the USFWS and CDFW, to be maintained until an agency-approved biologist has determined that the burrows have been abandoned.

Mitigation Measure 3.3.1c (Minimization). Future construction activities will observe all minimization measures presented in the *USFWS Standardized Recommendations*. Such measures include, but are not limited to: restriction of construction-related vehicle traffic to established roads, construction areas, and other designated areas; inspection and covering of structures (e.g., pipes), as well as installation of escape structures, to prevent the inadvertent entrapment of kit foxes; restriction of rodenticide and herbicide use; and proper disposal of food items and trash. See Appendix E for more details.

Mitigation Measure 3.3.1d (Employee Education Program). Prior to the start of future construction activities, the applicant will retain a qualified biologist to conduct a tailgate training for all construction staff on the San Joaquin kit fox. This training will include a description of the kit fox and its habitat needs; a report of the occurrence of kit fox in the project site; an explanation of the status of the species and its protection under the Endangered Species Act; and a list of the measures being taken to reduce impacts to the species during construction. Attendees will be provided a handout with all of the training information included in it. The applicant will use this handout to train any construction personnel that were not in attendance at the first meeting, prior to those personnel starting work on the site.

Mitigation Measure 3.3.1e (Mortality Reporting). The Sacramento Field Office of the USFWS and the Fresno Field Office of CDFW will be notified in writing within three working days in case of the accidental death or injury to a San Joaquin kit fox during construction. Notification must include the date, time, location of the incident or of the finding of a dead or injured animal, and any other pertinent information.

Implementation of the above measures will reduce potential project-related impacts to the San Joaquin kit fox to a less than significant level under CEQA, and will ensure that future construction activities are carried out in compliance with state and federal laws protecting this species.

3.3.2 Potential Project Impacts to Nesting Migratory Birds and Raptors, Including the Loggerhead Shrike

Potential Impacts. A variety of common avian species protected under the FMBTA and related state laws have the potential to nest on or adjacent to the project site. The orchard trees could be

used by the American robin, mourning dove, and possibly even the loggerhead shrike, a California Species of Special Concern. The disturbance-tolerant killdeer may nest on bare dirt or gravel surfaces of the site's ruderal areas. The on-site mature English walnut tree contains cavities and hollow branches, offering suitable nesting habitat for a variety of avian species, possibly including raptors such as the red-tailed hawk *(Buteo jamaicensis*) or American kestrel (*Falco sparverius*). Swainson's hawk is unlikely to nest on site, but could conceivably nest elsewhere in the project vicinity and be disturbed by future residential construction.

If future residential buildout occurs during the nesting season, birds nesting within the project site could be injured or killed by construction activities, while birds nesting adjacent to the project site could be disturbed such that they would abandon their nests. Activities that cause nest abandonment or mortality of migratory birds or raptors would be a violation of the FMBTA and related state laws, and would constitute a significant impact of the project under CEQA.

The project will not result in the loss of important nesting habitat for the loggerhead shrike or any other special status avian species. Loss of habitat for special status birds is not a significant impact of the project under CEQA.

Mitigation. The following measures will be implemented in order to minimize construction disturbance to active migratory bird nests:

> ***Measure 3.3.2a (Avoidance).*** If feasible, future tree removal and residential buildout will occur outside of the avian nesting season, typically defined as February 1 to August 31.
>
> ***Measure 3.3.2b (Preconstruction Surveys*).** If future tree removal or construction activities are to occur between February 1 and August 31, a qualified biologist will conduct pre-construction surveys on and within 250 feet of the project area for active migratory bird nests within 30 days prior to the start of work. The survey will extend out to 500 feet for raptors, and ½ mile for Swainson's hawk, where accessible. Should any active nests be discovered in or near proposed construction zones, the biologist will identify a suitable construction-free buffer around the nest. This buffer will be identified on the ground with flagging or fencing, and will be maintained until the biologist has determined that the young have fledged and are capable of foraging independently.

Implementation of the above measures will reduce potential project-related impacts to the loggerhead shrike and other migratory birds and raptors to a less than significant level under

CEQA, and will ensure that future construction activities are carried out in compliance with state and federal laws protecting these species.

3.3.3 Potential Project Impacts to Roosting Bats

Potential Impacts. The site's solitary English walnut tree has the potential to be used by roosting bats, possibly including the pallid bat, a California Species of Special Concern. If this tree contains bat maternity colonies at the time of its removal, many individual bats could be killed. Such a mortality event would be considered a potentially significant project-related impact under CEQA.

The loss of a single potential roost tree in a landscape heavily modified and frequently disturbed by anthropogenic uses is not expected to adversely affect individuals or populations of the pallid bat. Loss of habitat for special status bats is not a significant impact of the project under CEQA.

Mitigation. The following measures will be implemented for the protection of roosting bats:

> ***Mitigation Measure 3.3.3a (Temporal Avoidance).*** To avoid potential impacts to maternity bat roosts, and if feasible, future removal of the site's English walnut tree should occur outside of the period between April 1 and September 30, the time frame within which colony-nesting bats generally assemble, give birth, nurse their young, and ultimately disperse.
>
> ***Mitigation Measure 3.3.3b (Preconstruction Surveys).*** If removal of the walnut tree must occur between April 1 and September 30 (general maternity bat roost season), then within 30 days prior to scheduled removal, a qualified biologist will conduct a survey for roosting bats. The biologist will visually inspect all potential roost sites for individual bats, guano, and staining, and will listen for bat vocalizations. If necessary, the biologist will wait for nighttime emergence of bats from roost sites. If no bats are observed to be roosting or breeding, then no further action would be required, and removal of the walnut tree could proceed.
>
> ***Mitigation Measure 3.3.3c (Minimization).*** If a non-breeding bat colony is found in the English walnut tree, the individuals will be humanely evicted from the tree, under the direction of a qualified biologist, to ensure that no harm or "take" of any bats occurs as a result of construction activities.
>
> ***Mitigation Measure 3.3.3d (Avoidance of Maternity Roosts)***. If a maternity colony is detected during preconstruction surveys, a disturbance-free buffer will be established around the colony and remain in place until a qualified biologist determines that the

nursery is no longer active. The disturbance-free buffer will range from 50 to 100 feet as determined by the biologist.

Implementation of the above measures will reduce potential project-related impacts to roosting bats to a less than significant level under CEQA.

