DRAFT INITIAL STUDY AND
MITIGATED NEGATIVE DECLARATION

INITIAL STUDY / MITIGATED NEGATIVE DECLARATION

ORANGEWOOD ELEMENTARY SCHOOL – K-2 EXPANSION PROJECT

Edison School District
Empowering
Edison
Excellence

JANUARY 2020

DRAFT INITIAL STUDY AND
MITIGATED NEGATIVE DECLARATION

ORANGEWOOD ELEMENTARY SCHOOL – K-2 EXPANSION PROJECT

Prepared for:

Edison School District
11518 School Street
Bakersfield, CA 93307
Contact Person: Todd Noble
Phone: (661) 363-5394

Consultant:

5080 California Avenue, Suite 220
Bakersfield, CA 93309
Contact: Jaymie Brauer, Principal Planner
Phone: (661) 616-2600

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Project #190055

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Community Development
1600 Truxtun Avenue
Bakersfield, CA 93301

City of Bakersfield
Engineering Division
City Hall South Annex Building
1501 Truxtun Avenue
Bakersfield, California 93301

Kern County Planning & Natural
Resources Department
Special Projects Section
2700 M Street, Suite 100
Bakersfield, CA 93301

Kern Council of Governments
1404 19th Street, Ste 300
Bakersfield, CA 93301

San Joaquin Valley
Air Pollution Control District
Central Region
1990 E. Gettysburg Avenue
Fresno, CA 93726

Kern County Public Works
Department
2700 M Street, Suite 100
Bakersfield, CA 93301

Kern County Library
Northeast Branch
2671 Oswell Street
Bakersfield, CA 93306

Pacific Gas & Electric Co
Land Department
1918 "H" Street
Bakersfield, CA 93301

Division of Oil, Gas &
Geothermal Resources
4800 Stockdale Highway, #417
Bakersfield, CA 93309

US Fish and Wildlife Service
2800 Cottage Way, W-2606
Sacramento, CA 95825

Kern Valley Indian Community Robert Neil
Robinson. Chairperson
P.O. Box 1010
Lake Isabella, CA 93240

Southern California Gas Co
1510 North Chester Avenue
Bakersfield, CA 93308

Kern Valley Indian Community Julie
Turner. Secretary
P.O. Box 1010
Lake Isabella, CA 93240

Tejon Indian Tribe
Octavio Escobedo. Chairperson
P.O. Box 640
Arvin, CA 92023

Kitanemuk & Yowlumne Tejon Indians
Delia Dominguez, Chairperson
115 Radio Street
Bakersfield, CA 93305

Santa Rosa Rancheria Tachi Yokut Tribe
Rueben Barrios Sr.. Chairperson
P.O. Box 8
Lemoore, CA 93245

Wuksache Indian Tribe/Eshom Valley Band
Kenneth Woodrow. Chairperson
1179 Rock Haven Ct.
Salinas, CA 93906

Tejon Indian Tribe
Colin Rambo. Cultural Resources
Management
1731 Hasti-Acres Drive. Suite Kitanemuk
Bakersfield, CA 93309

Tule River Indian Tribe
Neil Pevron. Chairperson
P.O. Box 589
Porterville, CA 93258

Print Form

Appendix C

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #

Project Title: Orangewood Elementary School - K-2 Expansion Project

Lead Agency: Edison School District
Contact Person: Todd Noble
Mailing Address: 11518 School Street
Phone: (661) 363-5394
City: Bakersfield
Zip: 93307
County: Kern

Project Location: County: Kern
City/Nearest Community: Bakersfield
Cross Streets: Gargono Road and Eucalyptus Drive
Zip Code: 93306
Longitude/Latitude (degrees, minutes and seconds): 35 ° 21 ′ 57.1 ″ N / 118 ° 53 ′ 59.2 ″ W
Total Acres: 18.55
Assessor's Parcel No.: 388-140-12, -03
Section: 31
Twp.: 29S
Range: 29E
Base: MDBM
Within 2 Miles: State Hwy #: 58, 184, 178
Waterways: Kern River
Airports: None
Railways: Mojave and Arvin RRs
Schools: Multiple; Citywide

Document Type:

CEQA:
- ☐ NOP
- ☐ Early Cons
- ☐ Neg Dec
- ☒ Mit Neg Dec
- ☐ Draft EIR
- ☐ Supplement/Subsequent EIR (Prior SCH No.) _____
- Other: _____

NEPA:
- ☐ NOI
- ☐ EA
- ☐ Draft EIS
- ☐ FONSI

Other:
- ☐ Joint Document
- ☐ Final Document
- ☐ Other: _____

Local Action Type:

- ☐ General Plan Update
- ☐ General Plan Amendment
- ☐ General Plan Element
- ☐ Community Plan
- ☐ Specific Plan
- ☐ Master Plan
- ☐ Planned Unit Development
- ☐ Site Plan
- ☐ Rezone
- ☐ Prezone
- ☐ Use Permit
- ☐ Land Division (Subdivision, etc.)
- ☐ Annexation
- ☐ Redevelopment
- ☐ Coastal Permit
- ☐ Other: _____

Development Type:

- ☐ Residential: Units _____ Acres _____
- ☐ Office: Sq.ft. _____ Acres _____ Employees _____
- ☐ Commercial: Sq.ft. _____ Acres _____ Employees _____
- ☐ Industrial: Sq.ft. _____ Acres _____ Employees _____
- ☒ Educational: Expansion of existing school campus
- ☐ Recreational: _____
- ☐ Water Facilities: Type _____ MGD _____
- ☐ Transportation: Type _____
- ☐ Mining: Mineral _____
- ☐ Power: Type _____ MW _____
- ☐ Waste Treatment: Type _____ MGD _____
- ☐ Hazardous Waste: Type _____
- ☐ Other: _____

Project Issues Discussed in Document:

- ☒ Aesthetic/Visual
- ☒ Agricultural Land
- ☒ Air Quality
- ☒ Archeological/Historical
- ☒ Biological Resources
- ☐ Coastal Zone
- ☒ Drainage/Absorption
- ☐ Economic/Jobs
- ☐ Fiscal
- ☒ Flood Plain/Flooding
- ☒ Forest Land/Fire Hazard
- ☒ Geologic/Seismic
- ☒ Minerals
- ☒ Noise
- ☒ Population/Housing Balance
- ☒ Public Services/Facilities
- ☒ Recreation/Parks
- ☒ Schools/Universities
- ☒ Septic Systems
- ☒ Sewer Capacity
- ☒ Soil Erosion/Compaction/Grading
- ☒ Solid Waste
- ☒ Toxic/Hazardous
- ☒ Traffic/Circulation
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- ☒ Water Quality
- ☒ Water Supply/Groundwater
- ☐ Wetland/Riparian
- ☐ Growth Inducement
- ☒ Land Use
- ☐ Cumulative Effects
- ☐ Other: _____

Present Land Use/Zoning/General Plan Designation:

Citywide Ordinance Amendment

Project Description: *(please use a separate page if necessary)*

The proposed Project is an extension of the existing Orangewood Elementary School campus, including the construction of approximately 20,260 – 23,260 square feet of new buildings that will occupy an 18.55-acre Project site located immediately west and northwest of the existing campus (APNs 388-140-12 and -03). The proposed project would move the existing 450 kindergarten through second grade students from the current classrooms to the proposed new space. No expansion or increase in student enrollment, faculty or staff is proposed.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "**X**".
If you have already sent your document to the agency please denote that with an "**S**".

X Air Resources Board
___ Boating & Waterways, Department of
___ California Emergency Management Agency
___ California Highway Patrol
X Caltrans District #6
___ Caltrans Division of Aeronautics
___ Caltrans Planning
___ Central Valley Flood Protection Board
___ Coachella Valley Mtns. Conservancy
___ Coastal Commission
___ Colorado River Board
X Conservation, Department of
X Corrections, Department of
___ Delta Protection Commission
X Education, Department of
___ Energy Commission
X Fish & Game Region #4
___ Food & Agriculture, Department of
___ Forestry and Fire Protection, Department of
___ General Services, Department of
___ Health Services, Department of
___ Housing & Community Development
X Native American Heritage Commission

X Office of Historic Preservation
___ Office of Public School Construction
___ Parks & Recreation, Department of
___ Pesticide Regulation, Department of
___ Public Utilities Commission
X Regional WQCB #5
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___ Resources Recycling and Recovery, Department of
___ S.F. Bay Conservation & Development Comm.
___ San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
___ San Joaquin River Conservancy
___ Santa Monica Mtns. Conservancy
___ State Lands Commission
___ SWRCB: Clean Water Grants
X SWRCB: Water Quality
___ SWRCB: Water Rights
___ Tahoe Regional Planning Agency
X Toxic Substances Control, Department of
X Water Resources, Department of

X Other: Office of Public School Construction
___ Other: ___

Local Public Review Period (to be filled in by lead agency)

Starting Date ___ Ending Date ___

Lead Agency (Complete if applicable):

Consulting Firm: ___
Address: ___
City/State/Zip: ___
Contact: ___
Phone: ___

Applicant: ___
Address: ___
City/State/Zip: ___
Phone: ___

Signature of Lead Agency Representative: /s/ **Date:** 1/10/2020

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

NOTICE OF PUBLIC HEARING AND INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION

This is to advise that the Edison School District (ESD) has prepared a Mitigated Negative Declaration for the Project identified below that is scheduled to be considered at the Edison School District – Board of Trustees meeting on **Monday**, **March 9, 2020**.

PLEASE BE ADVISED that the Edison School – Board of Trustees will consider adopting the Mitigated Negative Declaration at the Board's meeting to be held on March 9, 2020. Presentations will be made at approximately 5:30 p.m. Action on items on the board agenda will occur after the presentations. The meeting will be held in the Loreda Clevenger Auditorium, 721 S. Edison Road, Bakersfield, CA 93307.

Project Name

Orangewood Elementary School K-2 Expansion Project

Project Location

Eucalyptus Drive, between Gargano Road and Vineland Road, East Bakersfield, CA.

Project Description

Edison School District (the District, as lead agency) has proposed an extension of the existing Orangewood Elementary School campus currently located at 9600 Eucalyptus Drive in Bakersfield, California (Project). The Project includes the construction of approximately 20,260 – 23,260 square feet of new buildings that will occupy an 18.55-acre Project site located immediately west and northwest of the existing campus (APNs 388-140-12 and -03).

The existing Orangewood Elementary School does not have classroom space to meet current California Department of Education classroom requirements. Therefore, the proposed extension of the school would construct new classrooms that meet these requirements. The proposed Project would move the existing 450 kindergarten through second grade from the current classrooms to the proposed new space. No expansion or increase in student enrollment, faculty or staff is proposed.

The document and documents referenced in the Initial Study/Mitigated Negative Declaration are available for review at the Edison School District Office, 11518 School Street, Bakersfield, CA 93307, and at the Kern County Northeast Bakersfield Library located at 2671 Oswell Street, Bakersfield, CA 93306.

As mandated by the California Environmental Quality Act (CEQA), the public review period for this document was 30 days (CEQA Section 15073[b]). The public review period began on January 10, 2020 and ended on February 10, 2020. For further information, please contact Jaymie Brauer at 661-616-2600.

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ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
ac	Acre
ADWF	Average Daily Wastewater Flow
afy	Acre-Foot per
APN	Assessor's Parcel Number
AQAP	Air Quality Attainment Plan
ATCM	Airborne Toxic Control Measure
BAU	Business-As-Usual
BMPs	Best Management Practices
CAA	Clean Air Act
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CH4	Methane
CNDDB	California Natural Diversity Database
CO2	Carbon dioxide
CRECs	Controlled Recognized Environmental Concerns
CWA	Clean Water Act
dB	Decibels
District	Kern High School District
DNL	Day-Night Average Level
DOC	Department of Conservation
DOGGR	Department of Oil, Gas, and Geothermal Resources
DTSC	Department of Toxic Substance Control
EIR	Environmental Impact Report
EOADP	Extreme Ozone Attainment Demonstration Plan
EPA	U.S. Environmental Protection Agency
ESA	Environmental Site Assessment
ESAs	Environmentally Sensitive Areas
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FMMP	Farmland Mapping and Monitoring Program
g	Acceleration of Gravity
GAMAQI	Guide to Assessing and Mitigating Air Quality Impacts
GHGs	Greenhouse Gases
HAPs	Hazardous Air Pollutants
HCFCs	Halogenated Fluorocarbons
HCP	Habitat Conservation Plan
HFCs	Hydrofluorocarbons
HREC	Historical Recognized Environmental Concerns
HVAC	Heating, Ventilation, and Air Conditioning
IS	Initial Study
IS/MND	Initial Study/Mitigated Negative Declaration

ITE	Institute of Transportation Engineers
KCEHSD	Kern County Environmental Health Services Department
KCRTP	Kern County Regional Transportation Plan
Kern COG	Kern Council of Governments
LOS	Level of Service
MBGP	Metropolitan Bakersfield General Plan
MBHCP	Metropolitan Bakersfield Habitat Conservation Plan
MBTA	Migratory Bird Treaty Act
MDB&M	Mount Diablo Base and Meridian
MGD	Million Gallons per Day
MM	Mitigation Measure
MND	Mitigated Negative Declaration
MTCO2e	Metric Tons Carbon Dioxide Equivalent
N2O	Nitrous Oxide
NAHC	Native American Heritage Commission
NOx	Oxide of Nitrogen
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NSR	New Source Review
O3	Ozone
OCPs	Organochlorine Pesticides
PEA	Preliminary Environmental Assessment
PFCs	Perfluorinated Carbons
PM2.5	Particulate Matter Less than 2.5 Microns
PM10	Particulate Matter Less than 10 Microns
PRC	Public Resources Code
ROG	Reactive Organic Gases
RSLs	Residential Screening Levels
RTIF	Regional Traffic Impact Fee
RWQCB	Regional Water Quality Control Board
SEI	Soils Engineering, Inc.
SF6	Sulfur Hexafluoride
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SPAL	Small Project Analysis Level
SWP	State Water Project
SWPPP	Stormwater Pollution Prevention Plan
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
VMT	Vehicle Miles Traveled
WSA	Water Supply Assessment
OCPs	Organochlorine Pesticides

MITIGATED NEGATIVE DECLARATION

As Lead Agency under the California Environmental Quality Act (CEQA), the Edison School District (ESD or the District) reviewed the Project described below to determine whether it could have a significant effect on the environment because of its development. In accordance with CEQA Guidelines Section 15382, "[s]ignificant 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 significance.

Project Name

Orangewood Elementary School K-2 Expansion Project

Project Location

Eucalyptus Drive, between Gargano Road and Vineland Road, East Bakersfield, CA.

Project Description

The proposed Project is an extension of the existing Orangewood Elementary School campus currently located at 9600 Eucalyptus Drive in Bakersfield, California (Project). The Project includes the construction of approximately 20,260 – 23,260 square feet of new buildings that will occupy an 18.55-acre Project site located immediately west and northwest of the existing campus (APNs 388-140-12 and -03).

The existing Orangewood Elementary School does not have classroom space to meet current California Department of Education classroom requirements. Therefore, the proposed extension of the school would construct new classrooms that meet these requirements. The proposed Project would move the existing 450 kindergarten through second grade from the current classrooms to the proposed new space. No expansion or increase in student enrollment, faculty or staff is proposed.

The Project includes the construction of a six-classroom wing for each grade level. Kindergarten classrooms would be 1,500 square feet each with attached student and staff restroom facilities. First grade classrooms would be 980 square feet each with attached student and staff restroom facilities. Second grade classrooms would be 980 square feet each with attached student restroom facilities. The Project also includes the construction of an administrative office between 2,500 and 3,000 square feet with attached restroom facilities. The hours of operation will be from 7:30am-4:00pm Monday through Friday.

The proposed Project also includes the construction of a media center, multi-purpose room, and learning center each approximately 2,000 to 2,500 square feet. The remaining undeveloped area will be used as multi-use recreational sports fields. To the extent feasible, the school athletic equipment such as permanent soccer nets will be wildlife-friendly, using smaller mesh netting. The parking lot that is currently located at the southeast boundary of

the Project site will be expanded to provide adequate on-site parking for staff and visitors. An existing water retention basin will be relocated to the southwest corner of the Project boundary.

As the proposed Project does not increase the student capacity of the school, no additional staff is required. Construction of the proposed Project will occur in phases, beginning with the construction of the kindergarten wing.

California Department of Education, School Siting Requirements

Education Code Section 17251 and the California Code of Regulations (CCR), Title 5, Sections 14001 through 14012, outline the powers and duties of the California Department of Education (CDE) regarding school sites and the construction of school buildings. Districts using local funds are encouraged to seek the Department's approval for the benefits that such outside, objective reviews provide to the school district and the community.

Safety is the first consideration in the selection and/or construction of school sites. Certain health and safety requirements are governed by state regulations and the policies of the Department. When selecting new school sites, the selection team considers the following factors: (1) proximity to airports; (2) proximity to high-voltage power transmission lines; (3) presence of toxic and hazardous substances; (4) hazardous air emissions and facilities within a quarter mile; (5) other health hazards; (6) proximity to railroads; (7) proximity to high-pressure natural gas lines, gasoline lines, pressurized sewer lines, or high pressure water pipelines; (8) proximity to propane tanks; (9) noise; (10) proximity to major roadways; (11) results of geological studies and soils analyses; (12) condition of traffic and school bus safety; (13) safe routes to school; and (14) safety issues for joint-use projects.

In considering the construction of the K-2 Elementary School, Edison School District considered the factors which apply to new school sites. Figure 1-5 illustrates the location and/or proximity of known hazards using the factors listed above for school site selection and lists the distances to each of the identified hazards from the school.

In general, the school siting criteria provides that hazards should be located greater than 1,500 feet from any new school. Data indicate that the nearest high-pressure gas line is greater than 1,500 feet from the Project site. Other identified hazards include a few oil wells (dry holes) that have been drilled less than one mile away from the site, but it not likely that any oil-related gases are present beneath the Project site (Soils Engineering, Inc, 2019).

Mailing Address and Phone Number of Contact Person

Edison School District
11518 School Street
Bakersfield, CA 93307
Contact Person: Todd Noble
Phone: (661) 340-1150

Findings

As Lead Agency, the District finds that the Project will not have a significant effect on the environment. The Environmental Checklist (CEQA Guidelines Appendix G) or Initial Study (IS) (see *Section 3 - Environmental Checklist*) identified one or more potentially significant effects on the environment, but revisions to the Project have been made before the release of this Mitigated Negative Declaration (MND) or mitigation measures would be implemented that reduce all potentially significant impacts less than significant levels. The Lead Agency further finds that there is no substantial evidence that this Project would have a significant effect on the environment.

Mitigation Measures Included in the Project to Avoid Potentially Significant Effects

MM AES-1: Security and nighttime lighting installed at the school site shall be designed utilizing "dark skies" standards and guidelines and shall incorporate shielding of lighting and orienting lighting downward to prevent direct uplighting. Lighting used for nighttime events shall be turned off by 11:00pm. All lights in excess of 150 watts shall be directed toward the stadium field and away from adjacent properties. All stadium field light fixtures shall be designed with appropriate reflectors, hoods and side shields to direct the angle of incidence to reflect light downward.

MM BIO-1: Within 14 days of the start of Project activities, a pre-activity survey shall be conducted by a qualified biologist knowledgeable in the identification of these species. The pre-activity survey shall include walking transects to identify presence of burrowing owl, Swainson's hawk, California horned lark, San Joaquin kit fox, burrowing owl, nesting birds, and other special-status species or signs of, and sensitive natural communities. The pre-activity survey shall be walked by no greater than 30-foot transects for 100 percent coverage of the Project site and the 250-foot buffer, where feasible. If no evidence of special-status species is detected, no further action is required.

If dens or burrows that could support either of these species are discovered during the pre-activity survey conducted under Mitigation Measure BIO-1, the avoidance buffers outlined below shall be established. No work would occur within these buffers unless the biologist approves and monitors the activity.

Burrowing Owl (active burrows)

- Non-breeding season: September 1 – January 31 – 160 feet
- Breeding season: February 1 – August 31 – 250 feet

San Joaquin Kit Fox

- Potential or Atypical den – 50 feet
- Known den – 100 feet
- Natal or pupping den – Contact agencies for further guidance

.

Potential kit fox dens may be excavated provided that the following conditions are satisfied: (1) the den has been monitored for at least four consecutive days and is deemed unoccupied by a qualified biologist; (2) the excavation is conducted by or under the direct supervision of a qualified biologist. Den monitoring and excavation shall be conducted in accordance with the *Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* (United States Fish and Wildlife Service, 2011).

MM BIO-2: Prior to ground disturbance activities, within one week of employment all new construction workers at the Project site shall attend a Construction Worker Environmental Awareness Training and Education Program, developed and presented by a qualified biologist.

The Construction Worker Environmental Awareness Training and Education Program would be presented by the biologist and shall include information on the life history wildlife and plant species that may be encountered during construction activities, their legal protections, the definition of "take" under the Endangered Species Act, measures the Project operator is implementing to protect the San Joaquin kit fox and other species, reporting requirements, specific measures that each worker would employ to avoid take of the wildlife species, and penalties for violation of the Act. Identification and information regarding sensitive or other special status plant species shall also be provided to construction personnel.

- An acknowledgement form signed by each worker indicating that environmental training has been completed.
- A sticker that shall be placed on hard hats indicating that the worker has completed the environmental training. Construction workers shall not be permitted to operate equipment within the construction area unless they have attended the training and are wearing hard hats with the required sticker;
- A copy of the training transcript and/or training video/CD, as well as a list of the names of all personnel who attended the training and copies of the signed acknowledgement forms shall be maintain on site for the duration of construction activities.

The construction crews and contractor(s) would be responsible for unauthorized impacts from construction activities to sensitive biological resources that are outside the areas defined as subject to impacts by Project permits.

MM BIO-3: If Project activities must occur during the nesting season (February 1 to September 15), pre-activity nesting bird surveys shall be conducted within seven days prior to the start of construction at the construction site plus a 250-foot buffer for songbirds and a 500-foot buffer for raptors (other than Swainson's hawk). The surveys shall be phased with construction of the Project. If no active nests are found, no further action is required. However, existing nests may become active and new nests may be built at any time prior to and throughout the nesting season, including when construction activities are in progress. If active nests are found during the survey or at any time during construction of the Project, an avoidance buffer ranging from 50 feet to 500 feet may be required, with the avoidance buffer

from any specific nest being determined by a qualified biologist. The avoidance buffer will remain in place until the biologist has determined that the young are no longer reliant on the adults or the nest. Work may occur within the avoidance buffer under the approval and guidance of the biologist, but full-time monitoring may be required. The biologist shall have the ability to stop construction if nesting adults show any sign of distress.

If all Project activities are completed outside of the Swainson's hawk nesting season (February 15 through August 31), no mitigation shall be required. If construction is planned during the nesting season, a preconstruction survey shall be conducted by a qualified biologist to evaluate the site and a 0.5-mile buffer for active Swainson's hawk nests. If potential Swainson's hawk nests or nesting substrates are located within 0.5 mile of the Project sites, then those nests or substrates must be monitored for activity on a routine and repeating basis throughout the breeding season, or until Swainson's hawks or other raptor species are verified to be using them. Monitoring will be conducted according to the protocol outlined in the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000). The protocol recommends that ten visits be made to each nest or nesting site: one during January 1-March 20 to identify potential nest sites, three during March 20-April 5, three during April 5-April 20, and three during June 10-July 30. To meet the minimum level of protection for the species, surveys shall be completed for at least the two survey periods immediately prior to Project-related ground disturbance activities. During the nesting period, active Swainson's hawk nests shall be avoided by 0.5 mile unless this avoidance buffer is reduced through consultation with the CDFW and/or USFWS. If an active Swainson's hawk nest is located within 250 feet of the Project or within the Project, including the stick nest located within the Project, CDFW will require an Incidental Take Permit.

MM BIO-4: A qualified biologist shall conduct a pre-construction survey on the Project site and within 250 feet of its perimeter where feasible, to identify the presence of the western burrowing owl. The survey shall be conducted between 14 and 30 days prior to the start of construction activities. If any burrowing owl burrows are observed during the preconstruction survey, avoidance measures shall be consistent with those included in the CDFW staff report on burrowing owl mitigation (CDFG 2012). If occupied burrowing owl burrows are observed outside of the breeding season (September 1 through January 31) and within 500 feet of proposed construction activities, a passive relocation effort may be instituted in accordance with the guidelines established by the California Burrowing Owl Consortium (1993) and the California Department of Fish and Wildlife (2012). During the breeding season (February 1 through August 31), a 250-foot (minimum) buffer zone shall be maintained unless a qualified biologist verifies through noninvasive methods that either the birds have not begun egg laying and incubation or that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

MM BIO-5: If construction is planned outside the nesting period for raptors and migratory birds (February 15 to August 31), no mitigation shall be required. If construction is planned during the nesting season for migratory birds and raptors, a preconstruction survey to identify active bird nests shall be conducted by a qualified biologist to evaluate the site and a 250-foot buffer for migratory birds and a 500-foot buffer for raptors. If nesting birds are

identified during the survey, active raptor nests shall be avoided by 500 feet and all other migratory bird nests shall be avoided by 250 feet. Avoidance buffers may be reduced if a qualified on-site monitor determines that encroachment into the buffer area is not affecting nest building, the rearing of young, or otherwise affecting the breeding behaviors of the resident birds.

No construction or earth-moving activity shall occur within a non-disturbance buffer until it is determined by a qualified biologist that the young have fledged (left the nest) and have attained sufficient flight skills to avoid Project construction areas. Once the migratory birds or raptors have completed nesting and young have fledged, disturbance buffers will no longer be needed and can be removed, and monitoring can cease.

MM BIO-6: During all construction-related activities, the following mitigation shall apply:

a. All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers.

b. Construction-related vehicle traffic shall be restricted to established roads and predetermined ingress and egress corridors, staging, and parking areas. Vehicle speeds shall not exceed 20 miles per hour (mph) within the Project site.

c. All Project activities shall occur during daylight hours, but if work must be conducted at night then a night-time construction speed limit of 10 mph shall be established.

d. Off-road traffic outside of designated Project areas shall be prohibited.

e. To prevent inadvertent entrapment of kit foxes or other animals during construction of the project, all excavated, steep-walled holes or trenches more than two feet deep shall 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.

f. Before holes or trenches are filled, they shall be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the USFWS and the CDFW shall be contacted before proceeding with the work.

g. In the case of trapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape, or the USFWS and CDFW shall be contacted for guidance.

h. All construction pipes, culverts, or similar structures with a diameter of four inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for kit foxes and burrowing owls 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 shall not be moved until the USFWS 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.

i. All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers and removed at least once a week from a construction or Project site.

j. No pets, such as dogs or cats, shall be permitted on the Project site.

k. Project-related use of rodenticides and herbicides shall be restricted.

l. 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 shall be identified during the employee education program and their name and telephone number shall be provided to the USFWS and CDFW.

m. Any Project personnel who are responsible for inadvertently killing or injuring one of these species shall immediately report the incident to their representative. This representative shall contact the CDFW and USFWS immediately in the case of a dead, injured or entrapped listed animal.

n. The Sacramento Fish and Wildlife office and CDFW Region 4 office 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.

o. New sightings of San Joaquin kit fox shall be reported to the California Natural Diversity Database. A copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed shall also be provided to the USFWS

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 archaeologist can evaluate 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 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. Implementation of the mitigation measure below would ensure that the proposed Project would not cause a substantial adverse change in the significance of a historical resource. Therefore, the Project would have a less than significant impact with incorporation of mitigation measures.

MM CUL-2: 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.

MM GEO-1: Prior to construction, the District shall submit 1) the approved Storm Water Pollution Prevention Plan (SWPPP) and 2) the Notice of Intent (NOI) to comply with the General National Pollutant Discharge Elimination System (NPDES) from the Central Valley Regional Water Quality Control Board. The requirements of the SWPPP and NPDES shall be incorporated into design specifications and construction contracts. Recommended best management practices for the construction phase may include the following:

- Stockpiling and disposing of demolition debris, concrete, and soil properly;
- Protecting existing storm drain inlets and stabilizing disturbed areas;
- Implementing erosion controls;
- Properly managing construction materials; and
- Managing waste, aggressively controlling litter, and implementing sediment controls.

MM GEO-2: The District shall limit grading to the minimum area necessary for construction and operation of the Project. Final grading plans shall include best management practices to limit onsite and offsite erosion.

MM GEO-3: If any paleontological materials are encountered during project development, all further development activities shall cease and a paleontologist shall be contacted. The paleontologist shall then assess the discovered material(s) and prepare a survey, study, or report evaluating the impact. This document shall contain a recommendation, if necessary, for the preservation, conservation, or relocation of the resource.

MM HAZ-1: Prior to operation of the Project, the Project proponent shall amend their existing Hazardous Materials Business Plan that identifies the expansion of Orangewood Elementary School and submit it to the Kern County Environmental Health Services Division/Hazardous Materials Section for review and approval. The Project proponent shall provide the hazardous materials business plan to all contractors working on the Project and shall ensure that one copy is available at the Project site at all times.

MM HAZ-2: In the event that other abandoned or unrecorded wells are uncovered or damaged during excavation or grading activities, all work shall cease, and the California Department of Conservation, Division of Oil, Gas and Geothermal Resources shall be contacted for requirements and approvals. The California Department of Conservation, Division of Oil, Gas and Geothermal Resources may determine that remedial plugging operations may be required.

MM NSE-1: During construction, the contractor shall situate implement the following measures:

1. All stationary construction equipment on the Project site shall be located so that noise emitting objects or equipment faces away from any potential sensitive receptors.

2. The construction contractor shall ensure that all construction equipment is equipped with manufacturer-approved mufflers and baffles During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receivers.

3. Construction activities shall not take place outside between the hours of 9 p.m. and 6 a.m. on weekdays and 9 p.m. and 8 a.m. on weekends.

SECTION 1 - INTRODUCTION

1.1 - Overview

The District is proposing to construct an expansion of the existing Orangewood Elementary School campus currently located at 9600 Eucalyptus Drive in an unincorporated area of central Kern County (Project). Figure 1-1 is a map of the regional location and Figure 1-2 shows the Project's vicinity. Figure 1-3 provides the aerial location of the Project site, and Figure 1-4 depicts a conceptual layout of the Project.

1.2 - California Environmental Quality Act

The District is the Lead Agency for this Project pursuant to the CEQA Guidelines (Public Resources Code Section 15000 et seq.). The Environmental Checklist (CEQA Guidelines Appendix G) or Initial Study (IS) (see *Section 3 – Initial Study*) provides analysis that examines the potential environmental effects of the construction and operation of the Project. Section 15063 of the CEQA Guidelines requires the Lead Agency to prepare an IS to determine whether a discretionary Project will have a significant effect on the environment. A Mitigated Negative Declaration (MND) is appropriate when an IS has been prepared and a determination can be made that no significant environmental effects will occur because revisions to the Project have been made or mitigation measures will be implemented that reduce all potentially significant impacts to less than significant levels. The content of an MND is the same as a Negative Declaration, with the addition of identified mitigation measures and a Mitigation Monitoring and Reporting Program (MMRP) (see *Section 6 – Mitigation Monitoring and Reporting Program*).

Based on the IS, the Lead Agency has determined that the environmental review for the proposed application can be completed with an MND.

1.3 - California Department of Education, School Siting Requirements

Education Code Section 17251 and the California Code of Regulations (CCR), Title 5, Sections 14001 through 14012, outline the powers and duties of the California Department of Education (CDE) regarding school sites and the construction of school buildings. Districts using local funds are encouraged to seek the Department's approval for the benefits that such outside, objective reviews provide to the school district and the community.

Safety is the first consideration in the selection and/or construction of school sites. Certain health and safety requirements are governed by state regulations and the policies of the Department. When selecting new school sites, the selection team considers the following factors: (1) proximity to airports; (2) proximity to high-voltage power transmission lines; (3) presence of toxic and hazardous substances; (4) hazardous air emissions and facilities within a quarter mile; (5) other health hazards; (6) proximity to railroads; (7) proximity to high-pressure natural gas lines, gasoline lines, pressurized sewer lines, or high pressure water pipelines; (8) proximity to propane tanks; (9) noise; (10) proximity to major

roadways; (11) results of geological studies and soils analyses; (12) condition of traffic and school bus safety; (13) safe routes to school; and (14) safety issues for joint-use projects.

In considering the construction of the Project, the District considered the factors that apply to new school sites. Figure 1-4 illustrates the location of existing airports in the Project vicinity, and Figure 1-5 illustrates the location and/or proximity of known hazards using the factors listed above for school site selection.

In general, the school siting criteria provides that hazards should be located greater than 1,500 feet from any new school. Data indicate that the nearest high-pressure gas line is greater than 1,500 feet from the Project site. Other identified hazards include an oil well (dry hole) that is approximately 400 feet east of the site, but it not likely that any oil-related gases are present beneath the Project site (See Figure 3.4.9-1) (Soils Engineering, Inc, 2019).

In general, the school siting criteria provides that hazards should be located greater than 1,500 feet from any new school. Data indicate that the nearest high-pressure gas line is greater than 1,500 feet from the Project site. Other identified hazards include a few oil wells (dry holes) that have been drilled less than one mile away from the site, but it not likely that any oil-related gases are present beneath the Project site (Soils Engineering, Inc, 2019).

1.4 - Impact Terminology

The following terminology is used to describe the level of significance of impacts.

- A finding of "no impact" is appropriate if the analysis concludes that the Project would not affect a topic area in any way.
- An impact is considered "less than significant" if the analysis concludes that it would cause no substantial adverse change to the environment and requires no mitigation.
- An impact is considered "less than significant with mitigation incorporated" if the analysis concludes that it would cause no substantial adverse change to the environment with the inclusion of environmental commitments that have been agreed to by the applicant.
- An impact is considered "potentially significant" if the analysis concludes that it could have a substantial adverse effect on the environment.

1.5 - Document Organization and Contents

The content and format of this IS/MND is designed to meet the requirements of CEQA. The report contains the following sections:

- *Section 1 – Introduction:* This section provides an overview of CEQA requirements, intended uses of the IS/MND, document organization, and a list of regulations that have been incorporated by reference.
- *Section 2– Project Description:* This section describes the Project and provides data on the site's location.

- *Section 3 – Initial Study:* This section contains the evaluation of 18 different environmental resource factors contained in Appendix G of the CEQA Guidelines. Each environmental resource factor is analyzed to determine whether the proposed Project would have an impact. One of four findings is made which include: no impact, less than significant impact, less than significant with mitigation, or significant and unavoidable. If the evaluation results in a finding of significant and unavoidable for any of the 18 environmental resource factors, then an Environmental Impact Report will be required.
- *Section 4 – List of Preparers:* This section identifies the individuals who prepared the IS/MND.
- *Section 5 – Bibliography:* This section contains a full list of references that were used in the preparation of this IS/MND.
- *Section 6 – Mitigation Monitoring and Reporting Program:* This section contains the Mitigation Monitoring and Reporting Program.

1.6 - Incorporated by Reference

The following documents and/or regulations are incorporated into this IS/MND by reference:

- Metropolitan Bakersfield General Plan;
- Kern County General Plan EIR;
- Kern County Zoning Ordinance;
- Kern County Airport Land Use Compatibility Plan; and
- California Department of Education, Title 5, California Code of Regulation.

Figure 1-1
Regional Location

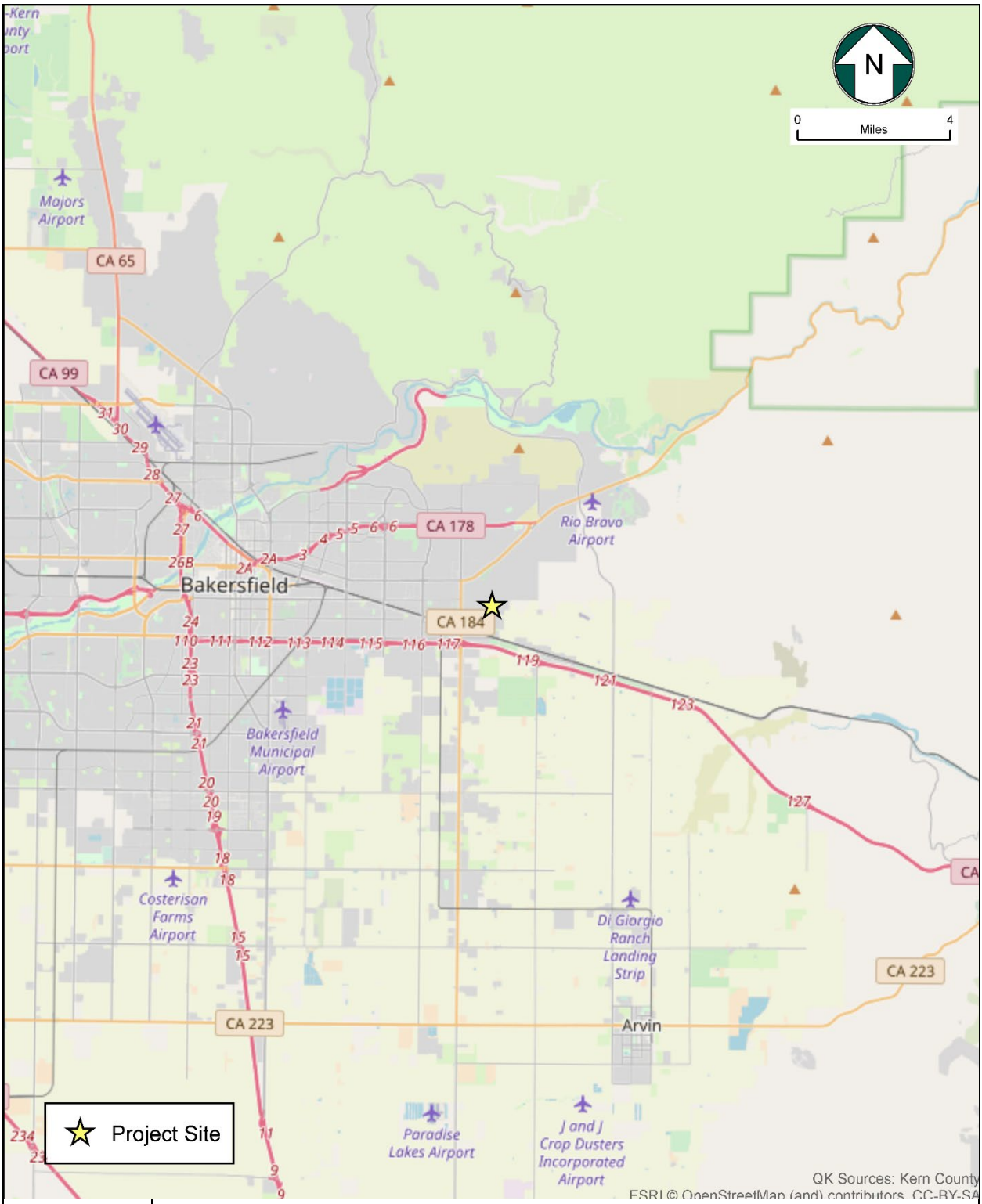

Figure 1-2
Project Vicinity

Figure 1-3
Aerial Location

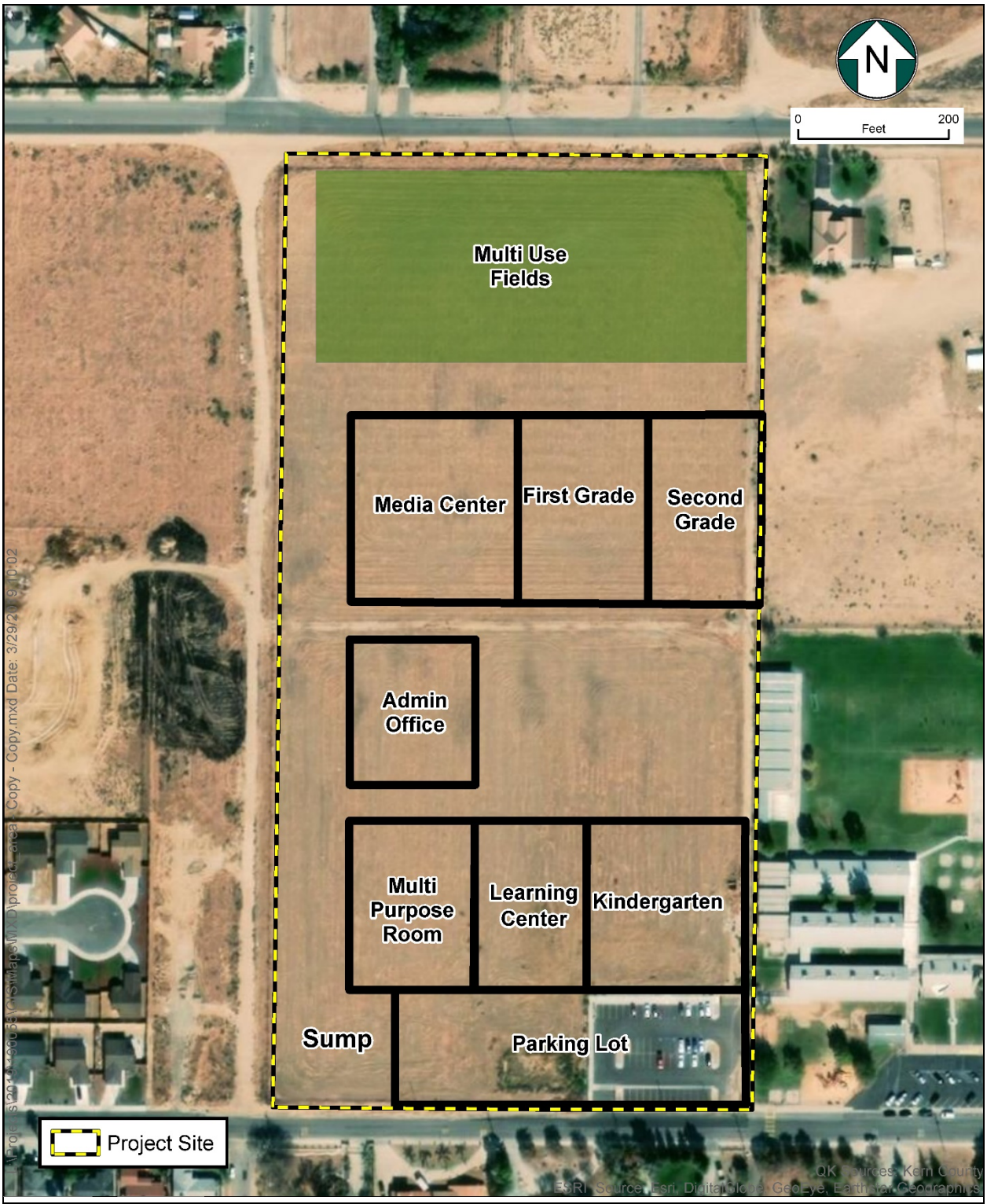

Figure 1-4
Conceptual Site Plan

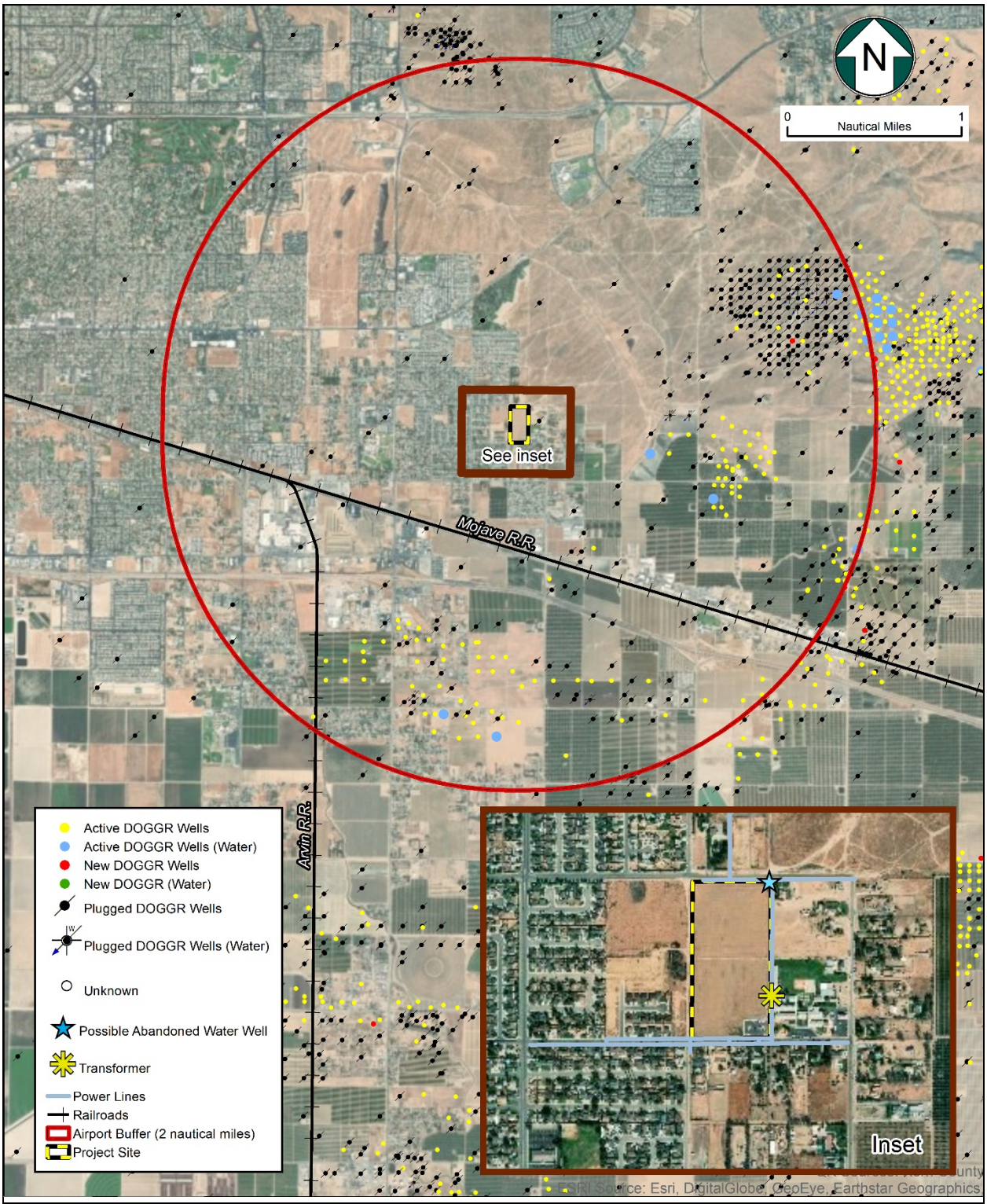

Figure 1-5
Hazards

SECTION 2 - PROJECT DESCRIPTION

2.1 - Introduction

The District is proposing to construct an expansion of the existing Orangewood Elementary School campus currently located at 9600 Eucalyptus Drive in Bakersfield, California (Project).

2.2 - Project Location

The project site is located within Section 31, Township 29 South, Range 29 East, Mount Diablo Base and Meridian (MDB&M), within the Lamont U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle. The site encompasses approximately 18.5 acres of Assessor's Parcel Numbers (APN) 388-140-03 and -12. The Project site is located on Eucalyptus Drive, immediately west and northwest of the existing Orangewood Elementary School campus at 9600 Eucalyptus Drive in Bakersfield, California.

The surrounding area includes Orangewood Elementary School to the east, and residences to the west, north, and south of the Project site.

2.3 - Project Environment

The site is currently undeveloped land consisting of exposed soil and sparse vegetation. The site is bordered by the Orangewood Elementary School to the east, and single-family residences to the south, west, and north of the Project site. The proposed school site has a Low Medium Density Residential (LMR) designation by the Metropolitan Bakersfield General Plan and a zone classification of Low Density Residential (R-1).

Police and fire service will be provided by the County of Kern and the City of Bakersfield. Water and sewer service would be provided by East Niles Community Services District (ENCSD).

2.4 - Proposed Project

The expansion of Orangewood Elementary School will occupy approximately 18.5 acres of the Project site. The enrollment capacity will remain at 450 students ranging from kindergarten through second grade. There will be seven buildings constructed, totaling between 20,260 and 23,260 square feet (sq. ft.). These buildings will include classrooms, administrative, and multi-purpose rooms. The Project will also include the construction of multi-use fields that will occupy the remaining undeveloped land in the northern portion of the Project site. To the extent feasible, the school athletic equipment such as permanent soccer nets will be wildlife-friendly, using smaller mesh netting. Outdoor lighting would be provided for nighttime campus security and the multi-use fields. The Project site would be primarily accessed from Eucalyptus Drive.

No known historic oil activity has occurred on the site. The Project is not located within the boundaries of an oilfield. According to the Division of Oil, Gas and Geothermal Resources (DOGGR) records and maps, no abandoned oil wells are located on the site, and the nearest well is approximately 400 feet east of the site (see Figure 3.4.9-1). It was determined the the high-pressure natural gas and petroleum transmission lines are located over 1,500 feet from of the Project site. No power transmission lines with greater than 115 kV appear to be present within 350 feet of the property border (Soils Engineering, Inc, 2019).

The Project site is not located within the Kern County Airport Land Use Compatibility Plan (ALUCP).

Student population for the school would come from students currently attending Orangewood Elementary School. The enrollment in the District as of Fall 2018 is 1,150 students. No additional student capacity is proposed as a part of the Project. Additionally, no additional staff will be required as a result of the Project.

SECTION 3 - INITIAL STUDY

3.1 - Environmental Checklist

1. **Project Title:**

   Orangewood Elementary School K-2 Expansion Project

2. **Lead Agency Name and Address:**

   Edison School District
   11518 School Street
   Bakersfield, CA 93307

3. **Contact Person and Phone Number:**

   Todd Noble
   (661) 340-1150

4. **Project Location:**

   Immediately west of 9600 Eucalyptus Drive in unincorporated Kern County.

5. **General Plan Designation:**

   Low Medium Density Residential (LMR)

6. **Zoning:**

   Low Density Residential (R-1)

7. **Description of Project:**

   Please See Section 2.

8. **Surrounding Land Uses and Setting:**

   Orangewood Elementary School to the east; single-family residences to the north, west and south.

9. **Other Public Agencies Whose Approval May Be Required:**

   - California Department of Education;
   - California Department of Toxic Substances Control;
   - California Division of the State Architect;
   - San Joaquin Valley Air Pollution Control District; and
   - Central Valley Regional Water Quality Control Board.

10. **Have California Native American tribes traditionally and culturally affiliated with the Project area requested consultation pursuant to Public Resources Code Section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?**

On March 29, 2019, letters were mailed to each of the Native American tribes within the geographic area. The letters included a brief Project description and location maps. To date, no response has been received from any tribe. A Sacred Lands File records request was submitted to the Native American Heritage Commission and the response was negative (See Appendix B).

3.2 - Environmental Factors Potentially Affected

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

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

3.3 - Determination

On the basis of this initial evaluation:

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

☒ I find that although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the

Project have been made by or agreed to by the Project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

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

☐ I find that the proposed Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (a) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (b) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENT 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.

Jaymie L. Brauer
Signature

1/10/2020
Date

Jaymie L. Brauer
Printed Name

Todd Noble
For

3.4 - Evaluation of Environmental Impacts

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

2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as Project-level, indirect as well as direct, and construction as well as operational impacts.

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

4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

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

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

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

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

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

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

8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a Project's environmental effects in whatever format is selected.

9. The explanation of each issue should identify:

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

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

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
3.4.1 - *AESTHETICS*				
Except as provided in Public Resources Code Section 21099, would the Project:				
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d. Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☒	☐	☐

Discussion

Impact #3.4.1a – Except as provided in Public Resources Code Section 21099, would the Project Have a substantial adverse effect on a scenic vista?

The existing school site and proposed extension are located in an area characterized by flat, undeveloped land. No known aesthetic resources exist on the site. The site is not within or in the vicinity of a State, city, or County identified scenic vista or scenic highway corridor. Furthermore, development of the Project would not block or preclude views to any area containing important or what would be considered visually appealing landforms. Therefore, no scenic vistas will be impacted by construction of this Project. The Project does not lie near or within a State Designated or Eligible State Scenic Highway (California Department of Transportation, 2011). Further, the Project does not include the removal of trees determined to be scenic or of scenic value, the destruction of rock outcroppings or degradation of any historic building. Therefore, no scenic resources will be affected. The Project will not result in development that is substantially different than surrounding land uses.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be *less than significant*.

Impact #3.4.1b – Except as provided in Public Resources Code Section 21099, would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

See Impact #3.4.1a, above.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be *less than significant*.

Impact #3.4.1c – Except as provided in Public Resources Code Section 21099, would the Project in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?

The Project is in an area that is predominantly residential with undeveloped land to the northeast. The proposed Project buddings and associated structures will be set back from the roadway but will be visible to traveling motorists. However, changes to the visual quality and character of the Project site will be similar in nature to the existing Orangewood Elementary School and residential development that surrounds the Project site. The Project's appearance would not change or degrade the visual character of the site. Therefore, the Project would not result in a substantial impact to the visual quality of the area.

See also discussion of Impact #3.4.1a, above.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be *less than significant*.

Impact #3.4.1d – Except as provided in Public Resources Code Section 21099, would the Project Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

Construction of the proposed Project would generally occur during daytime hours, typically from 7:00 a.m. to 6:00 p.m. All lighting would be directed downward and shielded to focus illumination on the desired work areas only and prevent light spillage onto adjacent properties. Because lighting used to illuminate work areas would be shielded, focused downward, and turned off by 6:00 p.m., the potential for lighting to affect any residents adversely is minimal. Increased truck traffic and the transport of construction materials to the Project site would temporarily increase glare conditions during construction. However, this increase in glare would be minimal. Construction activity would focus on specific areas on the sites, and any sources of glare would not be stationary for a prolonged period of time. Therefore, construction of the proposed Project would not create a new source of substantial glare that would affect daytime views in the area.

For operations, exterior lighting would comply with Kern County Dark Skies Ordinance (19.81) standards, which include outdoor lighting design to minimize reflective glare and light scatter. The school facility would include lighting for classrooms, onsite security and athletic stadium. State law requires the District to follow the California Code of Regulations Title 24 (Part 3) regarding indoor light design. In addition, Mitigation Measure MM AES-1 would require the school's lighting design to be compliance with "dark skies" standards and event lighting to be shut off by 11:00pm. These requirements would substantially reduce potential nuisances from light or glare. With implementation of Mitigation Measure MM AES-1, the proposed Project would not create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area. Therefore, the Project would have a less than significant impact with mitigation.

MITIGATION MEASURE(S)

MM AES-1: Security and nighttime lighting installed at the school site shall be designed utilizing "dark skies" standards and guidelines and shall incorporate shielding of lighting and orienting lighting downward to prevent direct uplighting. Lighting used for nighttime events shall be turned off by 11:00pm. All lights in excess of 150 watts shall be directed toward the stadium field and away from adjacent properties. All stadium field light fixtures shall be designed with appropriate reflectors, hoods and side shields to direct the angle of incidence to reflect light downward.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant with mitigation incorporated***.

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

3.4.2 - *AGRICULTURE AND FORESTRY RESOURCES*

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

a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?	☐	☐	☒	☐
b. Conflict with existing zoning for agricultural use or a Williamson Act Contract?	☐	☐	☒	☐
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☒	☐

Discussion

Impact #3.4.2a – Would the Project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?

The proposed Project would not convert any agricultural land to non-agricultural use. CEQA uses the FMMP categories of "Prime Farmland," "Farmland of Statewide Importance," and

"Unique Farmland" to define "agricultural land" for the purposes of assessing environmental impacts (PRC Section 21060.1(a)). The California Department of Conservation has designated the Project site as Vacant or Disturbed Land. Additionally, there is no designated Prime Farmland surrounding the Project site. Therefore, the Project site is not considered productive agricultural land, and its conversion to use for school would result in a less than significant impact.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant***.

Impact #3.4.2b – Would the Project conflict with existing zoning for agricultural use or a Williamson Act Contract?

The Project site is not zoned for agricultural use and is not under a Williamson Act land use contract (see Figure 3.4.2-1). The conversion of farmland to non-agricultural use has the potential to result in two types of impacts: 1) direct conversion impacts, which is the conversion of land within the project site boundary, or 2) indirect impacts, which is the pressure to convert other properties adjacent to the project site from agricultural to non-agricultural use. There are no lands adjacent to the Project site that are currently subject to a Williamson Act Contract (see Figure 3.4.2-1). Therefore, the Project would not conflict with existing zoning for agricultural use or Williamson Act Contract and there would be no impact.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

There would be ***no impact***.

Impact #3.4.2c – Would the Project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

The Public Resources Code Section 12220 (g) and Section 4526 defines "Forest land" as land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. The project would not result in the loss or conversion of forest land to a non-forest use. There are no forest lands identified on the project site or within its vicinity; therefore, there would be no conflict with or impacts to zoning for forest land or timber land.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

There would be ***no impact***.

Impact #3.4.2d – Would the Project result in the loss of forest land or conversion of forest land to non-forest use?

See discussion of Impact #3.4.2c, above.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

There would be ***no impact***.

Impact #3.4.2e – Would the Project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

See discussion of Impacts #3.4.2a - #3.4.2c, above.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant***.

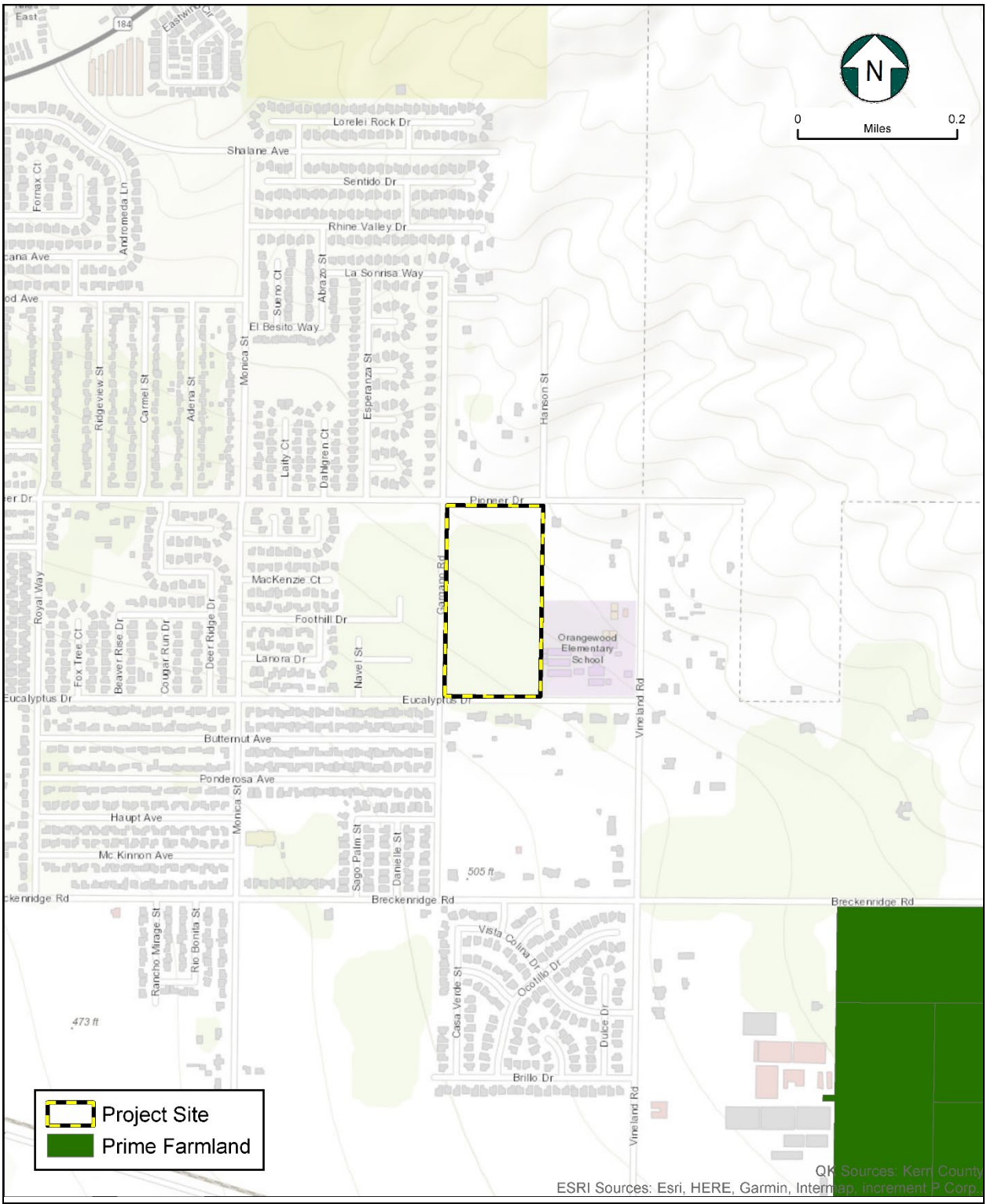

Figure 3.4.2-1
Williamson Act Land Use Contract

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

3.4.3 - *AIR QUALITY*

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the Project:

a.	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b.	Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard ?	☐	☐	☒	☐
c.	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d.	Result in other emissions (such as those leading to odors adversely affecting a substantial number of people?	☐	☐	☒	☐

Discussion

The following analysis is based primarily on an Air Quality Impact Analysis/Greenhouse Gases Assessment ((Insight Environmental, 2019), see Appendix A of this document, prepared in accordance with the San Joaquin Valley Air Pollution Control District's (SJVAPCDs) instructions that are included in the District's *Guide for Assessing and Mitigating Air Quality Impacts* (GAMAQI) for the Project. In addition to providing an assessment of the Project's impacts to air quality and GHGs, the AQIA includes a detailed description of the regulatory environment as it relates to air quality.

Impact #3.4.3a – Would the Project conflict with or obstruct implementation of the applicable air quality plan?

The CEQA Guidelines indicate that a significant impact would occur if the proposed project would conflict with or obstruct implementation of the applicable air quality plan. The San Joaquin Valley Air Basin (SJVAB) is designated nonattainment of State and federal health-based air quality standards for ozone and particulate matter less than 2.5 microns (PM2.5). The SJVAB is designated attainment for federal particulate matter less than 10 microns (PM10) standards and nonattainment of state PM10. To meet federal Clean Air Act (CAA)

requirements, the SJVAPCD has multiple air quality attainment plan (AQAP) documents, including:

- Extreme Ozone Attainment Demonstration Plan (EOADP) for attainment of the 1-hour ozone standard (2004);
- 2007 Ozone Plan for attainment of the 8-hour ozone standard;
- 2007 PM10 Maintenance Plan and Request for Redesignation; and
- 2008 PM2.5 Plan.

Because of the region's federal nonattainment status for ozone and PM2.5, and State nonattainment status for ozone, PM2.5, and PM10, if the project-generated emissions of either the ozone precursor pollutants [reactive organic gases (ROG) or oxides of nitrogen (NOx)], PM10, or PM2.5 were to exceed the SJVAPCD's significance thresholds, then the project uses would be considered to conflict with the attainment plans. In addition, if the project uses were to result in a change in land use and corresponding increases in vehicle miles traveled, they may result in an increase in vehicle miles traveled that is unaccounted for in regional emissions inventories contained in regional air quality control plans.

The GAMAQI states that the SJVAPCD's established thresholds of significance for criteria pollutant emissions, which are based on the NSR, require offsets for stationary sources. "Emission reductions achieved through implementation of District offset requirements are a major component of the District's air quality plans. Thus, projects with emissions below the thresholds of significance for criteria pollutants would be determined to 'Not conflict or obstruct implementation of the District's air quality plan'" (SJVAPCD 2015).

Project's Contribution to Air Quality Violations

As discussed in Impact #3.4.3b below, predicted construction and operational emissions would not exceed the SJVAPCD's significance thresholds for ROG, NOx, PM_{10}, and $PM_{2.5}$. As a result, the project would not conflict with emissions inventories contained in regional AQAPs and would not result in a significant contribution to the region's air quality non-attainment status.

Consistency with Assumptions in Air Quality Attainment Plans

The primary way of determining consistency with the AQAP'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 AQAPs 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 designates locations for land uses to regulate growth. The Kern County Council of Governments uses the growth projections and land use information in adopted general plans to estimate future average daily trips and then vehicle miles traveled (VMT), which are then provided to SJVAPCD to estimate future emissions in the AQAPs. Existing and future pollutant emissions computed in the AQAP are based on land uses from

area general plans. AQAPs detail the control measures and emission reductions required for reaching attainment of the air standards.

Control Measures

The AQAPs contain a number of control measures, including the rules outlined by the SJVAPCD. The control measures in the AQAP are enforceable requirements. The project would comply with all of SJVAPCD's applicable rules and regulations. Therefore, the project complies with this criterion.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant.***

Impact #3.4.3b – Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard?

Because the proposed Project would generate less than significant Project-related operational impacts to criteria air pollutants, the Project's contribution to cumulative air quality impacts would not be cumulatively considerable. Additionally, compliance with the SJVAPCD's Air Quality Attainment Plan (AQAP) is presumably required by all projects located within the SJVAPCD's jurisdiction. Because projects included in the cumulative analysis presumably comply with the requirements of one or both of these plans, the Project's incremental contribution to a cumulative effect is considered less than cumulatively considerable (CEQA Guidelines Section 15064(h)(3); SJVAPCD 2015). As discussed in Impact #3.4.3a, above, the Project would not exceed the thresholds established by the SJVAPCD and thus would not be considered cumulatively considerable.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant.***

Impact #3.4.3c – Would the Project expose sensitive receptors to substantial pollutant concentrations?

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. There are 11 known non-residential sensitive receptors within 2 miles of the Project.

The localized impacts depend on whether ambient CO levels in the Project vicinity would be above or below NAAQS. If ambient levels are below the standards, a project is considered to have significant impacts if a project's emissions would exceed of one or more of these standards. If ambient levels already exceed a state standard, a project's emissions are considered significant if they would increase one-hour CO concentrations by 10 ppm or more or eight-hour CO concentrations by 0.45 ppm or more. There are two criteria established by the SJVAPCD's GAMAQI by which CO "Hot Spot" modeling is required:

1. A traffic study for the project indicates that the Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity would be reduced to LOS E or F; or

2. A traffic study indicates that the project would substantially worsen an already existing LOS F on one or more streets or at one or more intersections in the project vicinity

A traffic study was not completed for this Project. The Project does not increase traffic activity levels; therefore, CO "Hotspot" Modeling was not conducted for this Project and no concentrated excessive CO emissions are expected to be caused once the proposed Project is completed (Insight Environmental, 2019)

The proposed Project does not increase either the student population or the staff. Construction traffic will be temporary, and once operational, daily traffic is not anticipated to be more than baseline conditions. Therefore, the Projects impact related to air quality is not expected to result in the generation of odors or hazardous air pollutants. The Project would not expose sensitive receptors to substantial concentrations of localized PM_{10}, carbon monoxide, diesel particulate matter, hazardous air pollutants, or naturally occurring asbestos, as discussed below.

Hazardous Pollutants or Odors

The GAMAQI guidelines introduce two types of projects that should be assessed when considering hazardous air pollutants (HAPs) which includes: 1) placing a toxic land use in an area where it may have an adverse health impact on an existing sensitive land use and 2) placing a sensitive land use in an area where an adverse health impact may occur from an existing toxic land use. Some examples of projects that may include HAPs are:

- Agricultural products processing;
- Bulk material handling;
- Chemical blending, mixing, manufacturing, storage, etc.;
- Combustion equipment (boilers, engines, heaters, incinerators, etc.);
- Metals etching, melting, plating, refining, etc.;
- Plastics & fiberglass forming and manufacturing;
- Petroleum production, manufacturing, storage, and distribution; and
- Rock & mineral mining and processing.

The proposed Project is located on a site that is currently vacant land that was previously used for agricultural purposes. The proposed Project consists of an expansion of the existing elementary school to reduce overcrowding. During the construction period some odors could result from vehicles and equipment using diesel fuels. However, vehicles and equipment using diesel fuels would have to comply with the California Air Resources Board (CARB) guidelines, which limit idling time to five minutes with the Airborne Toxic Control Measure (ATCM). In addition, the construction period would be temporary. In 2009, Senate Bill (SB) 124 (Amended Regulation) acknowledged and codified CARBs ATCM limiting school bus idling. During the operation of the proposed Project, school buses may be utilized and would emit diesel, but they are part of the baseline. Also, they are also subject to the CARB's ATCM limiting school bus idling and idling at or near schools to only when necessary for safety or operational concerns.

Naturally Occurring Asbestos

The CARB has an ATCM for construction and grading requiring the implementation of mitigation measures to minimize emissions of asbestos-laden dust when the activity occurs in an area where naturally occurring asbestos is likely to be found. No naturally occurring asbestos is suspected within 10 miles of the Project site (Soils Engineering, Inc, 2018).

Valley Fever Exposure

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

There is a potential risk of contracting Valley Fever within the region based on the general similarity between the sediments known to contain the spores and the sediments believed to be present in the area of the proposed project. In addition, it must be noted that: 1) airborne dust containing the spores can be transported to the project area from other areas within the Bakersfield area potentially exposing those present to the disease and 2) persons who have not resided in the Bakersfield area may be more susceptible to contracting the disease than long-time residents due to any environmental, medical, and personal factors. (Note: The conclusions regarding the potential for either exposure to or contraction of Valley Fever through the construction of the proposed Project should not be construed as a professional medical or public health opinion. These conclusions are merely a review of the geologic condition of the Project site relative to potential presence of sediments known to contain the Valley Fever spore.)

The proposed Project has the potential to generate substantial amounts of fugitive dust and suspend Valley Fever spores with the dust that could then reach nearby sensitive receptors. During Project construction, it is possible that on-site workers could be exposed to valley fever as fugitive dust is generated during construction. The Project would minimize the

generation of fugitive dust by complying with the SJVAPCD's Regulation VIII. Dust-disturbing activities would be limited in scope and duration.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant***.

Impact #3.4.3d – Would the Project result in other emissions (such as those leading to odors adversely affecting a substantial number of people?

See Impact #3.4.3c, above.

Because the Project is a school and the anticipated activities for the Project site are not listed in the GAMAQI as a source which would create objectionable odors the Project is not expected to be a source of objectionable odors (Insight Environmental, 2019).

Based on the provisions of the SJVAPCD's GAMAQI, the proposed Project would not exceed any screening trigger levels to be considered a source of objectionable odors or odorous compounds (Insight Environmental, 2019). Furthermore, there does not appear to be any significant source of objectionable odors in close proximity that may adversely impact the Project site when it is in operation. Additionally, the Project emission estimates indicate that the proposed Project would not be expected to adversely impact surrounding receptors. As such, the proposed Project would not be a source of any odorous compounds nor would it likely be impacted by any odorous source. The proposed Project, because of its educational nature, is not expected to result in the generation of odors other than sporadic diesel fumes during construction.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant***.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
3.4.4 - *BIOLOGICAL RESOURCES*				
Would the Project:				
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 Wildlife 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 Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f. Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☒	☐

Discussion

A biological reconnaissance survey was conducted to determine whether there are sensitive biological resources that might be adversely affected by the proposed Project. The evaluation is based upon existing site conditions, the potential for sensitive biological resources to occur

on and in the vicinity of the Project site, and any respective impacts that could potentially occur.

In addition to providing an evaluation of the Project's impacts to biological resources, the report includes a detailed description of the regulatory environment as it relates to biological resources.

A literature review of the California Department of Fish and Wildlife's California Natural Diversity Database for a 10-mile radius of the site (California Department of Fish and Wildlife, 2019)), California Native Plant Society (California Native Plant Society, 2019), and United States Fish and Wildlife Service Endangered Species List for the surrounding nine United States Geological Survey quadrangles (US Fish and Wildlife Service, 2019), was conducted to identify special-status plant and wildlife species with the potential to occur within the Project site and vicinity. The results of the database inquiry were subsequently reviewed to evaluate the potential for occurrence of special-status species on or near the Project site prior to conducting the biological reconnaissance survey.

On February 6, 2019, QK biologists conducted a biological reconnaissance survey of the Project site and a 50-foot buffer area (Biological Survey Area, BSA), where feasible. The purpose of the survey was to determine the locations and extent of potential plant communities and sensitive habitats, and the potential for occurrence of special-status plant and animal species within the Project site and surrounding buffer area. Survey methodologies included walking meandering pedestrian transects through all present habitat types with 100% visual coverage of the BSA. The survey was conducted during daylight hours during which there is a high probability of detecting special-status species including sign (e.g. tracks, scat, prey remains, dens, etc.). All data was recorded using ESRI Collector for ArcGIS software installed on an iPad. Photographs were taken to document the existing landscape of the Project site and adjacent land uses; detailed notes on observed plant and wildlife species and site conditions were taken while conducting the survey.

Impact #3.4.4a – Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

The literature search determined that there is a potential for several special-status species to be present on the Project site. An evaluation of each of the potential special-status species, which included habitat requirements, likelihood of required habitat to occur within the Project area, and a comparison to the CNDDB records was conducted. The results of this evaluation concluded that no special-status plant species are anticipated to occur on or near the Project site and four wildlife species have a reasonable potential to occur on or near the Project site.

General Wildlife and Plant Observations

Most of the Project site has experienced moderate to significant ground disturbance from past local disturbance, residential development, and existing school development surrounding the Project site. The wildlife species inhabiting the Project site and immediate surrounding area include those typically found in moderate to heavily disturbed habitats associated with urban development zones of Kern County and the southern San Joaquin Valley. When surveyed, the Project site had a high density of common and ruderal vegetation growth.

A total of six bird species and one mammal species were identified during the survey. A total of ten plant species were identified during the survey. Table 3.4.4-1 illustrates the observed species while conducting the reconnaissance level survey.

Table 3.4.4-1
List of Plant and Wildlife Species Observed on the Project Site

Scientific Name	Common Name
Plants	
Amsinckia intermedia	fiddleneck
Avena sp.	wild oats
Cynodon dactylon	Bermuda grass
Erodium cicutarium	red-stemmed filaree
Festuca sp.	fescue
Hordeum murinum	foxtail barley
Malva sp.	common mallow
Salsola tragus	Russian thistle
Sisymbrium irio	London rocket
Urtica urens	stinging nettle
Birds	
Sayornis saya	Say's Phoebe
Spizella atrogularis	black-chinned sparrow
Sturnella neglecta	Western meadowlark
Corvus corax	common raven
Zonotrichia leucophrys	white-crowned sparrow
Corvus brachyrhynchos	American crow
Mammals	
Canis lupus	domestic dog

*Indicates that only sign (scat, tracks, prey remains, dens) were observed.

Sensitive Habitats and Special-Status Species

SPECIAL-STATUS PLANTS

Based on the desktop research, there are three sensitive natural communities and 27 special-status plant species that have the potential to occur within the subject quadrangle and eight

surrounding quadrangles. There are two sensitive natural communities and 18 plant species found in the CNDDB that are found within a 10-mile buffer of the Project site. However, the Project site and vicinity has been disturbed for years due to ongoing agriculture production and urbanized with residential development and does not provide suitable habitat for any of these sensitive natural communities or special-status plant species. No special-status plant species were identified during the biological reconnaissance survey.

Ten plant species, primarily consisting of foxtail barley (*Hordeum murinum*), Russian thistle (*Salsola tragus*), and stinging nettle (*Urtica urens*), were observed during the survey of the Project site (see Table 3.4.4-1). Although protocol-level botanical surveys were not conducted, and the reconnaissance survey did not coincide with optimum blooming periods for all plant species, it is not anticipated that special-status plant species will be encountered on the Project site.

SPECIAL-STATUS WILDLIFE

Protocol surveys for specific special-status wildlife species were not conducted for this report as it was determined by the consulting biologist that such surveys were not warranted due to the condition of the Project site.

Based on the survey there are 42 special-status wildlife species that have the potential to occur within subject quadrangle and eight surrounding quadrangles. There are 24 wildlife species found in the CNDDB that are found within a 10-mile buffer of the Project site. Of the 42 species, a total of 38 can be eliminated from consideration due to the lack of suitable habitat within the Project site. The remaining four species have a low, moderate, or high potential to occur within the Project site and vicinity. There is one species with a low potential (i.e. Swainson's hawk) to occur on the Project site, and three species (i.e. burrowing owl, San Joaquin kit fox, and American badger) have a moderate potential to occur. There are no species that have a high potential to occur within the Project site.

Swainson's Hawk

The Swainson's hawk (*Buteo swainsoni*) has a low potential to occur within the Project or adjacent properties. The nearest historical CNDDB record (1935, EONDX 91383) for Swainson's hawk occurred approximately 5.5 miles west of the Project site. Swainson's hawk are known to forge in open agricultural fields, such are hay or alfalfa. The area surrounding the Project site are residentially developed, and the existing school is to the east. t track; however, no Swainson's hawks or sign of the species was observed during the reconnaissance level biological survey. Potential nesting habitat is present in the large trees located approximately 700-feet to the north of the Project site.

Burrowing owl

Burrowing owl *(Athene cunicularia)* has a moderate potential to occur within the Project site and immediate surrounding area. The nearest historical CNDDB record (2006, EONDX 82926) for burrowing owl occurred approximately 3 miles southwest of the Project site.

There is a moderate potential for burrowing owl to reside or forage in open fields in the vicinity of the Project site. Due to the development and disturbance in the vicinity it is unlikely that burrowing owl are present in the area; however, they could be present from time to time as a transient. There were no potential burrows observed within the Project site. No Western burrowing owl or sign were observed at the time of the survey.

San Joaquin Kit Fox

San Joaquin kit fox (*Vulpes macrotis mutica*) has a moderate potential to occur within the Project site and immediate surrounding area. The nearest historical CNDDB record (2004, EONDX 67172) for SJKF observation occurred approximately one-mile north of the Project site. Due to the lack of high-quality habitat and the lack of suitable foraging opportunities, there is a moderate potential for SJKF to reside or forage in the open space properties to the north and northeast of the Project site. No San Joaquin kit fox or sign were observed at the time of the reconnaissance survey. However, the San Joaquin kit fox is known to occur in the vicinity of the Project site and could potentially be present from time to time as a transient forager.

American Badger

American badger (*Taxidea taxus*) has a moderate potential to occur within the Project site and immediate surrounding area. The nearest historical CNDDB record (1900, EONDX 57313) for American badger occurred approximately 1.5-miles west of the Project site boundary. There is a moderate potential for American badger to reside or forage on the Project site. However, the American badger is known to occur in the vicinity of the Project site and could potentially be present from time to time as a transient forager.

CONCLUSION

The Project site and surrounding area has been disturbed for years due to ongoing disturbance and residential development. The Project site and vicinity does provide suitable habitat for any of these special-status plant species. The Project site and vicinity does provide suitable foraging habitat for four of these special-status wildlife species. No special-status plant or wildlife species were identified during the biological reconnaissance survey.

Special-status plant species are unlikely to be impacted by Project activities and no mitigation measures to protect, avoid, or minimize impacts to special-status plant species are warranted. There is the potential for some special-status or protected wildlife species to be impacted by Project activities. Mitigation Measures MM BIO-1 through MM Bio-6 would protect, avoid, and minimize impacts to special-status wildlife species, as provided below. When implemented, these measures would reduce impacts to these species to below significant levels.

Through implementation of mitigation measures listed below, impacts of the proposed Project would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in

local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. Therefore, the Project will have a less than significant impact with incorporation of mitigation measures.

MITIGATION MEASURE(S)

MM BIO-1: Within 14 days of the start of Project activities, a pre-activity survey shall be conducted by a qualified biologist knowledgeable in the identification of these species. The pre-activity survey shall include walking transects to identify presence of burrowing owl, Swainson's hawk, California horned lark, San Joaquin kit fox, burrowing owl, nesting birds, and other special-status species or signs of, and sensitive natural communities. The pre-activity survey shall be walked by no greater than 30-foot transects for 100 percent coverage of the Project site and the 250-foot buffer, where feasible. If no evidence of special-status species is detected, no further action is required.

If dens or burrows that could support either of these species are discovered during the pre-activity survey conducted under Measure BIO-1, the avoidance buffers outlined below shall be established. No work would occur within these buffers unless the biologist approves and monitors the activity.

Burrowing Owl (active burrows)

- Non-breeding season: September 1 – January 31 – 160 feet
- Breeding season: February 1 – August 31 – 250 feet

San Joaquin Kit Fox

- Potential or Atypical den – 50 feet
- Known den – 100 feet
- Natal or pupping den – Contact agencies for further guidance

Potential kit fox dens may be excavated provided that the following conditions are satisfied: (1) the den has been monitored for at least four consecutive days and is deemed unoccupied by a qualified biologist; (2) the excavation is conducted by or under the direct supervision of a qualified biologist. Den monitoring and excavation shall be conducted in accordance with the *Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* (United States Fish and Wildlife Service, 2011).

MM BIO-2: Prior to ground disturbance activities, within one week of employment all new construction workers at the Project site shall attend a Construction Worker Environmental Awareness Training and Education Program, developed and presented by a qualified biologist.

The Construction Worker Environmental Awareness Training and Education Program would be presented by the biologist and shall include information on the life history wildlife and plant species that may be encountered during construction activities, their legal protections, the definition of "take" under the Endangered Species Act, measures the Project operator is implementing to protect the San Joaquin kit fox and other species, reporting

requirements, specific measures that each worker would employ to avoid take of the wildlife species, and penalties for violation of the Act. Identification and information regarding sensitive or other special status plant species shall also be provided to construction personnel.

- An acknowledgement form signed by each worker indicating that environmental training has been completed.
- A sticker that shall be placed on hard hats indicating that the worker has completed the environmental training. Construction workers shall not be permitted to operate equipment within the construction area unless they have attended the training and are wearing hard hats with the required sticker;
- A copy of the training transcript and/or training video/CD, as well as a list of the names of all personnel who attended the training and copies of the signed acknowledgement forms shall be maintain on site for the duration of construction activities.

The construction crews and contractor(s) would be responsible for unauthorized impacts from construction activities to sensitive biological resources that are outside the areas defined as subject to impacts by Project permits.

MM BIO-3: If Project activities must occur during the nesting season (February 1 to September 15), pre-activity nesting bird surveys shall be conducted within seven days prior to the start of construction at the construction site plus a 250-foot buffer for songbirds and a 500-foot buffer for raptors (other than Swainson's hawk). The surveys shall be phased with construction of the Project. If no active nests are found, no further action is required. However, existing nests may become active and new nests may be built at any time prior to and throughout the nesting season, including when construction activities are in progress. If active nests are found during the survey or at any time during construction of the Project, an avoidance buffer ranging from 50 feet to 500 feet may be required, with the avoidance buffer from any specific nest being determined by a qualified biologist. The avoidance buffer shall remain in place until the biologist has determined that the young are no longer reliant on the adults or the nest. Work may occur within the avoidance buffer under the approval and guidance of the biologist, but full-time monitoring may be required. The biologist shall have the ability to stop construction if nesting adults show any sign of distress.

If all Project activities are completed outside of the Swainson's hawk nesting season (February 15 through August 31), no mitigation shall be required. If construction is planned during the nesting season, a preconstruction survey shall be conducted by a qualified biologist to evaluate the site and a 0.5-mile buffer for active Swainson's hawk nests. If potential Swainson's hawk nests or nesting substrates are located within 0.5 mile of the Project sites, then those nests or substrates must be monitored for activity on a routine and repeating basis throughout the breeding season, or until Swainson's hawks or other raptor species are verified to be using them. Monitoring shall be conducted according to the protocol outlined in the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000). The protocol recommends that ten visits be made to each nest or nesting

site: one during January 1-March 20 to identify potential nest sites, three during March 20-April 5, three during April 5-April 20, and three during June 10-July 30. To meet the minimum level of protection for the species, surveys shall be completed for at least the two survey periods immediately prior to Project-related ground disturbance activities. During the nesting period, active Swainson's hawk nests shall be avoided by 0.5 mile unless this avoidance buffer is reduced through consultation with the CDFW and/or USFWS. If an active Swainson's hawk nest is located within 250 feet of the Project or within the Project, including the stick nest located within the Project, CDFW will require an Incidental Take Permit.

MM BIO-4: A qualified biologist shall conduct a pre-construction survey on the Project site and within 250 feet of its perimeter where feasible, to identify the presence of the western burrowing owl. The survey shall be conducted between 14 and 30 days prior to the start of construction activities. If any burrowing owl burrows are observed during the preconstruction survey, avoidance measures shall be consistent with those included in the CDFW staff report on burrowing owl mitigation (CDFG 2012). If occupied burrowing owl burrows are observed outside of the breeding season (September 1 through January 31) and within 500 feet of proposed construction activities, a passive relocation effort may be instituted in accordance with the guidelines established by the California Burrowing Owl Consortium (1993) and the California Department of Fish and Wildlife (2012). During the breeding season (February 1 through August 31), a 250-foot (minimum) buffer zone shall be maintained unless a qualified biologist verifies through noninvasive methods that either the birds have not begun egg laying and incubation or that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

MM BIO-5: If construction is planned outside the nesting period for raptors and migratory birds (February 15 to August 31), no mitigation shall be required. If construction is planned during the nesting season for migratory birds and raptors, a preconstruction survey to identify active bird nests shall be conducted by a qualified biologist to evaluate the site and a 250-foot buffer for migratory birds and a 500-foot buffer for raptors. If nesting birds are identified during the survey, active raptor nests shall be avoided by 500 feet and all other migratory bird nests shall be avoided by 250 feet. Avoidance buffers may be reduced if a qualified on-site monitor determines that encroachment into the buffer area is not affecting nest building, the rearing of young, or otherwise affecting the breeding behaviors of the resident birds.

No construction or earth-moving activity shall occur within a non-disturbance buffer until it is determined by a qualified biologist that the young have fledged (left the nest) and have attained sufficient flight skills to avoid Project construction areas. Once the migratory birds or raptors have completed nesting and young have fledged, disturbance buffers will no longer be needed and can be removed, and monitoring can cease.

MM BIO-6: During all construction-related activities, the following mitigation shall apply:

a. All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers.

b. Construction-related vehicle traffic shall be restricted to established roads and predetermined ingress and egress corridors, staging, and parking areas. Vehicle speeds shall not exceed 20 miles per hour (mph) within the Project site.

c. All Project activities shall occur during daylight hours, but if work must be conducted at night then a night-time construction speed limit of 10 mph shall be established.

d. Off-road traffic outside of designated Project areas shall be prohibited.

e. To prevent inadvertent entrapment of kit foxes or other animals during construction of the project, all excavated, steep-walled holes or trenches more than two feet deep shall 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.

f. Before holes or trenches are filled, they shall be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the USFWS and the CDFW shall be contacted before proceeding with the work.

g. In the case of trapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape, or the USFWS and CDFW shall be contacted for guidance.

h. All construction pipes, culverts, or similar structures with a diameter of four inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for kit foxes and burrowing owls 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 shall not be moved until the USFWS 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.

i. All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers and removed at least once a week from a construction or Project site.

j. No pets, such as dogs or cats shall be permitted on the Project site.

k. Project-related use of rodenticides and herbicides shall be restricted.

l. 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 shall be identified during the employee education program and their name and telephone number shall be provided to the USFWS and CDFW.

m. Any Project personnel who are responsible for inadvertently killing or injuring one of these species shall immediately report the incident to their representative. This representative shall contact the CDFW and USFWS immediately in the case of a dead, injured or entrapped listed animal.

n. The Sacramento Fish and Wildlife office and CDFW Region 4 office 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.

o. New sightings of San Joaquin kit fox shall be reported to the California Natural Diversity Database. A copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed shall also be provided to the USFWS.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant impact with mitigation incorporated***.

Impact #3.4.4b – Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

There are two sensitive natural communities, including Stabilized Interior Dunes and Valley Saltbush Scrub, with the potential to occur within 10-miles of the Project site. The Project site is highly disturbed and does not provide habitat to maintain these communities. No sensitive natural communities were identified within the Project site or buffer area during the biological reconnaissance survey. Although protocol-level botanical surveys were not conducted, it is unlikely that these habitat communities exist in the Project area due to heavy disturbance of the Project site and surrounding vicinity. There are no anticipated impacts to sensitive natural communities as a result of the proposed Project. The Project site covers an area of approximately 18.44 acres in size and consists of vacant, previously disturbed land. The Project site is surrounded by disturbed cultivated land.

Riparian habitat is defined as lands that are influenced by a river, specifically the land area that encompasses the river channel and its current or potential floodplain. The Project is not located within a river or an area that encompasses a river or potential floodplain. With respect to sensitive natural communities, due to the extensive agriculture development that has occurred, there are no identified sensitive natural communities located within or in close proximity to the Project site. The proposed Project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community. Therefore, the Project's impacts would be less than significant.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant***.

Impact #3.4.4c – Would the Project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

The United States Army Corps of Engineers (USACE) has regulatory authority over the Clean Water Act (CWA), as provided for by the EPA. The USACE has established specific criteria for the determination of wetlands based upon the presence of wetland hydrology, hydric soils, and hydrophilic vegetation. There are no federally-protected wetlands or vernal pools that occur within the Project site.

Wetlands, streams, reservoirs, sloughs, and ponds typically meet the criteria for federal jurisdiction under Section 404 of the CWA and State jurisdiction under the Porter-Cologne Water Quality Control Act. Streams and ponds typically meet the criteria for State jurisdiction under Section 1602 of the California Fish and Game Code. There are no features on the Project site that would meet the criteria for either federal or State jurisdiction. Accordingly, there are no wetlands or Waters of the U.S. occurring on the Project site. There would be no impact to federally protected wetlands or waterways as a result of the proposed Project. Therefore, the Project would have no impact.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

There would be ***no impact***.

Impact #3.4.4d – Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Wildlife migratory corridors are described as a narrow stretch of land that connects two open pieces of habitat that would otherwise be unconnected. These routes provide shelter and sufficient food supplies to support wildlife species during migration. Movement corridors generally consist of riparian, woodlands, or forested habitats that span contiguous acres of undisturbed habitat and are important elements of resident species' home ranges.

The proposed Project and surrounding area does not occur within a known terrestrial migration route, significant wildlife corridor, or linkage area as identified in the Recovery Plan for Upland Species in the San Joaquin Valley (US Fish and Wildlife Service, 1998) or in habitat identified by the Essential Habitat Connectivity Project (Spencer, W.D., et al, 2010). The survey conducted for the Project did not provide evidence of a wildlife nursery or important migratory habitat being present on the Project site. Migratory birds and raptors could use habitat on or near the Project for foraging and/or as stopover sites during migrations or movement between local areas.

The Project would not substantially affect migrating birds or other wildlife. The Project will not restrict, eliminate, or significantly alter a wildlife movement corridor, wildlife core area, or Essential Habitat Connectivity area, either during construction or after the Project has been constructed. Project construction will not substantially interfere with wildlife movements or reduce breeding opportunities.

Additionally, the land surrounding the Project site is already developed with residences or an existing school facility or open landscape that is continually used by the locals as a dirt track. These developments sever wildlife movement through the site and eliminate any nursery site. The proposed Project would not interfere 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. Therefore, the Project's impacts would be less than significant.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant***.

Impact #3.4.4e – Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

There are no adopted local policies or ordinances protecting biological that would apply to this Project site. Therefore, implementation of the proposed Project would have no conflict related to an adopted local policies or ordinances protecting biological resources.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

There would be ***no impact***.

Impact #3.4.4f – Would the Project conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?

The Project site is within the Metropolitan Bakersfield Habitat Conservation Plan (MBHCP) boundaries. However, under the MBHCP other special districts such as school districts that do not obtain permits from the City or County, such as schools and hospitals, are not automatically covered by the MBHCP. The proposed Project would not be covered under the associated MBHCP Incidental Take Permit issued by the California Department of Fish and Wildlife.

The Project is subject to biological resources mitigation measures that ensure avoidance and minimization of impacts to biological species, so no take of listed species is expected. This environmental analysis has concluded that the Project would have a less than significant impact with incorporation of mitigation. The Project would follow approved survey protocols and avoidance and minimization measures similar to or exceeds what is required by the MBHCP.

The Project is not located within any other Natural Community Conservation Plan or any other local, regional, or state conservation plan. With mitigation, the proposed Project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be *less than significant*.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
3.4.5 - *CULTURAL RESOURCES*				
Would the Project:				
a. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☐	☒	☐	☐
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?	☐	☒	☐	☐
c. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Discussion

This section is based on a cultural resource records search conducted for the Orangewood Elementary School Project in Bakersfield, Kern County, California. The purpose of the search was to determine whether any known cultural resources or previously conducted cultural resource surveys were located on or near the proposed Project. A Technical Memo is included with this document (see QK, 2019, Appendix B).

Impact #3.4.5a – Would the Project cause a substantial adverse change in the significance of a historical resource as pursuant to CEQA Guidelines Section 15064.5?

As defined by CEQA Guidelines Section 15064.5, "historical resources" are:

- A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Public Resource Code Section 5024.1, Title 14 California Code of Regulations, Section 4850 et seq.).
- A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements Section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource,

provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Public Resources Code Section 5024.1, Title 14 CCR, Section 4852) including the following:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- Is associated with the lives of persons important in our past;
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- Has yielded, or may be likely to yield, information important in prehistory or history.

The records search indicated that the subject property had previously been surveyed for cultural resources (Schiffman 1991). No cultural resources were identified on the property as a result of that survey. Eight cultural resources surveys have been conducted within a half mile of the Project (QK, 2019). Three cultural resources have been recorded within a half mile of the Project. These are all historic period structures including a residence (P-15-11721) and two irrigation features (P-15-15800, P-15-11720). The Project will not impact any of these resources.

On March 29, 2019, letters were mailed to each of the Native American tribes within the geographic area (see Appendix B). The letters included a brief Project description and location maps. To date, no response has been received from any tribe.

Although there is no obvious evidence of historical or archaeological resources on the Project site, there is the potential during construction for the discovery of cultural resources. Grading and trenching, as well as other ground-disturbing actions, have the potential to damage or destroy these previously unidentified and potentially significant cultural resources within the Project area, including historical resources. Disturbance of any deposits that have the potential to provide significant cultural data would be considered a significant impact under CEQA. To reduce the potential impacts of the Project on any unknown cultural resources, the following mitigation measure is recommended. With implementation of MM CUL-1, the Project would have a less than significant impact.

MITIGATION MEASURE(S)

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 archaeologist can evaluate 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 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. Implementation of the mitigation measure below would ensure that the proposed Project would not cause a substantial adverse change in the significance of a historical resource. Therefore, the Project would have a less than significant impact with incorporation of mitigation measures.

LEVEL OF SIGNIFICANCE

Impact would be ***less than significant with mitigation incorporated***.

Impact #3.4.5b – Would the Project cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?

See discussion of Impact #3.4.5a, above.

MITIGATION MEASURE(S)

Implementation of Mitigation Measures MM CUL-1.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant with mitigation incorporated***.

Impact #3.4.5c – Would the Project disturb any human remains, including those interred outside of formal cemeteries?

Although unlikely, subsurface construction activities, such as trenching and grading, associated with the proposed Project could potentially disturb previously undiscovered human burial sites. Accordingly, this is a potentially significant impact. Although considered unlikely subsurface construction activities could cause a potentially significant impact to previously undiscovered human burial sites. The records searches did not indicate the presence of human remains, burials, or cemeteries within the Project site. No human remains have been discovered at the Project site, and no burials or cemeteries are known to occur within the area of the site. However, construction would involve earth-disturbing activities, and it is still possible that human remains may be discovered, possibly in association with archaeological sites. Implementation of the below mitigation measure would ensure that the proposed Project would not directly or indirectly destroy previously unknown human remains. The proposed Project would not disturb any known human remains, including those interred outside of formal cemeteries. With implementation of MM CUL-2, the Project would have a less than significant impact on any inadvertently discovered human remains.

Therefore, the Project would have a less than significant impact with incorporation of mitigation measures.

MITIGATION MEASURE(S)

MM CUL-2: 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.

LEVEL OF SIGNIFICANCE

Impact would be ***less than significant with mitigation incorporated***.

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

Discussion

This section is based on Project information provided by the District and available data.

Impact #3.4.6a – Would the Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Energy demand during the construction phase would result from the transportation of materials, construction equipment, and employee vehicle trips. Construction equipment includes excavators, graders, off-highway trucks, rubber-tired dozers, scrapers, tractors, loaders, backhoes, forklifts, cement and mortar mixers and cranes. The Project would comply with the SJVAPCD requirements regarding the use of fuel-efficient vehicles and equipment, to the extent feasible. Similar school construction projects in the area have identified typical fuel consumption during construction. Using a typical fuel efficiency of 5.85 miles per gallon the construction of the Project is expected to require approximately 15,827 gallons of diesel (QK, 2019).The Project will not use natural gas during the construction phase. Compliance with standard regional and local regulations, the Project would minimize fuel consumption during construction.

There are no unusual Project characteristics that would cause construction equipment to be less energy efficient compared with other similar construction sites in other parts of the State. Thus, construction-related fuel consumption of the Project would not result in inefficient, wasteful, or unnecessary energy usage.

The operation of the proposed Project will not significantly increase the rate of consumption of energy resources beyond the existing conditions. Where feasible, appliances and HVAC equipment will be energy efficient; lighting fixtures will be installed with higher efficiency bulbs in order to reduce energy consumption. Bathrooms will utilize low flow toilets, and

irrigation will use water efficient technologies such as drip lines, and where feasible, install landscaping with drought tolerant plants.

The proposed Project would not result in a significant environmental impact due to inefficient consumption of energy resources. Therefore, there would be a less than significant impact.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant.***

Impact #3.4.6b – Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

The Project must comply with Title 24, Chapter 4 of the California Building Standards Commission for all school buildings and Part 6, of the California Energy Code (CEC) (California Building Standards Commission, 2019). Additionally, the Project must comply with Section 100 of the CEC for information and applications of CEC adoptions (California Building Standards Commission, 2019). Finally, the Project must comply with the California Code of Regulations (CCR), Title 20 with adoptions of the California Energy Commission.

The Orangewood Elementary Expansion Project would result in additional classrooms located at the existing school site but would not result in expansion of student or staff population. Energy saving strategies will be implemented where possible to further reduce the Project's energy consumption, during the construction phase. Strategies being implemented include those recommended by the California Air Resources Board (CARB) that may reduce both the Project's energy consumption, including diesel anti-idling measures, light-duty vehicle technology, usage of alternative fuels such as biodiesel blends and ethanol, and heavy-duty vehicle design measures to reduce energy consumption. Additionally, as outlined in the SJVAPCD's GAMAQI, the Project includes recommendations to reduce energy consumption by shutting down equipment when not in use for extended periods, limiting the usage of construction equipment to eight cumulative hours per day, usage of electric equipment for construction whenever possible in lieu of diesel or gasoline powered equipment, and encouragement of employees to carpool to retail establishments or to remain on-site during lunch breaks. As noted above, the Project will use low flow toilets, xeriscaping, drought tolerant plans and drip irrigation to reduce water consumption. Based on this analysis, the Project would be consistent and not conflict with or obstruct a State of local plan related to renewable energy or energy consumption. Impacts would be less than significant.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant.***

3.4.7 - *GEOLOGY AND SOILS*

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the Project:				
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii. Strong seismic ground shaking?	☐	☐	☒	☐
iii. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv. Landslides?	☐	☐	☐	☒
b. Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?	☐	☐	☒	☐

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

Discussion

The following analysis is based primarily on the *Geologic Hazard Report* (Soils Engineering, Inc, 2019), prepared for this Project (Appendix D).

Impact #3.4.7a(i) – Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

The Project would expand an existing elementary school campus onto land that was historically cultivated crop land. The proposed construction and operation of the Project would not increase the potential exposure of persons living and working on the Project site to seismic events including risk of loss, injury, and death related to earthquakes and related hazards, which are described below.

Although there are several active faults in the Project vicinity, it is not located within an Alquist-Priolo Earthquake Zone. Additionally, no Seismic Source Type A or B earthquake faults are within proximity to the Project site that could produce potentially significant impacts on site (see Figure 1-5). The nearest Fault Rupture Hazard Zone is the Edison Fault located approximately 1.5 miles northeast. The nearest Seismic Source Type A fault is the San Andreas Fault, located 37 miles from the site, and would be considered potentially significant if located within 15 miles of the Project site (Appendix D).

Zones of Required Investigation referred to as "Seismic Hazard Zones" in CCR Article 10, Section 3722, are areas shown on Seismic Hazard Zone Maps where site investigations are required to determine the need for mitigation of potential liquefaction and/or earthquake-induced landslide ground displacements. The site is within the Lamont 7.5 Minute Quadrangle and there are no mapped areas that have Seismic Hazard Zones in the Project area (Soils Engineering, Inc, 2019)

In addition, pursuant to the California Educational Code Sections 17212 and 17212.5 construction of school buildings will have to comply with safety standards that prohibit schools to be located on an active earthquake fault or fault trace. The proposed Project would comply with the most recent California Building Standards Code which is implemented by the State Architect and provides criteria for the seismic design of buildings.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impact would be ***less than significant***.

Impact #3.4.7a(ii) – Would the Project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

Given the high seismicity of the southern San Joaquin Valley region, moderate to severe ground shaking associated with earthquakes on the nearby faults can be expected within the Project area and throughout Kern County. In the event of an earthquake on one of the nearby faults, it is likely that the Project site would experience ground shaking and expose people and structures associated with the Project. In the event of an earthquake on one of the nearby faults, it is likely that the Project site would experience ground shaking and expose people and structures associated with the Project. An estimated ground motion of 0.277g would occur at the site from a 7.2 magnitude earthquake on the White Wolf Fault, approximately 14 miles away (Soils Engineering, Inc, 2019).

The Project is required to design all school development and associated infrastructure to withstand substantial ground shaking in accordance with applicable State law IBC CBC and Title 5 and Title 24 earthquake construction standards, including those relating to soil characteristics. Adherence to all applicable local and State regulations would avoid any potential impacts to structures resulting from liquefaction at the Project site. Therefore, there would be less than significant.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant***.

Impact #3.4.7a(iii) – Would the Project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

No shallow groundwater was encountered in any of the soil borings conducted at the site. The lithology encountered in the subsurface includes multiple clay, silt or sand layers of material. The depth to groundwater beneath the site is approximately 140 feet. The liquefaction potential at the Project site appears to be minimal (Soils Engineering, Inc, 2019).

The Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure including liquefaction. Structures constructed as part of the Project would be required by State law to be constructed in accordance with all applicable IBC and CBC earthquake construction standards, including those relating to soil characteristics. Adherence to all applicable

regulations would avoid any potential impacts to structures resulting from liquefaction at the Project site. Therefore, there would be less than significant impacts as a result of ground failure and liquefaction.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be *less than significant*.

Impact #3.4.7a(iv) – Would the Project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

The site and surrounding area are flat, with no significant topological features. There is no potential for rock fall and landslides to impact the site in the event of a major earthquake, as the proposed site and surrounding areas are flat and do not include dramatic elevation changes. Based on the predicted maximum horizontal accelerations at the Project site and the soil types, minor subsurface settlement may occur on site during a major earthquake, and this is considered less than significant. The property is flat and there is a low potential for landslides. There would be no impact

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

There would be *no impact*.

Impact #3.4.7b – Would the Project result in substantial soil erosion or the loss of topsoil?

Construction activities associated with the proposed Project would disrupt surface vegetation and soils and would expose these disturbed areas to erosion by wind and water. National Pollutant Discharge Elimination System (NPDES) stormwater permitting programs regulate stormwater quality from construction sites, which includes erosion and sedimentation. Under the NPDES permitting program, the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) are required for construction activities that would disturb an area of one acre or more. A SWPPP must identify potential sources of erosion or sedimentation that may be reasonably expected to affect the quality of stormwater discharges as well as identify and implement best management practices (BMPs) that ensure the reduction of these pollutants during stormwater discharges. Typical BMPs intended to control erosion include sandbags, detention basins, silt fencing, storm drain inlet protection, street sweeping, and monitoring of water bodies. Mitigation Measure MM GEO-1 requires the approval of a SWPPP to comply with the NPDES General Construction Permit from the Central Valley Regional Water Quality Control Board

(RWQCB). Mitigation Measure MM GEO-1 requires the approval of a SWPPP to comply with the NPDES General Construction Permit from the Central Valley Regional Water Quality Control Board (RWQCB). Mitigation Measure GEO-2 requires that grading be limited to the minimum necessary to develop the Project, which would reduce possible loss of topsoil from wind erosion or from a rain event.

In the long-term and after construction activities have been completed on the Project site, the ground surface will have impermeable surfaces as well as permeable surfaces. The impermeable surfaces would include roadways, driveways, parking lots, and building sites. The permeable surfaces would include the ball fields and landscape areas which would stabilize the permeable areas. Overall, development of the Project would not result in conditions where substantial surface soils would be exposed to wind and water erosion.

The Project would not result in substantial soil erosion or the loss of topsoil. Impacts would be less than significant with incorporation of mitigation measures.

MITIGATION MEASURE(S)

MM GEO-1: Prior to construction, the District shall submit 1) the approved Storm Water Pollution Prevention Plan (SWPPP) and 2) the Notice of Intent (NOI) to comply with the General National Pollutant Discharge Elimination System (NPDES) from the Central Valley Regional Water Quality Control Board. The requirements of the SWPPP and NPDES shall be incorporated into design specifications and construction contracts. Recommended best management practices for the construction phase may include the following:

- Stockpiling and disposing of demolition debris, concrete, and soil properly;
- Protecting existing storm drain inlets and stabilizing disturbed areas;
- Implementing erosion controls;
- Properly managing construction materials; and
- Managing waste, aggressively controlling litter, and implementing sediment controls.

MM GEO-2: The District shall limit grading to the minimum area necessary for construction and operation of the Project. Final grading plans shall include best management practices to limit onsite and offsite erosion.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant. with mitigation incorporated***.

Impact #3.4.7c – Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?

There is no evidence of landslides on the Project site, and the site is not located in an unstable geologic unit or on soil that is considered unstable. The United States Department of

Agriculture Natural Resources Conservation Service indicates that the Project site consists of Delano sandy loam and Delano sandy clay loam (see Figure 3.4.7-1). These soils are not susceptible to subsidence with 0 to 5% slopes. Additionally, the Metropolitan Bakersfield General Plan Safety Element shows the location of the Project to be in an area where no historic land subsidence has occurred and is outside of the hydrocompaction area as shown on Plate 8 of the Geologic Hazard Report attached as Appendix D (Soils Engineering, Inc, 2019). The proposed Project would not 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. Therefore, the Project would have a less than significant impact.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant***.

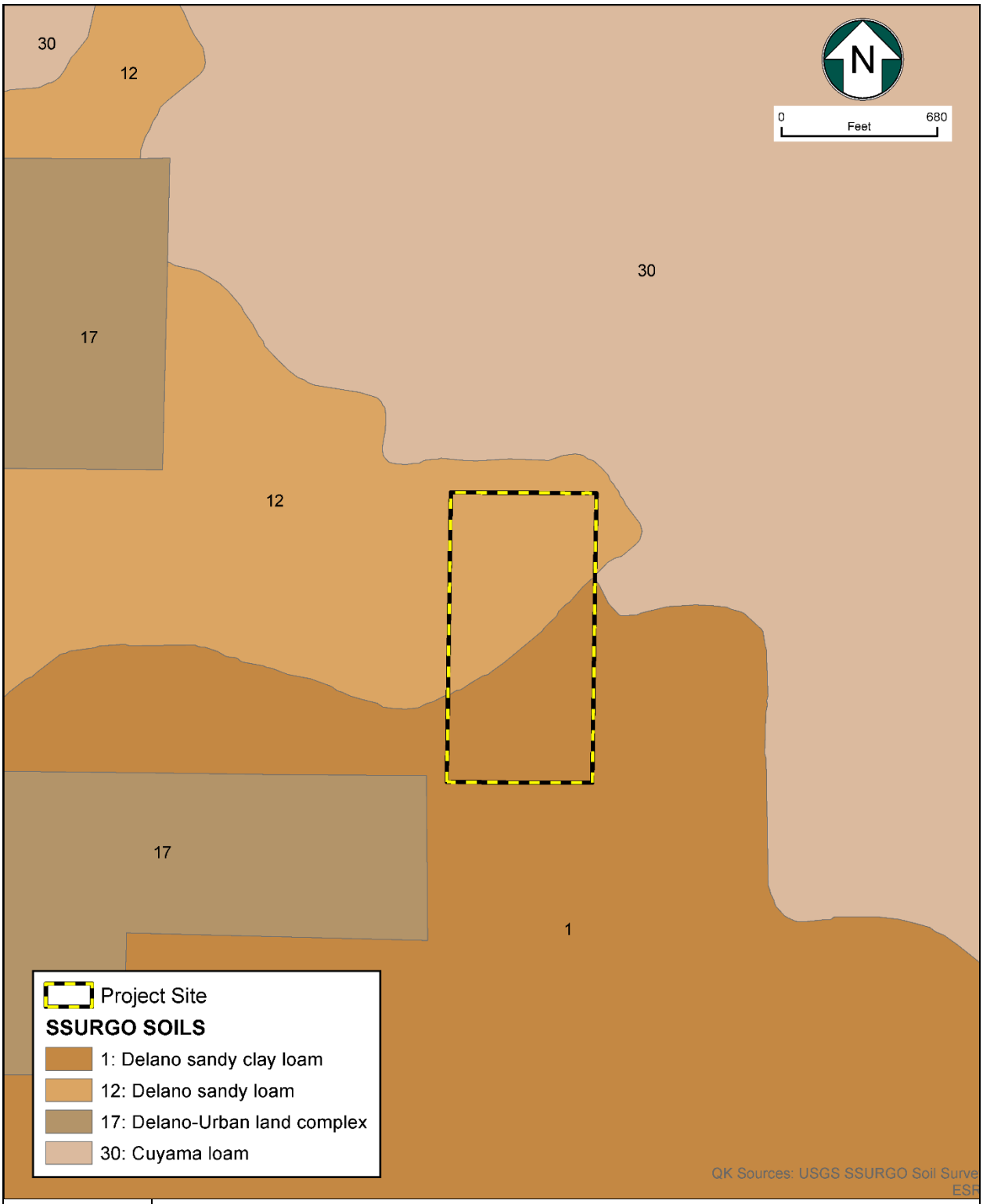

Figure 3.4.7-1
Soil Types

Impact #3.4.7d – Would the Project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Based on the type of soils encountered in the top 5 feet of soil in the Project area, it was determined that it is likely that no significant areas of highly expansive soils would be encountered. The Project would comply with all applicable requirements of the California Department of Education Title 5, California Code of Regulations, and the most recent California Building Standards Code that provides criteria for the appropriate design of buildings. The proposed Project would not be located on any identified expansive soils, as defined in the California Building Code. Therefore, the Project would have a less than significant impact.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant***.

Impact #3.4.7e – Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?

The proposed Project will connect to the existing East Niles Community Services District sewer system that services the Project area. The Project does not include the installation of a septic system. Therefore, there would be no impact.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

There would be ***no impact.***

Impact #3.4.7f – Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Geological records of the region indicate that the Project area is underlain by recent alluvial (latest Holocene) deposits (2,000 – 150 BP) to all depths likely to be reached by excavations associated with development (Meyer, Jack et al, 2010). These alluvial deposits appear to be too young geologically to contain significant fossil remains based on the age of Buena Vista Lake deposits, which represent the distal end of the Kern River deposits. Therefore, the Project area is considered to have a very "low potential." However, previously undocumented paleontological or geological resources could potentially be discovered

during the construction of the Project. If these resources are disturbed, impacts would be potentially significant. With the incorporation of MM GEO-2, impacts would be less than significant.

MITIGATION MEASURE(S)

MM GEO-3: If any paleontological materials are encountered during Project development, all further development activities shall cease, and a paleontologist shall be contacted. The paleontologist shall then assess the discovered material(s) and prepare a survey, study, or report evaluating the impact. This document shall contain a recommendation, if necessary, for the preservation, conservation, or relocation of the resource.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant with incorporated mitigation.***

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

Discussion

The following analysis is based primarily on an Air Quality Impact Analysis/Greenhouse Gases Assessment (see Appendix A). GHGs are identified as any gas that absorbs infrared radiation in the atmosphere. GHGs include water vapor, carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), halogenated fluorocarbons (HCFCs), ozone (O3), perfluorinated carbons (PFCs), hydrofluorocarbons (HFCs), and sulfur hexafluoride (SF6). On December 7, 2009, the EPA issued an Endangerment Finding on the above referenced key well-mixed GHGs. These GHGs are considered "pollutants" under the Endangerment Finding. However, these findings do not themselves impose any requirements on industry or other entities.

The Global Warming Solutions Act [Assembly Bill (AB) 32] was passed by the California Legislature and signed into law by the Governor in 2006. AB 32 requires that GHGs emissions in 2020 be reduced to 1990 levels. GHGs rules and market mechanisms for emissions reduction were required to be in place as of January 2012.

Impact #3.4.8a – Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Both construction and operation of the proposed Project would result in emissions of GHGs. Construction activities would require the use of on-road heavy equipment to deliver all off-road equipment to the Project site. Depending on the construction phase, varying numbers of workers would commute to the Project site in motor vehicles during construction.

Construction

The SJVAPCD does not have thresholds or guidance regarding the significance of construction related emissions. Overall, the impacts to occur during the construction phase

would be short-term and temporary in nature. Table 3.4.8-1 lists the estimated annual GHG emissions anticipated for the Project, which are shown to be minimal.

Table 3.4.8-1
Estimated Annual GHG Emissions (MT/Year)

Source	CO_2	CH_4	N_2O	CO_2e
Construction Emissions				
2019 Construction Emissions	308.0	0.064	0.000	309.6
2020 Construction Emissions	479.8	0.078	0.000	481.8
Mitigated Operational Emissions				
Area Emissions	0.0004	0.000	0.000	0.0004
Energy Emissions	51.03	0.002	0.001	51.27
Mobile Emissions	0.00	0.000	0.000	0.00
Waste Emissions	3.77	0.223	0.000	9.34
Water Emissions	7.94	0.014	0.0004	8.39
Total Project Operational Emissions	*62.74*	*0.238*	*0.001*	*69.00*
Annualized Construction Emissions[1]	*26.26*	*0.005*	*0.000*	*26.38*
Project Emissions	**89.00**	**0.243**	**0.001**	**95.38**

*Note: 0.00 could represent <0.001 Per South Coast AQMD's Methodology.
Source- (Insight Environmental, 2019)

As there are no current significance thresholds to quantify construction emissions and because construction-related impacts are considered temporary they are therefore, generally considered less than significant. In addition, construction of the proposed Project would still have to comply with the SJVAPCD's regulation and requirements as discussed in the air quality section.

Operation

Operational or long-term emissions occur over the life of the Project. The operational emissions for the Project are not expected to be higher than the current baseline condition due to the lack of increased student or staff population as part of the proposed Project.

The Project will not result in the emissions of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), or sulfur hexafluoride (SF6), the other gases identified as GHG in AB32. The proposed Project will be subject to any regulations developed under AB32 as determined by CARB. Therefore, the Project would have less than significant GHG impacts.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant***.

Impact #3.4.8b – Would the Project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The County of Kern has not developed specific thresholds for GHG emissions. Therefore, there is no local or regional GHG reduction plan applicable to the Project. The Project would comply with all applicable regulations.

As discussed under the previous significance criteria, the proposed Project would be consistent with the SJVAPCD's recommendations in its guidance for addressing GHGs in CEQA. The SJVAPCD's guidance is based on a minimum of 29% reduction from BAU, which is the same reduction that California would need to reduce GHG emissions to 1990 levels by the year 2020.

In the absence of an applicable local or regional GHG reduction plan, the Project's compliance with AB 32 is evaluated through compliance with the applicable measures in the Scoping Plan below.

Scoping Plan

Emission reductions in California alone would not be able to stabilize the concentration of GHGs in the earth's atmosphere. However, California's actions set an example and drive progress towards a reduction in GHGs elsewhere. If other states and countries were to follow California's emission reduction targets, this could avoid medium or higher ranges of global temperature increases. Thus, severe consequences of climate change could also be avoided.

The CARB Governing Board approved a Climate Change Scoping Plan (CARB 2008). The Scoping Plan outlines the State's strategy to achieve the 2020 GHG emissions limit. The Scoping Plan "proposes a comprehensive set of actions designed to reduce overall GHG emissions in California, improve our environment, reduce our dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health" (CARB 2008).

Project consistency with applicable strategies in the Scoping Plan is assessed in Table 3.4.8-2. As shown, the Project is consistent with the applicable strategies in the Scoping Plan.

Table 3.4.8-2
Consistency with Applicable Scoping Plan Reduction Measures

Scoping Plan Reduction Measure	Project Consistency or Reason Why Not Applicable
California Cap-and-Trade Program Linked to Western Climate Initiative. Implement a broad based California Cap-and-Trade program to provide a firm limit on emissions. Link the California cap–and-trade program with other Western Climate Initiative Partner programs to create a	Not Applicable. When this cap-and-trade system begins, products or services (such as electricity) would be covered and the cost of the cap-and-trade system would be transferred to the consumers.

Scoping Plan Reduction Measure	Project Consistency or Reason Why Not Applicable
regional market system to achieve greater benefits for California.	
California Light-Duty Vehicle Greenhouse Gas Standards. Implement adopted standards and planned second phase of the program. Align zero emission vehicle, alternative and renewable fuel and vehicle technology programs with long-term climate change goals.	Not Applicable. This is a statewide measure that cannot be implemented by a Project applicant or lead agency. When this measure is initiated, the standards would be applicable to the light-duty vehicles that would access the Project site.
Energy Efficiency. Maximize energy efficiency building and appliance standards; pursue additional efficiency including new technologies, policy, and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California	Consistent. This is a measure for the State to increase its energy efficiency standards. However, the applicant shall consider implementing Title 24 and Green Building Standards.
Renewable Portfolio Standard. Achieve 33% renewable energy mix statewide. Renewable energy sources include (but are not limited to) wind, solar, geothermal, small hydroelectric, biomass, anaerobic digestion, and landfill gas.	Not Applicable. The school project will not utilize solar or wind energy sources.
Low Carbon Fuel Standard. Develop and adopt the Low Carbon Fuel Standard	Not Applicable. This is a statewide measure that cannot be implemented by a Project applicant or lead agency. When this measure is initiated, the standard would be applicable to the fuel used by vehicles that would access the Project site.
Regional Transportation-Related Greenhouse Gas Targets. Develop regional greenhouse gas emissions reduction targets for passenger vehicles. This measure refers to SB 375.	Not Applicable. The Project is not related to developing GHG emission reduction targets.
Vehicle Efficiency Measures. Implement light duty vehicle efficiency measures.	Not Applicable. When this measure is initiated, the standards would be applicable to the light-duty vehicles that would access the Project site.
Goods Movement. Implement adopted regulations for the use of shore power for ships at berth. Improve efficiency in goods movement activities.	Not Applicable. The Project does not propose any changes to maritime, rail, or intermodal facilities or forms of transportation.

Scoping Plan Reduction Measure	Project Consistency or Reason Why Not Applicable
Million Solar Roofs Program. Install 3,000 MW of solar-electric capacity under California's existing solar programs.	Consistent. This measure is being implemented by various agencies throughout California. The applicant shall consider implementing Title 24 and Green Building Standards
Medium/Heavy-Duty Vehicles. Adopt medium and heavy-duty vehicle efficiency measures.	Not Applicable. This is a Statewide measure that cannot be implemented by a Project applicant or lead agency. When this measure is initiated, the standards would be applicable to vehicles that access the Project site.
Industrial Emissions. Require assessment of large industrial sources to determine whether individual sources within a facility can cost-effectively reduce greenhouse gas emissions and provide other pollution reduction co-benefits. Reduce greenhouse gas emissions from fugitive emissions from oil and gas extraction and gas transmission. Adopt and implement regulations to control fugitive methane emissions and reduce flaring at refineries.	Not Applicable. The Project is not an industrial land use.
High Speed Rail. Support implementation of a high-speed rail system.	Not Applicable. This is a Statewide measure that cannot be implemented by a Project applicant or the County.
Green Building Strategy. Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.	Consistent. The State's goal is to increase the use of green building practices. The Project would implement some green building strategies through Project design features.
High Global Warming Potential Gases. Adopt measures to reduce high global warming potential gases.	Not Applicable. When this measure is initiated, it would be applicable to those gases that have high global warming potential that would be used by the Project (such as in air conditioning and refrigerators).
Recycling and Waste. Reduce methane emissions at landfills. Increase waste diversion, composting, and commercial recycling. Move toward zero-waste.	Consistent. The State's goal is to help increase waste diversion. The Project will participate in the County of Kern's recycling program.
Sustainable Forests. Preserve forest sequestration and encourage the use of	Not Applicable. No forested lands exist onsite.

Scoping Plan Reduction Measure	Project Consistency or Reason Why Not Applicable
forest biomass for sustainable energy generation.	
Water. Continue efficiency programs and use cleaner energy sources to move and treat water.	Consistent. This is a measure for State and local agencies. The Project would implement water conservation features in its BMPs.
Agriculture. In the near-term, encourage investment in manure digesters and at the five-year Scoping Plan update determine if the program should be made mandatory by 2020.	Not Applicable. The proposed Project would include school construction.

Source: California Air Resources Board 2008.

In summary, the Project would not obstruct attainment of any of the goals established under AB 32. The Project would comply with all present and future regulatory measures developed in accordance with AB 32 and CARB's Scoping Plan. The proposed Project would incorporate a number of mitigation measures and design features that would minimize GHG emissions beyond existing regulatory requirements. Such measures also are consistent with the California Air Pollution Control Officers Association paper and general guidance provided by the SJVAPCD.

With the incorporation of standard measures, Project design features, and applicable laws, the Project is not expected to generate significant GHG emissions. Therefore, impacts would be less than significant.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant***.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
3.4.9 - *HAZARDS AND HAZARDOUS MATERIALS*				
Would the Project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c. Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☒	☐	☐
d. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e. For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area?	☐	☐	☐	☒
f. Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☐	☒

Discussion

This section is based on a *Preliminary Environmental Assessment Equivalent Report (PEA)* prepared for this Project (Soils Engineering, Inc, 2019) and documentation from the Department of Toxic Substances Control (DTSC) (Department of Toxic Substances Control, 2019) (both can be found in Appendix E).

Impact #3.4.9a – Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

The building and operation of the proposed school would not involve the transport, use, and storage of large quantities of hazardous materials. Although construction of the site would involve the transport and use of minor quantities of hazardous materials, such materials would be limited to fuels, oils, lubricants, hydraulic fluids, paints and solvents utilized at the Project site for construction purposes. Moreover, use of such materials would be temporary in nature and would cease upon completion of the Project. However, minor amounts of custodial chemicals would be used on site for cleaning supplies. The presence of such materials could present risk if not managed properly.

The presence and use of these materials, which can be classified as hazardous materials, create the potential for accidental spillage and exposure of workers to these substances. The District has procedures in place for the transport, use, and storage of hazardous materials which comply with the California Department of Education Title 5, California Code of Regulations. Hazardous and non-hazardous wastes would likely be transported to and from the Project site during the construction phase of the proposed Project. Construction would involve the use of some hazardous materials, such as diesel fuel, hydraulic oil, grease, solvents, adhesives, paints, and other petroleum-based products, although these materials are commonly used during construction activities and would not be disposed of on the Project site. Any hazardous waste or debris that is generated during construction of the proposed Project would be collected and transported away from the site and disposed of at an approved off-site landfill or other such facility. In addition, sanitary waste generated during construction would be managed through the use of portable toilets, which would be located at reasonably accessible on-site locations. Hazardous materials such as paint, bleach, water treatment chemicals, gasoline, oil, etc., may be used at the proposed school. These materials are stored in appropriate storage locations and containers in the manner specified by the manufacturer and disposed of in accordance with local, federal, and State regulations. Additionally, and in accordance with applicable federal and State Health and Safety Codes, and Kern County regulations, the Project proponent would be required to prepare and submit an updated hazardous materials business plan to include the expanded school site (Mitigation Measure MM HAZ-1) to the Kern County Environmental Health Services Division/Hazardous Materials Section. Therefore, with implementation of Mitigation Measure MM HAZ-1, no significant hazard to the public or to the environment through the routine transport, use, or disposal of hazardous waste during construction or operation of the expanded campus would occur.

From at least the 1946 until 2006, the site was used for agricultural activities, and there are two transformers on the site. The PEA prepared for the Project analyzed multiple soil samples around the Project site collected and analyzed for organo-chlorine pesticides (OCPs), metals, arsenic and total petroleum hydrocarbons (TPH). Additional soil testing was requested by DTSC to assess the potential impacts. Results indicated that the historical agricultural activities at the site have not significantly impacted the near surface soil within the site. Based on the rate and transport properties of OCPs and metals it is highly unlikely that concentrations of potential concern of these constituents would migrate to depths below two and a half feet in the soil. It was also concluded that cancer risk due to dieldrin in the soil is within the risk management range and unlikely to result in adverse health effects. No additional sampling or remediation is warranted at the site (Department of Toxic Substances Control, 2019).

A Preliminary Environmental Assessment Report and Supplemental Site Investigation Workplan (Workplan) were prepared for the Project and approved by DTSC in July 2019 (Department of Toxic Substances Control, 2019). The Workplan included additional evaluation of the OCP and arsenic detections to delineate the extent of impacted soil. As noted in Impact #3.4.9a, DTSC determined that no additional remediation of the site was recommended, and that cancer risk is within an acceptable range.

No known historic oil activity has occurred on the site. The Project is not located within the boundaries of an oilfield. According to the Division of Oil, Gas and Geothermal Resources (DOGGR) records and maps, no abandoned oil wells are located on the site, and the nearest well is 400 feet to the east of the site (see Figure 3.4.9-1). A human health screening evaluation was conducted and indicates the cancer risk is 2.2×10^{-6} and the cumulative hazard level is 0.0615. The PEA concludes that the Project site has a slightly elevated risk and a very low hazard to future occupants at this site from the on-site soil. (Soils Engineering, Inc, 2019)

It was determined the nearest high-pressure natural gas transmission lines are located over 1,500 feet from of the Project site. There are no high- pressure petroleum pipelines are known within 1, 500 feet of the property border. No power transmission lines with greater than 115 kV appear to be present within 350 feet of the property border (Soils Engineering, Inc, 2019).

With mitigation, the proposed Project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste. Therefore, the Project would have a less than significant impact with mitigation incorporated.

Based on analysis above, Mitigation Measures MM HAZ-1 has been proposed to mitigate potential impacts. With this mitigation, the proposed Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials nor 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. Therefore, impacts would be less than significant with implementation of mitigation measures.

MITIGATION MEASURE(S)

MM HAZ-1: Prior to operation of the Project, the Project proponent shall amend their existing Hazardous Materials Business Plan that identifies the expansion of Orangewood Elementary School and submit it to the Kern County Environmental Health Services Division/Hazardous Materials Section for review and approval. The Project proponent shall provide the hazardous materials business plan to all contractors working on the Project and shall ensure that one copy is available at the Project site at all times.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant with mitigation incorporated***.

Impact #3.4.9b – Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

No current mineral extraction activities exist on the Project site. As illustrated in Figure 3.4.9-1, the Project site is not located in an identified oilfield and there are no known oil or gas wells located on the site. The nearest well is located approximately 500 feet to the east and is a plugged and abandoned-dry hole designated Kearney 81-A (Soils Engineering, Inc, 2018).

Although unlikely, during construction activities an unknown oil/gas well may be discovered. In order to reduce potential impacts if a well is found, Mitigation Measure MM HAZ-2 requires that work would stop and the Project contractor contact the Division of Oil, Gas and Geothermal Resources (DOGGR) to determine the appropriate steps to be taken before work can continue. With implementation of MM HAZ-1 and MM HAZ-2, impacts would be considered less than significant.

See Impact #3.4.9a, above.

MITIGATION MEASURE(S)

Implementation of Mitigation Measures MM HAZ-1.

MM HAZ-2: In the event that abandoned or unrecorded wells are uncovered or damaged during excavation or grading activities, all work shall cease and the California Department of Conservation, Division of Oil, Gas and Geothermal Resources shall be contacted for requirements and approvals. The California Department of Conservation, Division of Oil, Gas and Geothermal Resources may determine that remedial plugging operations may be required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant with mitigation incorporated***.

Impact #3.4.9c – Would the Project emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

See Impact #3.4.9a and b, above.

MITIGATION MEASURE(S)

Implementation of Mitigation Measures MM HAZ-1 and MM HAZ-2.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant with mitigation incorporated***.

Impact #3.4.9d – Would the Project be located on a site that 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?

Available data indicated that there are no Permitted Underground Storage Tanks, Leaking Underground Storage Tanks, or any other cleanup sites on or in the vicinity (within one mile) of the Project site (SWRCB, n.d.)

The Project is not located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and would not create a significant hazard to the public or the environment (DTSC, n.d.). The Project site is not within the immediate vicinity of a hazardous materials site and would not impact a listed site. Literature review of available federal, State, and local database information systems was performed for the purpose of identifying known recognized environmental conditions present on the site and the nearby properties that have the potential to adversely impact the site. There is no data identifying any facilities within ¼ mile of the site that might reasonably be anticipated to emit hazardous air emissions or handle hazardous materials, substances, or wastes that might affect the proposed school site. Therefore, impacts would be less than significant with implementation of mitigation measures.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant.***

Impact #3.4.9e – For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area?

The nearest public airport is Bakersfield Municipal Airport, located on East Planz Road, approximately six miles southwest of the Project site (see Figure 1-5). The proposed Project is not located within the ALUCP and would not result in a safety hazard or cause excessive noise. Therefore, the Project would have no impact.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

There would be ***no impact***.

Impact #3.4.9f – Would the Project impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?

The proposed Project is required to adhere to the standards set forth in the Uniform Fire Code, which identifies the design standards for emergency access during both the Project's construction and operational phases. The Project would also comply with the appropriate local and State requirements regarding emergency response plans and access. The proposed Project would not inhibit the ability of local roadways to continue to accommodate emergency response and evacuation activities.

The proposed Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Therefore, the Project would have a less than significant impact.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant***.

Impact #3.4.9g – Would the Project Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

The proposed Project is surrounded by a mix of undeveloped land and urbanized residential land uses and would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, as there are no wildlands in the vicinity. According to available CalFire data, the Project site is not located within a hazard zone classified as Very High, High or Moderate for wildland fires (Cal Fire, 2006). Construction and operation of the Project is not expected to increase the risk of wildfires on and adjacent to the Project site. The Project will also be required to comply with all applicable standards as required by the Kern County and City of Bakersfield Fire Departments.

The proposed Project would not 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. Therefore, there would be no impact.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

There would be ***no impact***.

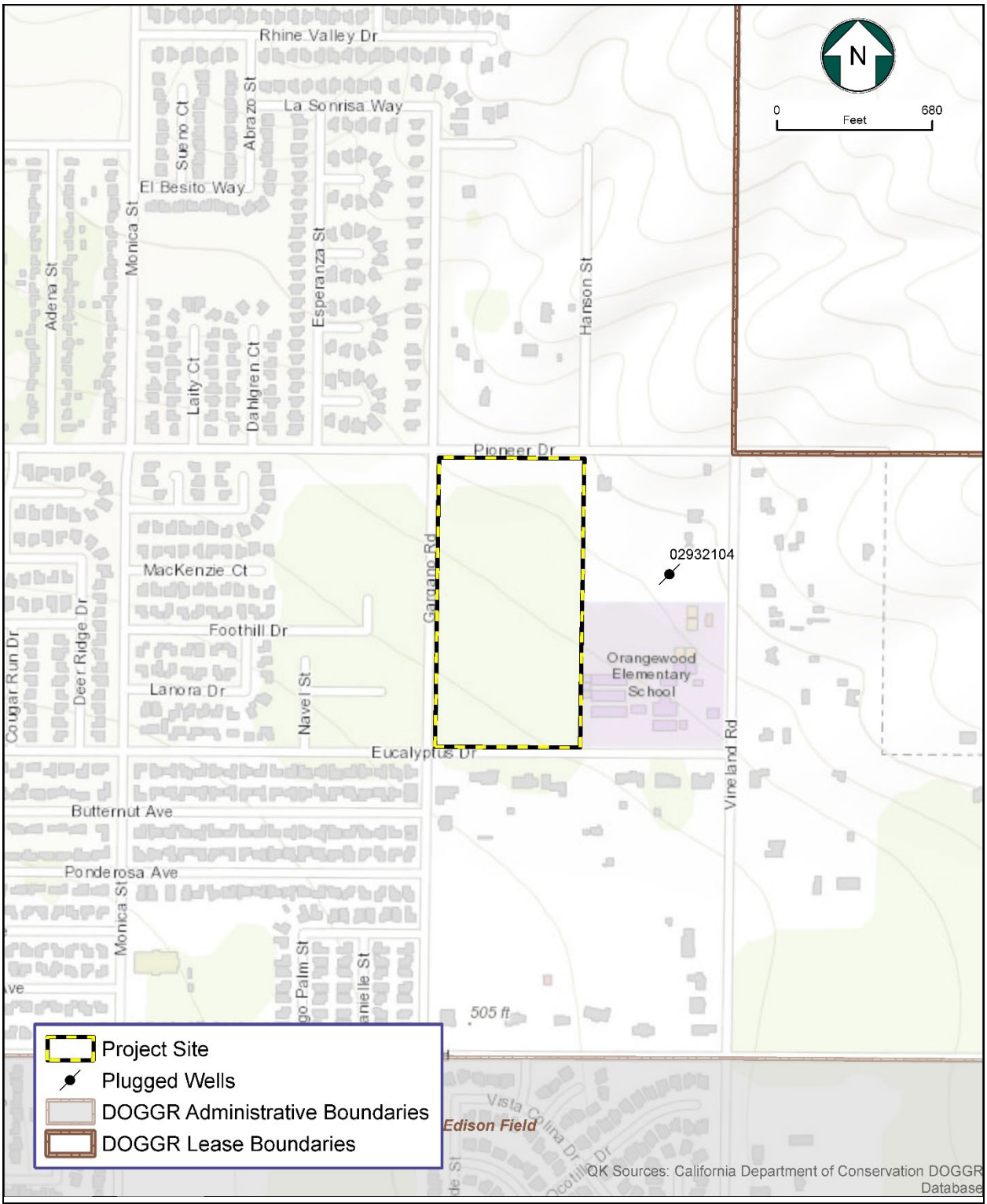

Figure 3.4.9-1
Oil / Gas Wells

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
3.4.10 - *HYDROLOGY AND WATER QUALITY*				
Would the Project:				
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☒	☐	☐
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i. Result in substantial erosion or siltation on-or off-site;	☐	☒	☐	☐
ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☒	☐	☐
iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☒	☐	☐
iv. Impede or redirect flood flows?	☐	☒	☐	☐
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation?	☐	☐	☐	☒
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

Discussion

Impact #3.4.10a – Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Construction of the Project would involve excavation, soil stockpiling, mass and fine grading, the installation of supporting drainage facilities, and associated infrastructure. During site grading and construction activities, large areas of bare soil could be exposed to erosive forces for short periods of time. Construction activities involving soil disturbance, excavation, cutting/filling, stockpiling, and grading activities could result in increased erosion and sedimentation to surface waters.

Additionally, accidental spills or disposal of potentially harmful materials used during construction could possibly wash into and pollute surface water runoff. Materials that could potentially contaminate the construction area, or spill or leak, include lead-based paint flakes, diesel fuel, gasoline, lubrication oil, hydraulic fluid, antifreeze, transmission fluid, lubricating grease, and other fluids. A SWPPP for construction-related activities would include, but not be limited to, the following types of BMPs to minimize the potential for pollution related to material spills:

- Vehicles and equipment will be cleaned.
- Vehicle and equipment fueling and maintenance requirements will be established.
- A spill containment and clean-up plan will be in place prior to and during construction activities.

In order to reduce potential impacts to water quality during construction activities, Mitigation Measure MM GEO-1 requires the Project proponent to file a Notice of Intent (NOI) to comply with the NPDES General Construction Permit and prepare a SWPPP. The Project SWPPP would include BMPs targeted at minimizing and controlling construction and post-construction runoff and erosion to the "maximum extent practicable." Mitigation Measure MM GEO-2 requires the District to limit grading to the minimum area necessary for construction and operation of the Project. Additionally, as noted in Section 3.4.9, *Hazards and Hazardous Materials*, Mitigation Measure MM HAZ-1 requires that all hazardous wastes be stored and properly managed in accordance with the approved Kern County Waste Management Department Hazardous Waste Exclusion Plan and an updated Hazardous Materials Business Plan.

Implementation would require the approval of a SWPPP that includes a number of BMPs related to handling the discharge of stormwater during construction to reduce potential impacts to water quality. With mitigation, the proposed Project would not violate any water quality standards or waste discharge requirements. Therefore, the Project would have a less than significant impact with incorporation of mitigation.

MITIGATION MEASURE(S)

Implementation of Mitigation Measures MM GEO-1, GEO-2 and MM HAZ-1.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant with mitigation incorporated***.

Impact #3.4.10b – Would the Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?

The Project site is located within the Kern County Subbasin within the San Joaquin Vlley Groundwater Basin (Basin Number 5-22.14, DWR Bulletin 118), which is identified as being critically overdrafted (California Department of Water Resources, 2003),

The Project site lies within the jurisdiction of the East Niles Community Services District. An Urban Water Management Plan was prepared in 2015 that outlines existing system supplies and establishes demand management measures. East Niles Community Services District is a member of the Kern River Groundwater Sustainability Agency, which prepared a Groundwater Management Plan in August 2019 that outlines federal, State, and local policies and established standards for groundwater management (Kern River Groundwater Sustainability Agency, 2019).

SGMA consists of three legislative bills and the legislation provides a framework for a long-term sustainable groundwater management across California. Local stakeholders have until 2020 to develop, prepare, and begin to implement the plan. GSAs will then have the responsibility to achieve groundwater sustainability. However, at this time, no additional requirements or implementation measures are applicable since a GSP has not been adopted within the subbasin.

East Niles Community Services District is supplied by combination of surface water and groundwater. As proposed, the Project is expanding the campus to alleviate overcrowding and improve student/faculty ratios. The Project's student and staff capacity is not increasing from the existing capacity of Orangewood Elementary School, so water demand is not anticipated to increase as a result of the Project.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant.***

Impact #3.4.10c(i) – Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through

the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site?

The rate and amount of surface runoff is determined by multiple factors, including the following: topography, the amount and intensity of precipitation, the amount of evaporation that occurs in the watershed and the amount of precipitation and water that infiltrates to the groundwater. There are no water features such as rivers or streams on the Project site. However, the proposed Project would alter the existing drainage pattern of the site, which would have the potential to result in erosion, siltation, or flooding on- or off-site. The disturbance of soils on-site during construction could cause erosion, resulting in temporary construction impacts. In addition, the placement of permanent structures on-site could affect drainage in the long-term. Impacts from construction and operation are discussed below.

As discussed in Impact #3.4.10a. above, potential impacts on water quality arising from erosion and sedimentation are expected to be localized and temporary during construction. Construction-related erosion and sedimentation impacts as a result of soil disturbance would be less than significant after implementation of an SWPPP (see Mitigation Measure MM GEO-1) and BMPs required by the NPDES. No drainages or other water bodies are present on the Project site, and therefore, the proposed Project would not change the course of any such drainages; however, erosion may occur on-site during rain events or high winds. Mitigation Measure MM GEO-2 requires the District to limit grading to the minimum area necessary for construction and operation of the Project. Additionally, as noted in Section 3.4.9, *Hazards and Hazardous Materials*, Mitigation Measure MM HAZ-1 requires that all hazardous wastes be stored and properly managed in accordance with the approved updated Hazardous Materials Business Plan. During operations stormwater would be routed to an on-site retention basin, and therefore not create a pattern of drainage that would impact the surrounding area.

With mitigation, the Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site. Therefore, the Project would have a less than significant impact with incorporation of mitigation.

MITIGATION MEASURE(S)

Implementation of Mitigation Measures MM GEO-1, MM GEO-2 and MM HAZ-1.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant with mitigation incorporated***.

Impact #3.4.10c(ii) – Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

According to the Federal Emergency Management Agency (FEMA), the Project site is located in an area of minimal flood hazard (See Figure 3.4.10-1). As noted in Impact # 3.4.4c, there are no water features or existing drainages on the Project site.

The Project would alter the natural drainage pattern of the site and add impervious surfaces where none currently exist. However, as noted in Impact #3.4.10a and Impact #3.4.10c(i) , with the implementation of MM GEO-1, which requires the approval of a SWPPP to handle stormwater during construction, the Project would not substantially increase the rate of amount of surface runoff or flooding on- or off-site.

MITIGATION MEASURE(S)

Implementation of Mitigation Measures MM GEO-1.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant with mitigation incorporated***.

Impact #3.4.10c(iii) – Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would 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?

As discussed in Impact #3.4.10a and Impact #3.4.10c(i)above, the Project is not anticipated to substantially alter the cause flooding or surface runoff from the site. As discussed in Impact #3.4.10a. above, potential impacts on water quality arising from erosion and sedimentation are expected to be localized and temporary during construction. Construction-related erosion and sedimentation impacts as a result of soil disturbance would be less than significant after implementation of an SWPPP (see Mitigation Measure MM GEO-1) and BMPs required by the NPDES. Mitigation Measure MM GEO-2 requires the District to limit grading to the minimum area necessary for construction and operation of the Project. Additionally, as noted in Section 3.4.9, *Hazards and Hazardous Materials*, Mitigation Measure MM HAZ-1 requires that all hazardous wastes be stored and properly managed in accordance with the approved, updated Hazardous Materials Business Plan. During operations stormwater would be routed to an on-site retention basin, and therefore not create a pattern of drainage that would impact the surrounding area.

The Project is an expansion of an existing elementary school campus but will not increase the student or staff capacity. Therefore, with mitigation, there would be less than significant impacts to existing or planned drainage systems and the impacts would be less than significant.

MITIGATION MEASURE(S)

Implementation of Mitigation Measures MM GEO-1, GEO-2 and MM HAZ-1.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant with mitigation incorporated***.

Impact #3.4.10c(iv) – Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows?

See discussion in Impact #3.4.10a, Impact #3.4.10c(i) through Impact #3.4.10c(iii), above.

MITIGATION MEASURE(S)

Implementation of Mitigation Measures MM GEO-1, GEO-2 and MM HAZ-1.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant with mitigation incorporated***.

Impact #3.4.10d – Would the Project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation?

The Project site is not located near the ocean or a steep topographic feature (i.e., mountain, hill, bluff, etc.). Therefore, there is no potential for the site to be inundated by tsunami or mudflow. Additionally, there is no body of water within the vicinity of the Project site. There is no potential for inundation of the Project site by seiche.

As shown by Federal Emergency Management Agency (FEMA), the school property is not located within a 100-year flood zone (see Figure 3.4.10-1). The potential for flooding at the site appears to be very low. The proposed Project site is located within a FEMA Flood Hazard Zone X: Area of Minimal Flood Hazard.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

There would be ***no impact.***

Impact #3.4.10e – Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Please see response #3.4.10b above.

This Project does not increase the student or staff capacity at the school, so the total consumption of water is not anticipated to increase. The Project would not conflict with or obstruct implementation of any applicable water plan and impacts would be less than significant.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant.***

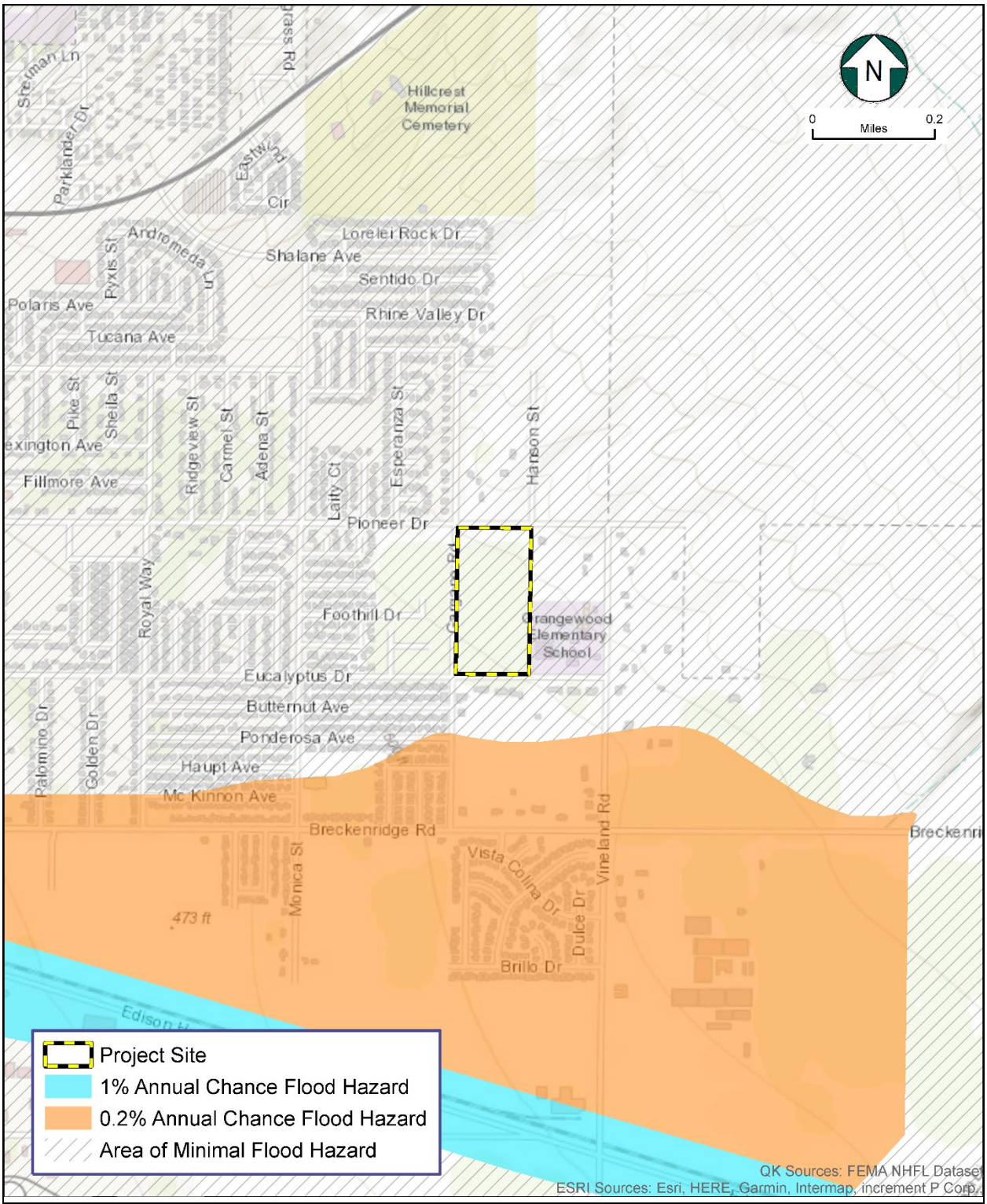

Figure 3.4.10-1
FEMA Floodplain

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
3.4.11 - *LAND USE AND PLANNING*				
Would the Project:				
a. Physically divide an established community?	☐	☐	☐	☒
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

Discussion

Impact #3.4.11a – Would the Project physically divide an established community?

The proposed Project site is presently undeveloped land and is adjacent to the existing Orangewood Elementary School to the east, and residences to the west, north and south. The proposed Project would not physically divide an established community. Therefore, the Project will have no impact.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

There would be ***no impact***.

Impact #3.4.11b – Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

The Project is within the Metropolitan Bakersfield General Plan (MBGP), which designates the Project site as LMR (Figure 3.4.11-1). The site is within unincorporated Kern County, and within the R-1 zone district (Figure 3.4.11-2). The Project is not anticipated to result in substantial direct or indirect population growth that was not previously anticipated by the MBGP because the Project is intended to alleviate classroom overcrowding and does not propose to expand the school's capacity or increase the number of students or staff. The

proposed Project would not 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. Therefore, the Project would have no impact.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

There would be ***no impact***.

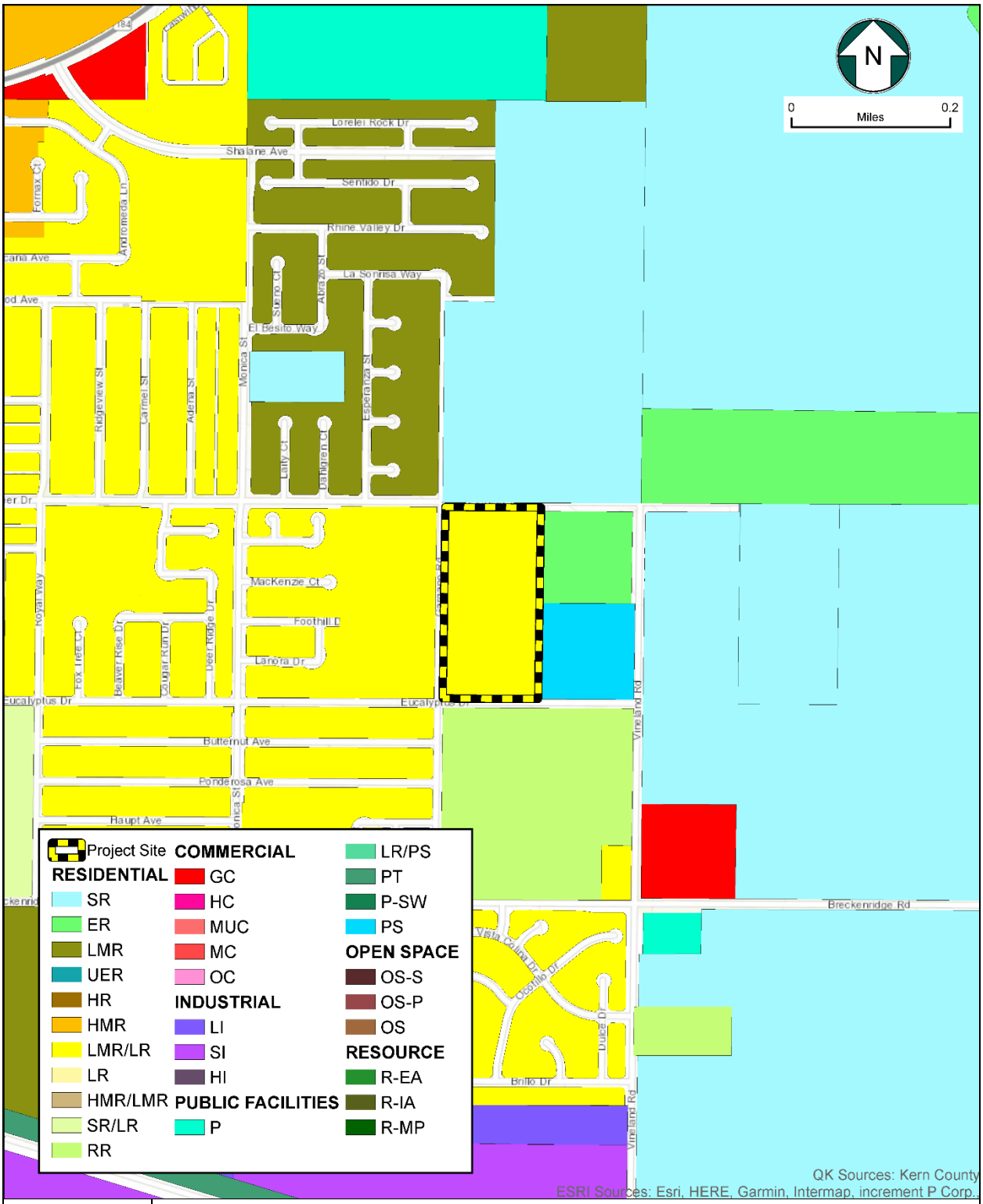

Figure 3.4.11-1
Land Use Designations

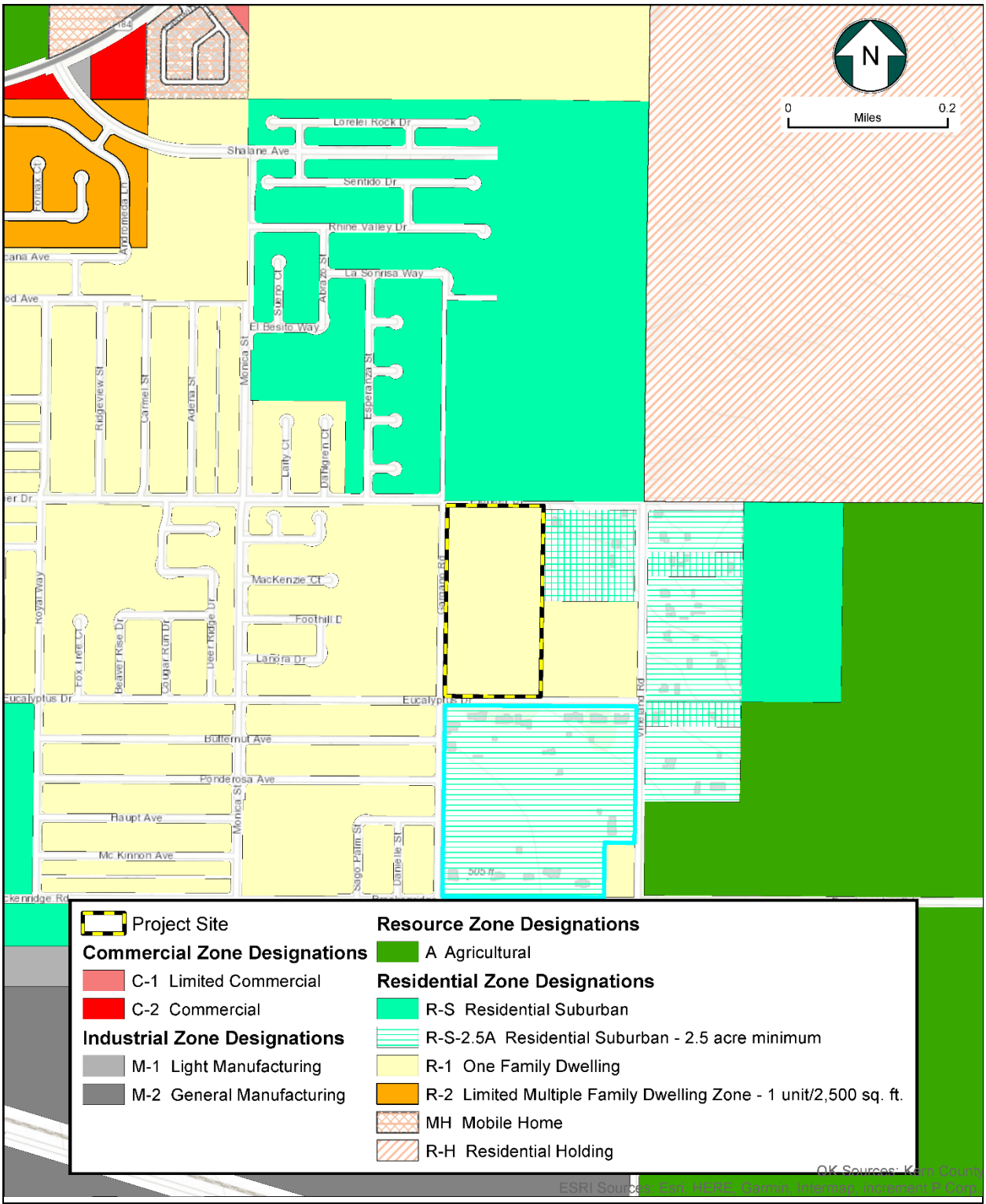

Figure 3.4.11-2
Zone Districts

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

Discussion

Impact #3.4.12a – Would the Project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No current mineral extraction activities exist on the Project site nor are any mineral extraction activities included in the Project design. As illustrated in Figure 3.4.9-1, the Project site is not located in a DOGGR identified oilfield and there are no known wells located on the site. The closest oil well is located approximately 400 feet to the east of the Project site, and it is abandoned. The proposed Project would not result in the loss of availability of mineral resources as the Project does not propose the extraction of mineral resources. Additionally, the proposed Project would not restrict the ability of mineral rights' holders, in the area, to exercise their legal rights to access surrounding sites for the exploration and/or extraction of underlying oil research or other natural resources.

The proposed Project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. Therefore, there would be no impact.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

There would be ***no impact***.

Impact #3.4.12b – Would the Project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

As seen in Figures 3.4.11-1 and 3.4.11-2 in Section 3.4.11, *Land Use and Planning*, the proposed Project is not designated as a mineral recovery area by the Metropolitan Bakersfield General Plan. The Project would not alter any existing plans that protect mineral resources. As a result, the proposed Project would not interfere with mining operations and would not result in the loss of land designated for mineral and petroleum.

The proposed Project would not 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. Therefore, the Project would have no impact.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

There would be ***no impact***.

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

Discussion

Impact #3.4.13a – Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

The MBGP has noise policies within the Noise Element of the plan (County of Kern, 2007). It discusses the noise environment in the metro planning area and establishes policies regarding land uses that may generate noise, and sensitive land uses that may be affected by noise generated elsewhere. Schools are identified as a sensitive land use. The primary function of the Noise Element is to incorporate noise considerations into the land use decision-making process.

The Kern County Noise Ordinance (Section 8.36.020 *et seq.*) prohibits a variety of nuisance noises. The major purpose of the Noise Element is to establish reasonable standards for maximum desired noise levels in Kern County, and to develop an implementation program which could effectively mitigate potential noise problems. The implementation measures have been designed so that they will not subject residential or other sensitive noise land uses to exterior noise levels in excess of 65 dBA L_{dn}, and interior noise levels in excess of 45 dBA L_{dn}.

Construction-related noise is regulated by means of a limitation on the hours of construction activity for projects located within 1,000 feet of an occupied residential dwelling. In such cases, construction is prohibited between the hours of 9 p.m. and 6 a.m. on weekdays and 9 p.m. and 8 a.m. on weekends, except as provided below:

- The development services agency director or his designated representative may for good cause exempt some construction work for a limited time.
- Emergency work is exempt from this section.

The Project is the expansion of the existing Orangewood Elementary school campus. The Project site is adjacent to the school to the east, an undeveloped property to the west, with residences to the north and south. Noise levels generated by the existing school are considered baseline. Since the Project does not propose to increase student or faculty capacity, there is no anticipated increase in noise levels from what is currently produced.

Construction of the proposed Project would include grading, truck traffic and the various noises generally associated with temporary construction activities. All other residences or sensitive receptors are located at distances sufficient to attenuate noise to acceptable levels. Implementation of the following mitigation measures will reduce temporary noise impacts from construction of the Project to levels considered less than significant.

MITIGATION MEASURE(S)

MM NSE-1: During construction, the contractor shall situate implement the following measures:

1. All stationary construction equipment on the Project site shall be located so that noise emitting objects or equipment faces away from any potential sensitive receptors.

2. The construction contractor shall ensure that all construction equipment is equipped with manufacturer-approved mufflers and baffles During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receivers.

3. Construction activities shall not take place outside between the hours of 9 p.m. and 6 a.m. on weekdays and 9 p.m. and 8 a.m. on weekends.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant with mitigation incorporated***.

Impact #3.4.13b – Would the Project result in generation of excessive groundborne vibration or groundborne noise levels?

Construction

Construction activities in general can have the potential to create groundborne vibrations. However, based on the soil types found in the general Project vicinity, it is unlikely that any blasting or pile-driving would be required in connection with construction of the school. Therefore, the potential for groundborne vibrations to occur as part of the construction of the Project is considered minimal.

The Federal Transit Administration (FTA) has published standard vibration velocities for construction equipment operations (Federal Highway Administration (FHWA), U.S. Department of Transportation, 2017). In general, the FTA architectural damage criterion for continuous vibrations (i.e., 0.2 inch/second) appears to be conservative even for sustained pile driving. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. The typical vibration produced by construction equipment is illustrated in Table 3.4.13-1.

Table 3.4.13-1
Typical Vibration Levels for Construction Equipment

Equipment	Reference peak particle velocity at 25 feet (inches/second)[1]	Approximate peak particle velocity at 100 feet (inches/second)[2]
Large bulldozer	0.089	0.011
Loaded trucks	0.076	0.010
Small bulldozer	0.003	0.0004
Jackhammer	0.035	0.004
Vibratory compactor/roller	0.210	0.026

Notes:
1 – Federal Transit Administration, Transit Noise and Vibration Impact Assessment Guidelines, May 2006. Table 12-2.
2 – Calculated using the following formula:
$PPV_{equip} = PPVref \times (25/D)1.5$
where: PPV (equip) = the peak particle velocity in in/sec of the equipment adjusted for the distance PPV (ref) = the reference vibration level in in/sec from Table 12-2 of the FTA Transit Noise and Vibration Impact Assessment Guidelines
D = the distance from the equipment to the receiver

As indicated in Table 3.4.13-1, based on the FTA data, vibration velocities from typical heavy construction equipment that would be used during Project construction range from 0.003 to 0.644 inch-per-second peak particle velocity (PPV) at 25 feet from the source of activity. With regard to the proposed Project, ground-borne vibration would be generated during site clearing and grading activities on-site facilitated by implementation of the proposed Project.