3.4 LESS THAN SIGNIFICANT PROJECT IMPACTS

3.4.1 Project Impacts to Special Status Plants

Potential Impacts. Fifteen special status plant species have been documented in the project vicinity (see Table 1). These plant species are absent from the project site due the absence of suitable habitat and/or the project site's being situated outside of the elevational range of the species. Project impacts to these special status plant species are considered less than significant under CEQA.

Mitigation. Mitigation is not warranted.

3.4.2 Project Impacts to Special Status Animals Absent or Unlikely to Occur on the Project Site

Potential Impacts. Of the 19 special status animal species potentially occurring in the region, 15 species would be absent or unlikely to occur within the project site due to the absence of suitable habitat and/or the project site's being situated outside of the species' known distribution. These species include the blunt-nosed leopard lizard (*Gambelia sila*), western snowy plover (*Charadrius alexandrines nivosus*), tricolored blackbird (*Agelaius tricolor*), Swainson's hawk, Tipton kangaroo rat (*Dipodomys nitratoides nitratoides),* Nelson's antelope squirrel (*Ammospermophilus nelsonii*), western spadefoot (*Spea hammondii*), western pond turtle (*Actineyms marmorata*), San Joaquin coachwhip (*Coluber flagellum ruddocki*), Bakersfield legless lizard (*Anniella grinelli*), coast horned lizard (*Phrynosoma blainvillii*), Kern Brook lamprey (*Lampetra hubbsi*), burrowing owl (*Athene cunicularia*), mountain plover (*Charadrius montanus*), and American badger (*Taxidea taxus*). Potential impacts to the Swainson's hawk from construction-related disturbance were evaluated and fully mitigated in Section 3.3.2 and will not be re-addressed here. The project is not expected to impact the remaining 14 species

through construction mortality/disturbance or loss of habitat because there is little to no likelihood that they occur on the proposed residential site. Project impacts are considered less than significant under CEQA.

Mitigation. Mitigation is not warranted.

3.4.3 Project Impacts to Western Mastiff Bat (May Forage on Site but Breed Elsewhere)

Potential Impacts. One special status animal, western mastiff bat (*Eumops perotis* ssp. *californicus*), has the potential to forage over the project site from time to time, but would not breed on or immediately adjacent to the project site (see Table 1). The project does not have the potential to result in the mortality of western mastiff bat, because it is highly mobile while foraging and would be expected to fly away from construction disturbance. The project is not expected to affect the availability of flying insects on which the western mastiff bat could feed; following project construction, individuals of this species would still be able to forage over the site. Potential project impacts to the western mastiff bat are considered less than significant under CEQA.

Mitigation. Mitigation is not warranted.

3.4.4 Project Impacts to Riparian Habitat, other Sensitive Natural Communities, or Designated Critical Habitat

Potential Impacts. No riparian habitats, sensitive natural communities, or designated critical habitat occur on or immediately adjacent to the site. The project does not have the potential to impact such habitats and communities.

Mitigation. Mitigation is not warranted.

3.4.5 Project Impacts to Jurisdictional Waters and Wetlands

Potential Impacts. As discussed, the proposed residential site contains a single agricultural basin. The basin is unlikely to fall under the jurisdiction of the USACE due to its hydrologic isolation from known or potential Waters of the U.S. However, the basin may be subject to the

jurisdiction of the Central Valley RWQCB. CDFW would be unlikely to assert jurisdiction over the basin since no defined bed and bank/channel is present.

The basin is man-made and bordered by rubble and debris, providing little value as habitat for native plant and animal species. Furthermore, this feature is not important for groundwater recharge, flood control, or water quality. Potential impacts to jurisdictional waters associated with future site buildout are considered less than significant under CEQA. However, a permit may be required from the Central Valley RWQCB before this basin can be filled or otherwise impacted.

Mitigation. Mitigation is not warranted.

3.4.6 Project Impacts to Wildlife Movement Corridors

Potential Impacts. No significant waterways or other geographic features conducive to fish or wildlife movements exist on or near the project site. Project construction will not interfere substantially with wildlife movement or established movement corridors; impacts are considered less than significant under CEQA.

Mitigation. Mitigation is not warranted.

3.4.7 Consistency with Local Policies and Ordinances and Habitat Conservation Plans

Potential Impacts. The project appears to be consistent with the Kern County General Plan. The project is not subject to any Habitat Conservation Plans or Natural Community Conservation Plans.

Mitigation. Mitigation is not warranted.

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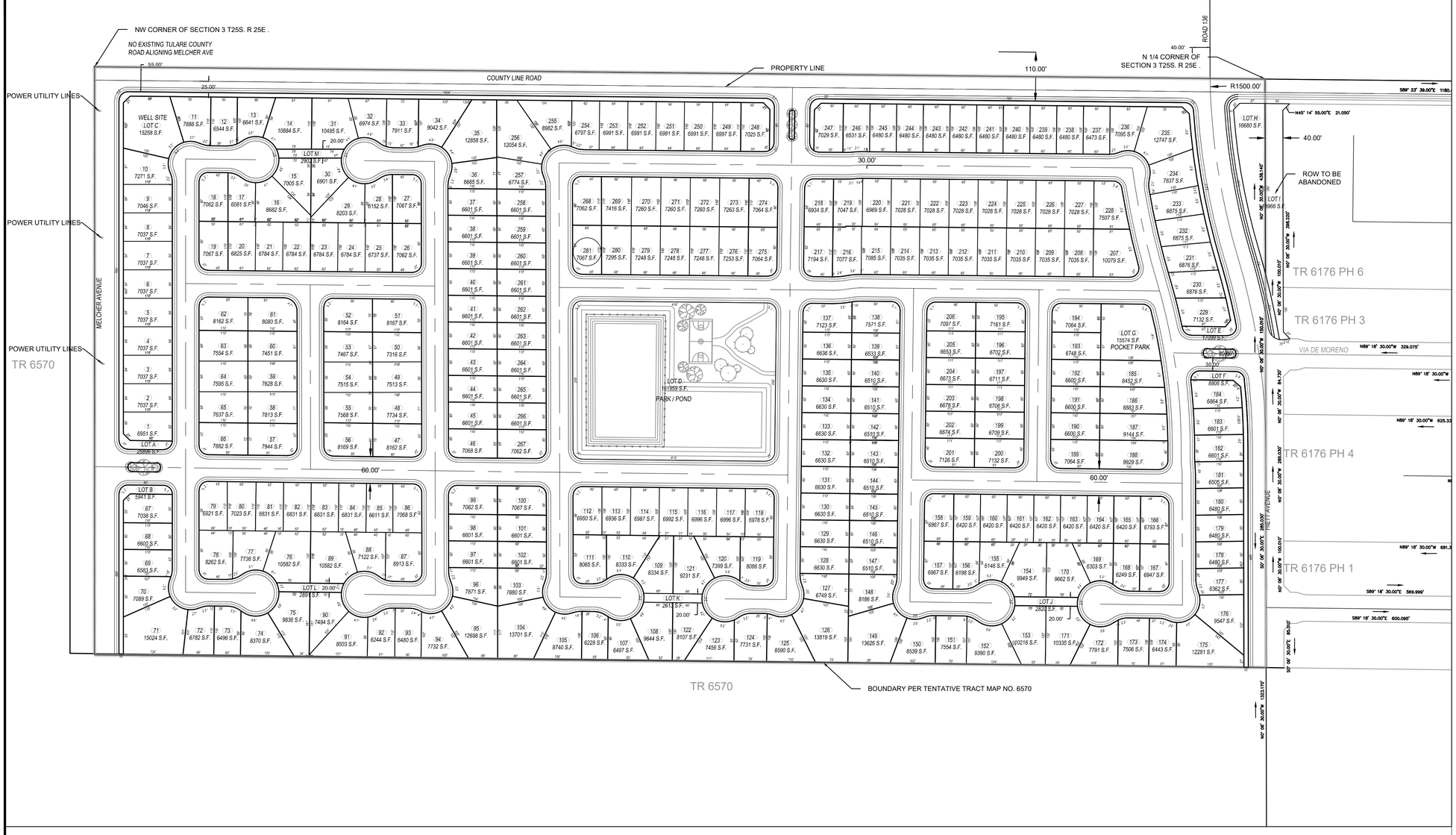
APPENDIX A: TENTATIVE SUBDIVISION MAP FOR TRACT 7379

JUNE 18, 2020

20049 - DELANO

TENTATIVE SUBDIVISION MAP

LOCATED IN THE NORTH HALF OF THE NORTHWEST QUARTER OF SECTION 3, TOWNSHIP 25 SOUTH, RANGE 25 EAST, IN THE UNINCORPORATED COUNTY OF KERN, STATE OF CALIFORNIA,
CITY OF DELANO
CONTAINING 76.36± ACRES
CONSISTING OF 294 PARCELS



LEGEND

APN:	*520-010-017*
ACREAGE:	*75.52± AC*
FLOOD ZONE:	*X*
ZONING (PROPOSED):	*R-1*
GENERAL PLAN::	*LDR*
ELECTRICITY:	*TBD*
WATER:	*CITY OF DELANO*
STORM:	*TBD*
SEWER:	*TBD*
TELEPHONE:	*TBD*
REFUSE:	*TBD*
NATURAL GAS:	*TBD*
EXISTING USE:	*VACANT*
PROPOSED USE:	*SINGLE FAMILY RESIDENTIAL*

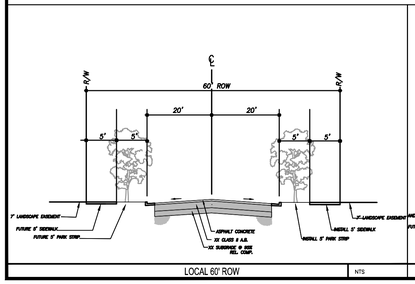
SINGLE FAMILY RESIDENTIAL LOTS

R-1:	*281 UNITS*
TYPICAL LOT SIZE:	*60 x 110*
GROSS AC:	*TBD AC (GROSS)*
NET AC:	*TBD AC (NET)*
DENSITY (GROSS)	*TBD DU/AC*
DENSITY (NET)	*TBD DU/AC*

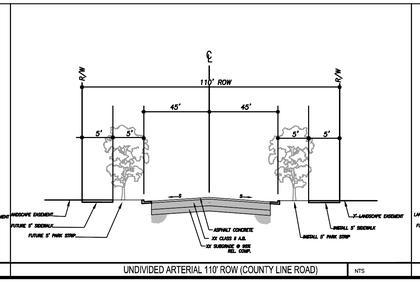
LANDSCAPE & LIGHTING DISTRICT
LOTS A-M TO BE DEDICATED TO CITY LLD

UTILITIES:

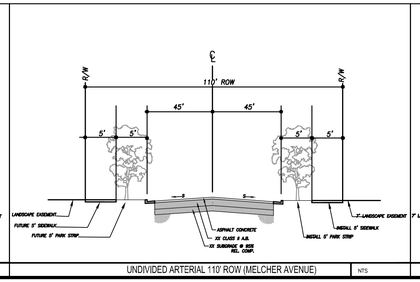
WATER	*TBD*
SEWER	*TBD*
STORM	*TBD*



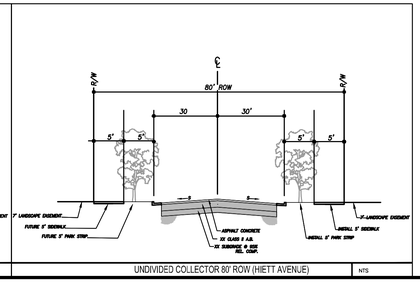
LOCAL 60' ROW | NTS



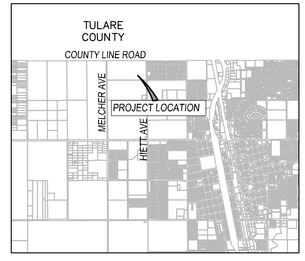
UNDIVIDED ARTERIAL 110' ROW (COUNTY LINE ROAD) | NTS



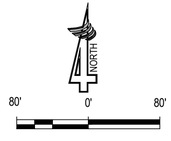
UNDIVIDED ARTERIAL 110' ROW (MELCHER AVENUE) | NTS



UNDIVIDED COLLECTOR 80' ROW (HIETT AVENUE) | NTS



VICINITY MAP



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APPENDIX B: VASCULAR PLANTS OF THE PROJECT SITE

The vascular plant species listed below were observed within the project site during a site survey conducted by Live Oak Associates, Inc. on August 11, 2020. The U.S. Fish and Wildlife Service wetland indicator status of each plant has been shown following its common name.