As demonstrated in Table 3.4-13-1, vibration levels at 100 feet would range from 0.0004 to 0.026 PPV. Therefore, the anticipated vibration levels would not exceed the 0.2 inch-per-second PPV significance threshold during construction operations at the nearest receptors, which are 200 feet to the south. It should be noted that 0.2 inch-per-second PPV is a conservative threshold, as that is the construction vibration damage criteria for non-engineered timber and masonry buildings (Kern County Planning Department, 2013). Buildings within the Project area would be better represented by the 0.5 inch-per-second PPV significance threshold (construction vibration damage criteria for a reinforced concrete, steel or timber buildings) (Kern County Planning Department, 2013). Therefore, vibration impacts associated with construction are anticipated to be less than significant.

Operations

Further, operation of the school would not include any activities that would create groundborne vibrations. The proposed Project would not result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. Therefore, the Project would have a less than significant impact.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be *less than significant*.

Impact #3.4.13c – For a Project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?

The proposed Project is approximately two miles from the closest public airport. However, the Project is not within an adopted Kern County ALUCP compatibility zone, and therefore would not expose people residing in or working in the Project area to excessive noise levels related to public or private airports. Therefore, noise impacts are considered less than significant related to excessive noise at a public airport.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be *less than significant*.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
3.4.14 - *POPULATION AND HOUSING*				
Would the Project:				
a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion

This analysis relied upon the Metropolitan Bakersfield General Plan for evaluating the significance of the Project's impacts to Population and Housing issues outlined in this section.

Impact #3.4.14a – Would the Project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

The proposed Project is an expansion of an existing elementary school campus to alleviate overcrowding; the student and staff capacity would not increase. Therefore, no population growth is anticipated to occur as a result of the Project.

The proposed Project would not 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). Therefore, impacts of the Project would be less than significant.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant***.

Impact #3.4.14b – Would the Project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

The proposed Project would be constructed on an undeveloped property and would not displace any existing housing or people in the Project area. The implementation of the Project would serve the existing student and staff population and not require construction or replacement of housing.

In addition, it is anticipated that construction workers would come from the surrounding area and would not require new housing. The proposed Project would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere. Therefore, the Project would have no impact.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

There would be ***no impact***.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
3.4.15 - *PUBLIC SERVICES*				
Would the Project:				
a. 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 to other performance objectives for any of the public services:				
i. Fire protection?	☐	☐	☒	☐
ii. Police protection?	☐	☐	☒	☐
iii. Schools?	☐	☐	☒	☐
iv. Parks?	☐	☐	☒	☐
v. Other public facilities?	☐	☐	☒	☐

Discussion

The proposed Project would have to comply with the California Department of Education Title 5, California Code of Regulations Section 14001, which requires that all schools are designed to meet federal, State, and local statutory requirements for structure, fire, and public safety, and be conveniently located for public services including but not limited to fire protection, police protection, public transit and trash disposal, whenever feasible.

The expansion of Orangewood Elementary is not anticipated to directly require additional public services. The existing school was anticipated in the growth projections for the Metropolitan Bakersfield General Plan and therefore, the school's public services needs have already been accounted for in projecting future public service needs for the City and County. It is anticipated that existing and future public facilities and equipment would be able to maintain the current level of service. No other public services would be significantly affected by the Project.

Impact #3.4.15a(i) – 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 to other performance objectives for any of the public services - Fire Protection?

Kern County Fire Department Station 45 would provide fire suppression and emergency medical services at the Project site. Station 45 is located about 2 miles to the southeast of the Project site along Edison Highway.

The existing approved water supply system would be capable of supplying required fire flow for fire protection purposes because the fire risk is not anticipated to increase as a result of the proposed Project. The Project will maintain compliance with gallons-per-minute requirements for fire flow based on the Guide for Determination of Required Fire Flow, published by the State Insurance Service Office and County of Kern's adopted Fire Code.

Fire hydrants would also be located and installed per the County of Kern standards. These design standards coupled with existing fire protection infrastructure would provide for proper fire suppression services on site. Further, by meeting these standards and incorporating needed design features in the Project design, no additional fire protection services would be required.

As discussed above, this Project does not increase the student or staff capacity of the elementary school campus. Therefore, the Project would not increase the need for such services beyond the baseline condition.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant***.

Impact #3.4.15a(ii) – 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 to other performance objectives for any of the public services – Police Protection?

The Kern County Sheriff's Office (KCSO) and Bakersfield Police Department provides law enforcement services to this part of unincorporated Kern County. KCSO would provide primary public protection to the Project site and surrounding areas. In addition, the Project site is located in the California Highway Patrol's Central Division.

As discussed above, the existing school and has been analyzed by the Metropolitan Bakersfield General Plan, including impacts to police protection services. Therefore, the Project would not increase the need for such services beyond the baseline condition.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant.***

Impact #3.4.15a(iii) – 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 to other performance objectives for any of the public services – Schools?

As stated previously, the expanded school site would serve current students in the vicinity and alleviate issues with meeting CDE classroom requirements, as well as possible overcrowding. The Project will not increase the student population or require an increase in faculty. Existing staff and students will relocate to the new buildings.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant.***

Impact #3.4.15a(iv) – 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 to other performance objectives for any of the public services – Parks?

No public parks are located within close proximity of the Project site. The closest public park is Pioneer Park, approximately 1.5 miles west of the Project. The expanded school campus would provide additional recreational space for the students during the school day. Existing parks would not be affected by the Project because no increase in student or staff is anticipated.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant.***

Impact #3.4.15a(v) – 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 to other performance objectives for any of the public services – Other Public Facilities?

The Project is proposed as a part of the Metropolitan Bakersfield General Plan and the predicted residential development in the area in order to eliminate the issue with CDE requirements for classroom size and student/teacher ratios. The Project would not induce the appreciable use of other public facilities such as libraries, courts, and other Kern County services.

The proposed Project would not 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 a significant environmental impact, in order to maintain acceptable service ratios for any of the public services. Therefore, the Project would have a less than significant impact.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant***.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less–than-Significant Impact	No Impact
3.4.16 - *RECREATION*				
Would the Project:				
a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b. Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☒	☐

Discussion

Impact #3.4.16a – 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?

The proposed elementary school expansion would not increase the use of existing neighborhood and regional parks or recreational facilities. As noted previously, the closest public park is Pioneer Park, which is approximately 1.5 miles west of the Project site. On-site recreational space would be provided within the school campus. The proposed Project would not 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 or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment. Therefore, the Project would have a less than significant impact.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be *less than significant*.

Impact #3.4.16b – Would the Project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

See Impact #3.4.16a, above.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant***.

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

Discussion

Impact #3.4.17a – Would the Project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

The closest arterial roadways to the Project include Breckenridge Road (SR 218) and Morning Drive; Eucalyptus Drive is a local street as identified in the MBGP Circulation Element. The construction of the proposed Project would generate additional traffic in the Project area due to construction-related trucks traveling to and from the site. However, this additional generation of traffic is temporary and is not anticipated to result in significant transportation impacts. It is anticipated that construction workers would be from the area and therefore vehicle miles traveled (VMT) would be consistent with employees working on a local job site. Existing students and staff would continue to travel the same amount of vehicle miles once the Project is operational. There would be no change in VMT from baseline levels with implementation of the Project.

The Project does not include an increase in student or staff capacity, and the expansion would not alter the distance traveled from home to school. Therefore, the operation of the Project is not anticipated to generate additional traffic beyond the baseline conditions.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be *less than significant*.

Impact #3.4.17b – Would the Project conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)?

See discussion of Impact #3.4.17a.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be *less than significant*.

Impact #3.4.17c – Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The Project would not introduce new curves and/or hazardous intersections into the Project vicinity. No new design or features would be introduced that would result in transportation-related hazards or safety concerns. During construction at the proposed Project site, construction-related delivery trucks would be present. However, these trucks would be traveling along the existing local roadways and would not interfere with access surrounding the site. Once construction is completed, trucks would cease to access the site with the exception of periodic deliveries and operational maintenance. The proposed Project would not result in an increase in hazards due to a design feature or incompatible use.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be *less than significant*.

Impact #3.4.17d – Would the Project result in inadequate emergency access?

The proposed Project would be required to comply with all emergency access requirements adopted by City, County and State agencies. Site access requirements are set forth in the Kern County Municipal Code as well as dictated by the DSA. These requirements and all

others required to be included in the project design will be verified by the appropriate agency prior to project approval. The California Fire Code establishes standards by which emergency access may be determined. The proposed Project would have to provide adequate unobstructed space for fire trucks to turn around. The proposed Project site would have adequate internal circulation capacity including entrance and exit routes to provide adequate unobstructed space for fire trucks and other emergency vehicles to gain access and to turn around.

As described above, the minimal temporary increase of construction-related traffic would not cause a significant increase in congestion and would not reduce the existing LOS on area roads, which could indirectly affect emergency access. The Project is not expected to require closures of public roads, which could inhibit access by emergency vehicles. The proposed Project would not result in inadequate emergency access.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant***.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less–than-Significant Impact	No Impact
3.4.18 - *TRIBAL CULTURAL RESOURCES*				
Would the Project:				
a. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or	☐	☒	☐	☐
ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Discussion

Impact #3.4.18a(i) – Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?

See discussion for Impact #3.4.5a.

MITIGATION MEASURE(S)

Implementation of Mitigation Measures MM CUL-1 and MM CUL-2.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant with mitigation incorporated***.

Impact #3.4.18a(ii) – Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

See discussion for Impact #3.4.5a.

MITIGATION MEASURE(S)

Implementation of Mitigation Measures MM CUL-1 and MM CUL-2.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant with mitigation incorporated***.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
3.4.19 - *UTILITIES AND SERVICE SYSTEMS*				
Would the Project:				
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b. Have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c. Result in a determination by the wastewater treatment provider that serves or may serve the Project that it has adequate capacity to serve the Project's Projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

Discussion

This analysis relied upon review of applicable requirements of the RWQCB- Central Valley as provided on their web site, the Kern County Waste Management Department online resources, and analysis provided by the Metropolitan Bakersfield General Plan EIR (County of Kern, 2007).

Impact #3.4.19a – Would the Project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

The infrastructure necessary to serve the Project would be included as part of the Project. A septic system serves the existing Orangewood Elementary campus, but the Project would connect to the wastewater infrastructure operated by the East Niles Community Services District. This sewer system is regulated by the Central Valley RWQCB and the State Water Resources Control Board (SWRCB). The RWQCB is responsible for protecting water resources in the region, and as such prescribes standards for the treatment and disposal of wastewater.

As discussed, there is adequate capacity in the East Niles Community Services District's existing sewer system and there is adequate amount of water to meet the demands of the school. No additional students or staff will be on site as a result of the Project. Therefore, no new water or wastewater facilities or expansion to the existing facilities would be necessary.

The school will connect to existing PG&E transmission for electrical power. Telecommunication requirements for the new school are typical of this type of land use and would not require any expansion or construction of new telecommunication facilities.

The proposed Project would not require or result in the construction of utility infrastructure, new water or wastewater treatment facilities or expansion of existing facilities. As demonstrated, the proposed Project will have adequate available water supply. Therefore, the Project would have a less than significant impact.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant***.

Impact #3.4.19b – Would the Project have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years?

The area lies above a series of water aquifers, which are part of a larger groundwater basin called the Southern San Joaquin Groundwater Basin. Sources of recharge for these aquifers include the Kern River Channel, runoff, canal seepage, spreading/banking, and wastewater reclamation, all of which are surface waters, and recharge the aquifers for use at a later date (City of Bakersfield, 2000). The Project would be served by water provided by East Niles Community Services District and water lines would be constructed to supply water to the school. As discussed in response to Impact #3.4.10a, above, there is adequate water supply for the Project.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be *less than significant*.

Impact #3.4.19c – Would the Project result in a determination by the wastewater treatment provider that 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?

See discussion for Impact #3.4.19a.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be *less than significant*.

Impact #3.4.19d – Would the Project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

The Project does not increase the number of students or staff members at the school and would therefore not result in increased operational generation of solid waste. Construction of the Project would temporarily result in an increased generation of solid waste, which would be disposed of at Bena Landfill located less than seven miles southeast of the Project site. The maximum permitted capacity of Bena Landfill is 53,000,000 cubic yards. Based on the most recently available information, the remaining capacity in 2013 was 32,808,260 cubic yards (CalRecycle, 2013). The maximum permitted daily disposal is 4,500 tons per day. The construction of the Project is not anticipated to result in the exceedance of daily disposal rates or the current remaining capacity of the landfill. Therefore, impacts would be less than significant.

The Project, in compliance with federal, State, and local statutes and regulations related to solid waste, would dispose of all waste generated on-site at an approved solid waste facility (Bena Landfill). The Project does not, and would not conflict with federal, State, or local regulations related to solid waste. The proposed Project would be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs in compliance with federal, state, and local statutes and regulations related to solid waste. Therefore, the Project would have a less than significant impact

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant***.

Impact #3.4.19e – Would the Project comply with federal, state, and local statutes and regulations related to solid waste?

The Kern County Solid Waste Program is the Local Enforcement Agency (LEA) for the California Department of Resources, Recycling and Recovery (CalRecycle). The Kern County's LEA enforces California Code of Regulations (CCR) Titles 14 and 27. The Kern County Municipal Code Chapter 8.28 (Solid Waste) contains definitions and regulations related to the handling and disposal of solid waste at County facilities. The Project applicant would comply with all applicable regulations related to solid waste generation, handling and disposal. Therefore, impacts would be less than significant.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant***.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
3.4.20 - *WILDFIRE*				
Would the Project:				
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risks or that may result in temporary or ongoing impacts to the environment?	☐	☐	☒	☐
d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☒	☐	☐

Impact #3.4.20a – Would the Project substantially impair an adopted emergency response plan or emergency evacuation plan?

Kern County has prepared an Emergency Operations Plan that outlines goals and policies related to emergency preparation and response. The Project does not include the increase of student or staff capacity of Orangewood Elementary.

The Project will also be required to comply with all applicable standards as required by the State Fire Marshall, CDE Title 5 and Title 24 regulations, as well as local fire codes. The existing the school has an emergency response plan in case of fire or other emergency situations.

The access of emergency response vehicles to the site will not be inhibited by the proposed Project. Therefore, the Project would result in a less than significant impact.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant.***

Impact #3.4.20b – Would the Project due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

The Project area is currently flat, undeveloped land surrounded by urbanized, developed properties. There is minimal vegetation on the Project site that could potentially result in wildfire. As seen in Figure 1-5, the Project area is not in a designated State Responsibility Area (SRA). The operation of the Project would pose minimal wildfire risk to students and staff on the Project site. Therefore, impacts would be less than significant.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant.***

Impact #3.4.20c – Would the Project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risks or that may result in temporary or ongoing impacts to the environment?

The Project would require installation of utility infrastructure in order to provide electricity to the expanded Orangewood Elementary School. However, construction involved with this is not anticipated to exacerbate fire risk or result in temporary or ongoing impacts to the environment. Therefore, impacts would be less than significant.

MITIGATION MEASURE(S)

No mitigation is required.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant.***

Impact #3.4.20d – Would the Project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

See discussion of Impact #3.4.10c(i). There is minimal flood hazard at the Project site, and the Project site is flat. The Project would not expose people or structures to increased risks as a result of post-fire instability. The Project will affect the existing drainage of the Project

site. The incorporation of MM GEO-1 would require the District to submit a SWPPP that outlines best management practices for the construction phase to reduce stormwater pollution and erosion. Additionally, MM GEO-2 would require the District to limit grading to the minimum area necessary for construction and operation of the Project and employ best management practices to limit onsite and offsite erosion. With incorporation of MM GEO-1 and MM GEO-2, these impacts would be less than significant.

MITIGATION MEASURE(S)

Implementation of MM GEO-1 and GEO-2.

LEVEL OF SIGNIFICANCE

Impacts would be ***less than significant with mitigation incorporated.***

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
3.4.21 - *MANDATORY FINDINGS OF SIGNIFICANCE*				
a. Does the Project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b. Does the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a Project are significant when viewed in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects.)	☐	☒	☐	☐
c. Does the Project have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Discussion

Impact #3.4.21a – 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, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

As evaluated in this IS/MND, the proposed Project would not 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; reduce the number or restrict the range of an endangered, rare, or threatened species; or eliminate important examples of the major periods of California history or prehistory. With mitigation, the proposed Project would not 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. Therefore, the Project would have a less than significant impact with mitigation incorporated.

MITIGATION MEASURE(S)

Implementation of Mitigation Measures MM BIO-1 through MM BIO-6, CUL-1 and CUL-2.

LEVEL OF SIGNIFICANCE

The Project would have a ***less than significant impact with mitigation incorporated***.

Impact #3.4.21b - Does the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a Project are significant when viewed in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects.)?

As described in the impact analyses in Sections 3.14.1 through 3.4.20 of this IS/MND, any potentially significant impacts of the proposed Project would be reduced to a less than significant level following incorporation of the mitigation measures listed in Section 6, *Mitigation and Reporting Plan*. 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. With mitigation, the proposed Project would not have impacts that are individually limited, but cumulatively considerable. Therefore, the Project would have a less than cumulatively considerable impact with mitigation incorporated.

MITIGATION MEASURE(S)

Implementation of Mitigation Measures MM AES-1, MM BIO-1 through MM BIO-6, MM CUL-1 and MM CUL-2, MM GEO-1 though MM GEO-3, MM HAZ-1 and MM HAZ-2, and NSE-1.

LEVEL OF SIGNIFICANCE

The Project would have a ***less than significant impact with mitigation incorporated***.

Impact #3.4.21c - Does the Project have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?

All of the Project's impacts, both direct and indirect, that are attributable to the Project were identified and mitigated. As shown in Section 6, *Mitigation and Reporting Plan*, the District has agreed to implement mitigation substantially reducing or eliminating impacts from the Project. Therefore, the proposed Project would not either directly or indirectly cause substantial adverse effects on human beings because all potentially adverse direct impacts

of the proposed Project are identified as having no impact, less than significant impact, or less than significant impact with mitigation.

MITIGATION MEASURE(S)

Implementation of Mitigation Measures MM AES-1, MM BIO-1 through MM BIO-6, MM CUL-1 and MM CUL-2, MM GEO-1 though MM GEO-3, MM HAZ-1 and MM HAZ-2, and NSE-1.

LEVEL OF SIGNIFICANCE

The Project would have a ***less than significant impact with mitigation incorporated***.

SECTION 4 - LIST OF PREPARERS

4.1 - Lead Agency

- Todd Noble
  Edison School District
  11518 School Street
  Bakersfield, CA 93307

4.2 - Consultant - QK

- Jaymie Brauer – Project Manager/author
- Christopher Mynk, AICP – QA/QC
- Conor McKay – Lead Author
- Robert Parr – Technical Author (Cultural)
- Karissa Denney – Technical Author (Biological)

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SECTION 6 - MITIGATION MONITORING AND REPORTING PROGRAM

Impact No.	Mitigation Measure	Implementation	Monitoring
Aesthetics			
3.4.1-d	**MM AES-1:** Security and nighttime lighting installed at the school site shall be designed utilizing "dark skies" standards and guidelines and shall incorporate shielding of lighting and orienting lighting downward to prevent direct uplighting. Lighting used for nighttime events shall be turned off by 11:00pm. All lights in excess of 150 watts shall be directed toward the stadium field and away from adjacent properties. All stadium field light fixtures shall be designed with appropriate reflectors, hoods and side shields to direct the angle of incidence to reflect light downward.	ESD/Project Architect/ Project Contractor	ESD Project Inspector
Biological Resources			
3.4.4-a	**MM BIO-1:** Within 14 days of the start of Project activities, a pre-activity survey shall be conducted by a qualified biologist knowledgeable in the identification of these species. The pre-activity survey shall include walking transects to identify presence of burrowing owl, Swainson's hawk, California horned lark, San Joaquin kit fox, burrowing owl, nesting birds, and other special-status species or signs of, and sensitive natural communities. The pre-activity survey shall be walked by no greater than 30-foot transects for 100 percent coverage of the Project site and the 250-foot buffer, where feasible. If no evidence of special-status species is detected, no further action is required. If dens or burrows that could support either of these species are discovered during the pre-activity survey conducted under Mitigation Measure BIO-1, the avoidance buffers outlined below shall be established. No work would occur within these buffers unless the biologist approves and monitors the activity.	ESD/Project Contractor	ESD Project Inspector

Burrowing Owl (active burrows)

- Non-breeding season: September 1 – January 31 – 160 feet
- Breeding season: February 1 – August 31 – 250 feet

San Joaquin Kit Fox

- Potential or Atypical den – 50 feet
- Known den – 100 feet
- Natal or pupping den – Contact agencies for further guidance

Potential kit fox dens may be excavated provided that the following conditions are satisfied: (1) the den has been monitored for at least four consecutive days and is deemed unoccupied by a qualified biologist; (2) the excavation is conducted by or under the direct supervision of a qualified biologist. Den monitoring and excavation shall be conducted in accordance with the *Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* (United States Fish and Wildlife Service, 2011).

MM BIO-2: Prior to ground disturbance activities, within one week of employment all new construction workers at the Project site shall attend a Construction Worker Environmental Awareness Training and Education Program, developed and presented by a qualified biologist. The Construction Worker Environmental Awareness Training and Education Program would be presented by the biologist and shall include information on the life history wildlife and plant species that may be encountered during construction activities, their legal protections, the definition of "take" under the Endangered Species Act, measures the Project operator is implementing to	ESD/Project Contractor	ESD Project Inspector

protect the San Joaquin kit fox and other species, reporting requirements, specific measures that each worker would employ to avoid take of the wildlife species, and penalties for violation of the Act. Identification and information regarding sensitive or other special status plant species shall also be provided to construction personnel.

- An acknowledgement form signed by each worker indicating that environmental training has been completed.

- A sticker that shall be placed on hard hats indicating that the worker has completed the environmental training. Construction workers shall not be permitted to operate equipment within the construction area unless they have attended the training and are wearing hard hats with the required sticker;

- A copy of the training transcript and/or training video/CD, as well as a list of the names of all personnel who attended the training and copies of the signed acknowledgement forms shall be maintained on site for the duration of construction activities.

The construction crews and contractor(s) would be responsible for unauthorized impacts from construction activities to sensitive biological resources that are outside the areas defined as subject to impacts by Project permits.

MM BIO-3: If Project activities must occur during the nesting season (February 1 to September 15), pre-activity nesting bird

surveys shall be conducted within seven days prior to the start of construction at the construction site plus a 250-foot buffer for songbirds and a 500-foot buffer for raptors (other than Swainson's hawk). The surveys shall be phased with construction of the Project. If no active nests are found, no further action is required. However, existing nests may become active and new nests may be built at any time prior to and throughout the nesting season, including when construction activities are in progress. If active nests are found during the survey or at any time during construction of the Project, an avoidance buffer ranging from 50 feet to 500 feet may be required, with the avoidance buffer from any specific nest being determined by a qualified biologist. The avoidance buffer will remain in place until the biologist has determined that the young are no longer reliant on the adults or the nest. Work may occur within the avoidance buffer under the approval and guidance of the biologist, but full-time monitoring may be required. The biologist shall have the ability to stop construction if nesting adults show any sign of distress.

If all Project activities are completed outside of the Swainson's hawk nesting season (February 15 through August 31), no mitigation shall be required. If construction is planned during the nesting season, a preconstruction survey shall be conducted by a qualified biologist to evaluate the site and a 0.5-mile buffer for active Swainson's hawk nests. If potential Swainson's hawk nests or nesting substrates are located within 0.5 mile of the Project sites, then those nests or substrates must be monitored for activity on a routine and repeating basis throughout the breeding season, or until Swainson's hawks or other raptor species are verified to be using them. Monitoring will be conducted according to the protocol outlined in the *Recommended Timing and Methodology for Swainson's Hawk*

Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee 2000). The protocol recommends that ten visits be made to each nest or nesting site: one during January 1-March 20 to identify potential nest sites, three during March 20-April 5, three during April 5-April 20, and three during June 10-July 30. To meet the minimum level of protection for the species, surveys shall be completed for at least the two survey periods immediately prior to Project-related ground disturbance activities. During the nesting period, active Swainson's hawk nests shall be avoided by 0.5 mile unless this avoidance buffer is reduced through consultation with the CDFW and/or USFWS. If an active Swainson's hawk nest is located within 250 feet of the Project or within the Project, including the stick nest located within the Project, CDFW will require an Incidental Take Permit.

MM BIO-4: A qualified biologist shall conduct a pre-construction survey on the Project site and within 250 feet of its perimeter where feasible, to identify the presence of the western burrowing owl. The survey shall be conducted between 14 and 30 days prior to the start of construction activities. If any burrowing owl burrows are observed during the preconstruction survey, avoidance measures shall be consistent with those included in the CDFW staff report on burrowing owl mitigation (CDFG 2012). If occupied burrowing owl burrows are observed outside of the breeding season (September 1 through January 31) and within 500 feet of proposed construction activities, a passive relocation effort may be instituted in accordance with the guidelines established by the California Burrowing Owl Consortium (1993) and the California Department of Fish and Wildlife (2012). During the breeding season (February 1 through August 31), a 250-foot (minimum) buffer zone shall be

maintained unless a qualified biologist verifies through noninvasive methods that either the birds have not begun egg laying and incubation or that juveniles from the occupied burrows are foraging independently and are capable of independent survival.		
MM BIO-5: If construction is planned outside the nesting period for raptors and migratory birds (February 15 to August 31), no mitigation shall be required. If construction is planned during the nesting season for migratory birds and raptors, a preconstruction survey to identify active bird nests shall be conducted by a qualified biologist to evaluate the site and a 250-foot buffer for migratory birds and a 500-foot buffer for raptors. If nesting birds are identified during the survey, active raptor nests shall be avoided by 500 feet and all other migratory bird nests shall be avoided by 250 feet. Avoidance buffers may be reduced if a qualified on-site monitor determines that encroachment into the buffer area is not affecting nest building, the rearing of young, or otherwise affecting the breeding behaviors of the resident birds. No construction or earth-moving activity shall occur within a non-disturbance buffer until it is determined by a qualified biologist that the young have fledged (left the nest) and have attained sufficient flight skills to avoid Project construction areas. Once the migratory birds or raptors have completed nesting and young have fledged, disturbance buffers will no longer be needed and can be removed, and monitoring can cease.		
MM BIO-6: During all construction-related activities, the following mitigation shall apply:	ESD/Project Contractor	ESD Project Inspector

a. All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers.

b. Construction-related vehicle traffic shall be restricted to established roads and predetermined ingress and egress corridors, staging, and parking areas. Vehicle speeds shall not exceed 20 miles per hour (mph) within the Project site.

c. All Project activities shall occur during daylight hours, but if work must be conducted at night then a night-time construction speed limit of 10 mph shall be established.

d. Off-road traffic outside of designated Project areas shall be prohibited.

e. To prevent inadvertent entrapment of kit foxes or other animals during construction of the project, all excavated, steep-walled holes or trenches more than two feet deep shall 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.

f. Before holes or trenches are filled, they shall be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the USFWS and the CDFW shall be contacted before proceeding with the work.

g. In the case of trapped animals, escape ramps or structures shall be installed immediately to allow the

animal(s) to escape, or the USFWS and CDFW shall be contacted for guidance.

h. All construction pipes, culverts, or similar structures with a diameter of four inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for kit foxes and burrowing owls 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 shall not be moved until the USFWS 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.

i. All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers and removed at least once a week from a construction or Project site.

j. No pets, such as dogs or cats, shall be permitted on the Project site.

k. Project-related use of rodenticides and herbicides shall be restricted.

l. 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 shall be identified during the employee education program and their name and telephone number shall be provided to the USFWS and CDFW.

	m. Any Project personnel who are responsible for inadvertently killing or injuring one of these species shall immediately report the incident to their representative. This representative shall contact the CDFW and USFWS immediately in the case of a dead, injured or entrapped listed animal. n. The Sacramento Fish and Wildlife office and CDFW Region 4 office 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. o. New sightings of San Joaquin kit fox shall be reported to the California Natural Diversity Database. A copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed shall also be provided to the USFWS		
Cultural Resources			
3.4.5-a	**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 archaeologist can evaluate 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 archaeologist determines that the discovery represents a potentially significant cultural	ESD/Project Contractor	ESD Project Inspector

	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. Implementation of the mitigation measure below would ensure that the proposed Project would not cause a substantial adverse change in the significance of a historical resource. Therefore, the Project would have a less than significant impact with incorporation of mitigation measures.		
3.4.5-c	**MM CUL-2:** 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.	ESD/Project Contractor	ESD Project Inspector
Geology and Soils			
3.4.7-b	**MM GEO-1:** Prior to construction, the District shall submit 1) the approved Storm Water Pollution Prevention Plan (SWPPP) and 2) the Notice of Intent (NOI) to comply with the General National Pollutant Discharge Elimination System (NPDES) from the Central Valley Regional Water Quality Control Board. The requirements of the SWPPP and NPDES shall be incorporated into design specifications and construction	ESD/Project Contractor	ESD Project Inspector

	contracts. Recommended best management practices for the construction phase may include the following: • Stockpiling and disposing of demolition debris, concrete, and soil properly; • Protecting existing storm drain inlets and stabilizing disturbed areas; • Implementing erosion controls; • Properly managing construction materials; and • Managing waste, aggressively controlling litter, and implementing sediment controls. **MM GEO-2**: The District shall limit grading to the minimum area necessary for construction and operation of the Project. Final grading plans shall include best management practices to limit onsite and offsite erosion		
3.4.7-f	**MM GEO-3:** If any paleontological materials are encountered during project development, all further development activities shall cease and a paleontologist shall be contacted. The paleontologist shall then assess the discovered material(s) and prepare a survey, study, or report evaluating the impact. This document shall contain a recommendation, if necessary, for the preservation, conservation, or relocation of the resource.	ESD/Project Contractor	
Hazards and Hazardous Materials			
3.4.9-a	**MM HAZ-1:** Prior to operation of the Project, the Project proponent shall amend their existing Hazardous Materials Business Plan that identifies the expansion of Orangewood	ESD/Project Contractor	ESD Project Inspector

	Elementary School and submit it to the Kern County Environmental Health Services Division/Hazardous Materials Section for review and approval. The Project proponent shall provide the hazardous materials business plan to all contractors working on the Project and shall ensure that one copy is available at the Project site at all times.		
	MM HAZ-2: In the event that other abandoned or unrecorded wells are uncovered or damaged during excavation or grading activities, all work shall cease and the California Department of Conservation, Division of Oil, Gas and Geothermal Resources shall be contacted for requirements and approval, and copies of said approvals shall be submitted to the Kern County Planning and Community Development Department. The California Department of Conservation, Division of Oil, Gas and Geothermal Resources may determine that remedial plugging operations may be required.	ESD/Project Contractor	ESD Project Inspector
Hydrology and Water Quality			
3.4.10-a 3.4.10c(i) 3.4.10c(iii) (iv)	Implementation of Mitigation Measures MM GEO-1, GEO-2 and MM HAZ-1	ESD/Project Contractor	ESD Project Inspector
3.4.10c(ii)	Implementation of Mitigation Measures MM GEO-1		
Noise			
3.4.13a	**MM NSE-1**: During construction, the contractor shall situate implement the following measures:	ESD/Project Contractor	ESD Project Inspector

1. All stationary construction equipment on the Project site shall be located so that noise emitting objects or equipment faces away from any potential sensitive receptors.

2. The construction contractor shall ensure that all construction equipment is equipped with manufacturer-approved mufflers and baffles During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receivers.

3. Construction activities shall not take place outside between the hours of 9 p.m. and 6 a.m. on weekdays and 9 p.m. and 8 a.m. on weekends

APPENDIX A
AIR QUALITY IMPACT ANALYSIS/GREENHOUSE GASES ANALYSIS

AIR QUALITY IMPACT ANALYSIS

Orangewood Elementary School Expansion Project

Bakersfield, California

Prepared For:

QK, Inc.
5080 California Avenue, Suite 220
Bakersfield, CA 93309

Prepared By:

INSIGHT ENVIRONMENTAL / TRINITY CONSULTANTS
5500 Ming Avenue, Suite 140
Bakersfield, CA 93309
661-282-2200

May 2019

Project 190505.0022

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Attachment D: California Air Resources Board 2015 and 2020 Estimated Emissions Inventories

1. EXECUTIVE SUMMARY

Insight Environmental Consultants, Inc., a Trinity Consultants Company, has completed an Air Quality Impact Analysis (AQIA) for the expansion of Orangewood Elementary School in the Edison School District. The Project site is near located in east Bakersfield, CA at the intersection of Eucalyptus Drive and Vineland Road and would provide additional educational facilities. The Project will not increase staff or student enrollment at the existing school site.

The proposed Project's construction would include the following criteria pollutant emissions: reactive organic gases (ROG), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and suspended particulate matter (PM_{10} and $PM_{2.5}$). Project operations would generate air pollutant emissions from energy sources (natural gas usage) and area sources (incidental activities related to architectural coating, consumer products and landscape maintenance). Project construction and operational activities would also generate greenhouse gas (GHG) emissions. Criteria and GHG emissions were estimated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2 (California Air Pollution Control Officers Association (CAPCOA) 2017), which is the most current version of the model approved for use by the San Joaquin Valley Air Pollution Control District (SJVAPCD).

Table 4-3 presents the Project's construction emissions and provides substantial evidence to support a *less than significant* air quality impact on the San Joaquin Valley Air Basin. **Table 4-4** presents the Project's operations emissions and provides substantial evidence to support a *less than significant* air quality impact on the San Joaquin Valley Air Basin. The Project will not reduce GHG emissions by 29%, however, it has been concluded that the Project is a low GHG emitter. Based on the foregoing conclusions, the Project is considered to have *less than significant* air quality impacts on the San Joaquin Valley Air Basin.

Cumulative impacts were also evaluated. A records search of the Kern County GIS Geocortex IMP Map Viewer identified one hundred and three (103) other projects within a six-mile radius of the proposed Project. Evaluation of the cumulative emissions was not completed since details provided regarding these projects do not provide enough information to accurately estimate their potential emissions. Because the proposed Project would generate less than significant Project-related operational impacts to criteria air pollutants, the Project's contribution to cumulative air quality impacts would not be cumulatively considerable. Additionally, compliance with the SJVAPCD's Air Quality Attainment Plan (AQAP) is presumably required by all projects located within the SJVAPCD's jurisdiction. Because projects included in the cumulative analysis presumably comply with the requirements of one or both of these plans, the Project's incremental contribution to a cumulative effect is considered *less than cumulatively considerable* (CEQA Guidelines Section 15064(h)(3); SJVAPCD 2015).

2.1. PURPOSE

This AQIA was prepared pursuant to the SJVAPCD Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI) (SJVAPCD 2015), the Kern County Planning and Community Development Department's (KCPD) Air Quality Preparation Guidelines (KCPD 2006), and the California Environmental Quality Act (CEQA) Statute and Guidelines (CEQA 2018).

2.2. GENERAL PROJECT DESCRIPTION

The Orangewood Elementary School Expansion Project is the expansion of the existing school educational facilities. The expansion will include new classrooms for the kindergarten through second grade school levels, a learning center, multi-purpose room, media center, office and multi-use fields. The current county zoning is agricultural. The Project would be located near southeast Bakersfield, CA at the intersection of Cottonwood Road and Panama Lane. **Figure 2-1** depicts the regional location and **Figure 2-2** depicts an aerial view of the Project location. There is no specific development or phasing start date but a 24 to 27 month construction schedule is estimated; therefore most of the defaults in the CalEEMod emissions model were applied to estimate construction, operational and Greenhouse Gas emissions.

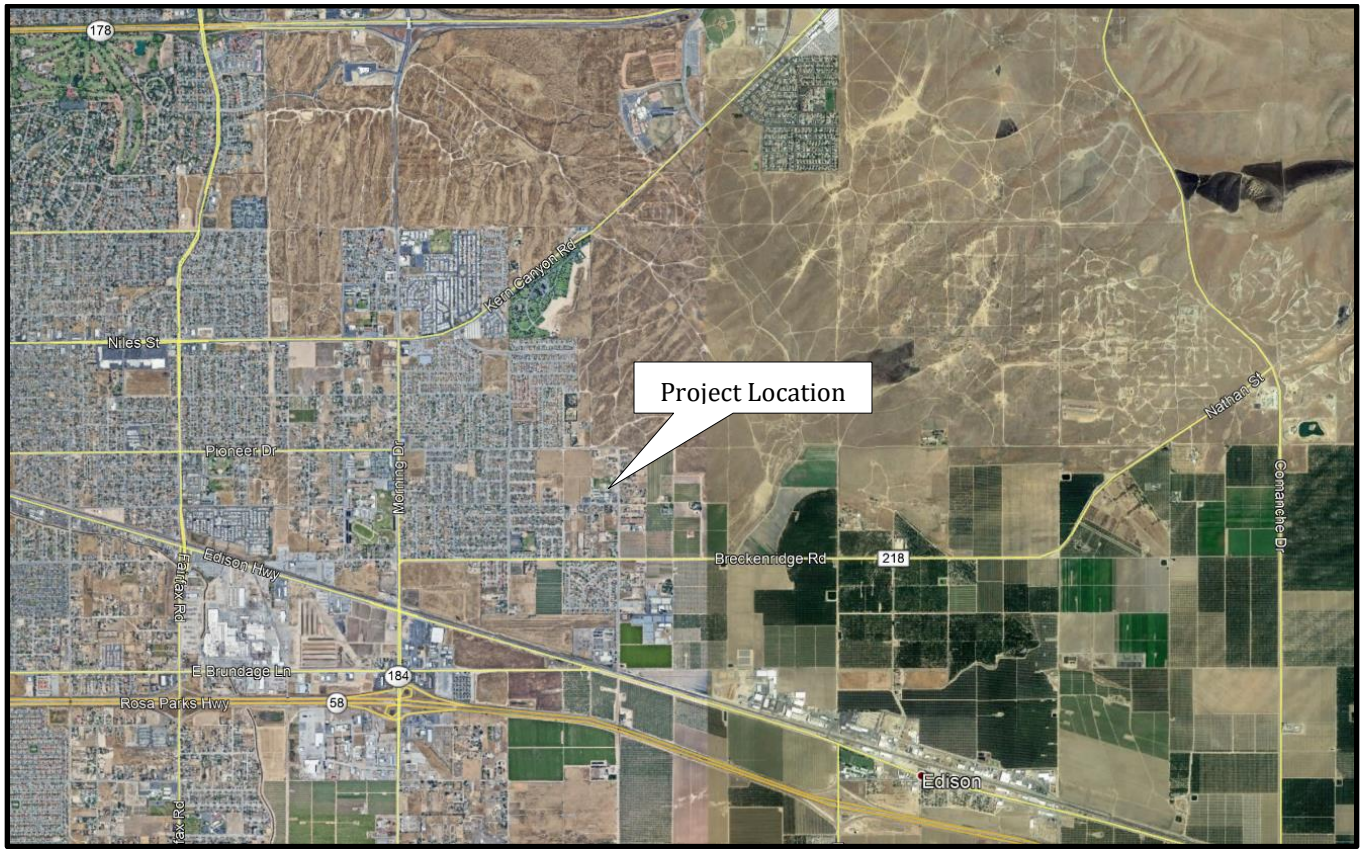


Figure 2-1 - Regional Location

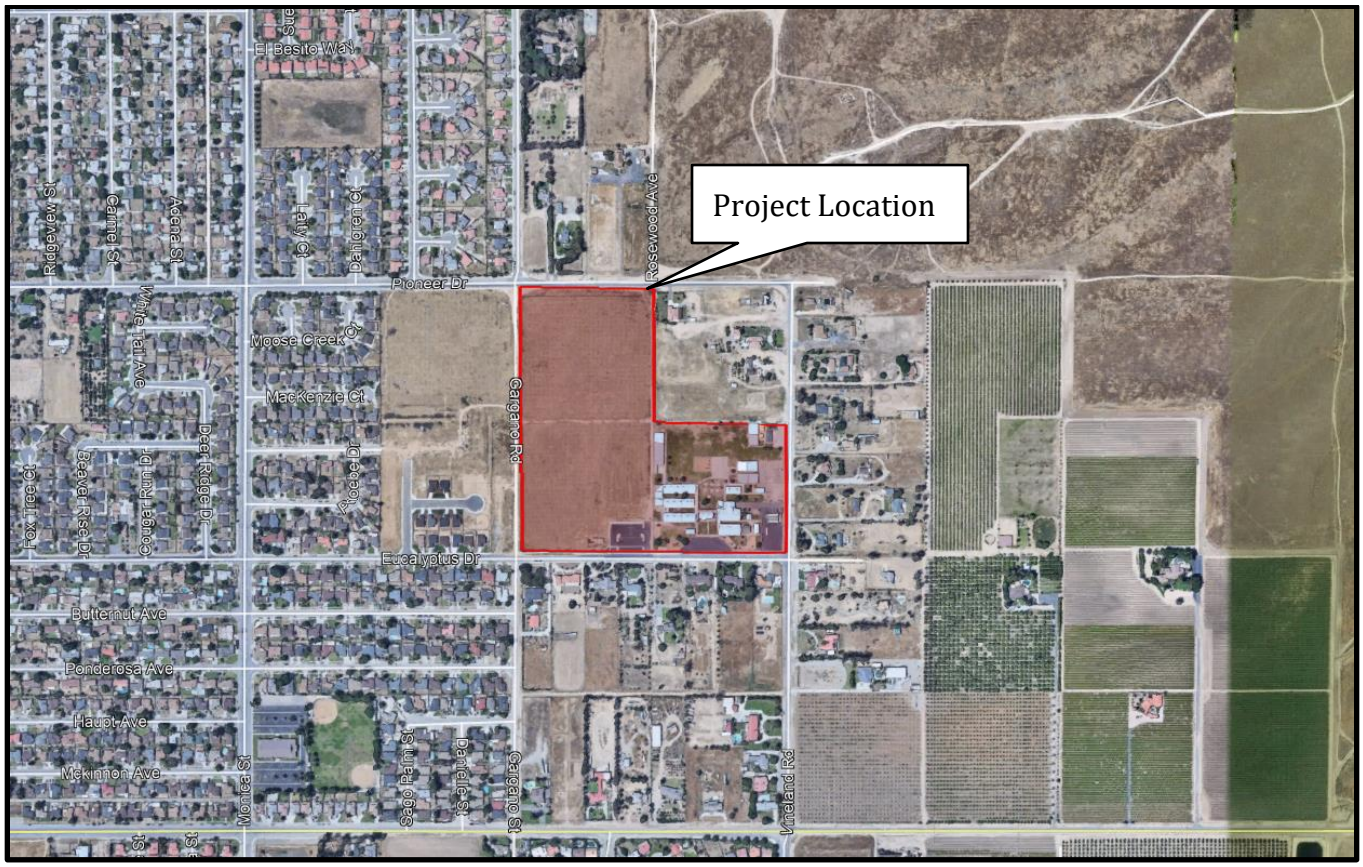
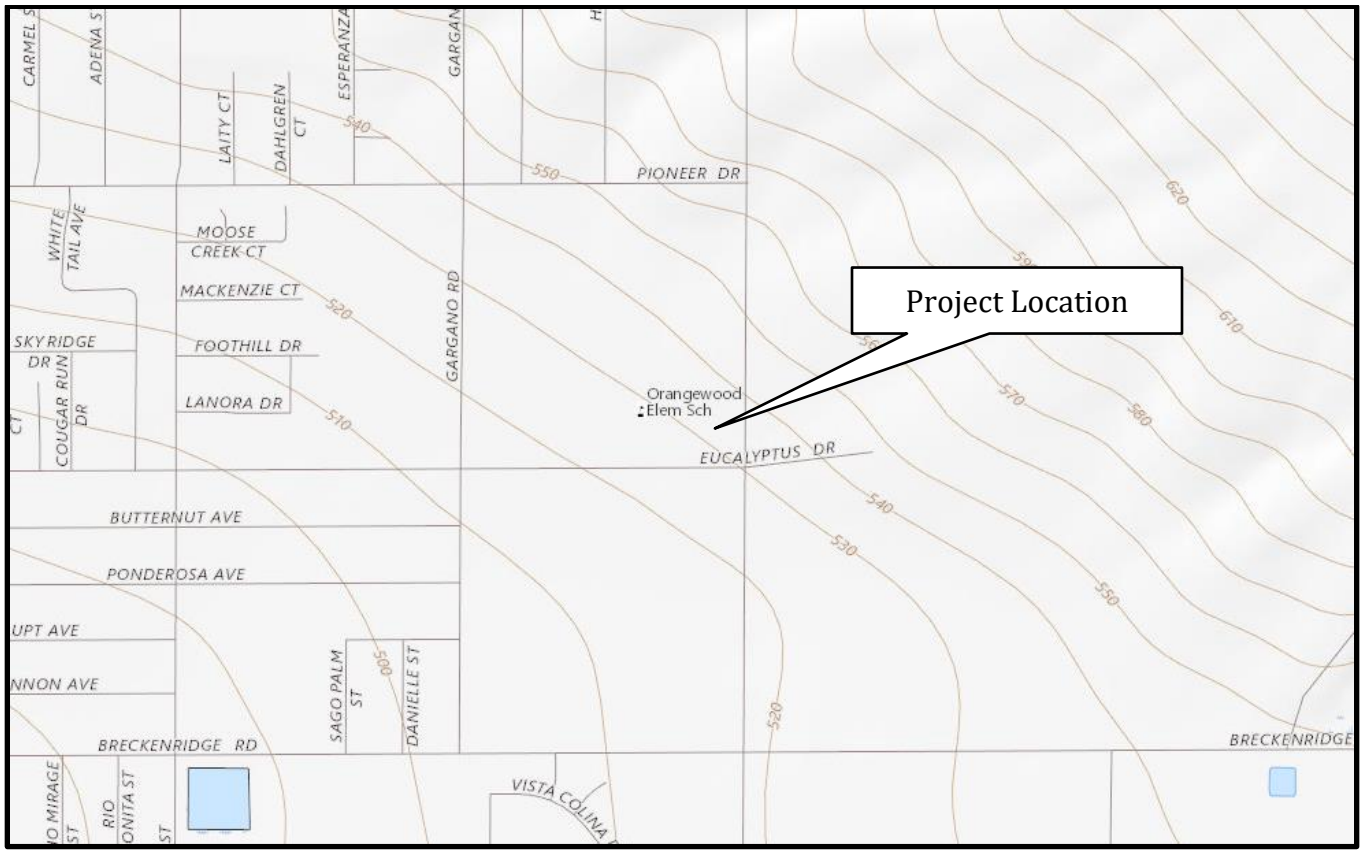


Figure 2-2 - Project Location

Figure 2-3 depicts the Project site's topography based on United States Geological Survey's (USGS) National Map (USGS 2015). The Project site is located at an elevation of approximately 530 feet above mean sea level and is surrounded by residential and agricultural land uses.



Source: USGS 2019

Figure 2-3 – Project Site Topography

3. SETTING

Protection of the public health is maintained through the attainment and maintenance of ambient air quality standards for various atmospheric compounds and the enforcement of emissions limits for individual stationary sources. The Federal Clean Air Act requires that the U.S. Environmental Protection Agency (EPA) establish National Ambient Air Quality Standards (NAAQS) to protect the health, safety, and welfare of the public. NAAQS have been established for ozone (O_3), CO, NO_2, SO_2, PM_{10} and $PM_{2.5}$, and lead (Pb). California has also adopted ambient air quality standards (CAAQS) for these "criteria" air pollutants. CAAQS are more stringent than the corresponding NAAQS and include standards for hydrogen sulfide (H_2S), vinyl chloride (chloroethene) and visibility reducing particles. The U.S. Clean Air Act Amendments of 1977 required each state to identify areas that were in non-attainment of the NAAQS and to develop State Implementation Plans (SIP's) containing strategies to bring these non-attainment areas into compliance. NAAQS and CAAQS designation/classification for Kern County are presented in **Section 3.1** below.

Responsibility for regulation of air quality in California lies with the California Air Resources Board (CARB), the 35 local air districts with oversight responsibility held by the EPA. CARB is responsible for regulating mobile source emissions, establishing CAAQS, conducting research, managing regulation development, and providing oversight and coordination of the activities of the 35 air districts. The air districts are primarily responsible for regulating stationary source emissions and monitoring ambient pollutant concentrations. CARB also determines whether air basins, or portions thereof, are “unclassified,” in “attainment” or in “non-attainment” for the NAAQS and CAAQS relying on statewide air quality monitoring data.

3.1. AIR QUALITY STANDARDS

The Project area is located within Kern County’s portion of the San Joaquin Valley Air Basin (SJVAB or Basin). Kern County is included among the eight counties that comprise the SJVAPCD. The SJVAPCD acts as the regulatory agency for air pollution control in the Basin and is the local agency empowered to regulate air pollutant emissions for the plan area. **Table 3-1** provides the NAAQS and CAAQS.

Table 3-1 - Federal & California Standards

		NAAQS	CAAQS
Pollutant	**Averaging Time**	**Concentration**	
O_3	8-Hour	0.070 ppm (137 µg/m³) [a]	0.070 ppm (137 µg/m³)
	1-Hour		0.09 ppm (180 µg/m³)
CO	8-Hour	9 ppm (10 mg/m³)	9 ppm (10 mg/m³)
	1-Hour	35 ppm (40 mg/m³)	20 ppm (23 mg/m³)
NO_2	Annual Average	53 ppb (100 µg/m³)	0.030 ppm (57 µg/m³)
	1-Hour	100 ppb (188.68 µg/m³)	0.18 ppm (339 µg/m³)
SO_2	3-Hour	0.5 ppm (1,300 µg/m³)	
	24 Hour	0.14 ppm (365 µg/m³)	0.04 ppm (105 µg/m³)
	1-Hour	75 ppb (196 µg/m³)	0.25 ppm (655 µg/m³)
Particulate Matter (PM10)	Annual Arithmetic Mean		20 µg/m³
	24-Hour	150 µg/m³	50 µg/m³
Fine Particulate Matter (PM2.5)	Annual Arithmetic Mean	12 µg/m³	12 µg/m³
	24-Hour	35 µg/m³	
Sulfates	24-Hour		25 µg/m³
Pb [d]	Rolling Three-Month Average	0.15 µg/m³	
	30 Day Average		1.5 µg/m³
H_2S	1-Hour		0.03 ppm (42 µg/m³)
Vinyl Chloride (chloroethene)	24-Hour		0.010 ppm (26 µg/m³)
Visibility Reducing particles	8 Hour (1000 to 1800 PST)		b

ppm = parts per million
ppb = parts per billion
mg/m3 = milligrams per cubic meter
µg/m ³= micrograms per cubic meter

Source: CARB 2016

a On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm

b In 1989, the CARB converted both the general statewide 10-mile visibility standards 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.

Under the provisions of the U.S. Clean Air Act, the Kern County portion of the SJVAB has been classified as nonattainment/extreme, nonattainment/severe, nonattainment, attainment/unclassified, attainment, or unclassified under the established NAAQS and CAAQS for various criteria pollutants. **Table 3-2** provides the SJVAB's designation and classification based on the various criteria pollutants under both NAAQS and CAAQS.

Table 3-2 - SJVAB Attainment Status

Pollutant	NAAQS[a]	CAAQS[b]
O_3, 1-hour	No Federal Standard[f]	Nonattainment/Severe
O_3, 8-hour	Nonattainment/Extreme[e]	Nonattainment
PM_{10}	Attainment[c]	Nonattainment
$PM_{2.5}$	Nonattainment[d]	Nonattainment
CO	Attainment/Unclassified	Attainment/Unclassified
NO_2	Attainment/Unclassified	Attainment
SO_2	Attainment/Unclassified	Attainment
Pb (Particulate)	No Designation/Classification	Attainment
H_2S	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing particulates	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment

Source: SJVAPCD 2017a

Note:

a See 40 CFR Part 81

b See CCR Title 17 Sections 60200-60210

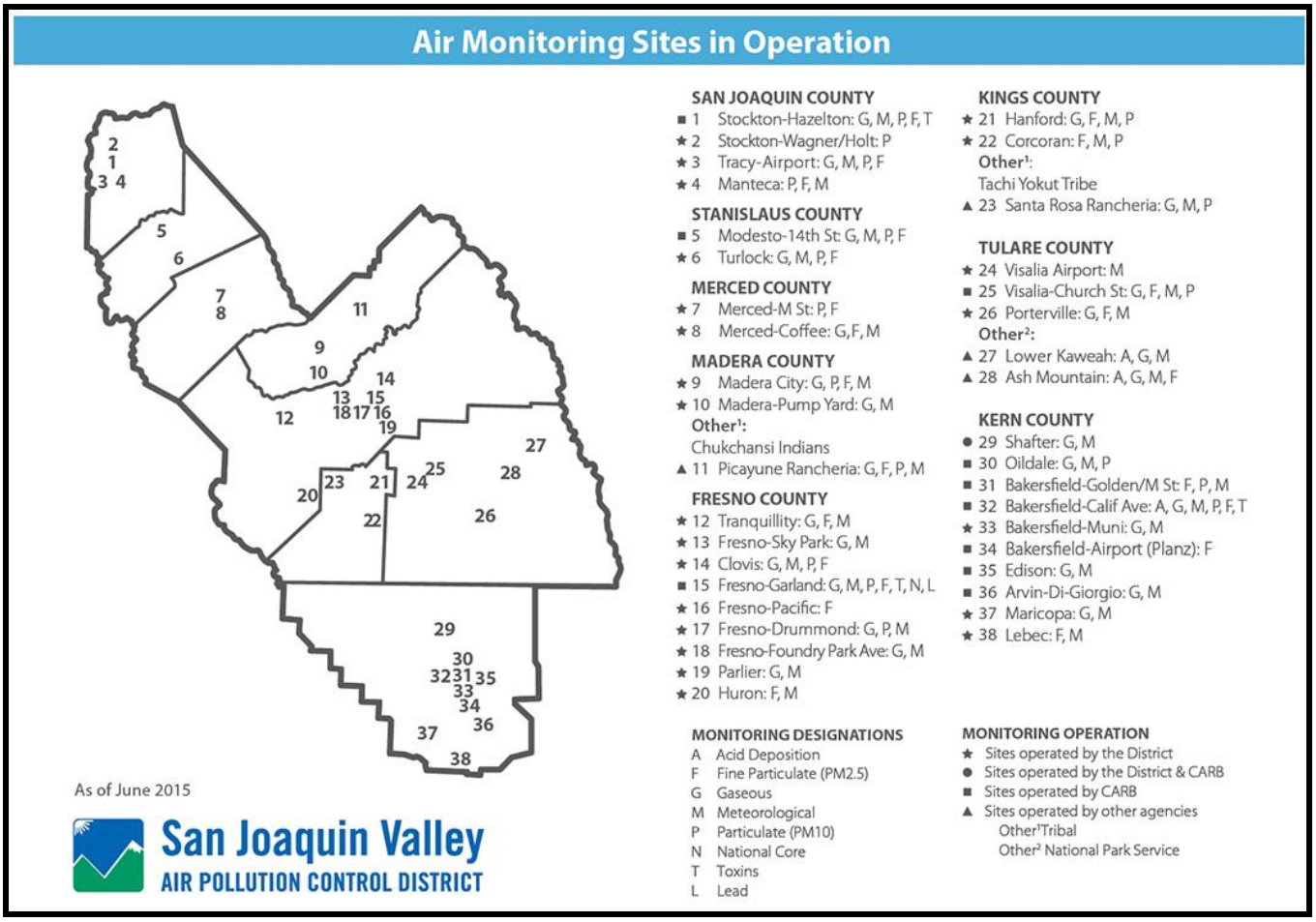
c On September 25, 2008, EPA redesignated the San Joaquin Valley to attainment for the PM10 National Ambient Air Quality Standard (NAAQS) and approved the PM10 Maintenance Plan.

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 O3 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 EPA revoked the federal 1-hour O3 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 O3 nonattainment areas continue to apply to the SJVAB.

The SJVAPCD along with the CARB operates an air quality monitoring network that provides information on average concentrations of those pollutants for which state or Federal agencies have established NAAQS and CAAQS. The monitoring stations in the San Joaquin Valley are depicted in **Figure 3-1**.



Source: SJVAPCD 2017b

Figure 3-1 – SJVAPCD Monitoring Network

3.2. EXISTING AIR QUALITY

For the purposes of background data and this air quality analysis, this analysis relied on data collected in the last three years for the CARB monitoring stations that are located in the closest proximity to the project site. **Table 3-3** provides the background concentrations for O3, particulate matter of 10 microns (PM10), particulate matter of less than 2.5 microns (PM2.5), CO, NO2, SO2, and Pb as of 2017. Information is provided for the Bakersfield-5558 California Avenue, Oildale – 3311 Manor St., Edison, Bakersfield – 410 E. Planz Rd., Bakersfield-Municipal Airport, and Fresno – 1st St. monitoring stations for 2014 through 2016. No data is available for H2S, Vinyl Chloride or other toxic air contaminants in Kern County.

Table 3-3 - Existing Air Quality Monitoring Data in Project Area

Pollutant and Monitoring Station Location	Maximum Concentration			Days Exceeding Standard		
	2015	2016	2017	2015	2016	2017
O_3 – 1-hour CAAQS (0.09 ppm)						
Bakersfield-5558 California Ave.	0.104	0.092	0.122	6	0	11
Bakersfield – Municipal Airport	0.118	0.102	0.118	23	8	9
Edison	0.112	0.109	0.112	17	14	12
O_3 – 8-hour CAAQS (0.07 ppm)						
Bakersfield-5558 California Ave.	0.097	0.086	0.104	54	63	87
Bakersfield – Municipal Airport	0.106	0.093	0.101	73	66	57
Edison	0.099	0.090	0.099	45	68	76
O_3 – 8-hour NAAQS (0.070 ppm)						
Bakersfield-5558 California Ave.	0.096	0.085	0.104	52	60	85
Bakersfield – Municipal Airport	0.106	0.093	0.101	69	63	55
Edison	0.099	0.090	0.098	42	64	74
PM_{10} – 24-hour CAAQS (50 µg/m^3)						
Bakersfield-5558 California Ave.	103.6	92.2	143.6	20	21	16
Oildale – 3311 Manor St.	104.4	88.4	210.0	26	18	80
Bakersfield – Golden State Highway	94.6	91.6	165.1	16	26	24
PM_{10} – 24-hour NAAQS (150 µg/m^3)						
Bakersfield-5558 California Ave.	104.7	90.9	138.0	0	0	0
Oildale – 3311 Manor St.	98.5	89.1	59.4	0	0	0
Bakersfield – Golden State Highway	100.5	91.6	158.2	0	0	1
$PM_{2.5}$ - 24-hour NAAQS (35 µg/m^3)						
Bakersfield – 410 E Planz Rd.	83.2	51.4	80.1	13	7	10
Bakersfield – 5558 California Ave.	107.8	66.4	101.8	29	23	28
Bakersfield – Golden State Highway	91.1	53.9	74.3	9	7	9
CO - 8-Hour CAAQS & NAAQS (9.0 ppm)						
No data collected	*	*	*	*	*	*
NO_2 - 1-Hour CAAQS (0.18 ppm)						
Bakersfield – 5558 California Ave.	0.054	0.058	0.066	0	0	0
Bakersfield – Municipal Airport	0.055	0.058	0.062	0	0	0
Edison	0.046	0.045	0.044	0	0	0
NO_2 - 1-Hour NAAQS (0.10 ppm)						
Bakersfield – 5558 California Ave.	0.055	0.058	0.066	0	0	0
Bakersfield – Municipal Airport	0.055	0.058	0.063	0	0	0
Edison	0.047	0.046	0.045	0	0	0
SO_2 – 24-hour Concentration - CAAQS (0.04 ppm) & NAAQS (0.14 ppm)						
No data collected	*	*	*	*	*	*
Pb - Maximum 30-Day Concentration CAAQS (1500 ng/m^3)						
Bakersfield - 5558 California Ave	9.5	19.8	12.6	0	0	0

Source: CARB 2019a

Notes: ppm= parts per million

* There was insufficient (or no) data available to determine the value.

The following is a description of criteria air pollutants, typical sources and health effects and the recently documented pollutant levels in the project vicinity.

3.2.1. Ozone (O_3)

The most severe air quality problem in the San Joaquin Valley is high concentrations of O_3. High levels of O_3 cause eye irritation and can impair respiratory functions. High levels of O_3 can also affect plants and materials. Grapes, lettuce, spinach and many types of garden flowers and shrubs are particularly vulnerable to O_3 damage. O_3 is not emitted directly into the atmosphere but is a secondary pollutant produced through photochemical reactions involving hydrocarbons and nitrogen oxides (NOx). Significant O_3 generation requires about one to three hours in a stable atmosphere with strong sunlight. For this reason, the months of April through October comprise the "ozone season." O_3 is a regional pollutant because O_3 precursors are transported and diffused by wind concurrently with the reaction process. The data contained in **Table 3-3** shows that the Bakersfield area exceeded the 1-hour average ambient O_3 CAAQS and the 8-hour average ambient O_3 NAAQS and CAAQS for the 2014 through 2016 period,.

3.2.2. Suspended Particulate Matter (PM_{10} and $PM_{2.5}$)

Both State and Federal particulate standards now apply to particulates under 10 microns (PM_{10}) rather than to total suspended particulate, which includes particulates up to 30 microns in diameter. Continuing studies have shown that the smaller-diameter fraction of TSP represents the greatest health hazard posed by the pollutant; therefore, EPA has recently established NAAQS for $PM_{2.5}$. The project area is classified as attainment for PM_{10} and non-attainment for $PM_{2.5}$ for NAAQS.

Particulate matter consists of particles in the atmosphere resulting from many kinds of dust and fume-producing industrial and agricultural operations, from combustion, and from atmospheric photochemical reactions. Natural activities also increase the level of particulates in the atmosphere; wind-raised dust and ocean spray are two sources of naturally occurring particulates. The largest sources of PM_{10} and $PM_{2.5}$ in Kern County are vehicle movement over paved and unpaved roads, demolition and construction activities, farming operations, and unplanned fires. PM_{10} and $PM_{2.5}$ are considered regional pollutants with elevated levels typically occurring over a wide geographic area. Concentrations tend to be highest in the winter, during periods of high atmospheric stability and low wind speed. In the respiratory tract, very small particles of certain substances may produce injury by themselves, or may contain absorbed gases that are injurious. Particulates of aerosol size suspended in the air can both scatter and absorb sunlight, producing haze and reducing visibility. They can also cause a wide range of damage to materials.

Table 3-3 shows that PM_{10} levels regularly exceeded the CAAQS but not the NAAQS at three monitoring stations over the three-year period of 2014 through 2016. **Table 3-3** shows that $PM_{2.5}$ NAAQS were exceeded from 2014 through 2016. Similar levels can be expected to occur in the vicinity of the project site.

3.2.3. Carbon Monoxide (CO)

Ambient CO concentrations normally correspond closely to the spatial and temporal distributions of vehicular traffic. Relatively high concentrations of CO would be expected along heavily traveled roads and near busy intersections. Wind speed and atmospheric mixing also influence CO concentrations; however, under inversion conditions prevalent in the San Joaquin valley, CO concentrations may be more uniformly distributed over a broad area.

Internal combustion engines, principally in vehicles, produce CO due to incomplete fuel combustion. Various industrial processes also produce CO emissions through incomplete combustion. Gasoline-powered motor

vehicles are typically the major source of this contaminant. CO does not irritate the respiratory tract, but passes through the lungs directly into the blood stream, and by interfering with the transfer of fresh oxygen to the blood, deprives sensitive tissues of oxygen, thereby aggravate cardiovascular disease, causing fatigue, headaches, and dizziness. CO is not known to have adverse effects on vegetation, visibility or materials.

Table 3-3 reports no CO levels at the Bakersfield monitoring station during the three-year period from 2014 through 2016; historically Bakersfield data for CO has been below the CAAQS and NAAQS.

3.2.4. Nitrogen Dioxide (NO_2) and Hydrocarbons

Kern County has been designated as an attainment area for the NAAQS for NO_2. NO_2 is the "whiskey brown" colored gas readily visible during periods of heavy air pollution. Mobile sources and oil and gas production account for nearly all of the county's NOx emissions, most of which is emitted as NO_2. Combustion in motor vehicle engines, power plants, refineries and other industrial operations are the primary sources in the region. Railroads and aircraft are other potentially significant sources of combustion air contaminants. Oxides of nitrogen are direct participants in photochemical smog reactions. The emitted compound, nitric oxide, combines with oxygen in the atmosphere in the presence of hydrocarbons and sunlight to form NO_2 and O_3. NO_2, the most significant of these pollutants, can color the atmosphere at concentrations as low as 0.5 ppm on days of 10-mile visibility. NO_x is an important air pollutant in the region because it is a primary receptor of ultraviolet light, which initiates the reactions producing photochemical smog. It also reacts in the air to form nitrate particulates.

Motor vehicles are the major source of reactive hydrocarbons in the basin. Other sources include evaporation of organic solvents and petroleum production and refining operations. Certain hydrocarbons can damage plants by inhibiting growth and by causing flowers and leaves to fall. Levels of hydrocarbons currently measured in urban areas are not known to cause adverse effects in humans. However, certain members of this contaminant group are important components in the reactions, which produce photochemical oxidants.

Table 3-3 shows that the Federal or State NO_2 standards have not been exceeded at the Edison or the Bakersfield area-monitoring stations over the three-year period of 2014 through 2016. Hydrocarbons are not currently monitored.

3.2.5. Sulfur Dioxide (SO_2)

Kern County has been designated as an attainment area for the NAAQS for SO_2. SO_2 is the primary combustion product of sulfur, or sulfur containing fuels. Fuel combustion is the major source of this pollutant, while chemical plants, sulfur recovery plants, and metal processing facilities are minor contributors. Gaseous fuels (natural gas, propane, etc.) typically have lower percentages of sulfur containing compounds than liquid fuels such as diesel or crude oil. SO_2 levels are generally higher in the winter months. Decreasing levels of SO_2 in the atmosphere reflect the use of natural gas in power plants and boilers.

At high concentrations, SO_2 irritates the upper respiratory tract. At lower concentrations, when respirated in combination with particulates, SO_2 can result in greater harm by injuring lung tissues. Sulfur oxides (SOx), in combination with moisture and oxygen, results in the formation of sulfuric acid, which can yellow the leaves of plants, dissolve marble, and oxidize iron and steel. SOx can also react to produce sulfates that reduce visibility and sunlight.

Table 3-3 shows no data has been reported over the three-year period in Bakersfield.

3.2.6. Lead (Pb) and Suspended Sulfate

Ambient Pb levels have dropped dramatically due to the increase in the percentage of motor vehicles that run exclusively on unleaded fuel. Ambient Pb levels in Bakersfield are well below the ambient standard and are expected to continue to decline; the data reported in **Table 3-3** only shows the highest concentration as the number of days exceeding standards are not reported. Suspended sulfate levels have stabilized to the point where no excesses of the State standard are expected in any given year.

3.3. CLIMATE

The most significant single control on the weather pattern of the San Joaquin Valley is the semi-permanent subtropical high-pressure cell, referred to as the "Pacific High." During the summer, the Pacific High is positioned off the coast of northern California, diverting ocean-derived storms to the north. Hence, the summer months are virtually rainless. During the winter, the Pacific High moves southward allowing storms to pass through the San Joaquin Valley. Almost all of the precipitation expected during a given year occurs from December through April. During the summer, the predominant surface winds are out of the northwest. Air enters the Valley through the Carquinez strait and flows toward the Tehachapi Mountains. This up-valley (northwesterly) wind flow is interrupted in early fall by the emergence of nocturnal, down-valley (southeasterly) winds which become progressively more predominant as winter approaches. Wind speeds are generally highest during the spring and lightest in fall and winter. The relatively cool air flowing through the Carquinez strait is warmed on its journey south through the Valley. On reaching the southern end of the Valley, the average high temperature during the summer is nearly 100 degrees Fahrenheit (^{o}F). Relative humidity during the summer is quite low, causing large diurnal temperature variations. Temperatures during the summer often drop into the upper 60s. In winter, the average high temperatures reach into the mid-50s and the average low drops to the mid-30s. In addition, another high-pressure cell, known as the "Great Basin High," develops east of the Sierra Nevada Mountain Range during winter. When this cell is weak, a layer of cool, damp air becomes trapped in the basin and extensive fog results. During inversions, vertical dispersion is restricted, and pollutant emissions are trapped beneath the inversion and pushed against the mountains, adversely affecting regional air quality. Surface-based inversions, while shallow and typically short-lived, are present most mornings. Elevated inversions, while less frequent than ground-based inversions, are typically longer lasting and create the more severe air stagnation problems. The winter season characteristically has the poorest conditions for vertical mixing of the entire year.

Meteorological data for various monitoring stations is maintained by the Western Regional Climate Center. Meteorological data for the project site is expected to be similar to the data recorded at the Bakersfield monitoring station. This data is provided in **Table 3-4** – Bakersfield Weather Data, which contains average precipitation data recorded at the Bakersfield monitoring station. Over the 79-year period from October of 1937 through June of 2016 (the most recent data available), the average annual precipitation was 6.17 inches.

Table 3-4 – Bakersfield Weather Data

Period of Record Monthly Climate Summary for the Period 10/01/1937 to 6/09/2016													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Avg. Maximum Temp (F)	57.4	63.6	69.0	75.7	84.2	92.1	98.6	96.7	91.0	80.5	67.3	57.8	77.8
Avg. Minimum Temp (F)	38.5	42.1	45.4	49.7	56.6	63.3	69.2	67.7	63.1	54.0	44.1	38.5	52.7
Average Total Precip.(in.)	1.04	1.16	1.12	0.67	0.21	0.07	0.01	0.04	0.10	0.30	0.59	0.85	6.17
Average Snowfall (in.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent of possible observations for period of record: Max. Temp.: 99.6% Min. Temp.: 99.6% Precipitation: 99.7% Snowfall: 92.4% Snow Depth: 92.2%													

Source: Western Regional Climate Center, 2019.

3.4. CLIMATE CHANGE AND GREENHOUSE GASES

3.4.1. Global Climate Change

"Global climate change" refers to change in average meteorological conditions on the earth with respect to temperature, precipitation, and storms, lasting for decades or longer. The term "global climate change" is often used interchangeably with the term "global warming," but "global climate change" is preferred by some scientists and policy makers to "global warming" because it helps convey the notion that in addition to rising temperatures, other changes in global climate may occur. Climate change may result from the following influences:

- Natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun;
- Natural processes within the climate system (e.g., changes in ocean circulation); and/or
- Human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, and desertification).

As determined from worldwide meteorological measurements between 1990 and 2005, the primary observed effect of global climate change has been a rise in the average global tropospheric temperature of 0.36 degree Fahrenheit (°F) per decade. Climate change modeling shows that further warming could occur, which could induce additional changes in the global climate system during the current century. Changes to the global climate system, ecosystems, and the environment of California could include higher sea levels, drier or wetter weather, changes in ocean salinity, changes in wind patterns or more energetic aspects of extreme weather (e.g., droughts, heavy precipitation, heat waves, extreme cold, and increased intensity of tropical cyclones). Specific effects from climate change in California may include a decline in the Sierra Nevada snowpack, erosion of California's coastline, and seawater intrusion in the Sacramento-San Joaquin River Delta.

Human activities, including fossil fuel combustion and land use changes, release carbon dioxide (CO2) and other compounds cumulatively termed greenhouse gases. GHGs are effective at trapping radiation that would otherwise escape the atmosphere. This trapped radiation warms the atmosphere, the oceans, and the earth's surface (USGCRP, 2014). Many scientists believe "most of the warming observed over the last 50 years is attributable to human activities" (IPCC, 2017). The increased amount of CO2 and other GHGs in the atmosphere is the alleged primary result of human-induced warming.

GHGs are present in the atmosphere naturally, released by natural sources, or formed from secondary reactions taking place in the atmosphere. They include CO2, methane (CH4), nitrous oxide (N2O), and O3. In the last 200 years, substantial quantities of GHGs have been released into the atmosphere, primarily from fossil fuel combustion. These human-induced emissions are increasing GHG concentrations in the atmosphere, therefore enhancing the natural greenhouse effect. The GHGs resulting from human activity are believed to be causing global climate change. While human-made GHGs include CO2, CH4, and N2O, some (like chlorofluorocarbons [CFCs]) are completely new to the atmosphere. GHGs vary considerably in terms of Global Warming Potential (GWP), the comparative ability of each GHG to trap heat in the atmosphere. The GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and the length of time that the gas remains in the atmosphere ("atmospheric lifetime"). The GWP of each gas is measured relative to CO2, the most abundant GHG. The definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO2 over a specified time period. GHG emissions are typically measured in terms of pounds or tons of "CO2 equivalents" (CO2e).

Natural sources of CO2 include the respiration (breathing) of humans and animals and evaporation from the oceans. Together, these natural sources release approximately 150 billion metric tons of CO2 each year, far outweighing the 7 billion metric tons of GHG emissions from fossil fuel burning, waste incineration, deforestation, cement manufacturing, and other human activity. Nevertheless, natural GHG removal processes such as photosynthesis cannot keep pace with the additional output of CO2 from human activities. Consequently GHGs are building up in the atmosphere (Environpedia, 2017).

Methane is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources of CH4 production include wetlands, termites, and oceans. Human activity accounts for the majority of the approximately 500 million metric tons of CH4 emitted annually. These anthropogenic sources include the mining and burning of fossil fuels; digestive processes in ruminant livestock such as cattle; rice cultivation; and the decomposition of waste in landfills. The major removal process for atmospheric CH4, the chemical breakdown in the atmosphere, cannot keep pace with source emissions; therefore, CH4 concentrations in the atmosphere are rising.

Worldwide emissions of GHGs in 2008 were 30.1 billion metric tons of CO2e and have increased considerably since that time (United Nations, 2011). It is important to note that the global emissions inventory data are not all from the same year and may vary depending on the source of the data (U.S. EPA, 2016). Emissions from the top five emitting countries and the European Union accounted for approximately 55% of total global GHG emissions. The United States was the number two producer of GHG emissions. The primary GHG emitted by human activities in the United States was CO2, representing approximately 84% of total GHG emissions (U.S. EPA, 2016).

In 2009, the United States emitted approximately 6.6 billion metric tons of CO2e or approximately 25 tons per year (tpy) per person. Of the six major sectors nationwide (electric power industry, transportation, industry, agriculture, commercial, and residential), the electric power industry and transportation sectors combined account for approximately 62% of the GHG emissions; the majority of the electrical power industry and all of the transportation emissions are generated from direct fossil fuel combustion. Between 1990 and 2006, total United States GHG emissions rose approximately 14.7% (U.S. EPA, 2016).

Worldwide CO2 emissions are expected to increase by 1.9% annually between 2001 and 2025 (U.S. Energy Information Center, 2017). Much of the increase in these emissions is expected to occur in the developing world where emerging economies, such as China and India, fuel economic development with fossil fuel energy. Developing countries' emissions are expected to grow above the world average at 2.7% annually between 2001 and 2025, and surpass emissions of industrialized countries around 2018.

CARB is responsible for developing and maintaining the California GHG emissions inventory. This inventory estimates the amount of GHGs emitted into and removed from the atmosphere by human activities within the state of California and supports the Assembly Bill (AB) 32 Climate Change Program. CARB's current GHG emission inventory covers the years 1990 through 2008 and is based on fuel use, equipment activity, industrial processes, and other relevant data (e.g., housing, landfill activity, and agricultural lands).

California's net emissions of GHG decreased 1.3% from 459 million metric tons (MMT) of CO2e in 2000 to 453 MMT in 2009, with a maximum of 483.9 MMT in 2004. Driven by a noticeable drop in on-road transportation emissions, statewide GHG emissions dropped from 485 MMT CO2e in 2008 to 457 MMT in 2009. (2009 also reflects the beginning of the economic recession and fuel price spikes.) As the economy recovers, GHG emissions are likely to rise again without other mitigation actions. During the same period from 2000 to 2009, California's GHG emissions per person decreased by 9.7%, but the emissions reductions were offset by the state's population increase of 9.0%.

CARB estimates that transportation was the source of approximately 38% of California's GHG emissions in 2009, followed by electricity generation at 23%. Other sources of GHG emissions were industrial sources at 20%, residential plus commercial activities at 9%, and agriculture at 7%.

CARB has projected statewide GHG emissions for the year 2020, which represent the emissions that would be expected to occur with reductions anticipated from Pavley I and the Renewables Portfolio Standard (RPS) (38 MMT CO2e total), will be 507 MMT of CO2e (CARB, 2014a). GHG emissions from the transportation and electricity sectors as a whole are expected to increase at approximately 36% and 22% of total CO2e emissions, respectively, as compared to 2009. The industrial sector consists of large stationary sources of GHG emissions and the percentage of the total 2020 emissions is projected to be 18% of total CO2e emissions. The remaining sources of GHG emissions in 2020 are high global warming potential gases at 7%, residential and commercial activities at 9%, agriculture at 6%, and recycling and waste at 2%.

3.4.2. Effects of Global Climate Change

Changes in the global climate are assessed using historical records of temperature changes that have occurred in the past. Climate change scientists use this temperature data to extrapolate a level of statistical significance specifically focusing on temperature records from the last 150 years (the Industrial Age) that differ from past climate changes in rate and magnitude.

The Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. In its Fifth Assessment Report, the IPCC predicted that the global mean temperature change from 1990 to 2100, could range from 1.1 degree Celsius (°C) to 6.4 °C (8 to 10.4 °Fahrenheit). Global average temperatures and sea levels are expected to rise under all scenarios (IPCC, 2014). The IPCC concluded that global climate change was largely the result of human activity, mainly the burning of fossil fuels. However, the scientific literature is not consistent regarding many of the aspects of climate change, the actual temperature changes during the 20th century, and contributions from human versus non-human activities.

Effects from global climate change may arise from temperature increases, climate sensitive diseases, extreme weather events, and degradation of air quality. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems. Heat-related problems include heat rash and heat stroke, drought, etc. In addition, climate-sensitive diseases may increase, such as those spread by mosquitoes and other disease-carrying insects. Such diseases include malaria, dengue fever, yellow fever, and

encephalitis. Extreme events such as flooding and hurricanes can displace people and agriculture. Global warming may also contribute to air quality problems from increased frequency of smog and particulate air pollution.

According to the 2006 California Climate Action Team (CAT) Report, several climate change effects can be expected in California over the course of the next century (CalEPA, 2006). These are based on trends established by the IPCC and are summarized below.

- A diminishing Sierra snowpack declining by 70% to 90%, threatening the state's water supply.
- A rise in sea levels, resulting in the displacement of coastal businesses and residences. During the past century, sea levels along California's coast have risen about seven inches. If emissions continue unabated and temperatures rise into the higher anticipated warming range, sea level is expected to rise an additional 22 to 35 inches by the end of the century. Sea level rises of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats. (Note: This condition would not affect the Proposed Project area as it is a significant distance away from coastal areas.)
- An increase in temperature and extreme weather events. Climate change is expected to lead to increases in the frequency, intensity, and duration of extreme heat events and heat waves in California. More heat waves can exacerbate chronic disease or heat-related illness.
- Increased risk of large wildfires if rain increases as temperatures rise. Wildfires in the grasslands and chaparral ecosystems of southern California are estimated to increase by approximately 30% toward the end of the 21st century because more winter rain will stimulate the growth of more plant fuel available to burn in the fall. In contrast, a hotter, drier climate could promote up to 90% more northern California fires by the end of the century by drying out and increasing the flammability of forest vegetation.
- Increasing temperatures from 8 to 10.4 °F under the higher emission scenarios, leading to a 25% to 35% increase in the number of days that ozone pollution levels are exceeded in most urban areas (see below).
- Increased vulnerability of forests due to forest fires, pest infestation, and increased temperatures.
- Reductions in the quality and quantity of certain agricultural products. The crops and products likely to be adversely affected include wine grapes, fruit, nuts, and milk.
- Exacerbation of air quality problems. If temperatures rise to the medium warming range, there could be 75 to 85% more days with weather conducive to ozone formation in Los Angeles and the San Joaquin Valley, relative to today's conditions. This is more than twice the increase expected if rising temperatures remain in the lower warming range. This increase in air quality problems could result in an increase in asthma and other health-related problems.
- A decrease in the health and productivity of California's forests. Climate change can cause an increase in wildfires, an enhanced insect population, and establishment of non-native species.
- Increased electricity demand, particularly in the hot summer months.
- Increased ground-level ozone formation due to higher reaction rates of ozone precursors.

3.4.3. Global Climate Change Regulatory Issues

In 1988, the United Nations established the Intergovernmental Panel on Climate Change to evaluate the impacts of global warming and to develop strategies that nations could implement to curtail global climate change. In 1992, the United Nations Framework Convention on Climate Change established an agreement with the goal of controlling GHG emissions, including methane. As a result, the Climate Change Action Plan was developed to address the reduction of GHGs in the United States. The plan consists of more than 50 voluntary programs. Additionally, the Montreal Protocol was originally signed in 1987 and substantially amended in 1990 and 1992. The Montreal Protocol stipulates that the production and consumption of compounds that deplete O_3 in the stratosphere (chlorofluorocarbons [CFCs], halons, carbon tetrachloride, and methyl chloroform) were phased out by 2000 (methyl chloroform was phased out by 2005).