OBLIGATE (OBL)	Probability to occur in wetland is >99%
FACULTATIVE WETLAND (FACW)	Probability to occur in wetland is >67 to 99%
FACULTATIVE (FAC)	Probability to occur in wetland is 33 to 67%
FACULTATIVE UPLAND (FACU)	Probability to occur in wetland is 1 to <33%.
UPLAND (UPL)	Probability to occur in wetland is <1%
NI	No Investigation

AMARANTHACEAE- Amaranth Family		
Amaranthus retroflexus	Rough Pigweed	UPL
ASCLEPIADACEAE – Milkweed Family		
Asclepias fascicularis	Narrow-leaved Milkweed	UPL
ASTERACEAE - Sunflower Family		
Erigeron canadensis	Canada Horseweed	FACU
Helianthus annuus	Common Sunflower	FACU
Lactuca serriola	Prickly Lettuce	FAC
Senecio vulgaris	Common Groundsel	FACU
BRASSICACEAE - Mustard Family		
Brassica nigra	Black Mustard	UPL
CHENOPODIACEAE – Saltbush Family		
Chenopodium album	Lambs Quarters	FACU
Salsola tragus	Prickly Russian Thistle	UPL
CYPERACEAE – Sedge Family		
Cyperus rotundus	Sedge	FAC
EUPHORBIACEAE - Spurge Family		
Croton setiger	Turkey Mullein	UPL
Euphorbia prostrata	Prostrate Euphorbia	UPL
FABACEAE - Pea Family		
Medicago polymorpha	California Burclover	FACU
GERANIACEAE – Geranium Family		
Erodium botrys	Broad-leaf Filaree	UPL
Erodium cicutarium	Red-stemmed Filaree	UPL
LAMIACEAE - Mint Family		
Lamium amplexicaule	Henbit	UPL
MALVACEAE – Mallow Family		

Malva neglecta	Common Mallow	UPL
POACEAE - Grass Family		
Avena fatua	Wild Oat	UPL
Bromus diandrus	Ripgut	UPL
Bromus hordeaceous	Soft Chess	FACU
Bromus rubens	Red Brome	UPL
Cynodon dactylon	Bermuda Grass	FACU
Echinochloa crus-galli	Barnyard Grass	FACW
Hordeum marinum	Barnyard Barley	FACU
Leptochloa fusca	Bearded Sprangletop	FACW
Poa annua	Annual Bluegrass	FAC
Polypogon monspeliensis	Rabbit's Foot Grass	FACW
Sorghum halapense	Johnson grass	FACU
POLYGONACEAE – Buckwheat Family		
Polygonum aviculare	Common Knotweed	
ROSACEAE – Rose Family		
Prunis dulcis	Cultivated Almond	UPL
XYGOPHYLLACEAE – Puncture Vine Family		
Tribulus terrestris	Puncture Vine	UPL

APPENDIX C: TERRESTRIAL VERTEBRATE SPECIES THAT POTENTIALLY OCCUR ON THE PROJECT SITES

The species listed below are those that may reasonably be expected to use the habitats of the project sites routinely or from time to time. The list was not intended to include birds that are vagrants or occasional transients. Terrestrial vertebrate species observed in or adjacent to the project sites during the survey conducted by Live Oak Associates, Inc. on August 11, 2020 have been noted with an asterisk.

CLASS: AMPHIBIA (Amphibians)
ORDER: SALIENTIA (Frogs and Toads)
FAMILY: BUFONIDAE (True Toads)
Western Toad (*Bufo boreas*)
FAMILY: HYLIDAE (Treefrogs and relatives)
Pacific Chorus Frog (*Pseudacris sierra*)
FAMILY: RANIDAE (True Frogs)
Bullfrog (*Rana catesbeiana*)

CLASS: REPTILIA (Reptiles)
ORDER: SQUAMATA (Lizards and Snakes)
SUBORDER: SAURIA (Lizards)
FAMILY: PHRYNOSOMATIDAE
Western Fence Lizard (*Sceloporus occidentalis*)
Side-blotched Lizard (*Uta stansburiana*)
SUBORDER: SERPENTES (Snakes)
FAMILY: COLUBRIDAE (Colubrids)
Gopher Snake (*Pituophis melanoleucus*)
Common Kingsnake (*Lampropeltis getulus*)
Common Garter Snake (*Thamnophis sirtalis*)
FAMILY: VIPERIDAE (Vipers)
Western Rattlesnake (*Crotalus viridis*)

CLASS: AVES (Birds)
ORDER: CICONIIFORMES (Herons, Storks, Ibises and Relatives)
FAMILY: ARDEIDAE (Herons and Bitterns)
Great Blue Heron (*Ardea herodias*)
Great Egret (*Ardea alba*)
Snowy Egret (*Egretta thula*)
Cattle Egret (*Bubulcus ibis*)
Green Heron (*Butorides virescens*)
FAMILY: CATHARTIDAE (American Vultures)
Turkey Vulture (*Cathartes aura*)
ORDER: ANSERIFORMES (Screamers, Ducks and Relatives)
FAMILY: ANATIDAE (Swans, Geese and Ducks)

Canada Goose (*Branta canadensis*)
Mallard (*Anas platyrhynchos*)

ORDER: FALCONIFORMES (Vultures, Hawks, and Falcons)

FAMILY: ACCIPITRIDAE (Hawks, Old World Vultures, and Harriers)

Red-tailed Hawk (*Buteo jamaicensis*)
Sharp-Shinned Hawk (*Accipiter striatus*)
Cooper's Hawk (*Accipiter cooperii*)
Red-Shouldered Hawk (*Buteo lineatus*)

FAMILY: FALCONIDAE (Caracaras and Falcons)

*American Kestrel (*Falco sparverius*)

ORDER: GRUIFORMES (Cranes, Rails, and Allies)

FAMILY: RALLIDAE (Rails, Gallinules, and Coots)

American Coot (*Fulica americana*)

ORDER: CHARADRIIFORMES (Shorebirds, Gulls, and relatives)