On September 27, 2006, Assembly Bill 32 (AB32), the California Global Warming Solutions Act of 2006 (the Act) was enacted by the State of California. The legislature stated, "global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California." The Act caps California's GHG emissions at 1990 levels by 2020. The Act defines GHG emissions as all of the following gases: carbon dioxide (CO_2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. This agreement represents the first enforceable statewide program in the U.S. to cap all GHG emissions from major industries that includes penalties for non-compliance. While acknowledging that national and international actions will be necessary to fully address the issue of global warming, AB32 lays out a program to inventory and reduce GHG emissions in California and from power generation facilities located outside the state that serve California residents and businesses.

AB32 charges CARB with responsibility to monitor and regulate sources of GHG emissions in order to reduce those emissions. CARB has adopted a list of discrete early action measures that can be implemented to reduce GHG emissions. CARB has defined the 1990 baseline emissions for California, and has adopted that baseline as the 2020 statewide emissions cap. CARB is conducting rulemaking for reducing GHG emissions to achieve the emissions cap by 2020. In designing emission reduction measures, CARB must aim to minimize costs, maximize benefits, improve and modernize California's energy infrastructure, maintain electric system reliability, maximize additional environmental and economic co-benefits for California, and complement the state's efforts to improve air quality.

Global warming and climate change have received substantial public attention for more than 20 years. For example, the United States Global Change Research Program was established by the Global Change Research Act of 1990 to enhance the understanding of natural and human-induced changes in the Earth's global environmental system, to monitor, understand and predict global change, and to provide a sound scientific basis for national and international decision-making. Even so, the analytical tools have not been developed to determine the effect on worldwide global warming from a particular increase in GHG emissions, or the resulting effects on climate change in a particular locale. The scientific tools needed to evaluate the impacts that a specific project may have on the environment are even farther in the future.

The California Supreme Court's most recent CEQA decision on the Newhall Ranch development case, *Center for Biological v. California Department of Fish and Wildlife* (November 30, 2015, Case No. 217763), determined that the project's Environmental Impact Report (EIR) did not substantiate the conclusion that the GHG cumulative impacts would be less than significant. The EIR determined that the Newhall Ranch development project would reduce GHG emissions by 31 percent from business as usual (BAU). This reduction was compared to the California's target of reducing GHG emissions statewide by 29 percent from business as usual. The Court determined that "the EIR's deficiency stems from taking a quantitative comparison method developed by the Scoping Plan as a measure of the greenhouse gas reduction effort required by the state as a whole, and attempting to use that method, without adjustments, for a purpose very different from its original design." In the Court's final ruling it offered suggestions that were deemed appropriate use of the BAU methodology:

1. Lead agencies can use the comparison to BAU methodology if they determine what reduction a particular project must achieve in order to comply with statewide goals,
2. Project design features that comply with regulations to reduce emissions may demonstrate that those components of emissions are less that significant, and
3. Lead agencies could also demonstrate compliance with locally adopted climate plans, or could apply specific numerical thresholds developed by some local agencies.

The KCPD, the lead CEQA agency, has not developed specific thresholds for GHG. As discussed in Section 4.1, Significance Criteria, the SJVAPCD, a CEQA Trustee Agency for this Project, has developed thresholds to determine significance of a proposed project – either implement Best Performance Standards or achieve a 29% reduction from BAU (a specific numerical threshold). A Best Performance Standards threshold has not been established. Therefore the 29% reduction from BAU is applied to the subject Project in order to determine significance. Therefore, the GHG analysis for this Project follows the suggestions from the Court's ruling on the Newhall Ranch development project in order to determine significance using the project design features.

4.1. SIGNIFICANCE CRITERIA

To determine whether a proposed Project could create a potential CEQA impact, local, state and federal agencies have developed various means by which a project's impacts may be measured and evaluated. Such means can generally be categorized as follows:

- Thresholds of significance adopted by air quality agencies to guide lead agencies in their evaluation of air quality impacts under the CEQA.
- Regulations established by air districts, CARB and EPA for the evaluation of stationary sources when applying for Authorities to Construct, Permits to Operate and other permit program requirements (e.g., New Source Review).
- Thresholds utilized to determine if a project would cause or contribute significantly to violations of the ambient air quality standards or other concentration-based limits.
- Regulations applied in areas where severe air quality problems exist.

Summary tables of these emission-based and concentration-based thresholds of significance for each pollutant are provided below along with a discussion of their applicability.

4.1.1. Thresholds Adopted for the Evaluation of Air Quality Impacts under CEQA

In order to maintain consistency with CEQA, the SJVAPCD (2015) adopted guidelines to assist applicants in complying with the various requirements. According to the SJVAPCD's GAMAQI, a project would have potentially significant air quality impacts when the project:

- Creates a conflict with or obstructs implementation of the applicable air quality plan;
- Causes a violation of any air quality standard or generates substantial contribution towards exceeding an existing or projected air quality standard;
- Results in a cumulatively considerable net increase of any criteria pollutant for which the project region is designated non-attainment under a NAAQS and CAAQS (including emissions which exceed quantitative thresholds for O_3 precursors);
- Exposes sensitive receptors to substantial pollutant concentrations; or
- Creates objectionable odors that affect a substantial number of people.

The SJVAPCD GAMAQI thresholds are designed to implement the general criteria for air quality emissions as required in the CEQA Guidelines, Appendix G, Paragraph III (Title 14 of the California Code of Regulations §15064.7) and CEQA (California Public Resources Code Sections 21000 et. al). SJVAPCD's specific CEQA air quality thresholds are presented in **Table 4-1**.

Table 4-1 SJVAPCD CEQA Thresholds of Significance

Criteria Pollutant	Significance Level	
	Construction	Operational
CO	100 tons/yr	100 tons/yr
NOx	10 tons/yr	10 tons/yr
ROG	10 tons/yr	10 tons/yr
SOx	27 tons/yr	27 tons/yr
PM10	15 tons/yr	15 tons/yr
PM2.5	15 tons/yr	15 tons/yr
Source: SJVAPCD 2015		

4.1.2. Thresholds for Ambient Air Quality Impacts

CEQA Guidelines – Appendix G (Environmental Checklist) states that a project that would "*violate any air quality standard or contribute substantially to an existing or projected air quality violation*" would be considered to create significant impacts on air quality. Therefore, an AQIA should determine whether the emissions from a project would cause or contribute significantly to violations of the NAAQS or CAAQS (presented above in **Table 3-1**) when added to existing ambient concentrations.

The EPA has established the federal Prevention of Significant Deterioration (PSD) program to determine what comprises "significant impact levels" (SIL) to NAAQS attainment areas. A project's impacts are considered less than significant if emissions are below PSD SIL for a particular pollutant. When a SIL is exceeded, an additional "increment analysis" is required. As the Project would not include modification to the stationary source under NSR, it would not be subject to either PSD or NSR review. The PSD SIL thresholds are used with ambient air quality modeling for a CEQA project to address whether the Project would "*violate any air quality standard or contribute substantially to an existing or projected air quality violation.*" Ambient air quality emissions estimates below the PSD SIL thresholds would result in less than significant ambient air quality impacts on both a project and cumulative CEQA impact analysis. The SJVAB is classified as non-attainment for the O_3 NAAQS and, as such, is subject to "non-attainment new source review" (NSR). PSD SILs and increments are more stringent than the CAAQS or NAAQS and represent the most stringent thresholds of significance.

4.1.3. Thresholds for Hazardous Air Pollutants

The SJVAPCD's GAMAQI states, "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" (SJVAPCD 2015).

Table 4-2 presents the thresholds of significance uses with toxic air contaminants when evaluating hazardous air pollutants (HAPs).

Table 4-2 Measures of Significance – Toxic Air Contaminants

Agency	Level	Description
Significance Thresholds Adopted for the Evaluation of Impacts Under CEQA		
SJVAPCD	Carcinogens	Maximally Exposed Individual risk **equals or exceeds** 20 in one million.
	Non-Carcinogens	**Acute**: Hazard Index **equals or exceeds** 1 for the Maximally Exposed Individual.
		Chronic: Hazard Index **equals or exceeds** 1 for the Maximally Exposed Individual.
Source: SJVAPCD 2015		

4.1.4. Global Climate Change Thresholds of Significance

On December 17, 2009, SJVAPCD adopted *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* (SJVAPCD 2009); which outlined the SJVAPCD's methodology for assessing a project's significance for GHGs under CEQA. The following criteria was outlined in the document to determine whether a project could have a significant impact:

- Projects determined to be exempt from the requirements of CEQA would be determined to have a less than significant individual and cumulative impact for GHG emissions and would not require further

environmental review, including analysis of project specific GHG emissions. Projects exempt under CEQA would be evaluated consistent with established rules and regulations governing project approval and would not be required to implement BPS.

- Projects complying with an approved GHG emission reduction plan or GHG mitigation program which avoids or substantially reduces GHG emissions within the geographic area in which the project is located would be determined to have a less than significant individual and cumulative impact for GHG emissions. Such plans or programs must be specified in law or approved by the lead agency with jurisdiction over the affected resource and supported by a CEQA compliant environmental review document adopted by the lead agency. Projects complying with an approved GHG emission reduction plan or GHG mitigation program would not be required to implement BPS.
- Projects implementing Best Performance Standards would not require quantification of project specific GHG emissions. Consistent with CEQA Guidelines, such projects would be determined to have a less than significant individual and cumulative impact for GHG emissions.
- Projects not implementing Best Performance Standards would require quantification of project specific GHG emissions and demonstration that project specific GHG emissions would be reduced or mitigated by at least 29%, compared to Business-as-Usual (BAU*), including GHG emission reductions achieved since the 2002-2004 baseline period. Projects achieving at least a 29% GHG emission reduction compared to BAU would be determined to have a less than significant individual and cumulative impact for GHG.
- Notwithstanding any of the above provisions, projects requiring preparation of an Environmental Impact Report for any other reason would require quantification of project specific GHG emissions. Projects implementing BPS or achieving at least a 29% GHG emission reduction compared to BAU would be determined to have a less than significant individual and cumulative impact for GHG.

4.2. PROJECT RELATED EMISSIONS

This document was prepared pursuant to the SJVAPCD's GAMAQI. The GAMAQI identifies separate thresholds for a project's short-term (construction) and long-term (operational) emissions.

Project emissions were estimated for the following project development stages:

- Short-term (Construction and Demolition) – Construction emissions of the proposed Project were estimated in CalEEMod using model defaults for construction schedule and construction equipment for the development of 13,960 square feet of elementary school buildings, parking lot and multi-use fields. There is no emissions estimate for demolition activities as none are planned for the Project.
- Long-term (Operations) – Long term emissions were also estimated in CalEEMod using only model defaults for operations of the facility with no increase in mobile activity.

4.2.1. Short-Term Emissions

Short-term emissions are primarily from the construction phase of a project, and would have temporary impacts on air quality.

The Project applicant did not provide a list of specific construction schedule or equipment; the construction emissions were therefore based on the default CalEEMod schedule and equipment list accordingly for the proposed Project's land use type and development intensity. Applying model defaults as well as a conservative analysis approach, construction emissions were estimated as if construction started in June of 2019. Based on CalEEMod defaults, the Project construction is 18 months and operations would begin during Year 2020. The dates entered into the CalEEMod program may not represent the actual dates the equipment will operate; however, the total construction time is accurate, and therefore, all estimated emission totals are conservative and a reasonable

and legally sufficient estimate of potential impacts. All construction equipment activity levels were the defaults CalEEMod specifies for type and number of equipment, hours per day and horse power.

SJVAPCD's required measures for all projects were also applied:

- Water exposed areas 3 times per day; and
- Reduce vehicle speed to less than 15 miles per hour.

Table 4-3 presents the Project's short-term emissions based on the anticipated construction period.

Table 4-3 – Short-Term Project Emissions

Emissions Source	Pollutant (tons/year)					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Unmitigated						
2019	0.24	2.30	1.62	0.003	0.39	0.22
2020	0.41	2.75	2.34	0.005	0.26	0.16
Maximum Annual Emission	**0.41**	**2.75**	**2.34**	**0.005**	**0.39**	**0.22**
Mitigated						
2019	0.24	2.30	1.62	0.003	0.25	0.16
2020	0.41	2.75	2.34	0.005	0.26	0.16
Maximum Annual Emission	**0.41**	**2.75**	**2.34**	**0.005**	**0.26**	**0.16**
Significance Threshold	10	10	100	27	15	15
Is Threshold Exceeded For a Single Year After Mitigation?	NO	NO	NO	NO	NO	NO
Source: Insight Environmental Consultants 2018						

As calculated with CalEEMod, the estimated short-term construction-related emissions would not exceed SJVAPCD significance threshold levels during any given year and would therefore be *less than significant*.

4.2.2. Long-Term Operations Emissions

Long-term emissions are caused by operational mobile, area and energy sources. Long-term emissions would consist of the following components.

4.2.2.1. Fugitive Dust Emissions

Operation of the Project site at full build-out is not expected to present a substantial source of fugitive dust (PM10) emissions. The main source of PM10 emissions would be from vehicular traffic associated with the Project site.

PM10 on its own as well as in combination with other pollutants creates a health hazard. The SJVAPCD's Regulation VIII establishes required controls to reduce and minimizing fugitive dust emissions. The following SJVAPCD Rules and Regulations apply to the proposed Project (and all projects):

- Rule 4102 - Nuisance
- Regulation VIII – Fugitive PM10 Prohibitions
  - Rule 8011 - General Requirements
  - Rule 8021 - Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities
  - Rule 8041 - Carryout and Trackout

- Rule 8051 - Open Areas

The Project would comply with applicable SJVAPCD Rules and Regulations, the local zoning codes, and additional emissions reduction measures recommended later in this analysis, in Section 7, Mitigation and Other Recommended Measures.

4.2.2.2. Exhaust Emissions

Project-related transportation activities from employees, students and parents would not increase as a result of this Project. As the Project is not expected to generate any change in current activity levels, increased emissions are not anticipated.

4.2.2.3. Projected Emissions

The proposed project is expected to have long-term air quality impacts as shown in **Table 4-4**. The output from the CalEEMod runs are available in **Attachment B**. Mitigation measures implemented within CalEEMod include:

- 3% Electric Lawnmower, Leaf blower, and chainsaw.

Table 4-4 – Post-Project (Operational) Emissions

Emissions Source	Pollutant (tons/year)					
	ROG	NOX	CO	SOX	PM10	PM2.5
Unmitigated Operational Emissions	0.07	0.02	0.01	0.0001	0.001	0.001
Mitigated Operational Emissions	0.07	0.02	0.01	0.0001	0.001	0.001
SJVAPCD Threshold	10	10	100	27	15	15
Is Threshold Exceeded After Mitigation?	NO	NO	NO	NO	NO	NO

Source: Insight Environmental Consultants 2018

As shown in **Table 4-4**, operations-related emissions, as calculated by CalEEMod (See **Attachment B**), would be less than the SJVAPCD significant threshold levels. Therefore, the proposed Project would have a *less than significant impact* during Project operations.

4.3. POTENTIAL IMPACTS ON SENSITIVE RECEPTORS

Sensitive receptors are defined as locations 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. The nearest residential sensitive receptors boarder the proposed Project site. The eleven known non-residential sensitive receptor within 2 miles of the Project site are listed below in **Table 4-5**.

Table 4-5 – Sensitive Receptors Located < 2 Miles from Project

Receptor	Type of Facility	Distance from Project in Miles	Direction from Project
Hort Elementary School	K-5 Public	0.55	NW
Voorhies Elementary School	K-6 Public	1.20	NW
Turner Christian Academy	K-12 Private	0.14	SW
Foothill High School	9-12 Public	1.18	W
Aurora Learning Center	9-12 Public	1.27	NW
Walter W. Stiern Middle School	6-8 Public	1.32	NW
Paul L. Cato Middle School	6-8 Public	1.68	N
Edison Middle School	4-8 Public	1.72	SE
Cesar E. Chavez Elementary School	K-6 Public	1.9	NE
East Niles Senior Center	Senior Center	2.0	NW

4.4. POTENTIAL IMPACTS TO VISIBILITY TO NEARBY CLASS 1 AREAS

Visibility impact analyses are intended for stationary sources of emissions which are subject to the Prevention of Significant Deterioration (PSD) requirements in 40 CFR Part 60; they are not usually conducted for area sources. Because the Project's PM10 emissions increase is predicted to be less than the PSD threshold levels, an impact at any Class 1 area within 100 kilometers of the Project (including Edwards Air Force Base, China Lake Naval Weapons Station and the entire R-2508 Airspace Complex) is extremely unlikely. Therefore, based on the Project's predicted less-than significant PM10 emissions, the Project would be expected to have a less than significant impact to visibility at any Class 1 Area.

4.5. POTENTIAL IMPACTS FROM CARBON MONOXIDE

Ambient CO concentrations normally correspond closely to the spatial and temporal distributions of vehicular traffic. Relatively high concentrations of CO would be expected along heavily traveled roads and near busy intersections. CO concentrations are also influenced by wind speed and atmospheric mixing. CO concentrations may be more uniformly distributed when inversion conditions are prevalent in the valley. Under certain meteorological conditions CO concentrations along a congested roadway or intersection may reach unhealthful levels for sensitive receptors, e.g. children, the elderly, hospital patients, etc. This localized impact can result in elevated levels of CO, or "hotspots" even though concentrations at the closest air quality monitoring station may be below NAAQS and CAAQS.

The localized project impacts depend on whether ambient CO levels in the Project vicinity would be above or below NAAQS. If ambient levels are below the standards, a project is considered to have significant impacts if a project's emissions would exceed of one or more of these standards. If ambient levels already exceed a state standard, a project's emissions are considered significant if they would increase one-hour CO concentrations by 10 ppm or more or eight-hour CO concentrations by 0.45 ppm or more. There are two criteria established by the SJVAPCD's GAMAQI by which CO "Hot Spot" modeling is required:

I. A traffic study for the project indicates that the Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity would be reduced to LOS E or F; or
II. A traffic study indicates that the project would substantially worsen an already existing LOS F on one or more streets or at one or more intersections in the project vicinity.

A traffic study was not completed for this Project. The Project does not increase traffic activity levels, therefore, CO "Hotspot" Modeling was not conducted for this Project and no concentrated excessive CO emissions are expected to be caused once the proposed Project is completed.

4.6. PREDICTED HEALTH RISK IMPACTS

GAMAQI recommends that Lead Agencies consider situations wherein a new or modified source of HAPs is proposed for a location near an existing residential area or other sensitive receptor when evaluating potential impacts related to HAPs. The proposed Project would not result in an increase in operational emissions of Hazardous Air Pollutants (HAPs); therefore, an assessment of the potential risk to the population attributable to emissions of hazardous air pollutants from the proposed Project is not required.

4.7. ODOR IMPACTS AND MITIGATION

The SJVAPCD's GAMAQI states "An analysis of potential odor impacts should be conducted for both of the following two situations:

1. Generators – projects that would potentially generate odorous emissions proposed to locate near existing sensitive receptors or other land uses where people may congregate, and
2. Receivers – residential or other sensitive receptor projects or other projects built for the intent of attracting people locating near existing odor sources." (SJVAPCD 2015).

GAMAQI also states "The District has identified some common types of facilities that have been known to produce odors in the San Joaquin Valley Air Basin. These are presented in Table 6 (Screening Levels for Potential Odor Sources), can be used as a screening tool to qualitatively assess a project's potential to adversely affect area receptors." (SJVAPCD, 2015). Because the Project is a school site and the anticipated activities for the Project site are not listed in Table 6 of the GAMAQI as a source which would create objectionable odors the Project is not expected to be a source of objectionable odors.

Based on the provisions of the SJVAPCD's GAMAQI, the proposed Project would not exceed any screening trigger levels to be considered a source of objectionable odors or odorous compounds (SJVAPCD, 2015). Furthermore, there does not appear to be any significant source of objectionable odors in close proximity that may adversely impact the project site when it is in operation. Additionally, the Project emission estimates indicate that the proposed Project would not be expected to adversely impact surrounding receptors. As such, the proposed Project would not be a source of any odorous compounds nor would it likely be impacted by any odorous source.

4.8. IMPACTS TO AMBIENT AIR QUALITY

An ambient air quality analysis was not performed to determine if the proposed Project has the potential to impact ambient air quality through a violation of the ambient air quality standards or a substantial contribution to an existing or projected air quality standard. GAMAQI concludes that Projects with less than 2 tons per year of PM10 and NOx will have a less than significant impact on air quality and no ambient air quality analysis (AAQA) is required. The proposed Project's emissions are less than 2 tons per year, therefore, AAQA impacts from this Project would be *less than significant* and no further impact analysis is required.

4.9. IMPACTS TO GREENHOUSE GASES AND CLIMATE CHANGE

The proposed Project's construction and operational GHG emissions were estimated using the CalEEMod program (version 2016.3.2). These emissions are summarized in **Table 4-9**. In order for the Project to conform with the goals of AB32 at least a 29% reduction of GHG emissions must be achieved by 2020. The mitigated emissions were calculated using updated emission factors from CalEEMod.

Table 4-9 – Estimated Annual GHG Emissions (MT/Year)

Source	CO_2	CH_4	N_2O	CO_2e
Construction Emissions				
2019 Construction Emissions	308.0	0.064	0.000	309.6
2020 Construction Emissions	479.8	0.078	0.000	481.8
Mitigated Operational Emissions				
Area Emissions	0.0004	0.000	0.000	0.0004
Energy Emissions	51.03	0.002	0.001	51.27
Mobile Emissions	0.00	0.000	0.000	0.00
Waste Emissions	3.77	0.223	0.000	9.34
Water Emissions	7.94	0.014	0.0004	8.39
Total Project Operational Emissions	*62.74*	*0.238*	*0.001*	*69.00*
Annualized Construction Emissions[1]	*26.26*	*0.005*	*0.000*	*26.38*
Project Emissions	**89.00**	**0.243**	**0.001**	**95.38**

*Note: 0.00 could represent <0.00
1 Per South Coast AQMD's Methodology

The Project will not result in the emissions of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), or sulfur hexafluoride (SF6), the other gases identified as GHG in AB32. The proposed Project will be subject to any regulations developed under AB32 as determined by CARB. The Project will not reduce GHG emissions by 29%, however, it has been concluded that the Project is a low GHG emitter. Therefore, the Project would have less than significant GHG impacts.

4.9.1. Feasible and Reasonable Mitigation Relative to Global Warming

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce the impacts from construction and operations on air quality. The SJVAPCD's "Non-Residential On-Site Mitigation Checklist" was utilized in preparing the mitigation measures and evaluating the projects features. These measures include using controls that limit the exhaust from construction equipment and using alternatives to diesel when possible. Additional reductions would be achieved through the regulatory process of the air district and CARB as required changes to diesel engines are implemented which would affect the product delivery trucks and limits on idling.

While it is not possible to determine whether the Project individually would have a significant impact on global warming or climate change, the Project would potentially contribute to cumulative GHG emissions in California as well as related health effects. The Project emissions would only be a very small fraction of the statewide GHG emissions. However, without the necessary science and analytical tools, it is not possible to assess, with certainty, whether the Project's contribution would be cumulatively considerable, within the meaning of CEQA Guidelines Sections 15065(a)(3) and 15130. CEQA, however, does note that the more severe environmental problems the lower the thresholds for treating a project's contribution to cumulative impacts as significant. Given the position of the legislature in AB32 which states that global warming poses serious detrimental effects, and the requirements of CEQA for the lead agency to determine that a project not have a cumulatively considerable contribution, the effect of the Project's CO2 contribution may be considered cumulatively considerable. This

determination is "speculative," given the lack of clear scientific evidence or other criteria for determining the significance of the Project's contribution of GHG to the air quality in the SJVAB.

The strategies currently being implemented by CARB may help in reducing the Project's GHG emissions and are summarized in the table below.

Table 4-10 – Select CARB GHG Emission Reduction Strategies

Strategy	Description of Strategy
Vehicle Climate Change Standards	AB 1493 (Pavley) required the state to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light duty trucks. Regulations were adopted by CARB in Sept. 2004.
Diesel Anti-Idling	In July 2004, CARB adopted a measure to limit diesel-fueled retail motor vehicle idling.
Other Light-Duty Vehicle Technology	New standards would be adopted to phase in beginning in the 2017 model year.
Alternative Fuels: Biodiesel Blends	CARB would develop regulations to require the use of 1% to 4% Biodiesel displacement of California diesel fuel.
Alternative Fuels: Ethanol	Increased use of ethanol fuel.
Heavy-Duty Vehicle Emission Reduction Measures	Increased efficiency in the design of heavy-duty vehicles and an educational program for the heavy-duty vehicle sector.

Not all of these measures are currently appropriate or applicable to the proposed Project. While future legislation could further reduce the Project's GHG footprint, the analysis of this is speculative and in accordance with CEQA Guidelines Section 15145, will not be further evaluated in this AQIA.

CEQA Guidelines Section 15130 notes that sometimes the only feasible mitigation for cumulative impacts may involve the adoption of ordinances or regulations rather than the imposition of conditions on a project-by-project basis. Global climate change is this type of issue. The causes and effects may not be just regional or statewide, they may also be worldwide. Given the uncertainties in identifying, let alone quantifying the impact of any single project on global warming and climate change, and the efforts made to reduce emissions of GHGs from the Project through design, in accordance with CEQA Section 15130, any further feasible emissions reductions would be accomplished through CARB regulations adopted pursuant to AB32. The Project will not reduce GHG emissions by 29%, however, it has been concluded that the Project is a low GHG emitter. Therefore, the Project's contribution to cumulative global climate change impacts would *not be cumulatively considerable*.

5. CUMULATIVE IMPACTS

By its very nature, air pollution has a cumulative impact. The District's nonattainment status is a result of past and present development within the SJVAB. Furthermore, attainment of ambient air quality standards can be jeopardized by increasing emissions-generating activities in the region. No single project would be sufficient in size, by itself, to result in nonattainment of the regional air quality standards. Instead, a project's emissions may be individually limited, but cumulatively considerable when taken in combination with past, present, and future development within the San Joaquin Valley Air Basin. When assessing whether there is a new significant cumulative effect, the Lead Agency shall consider whether the incremental effects of the project are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects [CCR §15064(h)(1)]. Per CEQA Guidelines §15064(h)(3) a Lead Agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program, including, but not limited to an air quality attainment or maintenance plan that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located. (SJVAPCD 2015a)

> GAMAQI also states "*If a project is significant based on the thresholds of significance for criteria pollutants, then it is also cumulatively significant. This does not imply that if the project is below all such significance thresholds, it cannot be cumulatively significant.*" (SJVAPCD 2015a). Based on the analysis conducted for this Project, it is individually *less than significant*. This AQIA, however, also considered impacts of the proposed Project in conjunction with the impacts of other projects previously proposed in the area. The following cumulative impacts were considered:

- Cumulative O3 Impacts (ROG and NOx) from numerous sources within the region including transport from outside the region. O3 is formed through chemical reactions of ROG and NOx in the presence of sunlight.
- Cumulative CO Impacts produced primarily by vehicular emissions.
- Cumulative PM10 Impacts from within the region and locally from the various projects. Such projects may cumulatively produce a significant amount of PM10 if several projects conduct grading or earthmoving activities at the same time; and
- Hazardous Air Pollutant (HAP) Impacts on sensitive receptors from within the SJVAPCD recommended screening radius of one mile.

5.1. CUMULATIVE REGIONAL AIR QUALITY IMPACTS

The most recent, certified SJVAB Emission Inventory data available from the SJVAPCD is based on data gathered for the 2015 annual inventory.[1] This data will be used to assist the SJVAPCD in demonstrating attainment of Federal 1-hour O3 Standards (SJVAPCD 2007). **Table 5-1** provides a comparative look at the impacts proposed by the proposed Project to the SJVAB Emissions Inventory.

[1] SJVAPCD Emissions for Aggregated Stationary, Area-Wide, Mobile and Natural Sources

Table 5-1 – Comparative Analysis Based on SJV Air Basin 2015 Inventory

Emissions Inventory Source	Pollutant (tons/year)					
	ROG	NOx	CO	SOx	PM10	PM2.5
Kern County - 2015	22,484.0	20,841.5	33,872.0	511.0	13,687.5	3,832.5
SJVAB - 2015	112,931.0	96,104.5	199,509.0	2,737.5	95,666.5	21,681.0
Proposed Project	0.07	0.02	0.01	0.0001	0.001	0.001
Proposed Project's % of Kern	0.0003%	0.0001%	0.000%	0.000%	0.000%	0.000%
Proposed Project's % of SJVAB	0.0001%	0.000%	0.000%	0.000%	0.000%	0.000%
Note: This is the latest inventory available as of February 2019; 0.000% could represent <0.00005% SOURCE: CARB 2019						

As shown in **Table 5-1** the proposed Project does not pose a substantial increase to basin emissions, as such basin emissions would be essentially the same if the Project is approved.

Tables 5-2 through **5-4** provide CARB Emissions Inventory projections for the year 2020 for both the SJVAB and the Kern County portion of the air basin. Looking at the SJVAB Emissions predicted by the CARB year 2020 emissions inventory, the Kern County portion of the air basin is a moderate source of the emissions. The proposed Project produces a small portion of the total emissions in both Kern County and the entire SJVAB.

Table 5-2 – Emission Inventory SJVAB 2020 Projection – Tons per Year

	ROG	NOx	CO	SOx	PM10	PM2.5
Total Emissions	108,113.0	74,204.5	162,425.0	2,847.0	96,652.0	21,535.0
Percent Stationary Sources	30.82%	14.07%	6.22%	83.33%	5.63%	14.75%
Percent Area-Wide Sources	51.59%	3.89%	11.96%	3.85%	89.43%	70.85%
Percent Mobile Sources	17.56%	82.05%	81.82%	12.82%	4.95%	100.00%
Total Stationary Source Emissions	33324.5	10439.0	10110.5	2372.5	5438.5	3175.5
Total Area-Wide Source Emissions	55772.0	2883.5	19418.0	109.5	86432.0	15257.0
Total Mobile Source Emissions	18980.0	60882.0	132896.5	365.0	4781.5	21535.0

Source: CARB 2019

Note: Total may not add due to rounding.

Table 5-3 - Emission Inventory SJVAB – Kern County Portion 2020 Estimate Projection – Tons per Year

	ROG	NOx	CO	SOx	PM10	PM2.5
Total Emissions	21535.0	15877.5	27338.5	511.0	13651.0	3723.0
Percent Stationary Sources	52.03%	18.39%	14.82%	78.57%	11.76%	32.35%
Percent Area-Wide Sources	33.73%	2.76%	6.94%	0.00%	82.62%	55.88%
Percent Mobile Sources	14.24%	78.62%	78.24%	14.29%	5.88%	11.76%
Total Stationary Source Emissions	11205.5	2920.0	4051.5	401.5	1606.0	1204.5
Total Area-Wide Source Emissions	7263.5	438.0	1898.0	0.0	11278.5	2080.5
Total Mobile Source Emissions	3066.0	12483.0	21389.0	73.0	803.0	438.0

Source: CARB 2019

Note: Total may not add due to rounding.

Table 5-4 - 2020 Emissions Projections – Proposed Project, Kern County, and San Joaquin Valley Air Basin

	ROG	NOx	CO	SOx	PM10	PM2.5
Proposed Project	0.07	0.02	0.01	0.0001	0.001	0.001
Kern County	21,535	15,878	27,339	511	13,651	3,723
SJVAB	108,113	74,205	162,425	2,847	96,652	21,535
Proposed Project Percent of Kern County	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Proposed Project Percent of SJVAB	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Kern County Percent of SJVAB	19.92%	21.40%	16.83%	17.95%	14.12%	17.29%
Source: CARB 2019						

As shown above, the proposed Project would pose an inconsequential impact on regional O_3 and PM_{10} formation. Because the regional contribution to these cumulative impacts would be negligible, the Project would *not be considered cumulatively considerable* in its contribution to regional O_3 and PM_{10} impacts.

5.2. CUMULATIVE LOCAL AIR QUALITY IMPACTS

The KCPD did not provide a list of other projects within a six-mile radius of the proposed Project. Therefore, a review of the Kern County GIS Geocortex Online Mapping information provided a list of 103 active, pending or partially recorded projects located within a six mile radius of the Proposed Project (**Attachment C**). However, the details provided regarding these projects do not provide enough information to accurately estimate their potential emissions. *The number or size of cumulative projects is of no particular significance since no "cumulative" emissions thresholds have been established by the SJVAPCD or the Kern County Community Development Agency*. These projects represent all known and reasonably foreseeable projects in the area. As these projects are either currently under construction or, at a minimum, approved by the Bakersfield City and Kern County Planning Departments for consistency with applicable regulation, for the purposes of this analysis, it is assumed that they are in conformance with the regional AQAP. Because the proposed Project would generate less than significant Project-related operational impacts to criteria air pollutants, the Project's contribution to cumulative air quality impacts would not be cumulatively considerable.

5.3. CUMULATIVE HAZARDOUS AIR POLLUTANTS

The GAMAQI also states that when evaluating potential impacts related to HAPs, "*impacts of local pollutants (CO, HAPs) are cumulatively significant when modeling shows that the combined emissions from the project and other existing and planned projects will exceed air quality standards.*" Because the Project would not be a significant sources of HAPS, the proposed Project would also *not be expected to pose a significant cumulative CO or HAPs impact*.

5.4. CUMULATIVE CARBON MONOXIDE (CO) – MOBILE SOURCES

The SJVAPCD's GAMAQI has identified CO impacts from impacted traffic intersections and roadway segments as being potentially cumulatively considerable. Traffic increases and added congestion caused by a project can combine to cause a violation of the SJVAPCD's CO standard also known as a "Hotspot". There are two criteria established by the GAMAQI by which CO "Hot Spot" modeling is required:

- A traffic study for the project indicates that the Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity will be reduced to LOS E or F; or

- A traffic study indicates that the project will substantially worsen an already existing LOS F on one or more streets or at one or more intersections in the project vicinity.

A traffic study was not completed for this Project. The Project does not increase traffic activity levels, therefore, CO "Hotspot" Modeling was not conducted for this Project and no concentrated excessive CO emissions are expected to be caused once the proposed Project is completed.

6. CONSISTENCY WITH THE AIR QUALITY ATTAINMENT PLAN

Air quality impacts from proposed projects within Kern County are controlled through policies and provisions of the SJVAPCD and the Kern County General Plan (KCPD 2004). In order to demonstrate that a proposed project would not cause further air quality degradation in either of the SJVAPCD's plan to improve air quality within the air basin or federal requirements to meet certain air quality compliance goals, each project should also demonstrate consistency with the SJVAPCD's adopted Air Quality Attainment Plans (AQAP) for O_3 and PM_{10}. The SJVAPCD is required to submit a "Rate of Progress" document to the CARB that demonstrates past and planned progress toward reaching attainment for all criteria pollutants. The California Clean Air Act (CCAA) requires air pollution control districts with severe or extreme air quality problems to provide for a 5% reduction in non-attainment emissions per year. The AQAP prepared for the San Joaquin Valley by the SJVAPCD complies with this requirement. CARB reviews, approves or amends the document and forwards the plan to the EPA for final review and approval within the SIP.

Air pollution sources associated with stationary sources are regulated through the permitting authority of the SJVAPCD under the New and Modified Stationary Source Review Rule (SJVAPCD Rule 2201). Owners of any new or modified equipment that emits, reduces or controls air contaminants, except those specifically exempted by the SJVAPCD, are required to apply for an Authority to Construct and Permit to Operate (SJVAPCD Rule 2010). Additionally, best available control technology (BACT) is required on specific types of stationary equipment and are required to offset both stationary source emission increases along with increases in cargo carrier emissions if the specified threshold levels are exceeded (SJVAPCD Rule 2201, 4.7.1). Through this mechanism, the SJVAPCD would ensure that all stationary sources within the project area would be subject to the standards of the SJVAPCD to ensure that new developments do not result in net increases in stationary sources of criteria air pollutants.

6.1. REQUIRED EVALUATION GUIDELINES

State CEQA Guidelines and the Federal Clean Air Act (Sections 176 and 316) contain specific references on the need to evaluate consistencies between the proposed project and the applicable AQAP for the project site. To accomplish this, CARB has developed a three-step approach to determine project conformity with the applicable AQAP:

1. *Determination that an AQAP is being implemented in the area where the project is being proposed*. The SJVAPCD has implemented the current, modified, AQAP as approved by the CARB. The current AQAP is under review by the U.S. EPA.
2. *The proposed project must be consistent with the growth assumptions of the applicable AQAP*. The proposed project land use type was anticipated in the current growth assumptions. Therefore, employee growth assumptions in the Metropolitan Bakersfield and Kern County General Plans will not be modified with the approval of the proposed Project.
3. *The project must contain in its design all reasonably available and feasible air quality control measures*. The proposed project incorporates various policy and rule-required implementation measures that will reduce related emissions.

The CCAA and AQAP identify transportation control measures as methods to further reduce emissions from mobile sources. Strategies identified to reduce vehicular emissions such as reductions in vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, and traffic congestion, in order to reduce vehicular emissions, can be implemented as control measures under the CCAA as well. Additional measures may also be implemented through the building process such as providing electrical outlets on exterior walls of structures to encourage use of

electrical landscape maintenance equipment or measures such as electrical outlets for electrical systems on diesel trucks to reduce or eliminate idling time.

As the growth represented by the proposed Project will not be require an update in the Kern County General Plan and incorporated into the AQAP, conclusions may be drawn from the following criteria:

1. That, by definition, the proposed emissions from the project are below the SJVAPCD's established emissions impact thresholds;
2. The Project proposes no growth to residences, employment, and households.

Based on these factors, the project appears to be *consistent with the AQAP*.

6.2. CONSISTENCY WITH THE KERN COUNTY COUNCIL OF GOVERNMENT'S REGIONAL CONFORMITY ANALYSIS

The Kern Council of Governments (Kern COG) Regional Conformity Analysis (Kern COG 2002) Determination demonstrates that the regional transportation expenditure plans (Destination 2030 Regional Transportation Plan and Federal Transportation Improvement Program) in the Kern County portion of the San Joaquin Valley air quality attainment areas would not hinder the efforts set out in the CARB's SIP for each area's non-attainment pollutants (CO, O_3 and PM_{10}). The analysis uses an adopted regional growth forecast, governed by both the adopted Kern COG Policy and Procedure Manual and a Memorandum of Understanding between the County of Kern and Kern COG (representing itself and outlying municipal member agencies).

The Kern COG Regional Conformity Analysis considers General Plan Amendments (GPA) and zone changes that were enacted at the time of the analysis as projected growth within the area based on land use designations incorporated within the Kern County General Plan. Land use designations that are altered based on subsequent GPAs that were not included in the Regional Conformity Analysis were not incorporated into the Kern COG analysis. Consequently, if a proposed project is not included in the regional growth forecast using the latest planning assumptions, it may not be said to conform to the regional growth forecast. Under the current Kern County Zoning, the project site is designated as "Low Density Residential" (see **Figure 6-1**).

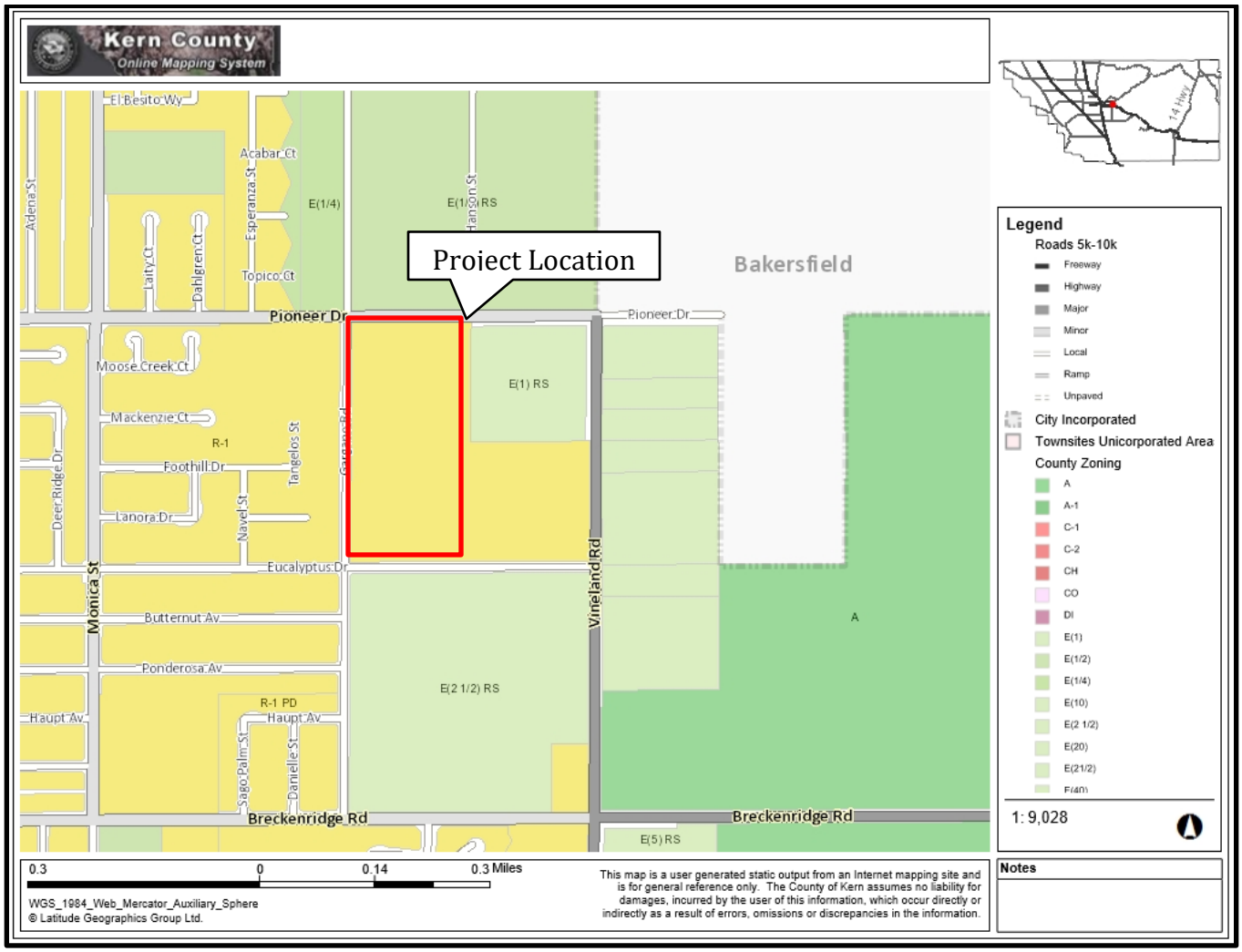


Figure 6-1 – Kern County Zoning

Item 2 under Section 3 – Model Maintenance Procedure, of the Kern COG Regional Transportation Modeling Policy and Procedure Manual states "*Land Use Data – General Plan land capacity data or "Build -out capacity" is used to distribute the forecasted County totals, and may be updated as new information becomes available, and is revised in regular consultation with local planning departments*."

Under current policies, only after a General Plan Amendment (GPA) is approved, can housing and employment assumptions be updated to reflect the capacity changes. Since the proposed development does not require a GPA and zone change, the existing growth forecast will not be modified to reflect these changes since no increase in employment, housing or residents in expected. In order to determine whether the forecasted growth for the project area is sufficient to account for the projected increases in employment, an analysis based on Kern COG regional forecast is typically conducted, however, since no growth is anticipated the analysis is not required.

7. MITIGATION AND OTHER RECOMMENDED MEASURES

As the estimated construction and operational emissions from the proposed Project would be *less than significant*, no specific mitigation measures would be required. However, to ensure that Project is in compliance with all applicable SJVAPCD rules and regulations and emissions are further reduced, the applicant should implement and comply with a number of measures that are either recommended as a "good operating practice" for environmental stewardship or they are required by regulation. Some of the listed measures are regulatory requirements or construction requirements that would result in further emission reductions through their inclusion in Project construction and long-term design. The following measures either have been applied to the Project through the CalEEMod model and would be incorporated into the Project by design or would be implemented in conjunction with SJVAPCD rules as conditions of approval:

7.1. SJVAPCD REQUIRED PM10 REDUCTION MEASURES

As the Project would be completed in compliance with SJVAPCD Regulation VIII, dust control measures would be taken to ensure compliance specifically during grading and construction phases. The required Regulation VII measures are as follows:

- Water previously exposed surfaces (soil) whenever visible dust is capable of drifting from the site or approaches 20% opacity.
- Water all unpaved haul roads a minimum of three-times/day or whenever visible dust from such roads is capable of drifting from the site or approaches 20% opacity.
- Reduce speed on unpaved roads to less than 15 miles per hour.
- Install and maintain a track out control device that meets the specifications of SJVAPCD Rule 8041 if the site exceeds 150 vehicle trips per day or more than 20 vehicle trips per day by vehicles with three or more axles.
- Stabilize all disturbed areas, including storage piles, which are not being actively utilized for production purposes using water, chemical stabilizers or by covering with a tarp or other suitable cover.
- Control fugitive dust emissions during land clearing, grubbing, scraping, excavation, leveling, grading, or cut and fill operations with application of water or by presoaking.
- When transporting materials offsite, maintain a freeboard limit of at least 6 inches and cover or effectively wet to limit visible dust emissions.
- Limit and remove the accumulation of mud and/or dirt from adjacent public roadways at the end of each workday. (Use of dry rotary brushes is prohibited except when preceded or accompanied by sufficient wetting to limit visible dust emissions and use of blowers is expressly forbidden).
- Stabilize the surface of storage piles following the addition or removal of materials using water or chemical stabilizer/suppressants.
- Remove visible track-out from the site at the end of each workday.
- Cease grading or other activities that cause excessive (greater than 20% opacity) dust formation during periods of high winds (greater than 20 mph over a one-hour period).

7.2. RECOMMENDED MEASURES TO REDUCE EQUIPMENT EXHAUST

In addition, the GAMAQI guidance document lists the following measures as approved and recommended for construction activities. These measures are recommended:

- Maintain all construction equipment as recommended by manufacturer manuals.
- Shut down equipment when not in use for extended periods.
- Construction equipment shall operate no longer than eight (8) cumulative hours per day.
- Use electric equipment for construction whenever possible in lieu of diesel or gasoline powered equipment.
- Curtail use of high-emitting construction equipment during periods of high or excessive ambient pollutant concentrations.
- All construction vehicles shall be equipped with proper emissions control equipment and kept in good and proper running order to substantially reduce NO_x emissions.
- On-Road and Off-Road diesel equipment shall use diesel particulate filters if permitted under manufacturer's guidelines.
- On-Road and Off-Road diesel equipment shall use cooled exhaust gas recirculation (EGR) if permitted under manufacturer's guidelines.
- All construction workers shall be encouraged to shuttle (car-pool) to retail establishments or to remain on-site during lunch breaks.
- All construction activities within the project area shall be discontinued during the first stage smog alerts.
- Construction and grading activities shall not be allowed during first stage O_3 alerts. First stage O_3 alerts are declared when the O_3 level exceeds 0.20 ppm (1-hour average).

7.3. OTHER MEASURES TO REDUCE PROJECT IMPACTS

The following measures are recommended to further reduce the potential for long-term emissions from the Project. These measures are required as a matter of regulatory compliance:

- The Project design shall comply with applicable standards set forth in Title 24 of the Uniform Building Code to minimize total consumption of energy.
- Applicants shall be required to comply with applicable mitigation measures in the AQAP, SJVAPCD Rules, Traffic Control Measures, Regulation VIII and Indirect Source Rules for the SJVAPCD.
- The developer shall comply with the provisions of SJVAPCD Rule 4601 - Architectural Coatings, during the construction of all buildings and facilities. Application of architectural coatings shall be completed in a manner that poses the least emissions impacts whenever such application is deemed proficient.
- The applicant shall comply with the provisions of SJVAPCD Rule 4641 during the construction and pavement of all roads and parking areas within the project area. Specifically, the applicant shall not allow the use of:
    - Rapid cure cutback asphalt;
    - Medium cure cutback asphalt;
    - Slow cure cutback asphalt (as specified in SJVAPCD Rule 4641, Section 5.1.3); or Emulsified asphalt (as specified in SJVAPCD Rule 4641, Section 5.1.4).
    - The developer shall comply with applicable provisions of SJVAPCD Rule 9510 (Indirect Source Review).

8. LEVEL OF SIGNIFICANCE AFTER MITIGATION

The proposed Project would have short-term air quality impacts due to facility construction activities as well as vehicular emissions. Both of these impacts *were found to be less than significant* before and after mitigation.

The proposed Project would result in long-term air quality impacts due to operational area source emissions. These impacts *were found to be less than significant* before and after mitigation.

The proposed Project, in conjunction with other past, present and foreseeable future projects, will result in cumulative short-term and long-term impacts to air quality. The proposed Project's incremental contribution to these impacts would be mitigated and are below thresholds of significance and would be not be considered cumulatively considerable. Therefore, the Project's contribution to cumulative impacts *were found to be less than significant*.

The proposed Project in conjunction with other past, present and foreseeable future projects would result in cumulative long-term impacts to global climate change. The proposed Project's incremental contribution to these impacts will be mitigated to the extent feasible and are considered *less than significant.*

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ATTACHMENT A: EXISTING AIR QUALITY MONITORING DATA

Top 4 Summary: Highest 4 Daily 24-Hour PM10 Averages

at Oildale-3311 Manor Street

	2015		2016		2017	
	Date	24-Hr Average	Date	24-Hr Average	Date	24-Hr Average
	National:					
First High:	Jan 6	98.5	Sep 21	89.1	Mar 14	59.4
Second High:	Oct 9	88.1	Sep 9	88.4	Jan 31	55.0
Third High:	Oct 27	81.3	Oct 21	88.1	May 1	44.7
Fourth High:	Nov 14	80.4	Sep 15	83.4	May 19	39.0
	California:					
First High:	Jan 6	104.4	Oct 21	88.4	Dec 16	210.0
Second High:	Oct 9	85.8	Sep 21	87.1	Dec 15	153.8
Third High:	Nov 14	81.4	Sep 9	86.5	Dec 11	148.5
Fourth High:	Oct 27	80.5	Sep 15	83.0	Dec 14	143.6
	National:					
Estimated # Days > 24-Hour Std:	*			0.0		*
Measured # Days > 24-Hour Std:	0			0		0
3-Yr Avg Est # Days > 24-Hr Std:	*			*		*
Annual Average:	*36.5*			*41.6*		*19.3*
3-Year Average:	*48*			*45*		*32*
	California:					
Estimated # Days > 24-Hour Std:	*			*		*
Measured # Days > 24-Hour Std:	26			18		80
Annual Average:	*			*		*
3-Year Maximum Annual Average:	*			*		*
Year Coverage:	87			97		24

Notes:

Daily PM10 averages and related statistics are available at Oildale-3311 Manor Street between 1988 and 2017. Some years in this range may not be represented.

All averages expressed in micrograms per cubic meter.

Top 4 Summary: Highest 4 Daily 24-Hour PM10 Averages

at Bakersfield-Golden State Highway

	2015		2016		2017	
	Date	24-Hr Average	Date	24-Hr Average	Date	24-Hr Average
National:						
First High:	Sep 9	100.5	Oct 21	91.6	Dec 15	158.2
Second High:	Nov 14	81.6	Nov 8	88.2	Dec 9	109.6
Third High:	Oct 9	80.8	Sep 9	87.9	Dec 27	101.4
Fourth High:	Aug 16	76.7	Sep 21	86.8	Oct 16	98.3
California:						
First High:	Sep 9	94.6	Oct 21	91.6	Dec 15	165.1
Second High:	Nov 14	83.1	Nov 8	89.2	Dec 9	115.4
Third High:	Oct 9	78.4	Nov 14	87.8	Dec 27	106.5
Fourth High:	Dec 2	78.2	Sep 9	85.7	Oct 16	100.3
National:						
Estimated # Days > 24-Hour Std:		*		0.0		6.1
Measured # Days > 24-Hour Std:		0		0		1
3-Yr Avg Est # Days > 24-Hr Std:		*		*		*
Annual Average:		*47.0*		*47.5*		*48.3*
3-Year Average:		*		*		*48*
California:						
Estimated # Days > 24-Hour Std:		*		157.9		145.5
Measured # Days > 24-Hour Std:		16		26		24
Annual Average:		*		47.3		48.4
3-Year Maximum Annual Average:		*		47		48
Year Coverage:		73		100		100

Notes:

Daily PM10 averages and related statistics are available at Bakersfield-Golden State Highway between 1994 and 2017. Some years in this range may not be represented.

All averages expressed in micrograms per cubic meter.

Top 4 Summary: Highest 4 Daily 24-Hour PM10 Averages

at Bakersfield-5558 California Avenue

	2015		2016		2017	
	Date	24-Hr Average	Date	24-Hr Average	Date	24-Hr Average
	National:					
First High:	Sep 9	104.7	Feb 12	90.9	Dec 15	138.0
Second High:	Jan 6	97.7	Sep 9	79.9	Dec 9	106.7
Third High:	Oct 9	82.3	Nov 8	79.5	Dec 27	94.9
Fourth High:	Nov 14	78.1	Oct 22	71.4	Oct 17	90.9
	California:					
First High:	Jan 6	103.6	Feb 12	92.2	Dec 15	143.6
Second High:	Sep 9	99.6	Nov 8	80.6	Dec 9	112.1
Third High:	Oct 9	80.1	Sep 9	78.1	Dec 27	99.5
Fourth High:	Nov 14	79.1	Dec 20	72.2	Oct 17	90.9
	National:					
Estimated # Days > 24-Hour Std:		0.0		0.0		0.0
Measured # Days > 24-Hour Std:		0		0		0
3-Yr Avg Est # Days > 24-Hr Std:		*		*		0.0
Annual Average:		*44.5*		*41.2*		*42.6*
3-Year Average:		*50*		*46*		*43*
	California:					
Estimated # Days > 24-Hour Std:		121.4		121.4		98.7
Measured # Days > 24-Hour Std:		20		21		16
Annual Average:		44.1		40.9		42.6
3-Year Maximum Annual Average:		44		44		44
Year Coverage:		99		97		98

Notes:

Daily PM10 averages and related statistics are available at Bakersfield-5558 California Avenue between 1994 and 2017. Some years in this range may not be represented.

All averages expressed in micrograms per cubic meter.

Top 4 Summary: Highest 4 Daily 24-Hour PM2.5 Averages

iADAM

at Bakersfield-Golden State Highway

	2015		2016		2017	
	Date	24-Hr Average	Date	24-Hr Average	Date	24-Hr Average
	National:					
First High:	Jan 9	91.1	Dec 20	53.9	Dec 15	74.3
Second High:	Jan 6	70.0	Dec 29	52.7	Dec 30	74.1
Third High:	Jan 18	51.5	Jan 1	51.4	Dec 12	71.3
Fourth High:	Feb 20	50.3	Feb 6	48.8	Dec 24	68.6
	California:					
First High:	Jan 9	91.1	Dec 20	53.9	Dec 15	74.3
Second High:	Jan 6	70.0	Dec 29	52.7	Dec 30	74.1
Third High:	Jan 18	51.5	Jan 1	51.4	Dec 12	71.3
Fourth High:	Feb 20	50.3	Feb 6	48.8	Dec 24	68.6
	National:					
Estimated # Days > 24-Hour Std:		30.8		21.8		29.7
Measured # Days > 24-Hour Std:		9		7		9
24-Hour Standard Design Value:		*		70		58
24-Hour Standard 98th Percentile:		51.5		51.4		71.3
2006 Annual Std Design Value:		*		*		15.9
2013 Annual Std Design Value:		*		16.5		15.9
Annual Average:		16.6		14.8		16.1
	California:					
Annual Std Designation Value:		17		17		17
Annual Average:		16.7		14.8		16.2
Year Coverage:		92		96		88

Notes:

Daily PM2.5 averages and related statistics are available at Bakersfield-Golden State Highway between 1999 and 2017. Some years in this range may not be represented.

All averages expressed in micrograms per cubic meter.

Top 4 Summary: Highest 4 Daily 24-Hour PM2.5 Averages

at Bakersfield-410 E Planz Road

iADAM

	2015		2016		2017	
	Date	24-Hr Average	Date	24-Hr Average	Date	24-Hr Average
	National:					
First High:	Jan 9	83.2	Dec 29	51.4	Dec 30	80.1
Second High:	Jan 6	64.3	Jan 1	50.7	Dec 15	73.6
Third High:	Nov 14	56.5	Dec 20	47.7	Dec 12	69.7
Fourth High:	Jan 18	52.9	Nov 8	44.5	Dec 24	69.7
	California:					
First High:	Jan 9	83.2	Dec 29	51.4	Dec 30	80.1
Second High:	Jan 6	64.3	Jan 1	50.7	Dec 15	73.6
Third High:	Nov 14	56.5	Dec 20	47.7	Dec 12	69.7
Fourth High:	Jan 18	52.9	Nov 8	44.5	Dec 24	69.7
	National:					
Estimated # Days > 24-Hour Std:		38.0		*		32.2
Measured # Days > 24-Hour Std:		13		7		10
24-Hour Standard Design Value:		77		61		59
24-Hour Standard 98th Percentile:		56.5		50.7		69.7
2006 Annual Std Design Value:		20.8		18.4		17.3
2013 Annual Std Design Value:		20.8		18.4		17.3
Annual Average:		17.8		15.8		18.2
	California:					
Annual Std Designation Value:		18		18		18
Annual Average:		17.9		*		*
Year Coverage:		94		86		86

Notes:

Daily PM2.5 averages and related statistics are available at Bakersfield-410 E Planz Road between 2000 and 2017. Some years in this range may not be represented.

All averages expressed in micrograms per cubic meter.

Top 4 Summary: Highest 4 Daily 24-Hour PM2.5 Averages

at Bakersfield-5558 California Avenue

iADAM

	2015		2016		2017	
	Date	24-Hr Average	Date	24-Hr Average	Date	24-Hr Average
National:						
First High:	Jan 10	107.8	Dec 21	66.4	Dec 28	101.8
Second High:	Jan 9	88.9	Dec 22	63.6	Dec 31	88.1
Third High:	Jan 8	87.0	Nov 9	55.7	Dec 30	82.9
Fourth High:	Jan 7	84.7	Jan 1	54.6	Dec 10	76.5
California:						
First High:	Jan 10	111.9	Dec 21	66.4	Dec 28	101.8
Second High:	Jan 9	92.0	Dec 22	63.6	Dec 31	88.1
Third High:	Jan 8	87.7	Nov 9	57.4	Dec 30	82.9
Fourth High:	Jan 7	84.7	Jan 1	54.6	Dec 10	76.5
National:						
Estimated # Days > 24-Hour Std:		32.3		25.5		30.2
Measured # Days > 24-Hour Std:		29		23		28
24-Hour Standard Design Value:		70		61		59
24-Hour Standard 98th Percentile:		57.2		47.0		71.8
2006 Annual Std Design Value:		18.3		16.5		15.7
2013 Annual Std Design Value:		18.3		16.5		15.7
Annual Average:		16.2		14.7		15.9
California:						
Annual Std Designation Value:		19		19		16
Annual Average:		16.6		16.0		15.9
Year Coverage:		91		90		94

Notes:

Daily PM2.5 averages and related statistics are available at Bakersfield-5558 California Avenue between 1999 and 2017. Some years in this range may not be represented.

All averages expressed in micrograms per cubic meter.

Top 4 Summary: Highest 4 Daily Maximum Hourly Ozone Measurements

iADAM

at Bakersfield-5558 California Avenue

	2015		2016		2017	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	Sep 25	0.104	Jun 5	0.092	Sep 2	0.122
Second High:	Oct 9	0.099	Jul 26	0.091	Sep 1	0.104
Third High:	Jul 29	0.097	Oct 22	0.091	Aug 29	0.101
Fourth High:	Sep 9	0.097	Jul 2	0.090	Jun 23	0.099
California:						
# Days Above the Standard:		6		0		11
California Designation Value:		0.10		0.10		0.10
Expected Peak Day Concentration:		0.098		0.097		0.100
National:						
# Days Above the Standard:		*0*		*0*		*0*
3-Year Estimated Expected Number of Exceedance Days:		*0.0*		*0.0*		*0.0*
1-Year Estimated Expected Number of Exceedance Days:		*0.0*		*0.0*		*0.0*
Nat'l Standard Design Value:		*0.099*		*0.098*		*0.101*
Year Coverage:		99		98		99

Notes:

Hourly ozone measurements and related statistics are available at Bakersfield-5558 California Avenue between 1994 and 2017. Some years in this range may not be represented.

All concentrations expressed in parts per million.

The national 1-hour ozone standard was revoked in June 2005. Statistics related to the national 1-hour ozone standard are shown in or .

An exceedance of a standard is not necessarily related to a violation of the standard.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* means there was insufficient data available to determine the value.

Top 4 Summary: Highest 4 Daily Maximum Hourly Ozone Measurements

at Edison

	2015		2016		2017	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	Jun 30	0.112	Jun 30	0.109	Sep 1	0.112
Second High:	Sep 9	0.112	Jul 29	0.107	Sep 2	0.112
Third High:	Oct 9	0.107	Jul 21	0.103	Aug 28	0.104
Fourth High:	Sep 25	0.106	Aug 13	0.103	Aug 29	0.104
California:						
# Days Above the Standard:		17		14		12
California Designation Value:		0.11		0.11		0.11
Expected Peak Day Concentration:		0.109		0.110		0.109
National:						
# Days Above the Standard:		*0*		*0*		*0*
3-Year Estimated Expected Number of Exceedance Days:		*0.0*		*0.0*		*0.0*
1-Year Estimated Expected Number of Exceedance Days:		*0.0*		*0.0*		*0.0*
Nat'l Standard Design Value:		*0.107*		*0.107*		*0.112*
Year Coverage:		95		99		97

Notes:

Hourly ozone measurements and related statistics are available at Edison between 1981 and 2017. Some years in this range may not be represented.

All concentrations expressed in parts per million.

The national 1-hour ozone standard was revoked in June 2005. Statistics related to the national 1-hour ozone standard are shown in or .

An exceedance of a standard is not necessarily related to a violation of the standard.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* means there was insufficient data available to determine the value.

Top 4 Summary: Highest 4 Daily Maximum Hourly Ozone Measurements

at Bakersfield-Municipal Airport

	2015		2016		2017	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	Oct 9	0.118	Jun 28	0.102	Sep 2	0.118
Second High:	Sep 24	0.115	Jun 29	0.100	Aug 29	0.105
Third High:	Sep 25	0.114	Aug 4	0.100	Aug 25	0.103
Fourth High:	Sep 9	0.112	Aug 13	0.099	Sep 1	0.101
California:						
# Days Above the Standard:		23		8		9
California Designation Value:		0.11		0.11		0.11
Expected Peak Day Concentration:		0.112		0.112		0.113
National:						
# Days Above the Standard:		*0*		*0*		*0*
3-Year Estimated Expected Number of Exceedance Days:		*0.0*		*0.0*		*0.0*
1-Year Estimated Expected Number of Exceedance Days:		*0.0*		*0.0*		*0.0*
Nat'l Standard Design Value:		*0.112*		*0.112*		*0.114*
Year Coverage:		99		97		96

Notes:

Hourly ozone measurements and related statistics are available at Bakersfield-Municipal Airport between 2012 and 2017. Some years in this range may not be represented.

All concentrations expressed in parts per million.

The national 1-hour ozone standard was revoked in June 2005. Statistics related to the national 1-hour ozone standard are shown in or .

An exceedance of a standard is not necessarily related to a violation of the standard.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* means there was insufficient data available to determine the value.

Top 4 Summary: Highest 4 Daily Maximum 8-Hour Ozone Averages

at Bakersfield-Municipal Airport

iADAM

	2015		2016		2017	
	Date	8-Hr Average	Date	8-Hr Average	Date	8-Hr Average
National 2015 Std (0.070 ppm):						
First High:	Sep 25	0.106	Aug 13	0.093	Sep 2	0.101
Second High:	Oct 9	0.102	Jul 29	0.088	Sep 1	0.091
Third High:	Sep 9	0.101	Aug 4	0.088	Aug 28	0.088
Fourth High:	Jun 25	0.097	Aug 12	0.088	Jul 10	0.086
California Std (0.070 ppm):						
First High:	Sep 25	0.106	Aug 13	0.093	Sep 2	0.101
Second High:	Oct 9	0.103	Jul 29	0.089	Sep 1	0.092
Third High:	Sep 9	0.102	Aug 4	0.089	Aug 28	0.088
Fourth High:	Jun 25	0.098	Aug 12	0.088	Aug 1	0.087
National 2015 Std (0.070 ppm):						
# Days Above the Standard:		69		63		55
Nat'l Standard Design Value:		0.090		0.090		0.090
National Year Coverage:		99		97		96
California Std (0.070 ppm):						
# Days Above the Standard:		73		66		57
California Designation Value:		0.103		0.098		0.101
Expected Peak Day Concentration:		0.105		0.101		0.101
California Year Coverage:		94		96		95

Notes:

Eight-hour ozone averages and related statistics are available at Bakersfield-Municipal Airport between 2012 and 2017. Some years in this range may not be represented.

All averages expressed in parts per million.

An exceedance of a standard is not necessarily related to a violation of the standard.

State and national statistics may differ for the following reasons:

National 8-hour averages are truncated to three decimal places; State 8-hour averages are rounded to three decimal places.

State criteria for ensuring that data are sufficiently complete for calculating 8-hour averages are more stringent than the national criteria.

Daily maximum 8-hour averages associated with the National 0.070 ppm standard exclude those 8-hour averages that have first hours between midnight and 6:00 am, Pacific Standard Time.

Daily maximum 8-hour averages associated with the National 0.070 ppm standard include only those 8-hour averages from days that have sufficient data for the day to be considered valid.

Top 4 Summary: Highest 4 Daily Maximum 8-Hour Ozone Averages

at Edison

iADAM

	2015		2016		2017	
	Date	8-Hr Average	Date	8-Hr Average	Date	8-Hr Average
National 2015 Std (0.070 ppm):						
First High:	Sep 25	0.099	Jul 29	0.090	Sep 2	0.098
Second High:	Sep 9	0.093	Jul 1	0.088	Sep 1	0.094
Third High:	Jun 25	0.091	Jul 26	0.086	Aug 28	0.089
Fourth High:	Oct 9	0.090	Jul 27	0.086	Oct 25	0.085
California Std (0.070 ppm):						
First High:	Sep 25	0.099	Jul 29	0.090	Sep 2	0.099
Second High:	Sep 9	0.093	Jul 1	0.089	Sep 1	0.095
Third High:	Jun 25	0.091	Jul 26	0.087	Aug 28	0.090
Fourth High:	Oct 9	0.090	Jul 27	0.087	Jul 23	0.085
National 2015 Std (0.070 ppm):						
# Days Above the Standard:		42		64		74
Nat'l Standard Design Value:		0.084		0.087		0.087
National Year Coverage:		94		100		98
California Std (0.070 ppm):						
# Days Above the Standard:		45		68		76
California Designation Value:		0.093		0.093		0.095
Expected Peak Day Concentration:		0.096		0.096		0.095
California Year Coverage:		93		99		97

Notes:

Eight-hour ozone averages and related statistics are available at Edison between 1981 and 2017. Some years in this range may not be represented.

All averages expressed in parts per million.

An exceedance of a standard is not necessarily related to a violation of the standard.

State and national statistics may differ for the following reasons:

National 8-hour averages are truncated to three decimal places; State 8-hour averages are rounded to three decimal places.

State criteria for ensuring that data are sufficiently complete for calculating 8-hour averages are more stringent than the national criteria.

Daily maximum 8-hour averages associated with the National 0.070 ppm standard exclude those 8-hour averages that have first hours between midnight and 6:00 am, Pacific Standard Time.

Daily maximum 8-hour averages associated with the National 0.070 ppm standard include only those 8-hour averages from days that have sufficient data for the day to be considered valid.

Top 4 Summary: Highest 4 Daily Maximum 8-Hour Ozone Averages

at Bakersfield-5558 California Avenue

	2015		2016		2017	
	Date	8-Hr Average	Date	8-Hr Average	Date	8-Hr Average
National 2015 Std (0.070 ppm):						
First High:	Sep 25	0.096	Jul 15	0.085	Sep 2	0.104
Second High:	Oct 9	0.090	Aug 13	0.084	Sep 1	0.094
Third High:	Sep 20	0.089	Sep 7	0.083	Aug 29	0.092
Fourth High:	Jun 25	0.088	Jul 1	0.082	Aug 28	0.089
California Std (0.070 ppm):						
First High:	Sep 25	0.097	Jul 15	0.086	Sep 2	0.104
Second High:	Oct 9	0.091	Aug 13	0.084	Sep 1	0.095
Third High:	Jun 25	0.089	Aug 29	0.083	Aug 29	0.092
Fourth High:	Jun 30	0.089	Sep 7	0.083	Aug 28	0.089
National 2015 Std (0.070 ppm):						
# Days Above the Standard:		52		60		85
Nat'l Standard Design Value:		0.085		0.084		0.086
National Year Coverage:		100		99		100
California Std (0.070 ppm):						
# Days Above the Standard:		54		63		87
California Designation Value:		0.097		0.093		0.095
Expected Peak Day Concentration:		0.097		0.094		0.095
California Year Coverage:		99		98		99

Notes:

Eight-hour ozone averages and related statistics are available at Bakersfield-5558 California Avenue between 1994 and 2017. Some years in this range may not be represented.

All averages expressed in parts per million.

An exceedance of a standard is not necessarily related to a violation of the standard.

State and national statistics may differ for the following reasons:

National 8-hour averages are truncated to three decimal places; State 8-hour averages are rounded to three decimal places.

State criteria for ensuring that data are sufficiently complete for calculating 8-hour averages are more stringent than the national criteria.

Daily maximum 8-hour averages associated with the National 0.070 ppm standard exclude those 8-hour averages that have first hours between midnight and 6:00 am, Pacific Standard Time.

Daily maximum 8-hour averages associated with the National 0.070 ppm standard include only those 8-hour averages from days that have sufficient data for the day to be considered valid.

Top 4 Summary: Highest 4 Daily Maximum Hourly Nitrogen Dioxide Measurements

at Bakersfield-Municipal Airport

iADAM

	2015		2016		2017	
	Date	Measurement	Date	Measurement	Date	Measurement
National:						
First High:	Oct 13	55.0	Nov 14	58.1	Oct 16	62.5
Second High:	Oct 9	53.0	Sep 8	56.1	Dec 11	60.4
Third High:	Jan 8	51.0	Oct 22	50.2	Dec 15	59.3
Fourth High:	Jan 5	46.0	Nov 7	49.4	Dec 12	56.4
California:						
First High:	Oct 13	55	Nov 14	58	Oct 16	62
Second High:	Oct 9	53	Sep 8	56	Dec 11	60
Third High:	Jan 8	51	Oct 22	50	Dec 15	59
Fourth High:	Jan 5	46	Nov 7	49	Dec 12	56
National:						
1-Hour Standard Design Value:		52		48		48
1-Hour Standard 98th Percentile:		45.0		45.2		52.9
# Days Above the Standard:		0		0		0
Annual Standard Design Value:		12		11		13
California:						
1-Hour Std Designation Value:		70		60		60
Expected Peak Day Concentration:		66		62		59
# Days Above the Standard:		0		0		0
Annual Std Designation Value:		14		13		12
Annual Average:		12		11		12
Year Coverage:		89		99		95

Notes:

Hourly nitrogen dioxide measurements and related statistics are available at Bakersfield-Municipal Airport between 2012 and 2017. Some years in this range may not be represented.

All concentrations expressed in parts per billion.

An exceedance of a standard is not necessarily related to a violation of the standard.

Top 4 Summary: Highest 4 Daily Maximum Hourly Nitrogen Dioxide Measurements

at Edison

	2015		2016		2017	
	Date	Measurement	Date	Measurement	Date	Measurement
National:						
First High:	Jun 17	46.5	Sep 30	45.7	Sep 18	44.9
Second High:	Jul 1	40.7	Jun 21	36.5	Oct 24	33.2
Third High:	Jan 9	34.3	Aug 26	32.4	Dec 12	28.5
Fourth High:	Aug 5	33.7	Jan 12	30.5	Dec 14	28.2
California:						
First High:	Jun 17	46	Sep 30	45	Sep 18	44
Second High:	Jul 1	40	Jun 21	36	Oct 24	33
Third High:	Jan 9	34	Aug 26	32	Dec 12	28
Fourth High:	Aug 5	33	Jan 12	30	Dec 14	28
National:						
1-Hour Standard Design Value:		32		30		29
1-Hour Standard 98th Percentile:		32.9		26.8		26.5
# Days Above the Standard:		0		0		0
Annual Standard Design Value:		7		6		5
California:						
1-Hour Std Designation Value:		40		40		40
Expected Peak Day Concentration:		41		38		37
# Days Above the Standard:		0		0		0
Annual Std Designation Value:		6		6		6
Annual Average:		6		6		5
Year Coverage:		91		95		98

Notes:

Hourly nitrogen dioxide measurements and related statistics are available at Edison between 1988 and 2017. Some years in this range may not be represented.

All concentrations expressed in parts per billion.

An exceedance of a standard is not necessarily related to a violation of the standard.

Top 4 Summary: Highest 4 Daily Maximum Hourly Nitrogen Dioxide Measurements

at Bakersfield-5558 California Avenue

	2015		2016		2017	
	Date	Measurement	Date	Measurement	Date	Measurement
National:						
First High:	Sep 9	54.5	Oct 21	58.1	Dec 15	66.0
Second High:	Nov 21	52.7	Oct 22	55.1	Dec 14	63.1
Third High:	Oct 12	52.5	Sep 27	54.8	Nov 22	61.5
Fourth High:	Jan 8	52.2	Nov 14	54.6	Dec 29	61.1
California:						
First High:	Sep 9	54	Oct 21	58	Dec 15	66
Second High:	Jan 8	52	Oct 22	55	Dec 14	63
Third High:	Oct 12	52	Sep 27	54	Nov 22	61
Fourth High:	Nov 21	52	Nov 14	54	Dec 12	61
National:						
1-Hour Standard Design Value:		*		*		52
1-Hour Standard 98th Percentile:		49.5		49.8		58.1
# Days Above the Standard:		0		0		0
Annual Standard Design Value:		11		12		13
California:						
1-Hour Std Designation Value:		60		60		60
Expected Peak Day Concentration:		57		57		63
# Days Above the Standard:		0		0		0
Annual Std Designation Value:		11		12		12
Annual Average:		11		12		12
Year Coverage:		97		93		97

Notes:

Hourly nitrogen dioxide measurements and related statistics are available at Bakersfield-5558 California Avenue between 1994 and 2017. Some years in this range may not be represented.

All concentrations expressed in parts per billion.

An exceedance of a standard is not necessarily related to a violation of the standard.

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Annual Toxics Summary

Bakersfield-5558 California Avenue

Lead

nanograms per cubic meter

iADAM
FAQs

Read About New Estimated Risk

Year	Months Present	Minimum	Median	Mean	90th Percentile	Maximum	Standard Deviation	Number of Observations	Detection Limit	Estimated Risk
2017	----------	0.65	3.5	*	7.5	12.6	2.60	29	1.3	*
2016	----------	0.65	4.3	*	6.9	19.8	3.57	33	1.3	*
2015	----------	0.65	3.2	3.34	7.6	9.5	2.50	33	1.3	0.1
2014	----------	0.85	3.6	*	8.8	14	3.78	16	1.7	*
2013	----------	0.5	2.9	*	5.3	6.7	1.71	21	1.0	*
2012	----------	1.7	3.4	4.02	8.2	14	2.74	32	1.5	0.1
2011	----------	0.75	4.0	*	9.1	11	2.90	20	1.5	*
2010	----------	0.75	2.5	*	5.7	8.2	2.07	18	1.5	*
2009	----------	1.5	4.5	5.27	11.2	14	3.22	29	1.5	0.2
2008	----------	*	*	*	*	*	*	0	*	*
2007	----------	0.75	7.1	*	11.7	13	3.23	24	1.5	*
2006	----------	*	*	*	*	*	*	0	*	*
2005	----------	*	*	*	*	*	*	0	*	*
2004	----------	*	*	*	*	*	*	0	*	*
2003	----------	4.0	*	*	*	7.0	1.64	5	3.0	*
2002	----------	1.5	7.0	6.78	10	17	3.34	36	3.0	0.2
2001	----------	2	5.0	5.83	9.2	26	4.41	39	4.0	0.2
2000	----------	2	5.0	5.92	14.1	22	4.76	40	4.0	0.2
1999	----------	2	5.0	5.70	11.2	25	4.55	39	4.0	0.2
1998	----------	2	7.0	9.43	14	78	11.8	42	4.0	0.3
1997	----------	2	7.0	7.92	14	20	4.40	34	4.0	0.3
1996	----------	2	7.0	7.69	14.5	35	6.10	36	4.0	0.3
1995	----------	2	8.0	8.68	15.1	21	5.14	30	4.0	0.3
1994	----------	2	10	*	16	39	7.11	25	4.0	*
1993	----------	*	*	*	*	*	*	0	*	*
1992	----------	*	*	*	*	*	*	0	*	*
1991	----------	*	*	*	*	*	*	0	*	*
1990	----------	*	*	*	*	*	*	0	*	*
1989	----------	*	*	*	*	*	*	0	*	*

Graph It!

Toxics Statistics Home

Notes: Values below the Limit of Detection (LoD) assumed to be ½ LoD.
Means and risks shown only for years with data in all 12 months.
"*" means there was insufficient or no data available to determine the value.