FAMILY: CHARADRIIDAE (Plovers and relatives)

*****Killdeer (*Charadrius vociferus*)

FAMILY: COLOPACIDAE (Sandpipers and Relatives)

Greater Yellowlegs (*Tringa melanoleuca*)
Least Sandpiper (*Calidris minutilla*)

FAMILY: LARIDAE (Skuas, Gulls, Terns and Skimmers)

Ring-billed Gull (*Larus delawarensis*)
California Gull (*Larus californicus*)

ORDER: COLUMBIFORMES (Pigeons and Doves)

FAMILY: COLUMBIDAE (Pigeons and Doves)

Rock Dove (*Columba livia*)
*Eurasian Collared Dove (*Streptopelia decaocto*)
*Mourning Dove (*Zenaida macroura*)

ORDER: STRIGIFORMES (Owls)

FAMILY: TYTONIDAE (Barn Owls)

Common Barn Owl (*Tyto alba*)

FAMILY: STRIGIDAE (Typical Owls)

Great Horned Owl (*Bubo virginianus*)

ORDER: APODIFORMES (Swifts and Hummingbirds)

FAMILY: TROCHILIDAE (Hummingbirds)

Anna's Hummingbird (*Calypte anna*)
Rufous Hummingbird (*Selasphorus rufus*)
Black-chinned Hummingbird (*Archilochus alexandri*)

ORDER: PICIFORMES (Woodpeckers and relatives)

FAMILY: PICIDAE (Woodpecker and Wrynecks)

Northern Flicker (*Colaptes chrysoides*)
Downy Woodpecker (*Picoides pubescens*)
Nuttall's Woodpecker (*Picoides nuttallii*)
Acorn Woodpecker (*Melanerpes formicivorus*)

ORDER: PASSERIFORMES (Perching Birds)

FAMILY: TYRANNIDAE (Tyrant Flycatchers)

Loggerhead Shrike (*Lanius ludovicianus*)

*Black Phoebe (*Sayornis nigricans*)
Say's Phoebe (*Sayornis saya*)
Western Kingbird (*Tyrannus verticalis*)

FAMILY: CORVIDAE (Jays, Magpies, and Crows)

*California Scrub Jay (*Aphelocoma californica*)
*American Crow (*Corvus brachyrhynchos*)
Common Raven (*Corvus corax*)

FAMILY: ALAUDIDAE (Larks)

Horned Lark (*Eremophila alpestris*)

FAMILY: HIRUNDINIDAE (Swallows)

Tree Swallow (*Tachycineta bicolor*)
Cliff Swallow (*Hirundo pyrrhonota*)
Barn Swallow (*Hirundo rustica*)

FAMILY: PARIDAE (Titmice and Relatives)

Oak Titmouse (*Baeolophus inornatus*)

FAMILY: AEGITHALIDAE (Bushtit)

Bushtit (*Psaltriparus minimus*)

FAMILY: TROGLODYTIDAE (Wrens)

House Wren (*Troglodytes aedon*)
Bewick's Wren (*Thryomanes bewickii*)

FAMILY: REGULIDAE (Kinglets)

Ruby-Crowned Kinglet (*Regulus calendula*)

FAMILY: TURDIDAE (Thrushes)

Western Bluebird (*Sialia mexicana*)
*American Robin (*Turdus migratorius*)

FAMILY: MIMIDAE (Mockingbirds and Thrashers)

*Northern Mockingbird (*Mimus polyglottos*)

FAMILY: STURNIDAE (Starlings)

*European Starling (*Sturnus vulgaris*)

FAMILY: MOTACILLIDAE (Wagtails and Pipits)

American Pipit (*Anthus rubescens*)

FAMILY: BOMBYCILLIDAE (Waxwings)

Cedar Waxwing (*Bombycilla cedrorum*)

FAMILY: PTILOGONATIDAE (Silky Flycatchers)

Phainopepla (*Phainopepla nitens*)

FAMILY: PARULIDAE (Wood Warblers and Relatives)

Orange-Crowned Warbler (*Vermivora celata*)
Yellow-Rumped Warbler (*Dendroica coronata*)

FAMILY: THRAUPIDAE (Tanagers)

Western Tanager (*Piranga ludoviciana*)

FAMILY: EMBERIZIDAE (Emberizines)

Spotted Towhee (*Pipilo maculatus*)
Lark Sparrow (*Chondestes grammacus*)
Savannah Sparrow (*Passerculus sandwichensis*)
*Song Sparrow (*Melospiza melodia*)
White-Crowned Sparrow (*Zonotrichia leucophrys*)

*Golden-Crowned Sparrow (*Zonotrichia atricapilla*)
Dark-Eyed Junco (*Junco hyemalis*)

FAMILY: ICTERIDAE (Blackbirds, Orioles and Allies)

Red-winged Blackbird (*Agelaius phoeniceus*)
Western Meadowlark (*Sturnella neglecta*)
Great-Tailed Grackle (*Quiscalus mexicanus*)
Brewer's Blackbird (*Euphagus cyanocephalus*)
Brown-headed Cowbird (*Molothrus ater*)
Bullock's Oriole (*Icterus bullockii*)

FAMILY: FRINGILLIDAE (Finches)

*House Finch (*Carpodacus mexicanus*)
Lesser Goldfinch (*Carduelis psaltria*)
Lawrence's Goldfinch (*Spinus lawrencei*)
American Goldfinch (*Spinus tristis*)

FAMILY: PASSERIDAE (Old World Sparrows)

House Sparrow (*Passer domesticus*)

CLASS: MAMMALIA (Mammals)

ORDER: DIDELPHIMORPHIA (Marsupials)

FAMILY: DIDELPHIDAE (Opossums)

Virginia Opossum (*Didelphis virginiana*)

ORDER: INSECTIVORA (Insectivores)

Ornate Shrew (*Sorex ornatus*)

FAMILY: TALPIDAE (Moles)

Broad-Footed Mole (*Scapanus latimanus*)

ORDER: CHIROPTERA (Bats)

FAMILY: PHYLLOSTOMIDAE (Leaf-nosed Bats)

Southern Long-nosed Bat (*Leptonycteris curasoae*)

FAMILY: VESPERTILIONIDAE (Evening Bats)