Data Descriptions Page

ATTACHMENT B: PROJECT EMISSION CALCULATIONS

Orangewood Elementary

Kern-San Joaquin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Elementary School	13.96	1000sqft	10.85	13,960.00	0
Parking Lot	0.86	Acre	0.86	37,461.60	0
City Park	5.04	Acre	5.04	219,542.40	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	32
Climate Zone	3			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Estimated acreage based on Google Earth

Construction Phase -

Vehicle Trips - No increase in students or staff

Construction Off-road Equipment Mitigation -

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblLandUse	LotAcreage	0.32	10.85
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	15.43	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					
2019	0.2352	2.3032	1.6188	3.4300e-003	0.2793	0.1094	0.3887	0.1196	0.1019	0.2215	0.0000	307.9941	307.9941	0.0642	0.0000	309.5993
2020	0.4081	2.7450	2.3420	5.3800e-003	0.1291	0.1287	0.2578	0.0350	0.1209	0.1559	0.0000	479.8246	479.8246	0.0778	0.0000	481.7703
Maximum	**0.4081**	**2.7450**	**2.3420**	**5.3800e-003**	**0.2793**	**0.1287**	**0.3887**	**0.1196**	**0.1209**	**0.2215**	**0.0000**	**479.8246**	**479.8246**	**0.0778**	**0.0000**	**481.7703**

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					
2019	0.2352	2.3032	1.6188	3.4300e-003	0.1449	0.1094	0.2543	0.0564	0.1019	0.1583	0.0000	307.9938	307.9938	0.0642	0.0000	309.5990
2020	0.4081	2.7450	2.3420	5.3800e-003	0.1291	0.1287	0.2578	0.0350	0.1209	0.1559	0.0000	479.8242	479.8242	0.0778	0.0000	481.7700
Maximum	**0.4081**	**2.7450**	**2.3420**	**5.3800e-003**	**0.1449**	**0.1287**	**0.2578**	**0.0564**	**0.1209**	**0.1583**	**0.0000**	**479.8242**	**479.8242**	**0.0778**	**0.0000**	**481.7700**

	ROG	**NOx**	**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**	**32.92**	**0.00**	**20.80**	**40.89**	**0.00**	**16.74**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**6-1-2019**	**8-31-2019**	1.2280	1.2280
2	**9-1-2019**	**11-30-2019**	0.9874	0.9874
3	**12-1-2019**	**2-29-2020**	0.9290	0.9290
4	**3-1-2020**	**5-31-2020**	0.9066	0.9066
5	**6-1-2020**	**8-31-2020**	0.9058	0.9058
6	**9-1-2020**	**9-30-2020**	0.2954	0.2954
		Highest	1.2280	1.2280

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0695	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.5000e-004	3.5000e-004	0.0000	0.0000	3.8000e-004
Energy	1.8900e-003	0.0172	0.0144	1.0000e-004		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003	0.0000	51.0293	51.0293	1.8200e-003	6.5000e-004	51.2671
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	3.7716	0.0000	3.7716	0.2229	0.0000	9.3439
Water						0.0000	0.0000		0.0000	0.0000	0.1284	7.8113	7.9398	0.0135	3.8000e-004	8.3929
Total	**0.0714**	**0.0172**	**0.0146**	**1.0000e-004**	**0.0000**	**1.3100e-003**	**1.3100e-003**	**0.0000**	**1.3100e-003**	**1.3100e-003**	**3.9000**	**58.8410**	**62.7410**	**0.2383**	**1.0300e-003**	**69.0044**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0695	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.5000e-004	3.5000e-004	0.0000	0.0000	3.7000e-004
Energy	1.8900e-003	0.0172	0.0144	1.0000e-004		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003	0.0000	51.0293	51.0293	1.8200e-003	6.5000e-004	51.2671
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	3.7716	0.0000	3.7716	0.2229	0.0000	9.3439
Water						0.0000	0.0000		0.0000	0.0000	0.1284	7.8113	7.9398	0.0135	3.8000e-004	8.3929
Total	**0.0714**	**0.0172**	**0.0146**	**1.0000e-004**	**0.0000**	**1.3100e-003**	**1.3100e-003**	**0.0000**	**1.3100e-003**	**1.3100e-003**	**3.9000**	**58.8410**	**62.7410**	**0.2383**	**1.0300e-003**	**69.0043**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/29/2019	7/12/2019	5	10	
2	Grading	Grading	7/13/2019	8/23/2019	5	30	
3	Building Construction	Building Construction	8/24/2019	10/16/2020	5	300	
4	Paving	Paving	10/17/2020	11/13/2020	5	20	
5	Architectural Coating	Architectural Coating	11/14/2020	12/11/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0.86

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 20,940; Non-Residential Outdoor: 6,980; Striped Parking Area: 2,248 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Excavators	2	8.00	158	0.38
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
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

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	114.00	44.00	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	23.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	**0.0217**	**0.2279**	**0.1103**	**1.9000e-004**	**0.0903**	**0.0120**	**0.1023**	**0.0497**	**0.0110**	**0.0607**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

3.2 Site Preparation - 2019

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	3.8000e-004	2.7000e-004	2.6100e-003	1.0000e-005	7.3000e-004	1.0000e-005	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6870	0.6870	2.0000e-005	0.0000	0.6875
Total	**3.8000e-004**	**2.7000e-004**	**2.6100e-003**	**1.0000e-005**	**7.3000e-004**	**1.0000e-005**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6870**	**0.6870**	**2.0000e-005**	**0.0000**	**0.6875**

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					0.0352	0.0000	0.0352	0.0194	0.0000	0.0194	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	**0.0217**	**0.2279**	**0.1103**	**1.9000e-004**	**0.0352**	**0.0120**	**0.0472**	**0.0194**	**0.0110**	**0.0304**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

3.2 Site Preparation - 2019

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	3.8000e-004	2.7000e-004	2.6100e-003	1.0000e-005	7.3000e-004	1.0000e-005	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6870	0.6870	2.0000e-005	0.0000	0.6875
Total	**3.8000e-004**	**2.7000e-004**	**2.6100e-003**	**1.0000e-005**	**7.3000e-004**	**1.0000e-005**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6870**	**0.6870**	**2.0000e-005**	**0.0000**	**0.6875**

3.3 Grading - 2019

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					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0711	0.8178	0.5007	9.3000e-004		0.0357	0.0357		0.0329	0.0329	0.0000	83.5520	83.5520	0.0264	0.0000	84.2129
Total	**0.0711**	**0.8178**	**0.5007**	**9.3000e-004**	**0.1301**	**0.0357**	**0.1658**	**0.0540**	**0.0329**	**0.0868**	**0.0000**	**83.5520**	**83.5520**	**0.0264**	**0.0000**	**84.2129**

3.3 Grading - 2019

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	1.2700e-003	8.9000e-004	8.7100e-003	3.0000e-005	2.4200e-003	2.0000e-005	2.4400e-003	6.4000e-004	2.0000e-005	6.6000e-004	0.0000	2.2899	2.2899	7.0000e-005	0.0000	2.2915
Total	**1.2700e-003**	**8.9000e-004**	**8.7100e-003**	**3.0000e-005**	**2.4200e-003**	**2.0000e-005**	**2.4400e-003**	**6.4000e-004**	**2.0000e-005**	**6.6000e-004**	**0.0000**	**2.2899**	**2.2899**	**7.0000e-005**	**0.0000**	**2.2915**

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					0.0507	0.0000	0.0507	0.0210	0.0000	0.0210	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0711	0.8178	0.5007	9.3000e-004		0.0357	0.0357		0.0329	0.0329	0.0000	83.5519	83.5519	0.0264	0.0000	84.2128
Total	**0.0711**	**0.8178**	**0.5007**	**9.3000e-004**	**0.0507**	**0.0357**	**0.0865**	**0.0210**	**0.0329**	**0.0539**	**0.0000**	**83.5519**	**83.5519**	**0.0264**	**0.0000**	**84.2128**

3.3 Grading - 2019

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	1.2700e-003	8.9000e-004	8.7100e-003	3.0000e-005	2.4200e-003	2.0000e-005	2.4400e-003	6.4000e-004	2.0000e-005	6.6000e-004	0.0000	2.2899	2.2899	7.0000e-005	0.0000	2.2915
Total	**1.2700e-003**	**8.9000e-004**	**8.7100e-003**	**3.0000e-005**	**2.4200e-003**	**2.0000e-005**	**2.4400e-003**	**6.4000e-004**	**2.0000e-005**	**6.6000e-004**	**0.0000**	**2.2899**	**2.2899**	**7.0000e-005**	**0.0000**	**2.2915**

3.4 Building Construction - 2019

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	0.1086	0.9696	0.7895	1.2400e-003		0.0593	0.0593		0.0558	0.0558	0.0000	108.1479	108.1479	0.0264	0.0000	108.8066
Total	**0.1086**	**0.9696**	**0.7895**	**1.2400e-003**		**0.0593**	**0.0593**		**0.0558**	**0.0558**	**0.0000**	**108.1479**	**108.1479**	**0.0264**	**0.0000**	**108.8066**

3.4 Building Construction - 2019

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	9.9300e-003	0.2712	0.0547	5.9000e-004	0.0135	2.0400e-003	0.0155	3.9000e-003	1.9500e-003	5.8500e-003	0.0000	56.2060	56.2060	4.7900e-003	0.0000	56.3257
Worker	0.0222	0.0155	0.1523	4.4000e-004	0.0423	3.1000e-004	0.0426	0.0112	2.8000e-004	0.0115	0.0000	40.0270	40.0270	1.1500e-003	0.0000	40.0557
Total	**0.0322**	**0.2868**	**0.2070**	**1.0300e-003**	**0.0558**	**2.3500e-003**	**0.0581**	**0.0151**	**2.2300e-003**	**0.0174**	**0.0000**	**96.2330**	**96.2330**	**5.9400e-003**	**0.0000**	**96.3814**

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	0.1086	0.9696	0.7895	1.2400e-003		0.0593	0.0593		0.0558	0.0558	0.0000	108.1478	108.1478	0.0264	0.0000	108.8065
Total	**0.1086**	**0.9696**	**0.7895**	**1.2400e-003**		**0.0593**	**0.0593**		**0.0558**	**0.0558**	**0.0000**	**108.1478**	**108.1478**	**0.0264**	**0.0000**	**108.8065**

3.4 Building Construction - 2019

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	9.9300e-003	0.2712	0.0547	5.9000e-004	0.0135	2.0400e-003	0.0155	3.9000e-003	1.9500e-003	5.8500e-003	0.0000	56.2060	56.2060	4.7900e-003	0.0000	56.3257
Worker	0.0222	0.0155	0.1523	4.4000e-004	0.0423	3.1000e-004	0.0426	0.0112	2.8000e-004	0.0115	0.0000	40.0270	40.0270	1.1500e-003	0.0000	40.0557
Total	**0.0322**	**0.2868**	**0.2070**	**1.0300e-003**	**0.0558**	**2.3500e-003**	**0.0581**	**0.0151**	**2.2300e-003**	**0.0174**	**0.0000**	**96.2330**	**96.2330**	**5.9400e-003**	**0.0000**	**96.3814**

3.4 Building Construction - 2020

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	0.2205	1.9954	1.7522	2.8000e-003		0.1162	0.1162		0.1092	0.1092	0.0000	240.8744	240.8744	0.0588	0.0000	242.3435
Total	**0.2205**	**1.9954**	**1.7522**	**2.8000e-003**		**0.1162**	**0.1162**		**0.1092**	**0.1092**	**0.0000**	**240.8744**	**240.8744**	**0.0588**	**0.0000**	**242.3435**

3.4 Building Construction - 2020

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	0.0186	0.5604	0.1084	1.3300e-003	0.0305	3.1400e-003	0.0337	8.8200e-003	3.0000e-003	0.0118	0.0000	125.9514	125.9514	0.0101	0.0000	126.2029
Worker	0.0456	0.0309	0.3067	9.7000e-004	0.0955	6.8000e-004	0.0962	0.0254	6.2000e-004	0.0260	0.0000	87.6093	87.6093	2.2600e-003	0.0000	87.6658
Total	**0.0642**	**0.5912**	**0.4151**	**2.3000e-003**	**0.1261**	**3.8200e-003**	**0.1299**	**0.0342**	**3.6200e-003**	**0.0378**	**0.0000**	**213.5607**	**213.5607**	**0.0123**	**0.0000**	**213.8687**

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	0.2205	1.9954	1.7522	2.8000e-003		0.1162	0.1162		0.1092	0.1092	0.0000	240.8741	240.8741	0.0588	0.0000	242.3432
Total	**0.2205**	**1.9954**	**1.7522**	**2.8000e-003**		**0.1162**	**0.1162**		**0.1092**	**0.1092**	**0.0000**	**240.8741**	**240.8741**	**0.0588**	**0.0000**	**242.3432**

3.4 Building Construction - 2020

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	0.0186	0.5604	0.1084	1.3300e-003	0.0305	3.1400e-003	0.0337	8.8200e-003	3.0000e-003	0.0118	0.0000	125.9514	125.9514	0.0101	0.0000	126.2029
Worker	0.0456	0.0309	0.3067	9.7000e-004	0.0955	6.8000e-004	0.0962	0.0254	6.2000e-004	0.0260	0.0000	87.6093	87.6093	2.2600e-003	0.0000	87.6658
Total	**0.0642**	**0.5912**	**0.4151**	**2.3000e-003**	**0.1261**	**3.8200e-003**	**0.1299**	**0.0342**	**3.6200e-003**	**0.0378**	**0.0000**	**213.5607**	**213.5607**	**0.0123**	**0.0000**	**213.8687**

3.5 Paving - 2020

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	0.0136	0.1407	0.1465	2.3000e-004		7.5300e-003	7.5300e-003		6.9300e-003	6.9300e-003	0.0000	20.0282	20.0282	6.4800e-003	0.0000	20.1902
Paving	1.1300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0147**	**0.1407**	**0.1465**	**2.3000e-004**		**7.5300e-003**	**7.5300e-003**		**6.9300e-003**	**6.9300e-003**	**0.0000**	**20.0282**	**20.0282**	**6.4800e-003**	**0.0000**	**20.1902**

3.5 Paving - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	3.9000e-004	3.8800e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.1084	1.1084	3.0000e-005	0.0000	1.1091
Total	**5.8000e-004**	**3.9000e-004**	**3.8800e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.1084**	**1.1084**	**3.0000e-005**	**0.0000**	**1.1091**

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	0.0136	0.1407	0.1465	2.3000e-004		7.5300e-003	7.5300e-003		6.9300e-003	6.9300e-003	0.0000	20.0282	20.0282	6.4800e-003	0.0000	20.1901
Paving	1.1300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0147**	**0.1407**	**0.1465**	**2.3000e-004**		**7.5300e-003**	**7.5300e-003**		**6.9300e-003**	**6.9300e-003**	**0.0000**	**20.0282**	**20.0282**	**6.4800e-003**	**0.0000**	**20.1901**

3.5 Paving - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	3.9000e-004	3.8800e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.1084	1.1084	3.0000e-005	0.0000	1.1091
Total	**5.8000e-004**	**3.9000e-004**	**3.8800e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.1084**	**1.1084**	**3.0000e-005**	**0.0000**	**1.1091**

3.6 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1049					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**0.1073**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

3.6 Architectural Coating - 2020

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	8.9000e-004	6.0000e-004	5.9500e-003	2.0000e-005	1.8500e-003	1.0000e-005	1.8700e-003	4.9000e-004	1.0000e-005	5.0000e-004	0.0000	1.6996	1.6996	4.0000e-005	0.0000	1.7007
Total	**8.9000e-004**	**6.0000e-004**	**5.9500e-003**	**2.0000e-005**	**1.8500e-003**	**1.0000e-005**	**1.8700e-003**	**4.9000e-004**	**1.0000e-005**	**5.0000e-004**	**0.0000**	**1.6996**	**1.6996**	**4.0000e-005**	**0.0000**	**1.7007**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1049					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**0.1073**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

3.6 Architectural Coating - 2020

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	8.9000e-004	6.0000e-004	5.9500e-003	2.0000e-005	1.8500e-003	1.0000e-005	1.8700e-003	4.9000e-004	1.0000e-005	5.0000e-004	0.0000	1.6996	1.6996	4.0000e-005	0.0000	1.7007
Total	**8.9000e-004**	**6.0000e-004**	**5.9500e-003**	**2.0000e-005**	**1.8500e-003**	**1.0000e-005**	**1.8700e-003**	**4.9000e-004**	**1.0000e-005**	**5.0000e-004**	**0.0000**	**1.6996**	**1.6996**	**4.0000e-005**	**0.0000**	**1.7007**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Elementary School	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
Elementary School	9.50	7.30	7.30	65.00	30.00	5.00	63	25	12
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.472669	0.031291	0.166276	0.125679	0.021211	0.006775	0.020722	0.144029	0.001634	0.001785	0.006011	0.000972	0.000946
Elementary School	0.472669	0.031291	0.166276	0.125679	0.021211	0.006775	0.020722	0.144029	0.001634	0.001785	0.006011	0.000972	0.000946
Parking Lot	0.472669	0.031291	0.166276	0.125679	0.021211	0.006775	0.020722	0.144029	0.001634	0.001785	0.006011	0.000972	0.000946

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	32.3234	32.3234	1.4600e-003	3.0000e-004	32.4501
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	32.3234	32.3234	1.4600e-003	3.0000e-004	32.4501
NaturalGas Mitigated	1.8900e-003	0.0172	0.0144	1.0000e-004		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003	0.0000	18.7059	18.7059	3.6000e-004	3.4000e-004	18.8171
NaturalGas Unmitigated	1.8900e-003	0.0172	0.0144	1.0000e-004		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003	0.0000	18.7059	18.7059	3.6000e-004	3.4000e-004	18.8171

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
Elementary School	350536	1.8900e-003	0.0172	0.0144	1.0000e-004		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003	0.0000	18.7059	18.7059	3.6000e-004	3.4000e-004	18.8171
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**1.8900e-003**	**0.0172**	**0.0144**	**1.0000e-004**		**1.3100e-003**	**1.3100e-003**		**1.3100e-003**	**1.3100e-003**	**0.0000**	**18.7059**	**18.7059**	**3.6000e-004**	**3.4000e-004**	**18.8171**

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
Elementary School	350536	1.8900e-003	0.0172	0.0144	1.0000e-004		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003	0.0000	18.7059	18.7059	3.6000e-004	3.4000e-004	18.8171
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**1.8900e-003**	**0.0172**	**0.0144**	**1.0000e-004**		**1.3100e-003**	**1.3100e-003**		**1.3100e-003**	**1.3100e-003**	**0.0000**	**18.7059**	**18.7059**	**3.6000e-004**	**3.4000e-004**	**18.8171**

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
Elementary School	97999.2	28.5091	1.2900e-003	2.7000e-004	28.6208
Parking Lot	13111.6	3.8143	1.7000e-004	4.0000e-005	3.8293
Total		**32.3234**	**1.4600e-003**	**3.1000e-004**	**32.4501**

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
Elementary School	97999.2	28.5091	1.2900e-003	2.7000e-004	28.6208
Parking Lot	13111.6	3.8143	1.7000e-004	4.0000e-005	3.8293
Total		**32.3234**	**1.4600e-003**	**3.1000e-004**	**32.4501**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

	ROG	NOx	CO	SO2	Fugitive 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	0.0695	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.5000e-004	3.5000e-004	0.0000	0.0000	3.7000e-004
Unmitigated	0.0695	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.5000e-004	3.5000e-004	0.0000	0.0000	3.8000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0105					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0590					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.5000e-004	3.5000e-004	0.0000	0.0000	3.8000e-004
Total	**0.0695**	**0.0000**	**1.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**3.5000e-004**	**3.5000e-004**	**0.0000**	**0.0000**	**3.8000e-004**

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	0.0105					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0590					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.5000e-004	3.5000e-004	0.0000	0.0000	3.7000e-004
Total	**0.0695**	**0.0000**	**1.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**3.5000e-004**	**3.5000e-004**	**0.0000**	**0.0000**	**3.7000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	7.9398	0.0135	3.8000e-004	8.3929
Unmitigated	7.9398	0.0135	3.8000e-004	8.3929

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 6.00507	6.1143	2.8000e-004	6.0000e-005	6.1383
Elementary School	0.404797 / 1.04091	1.8255	0.0133	3.3000e-004	2.2547
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**7.9398**	**0.0136**	**3.9000e-004**	**8.3929**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 6.00507	6.1143	2.8000e-004	6.0000e-005	6.1383
Elementary School	0.404797 / 1.04091	1.8255	0.0133	3.3000e-004	2.2547
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**7.9398**	**0.0136**	**3.9000e-004**	**8.3929**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	3.7716	0.2229	0.0000	9.3439
Unmitigated	3.7716	0.2229	0.0000	9.3439

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.43	0.0873	5.1600e-003	0.0000	0.2163
Elementary School	18.15	3.6843	0.2177	0.0000	9.1277
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**3.7716**	**0.2229**	**0.0000**	**9.3439**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.43	0.0873	5.1600e-003	0.0000	0.2163
Elementary School	18.15	3.6843	0.2177	0.0000	9.1277
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**3.7716**	**0.2229**	**0.0000**	**9.3439**

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

ATTACHMENT C: CUMULATIVE PROJECTS LIST

6-Mile Cumulative Tentative Tracts

OBJECTID	SUBDIVIDER	ENGINEER	STATUS	ORIGLOTS	REMLOTS	ORIGACRE	REMACRE	TRACTNO
2682	NATIONAL FARM WORK	PORTER-ROBERTSON	ACTIVE	36	0	7.22	0	6424
2691	G5 ENTERPRISES, INC.	MORELAND CONSULTING, INC.	ACTIVE	61	0	16.51	0	6293
2710	JCS HOMES	HENDRICKS, JERRY	ACTIVE	0	22	0	5.03	6487
2713	ANDRE, PAUL	DEWALT CORP	ACTIVE	166	0	43.81	0	6650
2729	LENOX HOMES	DEWALT CORP	ACTIVE	0	0	0	0	6656
2762	CARRIAGE HOMES	MORELAND CONSULTING INC.	ACTIVE	15	0	0	0	6096
5244	DANCO DEV.	CARTER BURGESS	ACTIVE	57	57	1.11	11.18	6459
5248	BAK BULLFROG LLC	R THOMPSON CONSULTING	ACTIVE	153	153	5.5	55.09	6503
5250	NILES STREET LUXURY TWNHSES LLC	M.S. WALKER & ASSOC INC	ACTIVE	16	16	4.89	4.89	6510
5252	CAL-KERN DEV. LLC	QUAD KNOPF	ACTIVE	240	240	6.07	60.79	6515
5253	JAMES T MURPHY	PINNACLE ENGINEERING	ACTIVE	29	29	2.48	24.81	6519
5254	BVGG LLC.	PINNACLE ENGINEERING	ACTIVE	425	425	1.1	110.6	6521
5255	RYER ISLAND LAND CO.	PINNACLE ENGINEERING	ACTIVE	249	249	6.08	60.8	6522
5266	CRT LAND COMPANY INC	PINNACLE ENGINEERING	ACTIVE	138	138	7.03	70.33	6571
5278	MARSHAL PLAN LTD	PORTER-ROBERTSON	ACTIVE	128	128	2.99	29.96	6645
5285	MOUNTAIN VIEW BRAVO LLC	McINTOSH & ASSOCIATES	ACTIVE	139	139	4.9	49.09	6696
5287	STEVE BONESO	DEWALT CORPORATION	ACTIVE	73	73	3.02	30.24	6730
5298	JACK HOOD	CORNERSTONE ENGINEERING INC	ACTIVE	73	73	2	20.03	6780
5309	G.F.C. PROPERTIES LLC	SAN JOAQUIN ENGINEERING	ACTIVE	82	82	7.59	75.91	6842
5311	CAVU/ROCK PROPERTIES PROJECT I LLC	SAN JOAQUIN ENGINEERING	ACTIVE/RECORDED	196	177	5.31	45.77	6850
5318	ANT HILL REAL PROPERTIES HOLDINGS	PORTER-ROBERTSON	ACTIVE	310	310	8.39	83.92	6866
5320	COTTONWOOD VILLAS, LLC	PROVOST & PRITCHARD	ACTIVE	223	223	4.06	40.6	6871
5322	GSJ COMPANY, LLC	CARTER BURGESS	ACTIVE	373	373	1.3	130.1	6876
5323	FAIRFAX HOLDINGS, LP	McINTOSH & ASSOCIATES	ACTIVE	130	130	3.26	32.63	6892
5325	FAIRFAX HOLDINGS, LP	McINTOSH & ASSOCIATES	ACTIVE	61	61	1.77	17.72	6902
5329	FAIRFAX HOLDINGS, LP	McINTOSH & ASSOCIATES	ACTIVE	172	172	4.02	40.23	6939
5331	S.K.Y. 21 LLC & NE 21 VENTURES LLC	SIKAND ENGINEERING ASSOC	ACTIVE	119	119	1.57	157.75	6961
5332	S.K.Y. 21 LLC & NE 21 VENTURES	SIKAND ENGINEERING ASSOC	ACTIVE	411	411	1.43	143.77	6962
5333	S.K.Y. 21 LLC & NE 21 VENTURES LLC	SIKAND ENGINEERING ASSOC	ACTIVE	438	438	1.42	142.45	6963
5334	S.K.Y. 21 LLC & NE 21 VENTURES LLC	SIKAND ENGINEERING ASSOC	ACTIVE	402	402	1.92	192.31	6964
5342	McMILLIN TUSCANY LLC	RICK ENGINEERING CO	ACTIVE	36	36	3.74	37.43	7027
5350	CAL KERN DEV. III	CANNON ASSOC	ACTIVE	166	166	4.09	40.9	7056
5361	ARCADIA VILLA LLC	PROJECT ENGINEERING GROUP	ACTIVE	4	4	2.37	2.37	7106
5364	KEVIN BROOKHART	PINNACLE ENGINEERING	ACTIVE	1	1	0.33	0.33	7126
5365	BAKER STREET VILLAGE LLC	PORTER & ASSOCIATES, INC	ACTIVE	4	4	6.61	6.61	7135
5367	FAIRFAX HOLDINGS L.P.	McINTOSH & ASSOCIATES	ACTIVE	171	171	4.02	40.23	7152
5368	FAIRFAX HOLDINGS L.P.	McINTOSH & ASSOCIATES	ACTIVE	180	180	3.84	38.41	7153
5385	THOMAS & LISA CAROSELLA	McINTOSH & ASSOCIATES	ACTIVE/RECORDED	322	285	3.43	313.02	6137
5386	SAGE COMMUNITY GROUP, INC.	PINNACLE ENGINEERING	ACTIVE/RECORDED	326	224	1.21	60.77	6148
5389	MONTE CARLO, LLC	SAN JOAQUIN ENGINEERING	ACTIVE	366	366	1.04	104.91	6182
5391	MORNING DRIVE 300 LLC	SAN JOAQUIN ENGINEERING	ACTIVE	281	281	8.39	83.96	6191
5395	REX MARTIN	SAN JOAQUIN ENGINEERING	ACTIVE	13	13	1	10	6251
5397	MT VERNON BUSINESS CENTRE LLC	M.S. WALKER & ASSOC INC	ACTIVE	31	31	1.13	113.09	6296
5398	ADH CORPORATION	McINTOSH & ASSOCIATES	ACTIVE/RECORDED	316	125	8.11	36.71	6297
5399	SYCAMORE VENTURES	CORNERSTONE ENGINEERING INC	ACTIVE	100	100	2.98	29.87	6318
5401	K HOVANANIAN COMMUNITIES INC	McINTOSH & ASSOCIATES	ACTIVE	247	247	8.06	80.67	6352
5408	GLOBAL INVESTMENT & DEV. L.L	QUAD KNOPF	ACTIVE/RECORDED	311	214	7.98	52.63	6426
5438	BAKERSFIELD-WASCO INVESTERS, LLC	McINTOSH & ASSOCIATES	ACTIVE	258	258	8.6	86.06	7242
5464	S & S HOMES	NEW VISION CIVIL ENGRG	ACTIVE	174	174	1.17	117.63	6465
5465	ESTATES AT RIO BRAVO LP	P.C.S. LAND SERVICES	ACTIVE	165	165	1.37	137.45	7168
5466	ESTATES AT RIO BRAVO LP	P.C.S. LAND SERVICES	ACTIVE	186	186	8.4	84.08	7167
5467	ESTATES AT RIO BRAVO LP	P.C.S. LAND SERVICES	ACTIVE	31	31	3.42	34.25	7170
5468	ESTATES AT RIO BRAVO LP	P.C.S. LAND SERVICES	ACTIVE	151	151	8.17	81.7	7169
5486	K HOVNANIAN HOMES	PINNACLE ENGINEERING	ACTIVE/RECORDED	751	239	1.83	56.23	6444
5488	CESAR GOANA & TK DEV	CORNERSTONE ENGINEERING INC	ACTIVE	21	21	1.73	17.38	6499
5493	WILLIAMS DEV. INC	PORTER-ROBERTSON	ACTIVE	116	116	2.34	23.42	6378
5512	ROLAND F SCHOLZ	SAN JOAQUIN ENGINEERING	ACTIVE	1	1	0.7	0.7	6905
5513	4200 PANORAMA LLC	DEWALT CORPORATION	ACTIVE	34	34	8.26	8.26	6543
5515	AUBURN OAKS DEVELOPERS, LLC	SAN JOAQUIN ENGINEERING	ACTIVE	69	69	1.27	12.73	7325
5516	LENOX HOMES	McINTOSH & ASSOCIATES	ACTIVE	95	95	7.04	70.43	6568
5517	LENOX HOMES	McINTOSH & ASSOCIATES	ACTIVE	63	63	2.09	20.92	6586
5520	LENOX HOMES	McINTOSH & ASSOCIATES	ACTIVE	298	298	1.05	105.44	6567
5523	NICKEL FAMILY LLC	SAN JOAQUIN ENGINEERING	ACTIVE	89	89	3.31	33.11	6547
5524	A & E UNION	PORTER-ROBERTSON	ACTIVE	22	22	6.97	6.97	6433
5525	ANDREW R FULLER & STEP S GREENE	McINTOSH & ASSOCIATES	ACTIVE	17	17	1.9	19.07	6736
5526	RIO BRAVO HEIGHTS LLC	McINTOSH & ASSOCIATES	ACTIVE	92	92	5.6	56.04	5517
5527	G.F.C. PROPERTIES LLC	SAN JOAQUIN ENGINEERING	ACTIVE	108	108	4.67	46.7	6839
5528	G.F.C. PROPERTIES LLC	SAN JOAQUIN ENGINEERING	ACTIVE	101	101	3.95	39.58	6840
5529	G.F.C. PROPERTIES LLC	SAN JOAQUIN ENGINEERING	ACTIVE	80	80	3.09	30.97	6841
5530	G.F.C. PROPERTIES LLC	SAN JOAQUIN ENGINEERING	ACTIVE	89	89	6.04	60.45	6843
5531	G.F.C. PROPERTIES, LLC	SAN JOAQUIN ENGINEERING	ACTIVE	104	104	6.51	65.15	6844
5533	K HOVANIAN HOMES	HUNSAKER & ASSOC	PENDING	254	254	5.37	53.71	7337
5535	RS & B LAND DEV.	STANTEC CONSULTING INC	ACTIVE	140	140	4.96	49.68	7141
5536	KERN HIGHLAND PARTNERS	SAN JOAQUIN ENGINEERING	ACTIVE/RECORDED	95	62	2.93	17.88	6383
5540	MESA MARIN, LLC	FORMA ENGINEERING	ACTIVE	54	54	1.13	11.32	7343

6-Mile Cumulative Tentative Parcels

OBJECTID	SUBDIVIDER	ENGINEER	STATUS	ORIGLOTS	REMLOTS	ORIGACRE	REMACRE	FILENO
2896	LOPEZ, KEN	LANDMARK SURVEY & ENG	ACTIVE	4	0	7.21	0	P11156
2906	ISAIAH BUSTAMANTE	JON F. KOEHNE	ACTIVE	2	0	5.04	0	P11297
2912	PEREZ, DORIS	HIGHER GROUND LAND SURVEY	ACTIVE	2	0	0.388	0	P11307
2913	MUNOZ, OLIVIA	NELMS SURVEYING	ACTIVE	2	0	19.64	0	P10880
2914	MCINTOSH & ASSOC	C&F MASONRY, INC	ACTIVE	4	0	7.82	0	P11351
2917	GUTIERREZ, EFREN & SMITH, OSCAR	PATRICK & HENDERSON	PENDING	4	0	3.3	0	P11315
2922	CERVANTES, ANTONIO & ENGRACIA	PLYLER, DAVID	PENDING	3	0	0.68	0	P11340
2936	MORIN, ERNEST	PACIFIC ENGINEERING	ACTIVE	3	0	10	0	P11219
2945	MATHERS, LEE	NELMS SURVEYING	ACTIVE	4	0	1.72	0	P11393
2951	ANDRE, PAUL	DEWALT CORP	ACTIVE	38	0	47.56	0	P11273
2971	PMH & NCR HOLDINGS	MEYER, RICHARD	ACTIVE	3	0	8.77	0	P11230
2977	SANTA CRUZ, JOE & SALLY	NELMS SURVEYING	ACTIVE	4	0	0	0	P11531
2980	MAYA HOLDINGS	NELMS SURVEYING	ACTIVE	4	0	1.26	0	P11612
3002	CERVANTES, JOSE & MARIE	HUGHES, WILEY	PENDING	4	0	0	0	P11682
3019	LINCOLN PROPERTIES, INC.	PATRICK AND HENDERSON, INC.	ACTIVE	4	0	2.92	0	P11856
3030	BAKERSFIELD INVESTMENTS, INC	BERRY & ASSOCIATES	ACTIVE	6	0	12.82	0	P11892
3037	LOPEZ, KENNETH F. & CONWAY F.	LANDMARK SURVEYING & ENGINEERING	ACTIVE	4	4	0	0	P11156
3049	ANDRADE, LUIS & ELOISA	NELMS SURVEYING, INC.	PENDING	2	0	0	0	P11470
3998	S.K.Y. 21 LLC	SIKAND ENGINEERING ASSOC	ACTIVE	0	24	636.25	636.25	P11618
3999	STEVEN BONESO FAMILY TRUST	McINTOSH & ASSOCIATES	ACTIVE	0	4	39.98	39.98	P11698
4012	ADH CORP	McINTOSH & ASSOCIATES	ACTIVE	0	14	18.58	18.58	P11246
4018	NAKANOGUMI CORP/SBD GROUP INC	FRANK A SLINKARD	ACTIVE	0	2	16.16	16.16	P11613
4019	ARNULFO ZEPEDA	NELMS SURVEYING INC	ACTIVE	0	3	2.29	2.29	P11472
4020	JIM L CROMPTON	CORNERSTONE ENGINEERING	ACTIVE	0	4	1.83	1.83	P11670
4025	RAMSUM & VLAHOPOULIOTIS	DEWALT CORPORATION	ACTIVE	0	9	10.04	10.04	P11548
4027	WESTMINSTER CAPITAL INC	McINTOSH & ASSOCIATES	ACTIVE	0	4	610	610	P11334R
4062	WORLD OF PENTECOST	HUGHES SURVEYING	ACTIVE	0	2	17.24	17.24	P12087
4067	COMMANCHE, LLC	CORNERSTONE ENGINEERING INC	ACTIVE/RECORDED	0	3	7.71	2.52	P12229

ATTACHMENT D: CARB 2015 AND 2020 ESTIMATED EMISSION INVENTORIES

2016 SIP Emission Projection Data

2015 Estimated Annual Average Emissions

SAN JOAQUIN VALLEY AIR BASIN

All emissions are represented in Tons per Day and reflect the most current data provided to ARB.

See detailed information.

Start a new query.

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5	NH3
FUEL COMBUSTION	18.5	3.5	24.8	27.0	2.3	5.0	4.8	4.7	2.1
WASTE DISPOSAL	495.3	25.7	0.5	0.3	0.1	0.9	0.3	0.1	10.3
CLEANING AND SURFACE COATINGS	26.0	23.6	-	-	-	0.3	0.3	0.3	0.0
PETROLEUM PRODUCTION AND MARKETING	112.0	18.3	1.1	0.4	0.5	0.2	0.1	0.1	0.0
INDUSTRIAL PROCESSES	18.8	17.7	1.3	3.7	3.3	19.0	8.6	3.3	1.6
*** TOTAL STATIONARY SOURCES**	**670.6**	**88.8**	**27.7**	**31.4**	**6.2**	**25.3**	**14.1**	**8.5**	**14.1**
AREAWIDE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
SOLVENT EVAPORATION	52.7	47.9	-	-	-	-	-	-	116.3
MISCELLANEOUS PROCESSES	761.7	102.9	53.3	8.1	0.3	467.5	233.8	41.3	193.4
*** TOTAL AREAWIDE SOURCES**	**814.4**	**150.8**	**53.3**	**8.1**	**0.3**	**467.5**	**233.8**	**41.3**	**309.7**
MOBILE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
ON-ROAD MOTOR VEHICLES	42.5	38.6	276.3	141.6	0.6	8.3	8.2	4.2	4.1
OTHER MOBILE SOURCES	35.4	31.3	189.3	82.2	0.3	6.1	6.0	5.5	0.0
*** TOTAL MOBILE SOURCES**	**77.9**	**69.9**	**465.6**	**223.8**	**0.9**	**14.4**	**14.1**	**9.7**	**4.2**
GRAND TOTAL FOR SAN JOAQUIN VALLEY AIR BASIN	**1562.8**	**309.4**	**546.6**	**263.3**	**7.5**	**507.2**	**262.1**	**59.4**	**328.0**

Start a new query.

2016 SIP Emission Projection Data

2015 Estimated Annual Average Emissions

KERN COUNTY

All emissions are represented in Tons per Day and reflect the most current data provided to ARB.

See detailed information.

Start a new query.

KERN COUNTY COUNTY - MOJAVE DESERT AIR BASIN

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5	NH3
FUEL COMBUSTION	0.5	0.1	0.7	2.4	0.2	0.4	0.4	0.3	0.0
WASTE DISPOSAL	7.6	0.1	0.0	-	0.0	0.0	0.0	0.0	0.1
CLEANING AND SURFACE COATINGS	0.9	0.8	-	-	-	0.0	0.0	0.0	-
PETROLEUM PRODUCTION AND MARKETING	0.2	0.2	-	-	-	-	-	-	-
INDUSTRIAL PROCESSES	0.1	0.1	9.3	16.7	7.4	3.3	2.7	1.6	0.1
*** TOTAL STATIONARY SOURCES**	**9.3**	**1.2**	**10.0**	**19.1**	**7.6**	**3.7**	**3.0**	**1.9**	**0.1**
AREAWIDE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
SOLVENT EVAPORATION	1.4	1.3	-	-	-	-	-	-	1.4
MISCELLANEOUS PROCESSES	3.4	1.2	11.0	0.6	0.0	18.3	9.5	2.5	0.7
*** TOTAL AREAWIDE SOURCES**	**4.9**	**2.4**	**11.0**	**0.6**	**0.0**	**18.3**	**9.5**	**2.5**	**2.1**
MOBILE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
ON-ROAD MOTOR VEHICLES	1.9	1.7	12.4	6.3	0.0	0.3	0.3	0.2	0.2
OTHER MOBILE SOURCES	5.2	5.1	23.7	6.4	0.3	3.0	3.0	2.9	0.0
*** TOTAL MOBILE SOURCES**	**7.1**	**6.8**	**36.1**	**12.7**	**0.3**	**3.4**	**3.3**	**3.1**	**0.2**
TOTAL KERN COUNTY IN MOJAVE DESERT	**21.2**	**10.4**	**57.0**	**32.3**	**8.0**	**25.4**	**15.8**	**7.6**	**2.3**

KERN COUNTY COUNTY - SAN JOAQUIN VALLEY AIR BASIN

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5	NH3
FUEL COMBUSTION	13.0	1.9	10.3	8.3	0.7	2.8	2.7	2.7	1.5
WASTE DISPOSAL	207.8	11.4	0.1	0.0	0.0	0.1	0.0	0.0	4.9
CLEANING AND SURFACE COATINGS	2.8	2.5	-	-	-	0.0	0.0	0.0	-
PETROLEUM PRODUCTION AND MARKETING	47.2	12.9	1.0	0.4	0.4	0.2	0.1	0.1	0.0
INDUSTRIAL PROCESSES	2.2	2.0	0.1	0.1	0.1	3.3	1.4	0.5	0.1

*** TOTAL STATIONARY SOURCES**	**273.0**	**30.8**	**11.5**	**8.8**	**1.2**	**6.4**	**4.3**	**3.4**	**6.7**
AREAWIDE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
SOLVENT EVAPORATION	10.5	9.6	-	-	-	-	-	-	28.0
MISCELLANEOUS PROCESSES	63.6	9.9	5.2	1.3	0.0	61.6	30.7	5.6	17.0
*** TOTAL AREAWIDE SOURCES**	**74.0**	**19.5**	**5.2**	**1.3**	**0.0**	**61.6**	**30.7**	**5.6**	**45.0**
MOBILE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
ON-ROAD MOTOR VEHICLES	7.9	7.1	48.6	33.2	0.1	1.8	1.7	0.9	0.9
OTHER MOBILE SOURCES	4.8	4.2	27.4	13.9	0.0	0.7	0.7	0.7	0.0
*** TOTAL MOBILE SOURCES**	**12.7**	**11.3**	**76.0**	**47.1**	**0.2**	**2.5**	**2.5**	**1.6**	**0.9**
TOTAL KERN COUNTY IN SAN JOAQUIN VALLEY	**359.7**	**61.6**	**92.8**	**57.1**	**1.4**	**70.5**	**37.5**	**10.5**	**52.5**
GRAND TOTAL FOR KERN COUNTY	**380.9**	**72.1**	**149.8**	**89.5**	**9.4**	**96.0**	**53.4**	**18.1**	**54.8**

Start a new query.

CONTACT US

(800) 242-4450 | helpline@arb.ca.gov
1001 I Street, Sacramento, CA 95814
P.O. Box 2815, Sacramento, CA 95812

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2016 SIP Emission Projection Data

2020 Estimated Annual Average Emissions

SAN JOAQUIN VALLEY AIR BASIN

All emissions are represented in Tons per Day and reflect the most current data provided to ARB.

See detailed information.

Start a new query.

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5	NH3
FUEL COMBUSTION	17.9	3.2	24.7	24.1	2.4	4.8	4.7	4.6	2.2
WASTE DISPOSAL	527.3	26.9	0.6	0.3	0.2	0.9	0.3	0.2	11.2
CLEANING AND SURFACE COATINGS	27.8	25.2	-	-	-	0.3	0.3	0.3	0.0
PETROLEUM PRODUCTION AND MARKETING	111.0	16.6	1.0	0.4	0.4	0.2	0.1	0.1	0.0
INDUSTRIAL PROCESSES	20.6	19.5	1.4	3.9	3.6	20.9	9.5	3.6	1.7
*** TOTAL STATIONARY SOURCES**	**704.7**	**91.3**	**27.7**	**28.6**	**6.5**	**27.2**	**14.9**	**8.7**	**15.2**
AREAWIDE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
SOLVENT EVAPORATION	55.0	49.9	-	-	-	-	-	-	113.1
MISCELLANEOUS PROCESSES	761.8	103.0	53.2	7.9	0.3	473.4	236.8	41.8	193.9
*** TOTAL AREAWIDE SOURCES**	**816.8**	**152.8**	**53.2**	**7.9**	**0.3**	**473.4**	**236.8**	**41.8**	**307.0**
MOBILE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
ON-ROAD MOTOR VEHICLES	27.3	24.9	167.9	96.9	0.6	7.8	7.6	3.4	3.6
OTHER MOBILE SOURCES	30.6	27.2	196.2	69.8	0.3	5.6	5.5	5.0	0.0
*** TOTAL MOBILE SOURCES**	**57.9**	**52.0**	**364.1**	**166.8**	**1.0**	**13.4**	**13.1**	**8.5**	**3.6**
GRAND TOTAL FOR SAN JOAQUIN VALLEY AIR BASIN	**1579.4**	**296.2**	**445.0**	**203.3**	**7.8**	**514.0**	**264.8**	**59.0**	**325.9**

Start a new query.

2016 SIP Emission Projection Data
2020 Estimated Annual Average Emissions
KERN COUNTY

All emissions are represented in Tons per Day and reflect the most current data provided to ARB.

See detailed information.

Start a new query.

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5	NH3
FUEL COMBUSTION	13.1	1.9	10.7	10.0	0.9	3.1	3.0	2.9	1.6
WASTE DISPOSAL	233.0	12.2	0.2	0.1	0.0	0.1	0.0	0.0	5.5
CLEANING AND SURFACE COATINGS	4.0	3.6	-	-	-	0.0	0.0	0.0	-
PETROLEUM PRODUCTION AND MARKETING	46.3	11.9	0.9	0.3	0.4	0.2	0.1	0.1	0.0
INDUSTRIAL PROCESSES	2.5	2.4	10.3	18.5	8.1	7.4	4.5	2.3	0.2
*** TOTAL STATIONARY SOURCES**	**298.9**	**32.0**	**22.1**	**28.8**	**9.4**	**10.8**	**7.7**	**5.4**	**7.3**
AREAWIDE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
SOLVENT EVAPORATION	12.5	11.3	-	-	-	-	-	-	27.8
MISCELLANEOUS PROCESSES	67.1	11.1	16.3	1.8	0.1	80.4	40.5	8.2	17.8
*** TOTAL AREAWIDE SOURCES**	**79.6**	**22.4**	**16.3**	**1.8**	**0.1**	**80.4**	**40.5**	**8.2**	**45.7**
MOBILE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
ON-ROAD MOTOR VEHICLES	6.5	5.9	38.5	27.6	0.2	2.0	1.9	0.9	0.9
OTHER MOBILE SOURCES	9.0	8.4	51.0	16.2	0.4	3.6	3.5	3.4	0.0
*** TOTAL MOBILE SOURCES**	**15.5**	**14.3**	**89.6**	**43.8**	**0.5**	**5.5**	**5.4**	**4.2**	**0.9**
GRAND TOTAL FOR KERN COUNTY	**394.0**	**68.8**	**127.9**	**74.4**	**10.0**	**96.7**	**53.6**	**17.9**	**54.0**

Start a new query.

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APPENDIX B
CULTURAL RESOURCES

TECHNICAL MEMORANDUM

Date: March 5, 2019

Project: Cultural resources records search for the Orangewood Elementary School Project-Bakersfield, CA

To: Jaymie Brauer

From: Robert Parr, MS, RPA, Senior Archaeologist

Subject: Cultural Resources Records Search Results (RS#19-077)

Background

This cultural resources records search (RS #19-077) was conducted at the Southern San Joaquin Valley Information Center, CSU Bakersfield for the Orangewood Elementary School Project in Bakersfield, Kern County to determine whether the proposed project would impact cultural resources.

Location

The project is located in east Bakersfield in a portion of the N ½ of the NE ¼ of Section 31, T.29S, R.29E (MDBM) (Figures 1-3).

Project Description

The proposed Project is an extension of the existing Orangewood Elementary School campus currently located at 9600 Eucalyptus Drive in Bakersfield, California (Project). The Project includes the construction of approximately 20,260 – 23,260 square feet of new buildings that will occupy an 18.55-acre Project site located immediately west and northwest of the existing campus (APNs 388-140-12 and -03).

Results

The records search covered an area within one-half mile of the project and included a review of the *National Register of Historic Places, California Points of Historical Interest, California Registry of Historic Resources, California Historical Landmarks, California State Historic Resources Inventory*, and a review of cultural resource reports on file.

The records search indicated that the subject property had previously been surveyed for cultural resources (Schiffman 1991). No cultural resources were identified on the property as a result of that survey. Eight cultural resources surveys have been conducted within a half mile of the project (Ptomey 1990; Schiffman 1992; Hudlow 2000a, 2000b, 2003, 2006; Pruett 2006; Romani 2012). Three cultural resources have been recorded within a half mile of the project. These are all historic

period structures including a residence (P-15-11721) and two irrigation features (P-15-15800, P-15-11720). No other cultural surveys or resources have been recorded within a half mile of the Orangewood Elementary School Project.

A Sacred Lands File request was also submitted to the Native American Heritage Commission. A response dated March 11, 2010 indicates negative results (see Attachment B).

Conclusions

Based on the results of cultural records search findings and the lack of historical or archaeological resources previously identified within a 0.5-mile radius of the proposed project, the potential to encounter subsurface cultural resources is minimal. Additionally, construction of the project would be conducted within the existing property. The potential to uncover subsurface historical or archaeological deposits is would be considered unlikely.

However, there is still a possibility that historical or archaeological materials may be exposed during construction. Grading and trenching, as well as other ground-disturbing actions have the potential to damage or destroy these previously unidentified and potentially significant cultural resources within the project area, including historical or archaeological resources. Disturbance of any deposits that have the potential to provide significant cultural data would be considered a significant impact under CEQA. To reduce the potential impacts of the project on cultural resources, the following mitigation measures are recommended. With implementation of MM CUL-1 and MM CUL-2, the Project would have a less than significant impact.

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 archaeologist can evaluate 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 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. Implementation of the mitigation measure below would ensure that the proposed Project would not cause a substantial adverse change in the significance of a historical resource.

MM CUL-2: 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.

(s) Robert E. Parr, MS, RPA
Senior Archaeologist

Attachment A- Figures
Attachment B- Sacred Lands File Response by the Native American Heritage Commission

References
(all reports on file at the Southern San Joaquin Valley Information Center, California State University, Bakersfield)

Pruett, Catherine Lewis
2006 A Cultural Resources Assessment for Sections 21 and 29, T.29S, R.29E, Located East of Bakersfield, Kern County, California. Report prepared for Paul, Hasting, Janofsky &

Walker LLP, Los Angeles, CA. (KE-3328)

Ptomey, Kathy
1990 An Archaeological Survey for Tentative Parcel Map No. 9447, Kern County. Report prepared for Cuesta Engineering, Bakersfield, CA. (KE-935)

Romani, Gwen W.
2012 Archaeological Survey Report: Improvements to Pioneer Drive from Gargano Road to Vineland Road (approximately 0.25-mile), Kern County, California. Report submitted to Kern County Roads Department, Bakersfield, CA. (KE-4170)

Schiffman, Robert A.
1991 Archaeological Investigation of 40 Acre Parcel Section 31, Township 29S., Range 29E. Kern County, California. (KE-1404)

1992 Archaeological Investigation of Tentative Tract # 5560 Section 31, T.29S., R.29E., Kern County, California. (KE-1441)

ATTACHMENT A
PROJECT FIGURES

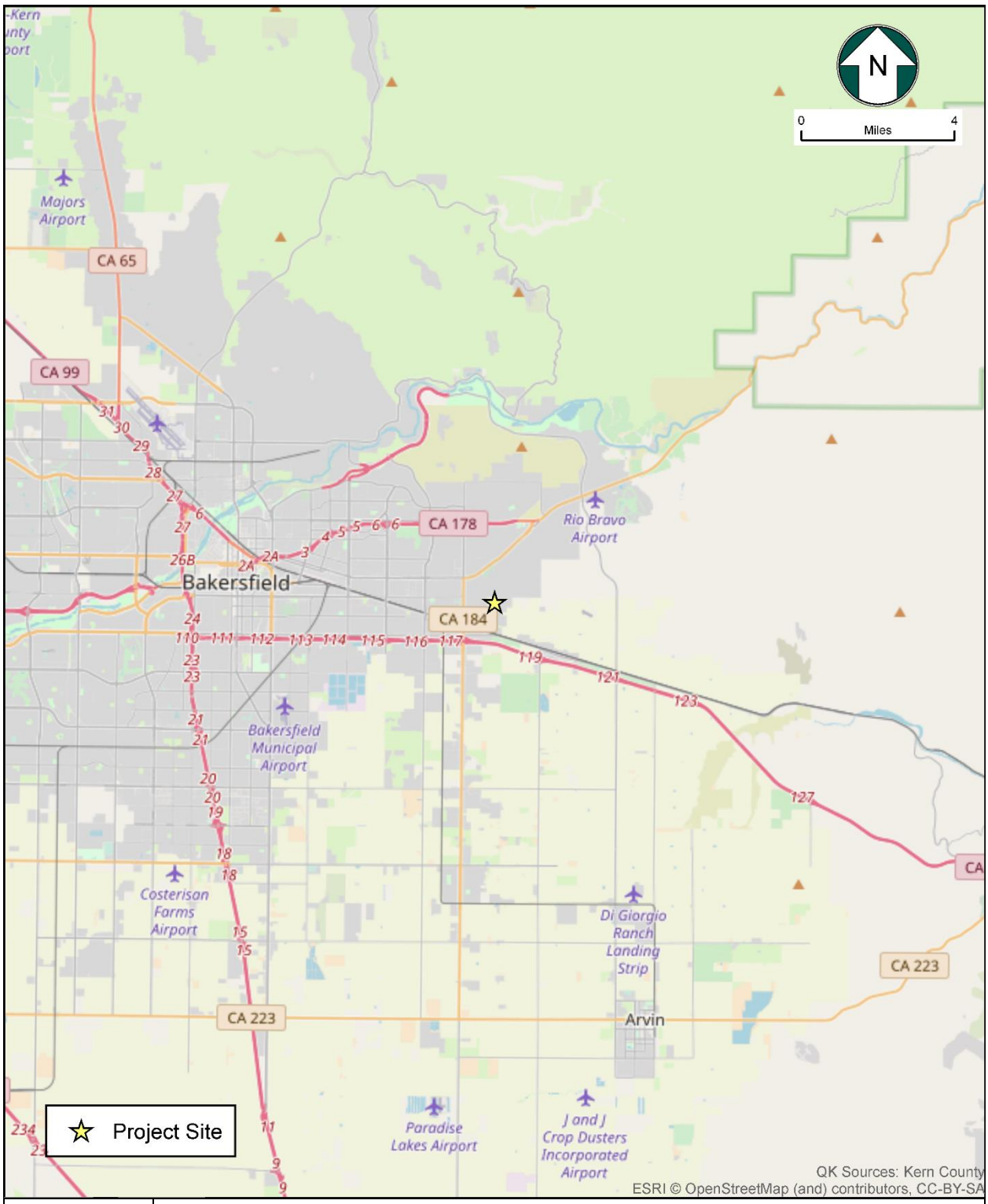

Figure 1
Regional Location

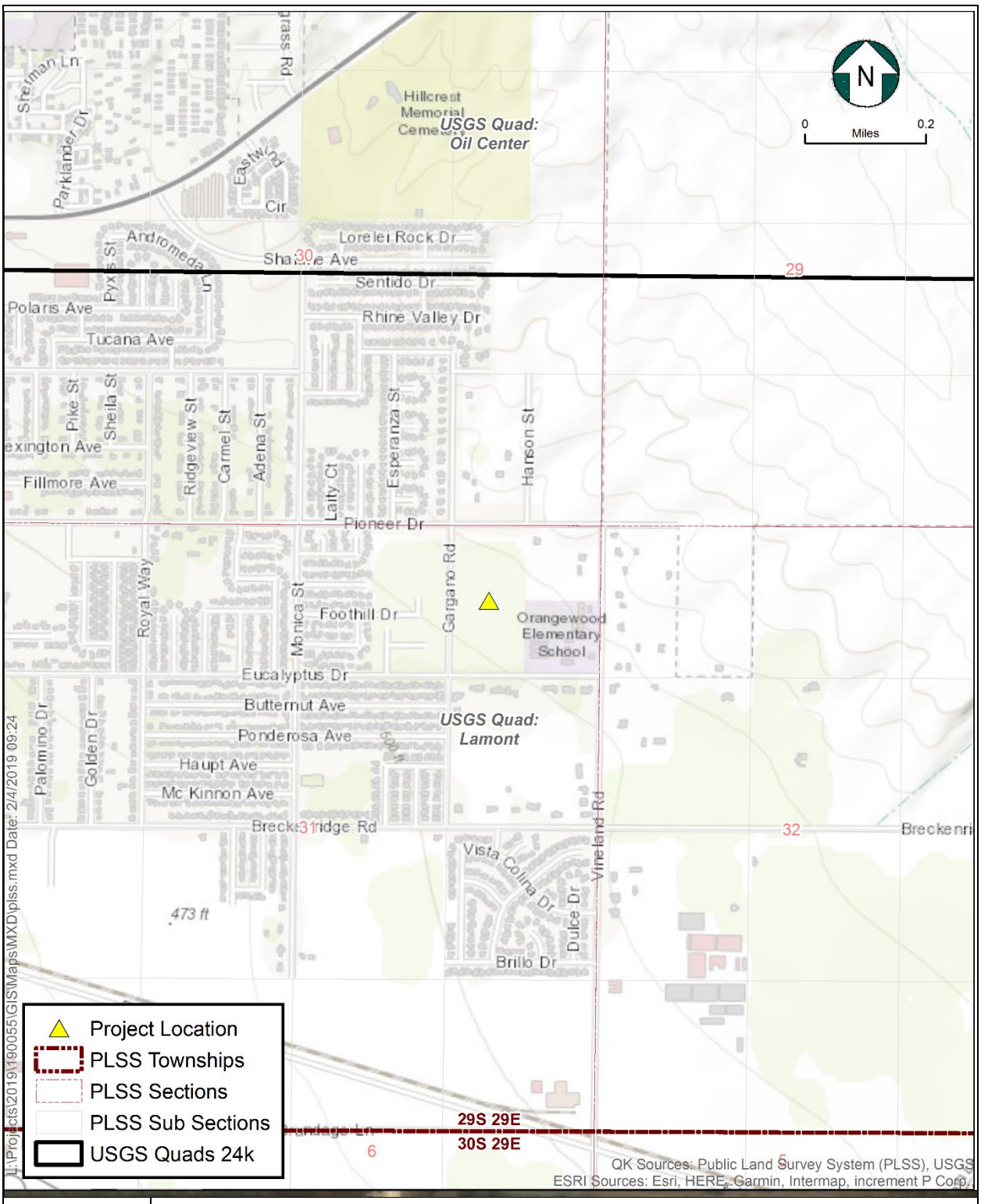

Figure -2
PLSS/USGS Quad

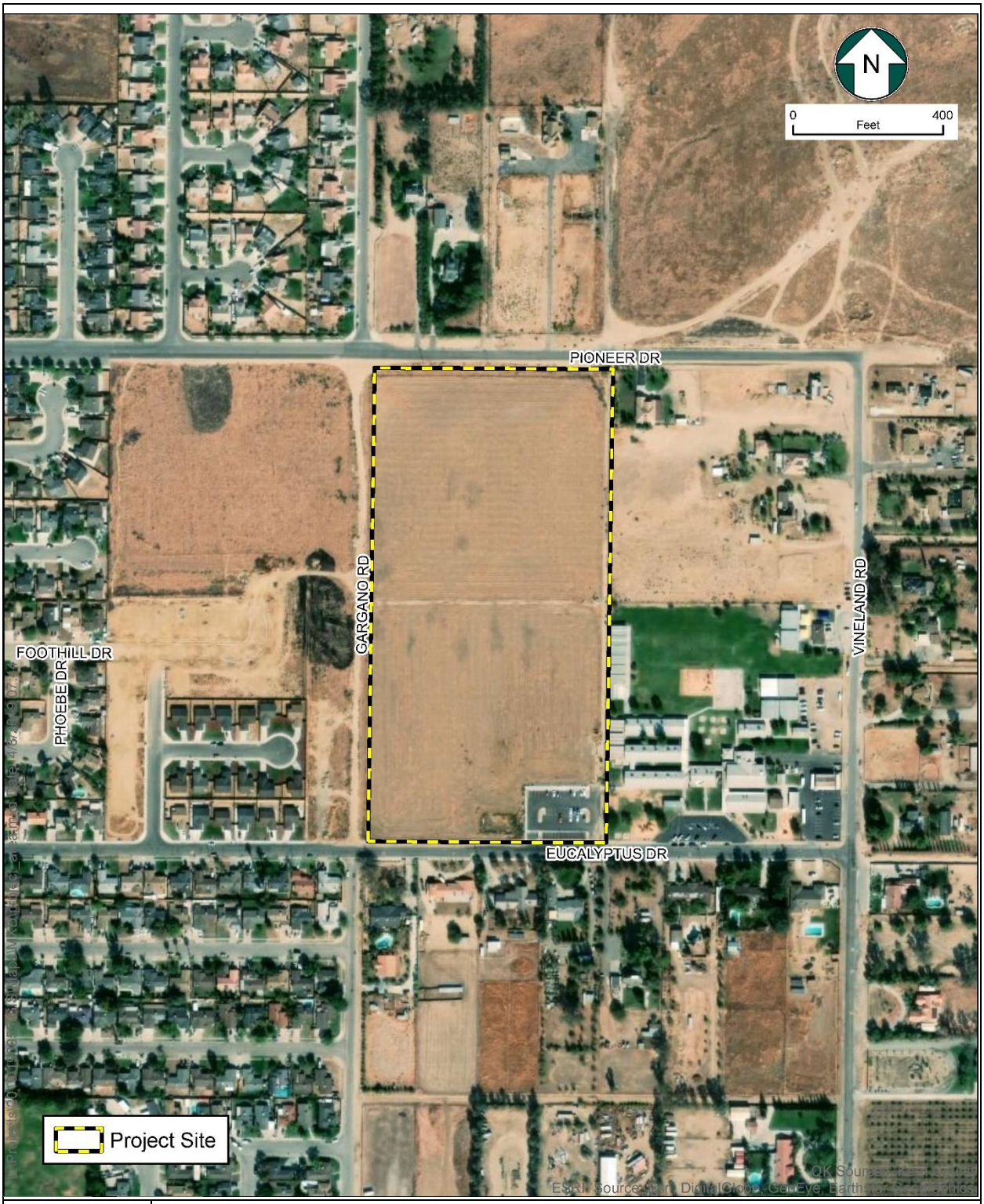

Figure -3
Project Site

Attachment B-
Sacred Lands File Response by the
Native American Heritage Commission

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691 Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov

March 11, 2019

Jaymie Brauer, Principal Planner
Quad Knopf, Inc.

VIA Email to: jaymie.brauer@qkinc.com

RE: Native American Tribal Consultation, Pursuant to the Assembly Bill 52 (AB 52), Amendments to the California Environmental Quality Act (CEQA) (Chapter 532, Statutes of 2014), Public Resources Code Sections 5097.94 (m), 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3, Orangewood Elementary School Expansion Project (190055), Kern County.

Dear Ms. Brauer:

Pursuant to Public Resources Code section 21080.3.1 (c), attached is a consultation list of tribes that are traditionally and culturally affiliated with the geographic area of the above-listed project. Please note that the intent of the AB 52 amendments to CEQA is to avoid and/or mitigate impacts to tribal cultural resources, (Pub. Resources Code §21084.3 (a)) ("Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.")

Public Resources Code sections 21080.3.1 and 21084.3(c) require CEQA lead agencies to consult with California Native American tribes that have requested notice from such agencies of proposed projects in the geographic area that are traditionally and culturally affiliated with the tribes on projects for which a Notice of Preparation or Notice of Negative Declaration or Mitigated Negative Declaration has been filed on or after July 1, 2015. Specifically, Public Resources Code section 21080.3.1 (d) provides:

> Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The AB 52 amendments to CEQA law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction prior to receiving requests for notification of projects in the tribe's areas of traditional and cultural affiliation. The Native American Heritage Commission (NAHC) recommends, but does not require, early consultation as a best practice to ensure that lead agencies receive sufficient information about cultural resources in a project area to avoid damaging effects to tribal cultural resources.

The NAHC also recommends, but does not require that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential effect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

   - A listing of any and all known cultural resources that have already been recorded on or adjacent to the APE, such as known archaeological sites;

   - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;

   - Whether the records search indicates a low, moderate, or high probability that unrecorded cultural resources are located in the APE; and

   - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

   - Any report that may contain site forms, site significance, and suggested mitigation measures.

     All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code section 6254.10.

3. The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was negative.

4. Any ethnographic studies conducted for any area including all or part of the APE; and

5. Any geotechnical reports regarding all or part of the APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: Katy.Sanchez@nahc.ca.gov.

Sincerely,

Nancy Sanchez

for Katy Sanchez
Associate Environmental Planner

Attatchment

Native American Heritage Commission
Tribal Consultation List
03/11/2019

Kern Valley Indian Community
Julie Turner, Secretary
P.O. Box 1010
Lake Isabella , CA 93240
(661) 340-0032 Cell

Kawaiisu
Tubatulabal

Kern Valley Indian Community
Robert Robinson, Chairperson
P.O. Box 1010
Lake Isabella , CA 93283
bbutterbredt@gmail.com
(760) 378-2915 Cell

Tubatulabal
Kawaiisu

Kitanemuk & Yowlumne Teion Indians
Delia Dominguez, Chairperson
115 Radio Street
Bakersfield , CA 93305
2deedominguez@gmail.com
(626) 339-6785

Yowlumne
Kitanemuk

Santa Rosa Rancheria Tachi Yokut Tribe
Rueben Barrios Sr., Chairperson
P.O. Box 8
Lemoore , CA 93245
(559) 924-1278

Tache
Tachi
Yokut

Teion Indian Tribe
Octavio Escobedo, Chairperson
1731 Hasti-acres Drive, Suite 1
Bakersfield , CA 93309
oescobedo@tejonindiantribe-nsn.gov
(661) 834-8566

Kitanemuk

Teion Indian Tribe
Colin Rambo, Cultural Resources Management
1731 Hasti-Acres Drive, Suite
Bakersfield , CA 93309
colin.rambo@teionindiantribe-n
(661) 834-8566

Kitanemuk

Tule River Indian Tribe
Neil Peyron, Chairperson
P.O. Box 589
Porterville , CA 93258
neil.peyron@tulerivertribe-nsn.gov
(559) 781-4271

Yokuts

Wuksache Indian Tribe/Eshom Valley Band
Kenneth Woodrow, Chairperson
1179 Rock Haven Ct.
Salinas , CA 93906
kwood8934@aol.com
(831) 443-9702

Foothill Yokuts
Mono
Wuksache

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 50 97.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable only for consultation with Native American tribes under Public Resources Code Sections 21080.1, 21080.3.1, and 21080.3.2 for proposed Orangewood Elementary School Expansion Project (190055), Kern County.

APPENDIX C
GEOLOGICAL HAZARDS STUDY

SOILS ENGINEERING, INC.

GEOLOGIC HAZARD STUDY

PROPOSED SCHOOL SITE
NE OF EUCALYPTUS DR. & GARGANO ST.
BAKERSFIELD, CALIFORNIA

Prepared For:

Edison Elementary School District
P.O. Box 368
Edison, CA 93220-0368
Attn: Mr. Todd Noble

File No. 18-16901

Prepared By:

Soils Engineering, Inc.
4400 Yeager Way
Bakersfield, CA. 93313

January 2019

SOILS ENGINEERING, INC.

January 10, 2019

File No. 18-16901

Mr. Todd Noble
Edison Elementary School District
P.O. Box 368
Edison, CA 93220-0368

Subject: Geological Hazard Study
for Proposed 18.44 Acre School Site,
Northeast of Eucalyptus Dr. and Gargano St.
in Edison, CA.
APN# 388-140-03 & -12

Dear Mr. Noble:

In accordance with your request and authorization, Soils Engineering, Inc. (SEI) has performed a Geological Hazards Study for the above described subject property in Bakersfield, California (site). This study was conducted in compliance with the California Code of Regulations, Title 24, Chapters 16, 18 and 33 of the 2016 California Building Code.

Our Geological Hazards Assessment indicates that there is a low probability for liquefaction to occur during a major earthquake at the site and that the maximum peak ground acceleration at the site would be 0.277g, as a result of a maximum earthquake of magnitude 7.2 on the White Wolf Fault, approximately 22.2 kilometers away. The computer-modeling program Eqsearchwin estimated that a ground motion of 0.375 g occurred at the site from a 6.1 magnitude earthquake in July 1952. The proposed structures should be built to withstand this magnitude of an earthquake and ground motions.

The site-specific design acceleration values to be utilized for the proposed improvements should be 0.71g for short periods (S_{Ds}) and 0.444g for the 1 second period (S_{D1}). The seismic design category is a D for both short and 1-second periods per the 2016 CBC.

In the event of a major earthquake, there is a very low potential for rock falls or landslides to impact the site. Minor flooding is possible following an upstream disaster but is not likely, due to upstream levees and canals and the predicted flow of the release. Minor settlement (<1") may occur at this site during a major earthquake.

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Based on the lithology encountered in the top 10 feet in the soil borings, it appears that moderately expansive surface soils are present at this site. Additional expansive testing and consolidation tests will be conducted during the geotechnical investigation to determine if any mitigation measures will be necessary.

No high-pressure natural gas pipelines are known within 1500' of the site. A few oil wells (dry holes) have been drilled less than one mile away from the site, but it is not likely that any significant subsurface oilfield related gases (hydrogen sulfide, methane etc.) are present beneath the site.

No additional geologic assessment or mitigation is recommended at this time.

The accompanying report is an instrument of service of ***Soils Engineering, Inc.*** The report summarizes our findings and relates our opinions with respect to the potential for geological hazards to affect the site. Note that our findings and opinions are based on information that we obtained on given dates, through records review, site review, and related activities. It is possible that other information exists or subsequently has become known, just as it is possible for conditions we observed to have changed after our observation.

Soils Engineering, Inc. will be pleased to provide more information in this regard. Please call us for assistance at (661) 831-5100.

Sincerely,
SOILS ENGINEERING, INC.

Robert J. Becker, R.G. 5076, C.E.G. 2238
Expires 2/28/19

CERTIFIED ENGINEERING GEOLOGIST
ROBERT J. BECKER
No. 2238
Exp. Date 2/28/19
STATE OF CALIFORNIA

PROFESSIONAL GEOLOGIST
ROBERT J. BECKER
No. 5076
REN 2/28/19
STATE OF CALIFORNIA

Distribution: Addressee (3)

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Appendix A: Deterministic Site Parameters, EQFault listing, EQSEARCHWIN, data, Seismic Design Data. USGS Unified Hazard Tool – Deaggregation data.

Appendix B: Boring Logs, Flood Insurance Rate Map, LiquefyPro Data and Pipeline Certification Form.

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GEOLOGICAL HAZARDS STUDY

For
Proposed 18.44 Acre School Site
Northeast of Eucalyptus Dr. and Gargano St.
in
Bakersfield, California

Updated January 2019

1.0 Introduction

Soils Engineering, Inc. (SEI) has conducted a Geological Hazards Study for the proposed development of the 18.44 acre site, located west of the Orangewood School property, northeast of Eucalyptus Dr. and Gargano St. (site) in Bakersfield, California (see Location Map, Plate 1). The site location coordinates are approximately 35.36722° north, latitude, and 118.89974° west, longitude. The following is an Executive Summary of the investigation initially conducted between June 7, 2006, and July 25, 2006 and updated in January 2019.

A site reconnaissance, which consisted of walking the property and evaluating the surrounding geological features, was conducted by SEI personnel in June 2006 and in November 2018. The project site covers approximately 18.44 acres, as shown on Plate 2, and is a former citrus grove, that grew mainly oranges with a few grapefruit trees. The orchard was cleared by 2007 with the current land a vacant field with low weed growth. The eastern and northern borders of the site have power lines. The site area is surrounded by chain-link fencing. Adjacent off-site properties include residences to the south, west and north and the Orangewood School, vacant land and residential to the east.

2.0 Geology and Hydrology

2.1 Geologic Setting

The site has generally flat relief with a slight slope to the southwest. The project site rests on Quaternary Fan deposits (Qf) within the southern portion of the San Joaquin Valley. See the attached Geologic Map (Plate 2A), as interpreted from on-site soil borings and the Bakersfield Sheet of the Geologic Map of California (Smith, Department of Conservation Division of Mines and Geology (CDMG), 1964). Active faults within 50 miles include the Kern Front Fault, approximately 14.7 kilometers to the northwest; the White Wolf Fault, approximately 22.2 kilometers to the southeast; the Pleito Thrust Fault, approximately 42.6 kilometers to the southwest; the Garlock (west) Fault, approximately 53.1 kilometers to the south; the San Andreas Fault—1857 Rupture and Carrizo, approximately 60.1 kilometers to the west; the Big Pine Fault, approximately 61.4 kilometers to the southwest; the San

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Gabriel, approximately 72.7 kilometers to the southeast; Garlock (East) Fault approximately 80.1 kilometers to the south. The site is not located within an Alquist-Priolo Special Study Zone (Earthquake Fault Zone (EF)). The nearest EF zone (Edison Fault) is shown on the Edison Quadrangle map approximately 1.5 miles southeast of the site. The Lamont Seismic Hazard Atlas Map shows an inferred fault approximately 1.2 miles east of the site (Plate 3). Nearby active faults are shown on the Fault Activity Map of California (CDMG, 2010) within the general area of the site (Plate 5A) and on the EQFault California Fault Map (Plate 5).

Near surface soils within the zone of influence of future developments consist of interbedded sandy clay, silty sand, sandy silt, clayey sand, and poorly-graded sand layers overlying bedrock, which is located several thousand feet below the surface. These sediments were derived in the Sierra Nevada Mountains to the east of the site and deposited by local drainage and the meandering Kern River.

2.2 Surface Lithology

Earth materials identified in the 2 onsite soil borings conducted in June 2006 consisted generally of intervals of Sandy Clay (CL), Clayey Sand (SC), and Well-Graded Sand (SW) in the top 50 feet below ground surface (bgs). These soils are classified as CL, SC, and SW respectively, in the Unified Soils Classification System. No shallow groundwater was encountered in the soil borings advanced up to a depth of 51'. Soil boring B-2 encountered rock (cobbles) at approximately 27' bgs, and boring B-1 encountered rock (cobbles) at approximately 15' bgs. See attached boring logs included in Appendix B for more detail.

2.3 Hydrology

Unconfined Aquifer - The depth to the unconfined aquifer as shown on maps prepared by the Kern County Water Agency (KCWA), and dated Spring 2017, is >140' below the ground surface (bgs). Historical depth to water data (Department of Water Resources (DWR) database and KCWA maps) indicates that the depth to groundwater has been >100' since at least the 1940's within 1-mile of the site.

Perched Water, Ground Water or Seepage - No shallow ground water beneath the site is shown on groundwater maps, dated Summer 2011. However, according to the Lamont Quadrangle Seismic Hazard Atlas Map, shallow ground water is present approximately three miles to the southwest of the site. No groundwater was encountered in any of the soil borings at the site to a depth of 51' in 2006.

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3.0 Seismic and Fault Hazards

3.1 Seismic History

There have been a number of historic earthquakes that may have affected the Bakersfield area. The following is a short summary of the major known events:

- 1/9/1857 - Fort Tejon Earthquake - San Andreas Fault, Estimated Magnitude 8.2+, 30 feet of slippage over a 200 mile area, widespread damage.

- 7/21/1952 - Arvin/Tehachapi - White Wolf Fault, Magnitude 7.7, extensive damage to buildings and highways.

- 8/22/1952 - Bakersfield Quake (Aftershock of Arvin/Tehachapi) - 6 miles ESE of Bakersfield, Magnitude 5.8. Closest aftershock to Bakersfield causing extensive damage to already weakened buildings. Multiple surface fissures were created from the 1952 earthquakes.

SEI utilized the software program EQSEARCHWIN version 3.0 (Thomas F. Blake) to evaluate historical earthquakes in the area of the site over the last 200 years. The Earthquake Epicenter Map (Plate 3A) shows earthquake magnitudes and the epicentral distance from the site. The majority of the seismic activity in the area of the site has been along the White Wolf Fault and the San Andreas Fault. The closest earthquake of at least 5.0 magnitude to the site was 4.1 kilometers away, at a magnitude of 5.8 in August 1952. The largest magnitude earthquake within 100 miles was 7.9 on the San Andreas Fault in 1857. The largest estimated site acceleration is 0.375 g from a 6.1 magnitude earthquake on July 29, 1952. The EQSEARCHWIN estimation of Peak Acceleration from California Earthquake Catalogs Table, Earthquake Recurrence Curve, Earthquake Epicenter Map and a graph of the Number of Earthquakes (N) above Magnitude (M) are presented in Appendix A.

3.2 Seismic Evaluation

The site is located within the Lamont Quadrangle in the northeast ¼ of Section 31, Township 29 South, Range 29 East and is not located in an Alquist-Priolo special studies zone (California Fault Zone). Local faults and general geology are also shown on the Lamont Quadrangle, Seismic Hazard Atlas Maps prepared for the Kern County Council of Governments (Plate 3).

According to the Lamont Quadrangle Seismic Hazard Atlas Map, an inferred fault is approximately 1.2 miles east of the site. The Lamont Seismic Hazard Atlas Map also shows a <5.9 magnitude earthquake epicenter approximately a half-mile southwest of the site. The active Edison Fault is shown on the Edison Quadrangle map approximately 1.5 miles southeast of the site. The nearest active fault, as indicated by the computer-modeling

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program EQFault version 2.01, is the Kern Front Fault, which is approximately 14.7 km to the northwest. The White Wolf Fault is approximately 22.2 kilometers to the south, southeast. The Pleito Fault is located approximately 42.6 kilometers southwest of the site. The Garlock Fault (west) is approximately 53.1 kilometers south, southeast of the site. The San Andreas Fault zone (Carrizo and 1857 rupture) is approximately 60.1 kilometers west of the site, and the Big Pine Fault is approximately 61.4 kilometers to the southwest. Regional faults in relation to the site location are presented on Plate 5A and are from the Fault Activity Map of California (CDMG, 2010).

3.3 Seismic Design

The seismic design values are presented in the table below based on the 2016 California Building Code (CBC). The Site Class for the proposed improvements located NE of Eucalyptus Dr. & Gargano St. in Bakersfield, Kern County, California, were determined using standard penetration test data obtained at the site and are provided in the attached Boring Logs.

SEISMIC DESIGN CRITERIA	VALUE	SOURCE
Risk Category	**III**	2016 CBC Table 1604.5
Site Class	**D**	Site Specific Soils Report 2016 CBC Section 1613.3.2, ASCE 7-10 Table 20.3-1
Mapped MCE_R Spectral Response Acceleration, short period, S_s	**0.95**	USGS maps/Software - 2016 CBC Figure 1613.3.1 (1)
Mapped MCE_R Spectral Response Acceleration, at 1-sec. Period, S_1	**0.34**	USGS Maps/Software - 2016 CBC Figure 1613.3.1 (2)
Site Coefficient, F_a	**1.12**	USGS Software - 2016 CBC Table 1613.3.3 (1)
Site Coefficient, F_v	**1.96**	USGS Software - 2016 CBC Table 1613.3.3 (2)
Adjusted MCE_R Spectral Response Acceleration, Short periods, $S_{MS} = F_a S_s$	**1.064**	USGS Software - 2016 CBC Section 1613.3.3
Adjusted MCE_R Spectral Response Acceleration, 1-sec. Period, $S_{M1} = F_v S_1$	**0.666**	USGS Software - 2016 CBC Section 1613.3.3
Design Spectral Response Acceleration, short periods, $S_{DS} = 2/3\ S_{MS}$	**0.71**	USGS Software - 2016 CBC Section 1613.3.4
Design Spectral Response Acceleration, 1-sec period, $S_{D1} = 2/3\ S_{MI}$	**0.444**	USGS Software - 2016 CBC Section 1613.3.4
Peak Ground Acceleration (PGA) for Max. Considered Earthquake (MCE_G)	***0.41g***	*USGS Software – ASCE 7-10 Fig 22-7*
Site Coefficient, $F_{PGA} = 1.19$, $PGA_M = F_{PGA} * PGA =$	***0.488g***	*USGS Software – ASCE 7-10 Table 11.8-1*

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SEISMIC DESIGN CRITERIA	VALUE	SOURCE
Site-Specific Ground Motion Procedures for Seismic Design, C_{RS}	***0.923***	*USGS Software - ASCE 7-10 Fig 22-17*
Site-Specific Ground Motion Procedures for Seismic Design, C_{R1}	***0.92***	*USGS Software - ASCE 7-10 Fig 22-18*
Seismic Design Category short periods (S_{DS})	**D**	2016 CBC Table 1613.3.5 (1)
Seismic Design Category, 1-sec period (S_{D1})	**D**	2016 CBC Table 1613.3.5 (2)

MCE_R = Maximum Considered Earthquake (risk targeted),
MCE_G = Maximum Considered Earthquake (geometric mean)

See attached USGS Design Maps Summary and Detail Report in Attachment A.

3.4 Seismology & Calculation of Earthquake Ground Motion

Because the site is not located within or directly adjacent to a mapped Alquist-Priolo (AP) Earthquake Zone, is not a Seismic Design Category E or F and is not required by ASCE 7 §11.4.7, a site-specific ground motion analysis was not conducted for this site. The above seismic design information in Section 3.3 will be utilized for this project.

3.5 Possible Earthquake Effects

A number of active faults are located within a 50-mile radius of the subject site. To evaluate the affect a major earthquake might have on the site, the computer modeling program EQFaultwin vers. 3.0 (Thomas Blake) was utilized. Site-specific parameters were inputted and the programs computed the maximum peak site ground accelerations resulting from an earthquake. Because ground accelerations are based largely on fault distance and magnitude, we have focused our analysis on those faults which are close to the site, or that have large maximum credible magnitudes, or a combination of the two. The result of this analysis is presented below in Table A.

This analysis estimates that a maximum peak ground acceleration of 0.277g would be felt at the site as a result of a maximum earthquake of magnitude 7.2 on the White Wolf Fault, approximately 22.2 kilometers away. See attached Deterministic Site Parameters for a full listing of computed values for faults within a 100-mile radius of the site in Appendix A. Also attached is a California Fault Map showing nearby faults in relationship to the site (Plate 5).

Utilizing the USGS Unified Tool Box program the Probabilistic Seismic Hazard Deaggregation for the Site was calculated to be 0.629g for a 2% chance every 50 years of exceedance based on a 6.32 magnitude earthquake occurring 19.57 kilometers away. See Appendix A for this calculation results page.

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TABLE A

FAULT	Approximate Distance (Km)	Maximum Earthquake Magnitude (Mw)	Maximum Peak Ground Acceleration (g)	Estimated Site Intensity (MM)
Edison Fault	**3.0**	<6.5	Estimated 0.1 to **0.3**	VIII to **X**
Kern Front	**14.7**	6.3	0.231	**IX**
White Wolf	22.2	7.2	**0.277**	**IX**
Pleito Thrust	42.6	7.2	0.170	VIII
Garlock (West)	53.1	7.1	0.122	VII
San Andreas (1857 Rupture & Carrizo)	60.1	7.2 to **7.8**	0.107 to 0.147	VII to VIII
Big Pine	61.4	6.7	0.081	VII
San Gabriel	72.7	7.0	0.083	VII
Garlock (East)	80.1	7.3	0.091	VII

3.6 Potential for Ground Rupture, Ground Shaking, Ground Failure

Ground rupture may occur along a fault trace in a major earthquake. Since this site is not located within 500 feet of a suspected active fault, it is unlikely that ground rupture would occur here. Moderate to strong ground shaking is likely at this site, in the event of a major earthquake on one of the nearby faults. Based on the predicted maximum horizontal accelerations at the site and the soil types identified in this investigation, ground failure is highly unlikely at this site.

3.7 Potential for Earthquake-Induced Flooding and Flood Zone

The potential for earthquake-induced flooding at the site appears to be low, since groundwater is over 140' below the ground surface. It is most likely that the majority of the flooding from an upstream disaster would be diverted to other areas by a series of levees and canals prior to reaching the site area. According to the Lake Isabella Dam Flood Plain &

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Dam Inundation Area Map for the Bakersfield Area, the floodwaters would not flow toward the site area (see Plate 7 for map).