Yuma Myotis (*Myotis yumanensis*)
California Myotis (*Myotis californicus*)
Western Pipistrelle (*Pipistrellus hesperus*)
Big Brown Bat (*Eptesicus fuscus*)
Pallid Bat (*Antrozous pallidus*)

FAMILY: MOLOSSIDAE (Free-tailed Bat)

Brazilian Free-tailed Bat (*Tadarida brasiliensis*)

ORDER: LAGOMORPHA (Rabbits, Hares, and Pikas)

FAMILY: LEPORIDAE (Rabbits and Hares)

Audubon Cottontail Rabbit (*Sylvilagus audubonii*)
Black-tailed (Hare) Jackrabbit (*Lepus californicus*)

ORDER: RODENTIA (Rodents)

FAMILY: SCIURIDAE (Squirrels, Chipmunks, and Marmots)

*California Ground Squirrel (*Otospermophilus beecheyi*)

FAMILY: GEOMYIDAE (Pocket Gophers)

*Botta's Pocket Gopher (*Thomomys bottae*)

FAMILY: MURIDAE (Old World Rats and Mice)

Western Harvest Mouse (*Reithrodontomys megalotis*)
Deer Mouse (*Peromyscus maniculatus*)
Norway Rat (*Rattus norvegicus*)
House Mouse (*Mus musculus*)
California Vole (*Microtus californicus*)

ORDER: CARNIVORA (Carnivores)

FAMILY: CANIDAE (Foxes, Wolves, and relatives)
Coyote (*Canis latrans*)
Domestic Dog (*Canis lupus familiaris*)
Red Fox (*Vulpes vulpes*)
Gray fox (*Urocyon cinereoargenteus*)

FAMILY: PROCYONIDAE (Raccoons and relatives)
Raccoon (*Procyon lotor*)

FAMILY: MEPHITIDAE (Skunks)
Striped Skunk (*Mephitis mephitis*)

FAMILY: FELIDAE (Cats)
Feral Cat (*Felis domesticus*)
Bobcat (*Lynx rufus*)

APPENDIX D: REPRESENTATIVE PHOTOGRAPHS OF THE PROJECT SITE



Photograph 1 (above). Mature almond orchard was the primary land use of the project site. Photograph 2 (below). Burrows of varying sizes and shapes were prevalent throughout the understory of the orchard.





Photograph 3 (above). An agricultural basin occurs within the southeastern corner of the site. It appears to be inundated periodically. Photograph 4 (below). Small mammal burrows were seen throughout ruderal (disturbed) areas around the basin.





Photograph 5 (above). This larger burrow was located on the ruderal berm around the agricultural basin.
Photograph 6 (below). A single English walnut (*Juglans regia*) grows in the southeastern corner of the project area. This large tree attracts a variety of bird species, offering nesting opportunities in cavities and hollow trunks.



APPENDIX E: U.S. FISH AND WILDLIFE SERVICE STANDARDIZED RECOMMENDATIONS FOR PROTECTION OF THE ENDANGERED SAN JOAQUIN KIT FOX PRIOR TO OR DURING GROUND DISTURBANCE

U.S. FISH AND WILDLIFE SERVICE STANDARDIZED RECOMMENDATIONS FOR PROTECTION OF THE ENDANGERED SAN JOAQUIN KIT FOX PRIOR TO OR DURING GROUND DISTURBANCE

Prepared by the Sacramento Fish and Wildlife Office
January 2011

INTRODUCTION

The following document includes many of the San Joaquin kit fox (*Vulpes macrotis mutica*) protection measures typically recommended by the U. S. Fish and Wildlife Service (Service), prior to and during ground disturbance activities. **However, incorporating relevant sections of these guidelines into the proposed project is not the only action required under the Endangered Species Act of 1973, as amended (Act) and does not preclude the need for section 7 consultation or a section 10 incidental take permit for the proposed project.** Project applicants should contact the Service in Sacramento to determine the full range of requirements that apply to your project; the address and telephone number are given at the end of this document. Implementation of the measures presented in this document may be necessary to avoid violating the provisions of the Act, including the prohibition against "take" (defined as killing, harming, or harassing a listed species, including actions that damage or destroy its habitat). These protection measures may also be required under the terms of a biological opinion pursuant to section 7 of the Act resulting in incidental take authorization (authorization), or an incidental take permit (permit) pursuant to section 10 of the Act. The specific measures implemented to protect kit fox for any given project shall be determined by the Service based upon the applicant's consultation with the Service.

The purpose of this document is to make information on kit fox protection strategies readily available and to help standardize the methods and definitions currently employed to achieve kit fox protection. The measures outlined in this document are subject to modification or revision at the discretion of the Service.

IS A PERMIT NECESSARY?

Certain acts need a permit from the Service which includes destruction of any known (occupied or unoccupied) or natal/pupping kit fox dens. Determination of the presence or absence of kit foxes and /or their dens should be made during the environmental review process. All surveys and monitoring described in this document must be conducted by a qualified biologist and these activities do not require a permit. A qualified biologist (biologist) means any person who has completed at least four years of university training in wildlife biology or a related science and/or has demonstrated field experience in the identification and life history of the San Joaquin kit fox. In addition, the biologist(s) must be able to identify coyote, red fox,

gray fox, and kit fox tracks, and to have seen a kit fox in the wild, at a zoo, or as a museum mount. Resumes of biologists should be submitted to the Service for review and approval prior to an6y survey or monitoring work occurring.

SMALL PROJECTS

Small projects are considered to be those projects with small foot prints, of approximately one acre or less, such as an individual in-fill oil well, communication tower, or bridge repairs. These projects must stand alone and not be part of, or in any way connected to larger projects (i.e., bridge repair or improvement to serve a future urban development). The Service recommends that on these small projects, the biologist survey the proposed project boundary and a 200-foot area outside of the project footprint to identify habitat features and utilize this information as guidance to situate the project to minimize or avoid impacts. If habitat features cannot be completely avoided, then surveys should be conducted and the Service should be contacted for technical assistance to determine the extent of possible take.

Preconstruction/preactivity surveys shall be conducted no less than 14 days and no more than 30 days prior to the beginning of ground disturbance and/or construction activities or any project activity likely to impact the San Joaquin kit fox. Kit foxes change dens four or five times during the summer months, and change natal dens one or two times per month (Morrell 1972). Surveys should identify kit fox habitat features on the project site and evaluate use by kit fox and, if possible, assess the potential impacts to the kit fox by the proposed activity. The status of all dens should be determined and mapped (see Survey Protocol). Written results of preconstruction/preactivity surveys must be received by the Service within five days after survey completion and prior to the start of ground disturbance and/or construction activities.