The site is located within flood Zone X with minimal potential flooding, according to the Flood Insurance Rate Map covering the site area. An area designated as Zone B is to the south of the site.

3.8 Liquefaction Potential

No shallow groundwater was encountered in any of the soil borings conducted at the site to a maximum depth of 51' bgs. The unconfined aquifer is not shown to be less than 50 feet below ground surface at the site based on current and historical information from the Kern County Water Agency. Blowcounts in the soil borings ranged from 10 to 52 blowcounts per foot to a depth of 51'. The lithology encountered in the subsurface includes multiple clay, silt or sand layers of material. A liquefaction analysis was performed on the deep borings B-1 and B-2 utilizing the program LiquefyPro (version 5.9b). Site-specific information was used in this analysis including; SPT or SPT equivalent blowcounts per foot, grain-size analysis, dry weight densities, and the PGA for the MCEg earthquake motion (0.488g). The liquefaction potential at this site appears to be minimal. See attached LiquefyPro data in Appendix B and boring logs for more detail.

3.9 Slope Stability

The site is located in an area with minimal slope to the southwest. No evidence of historic landslides or creep was observed in this area. There is a very low potential for rockfalls or landslides to impact the site in the event of a major earthquake. Overall, the site appears to be very stable.

3.10 Settlement

The estimated amount of dynamic settlement that would occur at this site during a major earthquake is approximately 0.47" to 0.51" based on the lithology encountered, the SPT blowcounts recorded during sampling and the settlement analysis conducted on boring B-1 and B-2 utilizing the program LiquefyPro. The estimated amount of differential settlement is 0.234" to 0.257" according to the program LiquefyPro. These settlement values appear to be acceptable for the proposed development. See attached Liquefaction Analysis Calculation Sheets and graphs in Appendix B for more detail.

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3.11 Expansive Soil and Hydrocollapse Potential

Based on the lithology encountered in the top 10 feet in the soil borings, it appears that moderately expansive surface soils are present at this site. Additional expansive testing and consolidation tests will be conducted during the geotechnical investigation to determine if any mitigation measures will be necessary.

The City of Bakersfield Safety Element includes a discussion on land subsidence potential in the Bakersfield area. The main causes of land subsidence are Tectonic Subsidence, Oil & Gas Fluid Extraction, Groundwater Withdrawal and Hydrocompaction of Moisture Deficient Alluvial Deposits. Figure 15 in the Safety Element shows the areas of significant subsidence within the Bakersfield area. The proposed school site is located within the area where no historic land subsidence has occurred and is outside of the area of hydrocompaction as shown on attached Plate 8. In addition, the school site is in an area where oil & gas activity is minor, agricultural use is decreasing and no public water wells are present nearby, so groundwater withdrawal appears to be limited. Based on this information it appears that regional subsidence should not be an issue at this site requiring any special mitigation or requirements.

4.0 High-Pressure Pipelines & Hazardous Materials

4.1 High-Pressure Pipelines

Based on the Lamont Quadrangle topographic map, a visual survey of the surrounding area and interviews with local utility companies, no high-pressure gas or crude oil pipelines are present within 1500' of the site. The nearest PG&E high-pressure natural gas line is over ½ mile to the west at Weedpatch Hwy. & Pioneer Drive.

See attached Pipeline Certification in Appendix B.

4.2 Hazardous Materials

No on-site oil or gas wells were indicated on the California Division of Oil and Gas (DOG) map 434. However, ~500 to the east is a plugged and abandoned-dry hole designated Kearney 81-A (R.S. Rheem). See Plate 6 for the site location in reference to the nearest oil and gas wells. A Preliminary Environmental Assessment (PEA) is currently being conducted at the site which included the collection and analysis of soil samples. Slightly elevated organochlorine pesticides were reported in the near surface soil in a portion of the site. The DTSC has not yet reviewed the PEA Report.

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5.0 Conclusions & Recommendations

Our Geological Hazards Assessment indicates that there is a low probability for liquefaction to occur during a major earthquake at the site and that the maximum peak ground acceleration at the site would be 0.277g, as a result of a maximum earthquake of magnitude 7.2 on the White Wolf Fault, approximately 22.2 kilometers away. The computer-modeling program Eqsearchwin estimated that a ground motion of 0.375 g occurred at the site from a 6.1 magnitude earthquake in July 1952. The proposed structures should be built to withstand this magnitude of an earthquake and ground motions.

The site-specific design acceleration values to be utilized for the proposed improvements should be 0.71g for short periods (S_{Ds}) and 0.444g for the 1 second period (S_{D1}). The seismic design category is a D for both short and 1-second periods per the 2016 CBC.

In the event of a major earthquake, there is a very low potential for rock falls or landslides to impact the site. Minor flooding is possible following an upstream disaster but is not likely, due to upstream levees and canals and the predicted flow of the release. Minor settlement (<1") may occur at this site during a major earthquake.

Based on the lithology encountered in the top 10 feet in the soil borings, it appears that moderately expansive surface soils are present at this site. Additional expansive testing and consolidation tests will be conducted during the geotechnical investigation to determine if any mitigation measures will be necessary.

No high-pressure natural gas pipelines are known within 1500' of the site. A few oil wells (dry holes) have been drilled less than one mile away from the site, but it is not likely that any significant subsurface oilfield related gases (hydrogen sulfide, methane etc.) are present beneath the site.

No additional geologic assessment or mitigation is recommended at this time.

5.0 Attachments

5.1 Location Map- Plate 1, "Location Map" shows the location of the site with relationship to roads and land features.

5.2 Plot Plan - Plate 2, "PLOT PLAN" shows the location and lot configuration of the property.

5.2.1 Plate 2A, Geologic Map shows the site geology related to local topography, streets and nearby surficial features.

5.2.2 Plate 2B, Geologic Cross-Section A to A', shows the subsurface lithology encountered in some of the soil borings at the site.

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5.3 Seismic Hazard Atlas Map- Plate 3, shows local geology and faults within the Lamont Quadrangle near the site.

5.3.1 Earthquake Epicenter Map - Plate 3A, shows the site location on an earthquake epicenter map of historical earthquakes with magnitudes >5.0, from the Eqsearchwin computer modeling program.

5.4 Depth to Groundwater Map - Plate 4, shows the site location in relation to a Depth to Water Map of the regional area prepared by the Kern County Water Agency.

5.5 Fault Location Map- Plate 5, shows the site in relation to the nearest active faults within 100 miles based on the EQFault program.

5.5.1 Plate 5A shows the Regional Faults based on the Fault Activity Map of California 2010.

5.6 DOGGR Oil Well Map - Plate 6, shows the site in relation to the nearest oil wells drilled near the site.

5.7 Lake Isabella Dam Inundation Map, Plate 7 shows the predicted rate and depth of flooding which would occur in the Bakersfield area if the Lake Isabella Dam broke.

5.8 Regional Land Subsidence Map, Plate 8, shows the regional area of land subsidence and hydrocompaction.

5.8 Appendix A - Deterministic Site Parameters - EQFAULTWIN data determined for the site for faults within 100 miles. EQSEARCHWIN data concerning the distance and magnitude of earthquakes within 100 miles of the site is attached. Seismic Design Data from OSHPOD. USGS Unified hazard Tool – Deaggregation data.

5.9 Appendix B - Presents the Boring Logs, Flood Insurance Rate Map, LiquefyPro data and the Pipeline Certification form.

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- USGS, Design Maps, http://geohazards.usgs.gov/designmaps/us
- LiquefyPro (version 5.9b), CivilTech Software.
- DOGGR, Online Mapping System.

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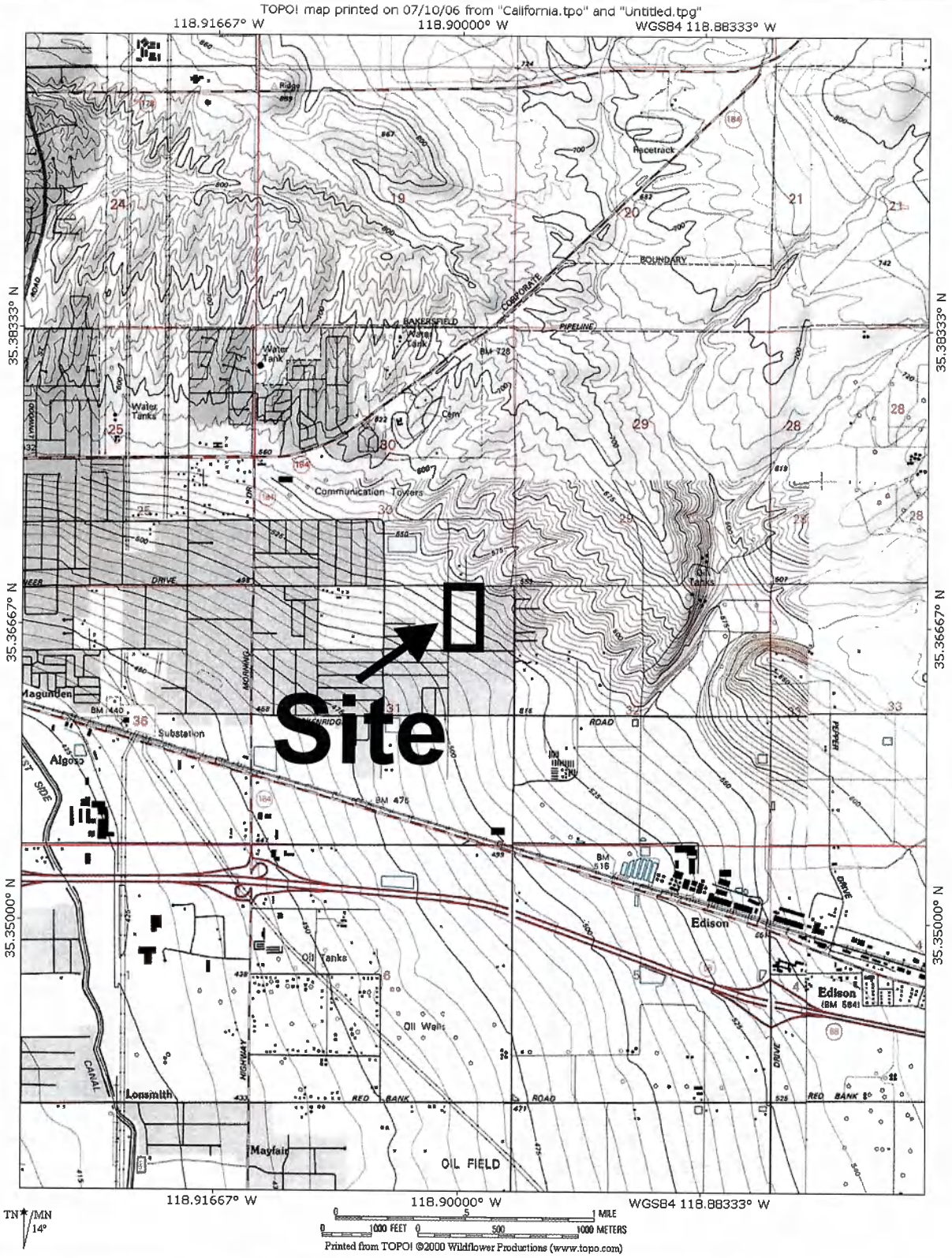

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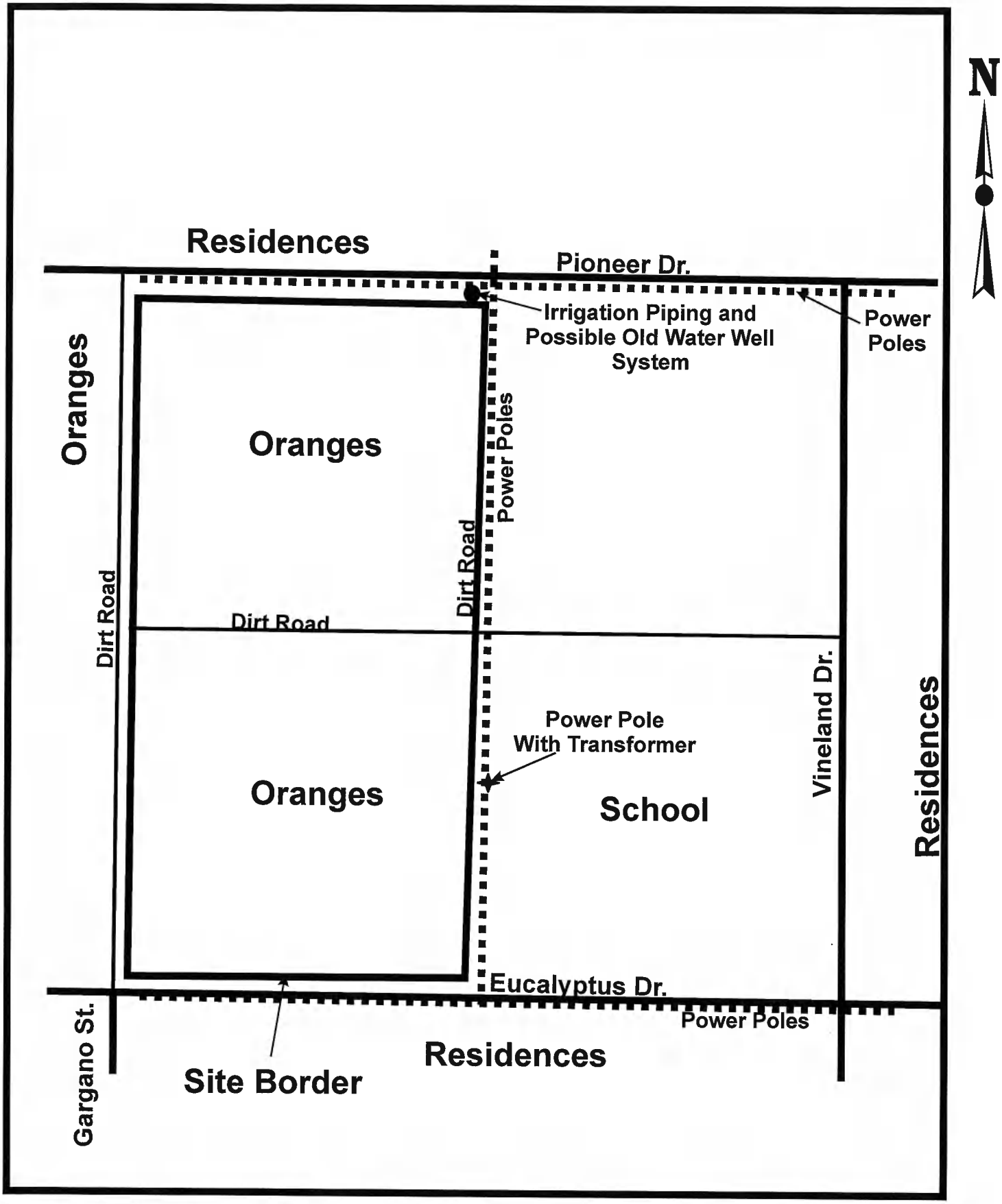
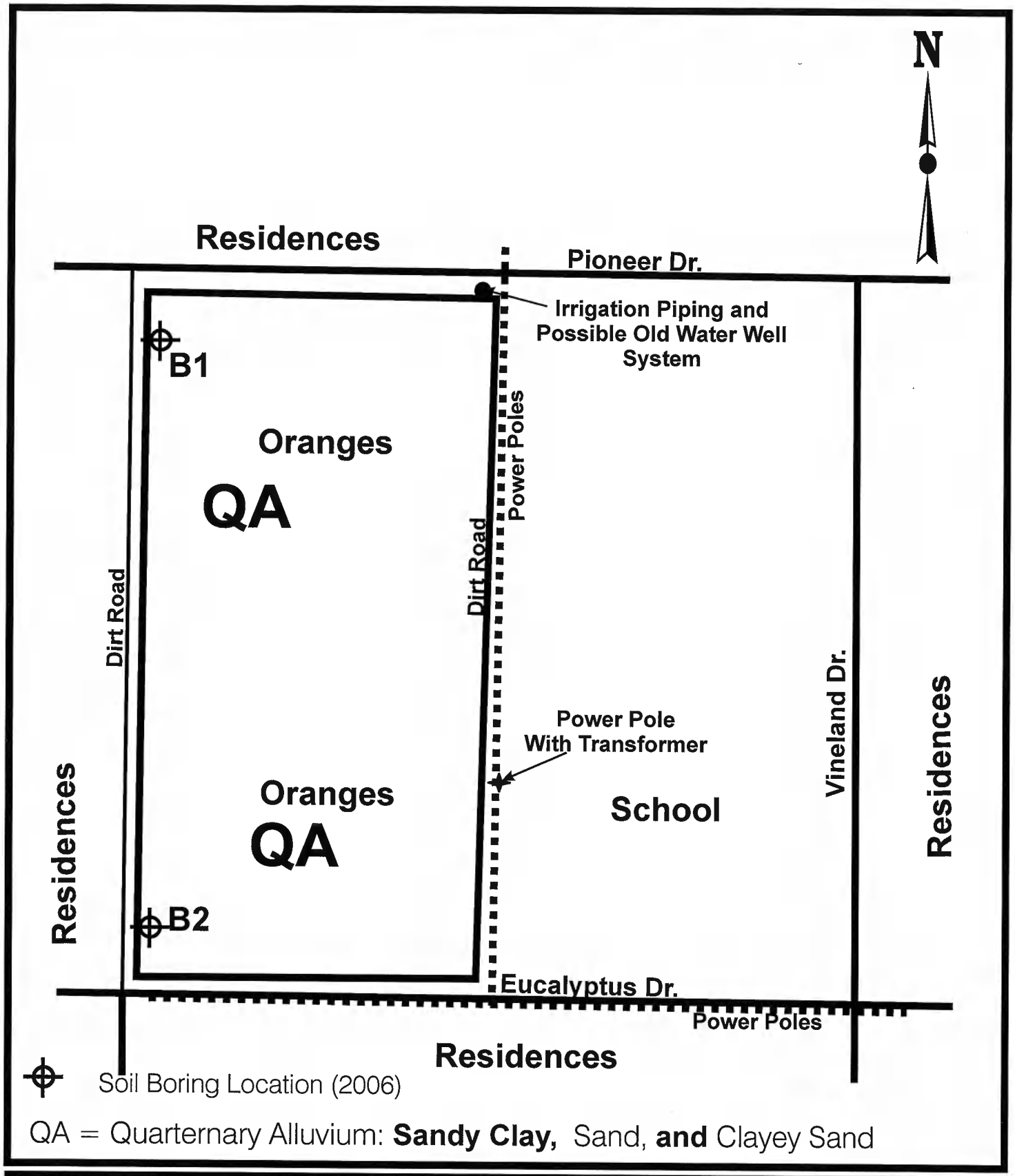
SOILS ENGINEERING, INC. **4400 Yeager Way** **Bakersfield, CA 93313** **(661) 831 - 5100** DATE: 1/19 PROJECT: 16901	**Edison Elementary School District** **NE of Eucalyptus Dr. and Gargano St.** **Edison, CA** Location Map	**PLATE** **1**

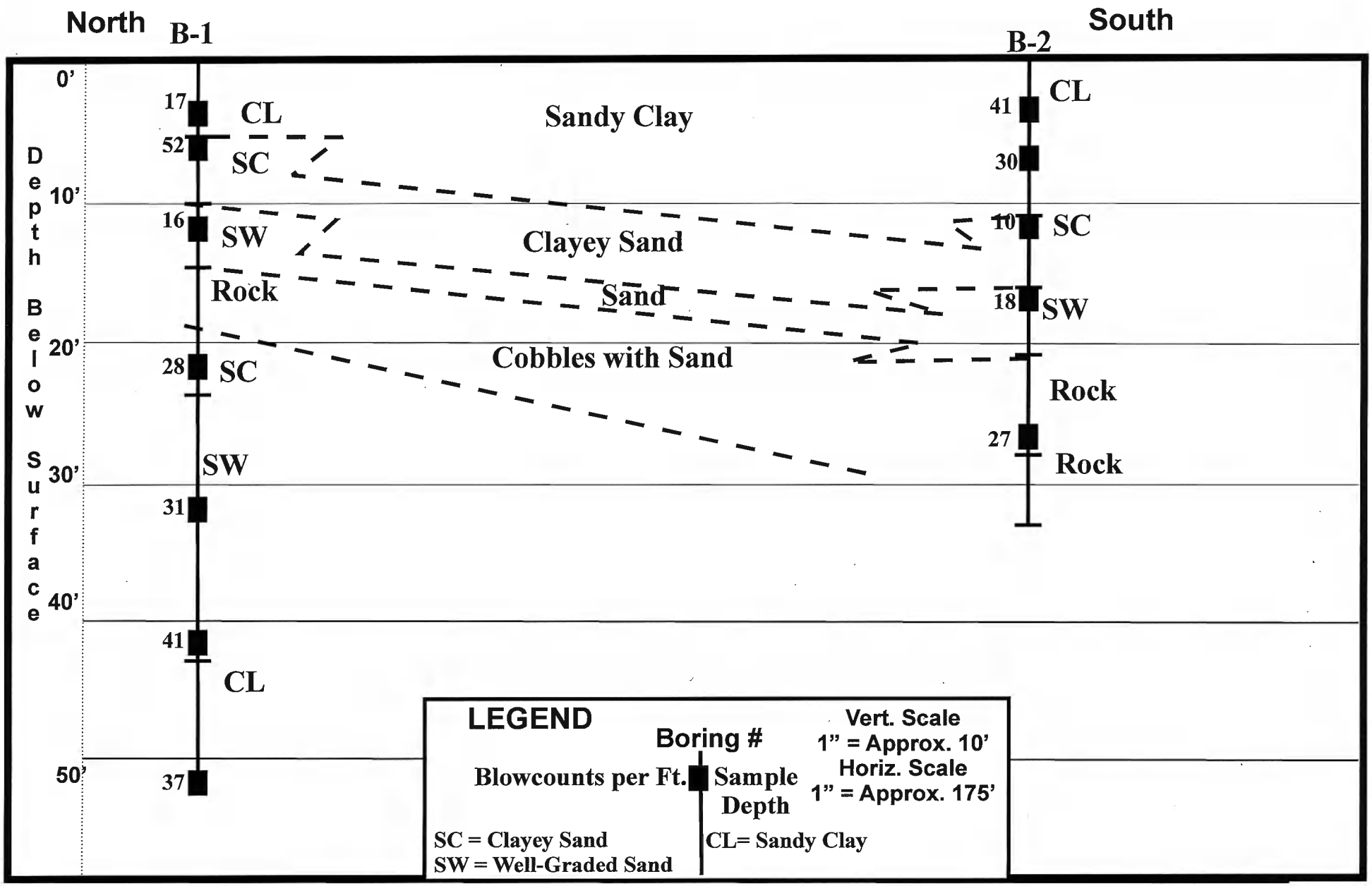


SOILS ENGINEERING, INC. 4400 Yeager Way Bakersfield, CA 93313 (661) 831 - 5100 DATE: 1/19 PROJECT: 16901	Edison Elementary School District NE of Eucalyptus Dr. and Gargano St. Edison, CA **PLOT PLAN**	PLATE 2 No Scale



QA = Quarternary Alluvium: **Sandy Clay,** Sand, **and** Clayey Sand

SOILS ENGINEERING, INC. 4400 Yeager Way BAKERSFIELD, CA 93313	**Edison Elementary School District** **NE of Eucalyptus Dr. and Gargano St.** **Edison, CA**	Plate
DATE: 1/19 PROJECT: 16901	**BORING LOCATION/GEOLOGIC MAP**	2A



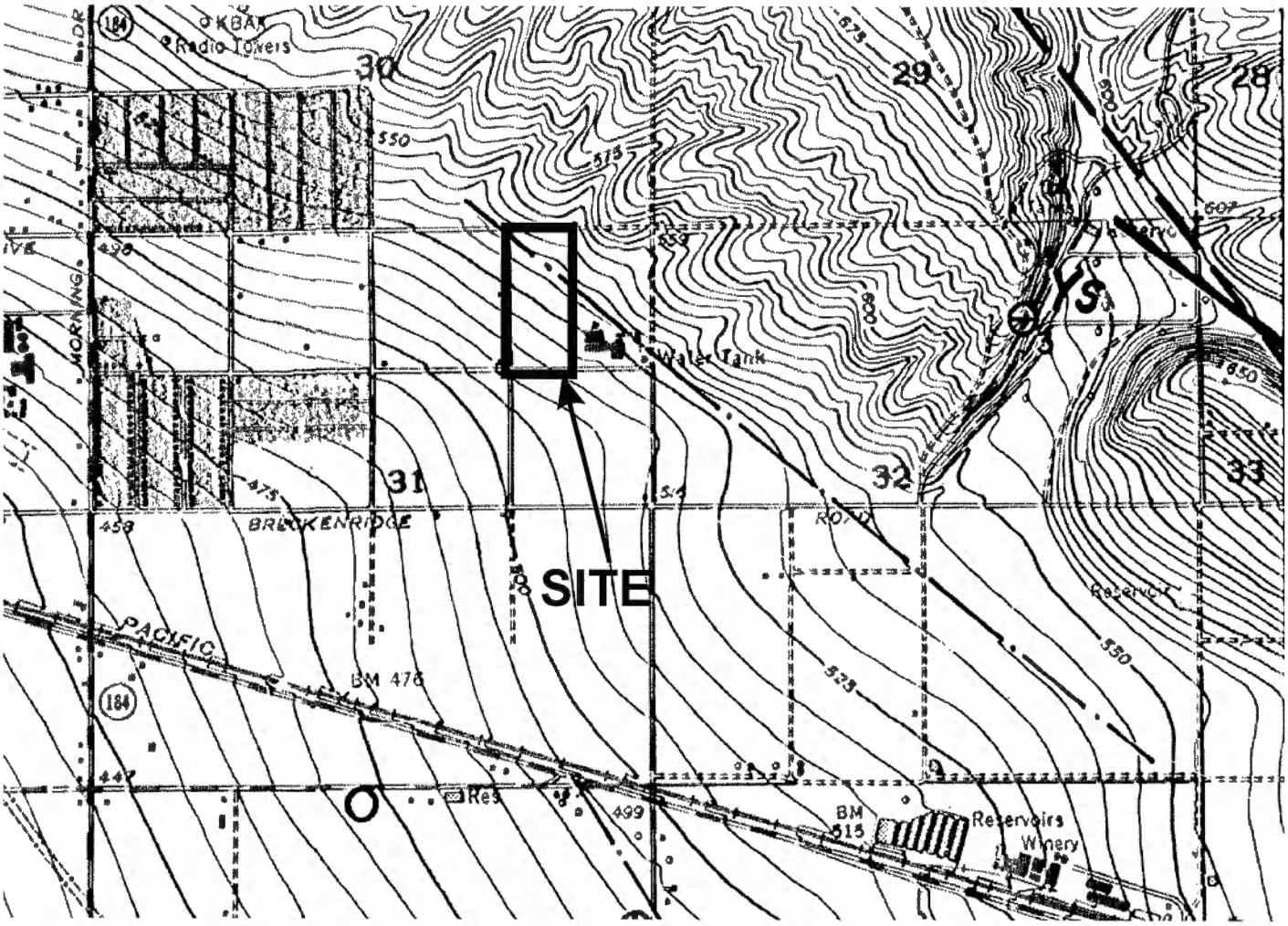
SOILS ENGINEERING
4400 Yeager Way
Bakersfield, CA 93313

DATE: 7/06 PROJECT: 11754

Edison Elementary School District
NE corner of Eucalyptus Dr. and Gargano St.
Edison, CA

Cross-section North to South

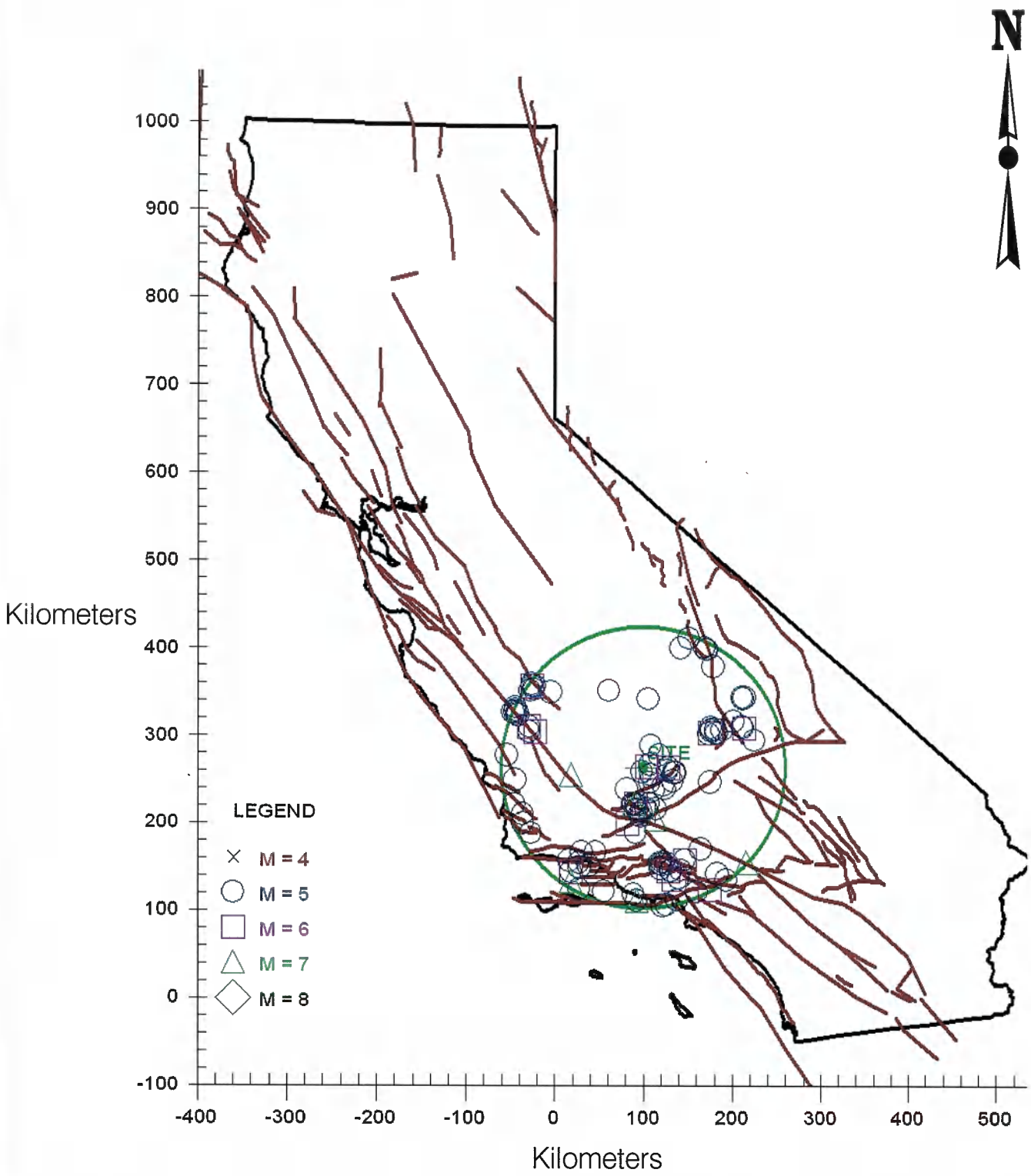
PLATE
2B



YS = Younger Sediments

SOURCE: Lamont Quadrangle, Seismic Hazard Atlas Map, Kern County Council of Govt.

SOILS ENGINEERING, INC. 4400 Yeager Way BAKERSFIELD, CA 93313	**Edison Elementary School District** **NE of Eucalyptus Dr. and Gargano St.** **Edison, CA**	PLATE
DATE: 1/19 PROJECT: 16901	Seismic Hazard Zone Atlas Map	3



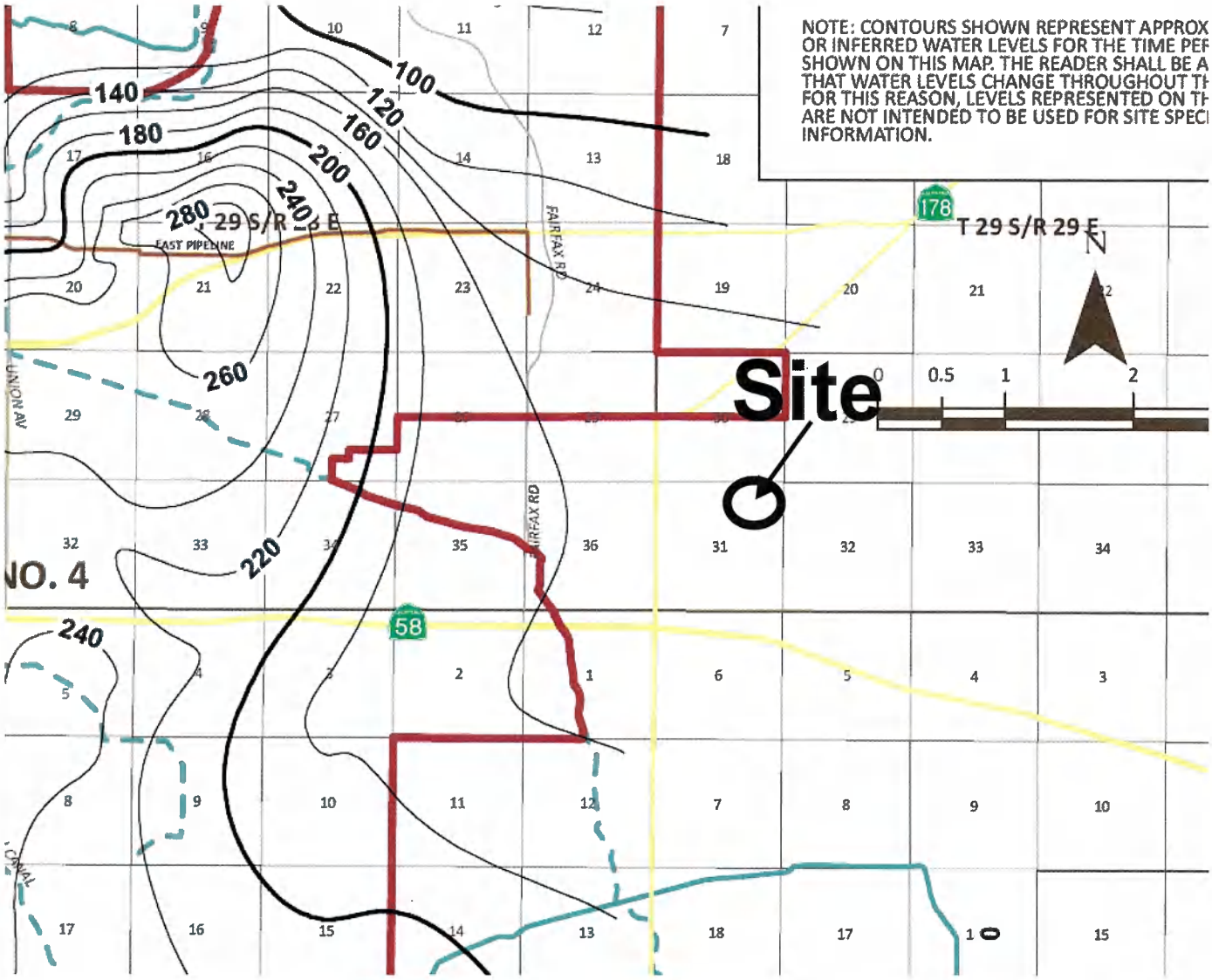
SOILS ENGINEERING, INC.
4400 Yeager Way
BAKERSFIELD, CA 93313

DATE: 1/19
PROJECT: 16901

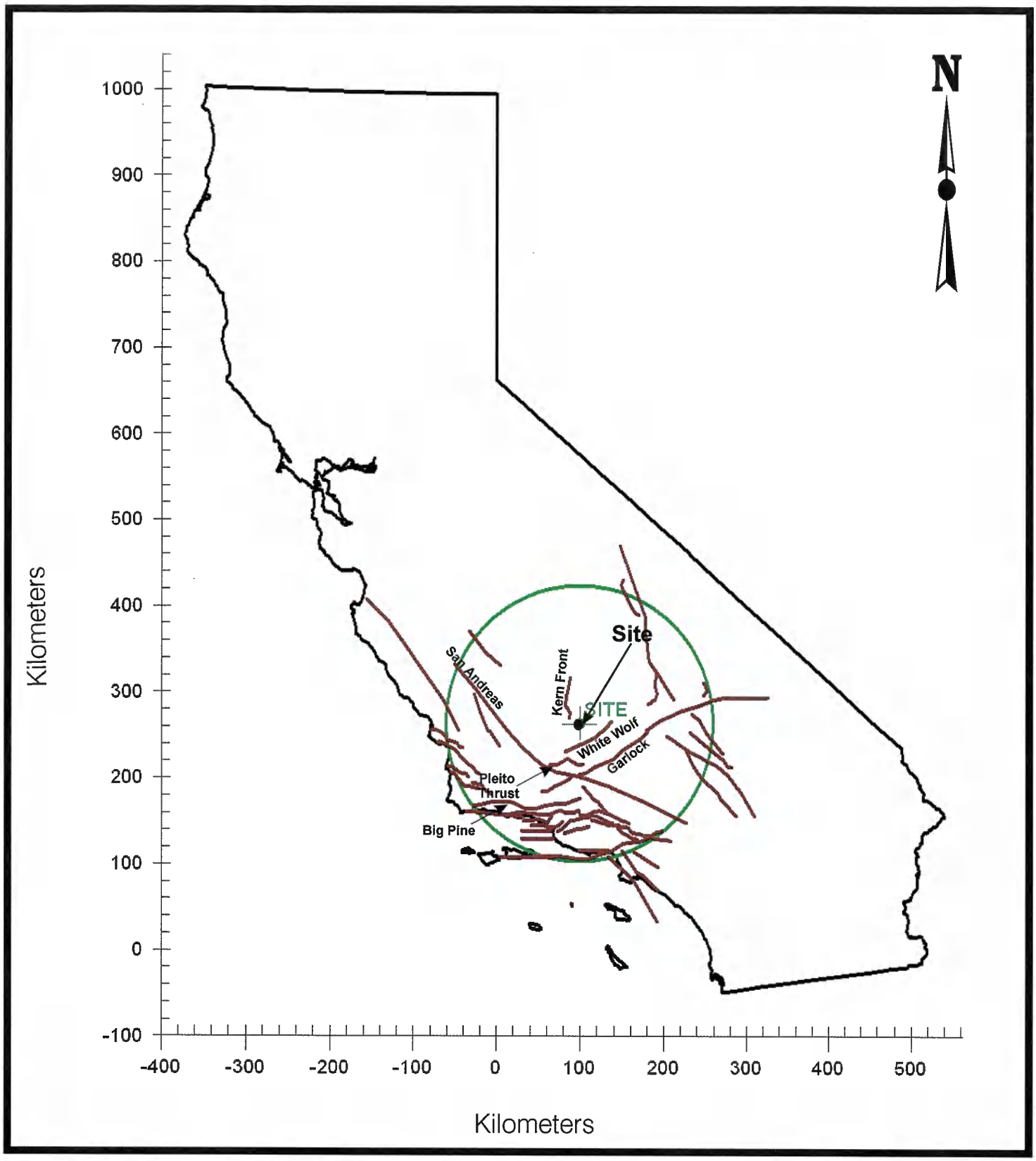
Edison Elementary School District
NE of Eucalyptus Dr. and Gargano St.
Edison, CA

Earthquake Epicenter Map

PLATE
3A



SOILS ENGINEERING, INC. **4400 Yeager Way** **Bakersfield, CA 93313** **(661) 831-5100** DATE: 1/19 PROJECT: 16901	**Edison Elementary School District** **NE of Eucalyptus Dr. and Gargano St.** **Edison, CA** Depth to Water Map	**PLATE** **4**



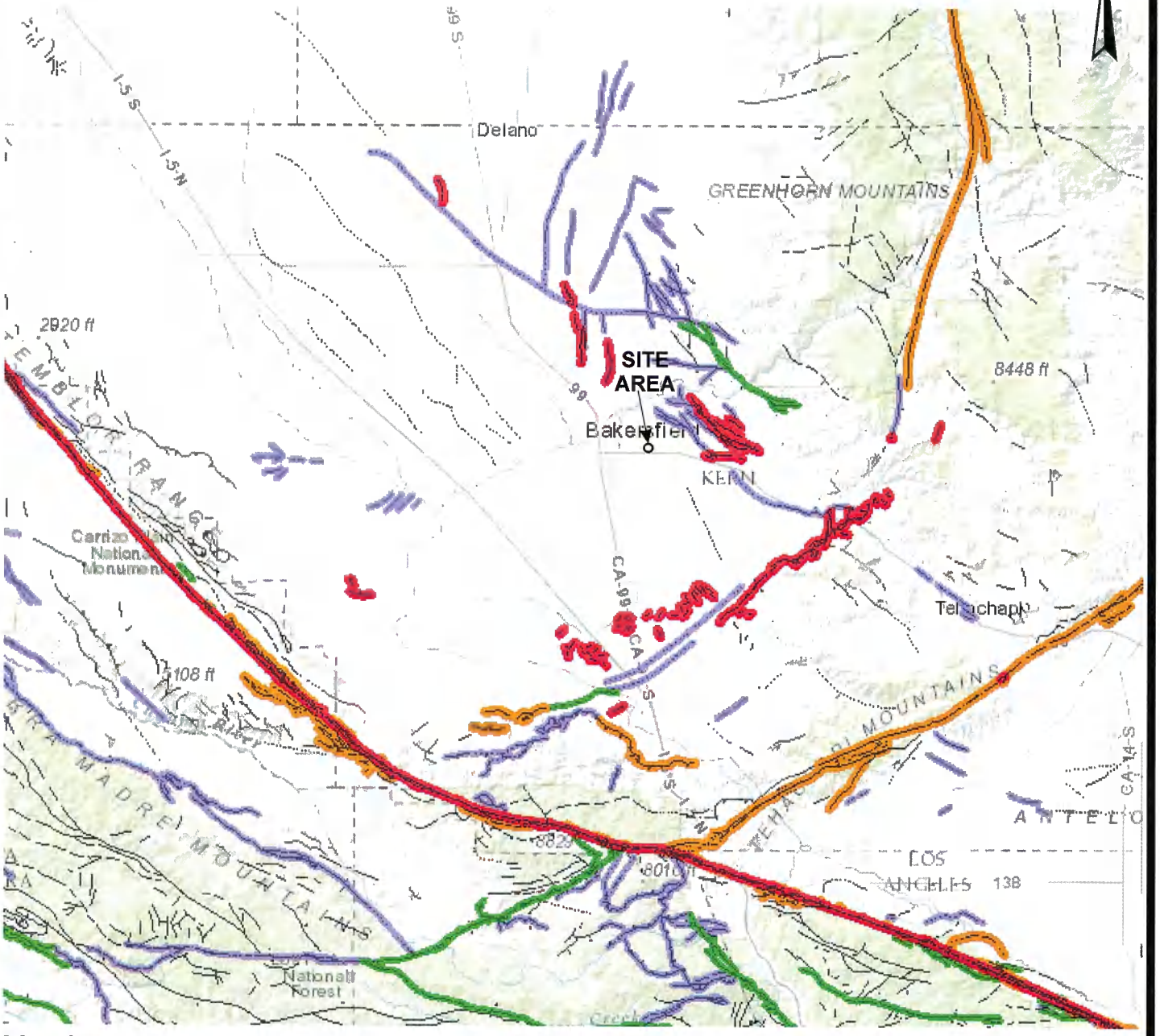
SOILS ENGINEERING, INC.
4400 Yeager Way
BAKERSFIELD, CA 93313

DATE: 1/19
PROJECT: 16901

Edison Elementary School District
NE of Eucalyptus Dr. and Gargano St.
Edison, CA

Fault Location Map

PLATE
5



SOURCE: Fault Activity Map of California 2010, CDMG

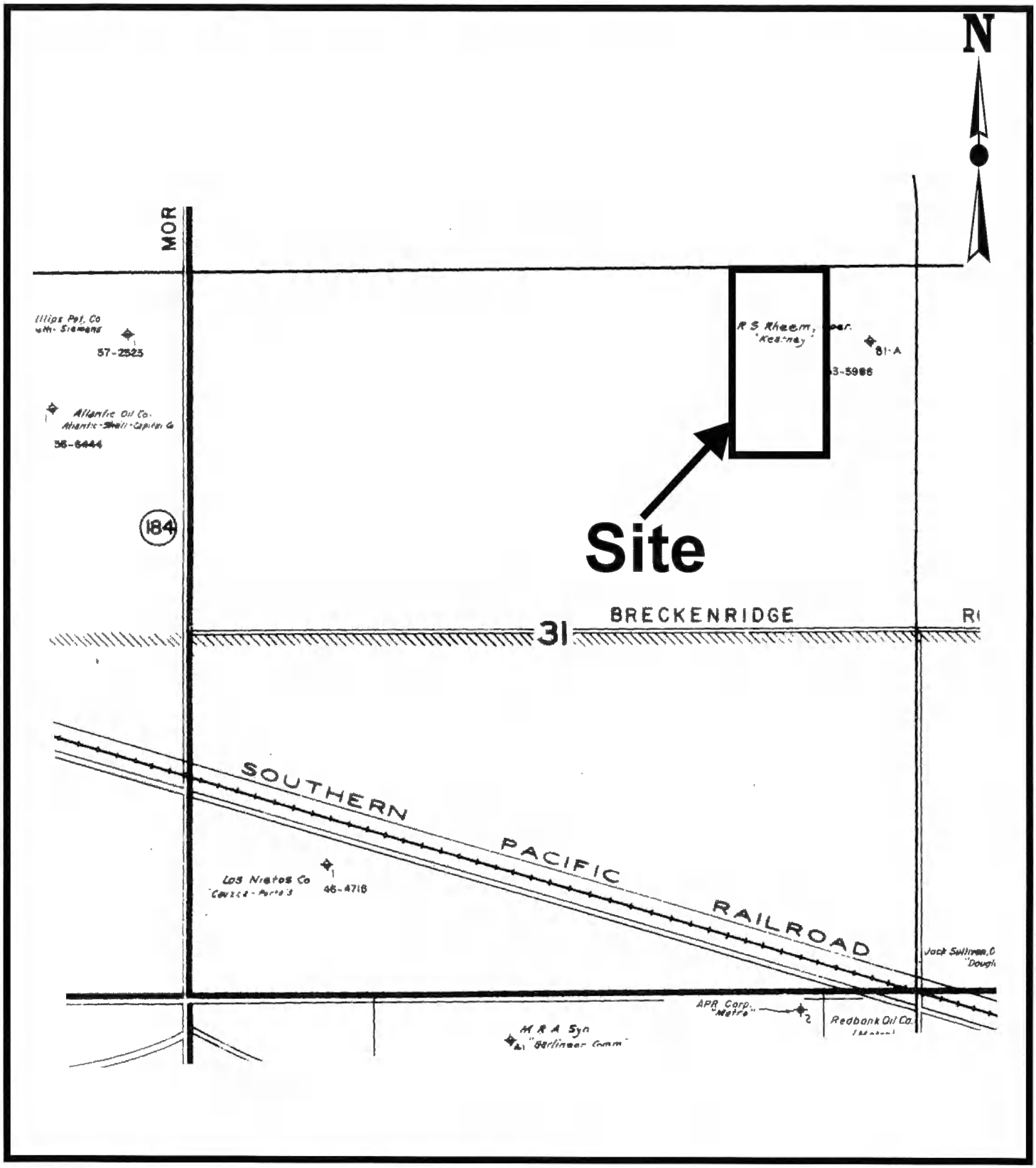
SOILS ENGINEERING, INC.
4400 Yeager Way
BAKERSFIELD, CA 93313

DATE: 1/19
PROJECT: 16901

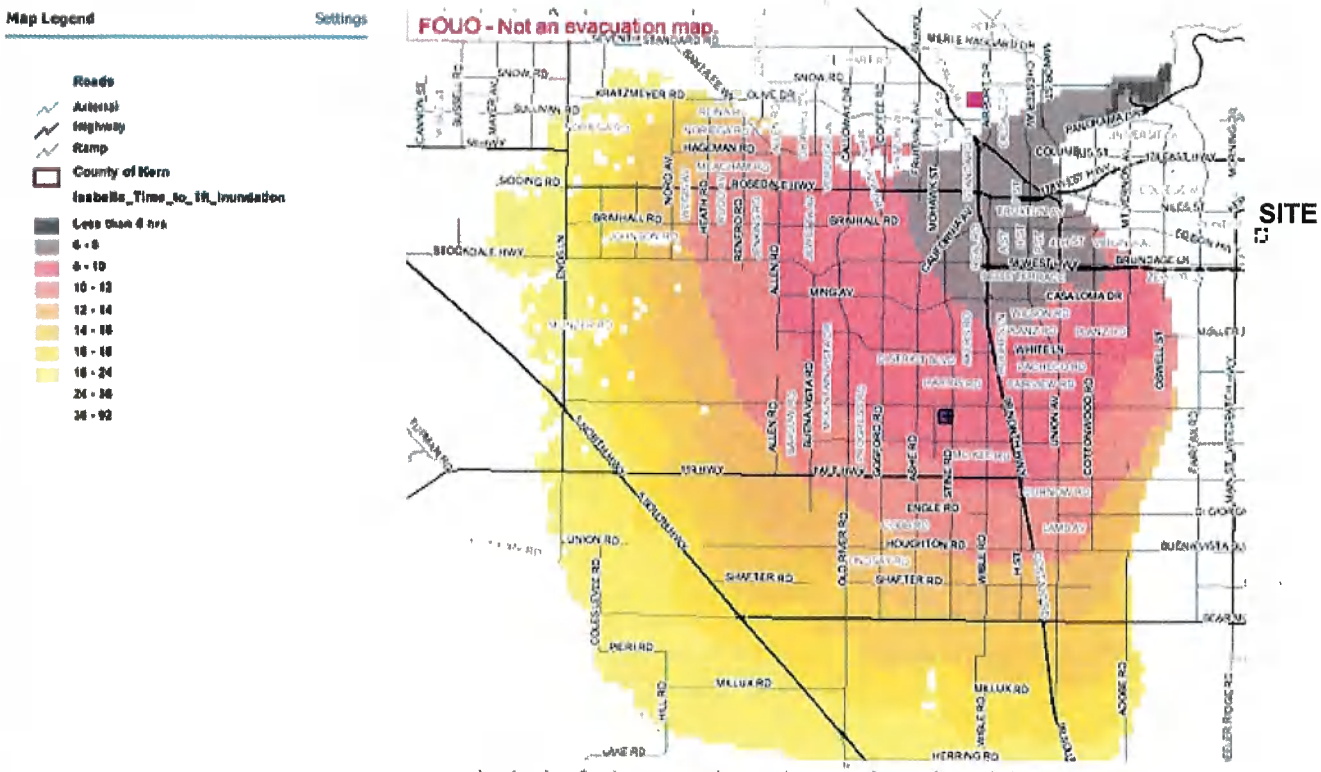
Edison Elementary School District
NE of Eucalyptus Dr. and Gargano St.
Edison, CA

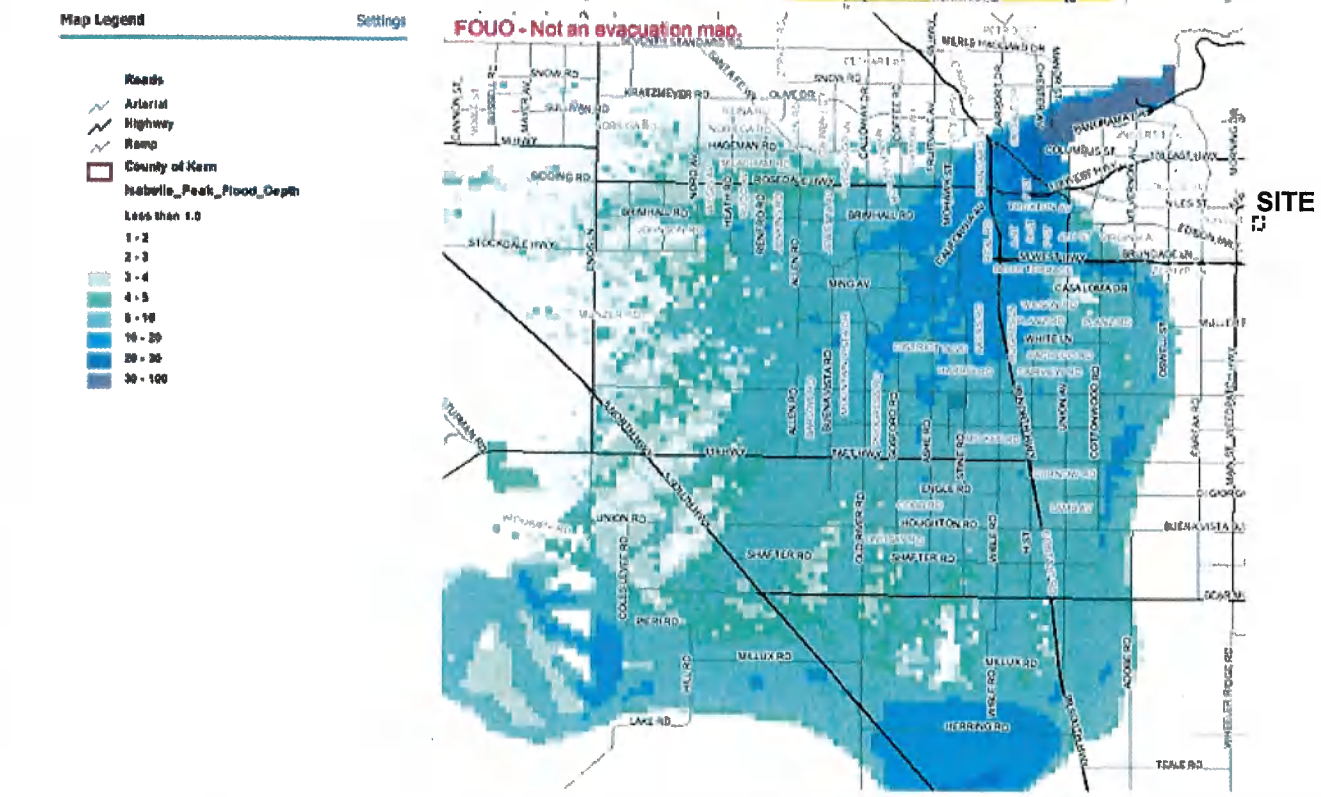
REGIONAL FAULT MAP

PLATE
5A



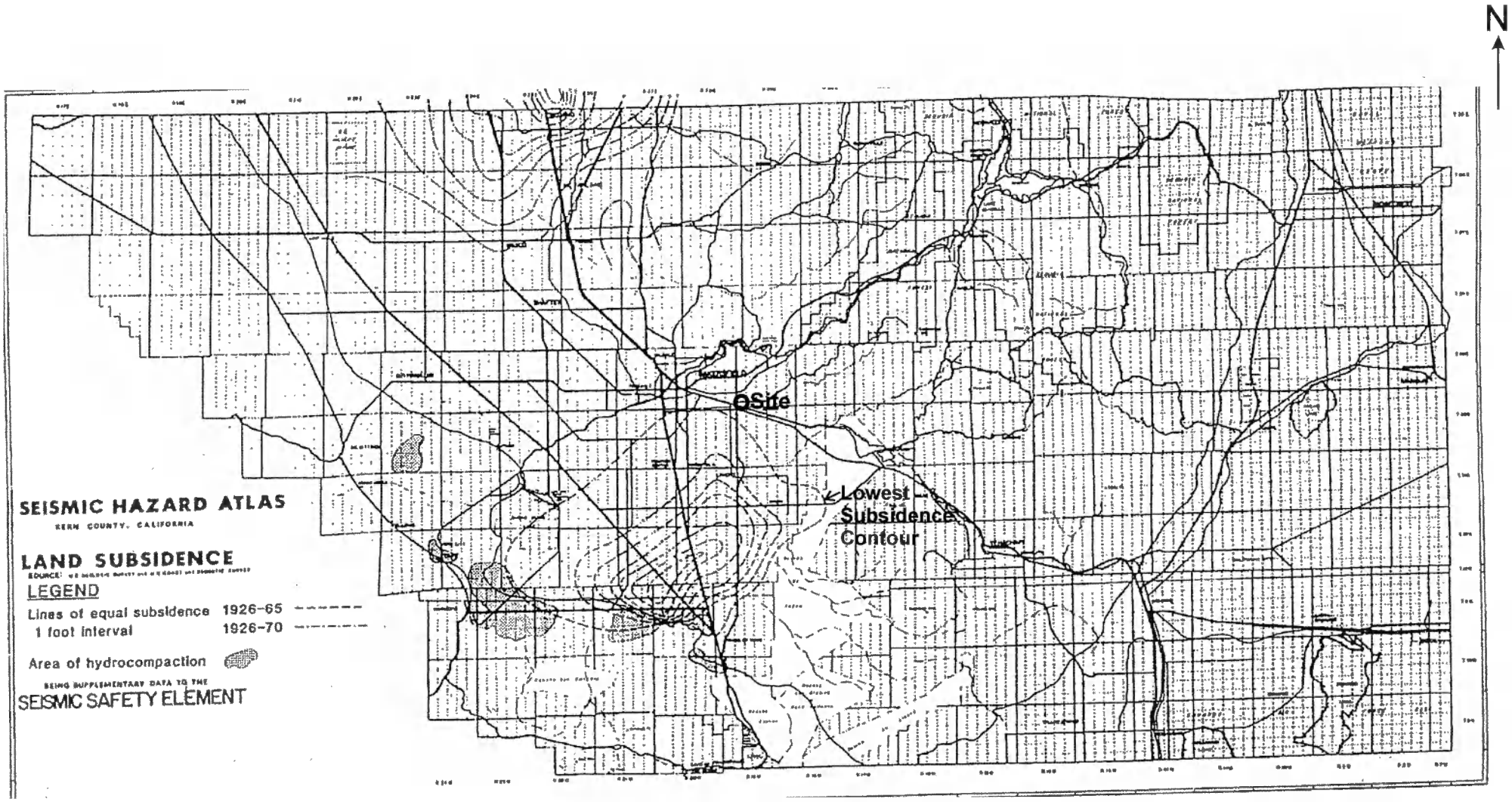
SOILS ENGINEERING, INC. **4400 Yeager Way** **Bakersfield, CA 93313** **(661) 831 - 5100** DATE: 1/19 PROJECT: 16901	**Edison Elementary School District** **NE of Eucalyptus Dr. and Gargano St.** **Edison, CA** DOGGR Oil Well Map	**PLATE** **6**





Source: Kern County Map Info System, US Army Corps of Engineers Preliminary Flood Results

SOILS ENGINEERING, INC. **4400 Yeager Way** **Bakersfield, CA 93313** **(661) 831 - 5100** DATE: 1/19 PROJECT: 16901	**Edison Elementary School District** **NE of Eucalyptus Dr. and Gargano St.** **Edison, CA** **Lake Isabella Dam Inundation Map**	**Plate** **7**



Regional Land Subsidence Map

From City of Bakersfield Safety Element (Figure 15)

Plate 8

Appendix A

Deterministic Site Parameters, EQFault, EQSEARCHWIN, FRISKSPWIN Data, Seismic Design Data, Unified Hazard Tool – Deaggregation Data.

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*    E Q F A U L T    *
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*    Version 3.00     *
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DETERMINISTIC ESTIMATION OF
PEAK ACCELERATION FROM DIGITIZED FAULTS

JOB NUMBER: 16901

DATE: 01-10-2019

JOB NAME: Edison School Site

CALCULATION NAME: Test Run Analysis

FAULT-DATA-FILE NAME: CGSFLTE.DAT

SITE COORDINATES:
   SITE LATITUDE: 35.3672
   SITE LONGITUDE: 118.8997

SEARCH RADIUS: 100 mi

ATTENUATION RELATION: 3) Boore et al. (1997) Horiz. - NEHRP D (250)
   UNCERTAINTY (M=Median, S=Sigma): M Number of Sigmas: 0.0
   DISTANCE MEASURE: cd_2drp
   SCOND: 0
   Basement Depth: 5.00 km Campbell SSR: Campbell SHR:
   COMPUTE PEAK HORIZONTAL ACCELERATION

FAULT-DATA FILE USED: CGSFLTE.DAT

MINIMUM DEPTH VALUE (km): 0.0

EQFAULT SUMMARY

DETERMINISTIC SITE PARAMETERS

Page 1

ABBREVIATED FAULT NAME	APPROXIMATE DISTANCE mi (km)	ESTIMATED MAX. EARTHQUAKE EVENT MAXIMUM EARTHQUAKE MAG.(Mw)	PEAK SITE ACCEL. g	EST. SITE INTENSITY MOD.MERC.
Kern Front	9.1(14.7)	6.3	0.231	IX
WHITE WOLF	13.8(22.2)	7.3	0.292	IX
PLEITO THRUST	26.3(42.3)	7.0	0.154	VIII
GARLOCK (West)	32.9(52.9)	7.3	0.125	VII
SAN ANDREAS - Whole M-1a	37.7(60.6)	8.0	0.162	VIII
SAN ANDREAS - Carrizo M-1c-2	37.7(60.6)	7.4	0.118	VII
SAN ANDREAS - 1857 Rupture M-2a	37.7(60.6)	7.8	0.146	VIII
SAN ANDREAS - Cho-Moj M-1b-1	37.7(60.6)	7.8	0.146	VIII
BIG PINE	38.2(61.4)	6.9	0.090	VII
SAN GABRIEL	45.2(72.7)	7.2	0.093	VII
GARLOCK (East)	49.6(79.9)	7.5	0.101	VII
SAN ANDREAS - Mojave M-1c-3	51.2(82.4)	7.4	0.093	VII
So. SIERRA NEVADA	52.9(85.1)	7.3	0.105	VII
SANTA YNEZ (East)	53.9(86.8)	7.1	0.077	VII
SAN ANDREAS - Cholame M-1c-1	54.6(87.8)	7.3	0.084	VII
SAN CAYETANO	58.5(94.1)	7.0	0.083	VII
M.RIDGE-ARROYO PARIDA-SANTA ANA	60.7(97.7)	7.2	0.090	VII

SAN JUAN	61.7(99.3)	7.1	0.069	VI
SANTA SUSANA	64.6(104.0)	6.7	0.066	VI
HOLSER	64.6(104.0)	6.5	0.059	VI
LENWOOD-LOCKHART-OLD WOMAN SPRGS	64.9(104.5)	7.5	0.082	VII
OAK RIDGE (Onshore)	67.1(108.0)	7.0	0.075	VII
NORTHRIDGE (E. Oak Ridge)	67.4(108.4)	7.0	0.074	VII
NORTH CHANNEL SLOPE	68.4(110.0)	7.4	0.091	VII
LITTLE LAKE	68.6(110.4)	6.9	0.057	VI
RED MOUNTAIN	68.7(110.6)	7.0	0.073	VII
SIMI-SANTA ROSA	69.5(111.9)	7.0	0.073	VII
SIERRA MADRE (San Fernando)	69.6(112.0)	6.7	0.062	VI
VENTURA - PITAS POINT	70.6(113.6)	6.9	0.068	VI
SANTA YNEZ (West)	71.6(115.3)	7.1	0.061	VI
GREAT VALLEY 14	73.6(118.4)	6.4	0.051	VI
OAK RIDGE MID-CHANNEL STRUCTURE	74.9(120.5)	6.6	0.055	VI
VERDUGO	76.7(123.4)	6.9	0.064	VI
OWENS VALLEY	76.8(123.6)	7.6	0.076	VII
SAN LUIS RANGE (S. Margin)	78.4(126.2)	7.2	0.073	VII
CHANNEL IS. THRUST (Eastern)	78.5(126.4)	7.5	0.086	VII
SIERRA MADRE	79.4(127.8)	7.2	0.073	VII
HELENDALE - S. LOCKHARDT	81.6(131.3)	7.3	0.062	VI
GRAVEL HILLS - HARPER LAKE	81.8(131.7)	7.1	0.055	VI
LOS ALAMOS-W. BASELINE	83.0(133.6)	6.9	0.060	VI

DETERMINISTIC SITE PARAMETERS

Page 2

ABBREVIATED FAULT NAME	APPROXIMATE DISTANCE mi (km)	ESTIMATED MAX. EARTHQUAKE EVENT MAXIMUM EARTHQUAKE MAG.(Mw)	PEAK SITE ACCEL. g	EST. SITE INTENSITY MOD.MERC.
SAN ANDREAS - Parkfield	83.3(134.0)	6.5	0.040	V
BLACKWATER	84.0(135.2)	7.1	0.054	VI
ANACAPA-DUME	84.1(135.3)	7.5	0.082	VII
OAK RIDGE(Blind Thrust Offshore)	84.9(136.7)	7.1	0.065	VI
LIONS HEAD	87.2(140.4)	6.6	0.049	VI
CLAMSHELL-SAWPIT	88.4(142.2)	6.5	0.046	VI
GREAT VALLEY 13	88.4(142.3)	6.5	0.046	VI
MALIBU COAST	88.8(142.9)	6.7	0.051	VI
LOS OSOS	89.4(143.8)	7.0	0.060	VI
HOLLYWOOD	89.5(144.1)	6.4	0.043	VI

16901 EQF

INDEPENDENCE	90.7(145.9)	7.1	0.062	VI
RINCONADA	90.8(146.1)	7.5	0.063	VI
UPPER ELYSIAN PARK BLIND THRUST	90.8(146.2)	6.4	0.043	VI
CASMALIA (Orcutt Frontal Fault)	91.0(146.5)	6.5	0.045	VI
TANK CANYON	91.7(147.5)	6.4	0.043	VI
PUENTE HILLS BLIND THRUST	91.8(147.7)	7.1	0.062	VI
SANTA MONICA	92.1(148.3)	6.6	0.047	VI
RAYMOND	92.2(148.4)	6.5	0.045	VI
NEWPORT-INGLEWOOD (L.A.Basin)	95.9(154.3)	7.1	0.049	VI
PALOS VERDES	99.7 (160.5)	7.3	0.053	VI

****

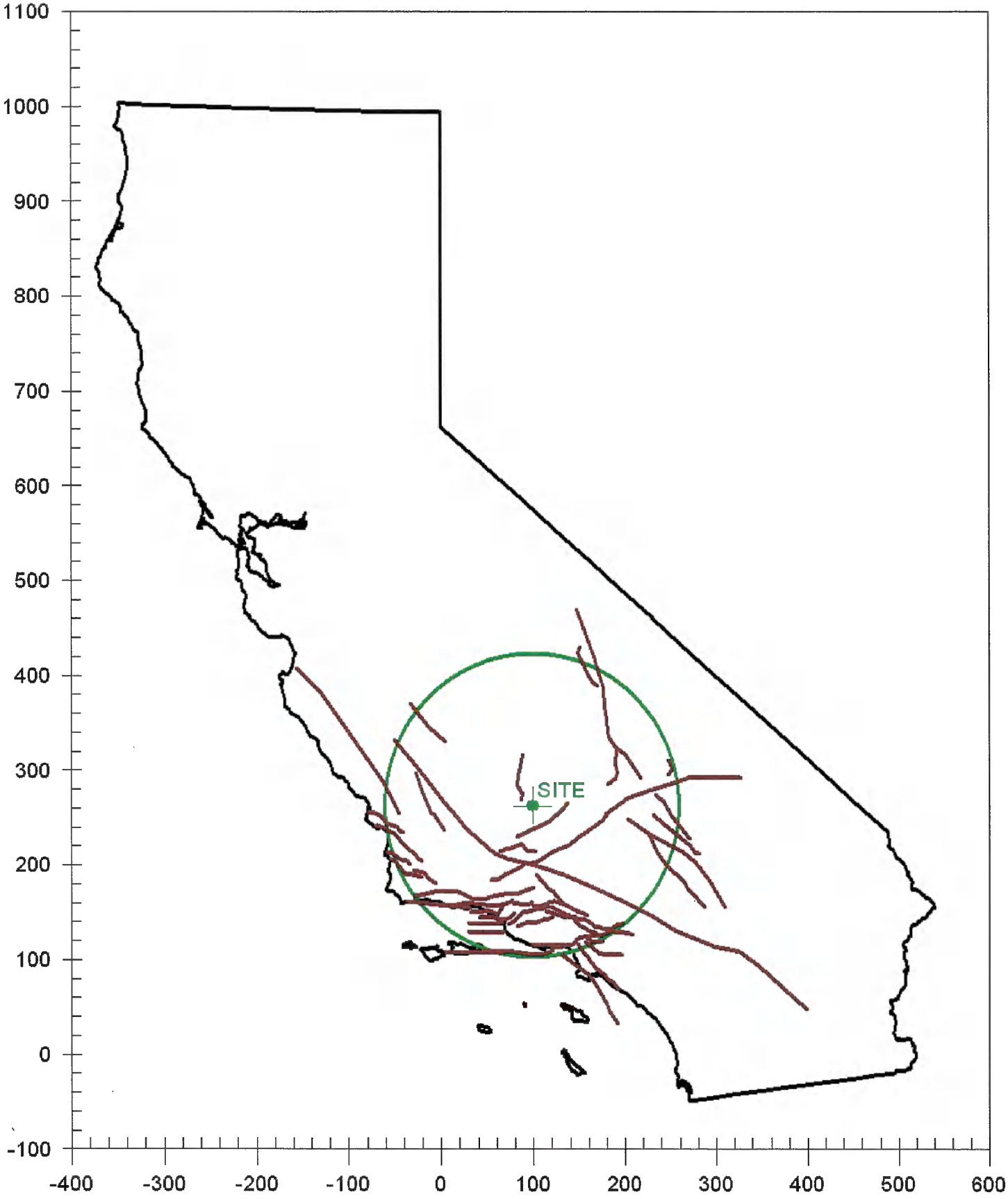
-END OF SEARCH- 60 FAULTS FOUND WITHIN THE SPECIFIED SEARCH RADIUS.

THE Kern Front FAULT IS CLOSEST TO THE SITE.
IT IS ABOUT 9.1 MILES (14.7 km) AWAY.