If a natal/pupping den is discovered within the project area or within 200-feet of the project boundary, the Service shall be immediately notified and under no circumstances should the den be disturbed or destroyed without prior authorization. If the preconstruction/preactivity survey reveals an active natal pupping or new information, the project applicant should contact the Service immediately to obtain the necessary take authorization/permit.

If the take authorization/permit has already been issued, then the biologist may proceed with den destruction within the project boundary, except natal/pupping den which may not be destroyed while occupied. A take authorization/permit is required to destroy these dens even after they are vacated. Protective exclusion zones can be placed around all known and potential dens which occur outside the project footprint (conversely, the project boundary can be demarcated, see den destruction section).

OTHER PROJECTS

It is likely that all other projects occurring within kit fox habitat will require a take authorization/permit from the Service. This determination would be made by the Service during the early evaluation process (see Survey Protocol). These other projects would include, but are not limited to: Linear projects; projects with large footprints such as urban development; and projects which in themselves may be small but have far reaching impacts (i.e., water storage or conveyance facilities that promote urban growth or agriculture, etc.).

The take authorization/permit issued by the Service may incorporate some or all of the protection measures presented in this document. The take authorization/permit may include measures specific to the needs of the project and those requirements supersede any requirements found in this document.

EXCLUSION ZONES

In order to avoid impacts, construction activities must avoid their dens. The configuration of exclusion zones around the kit fox dens should have a radius measured outward from the entrance or cluster of entrances due to the length of dens underground. The following distances are **minimums**, and if they cannot be followed the Service must be contacted. Adult and pup kit foxes are known to sometimes rest and play near the den entrance in the afternoon, but most above-ground activities begin near sunset and continue sporadically throughout the night. Den definitions are attached as Exhibit A.

Potential den**	50 feet
Atypical den**	50 feet
Known den*	100 feet
Natal/pupping den (occupied and unoccupied)	Service must be contacted

*Known den: To ensure protection, the exclusion zone should be demarcated by fencing that encircles each den at the appropriate distance and does not prevent access to the den by kit foxes. Acceptable fencing includes untreated wood particle-board, silt fencing, orange construction fencing or other fencing as approved by the Service as long as it has openings for kit fox ingress/egress and keeps humans and equipment out. Exclusion zone fencing should be maintained until all construction related or operational disturbances have been terminated. At that time, all fencing shall be removed to avoid attracting subsequent attention to the dens.

**Potential and Atypical dens: Placement of 4-5 flagged stakes 50 feet from the den entrance(s) will suffice to identify the den location; fencing will not be required, but the exclusion zone must be observed.

Only essential vehicle operation on existing roads and foot traffic should be permitted. Otherwise, all construction, vehicle operation, material storage, or any other type of surface-disturbing activity should be prohibited or greatly restricted within the exclusion zones.

DESTRUCTION OF DENS

Limited destruction of kit fox dens may be allowed, if avoidance is not a reasonable alternative, provided the following procedures are observed. The value to kit foxes of potential, known, and natal/pupping dens differ and therefore, each den type needs a different level of protection. **Destruction of any known or natal/pupping kit fox den requires take authorization/permit from the Service**.

Destruction of the den should be accomplished by careful excavation until it is certain that no kit foxes are inside. The den should be fully excavated, filled with dirt and compacted to ensure that kit foxes cannot reenter or use the den during the construction period. If at any point during excavation, a kit fox is discovered inside the den, the excavation activity shall cease immediately and monitoring of the den as described above should be resumed. Destruction of the den may be completed when in the judgment of the biologist, the animal has escaped, without further disturbance, from the partially destroyed den.

Natal/pupping dens: Natal or pupping dens which are occupied will not be destroyed until the pups and adults have vacated and then only after consultation with the Service. Therefore, project activities at some den sites may have to be postponed.

Known Dens: Known dens occurring within the footprint of the activity must be monitored for three days with tracking medium or an infra-red beam camera to determine the current use. If no kit fox activity is observed during this period, the den should be destroyed immediately to preclude subsequent use.

If kit fox activity is observed at the den during this period, the den should be monitored for at least five consecutive days from the time of the observation to allow any resident animal to move to another den during its normal activity. Use of the den can be discouraged during this period by partially plugging its entrances(s) with soil in such a manner that any resident animal can escape easily. Only when the den is determined to be unoccupied may the den be excavated under the direction of the biologist. If the animal is still present after five or more consecutive days of plugging and monitoring, the den may have to be excavated when, in the judgment of a biologist, it is temporarily vacant, for example during the animal's normal foraging activities.

The Service encourages hand excavation, but realizes that soil conditions may necessitate the use of excavating equipment. However, extreme caution must be exercised.

Potential Dens: If a take authorization/permit has been obtained from the Service, den destruction may proceed without monitoring, unless other restrictions were issued with the take authorization/permit. If no take authorization/permit has been issued, then potential dens should be monitored as if they were known dens. If any den was considered to be a potential den, but is later determined during monitoring or destruction to be currently, or previously used by kit fox (e.g., if kit fox sign is found inside), then all construction activities shall cease and the Service shall be notified immediately.

CONSTRUCTION AND ON-GOING OPERATIONAL REQUIREMENTS

Habitat subject to permanent and temporary construction disturbances and other types of ongoing project-related disturbance activities should be minimized by adhering to the following activities. Project designs should limit or cluster permanent project features to the smallest area possible while still permitting achievement of project goals. To minimize temporary disturbances, all project-related vehicle traffic should be restricted to established roads, construction areas, and other designated areas. These areas should also be included in preconstruction surveys and, to the extent possible, should be established in locations disturbed by previous activities to prevent further impacts.

1. Project-related vehicles should observe a daytime speed limit of 20-mph throughout the site in all project areas, except on county roads and State and Federal highways; this is particularly important at night when kit foxes are most active. Night-time construction should be minimized to the extent possible. However if it does occur, then the speed limit should be reduced to 10-mph. Off-road traffic outside of designated project areas should be prohibited.