LARGEST MAXIMUM-EARTHQUAKE SITE ACCELERATION: 0.2925 g

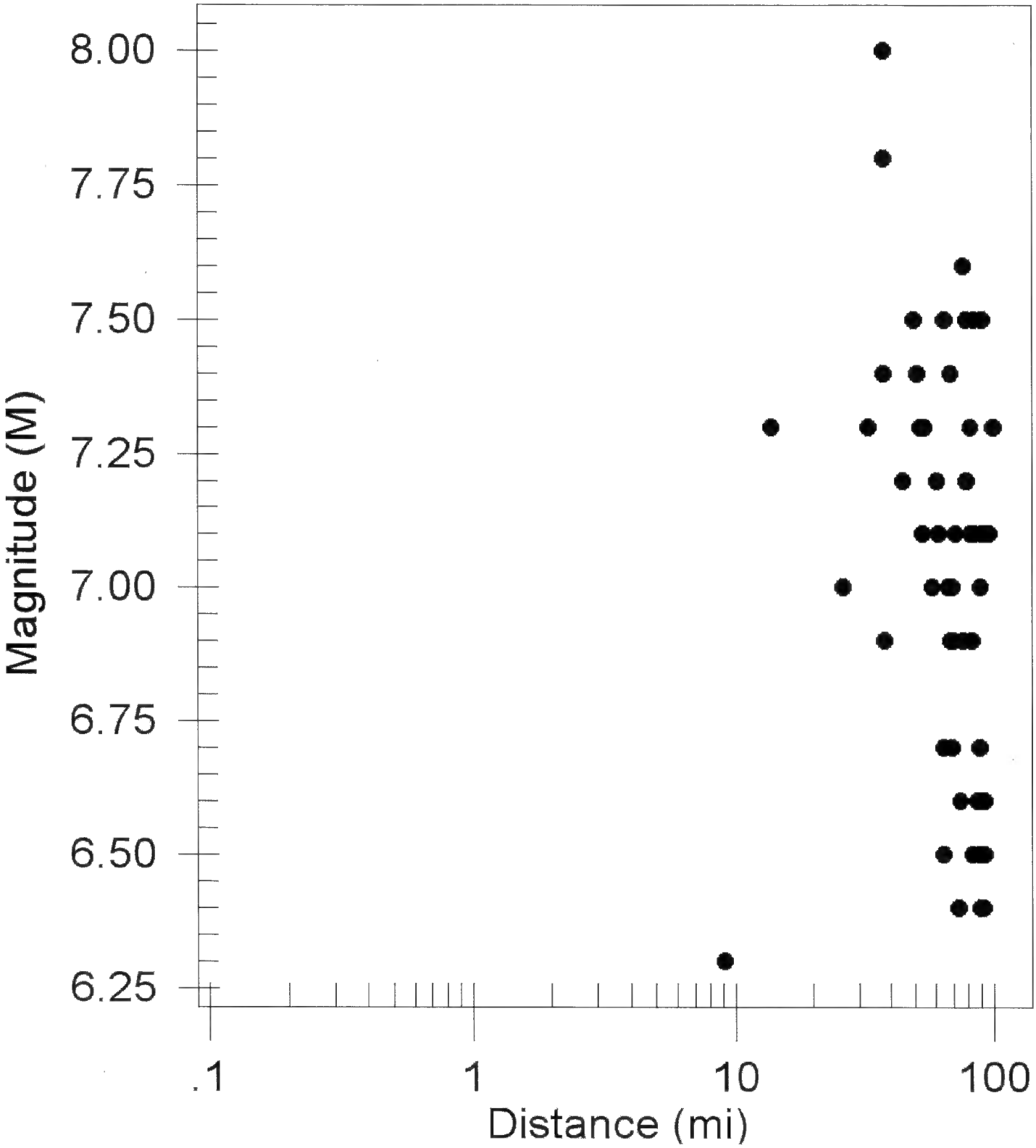
CALIFORNIA FAULT MAP

Edison School Site



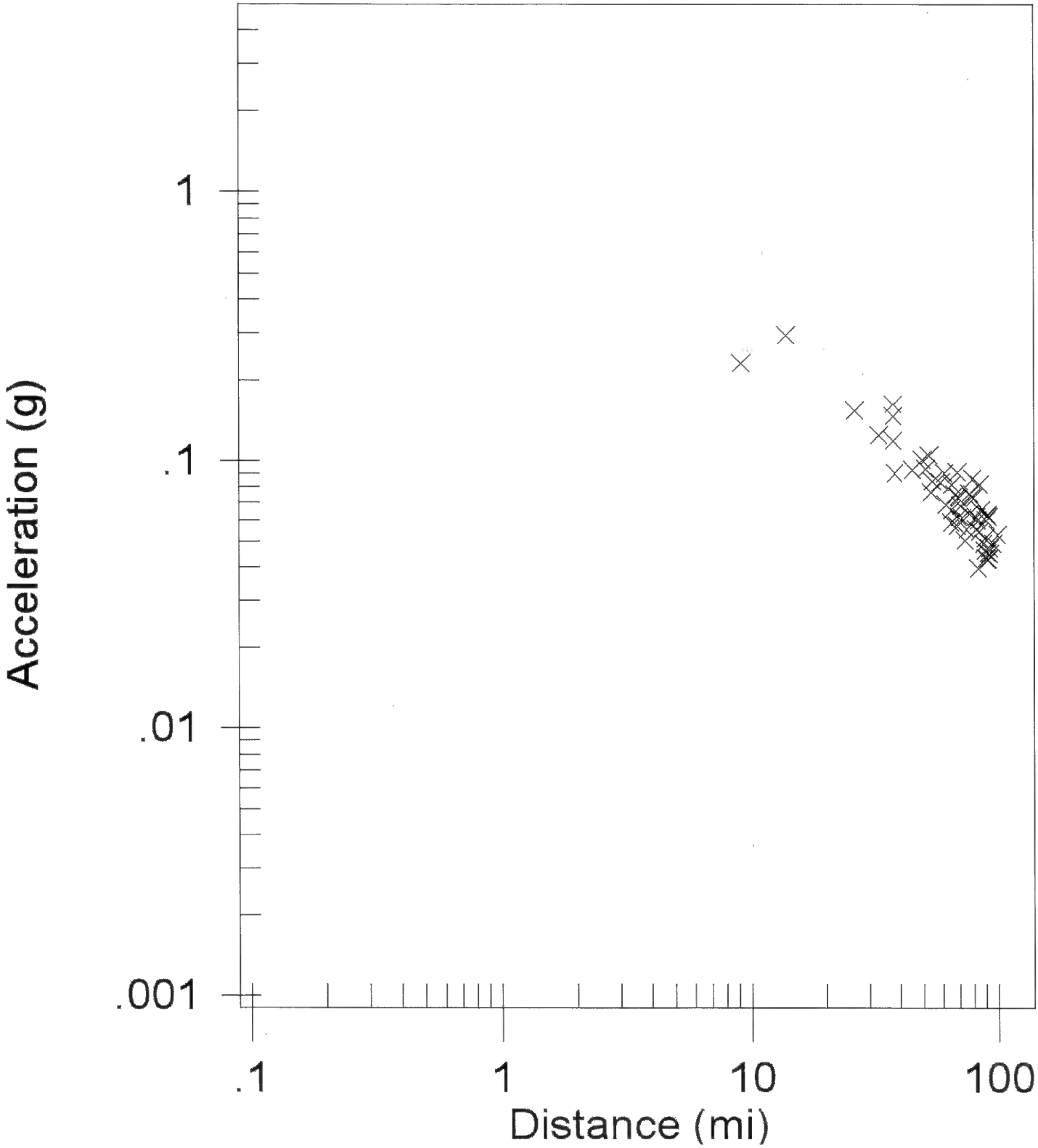
EARTHQUAKE MAGNITUDES & DISTANCES

Edison School Site



MAXIMUM EARTHQUAKES

Edison School Site



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ESTIMATION OF
PEAK ACCELERATION FROM
CALIFORNIA EARTHQUAKE CATALOGS

JOB NUMBER: 16901

DATE: 01-10-2019

JOB NAME: Edison SD

EARTHQUAKE-CATALOG-FILE NAME: ALLQUAKE.DAT

SITE COORDINATES:
SITE LATITUDE: 35.3672
SITE LONGITUDE: 118.8997

SEARCH DATES:
START DATE: 1800
END DATE: 2010

SEARCH RADIUS:
100.0 mi
160.9 km

ATTENUATION RELATION: 3) Boore et al. (1997) Horiz. - NEHRP D (250)
UNCERTAINTY (M=Median, S=Sigma): M Number of Sigmas: 0.0
ASSUMED SOURCE TYPE: DS [SS=Strike-slip, DS=Reverse-slip, BT=Blind-thrust]
SCOND: 0 Depth Source: A
Basement Depth: 5.00 km Campbell SSR: Campbell SHR:
COMPUTE PEAK HORIZONTAL ACCELERATION

MINIMUM DEPTH VALUE (km): 0.0

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	35.3330	118.9170	08/22/1952	224124.0	0.0	5.80	0.337	IX	2.5(4.1)
DMG	35.3830	118.8500	07/29/1952	7 347.0	0.0	6.10	0.375	IX	3.0(4.8)
DMG	35.4000	118.8170	07/29/1952	8 146.0	0.0	5.10	0.175	VIII	5.2(8.3)
DMG	35.3000	118.8000	12/23/1905	2223 0.0	0.0	5.00	0.135	VIII	7.3(11.7)
DMG	35.2170	118.8170	07/23/1952	1317 5.0	0.0	5.70	0.145	VIII	11.4(18.3)
DMG	35.5000	118.7000	01/06/1905	1430 0.0	0.0	5.00	0.084	VII	14.5(23.3)
DMG	35.6000	118.8000	06/30/1926	1331 0.0	0.0	5.00	0.075	VII	17.0(27.4)
DMG	35.3330	118.6000	07/31/1952	12 9 9.0	0.0	5.80	0.113	VII	17.0(27.4)
DMG	35.1330	118.7670	07/21/1952	194122.0	0.0	5.50	0.094	VII	17.8(28.7)
DMG	35.3670	118.5830	07/23/1952	31923.0	0.0	5.00	0.072	VI	17.8(28.7)
DMG	35.3670	118.5830	07/23/1952	03832.0	0.0	6.10	0.128	VIII	17.8(28.7)
GSP	35.1490	119.1040	05/28/1993	044740.6	21.0	5.20	0.076	VII	19.0(30.5)
DMG	35.1830	118.6500	07/21/1952	151358.0	0.0	5.10	0.072	VII	19.0(30.5)
DMG	35.1500	118.6330	01/27/1954	141948.0	0.0	5.00	0.063	VI	21.2(34.2)
DMG	35.3150	118.5160	07/25/1952	194323.7	11.2	5.70	0.089	VII	21.9(35.2)
DMG	35.2330	118.5330	07/21/1952	174244.0	0.0	5.10	0.063	VI	22.6(36.4)
DMG	35.3110	118.4990	07/25/1952	1313 8.2	2.8	5.00	0.060	VI	22.9(36.8)
DMG	35.3170	118.4940	07/25/1952	19 944.6	5.5	5.70	0.086	VII	23.1(37.2)
DMG	35.0000	118.8330	07/23/1952	181351.0	0.0	5.20	0.061	VI	25.6(41.2)
DMG	35.0000	118.8330	07/23/1952	75319.0	0.0	5.40	0.067	VI	25.6(41.2)
DMG	35.0000	119.0000	07/21/1952	12 531.0	0.0	6.40	0.113	VII	26.0(41.8)
DMG	35.0000	119.0000	02/16/1919	1557 0.0	0.0	5.00	0.054	VI	26.0(41.8)
DMG	35.0000	119.0170	07/21/1952	115214.0	0.0	7.70	0.223	IX	26.2(42.2)
DMG	35.0000	119.0170	01/12/1954	233349.0	0.0	5.90	0.086	VII	26.2(42.2)
DMG	35.0000	119.0330	07/21/1952	12 2 0.0	0.0	5.60	0.073	VII	26.4(42.6)
DMG	34.9830	118.9830	05/23/1954	235243.0	0.0	5.10	0.055	VI	26.9(43.3)
DMG	34.9500	118.8670	07/21/1952	121936.0	0.0	5.30	0.058	VI	28.9(46.4)
DMG	34.9410	118.9870	11/15/1961	53855.5	10.7	5.00	0.049	VI	29.8(48.0)
DMG	34.9320	118.9760	03/01/1963	02557.9	13.9	5.00	0.048	VI	30.4(48.8)
PAS	34.9430	118.7430	06/10/1988	23 643.0	6.8	5.40	0.059	VI	30.6(49.2)
T-A	34.9200	118.9200	01/20/1857	0 0 0.0	0.0	5.00	0.047	VI	30.9(49.7)
T-A	34.9200	118.9200	05/23/1857	0 0 0.0	0.0	5.00	0.047	VI	30.9(49.7)
DMG	34.9000	118.9000	10/23/1916	244 0.0	0.0	6.00	0.078	VII	32.3(51.9)
DMG	34.9000	118.9500	08/01/1952	13 430.0	0.0	5.10	0.048	VI	32.4(52.1)
DMG	34.8670	118.9330	09/21/1941	1953 7.2	0.0	5.20	0.048	VI	34.6(55.7)
T-A	34.8300	118.7500	11/27/1852	0 0 0.0	0.0	7.00	0.116	VII	38.0(61.2)
DMG	34.8000	119.1000	09/05/1883	1230 0.0	0.0	6.00	0.065	VI	40.8(65.6)
DMG	34.7000	119.0000	10/23/1916	254 0.0	0.0	5.50	0.045	VI	46.4(74.7)
GSP	35.2100	118.0660	07/11/1992	181416.2	10.0	5.70	0.049	VI	48.2(77.6)
DMG	36.0800	118.8200	05/29/1915	646 0.0	0.0	5.00	0.033	V	49.4(79.5)
DMG	35.3000	119.8000	01/09/1857	16 0 0.0	0.0	7.90	0.148	VIII	50.9(81.9)
DMG	35.7150	118.0740	03/15/1946	14 035.4	0.0	5.30	0.037	V	52.2(84.1)
DMG	35.7250	118.0550	03/15/1946	134935.9	22.0	6.30	0.062	VI	53.5(86.1)
DMG	35.7450	118.0390	03/16/1946	94617.9	0.0	5.10	0.032	V	54.9(88.4)
DMG	35.7780	118.0490	01/28/1961	81246.2	5.5	5.30	0.035	V	55.6(89.4)
DMG	35.7510	118.0290	03/15/1946	215433.4	0.0	5.20	0.033	V	55.6(89.5)
DMG	35.7140	117.9770	03/15/1946	191853.6	0.0	5.40	0.036	V	57.1(91.9)
DMG	35.7530	117.9860	03/15/1946	1321 0.9	0.0	5.20	0.032	V	57.8(93.0)
T-A	36.1700	119.3200	07/25/1868	230 0.0	0.0	5.00	0.028	V	60.2(96.9)
DMG	35.7470	117.9080	03/18/1946	155042.6	4.4	5.30	0.033	V	61.6(99.1)
GSP	34.3940	118.6690	06/26/1995	084028.9	13.0	5.00	0.026	V	68.4(110.2)
DMG	34.5000	119.5000	06/29/1926	2321 0.0	0.0	5.50	0.033	V	68.8(110.8)
DMG	34.5000	119.5000	08/05/1930	1125 0.0	0.0	5.00	0.025	V	68.8(110.8)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
GSB	34.3790	118.7110	01/19/1994	210928.6	14.0	5.50	0.033	V	69.1(111.1)
GSP	34.3770	118.6980	01/18/1994	004308.9	11.0	5.20	0.028	V	69.3(111.5)
GSP	34.3690	118.6720	04/26/1997	103730.7	16.0	5.10	0.026	V	70.1(112.8)
GSP	34.3780	118.6180	01/19/1994	211144.9	11.0	5.10	0.026	V	70.1(112.9)
DMG	34.5190	118.1980	08/23/1952	10 9 7.1	13.1	5.00	0.025	V	70.8(113.9)
DMG	35.8310	117.7610	10/19/1961	5 943.9	-2.0	5.20	0.028	V	71.5(115.1)
DMG	34.4110	118.4010	02/09/1971	14 1 8.0	8.0	5.80	0.038	V	71.8(115.6)
DMG	34.4110	118.4010	02/09/1971	14 041.8	8.4	6.40	0.052	VI	71.8(115.6)
DMG	34.4110	118.4010	02/09/1971	141028.0	8.0	5.30	0.029	V	71.8(115.6)
DMG	34.4110	118.4010	02/09/1971	14 244.0	8.0	5.80	0.038	V	71.8(115.6)
GSP	34.3260	118.6980	01/17/1994	233330.7	9.0	5.60	0.033	V	72.8(117.1)
T-A	34.5000	119.6700	06/01/1893	12 0 0.0	0.0	5.00	0.024	V	74.1(119.2)
GSP	35.7760	117.6620	08/17/1995	223959.0	5.0	5.40	0.029	V	75.0(120.7)
GSP	35.7660	117.6490	01/07/1996	143253.1	5.0	5.20	0.026	V	75.4(121.4)
GSP	34.3050	118.5790	01/29/1994	112036.0	1.0	5.10	0.025	V	75.6(121.6)
DMG	34.3000	118.6000	04/04/1893	1940 0.0	0.0	6.00	0.040	V	75.6(121.7)
GSB	35.7610	117.6390	09/20/1995	232736.3	5.0	6.10	0.042	VI	75.8(122.1)
GSB	34.3010	118.5650	01/17/1994	204602.4	9.0	5.20	0.026	V	76.0(122.3)
DMG	34.3080	118.4540	02/09/1971	144346.7	6.2	5.20	0.026	V	77.4(124.5)
DMG	34.3670	119.5830	07/01/1941	75054.8	0.0	5.90	0.037	V	79.2(127.4)
DMG	35.6310	117.5130	09/17/1938	1423 4.1	-2.0	5.00	0.023	IV	80.0(128.8)
DMG	35.7500	120.2500	03/10/1922	112120.0	0.0	6.50	0.050	VI	80.3(129.2)
MGI	34.4000	119.7000	03/25/1806	8 0 0.0	0.0	5.00	0.023	IV	80.7(129.9)
GSP	34.2310	118.4750	03/20/1994	212012.3	13.0	5.30	0.026	V	82.1(132.1)
GSP	34.2130	118.5370	01/17/1994	123055.4	18.0	6.70	0.054	VI	82.3(132.4)
T-A	34.4200	119.8200	00/00/1862	0 0 0.0	0.0	5.70	0.032	V	83.6(134.6)
PAS	34.3470	119.6960	08/13/1978	225453.4	12.8	5.10	0.023	IV	83.6(134.6)
PAS	36.1510	120.0490	08/04/1985	12 156.0	6.0	5.80	0.033	V	84.1(135.4)
DMG	35.7500	120.3300	08/18/1922	512 0.0	0.0	5.00	0.022	IV	84.6(136.1)
GSP	36.0750	117.6500	11/27/1996	201724.1	1.0	5.30	0.025	V	85.4(137.4)
GSP	36.0670	117.6380	03/06/1998	054740.3	1.0	5.20	0.024	V	85.7(137.8)
DMG	35.8000	120.3300	06/08/1934	430 0.0	0.0	5.00	0.022	IV	85.7(137.9)
DMG	35.8000	120.3300	06/08/1934	447 0.0	0.0	6.00	0.036	V	85.7(137.9)
DMG	35.8000	120.3300	12/28/1939	121538.0	0.0	5.00	0.022	IV	85.7(137.9)
DMG	35.8000	120.3300	06/05/1934	2148 0.0	0.0	5.00	0.022	IV	85.7(137.9)
GSP	36.0760	117.6180	03/07/1998	003646.8	1.0	5.00	0.021	IV	86.9(139.9)
DMG	36.4000	118.0000	07/05/1871	21 6 0.0	0.0	5.20	0.024	IV	87.3(140.5)
MGI	36.6000	118.4000	09/04/1868	0 0 0.0	0.0	5.00	0.021	IV	89.6(144.2)
MGI	34.3000	119.8000	07/03/1925	1638 0.0	0.0	5.30	0.024	V	89.6(144.2)
DMG	34.3000	119.8000	06/29/1925	144216.0	0.0	6.25	0.040	V	89.6(144.2)
MGI	34.3000	119.8000	07/03/1925	1821 0.0	0.0	5.30	0.024	V	89.6(144.2)
DMG	34.0650	119.0350	02/21/1973	144557.3	8.0	5.90	0.033	V	90.2(145.2)
MGI	35.2500	120.5000	07/09/1917	2222 0.0	0.0	5.00	0.021	IV	90.5(145.7)
MGI	35.2500	120.5000	07/09/1917	2238 0.0	0.0	5.30	0.024	V	90.5(145.7)
MGI	35.2500	120.5000	07/10/1917	043 0.0	0.0	5.30	0.024	V	90.5(145.7)
MGI	35.2500	120.5000	07/10/1917	045 0.0	0.0	5.30	0.024	V	90.5(145.7)
MGI	34.9000	120.4000	03/29/1928	625 0.0	0.0	5.30	0.024	V	90.6(145.9)
DMG	34.7000	120.3000	01/12/1915	431 0.0	0.0	5.50	0.027	V	91.6(147.4)
DMG	34.7000	120.3000	07/31/1902	920 0.0	0.0	5.50	0.027	V	91.6(147.4)
GSP	34.2620	118.0020	06/28/1991	144354.5	11.0	5.40	0.025	V	91.7(147.6)
DMG	34.1000	119.4000	05/19/1893	035 0.0	0.0	5.50	0.026	V	92.0(148.0)
MGI	34.8000	120.4000	12/12/1902	0 0 0.0	0.0	5.70	0.029	V	93.4(150.3)
MGI	35.0000	120.5000	11/19/1927	332 0.0	0.0	5.00	0.020	IV	93.8(150.9)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	34.0000	119.0000	09/24/1827	4 0 0.0	0.0	7.00	0.057	VI	94.6(152.2)
MGI	34.0000	119.0000	12/14/1912	0 0 0.0	0.0	5.70	0.029	V	94.6(152.2)
PAS	36.1820	120.2680	02/14/1987	72650.8	6.0	5.10	0.021	IV	95.1(153.0)
DMG	34.2000	119.8000	12/21/1812	19 0 0.0	0.0	7.00	0.057	VI	95.4(153.5)
MGI	36.5800	118.0800	07/06/1917	11 1 0.0	0.0	5.70	0.029	V	95.4(153.6)
GSB	35.9170	120.4650	12/20/1994	102747.2	8.0	5.00	0.020	IV	95.7(154.0)
T-A	36.5800	118.0700	04/18/1872	0 0 0.0	0.0	5.00	0.020	IV	95.7(154.0)
T-A	36.5800	118.0700	08/13/1882	0 0 0.0	0.0	5.00	0.020	IV	95.7(154.0)
MGI	34.0800	118.2600	07/16/1920	18 8 0.0	0.0	5.00	0.020	IV	96.0(154.5)
MGI	35.5000	120.6000	01/01/1830	0 0 0.0	0.0	5.00	0.020	IV	96.1(154.6)
MGI	36.6000	118.1000	05/17/1872	21 0 0.0	0.0	5.00	0.020	IV	96.1(154.7)
BRK	36.2200	120.2600	09/09/1983	91614.0	0.0	5.40	0.024	V	96.3(154.9)
DMG	35.9300	120.4800	12/24/1934	1626 0.0	0.0	5.00	0.020	IV	96.8(155.8)
DMG	35.9500	120.4700	11/16/1956	323 9.0	0.0	5.00	0.020	IV	96.8(155.8)
DMG	36.1700	120.3200	12/27/1926	919 0.0	0.0	5.00	0.020	IV	97.0(156.0)
MGI	34.0000	118.5000	11/19/1918	2018 0.0	0.0	5.00	0.020	IV	97.1(156.2)
DMG	34.0000	118.5000	08/04/1927	1224 0.0	0.0	5.00	0.020	IV	97.1(156.2)
DMG	34.1180	119.7020	07/05/1968	04517.2	5.9	5.20	0.022	IV	97.5(156.9)
BRK	36.2200	120.2900	05/02/1983	234239.0	0.0	6.70	0.048	VI	97.6(157.1)
BRK	36.2200	120.2900	05/02/1983	2346 6.0	0.0	5.60	0.027	V	97.6(157.1)
DMG	36.7000	118.3000	08/17/1896	1130 0.0	0.0	5.90	0.031	V	97.9(157.6)
DMG	35.9500	120.5000	06/28/1966	42613.4	0.0	5.50	0.025	V	98.4(158.3)
BRK	36.2400	120.2900	05/09/1983	24912.0	0.0	5.20	0.021	IV	98.4(158.4)
DMG	34.2000	117.9000	08/28/1889	215 0.0	0.0	5.50	0.025	V	98.5(158.6)
MGI	34.1000	118.1000	07/11/1855	415 0.0	0.0	6.30	0.038	V	98.6(158.6)
DMG	34.3700	117.6500	12/08/1812	15 0 0.0	0.0	7.00	0.055	VI	98.7(158.9)
DMG	35.9700	120.5000	06/28/1966	4 856.2	0.0	5.10	0.020	IV	98.9(159.2)
DMG	33.9500	118.6320	08/31/1930	04036.0	0.0	5.20	0.021	IV	99.0(159.4)
PAS	33.9440	118.6810	01/01/1979	231438.9	11.3	5.00	0.019	IV	99.0(159.4)
DMG	36.0000	120.5000	03/03/1901	745 0.0	0.0	5.50	0.025	V	99.8(160.6)
DMG	36.0000	120.5000	02/02/1881	011 0.0	0.0	5.60	0.026	V	99.8(160.6)
DMG	35.9500	120.5300	06/29/1966	195325.9	0.0	5.00	0.019	IV	99.9(160.8)

****

-END OF SEARCH- 138 EARTHQUAKES FOUND WITHIN THE SPECIFIED SEARCH AREA.

TIME PERIOD OF SEARCH: 1800 TO 2010

LENGTH OF SEARCH TIME: 211 years

THE EARTHQUAKE CLOSEST TO THE SITE IS ABOUT 2.5 MILES (4.1 km) AWAY.

LARGEST EARTHQUAKE MAGNITUDE FOUND IN THE SEARCH RADIUS: 7.9

LARGEST EARTHQUAKE SITE ACCELERATION FROM THIS SEARCH: 0.375 g

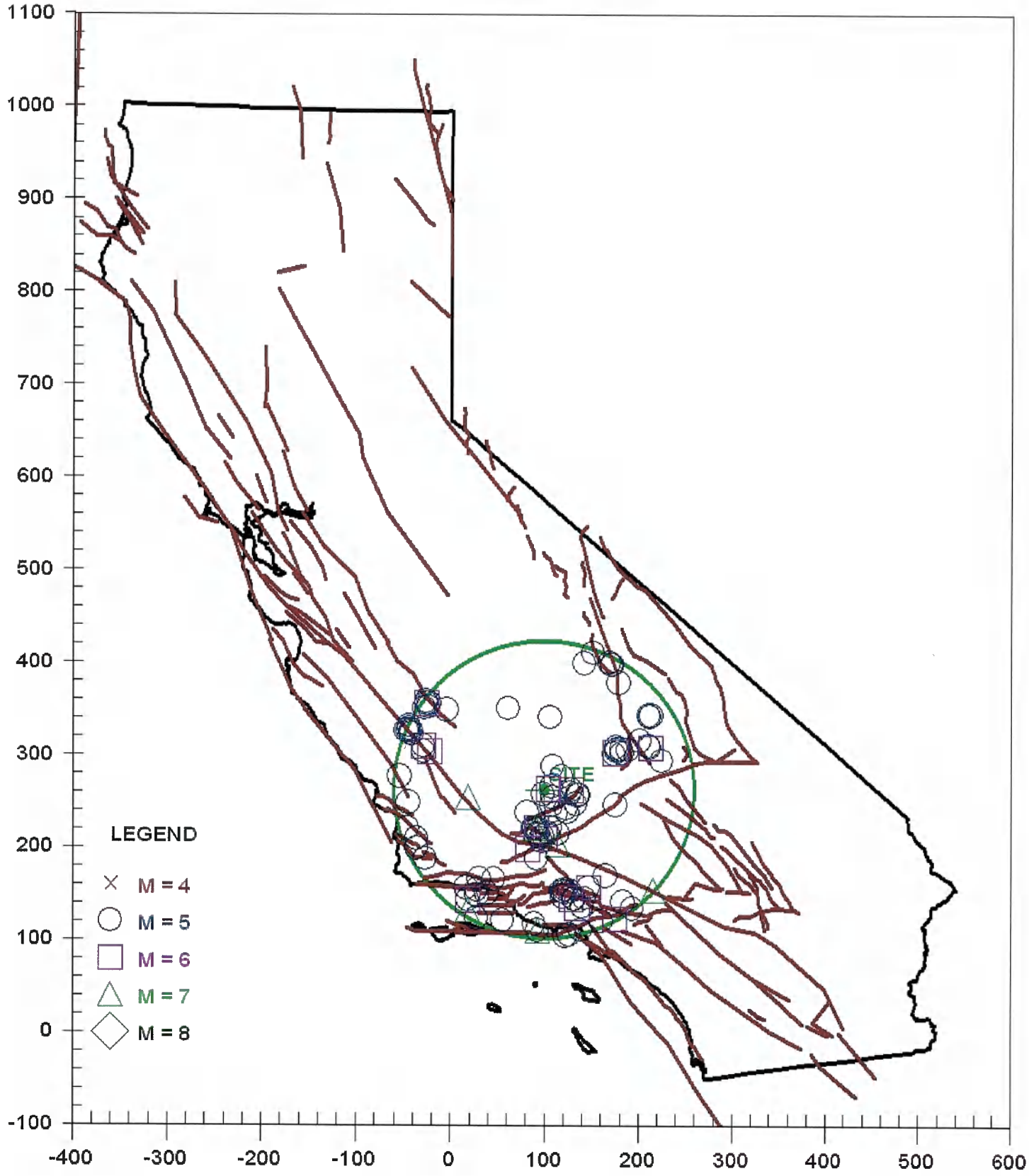
COEFFICIENTS FOR GUTENBERG & RICHTER RECURRENCE RELATION:
a-value= 1.626
b-value= 0.412
beta-value= 0.948

TABLE OF MAGNITUDES AND EXCEEDANCES:

Earthquake Magnitude	Number of Times Exceeded	Cumulative No. / Year
4.0	138	0.65714
4.5	138	0.65714
5.0	138	0.65714
5.5	52	0.24762
6.0	21	0.10000
6.5	9	0.04286
7.0	6	0.02857
7.5	2	0.00952

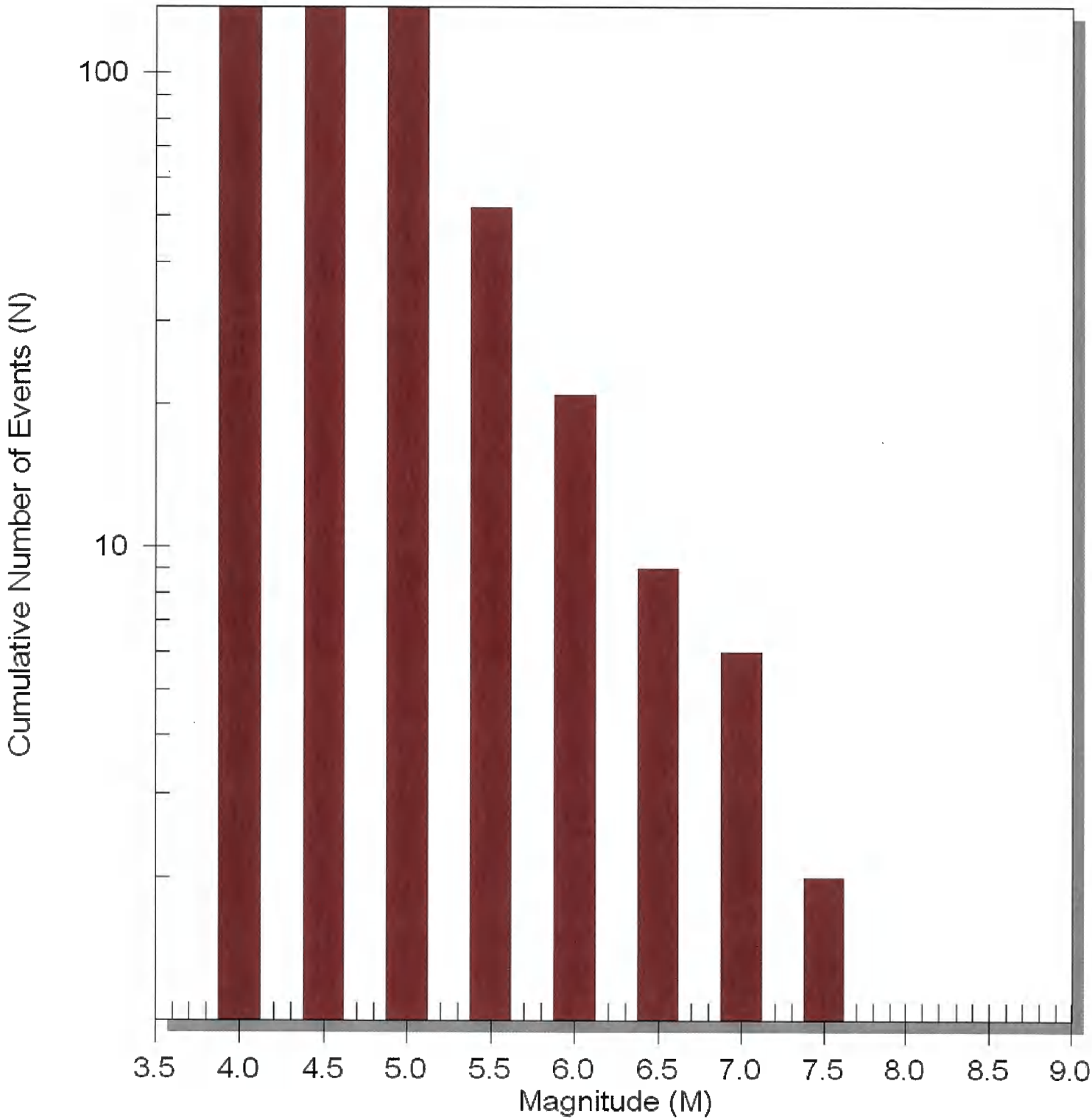
EARTHQUAKE EPICENTER MAP

Edison SD



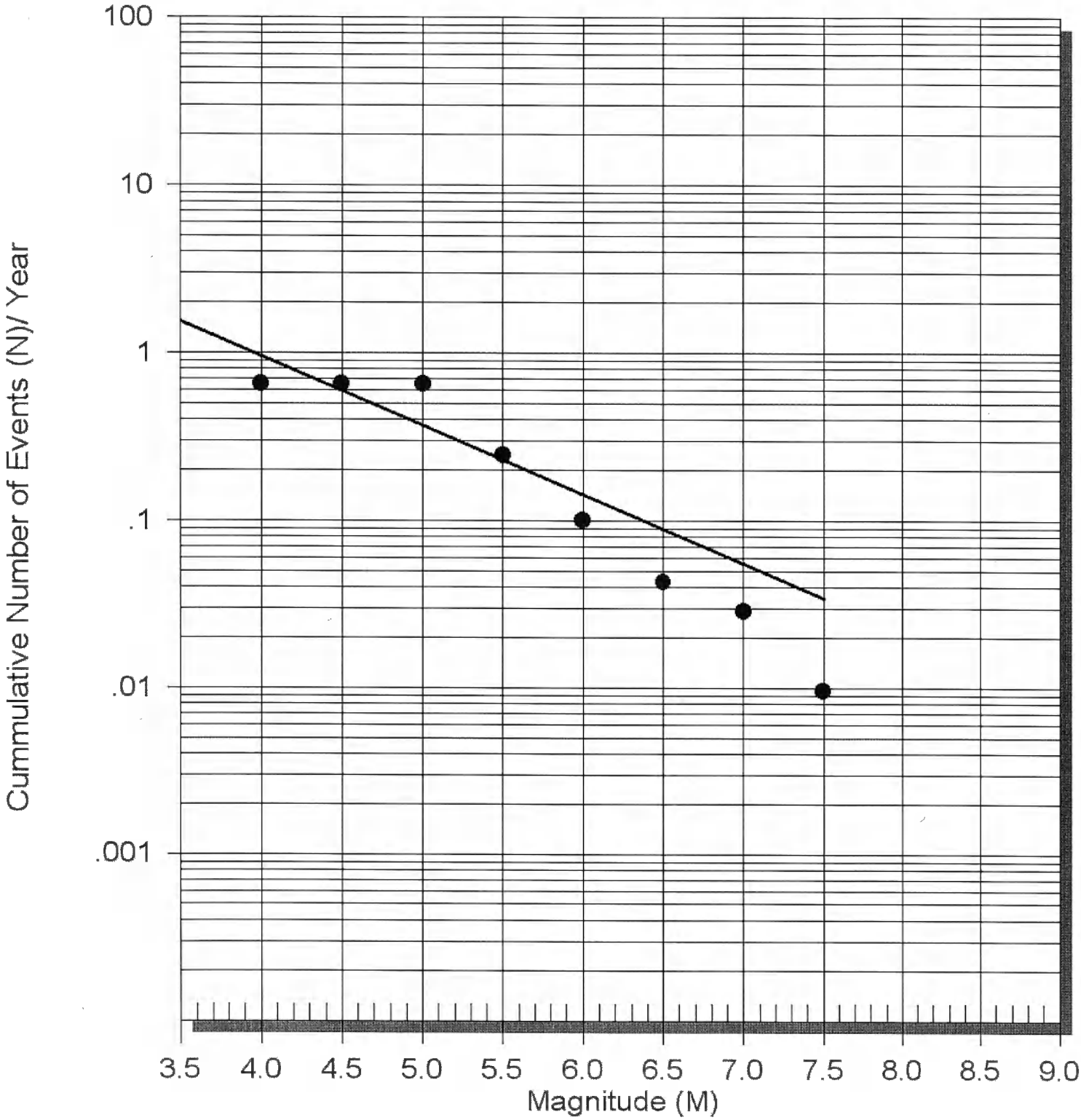
Number of Earthquakes (N) Above Magnitude (M)

Edison SD



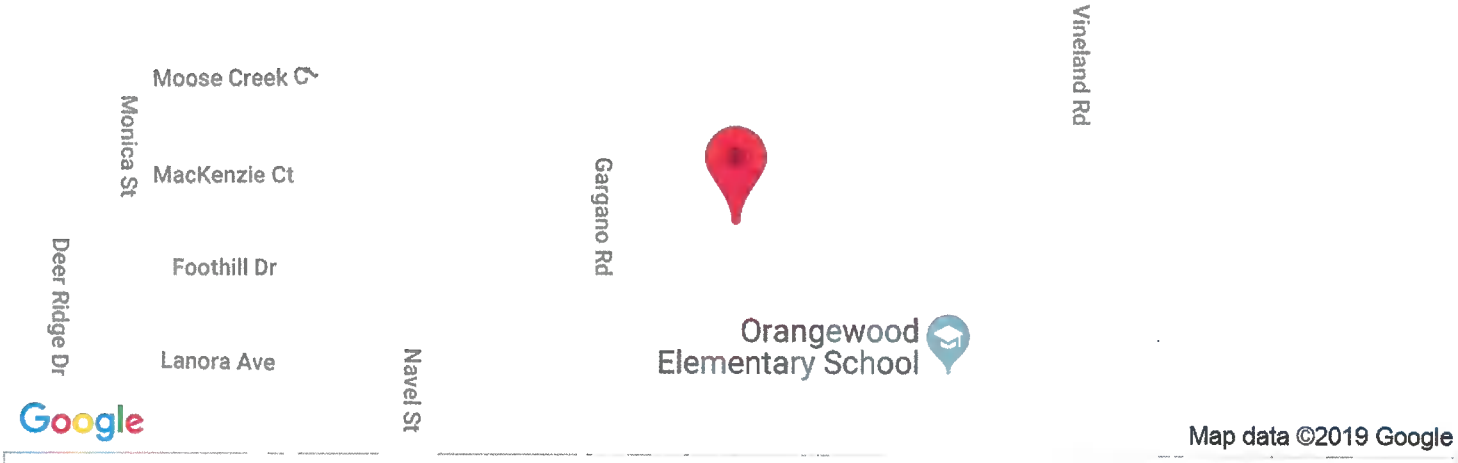
EARTHQUAKE RECURRENCE CURVE

Edison SD



16901 Edison School Site

Latitude, Longitude: 35.367149, -118.899629

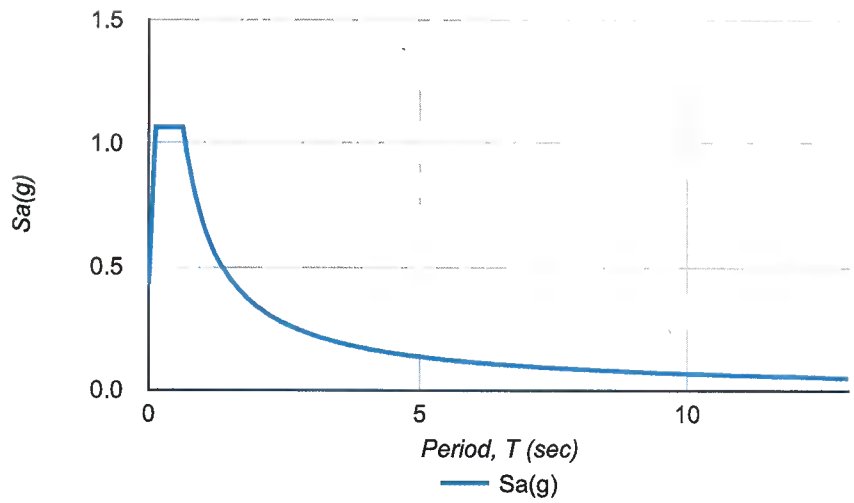


Date	1/9/2019, 4:36:19 PM
Design Code Reference Document	NEHRP-2015
Risk Category	III
Site Class	D - Stiff Soil

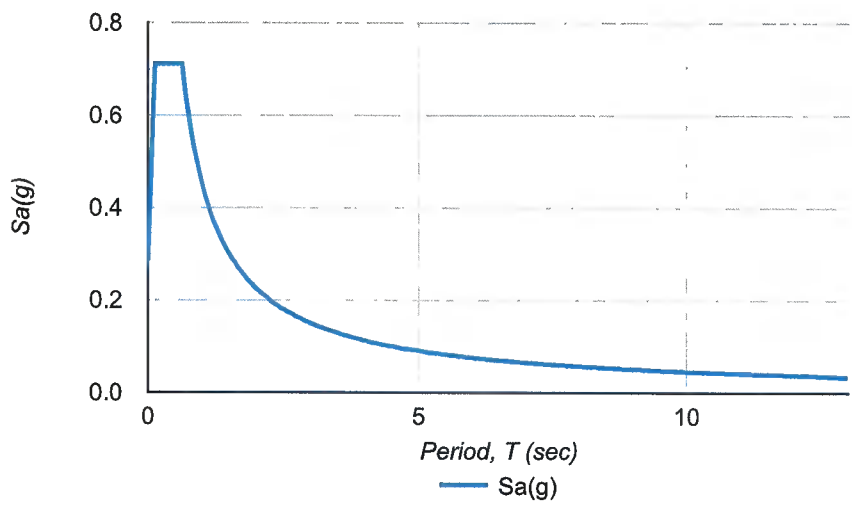
Type	Value	Description
S_S	0.95	MCE_R ground motion. (for 0.2 second period)
S_1	0.34	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.064	Site-modified spectral acceleration value
S_{M1}	0.666 -See Section 11.4.7	Site-modified spectral acceleration value
S_{DS}	0.71	Numeric seismic design value at 0.2 second SA
S_{D1}	0.444 -See Section 11.4.7	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	D -See Section 11.4.7	Seismic design category
F_a	1.12	Site amplification factor at 0.2 second
F_v	1.96 -See Section 11.4.7	Site amplification factor at 1.0 second
PGA	0.41	MCE_G peak ground acceleration
F_{PGA}	1.19	Site amplification factor at PGA
PGA_M	0.488	Site modified peak ground acceleration
T_L	12	Long-period transition period in seconds
SsRT	0.95	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	1.029	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.34	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.369	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.923	Mapped value of the risk coefficient at short periods
C_{R1}	0.92	Mapped value of the risk coefficient at a period of 1 s

MCER Response Spectrum



Design Response Spectrum



U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition

Dynamic: Conterminous U.S. 2014 (v4.1.

Spectral Period

Peak ground acceleration

Latitude

Decimal degrees

35.367149

Time Horizon

Return period in years

2475

Longitude

Decimal degrees, negative values for western longitudes

-118.899629

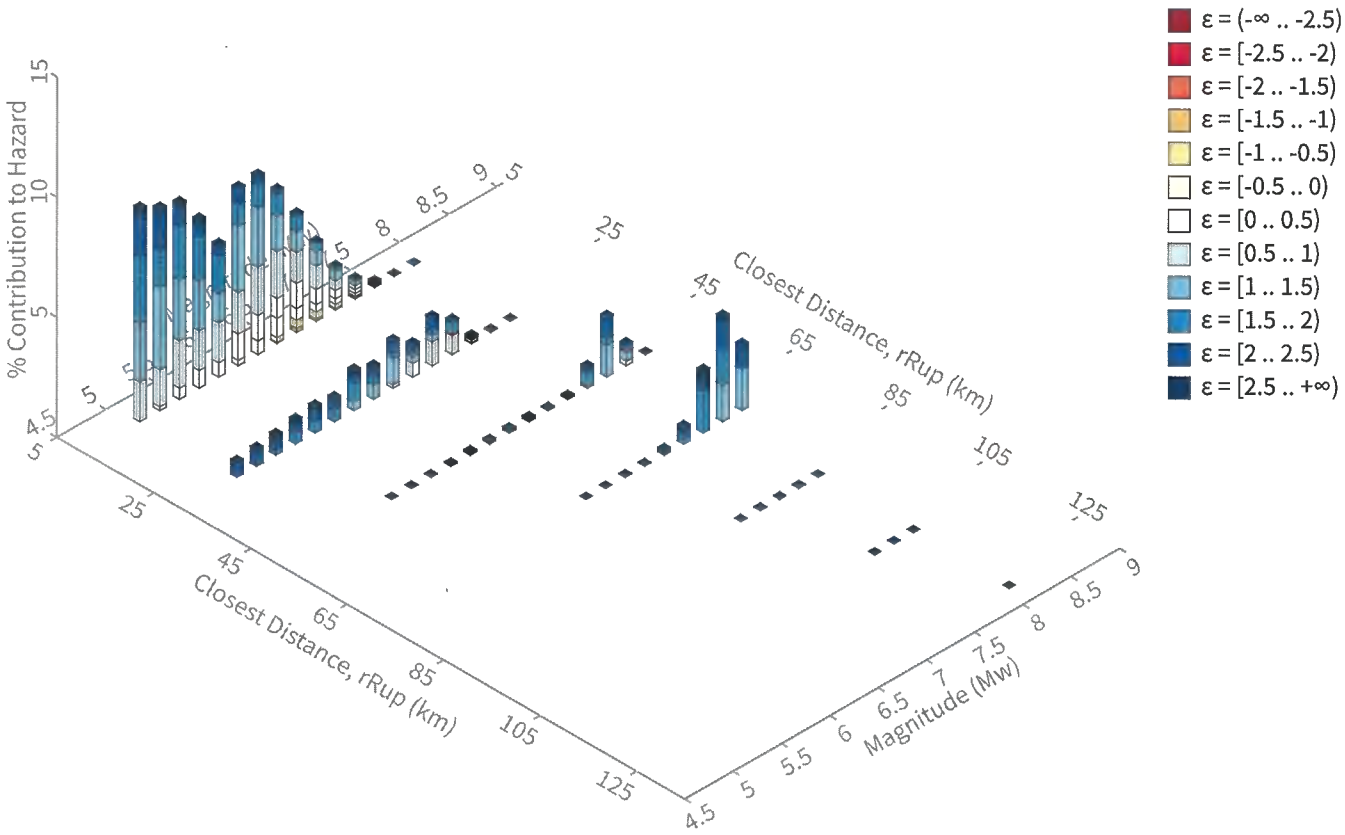
Site Class

259 m/s (Site class D)

Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 2475 yrs
Exceedance rate: 0.0004040404 yr^{-1}
PGA ground motion: 0.62954809 g

Recovered targets

Return period: 2832.8147 yrs
Exceedance rate: 0.00035300579 yr^{-1}

Totals

Binned: 100 %
Residual: 0 %
Trace: 0.12 %

Mean (for all sources)

r: 19.57 km
m: 6.32
ε_0: 1.32 σ

Mode (largest r-m bin)

r: 9.79 km
m: 5.1
ε_0: 1.51 σ
Contribution: 8.83 %

Mode (largest ε_0 bin)

r: 9.4 km
m: 5.3
ε_0: 1.29 σ
Contribution: 3.42 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km
m: min = 4.4, max = 9.4, Δ = 0.2
ε: min = -3.0, max = 3.0, Δ = 0.5 σ

Epsilon keys

ε0: [-∞ .. -2.5)
ε1: [-2.5 .. -2.0)
ε2: [-2.0 .. -1.5)
ε3: [-1.5 .. -1.0)
ε4: [-1.0 .. -0.5)
ε5: [-0.5 .. 0.0)
ε6: [0.0 .. 0.5)
ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Deaggregation Contributors

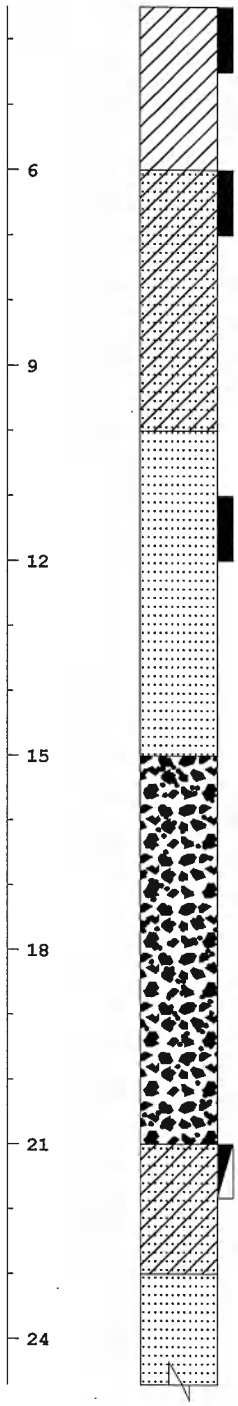
Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
UC33brAvg_FM31 (opt)	Grid							39.84
PointSourceFinite: -118.900, 35.399		6.03	5.71	0.84	118.900°W	35.399°N	0.00	4.45
PointSourceFinite: -118.900, 35.399		6.03	5.71	0.84	118.900°W	35.399°N	0.00	4.43
PointSourceFinite: -118.900, 35.453		9.75	5.89	1.16	118.900°W	35.453°N	0.00	3.46
PointSourceFinite: -118.900, 35.453		9.75	5.89	1.16	118.900°W	35.453°N	0.00	3.45
PointSourceFinite: -118.900, 35.471		11.18	5.94	1.26	118.900°W	35.471°N	0.00	2.83
PointSourceFinite: -118.900, 35.471		11.18	5.94	1.26	118.900°W	35.471°N	0.00	2.82
PointSourceFinite: -118.900, 35.435		8.41	5.83	1.07	118.900°W	35.435°N	0.00	2.82
PointSourceFinite: -118.900, 35.435		8.41	5.83	1.07	118.900°W	35.435°N	0.00	2.81
PointSourceFinite: -118.900, 35.534		16.38	6.15	1.50	118.900°W	35.534°N	0.00	1.36
PointSourceFinite: -118.900, 35.534		16.39	6.15	1.50	118.900°W	35.534°N	0.00	1.35
UC33brAvg_FM32 (opt)	Grid							39.80
PointSourceFinite: -118.900, 35.399		6.03	5.71	0.84	118.900°W	35.399°N	0.00	4.44
PointSourceFinite: -118.900, 35.399		6.03	5.71	0.84	118.900°W	35.399°N	0.00	4.43
PointSourceFinite: -118.900, 35.453		9.75	5.89	1.16	118.900°W	35.453°N	0.00	3.46
PointSourceFinite: -118.900, 35.453		9.75	5.89	1.16	118.900°W	35.453°N	0.00	3.44
PointSourceFinite: -118.900, 35.471		11.19	5.94	1.26	118.900°W	35.471°N	0.00	2.83
PointSourceFinite: -118.900, 35.471		11.19	5.94	1.26	118.900°W	35.471°N	0.00	2.82
PointSourceFinite: -118.900, 35.435		8.41	5.83	1.07	118.900°W	35.435°N	0.00	2.81
PointSourceFinite: -118.900, 35.435		8.41	5.83	1.07	118.900°W	35.435°N	0.00	2.81
PointSourceFinite: -118.900, 35.534		16.39	6.15	1.50	118.900°W	35.534°N	0.00	1.36
PointSourceFinite: -118.900, 35.534		16.39	6.15	1.50	118.900°W	35.534°N	0.00	1.35
UC33brAvg_FM31	System							10.19
San Andreas (Big Bend) [4]		60.97	8.08	1.83	119.053°W	34.833°N	193.24	5.00
White Wolf [4]		23.47	7.06	1.25	118.735°W	35.205°N	140.42	1.80
Pleito [2]		43.71	7.90	1.51	119.049°W	34.994°N	198.15	1.08
UC33brAvg_FM32	System							10.16
San Andreas (Big Bend) [4]		60.97	8.08	1.82	119.053°W	34.833°N	193.24	4.98
White Wolf [4]		23.47	7.04	1.25	118.735°W	35.205°N	140.42	1.79
Pleito [2]		43.71	7.91	1.51	119.049°W	34.994°N	198.15	1.05

Appendix B

Boring Logs, Flood Insurance Rate Map, LiquefyPro Data and Pipeline Certification Form

LOG OF TEST BORING
BORING B-1

PROJECT: *Edison School District,Gargano St. & Eucalyptus Dr.,Bakersfield* **FILE NO:** *16901*
BORING DATE: *June 2006* **ELEV.:**
BORING LOCATION: *NW Portion of Site* **START:**
DRILL METHOD: **FINISH:**
DESCRIPTION: *Geohazard Study*
DEPTH TO WATER - : **CAVING -** : **LOGGER:**



ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
		CL	Sandy Clay		123.4	8.8
		SC	Clayey Sand		123.9	10
		SW	Sand		113.9	
		GW	Rock (Cobbles)			
		SC	Clayey Sand		107.5	9.2
		SW	Sand			

Figure Number

LOG OF TEST BORING
BORING B-1

PROJECT: *Edison School District,Gargano St. & Eucalyptus Dr.,Bakersfield* **FILE NO:** *16901*
BORING DATE: *June 2006* **ELEV.:**
BORING LOCATION: *NW Portion of Site* **START:**
DRILL METHOD: **FINISH:**
DESCRIPTION: *Geohazard Study*
DEPTH TO WATER - : **CAVING -** : **LOGGER:**

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
27						
30						
	8 14 17	SW	Sand continues		135.3	3.2
33						
36						
39						
	12 20 21				116.2	5.9
42						
		CL	Sandy Clay			
45						

Figure Number

LOG OF TEST BORING
BORING B-1

PROJECT: *Edison School District,Gargano St. & Eucalyptus Dr.,Bakersfield* **FILE NO:** *16901*
BORING DATE: *June 2006* **ELEV.:**
BORING LOCATION: *NW Portion of Site* **START:**
DRILL METHOD: **FINISH:**
DESCRIPTION: *Geohazard Study*
DEPTH TO WATER - : **CAVING -** : **LOGGER:**

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
48						
51	12 17 20	CL			118	6
54						
57						
60						
63						
66						

Figure Number

LOG OF TEST BORING
BORING B-2

PROJECT: *Edison School District,Gargano St. & Eucalyptus Dr.,Bakersfield* **FILE NO:** *16901*
BORING DATE: *June 2006* **ELEV.:**
BORING LOCATION: *SW Portion of Site* **START:**
DRILL METHOD: **FINISH:**
DESCRIPTION: *Geohazard Study*
DEPTH TO WATER - ▼ : **CAVING - ▶ :** **LOGGER:**

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
	12 18 23	CL	Sandy Clay		128.2	9.3
6	8 12 18				121.2	14.4
9						
	2 4 6	SC	Clayey Sand		115.8	11.5
12						
15						
	6 8 10	SW	Sand		118	7
18						
21		GP/ GW	Rock (Cobbles)			
24						

Figure Number

LOG OF TEST BORING
BORING B-2

PROJECT: *Edison School District,Gargano St. & Eucalyptus Dr.,Bakersfield* **FILE NO:** *16901*
BORING DATE: *June 2006* **ELEV.:**
BORING LOCATION: *SW Portion of Site* **START:**
DRILL METHOD: **FINISH:**
DESCRIPTION: *Geohazard Study*
DEPTH TO WATER - : **CAVING -** : **LOGGER:**

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
27	8 10 17		Rock Continues		119.2	4.8
30			Refusal at 31'			
33						
36						
39						
42						
45						

Figure Number

N

National Flood Hazard Layer FIRMette

FEMA

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/9/2019 at 6:55:47 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

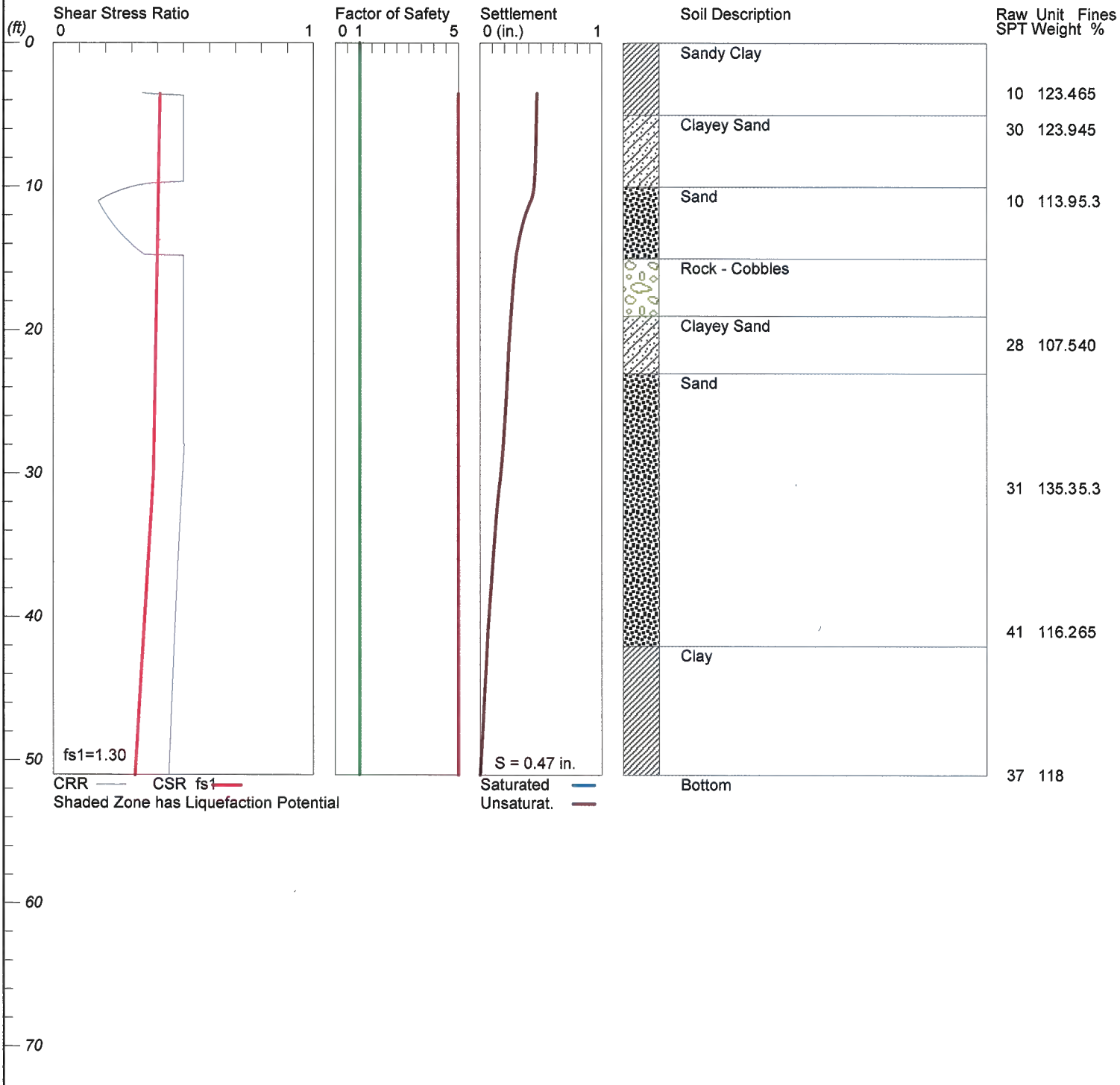
SOILS ENGINEERING, INC. **4400 Yeager Way** **Bakersfield, CA 93313** **(661) 831 - 5100** DATE: 1/19 PROJECT: 16901	**Edison Elementary School District** **NE corner of Eucalyptus Dr. and Gargano St.** **Edison, CA** **FEMA Flood Insurance Rate Map**	**PLATE**

LIQUEFACTION ANALYSIS

Edison SD - New School Site

Hole No.=B-1 Water Depth=100 ft

Magnitude=7.5
Acceleration=0.488g



LiquefyPro CivilTech Software USA www.civiltech.com

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**********************************************************************
                    ******************************
                    LIQUEFACTION ANALYSIS SUMMARY
                    Copyright by CivilTech Software
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**********************************************************************
                    ******************************
     Font: Courier New, Regular, Size 8 is recommended for this report.
     Licensed to SEI, 1/10/2019  8:03:56 AM

     Input File Name: O:\b. PROJECT FILES (ACTIVE)\16900-16999\16901
Edison School District PEA Services\Geohaz Update\LiquefyPro files\16901
B-1.liq
     Title:  Edison SD - New School Site
     Subtitle:  16901

     Surface Elev.=
     Hole No.=B-1
     Depth of Hole= 51.00 ft
     Water Table during Earthquake= 100.00 ft
     Water Table during In-Situ Testing= 100.00 ft
     Max. Acceleration= 0.49 g
     Earthquake Magnitude= 7.50

 Input Data:
     Surface Elev.=
     Hole No.=B-1
     Depth of Hole=51.00 ft
     Water Table during Earthquake= 100.00 ft
     Water Table during In-Situ Testing= 100.00 ft
     Max. Acceleration=0.49 g
     Earthquake Magnitude=7.50
     No-Liquefiable Soils:   Based on Analysis

     1. SPT or BPT Calculation.
     2. Settlement Analysis Method: Tokimatsu, M-correction
     3. Fines Correction for Liquefaction: Idriss/Seed
     4. Fine Correction for Settlement: During Liquefaction*
     5. Settlement Calculation in: All zones*
     6. Hammer Energy Ratio,                                    Ce = 1.25
     7. Borehole Diameter,                                      Cb= 1
     8. Sampling Method,                                        Cs= 1.2
     9. User request factor of safety (apply to CSR) ,    User= 1.3
        Plot one CSR curve (fs1=User)
     10. Use Curve Smoothing: Yes*
     * Recommended Options