2. To prevent inadvertent entrapment of kit foxes or other animals during the construction phase of a project, all excavated, steep-walled holes or trenches more than 2-feet deep should be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the Service and the California Department of Fish and Game (CDFG) shall be contacted as noted under measure 13 referenced below.

3. Kit foxes are attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar structures with a diameter of 4-inches or greater that are stored at a construction site for one or more overnight periods should be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is

discovered inside a pipe, that section of pipe should not be moved until the Service has been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped.

4. All food-related trash items such as wrappers, cans, bottles, and food scraps should be disposed of in securely closed containers and removed at least once a week from a construction or project site.

5. No firearms shall be allowed on the project site.

6. No pets, such as dogs or cats, should be permitted on the project site to prevent harassment, mortality of kit foxes, or destruction of dens.

7. Use of rodenticides and herbicides in project areas should be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. All uses of such compounds should observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other State and Federal legislation, as well as additional project-related restrictions deemed necessary by the Service. If rodent control must be conducted, zinc phosphide should be used because of a proven lower risk to kit fox.

8. A representative shall be appointed by the project proponent who will be the contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured or entrapped kit fox. The representative will be identified during the employee education program and their name and telephone number shall be provided to the Service.

9. An employee education program should be conducted for any project that has anticipated impacts to kit fox or other endangered species. The program should consist of a brief presentation by persons knowledgeable in kit fox biology and legislative protection to explain endangered species concerns to contractors, their employees, and military and/or agency personnel involved in the project. The program should include the following: A description of the San Joaquin kit fox and its habitat needs; a report of the occurrence of kit fox in the project area; an explanation of the status of the species and its protection under the Endangered Species Act; and a list of measures being taken to reduce impacts to the species during project construction and implementation. A fact sheet conveying this information should be prepared for distribution to the previously referenced people and anyone else who may enter the project site.

10. Upon completion of the project, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. should be

re-contoured if necessary, and revegetated to promote restoration of the area to pre-project conditions. An area subject to "temporary" disturbance means any area that is disturbed during the project, but after project completion will not be subject to further disturbance and has the potential to be revegetated. Appropriate methods and plant species used to revegetate such areas should be determined on a site-specific basis in consultation with the Service, California Department of Fish and Game (CDFG), and revegetation experts.

11. In the case of trapped animals, escape ramps or structures should be installed immediately to allow the animal(s) to escape, or the Service should be contacted for guidance.

12. Any contractor, employee, or military or agency personnel who are responsible for inadvertently killing or injuring a San Joaquin kit fox shall immediately report the incident to their representative. This representative shall contact the CDFG immediately in the case of a dead, injured or entrapped kit fox. The CDFG contact for immediate assistance is State Dispatch at (916)445-0045. They will contact the local warden or Mr. Paul Hoffman, the wildlife biologist, at (530)934-9309. The Service should be contacted at the numbers below.

13. The Sacramento Fish and Wildlife Office and CDFG shall be notified in writing within three working days of the accidental death or injury to a San Joaquin kit fox during project related activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information. The Service contact is the Chief of the Division of Endangered Species, at the addresses and telephone numbers below. The CDFG contact is Mr. Paul Hoffman at 1701 Nimbus Road, Suite A, Rancho Cordova, California 95670, (530) 934-9309.

14. New sightings of kit fox shall be reported to the California Natural Diversity Database (CNDDB). A copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed should also be provided to the Service at the address below.

Any project-related information required by the Service or questions concerning the above conditions or their implementation may be directed in writing to the U.S. Fish and Wildlife Service at:

Endangered Species Division
2800 Cottage Way, Suite W2605
Sacramento, California 95825-1846
(916) 414-6620 or (916) 414-6600

EXHIBIT "A" - DEFINITIONS

"Take" - Section 9 of the Endangered Species Act of 1973, as amended (Act) prohibits the "take" of any federally listed endangered species by any person (an individual, corporation, partnership, trust, association, etc.) subject to the jurisdiction of the United States. As defined in the Act, take means " . . . to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct". Thus, not only is a listed animal protected from activities such as hunting, but also from actions that damage or destroy its habitat.

"Dens" - San Joaquin kit fox dens may be located in areas of low, moderate, or steep topography. Den characteristics are listed below, however, the specific characteristics of individual dens may vary and occupied dens may lack some or all of these features. Therefore, caution must be exercised in determining the status of any den. Typical dens may include the following: (1) one or more entrances that are approximately 5 to 8 inches in diameter; (2) dirt berms adjacent to the entrances; (3) kit fox tracks, scat, or prey remains in the vicinity of the den; (4) matted vegetation adjacent to the den entrances; and (5) manmade features such as culverts, pipes, and canal banks.

"Known den" - Any existing natural den or manmade structure that is used or has been used at any time in the past by a San Joaquin kit fox. Evidence of use may include historical records, past or current radiotelemetry or spotlighting data, kit fox sign such as tracks, scat, and/or prey remains, or other reasonable proof that a given den is being or has been used by a kit fox. The Service discourages use of the terms "active" and "inactive" when referring to any kit fox den because a great percentage of occupied dens show no evidence of use, and because kit foxes change dens often, with the result that the status of a given den may change frequently and abruptly.

"Potential Den" - Any subterranean hole within the species' range that has entrances of appropriate dimensions for which available evidence is insufficient to conclude that it is being used or has been used by a kit fox. Potential dens shall include the following: (1) any suitable subterranean hole; or (2) any den or burrow of another species (e.g., coyote, badger, red fox, or ground squirrel) that otherwise has appropriate characteristics for kit fox use.

"Natal or Pupping Den" - Any den used by kit foxes to whelp and/or rear their pups. Natal/pupping dens may be larger with more numerous entrances than dens occupied exclusively by adults. These dens typically have more kit fox tracks, scat, and prey remains in the vicinity of the den, and may have a broader apron of matted dirt and/or vegetation at one or more entrances. A natal den, defined as a den in which kit fox pups are actually whelped but not necessarily reared, is a more restrictive version of the pupping den. In practice, however, it is difficult to distinguish between the two, therefore, for purposes of this definition either term applies.

"Atypical Den" - Any manmade structure which has been or is being occupied by a San Joaquin kit fox. Atypical dens may include pipes, culverts, and diggings beneath concrete slabs and buildings.