     In-Situ Test Data:
     Depth SPT   gamma       Fines
     ft          pcf           %
     ____________________________________
     3.50  10.00 123.40      65.00
     6.00  30.00 123.90      45.00
     11.00 10.00 113.90      5.30
     21.00 28.00 107.50      40.00
     31.00 31.00 135.30      5.30
     41.00 41.00 116.20      65.00
     51.00 37.00 118.00      65.00
     ____________________________________
```

Output Results:

Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=0.47 in.
Total Settlement of Saturated and Unsaturated Sands=0.47 in.
Differential Settlement=0.234 to 0.309 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
3.50	0.34	0.41	5.00	0.00	0.47	0.47
3.55	0.37	0.41	5.00	0.00	0.47	0.47
3.60	0.42	0.41	5.00	0.00	0.47	0.47
3.65	0.50	0.41	5.00	0.00	0.47	0.47
3.70	0.50	0.41	5.00	0.00	0.47	0.47
3.75	0.50	0.41	5.00	0.00	0.47	0.47
3.80	0.50	0.41	5.00	0.00	0.47	0.47
3.85	0.50	0.41	5.00	0.00	0.47	0.47
3.90	0.50	0.41	5.00	0.00	0.47	0.47
3.95	0.50	0.41	5.00	0.00	0.47	0.47
4.00	0.50	0.41	5.00	0.00	0.47	0.47
4.05	0.50	0.41	5.00	0.00	0.47	0.47
4.10	0.50	0.41	5.00	0.00	0.47	0.47
4.15	0.50	0.41	5.00	0.00	0.47	0.47
4.20	0.50	0.41	5.00	0.00	0.47	0.47
4.25	0.50	0.41	5.00	0.00	0.46	0.46
4.30	0.50	0.41	5.00	0.00	0.46	0.46
4.35	0.50	0.41	5.00	0.00	0.46	0.46
4.40	0.50	0.41	5.00	0.00	0.46	0.46
4.45	0.50	0.41	5.00	0.00	0.46	0.46
4.50	0.50	0.41	5.00	0.00	0.46	0.46
4.55	0.50	0.41	5.00	0.00	0.46	0.46
4.60	0.50	0.41	5.00	0.00	0.46	0.46
4.65	0.50	0.41	5.00	0.00	0.46	0.46
4.70	0.50	0.41	5.00	0.00	0.46	0.46
4.75	0.50	0.41	5.00	0.00	0.46	0.46
4.80	0.50	0.41	5.00	0.00	0.46	0.46
4.85	0.50	0.41	5.00	0.00	0.46	0.46
4.90	0.50	0.41	5.00	0.00	0.46	0.46
4.95	0.50	0.41	5.00	0.00	0.46	0.46
5.00	0.50	0.41	5.00	0.00	0.46	0.46
5.05	0.50	0.41	5.00	0.00	0.46	0.46
5.10	0.50	0.41	5.00	0.00	0.46	0.46
5.15	0.50	0.41	5.00	0.00	0.46	0.46
5.20	0.50	0.41	5.00	0.00	0.46	0.46
5.25	0.50	0.41	5.00	0.00	0.46	0.46
5.30	0.50	0.41	5.00	0.00	0.46	0.46
5.35	0.50	0.41	5.00	0.00	0.46	0.46
5.40	0.50	0.41	5.00	0.00	0.46	0.46
5.45	0.50	0.41	5.00	0.00	0.46	0.46
5.50	0.50	0.41	5.00	0.00	0.46	0.46
5.55	0.50	0.41	5.00	0.00	0.46	0.46
5.60	0.50	0.41	5.00	0.00	0.46	0.46
5.65	0.50	0.41	5.00	0.00	0.46	0.46
5.70	0.50	0.41	5.00	0.00	0.46	0.46
5.75	0.50	0.41	5.00	0.00	0.46	0.46
5.80	0.50	0.41	5.00	0.00	0.46	0.46
5.85	0.50	0.41	5.00	0.00	0.46	0.46
5.90	0.50	0.41	5.00	0.00	0.46	0.46

5.95	0.50	0.41	5.00	0.00	0.46	0.46
6.00	0.50	0.41	5.00	0.00	0.46	0.46
6.05	0.50	0.41	5.00	0.00	0.46	0.46
6.10	0.50	0.41	5.00	0.00	0.46	0.46
6.15	0.50	0.41	5.00	0.00	0.46	0.46
6.20	0.50	0.41	5.00	0.00	0.46	0.46
6.25	0.50	0.41	5.00	0.00	0.46	0.46
6.30	0.50	0.41	5.00	0.00	0.46	0.46
6.35	0.50	0.41	5.00	0.00	0.46	0.46
6.40	0.50	0.41	5.00	0.00	0.46	0.46
6.45	0.50	0.41	5.00	0.00	0.46	0.46
6.50	0.50	0.41	5.00	0.00	0.46	0.46
6.55	0.50	0.41	5.00	0.00	0.46	0.46
6.60	0.50	0.41	5.00	0.00	0.46	0.46
6.65	0.50	0.41	5.00	0.00	0.46	0.46
6.70	0.50	0.41	5.00	0.00	0.46	0.46
6.75	0.50	0.41	5.00	0.00	0.46	0.46
6.80	0.50	0.41	5.00	0.00	0.46	0.46
6.85	0.50	0.41	5.00	0.00	0.46	0.46
6.90	0.50	0.41	5.00	0.00	0.46	0.46
6.95	0.50	0.41	5.00	0.00	0.46	0.46
7.00	0.50	0.41	5.00	0.00	0.46	0.46
7.05	0.50	0.41	5.00	0.00	0.46	0.46
7.10	0.50	0.41	5.00	0.00	0.46	0.46
7.15	0.50	0.41	5.00	0.00	0.46	0.46
7.20	0.50	0.41	5.00	0.00	0.46	0.46
7.25	0.50	0.41	5.00	0.00	0.46	0.46
7.30	0.50	0.41	5.00	0.00	0.46	0.46
7.35	0.50	0.41	5.00	0.00	0.46	0.46
7.40	0.50	0.41	5.00	0.00	0.46	0.46
7.45	0.50	0.41	5.00	0.00	0.46	0.46
7.50	0.50	0.41	5.00	0.00	0.46	0.46
7.55	0.50	0.41	5.00	0.00	0.46	0.46
7.60	0.50	0.41	5.00	0.00	0.46	0.46
7.65	0.50	0.41	5.00	0.00	0.46	0.46
7.70	0.50	0.40	5.00	0.00	0.46	0.46
7.75	0.50	0.40	5.00	0.00	0.46	0.46
7.80	0.50	0.40	5.00	0.00	0.46	0.46
7.85	0.50	0.40	5.00	0.00	0.46	0.46
7.90	0.50	0.40	5.00	0.00	0.46	0.46
7.95	0.50	0.40	5.00	0.00	0.46	0.46
8.00	0.50	0.40	5.00	0.00	0.46	0.46
8.05	0.50	0.40	5.00	0.00	0.46	0.46
8.10	0.50	0.40	5.00	0.00	0.45	0.45
8.15	0.50	0.40	5.00	0.00	0.45	0.45
8.20	0.50	0.40	5.00	0.00	0.45	0.45
8.25	0.50	0.40	5.00	0.00	0.45	0.45
8.30	0.50	0.40	5.00	0.00	0.45	0.45
8.35	0.50	0.40	5.00	0.00	0.45	0.45
8.40	0.50	0.40	5.00	0.00	0.45	0.45
8.45	0.50	0.40	5.00	0.00	0.45	0.45
8.50	0.50	0.40	5.00	0.00	0.45	0.45
8.55	0.50	0.40	5.00	0.00	0.45	0.45
8.60	0.50	0.40	5.00	0.00	0.45	0.45
8.65	0.50	0.40	5.00	0.00	0.45	0.45
8.70	0.50	0.40	5.00	0.00	0.45	0.45
8.75	0.50	0.40	5.00	0.00	0.45	0.45
8.80	0.50	0.40	5.00	0.00	0.45	0.45
8.85	0.50	0.40	5.00	0.00	0.45	0.45

8.90	0.50	0.40	5.00	0.00	0.45	0.45
8.95	0.50	0.40	5.00	0.00	0.45	0.45
9.00	0.50	0.40	5.00	0.00	0.45	0.45
9.05	0.50	0.40	5.00	0.00	0.45	0.45
9.10	0.50	0.40	5.00	0.00	0.45	0.45
9.15	0.50	0.40	5.00	0.00	0.45	0.45
9.20	0.50	0.40	5.00	0.00	0.45	0.45
9.25	0.50	0.40	5.00	0.00	0.45	0.45
9.30	0.50	0.40	5.00	0.00	0.45	0.45
9.35	0.50	0.40	5.00	0.00	0.45	0.45
9.40	0.50	0.40	5.00	0.00	0.45	0.45
9.45	0.50	0.40	5.00	0.00	0.45	0.45
9.50	0.50	0.40	5.00	0.00	0.45	0.45
9.55	0.50	0.40	5.00	0.00	0.45	0.45
9.60	0.50	0.40	5.00	0.00	0.45	0.45
9.65	0.50	0.40	5.00	0.00	0.45	0.45
9.70	0.44	0.40	5.00	0.00	0.45	0.45
9.75	0.39	0.40	5.00	0.00	0.45	0.45
9.80	0.36	0.40	5.00	0.00	0.45	0.45
9.85	0.35	0.40	5.00	0.00	0.44	0.44
9.90	0.33	0.40	5.00	0.00	0.44	0.44
9.95	0.32	0.40	5.00	0.00	0.44	0.44
10.00	0.31	0.40	5.00	0.00	0.44	0.44
10.05	0.30	0.40	5.00	0.00	0.44	0.44
10.10	0.29	0.40	5.00	0.00	0.44	0.44
10.15	0.28	0.40	5.00	0.00	0.44	0.44
10.20	0.27	0.40	5.00	0.00	0.44	0.44
10.25	0.26	0.40	5.00	0.00	0.44	0.44
10.30	0.25	0.40	5.00	0.00	0.44	0.44
10.35	0.24	0.40	5.00	0.00	0.44	0.44
10.40	0.24	0.40	5.00	0.00	0.44	0.44
10.45	0.23	0.40	5.00	0.00	0.44	0.44
10.50	0.22	0.40	5.00	0.00	0.43	0.43
10.55	0.22	0.40	5.00	0.00	0.43	0.43
10.60	0.21	0.40	5.00	0.00	0.43	0.43
10.65	0.21	0.40	5.00	0.00	0.43	0.43
10.70	0.20	0.40	5.00	0.00	0.43	0.43
10.75	0.20	0.40	5.00	0.00	0.43	0.43
10.80	0.19	0.40	5.00	0.00	0.43	0.43
10.85	0.19	0.40	5.00	0.00	0.42	0.42
10.90	0.18	0.40	5.00	0.00	0.42	0.42
10.95	0.18	0.40	5.00	0.00	0.42	0.42
11.00	0.17	0.40	5.00	0.00	0.42	0.42
11.05	0.18	0.40	5.00	0.00	0.41	0.41
11.10	0.18	0.40	5.00	0.00	0.41	0.41
11.15	0.18	0.40	5.00	0.00	0.41	0.41
11.20	0.18	0.40	5.00	0.00	0.41	0.41
11.25	0.18	0.40	5.00	0.00	0.40	0.40
11.30	0.18	0.40	5.00	0.00	0.40	0.40
11.35	0.18	0.40	5.00	0.00	0.40	0.40
11.40	0.18	0.40	5.00	0.00	0.40	0.40
11.45	0.19	0.40	5.00	0.00	0.39	0.39
11.50	0.19	0.40	5.00	0.00	0.39	0.39
11.55	0.19	0.40	5.00	0.00	0.39	0.39
11.60	0.19	0.40	5.00	0.00	0.39	0.39
11.65	0.19	0.40	5.00	0.00	0.39	0.39
11.70	0.19	0.40	5.00	0.00	0.38	0.38
11.75	0.20	0.40	5.00	0.00	0.38	0.38
11.80	0.20	0.40	5.00	0.00	0.38	0.38

11.85	0.20	0.40	5.00	0.00	0.38	0.38
11.90	0.20	0.40	5.00	0.00	0.37	0.37
11.95	0.20	0.40	5.00	0.00	0.37	0.37
12.00	0.20	0.40	5.00	0.00	0.37	0.37
12.05	0.21	0.40	5.00	0.00	0.37	0.37
12.10	0.21	0.40	5.00	0.00	0.37	0.37
12.15	0.21	0.40	5.00	0.00	0.37	0.37
12.20	0.21	0.40	5.00	0.00	0.36	0.36
12.25	0.21	0.40	5.00	0.00	0.36	0.36
12.30	0.22	0.40	5.00	0.00	0.36	0.36
12.35	0.22	0.40	5.00	0.00	0.36	0.36
12.40	0.22	0.40	5.00	0.00	0.36	0.36
12.45	0.22	0.40	5.00	0.00	0.35	0.35
12.50	0.22	0.40	5.00	0.00	0.35	0.35
12.55	0.23	0.40	5.00	0.00	0.35	0.35
12.60	0.23	0.40	5.00	0.00	0.35	0.35
12.65	0.23	0.40	5.00	0.00	0.35	0.35
12.70	0.23	0.40	5.00	0.00	0.35	0.35
12.75	0.23	0.40	5.00	0.00	0.34	0.34
12.80	0.24	0.40	5.00	0.00	0.34	0.34
12.85	0.24	0.40	5.00	0.00	0.34	0.34
12.90	0.24	0.40	5.00	0.00	0.34	0.34
12.95	0.24	0.40	5.00	0.00	0.34	0.34
13.00	0.25	0.40	5.00	0.00	0.34	0.34
13.05	0.25	0.40	5.00	0.00	0.34	0.34
13.10	0.25	0.40	5.00	0.00	0.33	0.33
13.15	0.25	0.40	5.00	0.00	0.33	0.33
13.20	0.26	0.40	5.00	0.00	0.33	0.33
13.25	0.26	0.40	5.00	0.00	0.33	0.33
13.30	0.26	0.40	5.00	0.00	0.33	0.33
13.35	0.26	0.40	5.00	0.00	0.33	0.33
13.40	0.27	0.40	5.00	0.00	0.33	0.33
13.45	0.27	0.40	5.00	0.00	0.32	0.32
13.50	0.27	0.40	5.00	0.00	0.32	0.32
13.55	0.27	0.40	5.00	0.00	0.32	0.32
13.60	0.28	0.40	5.00	0.00	0.32	0.32
13.65	0.28	0.40	5.00	0.00	0.32	0.32
13.70	0.28	0.40	5.00	0.00	0.32	0.32
13.75	0.28	0.40	5.00	0.00	0.32	0.32
13.80	0.29	0.40	5.00	0.00	0.32	0.32
13.85	0.29	0.40	5.00	0.00	0.32	0.32
13.90	0.29	0.40	5.00	0.00	0.31	0.31
13.95	0.30	0.40	5.00	0.00	0.31	0.31
14.00	0.30	0.40	5.00	0.00	0.31	0.31
14.05	0.30	0.40	5.00	0.00	0.31	0.31
14.10	0.30	0.40	5.00	0.00	0.31	0.31
14.15	0.31	0.40	5.00	0.00	0.31	0.31
14.20	0.31	0.40	5.00	0.00	0.31	0.31
14.25	0.31	0.40	5.00	0.00	0.31	0.31
14.30	0.32	0.40	5.00	0.00	0.31	0.31
14.35	0.32	0.40	5.00	0.00	0.30	0.30
14.40	0.32	0.40	5.00	0.00	0.30	0.30
14.45	0.33	0.40	5.00	0.00	0.30	0.30
14.50	0.33	0.40	5.00	0.00	0.30	0.30
14.55	0.34	0.40	5.00	0.00	0.30	0.30
14.60	0.34	0.40	5.00	0.00	0.30	0.30
14.65	0.34	0.40	5.00	0.00	0.30	0.30
14.70	0.35	0.40	5.00	0.00	0.30	0.30
14.75	0.35	0.40	5.00	0.00	0.30	0.30

14.80	0.50	0.40	5.00	0.00	0.29	0.29
14.85	0.50	0.40	5.00	0.00	0.29	0.29
14.90	0.50	0.40	5.00	0.00	0.29	0.29
14.95	0.50	0.40	5.00	0.00	0.29	0.29
15.00	0.50	0.40	5.00	0.00	0.29	0.29
15.05	0.50	0.40	5.00	0.00	0.29	0.29
15.10	0.50	0.40	5.00	0.00	0.29	0.29
15.15	0.50	0.40	5.00	0.00	0.29	0.29
15.20	0.50	0.40	5.00	0.00	0.29	0.29
15.25	0.50	0.40	5.00	0.00	0.29	0.29
15.30	0.50	0.40	5.00	0.00	0.29	0.29
15.35	0.50	0.40	5.00	0.00	0.29	0.29
15.40	0.50	0.40	5.00	0.00	0.29	0.29
15.45	0.50	0.40	5.00	0.00	0.29	0.29
15.50	0.50	0.40	5.00	0.00	0.29	0.29
15.55	0.50	0.40	5.00	0.00	0.28	0.28
15.60	0.50	0.40	5.00	0.00	0.28	0.28
15.65	0.50	0.40	5.00	0.00	0.28	0.28
15.70	0.50	0.40	5.00	0.00	0.28	0.28
15.75	0.50	0.40	5.00	0.00	0.28	0.28
15.80	0.50	0.40	5.00	0.00	0.28	0.28
15.85	0.50	0.40	5.00	0.00	0.28	0.28
15.90	0.50	0.40	5.00	0.00	0.28	0.28
15.95	0.50	0.40	5.00	0.00	0.28	0.28
16.00	0.50	0.40	5.00	0.00	0.28	0.28
16.05	0.50	0.40	5.00	0.00	0.28	0.28
16.10	0.50	0.40	5.00	0.00	0.28	0.28
16.15	0.50	0.40	5.00	0.00	0.28	0.28
16.20	0.50	0.40	5.00	0.00	0.28	0.28
16.25	0.50	0.40	5.00	0.00	0.28	0.28
16.30	0.50	0.40	5.00	0.00	0.28	0.28
16.35	0.50	0.40	5.00	0.00	0.28	0.28
16.40	0.50	0.40	5.00	0.00	0.27	0.27
16.45	0.50	0.40	5.00	0.00	0.27	0.27
16.50	0.50	0.40	5.00	0.00	0.27	0.27
16.55	0.50	0.40	5.00	0.00	0.27	0.27
16.60	0.50	0.40	5.00	0.00	0.27	0.27
16.65	0.50	0.40	5.00	0.00	0.27	0.27
16.70	0.50	0.40	5.00	0.00	0.27	0.27
16.75	0.50	0.40	5.00	0.00	0.27	0.27
16.80	0.50	0.40	5.00	0.00	0.27	0.27
16.85	0.50	0.40	5.00	0.00	0.27	0.27
16.90	0.50	0.40	5.00	0.00	0.27	0.27
16.95	0.50	0.40	5.00	0.00	0.27	0.27
17.00	0.50	0.40	5.00	0.00	0.27	0.27
17.05	0.50	0.40	5.00	0.00	0.27	0.27
17.10	0.50	0.40	5.00	0.00	0.27	0.27
17.15	0.50	0.40	5.00	0.00	0.27	0.27
17.20	0.50	0.40	5.00	0.00	0.27	0.27
17.25	0.50	0.40	5.00	0.00	0.27	0.27
17.30	0.50	0.40	5.00	0.00	0.27	0.27
17.35	0.50	0.40	5.00	0.00	0.27	0.27
17.40	0.50	0.40	5.00	0.00	0.27	0.27
17.45	0.50	0.40	5.00	0.00	0.26	0.26
17.50	0.50	0.40	5.00	0.00	0.26	0.26
17.55	0.50	0.40	5.00	0.00	0.26	0.26
17.60	0.50	0.40	5.00	0.00	0.26	0.26
17.65	0.50	0.40	5.00	0.00	0.26	0.26
17.70	0.50	0.40	5.00	0.00	0.26	0.26

17.75	0.50	0.40	5.00	0.00	0.26	0.26
17.80	0.50	0.40	5.00	0.00	0.26	0.26
17.85	0.50	0.40	5.00	0.00	0.26	0.26
17.90	0.50	0.40	5.00	0.00	0.26	0.26
17.95	0.50	0.40	5.00	0.00	0.26	0.26
18.00	0.50	0.40	5.00	0.00	0.26	0.26
18.05	0.50	0.40	5.00	0.00	0.26	0.26
18.10	0.50	0.39	5.00	0.00	0.26	0.26
18.15	0.50	0.39	5.00	0.00	0.26	0.26
18.20	0.50	0.39	5.00	0.00	0.26	0.26
18.25	0.50	0.39	5.00	0.00	0.26	0.26
18.30	0.50	0.39	5.00	0.00	0.26	0.26
18.35	0.50	0.39	5.00	0.00	0.26	0.26
18.40	0.50	0.39	5.00	0.00	0.26	0.26
18.45	0.50	0.39	5.00	0.00	0.26	0.26
18.50	0.50	0.39	5.00	0.00	0.26	0.26
18.55	0.50	0.39	5.00	0.00	0.26	0.26
18.60	0.50	0.39	5.00	0.00	0.26	0.26
18.65	0.50	0.39	5.00	0.00	0.25	0.25
18.70	0.50	0.39	5.00	0.00	0.25	0.25
18.75	0.50	0.39	5.00	0.00	0.25	0.25
18.80	0.50	0.39	5.00	0.00	0.25	0.25
18.85	0.50	0.39	5.00	0.00	0.25	0.25
18.90	0.50	0.39	5.00	0.00	0.25	0.25
18.95	0.50	0.39	5.00	0.00	0.25	0.25
19.00	0.50	0.39	5.00	0.00	0.25	0.25
19.05	0.50	0.39	5.00	0.00	0.25	0.25
19.10	0.50	0.39	5.00	0.00	0.25	0.25
19.15	0.50	0.39	5.00	0.00	0.25	0.25
19.20	0.50	0.39	5.00	0.00	0.25	0.25
19.25	0.50	0.39	5.00	0.00	0.25	0.25
19.30	0.50	0.39	5.00	0.00	0.25	0.25
19.35	0.50	0.39	5.00	0.00	0.25	0.25
19.40	0.50	0.39	5.00	0.00	0.25	0.25
19.45	0.50	0.39	5.00	0.00	0.25	0.25
19.50	0.50	0.39	5.00	0.00	0.25	0.25
19.55	0.50	0.39	5.00	0.00	0.25	0.25
19.60	0.50	0.39	5.00	0.00	0.25	0.25
19.65	0.50	0.39	5.00	0.00	0.25	0.25
19.70	0.50	0.39	5.00	0.00	0.25	0.25
19.75	0.50	0.39	5.00	0.00	0.25	0.25
19.80	0.50	0.39	5.00	0.00	0.25	0.25
19.85	0.50	0.39	5.00	0.00	0.24	0.24
19.90	0.50	0.39	5.00	0.00	0.24	0.24
19.95	0.50	0.39	5.00	0.00	0.24	0.24
20.00	0.50	0.39	5.00	0.00	0.24	0.24
20.05	0.50	0.39	5.00	0.00	0.24	0.24
20.10	0.50	0.39	5.00	0.00	0.24	0.24
20.15	0.50	0.39	5.00	0.00	0.24	0.24
20.20	0.50	0.39	5.00	0.00	0.24	0.24
20.25	0.50	0.39	5.00	0.00	0.24	0.24
20.30	0.50	0.39	5.00	0.00	0.24	0.24
20.35	0.50	0.39	5.00	0.00	0.24	0.24
20.40	0.50	0.39	5.00	0.00	0.24	0.24
20.45	0.50	0.39	5.00	0.00	0.24	0.24
20.50	0.50	0.39	5.00	0.00	0.24	0.24
20.55	0.50	0.39	5.00	0.00	0.24	0.24
20.60	0.50	0.39	5.00	0.00	0.24	0.24
20.65	0.50	0.39	5.00	0.00	0.24	0.24

20.70	0.50	0.39	5.00	0.00	0.24	0.24
20.75	0.50	0.39	5.00	0.00	0.24	0.24
20.80	0.50	0.39	5.00	0.00	0.24	0.24
20.85	0.50	0.39	5.00	0.00	0.24	0.24
20.90	0.50	0.39	5.00	0.00	0.24	0.24
20.95	0.50	0.39	5.00	0.00	0.24	0.24
21.00	0.50	0.39	5.00	0.00	0.23	0.23
21.05	0.50	0.39	5.00	0.00	0.23	0.23
21.10	0.50	0.39	5.00	0.00	0.23	0.23
21.15	0.50	0.39	5.00	0.00	0.23	0.23
21.20	0.50	0.39	5.00	0.00	0.23	0.23
21.25	0.50	0.39	5.00	0.00	0.23	0.23
21.30	0.50	0.39	5.00	0.00	0.23	0.23
21.35	0.50	0.39	5.00	0.00	0.23	0.23
21.40	0.50	0.39	5.00	0.00	0.23	0.23
21.45	0.50	0.39	5.00	0.00	0.23	0.23
21.50	0.50	0.39	5.00	0.00	0.23	0.23
21.55	0.50	0.39	5.00	0.00	0.23	0.23
21.60	0.50	0.39	5.00	0.00	0.23	0.23
21.65	0.50	0.39	5.00	0.00	0.23	0.23
21.70	0.50	0.39	5.00	0.00	0.23	0.23
21.75	0.50	0.39	5.00	0.00	0.23	0.23
21.80	0.50	0.39	5.00	0.00	0.23	0.23
21.85	0.50	0.39	5.00	0.00	0.23	0.23
21.90	0.50	0.39	5.00	0.00	0.23	0.23
21.95	0.50	0.39	5.00	0.00	0.23	0.23
22.00	0.50	0.39	5.00	0.00	0.23	0.23
22.05	0.50	0.39	5.00	0.00	0.23	0.23
22.10	0.50	0.39	5.00	0.00	0.23	0.23
22.15	0.50	0.39	5.00	0.00	0.23	0.23
22.20	0.50	0.39	5.00	0.00	0.23	0.23
22.25	0.50	0.39	5.00	0.00	0.23	0.23
22.30	0.50	0.39	5.00	0.00	0.23	0.23
22.35	0.50	0.39	5.00	0.00	0.23	0.23
22.40	0.50	0.39	5.00	0.00	0.23	0.23
22.45	0.50	0.39	5.00	0.00	0.23	0.23
22.50	0.50	0.39	5.00	0.00	0.23	0.23
22.55	0.50	0.39	5.00	0.00	0.23	0.23
22.60	0.50	0.39	5.00	0.00	0.23	0.23
22.65	0.50	0.39	5.00	0.00	0.23	0.23
22.70	0.50	0.39	5.00	0.00	0.23	0.23
22.75	0.50	0.39	5.00	0.00	0.23	0.23
22.80	0.50	0.39	5.00	0.00	0.22	0.22
22.85	0.50	0.39	5.00	0.00	0.22	0.22
22.90	0.50	0.39	5.00	0.00	0.22	0.22
22.95	0.50	0.39	5.00	0.00	0.22	0.22
23.00	0.50	0.39	5.00	0.00	0.22	0.22
23.05	0.50	0.39	5.00	0.00	0.22	0.22
23.10	0.50	0.39	5.00	0.00	0.22	0.22
23.15	0.50	0.39	5.00	0.00	0.22	0.22
23.20	0.50	0.39	5.00	0.00	0.22	0.22
23.25	0.50	0.39	5.00	0.00	0.22	0.22
23.30	0.50	0.39	5.00	0.00	0.22	0.22
23.35	0.50	0.39	5.00	0.00	0.22	0.22
23.40	0.50	0.39	5.00	0.00	0.22	0.22
23.45	0.50	0.39	5.00	0.00	0.22	0.22
23.50	0.50	0.39	5.00	0.00	0.22	0.22
23.55	0.50	0.39	5.00	0.00	0.22	0.22
23.60	0.50	0.39	5.00	0.00	0.22	0.22

23.65	0.50	0.39	5.00	0.00	0.22	0.22
23.70	0.50	0.39	5.00	0.00	0.22	0.22
23.75	0.50	0.39	5.00	0.00	0.22	0.22
23.80	0.50	0.39	5.00	0.00	0.22	0.22
23.85	0.50	0.39	5.00	0.00	0.22	0.22
23.90	0.50	0.39	5.00	0.00	0.22	0.22
23.95	0.50	0.39	5.00	0.00	0.22	0.22
24.00	0.50	0.39	5.00	0.00	0.22	0.22
24.05	0.50	0.39	5.00	0.00	0.22	0.22
24.10	0.50	0.39	5.00	0.00	0.22	0.22
24.15	0.50	0.39	5.00	0.00	0.22	0.22
24.20	0.50	0.39	5.00	0.00	0.22	0.22
24.25	0.50	0.39	5.00	0.00	0.22	0.22
24.30	0.50	0.39	5.00	0.00	0.22	0.22
24.35	0.50	0.39	5.00	0.00	0.22	0.22
24.40	0.50	0.39	5.00	0.00	0.22	0.22
24.45	0.50	0.39	5.00	0.00	0.21	0.21
24.50	0.50	0.39	5.00	0.00	0.21	0.21
24.55	0.50	0.39	5.00	0.00	0.21	0.21
24.60	0.50	0.39	5.00	0.00	0.21	0.21
24.65	0.50	0.39	5.00	0.00	0.21	0.21
24.70	0.50	0.39	5.00	0.00	0.21	0.21
24.75	0.50	0.39	5.00	0.00	0.21	0.21
24.80	0.50	0.39	5.00	0.00	0.21	0.21
24.85	0.50	0.39	5.00	0.00	0.21	0.21
24.90	0.50	0.39	5.00	0.00	0.21	0.21
24.95	0.50	0.39	5.00	0.00	0.21	0.21
25.00	0.50	0.39	5.00	0.00	0.21	0.21
25.05	0.50	0.39	5.00	0.00	0.21	0.21
25.10	0.50	0.39	5.00	0.00	0.21	0.21
25.15	0.50	0.39	5.00	0.00	0.21	0.21
25.20	0.50	0.39	5.00	0.00	0.21	0.21
25.25	0.50	0.39	5.00	0.00	0.21	0.21
25.30	0.50	0.39	5.00	0.00	0.21	0.21
25.35	0.50	0.39	5.00	0.00	0.21	0.21
25.40	0.50	0.39	5.00	0.00	0.21	0.21
25.45	0.50	0.39	5.00	0.00	0.21	0.21
25.50	0.50	0.39	5.00	0.00	0.21	0.21
25.55	0.50	0.39	5.00	0.00	0.21	0.21
25.60	0.50	0.39	5.00	0.00	0.21	0.21
25.65	0.50	0.39	5.00	0.00	0.21	0.21
25.70	0.50	0.39	5.00	0.00	0.21	0.21
25.75	0.50	0.39	5.00	0.00	0.21	0.21
25.80	0.50	0.39	5.00	0.00	0.21	0.21
25.85	0.50	0.39	5.00	0.00	0.21	0.21
25.90	0.50	0.39	5.00	0.00	0.20	0.20
25.95	0.50	0.39	5.00	0.00	0.20	0.20
26.00	0.50	0.39	5.00	0.00	0.20	0.20
26.05	0.50	0.39	5.00	0.00	0.20	0.20
26.10	0.50	0.39	5.00	0.00	0.20	0.20
26.15	0.50	0.39	5.00	0.00	0.20	0.20
26.20	0.50	0.39	5.00	0.00	0.20	0.20
26.25	0.50	0.39	5.00	0.00	0.20	0.20
26.30	0.50	0.39	5.00	0.00	0.20	0.20
26.35	0.50	0.39	5.00	0.00	0.20	0.20
26.40	0.50	0.39	5.00	0.00	0.20	0.20
26.45	0.50	0.39	5.00	0.00	0.20	0.20
26.50	0.50	0.39	5.00	0.00	0.20	0.20
26.55	0.50	0.39	5.00	0.00	0.20	0.20

26.60	0.50	0.39	5.00	0.00	0.20	0.20
26.65	0.50	0.39	5.00	0.00	0.20	0.20
26.70	0.50	0.39	5.00	0.00	0.20	0.20
26.75	0.50	0.39	5.00	0.00	0.20	0.20
26.80	0.50	0.39	5.00	0.00	0.20	0.20
26.85	0.50	0.39	5.00	0.00	0.20	0.20
26.90	0.50	0.39	5.00	0.00	0.20	0.20
26.95	0.50	0.39	5.00	0.00	0.20	0.20
27.00	0.50	0.39	5.00	0.00	0.20	0.20
27.05	0.50	0.39	5.00	0.00	0.20	0.20
27.10	0.50	0.39	5.00	0.00	0.20	0.20
27.15	0.50	0.39	5.00	0.00	0.20	0.20
27.20	0.50	0.39	5.00	0.00	0.20	0.20
27.25	0.50	0.39	5.00	0.00	0.19	0.19
27.30	0.50	0.39	5.00	0.00	0.19	0.19
27.35	0.50	0.39	5.00	0.00	0.19	0.19
27.40	0.50	0.39	5.00	0.00	0.19	0.19
27.45	0.50	0.39	5.00	0.00	0.19	0.19
27.50	0.50	0.39	5.00	0.00	0.19	0.19
27.55	0.50	0.39	5.00	0.00	0.19	0.19
27.60	0.50	0.39	5.00	0.00	0.19	0.19
27.65	0.50	0.39	5.00	0.00	0.19	0.19
27.70	0.50	0.39	5.00	0.00	0.19	0.19
27.75	0.50	0.39	5.00	0.00	0.19	0.19
27.80	0.50	0.39	5.00	0.00	0.19	0.19
27.85	0.50	0.39	5.00	0.00	0.19	0.19
27.90	0.50	0.39	5.00	0.00	0.19	0.19
27.95	0.50	0.39	5.00	0.00	0.19	0.19
28.00	0.50	0.39	5.00	0.00	0.19	0.19
28.05	0.50	0.39	5.00	0.00	0.19	0.19
28.10	0.50	0.39	5.00	0.00	0.19	0.19
28.15	0.50	0.39	5.00	0.00	0.19	0.19
28.20	0.50	0.39	5.00	0.00	0.19	0.19
28.25	0.50	0.39	5.00	0.00	0.19	0.19
28.30	0.50	0.39	5.00	0.00	0.19	0.19
28.35	0.50	0.39	5.00	0.00	0.19	0.19
28.40	0.50	0.39	5.00	0.00	0.19	0.19
28.45	0.50	0.39	5.00	0.00	0.18	0.18
28.50	0.50	0.38	5.00	0.00	0.18	0.18
28.55	0.50	0.38	5.00	0.00	0.18	0.18
28.60	0.50	0.38	5.00	0.00	0.18	0.18
28.65	0.50	0.38	5.00	0.00	0.18	0.18
28.70	0.50	0.38	5.00	0.00	0.18	0.18
28.75	0.50	0.38	5.00	0.00	0.18	0.18
28.80	0.50	0.38	5.00	0.00	0.18	0.18
28.85	0.50	0.38	5.00	0.00	0.18	0.18
28.90	0.50	0.38	5.00	0.00	0.18	0.18
28.95	0.50	0.38	5.00	0.00	0.18	0.18
29.00	0.50	0.38	5.00	0.00	0.18	0.18
29.05	0.50	0.38	5.00	0.00	0.18	0.18
29.10	0.50	0.38	5.00	0.00	0.18	0.18
29.15	0.50	0.38	5.00	0.00	0.18	0.18
29.20	0.50	0.38	5.00	0.00	0.18	0.18
29.25	0.50	0.38	5.00	0.00	0.18	0.18
29.30	0.50	0.38	5.00	0.00	0.18	0.18
29.35	0.50	0.38	5.00	0.00	0.18	0.18
29.40	0.50	0.38	5.00	0.00	0.18	0.18
29.45	0.50	0.38	5.00	0.00	0.18	0.18
29.50	0.50	0.38	5.00	0.00	0.17	0.17

29.55	0.50	0.38	5.00	0.00	0.17	0.17
29.60	0.50	0.38	5.00	0.00	0.17	0.17
29.65	0.50	0.38	5.00	0.00	0.17	0.17
29.70	0.50	0.38	5.00	0.00	0.17	0.17
29.75	0.50	0.38	5.00	0.00	0.17	0.17
29.80	0.50	0.38	5.00	0.00	0.17	0.17
29.85	0.50	0.38	5.00	0.00	0.17	0.17
29.90	0.50	0.38	5.00	0.00	0.17	0.17
29.95	0.50	0.38	5.00	0.00	0.17	0.17
30.00	0.50	0.38	5.00	0.00	0.17	0.17
30.05	0.50	0.38	5.00	0.00	0.17	0.17
30.10	0.50	0.38	5.00	0.00	0.17	0.17
30.15	0.50	0.38	5.00	0.00	0.17	0.17
30.20	0.50	0.38	5.00	0.00	0.17	0.17
30.25	0.50	0.38	5.00	0.00	0.17	0.17
30.30	0.50	0.38	5.00	0.00	0.17	0.17
30.35	0.50	0.38	5.00	0.00	0.16	0.16
30.40	0.50	0.38	5.00	0.00	0.16	0.16
30.45	0.50	0.38	5.00	0.00	0.16	0.16
30.50	0.49	0.38	5.00	0.00	0.16	0.16
30.55	0.49	0.38	5.00	0.00	0.16	0.16
30.60	0.49	0.38	5.00	0.00	0.16	0.16
30.65	0.49	0.38	5.00	0.00	0.16	0.16
30.70	0.49	0.38	5.00	0.00	0.16	0.16
30.75	0.49	0.38	5.00	0.00	0.16	0.16
30.80	0.49	0.38	5.00	0.00	0.16	0.16
30.85	0.49	0.38	5.00	0.00	0.16	0.16
30.90	0.49	0.38	5.00	0.00	0.16	0.16
30.95	0.49	0.38	5.00	0.00	0.16	0.16
31.00	0.49	0.38	5.00	0.00	0.16	0.16
31.05	0.49	0.38	5.00	0.00	0.15	0.15
31.10	0.49	0.38	5.00	0.00	0.15	0.15
31.15	0.49	0.38	5.00	0.00	0.15	0.15
31.20	0.49	0.38	5.00	0.00	0.15	0.15
31.25	0.49	0.38	5.00	0.00	0.15	0.15
31.30	0.49	0.38	5.00	0.00	0.15	0.15
31.35	0.49	0.38	5.00	0.00	0.15	0.15
31.40	0.49	0.38	5.00	0.00	0.15	0.15
31.45	0.49	0.38	5.00	0.00	0.15	0.15
31.50	0.49	0.38	5.00	0.00	0.15	0.15
31.55	0.49	0.38	5.00	0.00	0.15	0.15
31.60	0.49	0.38	5.00	0.00	0.15	0.15
31.65	0.49	0.38	5.00	0.00	0.15	0.15
31.70	0.49	0.38	5.00	0.00	0.15	0.15
31.75	0.49	0.38	5.00	0.00	0.15	0.15
31.80	0.49	0.38	5.00	0.00	0.15	0.15
31.85	0.49	0.38	5.00	0.00	0.14	0.14
31.90	0.49	0.38	5.00	0.00	0.14	0.14
31.95	0.49	0.38	5.00	0.00	0.14	0.14
32.00	0.49	0.38	5.00	0.00	0.14	0.14
32.05	0.49	0.38	5.00	0.00	0.14	0.14
32.10	0.49	0.38	5.00	0.00	0.14	0.14
32.15	0.49	0.38	5.00	0.00	0.14	0.14
32.20	0.49	0.38	5.00	0.00	0.14	0.14
32.25	0.49	0.38	5.00	0.00	0.14	0.14
32.30	0.49	0.38	5.00	0.00	0.14	0.14
32.35	0.49	0.38	5.00	0.00	0.14	0.14
32.40	0.49	0.38	5.00	0.00	0.14	0.14
32.45	0.49	0.38	5.00	0.00	0.14	0.14

32.50	0.49	0.38	5.00	0.00	0.14	0.14
32.55	0.49	0.37	5.00	0.00	0.14	0.14
32.60	0.49	0.37	5.00	0.00	0.14	0.14
32.65	0.49	0.37	5.00	0.00	0.14	0.14
32.70	0.49	0.37	5.00	0.00	0.14	0.14
32.75	0.49	0.37	5.00	0.00	0.14	0.14
32.80	0.49	0.37	5.00	0.00	0.13	0.13
32.85	0.49	0.37	5.00	0.00	0.13	0.13
32.90	0.49	0.37	5.00	0.00	0.13	0.13
32.95	0.49	0.37	5.00	0.00	0.13	0.13
33.00	0.49	0.37	5.00	0.00	0.13	0.13
33.05	0.49	0.37	5.00	0.00	0.13	0.13
33.10	0.49	0.37	5.00	0.00	0.13	0.13
33.15	0.49	0.37	5.00	0.00	0.13	0.13
33.20	0.49	0.37	5.00	0.00	0.13	0.13
33.25	0.49	0.37	5.00	0.00	0.13	0.13
33.30	0.49	0.37	5.00	0.00	0.13	0.13
33.35	0.49	0.37	5.00	0.00	0.13	0.13
33.40	0.49	0.37	5.00	0.00	0.13	0.13
33.45	0.49	0.37	5.00	0.00	0.13	0.13
33.50	0.49	0.37	5.00	0.00	0.13	0.13
33.55	0.49	0.37	5.00	0.00	0.13	0.13
33.60	0.49	0.37	5.00	0.00	0.13	0.13
33.65	0.49	0.37	5.00	0.00	0.13	0.13
33.70	0.48	0.37	5.00	0.00	0.13	0.13
33.75	0.48	0.37	5.00	0.00	0.13	0.13
33.80	0.48	0.37	5.00	0.00	0.13	0.13
33.85	0.48	0.37	5.00	0.00	0.12	0.12
33.90	0.48	0.37	5.00	0.00	0.12	0.12
33.95	0.48	0.37	5.00	0.00	0.12	0.12
34.00	0.48	0.37	5.00	0.00	0.12	0.12
34.05	0.48	0.37	5.00	0.00	0.12	0.12
34.10	0.48	0.37	5.00	0.00	0.12	0.12
34.15	0.48	0.37	5.00	0.00	0.12	0.12
34.20	0.48	0.37	5.00	0.00	0.12	0.12
34.25	0.48	0.37	5.00	0.00	0.12	0.12
34.30	0.48	0.37	5.00	0.00	0.12	0.12
34.35	0.48	0.37	5.00	0.00	0.12	0.12
34.40	0.48	0.37	5.00	0.00	0.12	0.12
34.45	0.48	0.37	5.00	0.00	0.12	0.12
34.50	0.48	0.37	5.00	0.00	0.12	0.12
34.55	0.48	0.37	5.00	0.00	0.12	0.12
34.60	0.48	0.37	5.00	0.00	0.12	0.12
34.65	0.48	0.37	5.00	0.00	0.12	0.12
34.70	0.48	0.37	5.00	0.00	0.12	0.12
34.75	0.48	0.37	5.00	0.00	0.12	0.12
34.80	0.48	0.37	5.00	0.00	0.12	0.12
34.85	0.48	0.37	5.00	0.00	0.12	0.12
34.90	0.48	0.37	5.00	0.00	0.12	0.12
34.95	0.48	0.37	5.00	0.00	0.11	0.11
35.00	0.48	0.37	5.00	0.00	0.11	0.11
35.05	0.48	0.37	5.00	0.00	0.11	0.11
35.10	0.48	0.37	5.00	0.00	0.11	0.11
35.15	0.48	0.37	5.00	0.00	0.11	0.11
35.20	0.48	0.37	5.00	0.00	0.11	0.11
35.25	0.48	0.37	5.00	0.00	0.11	0.11
35.30	0.48	0.37	5.00	0.00	0.11	0.11
35.35	0.48	0.37	5.00	0.00	0.11	0.11
35.40	0.48	0.37	5.00	0.00	0.11	0.11

35.45	0.48	0.37	5.00	0.00	0.11	0.11
35.50	0.48	0.36	5.00	0.00	0.11	0.11
35.55	0.48	0.36	5.00	0.00	0.11	0.11
35.60	0.48	0.36	5.00	0.00	0.11	0.11
35.65	0.48	0.36	5.00	0.00	0.11	0.11
35.70	0.48	0.36	5.00	0.00	0.11	0.11
35.75	0.48	0.36	5.00	0.00	0.11	0.11
35.80	0.48	0.36	5.00	0.00	0.11	0.11
35.85	0.48	0.36	5.00	0.00	0.11	0.11
35.90	0.48	0.36	5.00	0.00	0.11	0.11
35.95	0.48	0.36	5.00	0.00	0.11	0.11
36.00	0.48	0.36	5.00	0.00	0.11	0.11
36.05	0.48	0.36	5.00	0.00	0.11	0.11
36.10	0.48	0.36	5.00	0.00	0.11	0.11
36.15	0.48	0.36	5.00	0.00	0.10	0.10
36.20	0.48	0.36	5.00	0.00	0.10	0.10
36.25	0.48	0.36	5.00	0.00	0.10	0.10
36.30	0.48	0.36	5.00	0.00	0.10	0.10
36.35	0.48	0.36	5.00	0.00	0.10	0.10
36.40	0.48	0.36	5.00	0.00	0.10	0.10
36.45	0.48	0.36	5.00	0.00	0.10	0.10
36.50	0.48	0.36	5.00	0.00	0.10	0.10
36.55	0.48	0.36	5.00	0.00	0.10	0.10
36.60	0.48	0.36	5.00	0.00	0.10	0.10
36.65	0.48	0.36	5.00	0.00	0.10	0.10
36.70	0.48	0.36	5.00	0.00	0.10	0.10
36.75	0.48	0.36	5.00	0.00	0.10	0.10
36.80	0.48	0.36	5.00	0.00	0.10	0.10
36.85	0.48	0.36	5.00	0.00	0.10	0.10
36.90	0.48	0.36	5.00	0.00	0.10	0.10
36.95	0.48	0.36	5.00	0.00	0.10	0.10
37.00	0.48	0.36	5.00	0.00	0.10	0.10
37.05	0.48	0.36	5.00	0.00	0.10	0.10
37.10	0.48	0.36	5.00	0.00	0.10	0.10
37.15	0.48	0.36	5.00	0.00	0.10	0.10
37.20	0.48	0.36	5.00	0.00	0.10	0.10
37.25	0.48	0.36	5.00	0.00	0.10	0.10
37.30	0.47	0.36	5.00	0.00	0.09	0.09
37.35	0.47	0.36	5.00	0.00	0.09	0.09
37.40	0.47	0.36	5.00	0.00	0.09	0.09
37.45	0.47	0.36	5.00	0.00	0.09	0.09
37.50	0.47	0.36	5.00	0.00	0.09	0.09
37.55	0.47	0.36	5.00	0.00	0.09	0.09
37.60	0.47	0.36	5.00	0.00	0.09	0.09
37.65	0.47	0.36	5.00	0.00	0.09	0.09
37.70	0.47	0.36	5.00	0.00	0.09	0.09
37.75	0.47	0.36	5.00	0.00	0.09	0.09
37.80	0.47	0.36	5.00	0.00	0.09	0.09
37.85	0.47	0.36	5.00	0.00	0.09	0.09
37.90	0.47	0.36	5.00	0.00	0.09	0.09
37.95	0.47	0.36	5.00	0.00	0.09	0.09
38.00	0.47	0.36	5.00	0.00	0.09	0.09
38.05	0.47	0.36	5.00	0.00	0.09	0.09
38.10	0.47	0.36	5.00	0.00	0.09	0.09
38.15	0.47	0.36	5.00	0.00	0.09	0.09
38.20	0.47	0.36	5.00	0.00	0.09	0.09
38.25	0.47	0.36	5.00	0.00	0.09	0.09
38.30	0.47	0.36	5.00	0.00	0.09	0.09
38.35	0.47	0.36	5.00	0.00	0.09	0.09

38.40	0.47	0.36	5.00	0.00	0.09	0.09
38.45	0.47	0.36	5.00	0.00	0.09	0.09
38.50	0.47	0.35	5.00	0.00	0.08	0.08
38.55	0.47	0.35	5.00	0.00	0.08	0.08
38.60	0.47	0.35	5.00	0.00	0.08	0.08
38.65	0.47	0.35	5.00	0.00	0.08	0.08
38.70	0.47	0.35	5.00	0.00	0.08	0.08
38.75	0.47	0.35	5.00	0.00	0.08	0.08
38.80	0.47	0.35	5.00	0.00	0.08	0.08
38.85	0.47	0.35	5.00	0.00	0.08	0.08
38.90	0.47	0.35	5.00	0.00	0.08	0.08
38.95	0.47	0.35	5.00	0.00	0.08	0.08
39.00	0.47	0.35	5.00	0.00	0.08	0.08
39.05	0.47	0.35	5.00	0.00	0.08	0.08
39.10	0.47	0.35	5.00	0.00	0.08	0.08
39.15	0.47	0.35	5.00	0.00	0.08	0.08
39.20	0.47	0.35	5.00	0.00	0.08	0.08
39.25	0.47	0.35	5.00	0.00	0.08	0.08
39.30	0.47	0.35	5.00	0.00	0.08	0.08
39.35	0.47	0.35	5.00	0.00	0.08	0.08
39.40	0.47	0.35	5.00	0.00	0.08	0.08
39.45	0.47	0.35	5.00	0.00	0.08	0.08
39.50	0.47	0.35	5.00	0.00	0.08	0.08
39.55	0.47	0.35	5.00	0.00	0.08	0.08
39.60	0.47	0.35	5.00	0.00	0.08	0.08
39.65	0.47	0.35	5.00	0.00	0.08	0.08
39.70	0.47	0.35	5.00	0.00	0.07	0.07
39.75	0.47	0.35	5.00	0.00	0.07	0.07
39.80	0.47	0.35	5.00	0.00	0.07	0.07
39.85	0.47	0.35	5.00	0.00	0.07	0.07
39.90	0.47	0.35	5.00	0.00	0.07	0.07
39.95	0.47	0.35	5.00	0.00	0.07	0.07
40.00	0.47	0.35	5.00	0.00	0.07	0.07
40.05	0.47	0.35	5.00	0.00	0.07	0.07
40.10	0.47	0.35	5.00	0.00	0.07	0.07
40.15	0.47	0.35	5.00	0.00	0.07	0.07
40.20	0.47	0.35	5.00	0.00	0.07	0.07
40.25	0.47	0.35	5.00	0.00	0.07	0.07
40.30	0.47	0.35	5.00	0.00	0.07	0.07
40.35	0.47	0.35	5.00	0.00	0.07	0.07
40.40	0.47	0.35	5.00	0.00	0.07	0.07
40.45	0.47	0.35	5.00	0.00	0.07	0.07
40.50	0.47	0.35	5.00	0.00	0.07	0.07
40.55	0.47	0.35	5.00	0.00	0.07	0.07
40.60	0.47	0.35	5.00	0.00	0.07	0.07
40.65	0.47	0.35	5.00	0.00	0.07	0.07
40.70	0.47	0.35	5.00	0.00	0.07	0.07
40.75	0.47	0.35	5.00	0.00	0.07	0.07
40.80	0.47	0.35	5.00	0.00	0.07	0.07
40.85	0.47	0.35	5.00	0.00	0.07	0.07
40.90	0.47	0.35	5.00	0.00	0.06	0.06
40.95	0.47	0.35	5.00	0.00	0.06	0.06
41.00	0.47	0.35	5.00	0.00	0.06	0.06
41.05	0.47	0.35	5.00	0.00	0.06	0.06
41.10	0.47	0.35	5.00	0.00	0.06	0.06
41.15	0.47	0.35	5.00	0.00	0.06	0.06
41.20	0.47	0.35	5.00	0.00	0.06	0.06
41.25	0.47	0.35	5.00	0.00	0.06	0.06
41.30	0.46	0.35	5.00	0.00	0.06	0.06

41.35	0.46	0.35	5.00	0.00	0.06	0.06
41.40	0.46	0.35	5.00	0.00	0.06	0.06
41.45	0.46	0.35	5.00	0.00	0.06	0.06
41.50	0.46	0.34	5.00	0.00	0.06	0.06
41.55	0.46	0.34	5.00	0.00	0.06	0.06
41.60	0.46	0.34	5.00	0.00	0.06	0.06
41.65	0.46	0.34	5.00	0.00	0.06	0.06
41.70	0.46	0.34	5.00	0.00	0.06	0.06
41.75	0.46	0.34	5.00	0.00	0.06	0.06
41.80	0.46	0.34	5.00	0.00	0.06	0.06
41.85	0.46	0.34	5.00	0.00	0.06	0.06
41.90	0.46	0.34	5.00	0.00	0.06	0.06
41.95	0.46	0.34	5.00	0.00	0.06	0.06
42.00	0.46	0.34	5.00	0.00	0.06	0.06
42.05	0.46	0.34	5.00	0.00	0.06	0.06
42.10	0.46	0.34	5.00	0.00	0.06	0.06
42.15	0.46	0.34	5.00	0.00	0.06	0.06
42.20	0.46	0.34	5.00	0.00	0.06	0.06
42.25	0.46	0.34	5.00	0.00	0.06	0.06
42.30	0.46	0.34	5.00	0.00	0.06	0.06
42.35	0.46	0.34	5.00	0.00	0.06	0.06
42.40	0.46	0.34	5.00	0.00	0.06	0.06
42.45	0.46	0.34	5.00	0.00	0.06	0.06
42.50	0.46	0.34	5.00	0.00	0.06	0.06
42.55	0.46	0.34	5.00	0.00	0.05	0.05
42.60	0.46	0.34	5.00	0.00	0.05	0.05
42.65	0.46	0.34	5.00	0.00	0.05	0.05
42.70	0.46	0.34	5.00	0.00	0.05	0.05
42.75	0.46	0.34	5.00	0.00	0.05	0.05
42.80	0.46	0.34	5.00	0.00	0.05	0.05
42.85	0.46	0.34	5.00	0.00	0.05	0.05
42.90	0.46	0.34	5.00	0.00	0.05	0.05
42.95	0.46	0.34	5.00	0.00	0.05	0.05
43.00	0.46	0.34	5.00	0.00	0.05	0.05
43.05	0.46	0.34	5.00	0.00	0.05	0.05
43.10	0.46	0.34	5.00	0.00	0.05	0.05
43.15	0.46	0.34	5.00	0.00	0.05	0.05
43.20	0.46	0.34	5.00	0.00	0.05	0.05
43.25	0.46	0.34	5.00	0.00	0.05	0.05
43.30	0.46	0.34	5.00	0.00	0.05	0.05
43.35	0.46	0.34	5.00	0.00	0.05	0.05
43.40	0.46	0.34	5.00	0.00	0.05	0.05
43.45	0.46	0.34	5.00	0.00	0.05	0.05
43.50	0.46	0.34	5.00	0.00	0.05	0.05
43.55	0.46	0.34	5.00	0.00	0.05	0.05
43.60	0.46	0.34	5.00	0.00	0.05	0.05
43.65	0.46	0.34	5.00	0.00	0.05	0.05
43.70	0.46	0.34	5.00	0.00	0.05	0.05
43.75	0.46	0.34	5.00	0.00	0.05	0.05
43.80	0.46	0.34	5.00	0.00	0.05	0.05
43.85	0.46	0.34	5.00	0.00	0.05	0.05
43.90	0.46	0.34	5.00	0.00	0.05	0.05
43.95	0.46	0.34	5.00	0.00	0.05	0.05
44.00	0.46	0.34	5.00	0.00	0.05	0.05
44.05	0.46	0.34	5.00	0.00	0.05	0.05
44.10	0.46	0.34	5.00	0.00	0.05	0.05
44.15	0.46	0.34	5.00	0.00	0.04	0.04
44.20	0.46	0.34	5.00	0.00	0.04	0.04
44.25	0.46	0.34	5.00	0.00	0.04	0.04

44.30	0.46	0.34	5.00	0.00	0.04	0.04
44.35	0.46	0.34	5.00	0.00	0.04	0.04
44.40	0.46	0.34	5.00	0.00	0.04	0.04
44.45	0.46	0.33	5.00	0.00	0.04	0.04
44.50	0.46	0.33	5.00	0.00	0.04	0.04
44.55	0.46	0.33	5.00	0.00	0.04	0.04
44.60	0.46	0.33	5.00	0.00	0.04	0.04
44.65	0.46	0.33	5.00	0.00	0.04	0.04
44.70	0.46	0.33	5.00	0.00	0.04	0.04
44.75	0.46	0.33	5.00	0.00	0.04	0.04
44.80	0.46	0.33	5.00	0.00	0.04	0.04
44.85	0.46	0.33	5.00	0.00	0.04	0.04
44.90	0.46	0.33	5.00	0.00	0.04	0.04
44.95	0.46	0.33	5.00	0.00	0.04	0.04
45.00	0.46	0.33	5.00	0.00	0.04	0.04
45.05	0.46	0.33	5.00	0.00	0.04	0.04
45.10	0.46	0.33	5.00	0.00	0.04	0.04
45.15	0.46	0.33	5.00	0.00	0.04	0.04
45.20	0.46	0.33	5.00	0.00	0.04	0.04
45.25	0.46	0.33	5.00	0.00	0.04	0.04
45.30	0.46	0.33	5.00	0.00	0.04	0.04
45.35	0.46	0.33	5.00	0.00	0.04	0.04
45.40	0.46	0.33	5.00	0.00	0.04	0.04
45.45	0.46	0.33	5.00	0.00	0.04	0.04
45.50	0.46	0.33	5.00	0.00	0.04	0.04
45.55	0.46	0.33	5.00	0.00	0.04	0.04
45.60	0.45	0.33	5.00	0.00	0.04	0.04
45.65	0.45	0.33	5.00	0.00	0.04	0.04
45.70	0.45	0.33	5.00	0.00	0.04	0.04
45.75	0.45	0.33	5.00	0.00	0.03	0.03
45.80	0.45	0.33	5.00	0.00	0.03	0.03
45.85	0.45	0.33	5.00	0.00	0.03	0.03
45.90	0.45	0.33	5.00	0.00	0.03	0.03
45.95	0.45	0.33	5.00	0.00	0.03	0.03
46.00	0.45	0.33	5.00	0.00	0.03	0.03
46.05	0.45	0.33	5.00	0.00	0.03	0.03
46.10	0.45	0.33	5.00	0.00	0.03	0.03
46.15	0.45	0.33	5.00	0.00	0.03	0.03
46.20	0.45	0.33	5.00	0.00	0.03	0.03
46.25	0.45	0.33	5.00	0.00	0.03	0.03
46.30	0.45	0.33	5.00	0.00	0.03	0.03
46.35	0.45	0.33	5.00	0.00	0.03	0.03
46.40	0.45	0.33	5.00	0.00	0.03	0.03
46.45	0.45	0.33	5.00	0.00	0.03	0.03
46.50	0.45	0.33	5.00	0.00	0.03	0.03
46.55	0.45	0.33	5.00	0.00	0.03	0.03
46.60	0.45	0.33	5.00	0.00	0.03	0.03
46.65	0.45	0.33	5.00	0.00	0.03	0.03
46.70	0.45	0.33	5.00	0.00	0.03	0.03
46.75	0.45	0.33	5.00	0.00	0.03	0.03
46.80	0.45	0.33	5.00	0.00	0.03	0.03
46.85	0.45	0.33	5.00	0.00	0.03	0.03
46.90	0.45	0.33	5.00	0.00	0.03	0.03
46.95	0.45	0.33	5.00	0.00	0.03	0.03
47.00	0.45	0.33	5.00	0.00	0.03	0.03
47.05	0.45	0.33	5.00	0.00	0.03	0.03
47.10	0.45	0.33	5.00	0.00	0.03	0.03
47.15	0.45	0.33	5.00	0.00	0.03	0.03
47.20	0.45	0.33	5.00	0.00	0.03	0.03

47.25	0.45	0.33	5.00	0.00	0.03	0.03
47.30	0.45	0.33	5.00	0.00	0.02	0.02
47.35	0.45	0.33	5.00	0.00	0.02	0.02
47.40	0.45	0.33	5.00	0.00	0.02	0.02
47.45	0.45	0.32	5.00	0.00	0.02	0.02
47.50	0.45	0.32	5.00	0.00	0.02	0.02
47.55	0.45	0.32	5.00	0.00	0.02	0.02
47.60	0.45	0.32	5.00	0.00	0.02	0.02
47.65	0.45	0.32	5.00	0.00	0.02	0.02
47.70	0.45	0.32	5.00	0.00	0.02	0.02
47.75	0.45	0.32	5.00	0.00	0.02	0.02
47.80	0.45	0.32	5.00	0.00	0.02	0.02
47.85	0.45	0.32	5.00	0.00	0.02	0.02
47.90	0.45	0.32	5.00	0.00	0.02	0.02
47.95	0.45	0.32	5.00	0.00	0.02	0.02
48.00	0.45	0.32	5.00	0.00	0.02	0.02
48.05	0.45	0.32	5.00	0.00	0.02	0.02
48.10	0.45	0.32	5.00	0.00	0.02	0.02
48.15	0.45	0.32	5.00	0.00	0.02	0.02
48.20	0.45	0.32	5.00	0.00	0.02	0.02
48.25	0.45	0.32	5.00	0.00	0.02	0.02
48.30	0.45	0.32	5.00	0.00	0.02	0.02
48.35	0.45	0.32	5.00	0.00	0.02	0.02
48.40	0.45	0.32	5.00	0.00	0.02	0.02
48.45	0.45	0.32	5.00	0.00	0.02	0.02
48.50	0.45	0.32	5.00	0.00	0.02	0.02
48.55	0.45	0.32	5.00	0.00	0.02	0.02
48.60	0.45	0.32	5.00	0.00	0.02	0.02
48.65	0.45	0.32	5.00	0.00	0.02	0.02
48.70	0.45	0.32	5.00	0.00	0.02	0.02
48.75	0.45	0.32	5.00	0.00	0.02	0.02
48.80	0.45	0.32	5.00	0.00	0.01	0.01
48.85	0.45	0.32	5.00	0.00	0.01	0.01
48.90	0.45	0.32	5.00	0.00	0.01	0.01
48.95	0.45	0.32	5.00	0.00	0.01	0.01
49.00	0.45	0.32	5.00	0.00	0.01	0.01
49.05	0.45	0.32	5.00	0.00	0.01	0.01
49.10	0.45	0.32	5.00	0.00	0.01	0.01
49.15	0.45	0.32	5.00	0.00	0.01	0.01
49.20	0.45	0.32	5.00	0.00	0.01	0.01
49.25	0.45	0.32	5.00	0.00	0.01	0.01
49.30	0.45	0.32	5.00	0.00	0.01	0.01
49.35	0.45	0.32	5.00	0.00	0.01	0.01
49.40	0.45	0.32	5.00	0.00	0.01	0.01
49.45	0.45	0.32	5.00	0.00	0.01	0.01
49.50	0.45	0.32	5.00	0.00	0.01	0.01
49.55	0.45	0.32	5.00	0.00	0.01	0.01
49.60	0.45	0.32	5.00	0.00	0.01	0.01
49.65	0.45	0.32	5.00	0.00	0.01	0.01
49.70	0.45	0.32	5.00	0.00	0.01	0.01
49.75	0.45	0.32	5.00	0.00	0.01	0.01
49.80	0.45	0.32	5.00	0.00	0.01	0.01
49.85	0.45	0.32	5.00	0.00	0.01	0.01
49.90	0.45	0.32	5.00	0.00	0.01	0.01
49.95	0.45	0.32	5.00	0.00	0.01	0.01
50.00	0.45	0.32	5.00	0.00	0.01	0.01
50.05	0.45	0.32	5.00	0.00	0.01	0.01
50.10	0.45	0.32	5.00	0.00	0.01	0.01
50.15	0.44	0.32	5.00	0.00	0.01	0.01

50.20	0.44	0.32	5.00	0.00	0.01	0.01
50.25	0.44	0.32	5.00	0.00	0.01	0.01
50.30	0.44	0.32	5.00	0.00	0.00	0.00
50.35	0.44	0.32	5.00	0.00	0.00	0.00
50.40	0.44	0.31	5.00	0.00	0.00	0.00
50.45	0.44	0.31	5.00	0.00	0.00	0.00
50.50	0.44	0.31	5.00	0.00	0.00	0.00
50.55	0.44	0.31	5.00	0.00	0.00	0.00
50.60	0.44	0.31	5.00	0.00	0.00	0.00
50.65	0.44	0.31	5.00	0.00	0.00	0.00
50.70	0.44	0.31	5.00	0.00	0.00	0.00
50.75	0.44	0.31	5.00	0.00	0.00	0.00
50.80	0.44	0.31	5.00	0.00	0.00	0.00
50.85	0.44	0.31	5.00	0.00	0.00	0.00
50.90	0.44	0.31	5.00	0.00	0.00	0.00
50.95	0.44	0.31	5.00	0.00	0.00	0.00
51.00	0.44	0.31	5.00	0.00	0.00	0.00

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* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units:Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)

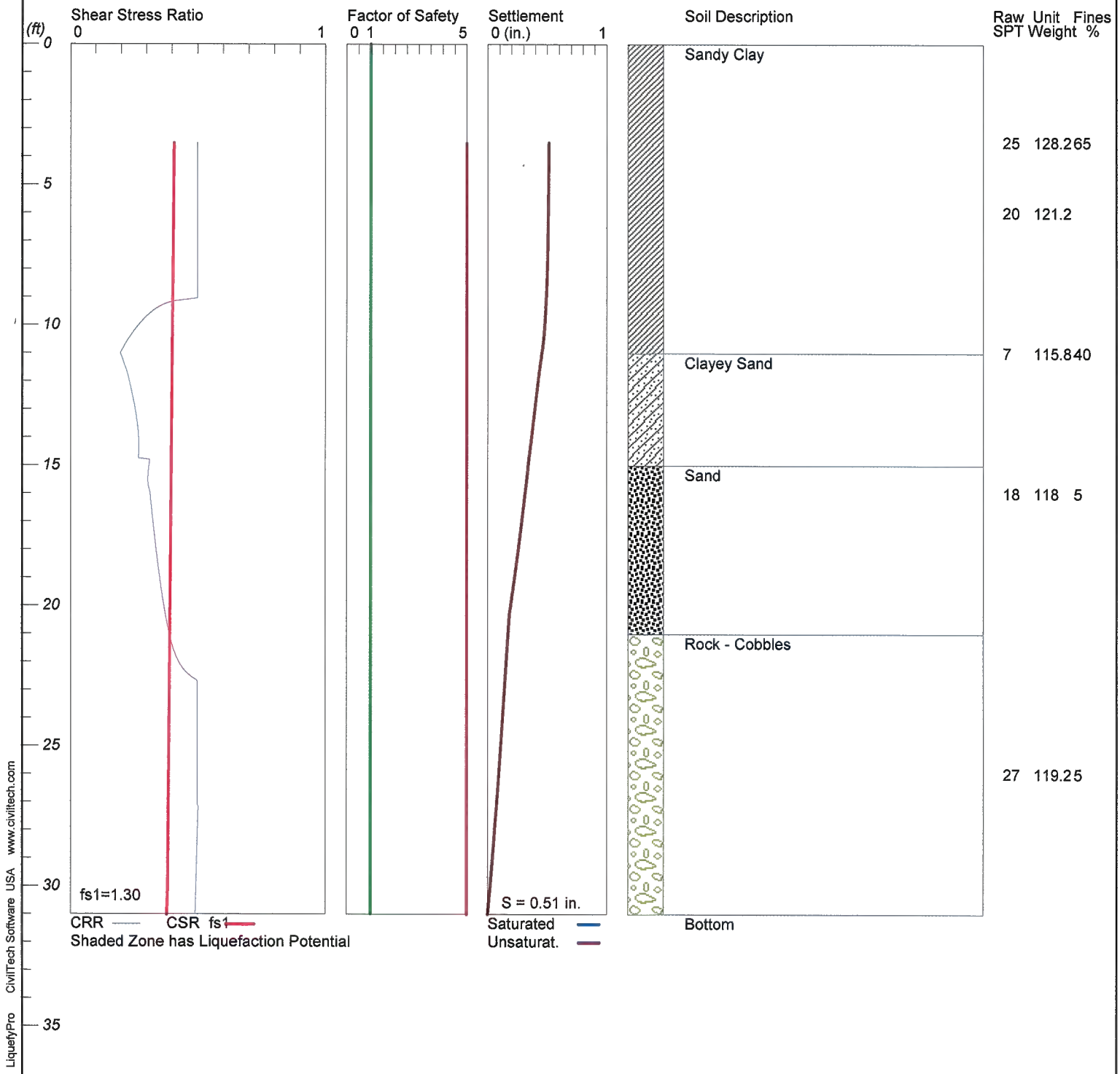
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Edison SD - New School Site

Hole No.=B-2 Water Depth=100 ft

Magnitude=7.5
Acceleration=0.488g



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LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: O:\b. PROJECT FILES (ACTIVE)\16900-16999\16901 Edison School District PEA Services\Geohaz Update\LiquefyPro files\16901 B-2.liq
Title: Edison SD - New School Site
Subtitle: 16901

Surface Elev.=
Hole No.=B-2
Depth of Hole= 31.00 ft
Water Table during Earthquake= 100.00 ft
Water Table during In-Situ Testing= 100.00 ft
Max. Acceleration= 0.49 g
Earthquake Magnitude= 7.50

Input Data:
Surface Elev.=
Hole No.=B-2
Depth of Hole=31.00 ft
Water Table during Earthquake= 100.00 ft
Water Table during In-Situ Testing= 100.00 ft
Max. Acceleration=0.49 g
Earthquake Magnitude=7.50
No-Liquefiable Soils: Based on Analysis

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Idriss/Seed
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*

* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
3.50	25.00	128.20	65.00
6.00	20.00	121.20	65.00
11.00	7.00	115.80	40.00
16.00	18.00	118.00	5.00
26.00	27.00	119.20	5.00

Output Results:

Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=0.51 in.
Total Settlement of Saturated and Unsaturated Sands=0.51 in.
Differential Settlement=0.257 to 0.340 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
3.50	0.50	0.41	5.00	0.00	0.51	0.51
3.55	0.50	0.41	5.00	0.00	0.51	0.51
3.60	0.50	0.41	5.00	0.00	0.51	0.51
3.65	0.50	0.41	5.00	0.00	0.51	0.51
3.70	0.50	0.41	5.00	0.00	0.51	0.51
3.75	0.50	0.41	5.00	0.00	0.51	0.51
3.80	0.50	0.41	5.00	0.00	0.51	0.51
3.85	0.50	0.41	5.00	0.00	0.51	0.51
3.90	0.50	0.41	5.00	0.00	0.51	0.51
3.95	0.50	0.41	5.00	0.00	0.51	0.51
4.00	0.50	0.41	5.00	0.00	0.51	0.51
4.05	0.50	0.41	5.00	0.00	0.51	0.51
4.10	0.50	0.41	5.00	0.00	0.51	0.51
4.15	0.50	0.41	5.00	0.00	0.51	0.51
4.20	0.50	0.41	5.00	0.00	0.51	0.51
4.25	0.50	0.41	5.00	0.00	0.51	0.51
4.30	0.50	0.41	5.00	0.00	0.51	0.51
4.35	0.50	0.41	5.00	0.00	0.51	0.51
4.40	0.50	0.41	5.00	0.00	0.51	0.51
4.45	0.50	0.41	5.00	0.00	0.51	0.51
4.50	0.50	0.41	5.00	0.00	0.51	0.51
4.55	0.50	0.41	5.00	0.00	0.51	0.51
4.60	0.50	0.41	5.00	0.00	0.51	0.51
4.65	0.50	0.41	5.00	0.00	0.51	0.51
4.70	0.50	0.41	5.00	0.00	0.51	0.51
4.75	0.50	0.41	5.00	0.00	0.51	0.51
4.80	0.50	0.41	5.00	0.00	0.51	0.51
4.85	0.50	0.41	5.00	0.00	0.51	0.51
4.90	0.50	0.41	5.00	0.00	0.51	0.51
4.95	0.50	0.41	5.00	0.00	0.51	0.51
5.00	0.50	0.41	5.00	0.00	0.51	0.51
5.05	0.50	0.41	5.00	0.00	0.51	0.51
5.10	0.50	0.41	5.00	0.00	0.51	0.51
5.15	0.50	0.41	5.00	0.00	0.51	0.51
5.20	0.50	0.41	5.00	0.00	0.51	0.51
5.25	0.50	0.41	5.00	0.00	0.51	0.51
5.30	0.50	0.41	5.00	0.00	0.51	0.51
5.35	0.50	0.41	5.00	0.00	0.51	0.51
5.40	0.50	0.41	5.00	0.00	0.51	0.51
5.45	0.50	0.41	5.00	0.00	0.51	0.51
5.50	0.50	0.41	5.00	0.00	0.51	0.51
5.55	0.50	0.41	5.00	0.00	0.51	0.51
5.60	0.50	0.41	5.00	0.00	0.51	0.51
5.65	0.50	0.41	5.00	0.00	0.51	0.51
5.70	0.50	0.41	5.00	0.00	0.51	0.51
5.75	0.50	0.41	5.00	0.00	0.51	0.51
5.80	0.50	0.41	5.00	0.00	0.51	0.51
5.85	0.50	0.41	5.00	0.00	0.51	0.51
5.90	0.50	0.41	5.00	0.00	0.51	0.51
5.95	0.50	0.41	5.00	0.00	0.51	0.51

6.00	0.50	0.41	5.00	0.00	0.51	0.51
6.05	0.50	0.41	5.00	0.00	0.51	0.51
6.10	0.50	0.41	5.00	0.00	0.51	0.51
6.15	0.50	0.41	5.00	0.00	0.51	0.51
6.20	0.50	0.41	5.00	0.00	0.51	0.51
6.25	0.50	0.41	5.00	0.00	0.51	0.51
6.30	0.50	0.41	5.00	0.00	0.51	0.51
6.35	0.50	0.41	5.00	0.00	0.51	0.51
6.40	0.50	0.41	5.00	0.00	0.51	0.51
6.45	0.50	0.41	5.00	0.00	0.51	0.51
6.50	0.50	0.41	5.00	0.00	0.51	0.51
6.55	0.50	0.41	5.00	0.00	0.51	0.51
6.60	0.50	0.41	5.00	0.00	0.51	0.51
6.65	0.50	0.41	5.00	0.00	0.51	0.51
6.70	0.50	0.41	5.00	0.00	0.51	0.51
6.75	0.50	0.41	5.00	0.00	0.51	0.51
6.80	0.50	0.41	5.00	0.00	0.51	0.51
6.85	0.50	0.41	5.00	0.00	0.51	0.51
6.90	0.50	0.41	5.00	0.00	0.51	0.51
6.95	0.50	0.41	5.00	0.00	0.51	0.51
7.00	0.50	0.41	5.00	0.00	0.51	0.51
7.05	0.50	0.41	5.00	0.00	0.51	0.51
7.10	0.50	0.41	5.00	0.00	0.51	0.51
7.15	0.50	0.41	5.00	0.00	0.51	0.51
7.20	0.50	0.41	5.00	0.00	0.51	0.51
7.25	0.50	0.41	5.00	0.00	0.51	0.51
7.30	0.50	0.41	5.00	0.00	0.50	0.50
7.35	0.50	0.41	5.00	0.00	0.50	0.50
7.40	0.50	0.41	5.00	0.00	0.50	0.50
7.45	0.50	0.41	5.00	0.00	0.50	0.50
7.50	0.50	0.41	5.00	0.00	0.50	0.50
7.55	0.50	0.41	5.00	0.00	0.50	0.50
7.60	0.50	0.41	5.00	0.00	0.50	0.50
7.65	0.50	0.41	5.00	0.00	0.50	0.50
7.70	0.50	0.40	5.00	0.00	0.50	0.50
7.75	0.50	0.40	5.00	0.00	0.50	0.50
7.80	0.50	0.40	5.00	0.00	0.50	0.50
7.85	0.50	0.40	5.00	0.00	0.50	0.50
7.90	0.50	0.40	5.00	0.00	0.50	0.50
7.95	0.50	0.40	5.00	0.00	0.50	0.50
8.00	0.50	0.40	5.00	0.00	0.50	0.50
8.05	0.50	0.40	5.00	0.00	0.50	0.50
8.10	0.50	0.40	5.00	0.00	0.50	0.50
8.15	0.50	0.40	5.00	0.00	0.50	0.50
8.20	0.50	0.40	5.00	0.00	0.50	0.50
8.25	0.50	0.40	5.00	0.00	0.50	0.50
8.30	0.50	0.40	5.00	0.00	0.50	0.50
8.35	0.50	0.40	5.00	0.00	0.50	0.50
8.40	0.50	0.40	5.00	0.00	0.50	0.50
8.45	0.50	0.40	5.00	0.00	0.50	0.50
8.50	0.50	0.40	5.00	0.00	0.50	0.50
8.55	0.50	0.40	5.00	0.00	0.50	0.50
8.60	0.50	0.40	5.00	0.00	0.50	0.50
8.65	0.50	0.40	5.00	0.00	0.50	0.50
8.70	0.50	0.40	5.00	0.00	0.50	0.50
8.75	0.50	0.40	5.00	0.00	0.50	0.50
8.80	0.50	0.40	5.00	0.00	0.50	0.50
8.85	0.50	0.40	5.00	0.00	0.49	0.49
8.90	0.50	0.40	5.00	0.00	0.49	0.49

8.95	0.50	0.40	5.00	0.00	0.49	0.49
9.00	0.50	0.40	5.00	0.00	0.49	0.49
9.05	0.50	0.40	5.00	0.00	0.49	0.49
9.10	0.46	0.40	5.00	0.00	0.49	0.49
9.15	0.41	0.40	5.00	0.00	0.49	0.49
9.20	0.39	0.40	5.00	0.00	0.49	0.49
9.25	0.37	0.40	5.00	0.00	0.49	0.49
9.30	0.36	0.40	5.00	0.00	0.49	0.49
9.35	0.35	0.40	5.00	0.00	0.49	0.49
9.40	0.34	0.40	5.00	0.00	0.49	0.49
9.45	0.33	0.40	5.00	0.00	0.49	0.49
9.50	0.33	0.40	5.00	0.00	0.49	0.49
9.55	0.32	0.40	5.00	0.00	0.49	0.49
9.60	0.31	0.40	5.00	0.00	0.49	0.49
9.65	0.31	0.40	5.00	0.00	0.48	0.48
9.70	0.30	0.40	5.00	0.00	0.48	0.48
9.75	0.30	0.40	5.00	0.00	0.48	0.48
9.80	0.29	0.40	5.00	0.00	0.48	0.48
9.85	0.28	0.40	5.00	0.00	0.48	0.48
9.90	0.28	0.40	5.00	0.00	0.48	0.48
9.95	0.27	0.40	5.00	0.00	0.48	0.48
10.00	0.27	0.40	5.00	0.00	0.48	0.48
10.05	0.27	0.40	5.00	0.00	0.48	0.48
10.10	0.26	0.40	5.00	0.00	0.48	0.48
10.15	0.26	0.40	5.00	0.00	0.48	0.48
10.20	0.25	0.40	5.00	0.00	0.48	0.48
10.25	0.25	0.40	5.00	0.00	0.48	0.48
10.30	0.25	0.40	5.00	0.00	0.47	0.47
10.35	0.24	0.40	5.00	0.00	0.47	0.47
10.40	0.24	0.40	5.00	0.00	0.47	0.47
10.45	0.23	0.40	5.00	0.00	0.47	0.47
10.50	0.23	0.40	5.00	0.00	0.47	0.47
10.55	0.23	0.40	5.00	0.00	0.47	0.47
10.60	0.22	0.40	5.00	0.00	0.47	0.47
10.65	0.22	0.40	5.00	0.00	0.47	0.47
10.70	0.22	0.40	5.00	0.00	0.47	0.47
10.75	0.21	0.40	5.00	0.00	0.46	0.46
10.80	0.21	0.40	5.00	0.00	0.46	0.46
10.85	0.21	0.40	5.00	0.00	0.46	0.46
10.90	0.20	0.40	5.00	0.00	0.46	0.46
10.95	0.20	0.40	5.00	0.00	0.46	0.46
11.00	0.20	0.40	5.00	0.00	0.46	0.46
11.05	0.20	0.40	5.00	0.00	0.45	0.45
11.10	0.20	0.40	5.00	0.00	0.45	0.45
11.15	0.20	0.40	5.00	0.00	0.45	0.45
11.20	0.21	0.40	5.00	0.00	0.45	0.45
11.25	0.21	0.40	5.00	0.00	0.45	0.45
11.30	0.21	0.40	5.00	0.00	0.44	0.44
11.35	0.21	0.40	5.00	0.00	0.44	0.44
11.40	0.21	0.40	5.00	0.00	0.44	0.44
11.45	0.22	0.40	5.00	0.00	0.44	0.44
11.50	0.22	0.40	5.00	0.00	0.44	0.44
11.55	0.22	0.40	5.00	0.00	0.44	0.44
11.60	0.22	0.40	5.00	0.00	0.44	0.44
11.65	0.22	0.40	5.00	0.00	0.43	0.43
11.70	0.23	0.40	5.00	0.00	0.43	0.43
11.75	0.23	0.40	5.00	0.00	0.43	0.43
11.80	0.23	0.40	5.00	0.00	0.43	0.43
11.85	0.23	0.40	5.00	0.00	0.43	0.43

11.90	0.23	0.40	5.00	0.00	0.43	0.43
11.95	0.23	0.40	5.00	0.00	0.42	0.42
12.00	0.23	0.40	5.00	0.00	0.42	0.42
12.05	0.23	0.40	5.00	0.00	0.42	0.42
12.10	0.24	0.40	5.00	0.00	0.42	0.42
12.15	0.24	0.40	5.00	0.00	0.42	0.42
12.20	0.24	0.40	5.00	0.00	0.42	0.42
12.25	0.24	0.40	5.00	0.00	0.42	0.42
12.30	0.24	0.40	5.00	0.00	0.41	0.41
12.35	0.24	0.40	5.00	0.00	0.41	0.41
12.40	0.24	0.40	5.00	0.00	0.41	0.41
12.45	0.24	0.40	5.00	0.00	0.41	0.41
12.50	0.25	0.40	5.00	0.00	0.41	0.41
12.55	0.25	0.40	5.00	0.00	0.41	0.41
12.60	0.25	0.40	5.00	0.00	0.41	0.41
12.65	0.25	0.40	5.00	0.00	0.40	0.40
12.70	0.25	0.40	5.00	0.00	0.40	0.40
12.75	0.25	0.40	5.00	0.00	0.40	0.40
12.80	0.25	0.40	5.00	0.00	0.40	0.40
12.85	0.25	0.40	5.00	0.00	0.40	0.40
12.90	0.25	0.40	5.00	0.00	0.40	0.40
12.95	0.26	0.40	5.00	0.00	0.40	0.40
13.00	0.26	0.40	5.00	0.00	0.40	0.40
13.05	0.26	0.40	5.00	0.00	0.39	0.39
13.10	0.26	0.40	5.00	0.00	0.39	0.39
13.15	0.26	0.40	5.00	0.00	0.39	0.39
13.20	0.26	0.40	5.00	0.00	0.39	0.39
13.25	0.26	0.40	5.00	0.00	0.39	0.39
13.30	0.26	0.40	5.00	0.00	0.39	0.39
13.35	0.26	0.40	5.00	0.00	0.39	0.39
13.40	0.26	0.40	5.00	0.00	0.38	0.38
13.45	0.26	0.40	5.00	0.00	0.38	0.38
13.50	0.26	0.40	5.00	0.00	0.38	0.38
13.55	0.27	0.40	5.00	0.00	0.38	0.38
13.60	0.27	0.40	5.00	0.00	0.38	0.38
13.65	0.27	0.40	5.00	0.00	0.38	0.38
13.70	0.27	0.40	5.00	0.00	0.38	0.38
13.75	0.27	0.40	5.00	0.00	0.38	0.38
13.80	0.27	0.40	5.00	0.00	0.37	0.37
13.85	0.27	0.40	5.00	0.00	0.37	0.37
13.90	0.27	0.40	5.00	0.00	0.37	0.37
13.95	0.27	0.40	5.00	0.00	0.37	0.37
14.00	0.27	0.40	5.00	0.00	0.37	0.37
14.05	0.27	0.40	5.00	0.00	0.37	0.37
14.10	0.27	0.40	5.00	0.00	0.37	0.37
14.15	0.27	0.40	5.00	0.00	0.36	0.36
14.20	0.27	0.40	5.00	0.00	0.36	0.36
14.25	0.27	0.40	5.00	0.00	0.36	0.36
14.30	0.27	0.40	5.00	0.00	0.36	0.36
14.35	0.27	0.40	5.00	0.00	0.36	0.36
14.40	0.27	0.40	5.00	0.00	0.36	0.36
14.45	0.27	0.40	5.00	0.00	0.36	0.36
14.50	0.27	0.40	5.00	0.00	0.35	0.35
14.55	0.27	0.40	5.00	0.00	0.35	0.35
14.60	0.27	0.40	5.00	0.00	0.35	0.35
14.65	0.27	0.40	5.00	0.00	0.35	0.35
14.70	0.27	0.40	5.00	0.00	0.35	0.35
14.75	0.27	0.40	5.00	0.00	0.35	0.35
14.80	0.31	0.40	5.00	0.00	0.34	0.34

14.85	0.31	0.40	5.00	0.00	0.34	0.34
14.90	0.31	0.40	5.00	0.00	0.34	0.34
14.95	0.31	0.40	5.00	0.00	0.34	0.34
15.00	0.31	0.40	5.00	0.00	0.34	0.34
15.05	0.31	0.40	5.00	0.00	0.34	0.34
15.10	0.31	0.40	5.00	0.00	0.34	0.34
15.15	0.31	0.40	5.00	0.00	0.34	0.34
15.20	0.31	0.40	5.00	0.00	0.34	0.34
15.25	0.31	0.40	5.00	0.00	0.33	0.33
15.30	0.31	0.40	5.00	0.00	0.33	0.33
15.35	0.31	0.40	5.00	0.00	0.33	0.33
15.40	0.31	0.40	5.00	0.00	0.33	0.33
15.45	0.31	0.40	5.00	0.00	0.33	0.33
15.50	0.31	0.40	5.00	0.00	0.33	0.33
15.55	0.31	0.40	5.00	0.00	0.33	0.33
15.60	0.31	0.40	5.00	0.00	0.32	0.32
15.65	0.31	0.40	5.00	0.00	0.32	0.32
15.70	0.31	0.40	5.00	0.00	0.32	0.32
15.75	0.31	0.40	5.00	0.00	0.32	0.32
15.80	0.31	0.40	5.00	0.00	0.32	0.32
15.85	0.31	0.40	5.00	0.00	0.32	0.32
15.90	0.31	0.40	5.00	0.00	0.32	0.32
15.95	0.31	0.40	5.00	0.00	0.32	0.32
16.00	0.32	0.40	5.00	0.00	0.31	0.31
16.05	0.32	0.40	5.00	0.00	0.31	0.31
16.10	0.32	0.40	5.00	0.00	0.31	0.31
16.15	0.32	0.40	5.00	0.00	0.31	0.31
16.20	0.32	0.40	5.00	0.00	0.31	0.31
16.25	0.32	0.40	5.00	0.00	0.31	0.31
16.30	0.32	0.40	5.00	0.00	0.31	0.31
16.35	0.32	0.40	5.00	0.00	0.30	0.30
16.40	0.32	0.40	5.00	0.00	0.30	0.30
16.45	0.32	0.40	5.00	0.00	0.30	0.30
16.50	0.32	0.40	5.00	0.00	0.30	0.30
16.55	0.32	0.40	5.00	0.00	0.30	0.30
16.60	0.32	0.40	5.00	0.00	0.30	0.30
16.65	0.32	0.40	5.00	0.00	0.30	0.30
16.70	0.32	0.40	5.00	0.00	0.29	0.29
16.75	0.32	0.40	5.00	0.00	0.29	0.29
16.80	0.32	0.40	5.00	0.00	0.29	0.29
16.85	0.32	0.40	5.00	0.00	0.29	0.29
16.90	0.33	0.40	5.00	0.00	0.29	0.29
16.95	0.33	0.40	5.00	0.00	0.29	0.29
17.00	0.33	0.40	5.00	0.00	0.29	0.29
17.05	0.33	0.40	5.00	0.00	0.28	0.28
17.10	0.33	0.40	5.00	0.00	0.28	0.28
17.15	0.33	0.40	5.00	0.00	0.28	0.28
17.20	0.33	0.40	5.00	0.00	0.28	0.28
17.25	0.33	0.40	5.00	0.00	0.28	0.28
17.30	0.33	0.40	5.00	0.00	0.28	0.28
17.35	0.33	0.40	5.00	0.00	0.28	0.28
17.40	0.33	0.40	5.00	0.00	0.27	0.27
17.45	0.33	0.40	5.00	0.00	0.27	0.27
17.50	0.33	0.40	5.00	0.00	0.27	0.27
17.55	0.33	0.40	5.00	0.00	0.27	0.27
17.60	0.33	0.40	5.00	0.00	0.27	0.27
17.65	0.33	0.40	5.00	0.00	0.27	0.27
17.70	0.33	0.40	5.00	0.00	0.27	0.27
17.75	0.34	0.40	5.00	0.00	0.26	0.26

17.80	0.34	0.40	5.00	0.00	0.26	0.26
17.85	0.34	0.40	5.00	0.00	0.26	0.26
17.90	0.34	0.40	5.00	0.00	0.26	0.26
17.95	0.34	0.40	5.00	0.00	0.26	0.26
18.00	0.34	0.40	5.00	0.00	0.26	0.26
18.05	0.34	0.40	5.00	0.00	0.26	0.26
18.10	0.34	0.39	5.00	0.00	0.25	0.25
18.15	0.34	0.39	5.00	0.00	0.25	0.25
18.20	0.34	0.39	5.00	0.00	0.25	0.25
18.25	0.34	0.39	5.00	0.00	0.25	0.25
18.30	0.34	0.39	5.00	0.00	0.25	0.25
18.35	0.34	0.39	5.00	0.00	0.25	0.25
18.40	0.34	0.39	5.00	0.00	0.24	0.24
18.45	0.34	0.39	5.00	0.00	0.24	0.24
18.50	0.35	0.39	5.00	0.00	0.24	0.24
18.55	0.35	0.39	5.00	0.00	0.24	0.24
18.60	0.35	0.39	5.00	0.00	0.24	0.24
18.65	0.35	0.39	5.00	0.00	0.24	0.24
18.70	0.35	0.39	5.00	0.00	0.24	0.24
18.75	0.35	0.39	5.00	0.00	0.23	0.23
18.80	0.35	0.39	5.00	0.00	0.23	0.23
18.85	0.35	0.39	5.00	0.00	0.23	0.23
18.90	0.35	0.39	5.00	0.00	0.23	0.23
18.95	0.35	0.39	5.00	0.00	0.23	0.23
19.00	0.35	0.39	5.00	0.00	0.23	0.23
19.05	0.35	0.39	5.00	0.00	0.22	0.22
19.10	0.35	0.39	5.00	0.00	0.22	0.22
19.15	0.35	0.39	5.00	0.00	0.22	0.22
19.20	0.36	0.39	5.00	0.00	0.22	0.22
19.25	0.36	0.39	5.00	0.00	0.22	0.22
19.30	0.36	0.39	5.00	0.00	0.22	0.22
19.35	0.36	0.39	5.00	0.00	0.21	0.21
19.40	0.36	0.39	5.00	0.00	0.21	0.21
19.45	0.36	0.39	5.00	0.00	0.21	0.21
19.50	0.36	0.39	5.00	0.00	0.21	0.21
19.55	0.36	0.39	5.00	0.00	0.21	0.21
19.60	0.36	0.39	5.00	0.00	0.21	0.21
19.65	0.36	0.39	5.00	0.00	0.20	0.20
19.70	0.36	0.39	5.00	0.00	0.20	0.20
19.75	0.36	0.39	5.00	0.00	0.20	0.20
19.80	0.37	0.39	5.00	0.00	0.20	0.20
19.85	0.37	0.39	5.00	0.00	0.20	0.20
19.90	0.37	0.39	5.00	0.00	0.20	0.20
19.95	0.37	0.39	5.00	0.00	0.19	0.19
20.00	0.37	0.39	5.00	0.00	0.19	0.19
20.05	0.37	0.39	5.00	0.00	0.19	0.19
20.10	0.37	0.39	5.00	0.00	0.19	0.19
20.15	0.37	0.39	5.00	0.00	0.19	0.19
20.20	0.37	0.39	5.00	0.00	0.19	0.19
20.25	0.37	0.39	5.00	0.00	0.18	0.18
20.30	0.37	0.39	5.00	0.00	0.18	0.18
20.35	0.38	0.39	5.00	0.00	0.18	0.18
20.40	0.38	0.39	5.00	0.00	0.18	0.18
20.45	0.38	0.39	5.00	0.00	0.18	0.18
20.50	0.38	0.39	5.00	0.00	0.18	0.18
20.55	0.38	0.39	5.00	0.00	0.18	0.18
20.60	0.38	0.39	5.00	0.00	0.18	0.18
20.65	0.38	0.39	5.00	0.00	0.18	0.18
20.70	0.38	0.39	5.00	0.00	0.18	0.18

20.75	0.38	0.39	5.00	0.00	0.18	0.18
20.80	0.38	0.39	5.00	0.00	0.18	0.18
20.85	0.39	0.39	5.00	0.00	0.17	0.17
20.90	0.39	0.39	5.00	0.00	0.17	0.17
20.95	0.39	0.39	5.00	0.00	0.17	0.17
21.00	0.39	0.39	5.00	0.00	0.17	0.17
21.05	0.39	0.39	5.00	0.00	0.17	0.17
21.10	0.39	0.39	5.00	0.00	0.17	0.17
21.15	0.39	0.39	5.00	0.00	0.17	0.17
21.20	0.40	0.39	5.00	0.00	0.17	0.17
21.25	0.40	0.39	5.00	0.00	0.17	0.17
21.30	0.40	0.39	5.00	0.00	0.17	0.17
21.35	0.40	0.39	5.00	0.00	0.17	0.17
21.40	0.40	0.39	5.00	0.00	0.17	0.17
21.45	0.40	0.39	5.00	0.00	0.17	0.17
21.50	0.40	0.39	5.00	0.00	0.16	0.16
21.55	0.41	0.39	5.00	0.00	0.16	0.16
21.60	0.41	0.39	5.00	0.00	0.16	0.16
21.65	0.41	0.39	5.00	0.00	0.16	0.16
21.70	0.41	0.39	5.00	0.00	0.16	0.16
21.75	0.41	0.39	5.00	0.00	0.16	0.16
21.80	0.42	0.39	5.00	0.00	0.16	0.16
21.85	0.42	0.39	5.00	0.00	0.16	0.16
21.90	0.42	0.39	5.00	0.00	0.16	0.16
21.95	0.42	0.39	5.00	0.00	0.16	0.16
22.00	0.43	0.39	5.00	0.00	0.16	0.16
22.05	0.43	0.39	5.00	0.00	0.16	0.16
22.10	0.43	0.39	5.00	0.00	0.16	0.16
22.15	0.44	0.39	5.00	0.00	0.15	0.15
22.20	0.44	0.39	5.00	0.00	0.15	0.15
22.25	0.44	0.39	5.00	0.00	0.15	0.15
22.30	0.45	0.39	5.00	0.00	0.15	0.15
22.35	0.45	0.39	5.00	0.00	0.15	0.15
22.40	0.46	0.39	5.00	0.00	0.15	0.15
22.45	0.46	0.39	5.00	0.00	0.15	0.15
22.50	0.47	0.39	5.00	0.00	0.15	0.15
22.55	0.48	0.39	5.00	0.00	0.15	0.15
22.60	0.49	0.39	5.00	0.00	0.15	0.15
22.65	0.50	0.39	5.00	0.00	0.15	0.15
22.70	0.50	0.39	5.00	0.00	0.15	0.15
22.75	0.50	0.39	5.00	0.00	0.15	0.15
22.80	0.50	0.39	5.00	0.00	0.14	0.14
22.85	0.50	0.39	5.00	0.00	0.14	0.14
22.90	0.50	0.39	5.00	0.00	0.14	0.14
22.95	0.50	0.39	5.00	0.00	0.14	0.14
23.00	0.50	0.39	5.00	0.00	0.14	0.14
23.05	0.50	0.39	5.00	0.00	0.14	0.14
23.10	0.50	0.39	5.00	0.00	0.14	0.14
23.15	0.50	0.39	5.00	0.00	0.14	0.14
23.20	0.50	0.39	5.00	0.00	0.14	0.14
23.25	0.50	0.39	5.00	0.00	0.14	0.14
23.30	0.50	0.39	5.00	0.00	0.14	0.14
23.35	0.50	0.39	5.00	0.00	0.14	0.14
23.40	0.50	0.39	5.00	0.00	0.14	0.14
23.45	0.50	0.39	5.00	0.00	0.13	0.13
23.50	0.50	0.39	5.00	0.00	0.13	0.13
23.55	0.50	0.39	5.00	0.00	0.13	0.13
23.60	0.50	0.39	5.00	0.00	0.13	0.13
23.65	0.50	0.39	5.00	0.00	0.13	0.13

23.70	0.50	0.39	5.00	0.00	0.13	0.13
23.75	0.50	0.39	5.00	0.00	0.13	0.13
23.80	0.50	0.39	5.00	0.00	0.13	0.13
23.85	0.50	0.39	5.00	0.00	0.13	0.13
23.90	0.50	0.39	5.00	0.00	0.13	0.13
23.95	0.50	0.39	5.00	0.00	0.13	0.13
24.00	0.50	0.39	5.00	0.00	0.13	0.13
24.05	0.50	0.39	5.00	0.00	0.12	0.12
24.10	0.50	0.39	5.00	0.00	0.12	0.12
24.15	0.50	0.39	5.00	0.00	0.12	0.12
24.20	0.50	0.39	5.00	0.00	0.12	0.12
24.25	0.50	0.39	5.00	0.00	0.12	0.12
24.30	0.50	0.39	5.00	0.00	0.12	0.12
24.35	0.50	0.39	5.00	0.00	0.12	0.12
24.40	0.50	0.39	5.00	0.00	0.12	0.12
24.45	0.50	0.39	5.00	0.00	0.12	0.12
24.50	0.50	0.39	5.00	0.00	0.12	0.12
24.55	0.50	0.39	5.00	0.00	0.12	0.12
24.60	0.50	0.39	5.00	0.00	0.12	0.12
24.65	0.50	0.39	5.00	0.00	0.12	0.12
24.70	0.50	0.39	5.00	0.00	0.11	0.11
24.75	0.50	0.39	5.00	0.00	0.11	0.11
24.80	0.50	0.39	5.00	0.00	0.11	0.11
24.85	0.50	0.39	5.00	0.00	0.11	0.11
24.90	0.50	0.39	5.00	0.00	0.11	0.11
24.95	0.50	0.39	5.00	0.00	0.11	0.11
25.00	0.50	0.39	5.00	0.00	0.11	0.11
25.05	0.50	0.39	5.00	0.00	0.11	0.11
25.10	0.50	0.39	5.00	0.00	0.11	0.11
25.15	0.50	0.39	5.00	0.00	0.11	0.11
25.20	0.50	0.39	5.00	0.00	0.11	0.11
25.25	0.50	0.39	5.00	0.00	0.11	0.11
25.30	0.50	0.39	5.00	0.00	0.10	0.10
25.35	0.50	0.39	5.00	0.00	0.10	0.10
25.40	0.50	0.39	5.00	0.00	0.10	0.10
25.45	0.50	0.39	5.00	0.00	0.10	0.10
25.50	0.50	0.39	5.00	0.00	0.10	0.10
25.55	0.50	0.39	5.00	0.00	0.10	0.10
25.60	0.50	0.39	5.00	0.00	0.10	0.10
25.65	0.50	0.39	5.00	0.00	0.10	0.10
25.70	0.50	0.39	5.00	0.00	0.10	0.10
25.75	0.50	0.39	5.00	0.00	0.10	0.10
25.80	0.50	0.39	5.00	0.00	0.10	0.10
25.85	0.50	0.39	5.00	0.00	0.10	0.10
25.90	0.50	0.39	5.00	0.00	0.10	0.10
25.95	0.50	0.39	5.00	0.00	0.09	0.09
26.00	0.50	0.39	5.00	0.00	0.09	0.09
26.05	0.50	0.39	5.00	0.00	0.09	0.09
26.10	0.50	0.39	5.00	0.00	0.09	0.09
26.15	0.50	0.39	5.00	0.00	0.09	0.09
26.20	0.50	0.39	5.00	0.00	0.09	0.09
26.25	0.50	0.39	5.00	0.00	0.09	0.09
26.30	0.50	0.39	5.00	0.00	0.09	0.09
26.35	0.50	0.39	5.00	0.00	0.09	0.09
26.40	0.50	0.39	5.00	0.00	0.09	0.09
26.45	0.50	0.39	5.00	0.00	0.09	0.09
26.50	0.50	0.39	5.00	0.00	0.09	0.09
26.55	0.50	0.39	5.00	0.00	0.08	0.08
26.60	0.50	0.39	5.00	0.00	0.08	0.08

26.65	0.50	0.39	5.00	0.00	0.08	0.08
26.70	0.50	0.39	5.00	0.00	0.08	0.08
26.75	0.50	0.39	5.00	0.00	0.08	0.08
26.80	0.50	0.39	5.00	0.00	0.08	0.08
26.85	0.50	0.39	5.00	0.00	0.08	0.08
26.90	0.50	0.39	5.00	0.00	0.08	0.08
26.95	0.50	0.39	5.00	0.00	0.08	0.08
27.00	0.50	0.39	5.00	0.00	0.08	0.08
27.05	0.50	0.39	5.00	0.00	0.08	0.08
27.10	0.50	0.39	5.00	0.00	0.07	0.07
27.15	0.50	0.39	5.00	0.00	0.07	0.07
27.20	0.50	0.39	5.00	0.00	0.07	0.07
27.25	0.50	0.39	5.00	0.00	0.07	0.07
27.30	0.50	0.39	5.00	0.00	0.07	0.07
27.35	0.50	0.39	5.00	0.00	0.07	0.07
27.40	0.50	0.39	5.00	0.00	0.07	0.07
27.45	0.50	0.39	5.00	0.00	0.07	0.07
27.50	0.50	0.39	5.00	0.00	0.07	0.07
27.55	0.50	0.39	5.00	0.00	0.07	0.07
27.60	0.50	0.39	5.00	0.00	0.07	0.07
27.65	0.50	0.39	5.00	0.00	0.06	0.06
27.70	0.50	0.39	5.00	0.00	0.06	0.06
27.75	0.50	0.39	5.00	0.00	0.06	0.06
27.80	0.50	0.39	5.00	0.00	0.06	0.06
27.85	0.50	0.39	5.00	0.00	0.06	0.06
27.90	0.50	0.39	5.00	0.00	0.06	0.06
27.95	0.50	0.39	5.00	0.00	0.06	0.06
28.00	0.50	0.39	5.00	0.00	0.06	0.06
28.05	0.50	0.39	5.00	0.00	0.06	0.06
28.10	0.50	0.39	5.00	0.00	0.06	0.06
28.15	0.50	0.39	5.00	0.00	0.06	0.06
28.20	0.50	0.39	5.00	0.00	0.05	0.05
28.25	0.50	0.39	5.00	0.00	0.05	0.05
28.30	0.50	0.39	5.00	0.00	0.05	0.05
28.35	0.50	0.39	5.00	0.00	0.05	0.05
28.40	0.50	0.39	5.00	0.00	0.05	0.05
28.45	0.50	0.39	5.00	0.00	0.05	0.05
28.50	0.50	0.38	5.00	0.00	0.05	0.05
28.55	0.50	0.38	5.00	0.00	0.05	0.05
28.60	0.50	0.38	5.00	0.00	0.05	0.05
28.65	0.50	0.38	5.00	0.00	0.05	0.05
28.70	0.50	0.38	5.00	0.00	0.05	0.05
28.75	0.50	0.38	5.00	0.00	0.04	0.04
28.80	0.50	0.38	5.00	0.00	0.04	0.04
28.85	0.50	0.38	5.00	0.00	0.04	0.04
28.90	0.50	0.38	5.00	0.00	0.04	0.04
28.95	0.50	0.38	5.00	0.00	0.04	0.04
29.00	0.50	0.38	5.00	0.00	0.04	0.04
29.05	0.50	0.38	5.00	0.00	0.04	0.04
29.10	0.50	0.38	5.00	0.00	0.04	0.04
29.15	0.50	0.38	5.00	0.00	0.04	0.04
29.20	0.50	0.38	5.00	0.00	0.04	0.04
29.25	0.50	0.38	5.00	0.00	0.04	0.04
29.30	0.50	0.38	5.00	0.00	0.03	0.03
29.35	0.50	0.38	5.00	0.00	0.03	0.03
29.40	0.50	0.38	5.00	0.00	0.03	0.03
29.45	0.50	0.38	5.00	0.00	0.03	0.03
29.50	0.50	0.38	5.00	0.00	0.03	0.03
29.55	0.50	0.38	5.00	0.00	0.03	0.03

29.60	0.50	0.38	5.00	0.00	0.03	0.03
29.65	0.50	0.38	5.00	0.00	0.03	0.03
29.70	0.50	0.38	5.00	0.00	0.03	0.03
29.75	0.50	0.38	5.00	0.00	0.03	0.03
29.80	0.50	0.38	5.00	0.00	0.02	0.02
29.85	0.50	0.38	5.00	0.00	0.02	0.02
29.90	0.49	0.38	5.00	0.00	0.02	0.02
29.95	0.49	0.38	5.00	0.00	0.02	0.02
30.00	0.49	0.38	5.00	0.00	0.02	0.02
30.05	0.49	0.38	5.00	0.00	0.02	0.02
30.10	0.49	0.38	5.00	0.00	0.02	0.02
30.15	0.49	0.38	5.00	0.00	0.02	0.02
30.20	0.49	0.38	5.00	0.00	0.02	0.02
30.25	0.49	0.38	5.00	0.00	0.02	0.02
30.30	0.49	0.38	5.00	0.00	0.01	0.01
30.35	0.49	0.38	5.00	0.00	0.01	0.01
30.40	0.49	0.38	5.00	0.00	0.01	0.01
30.45	0.49	0.38	5.00	0.00	0.01	0.01
30.50	0.49	0.38	5.00	0.00	0.01	0.01
30.55	0.49	0.38	5.00	0.00	0.01	0.01
30.60	0.49	0.38	5.00	0.00	0.01	0.01
30.65	0.49	0.38	5.00	0.00	0.01	0.01
30.70	0.49	0.38	5.00	0.00	0.01	0.01
30.75	0.49	0.38	5.00	0.00	0.01	0.01
30.80	0.49	0.38	5.00	0.00	0.00	0.00
30.85	0.49	0.38	5.00	0.00	0.00	0.00
30.90	0.49	0.38	5.00	0.00	0.00	0.00
30.95	0.49	0.38	5.00	0.00	0.00	0.00
31.00	0.49	0.38	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

CALIFORNIA DEPARTMENT OF EDUCATION
SCHOOL FACILITIES PLANNING DIVISION

HAZARDOUS PIPELINE SURVEY (Rev. 9/04)

Submit only if pipeline survey information is not contained in a Geological Hazards Report or other environmental hazards report as required for California Department of Education (CDE) school site approval.

County	Project Tracking Number
Kern	–

Local Educational Agency

Edison School District

Proposed School Site

New School Site

Proposed School Site Location

Address and Cross Streets

NE of Gargano St. & Eucalyptus Drive in Bakersfield, CA

Parcel Numbers

388-140-03 & -12

Legal Description

18.44 acres located NE of Gargano St. and Eycalyptus Dr.

Investigation

Describe what professional investigation has been conducted to allow completion of this survey, including but not limited to, field surveys, written, electronic, and documented verbal contacts with utility companies, railroads, cities, counties, special districts, or regulatory agencies. If any maps or other documentation previously completed by others is utilized, please cite. Attach additional sheets if necessary.

Contacted local utilty companies, conducted a visual survey of the surrounding 1/2 mile area around the site borders, reviewed topographic maps and the local and national pipeline maps. No high-pressure pipelines identified within 1500' of the site area.

Certification

*I certify that, to the best of my knowledge based upon the above-described investigation, and not receiving credible information to the contrary, no portion of the proposed school site listed above is within 1500 feet of the easement of an aboveground or underground pipeline, including natural gas, petroleum, fuels, or other hazardous substances (other than a natural gas or water distribution line which serves the site or surrounding neighborhood with a maximum pressure of less than 80 psi).**

Robert J. Becker, PG, CEG	**Environmental Manager**
Print Name	Title
	1/10/19
Signature	Date

Professional Qualifications (e.g., registered engineer, geologist, etc.)

PG, CEG

Company	Address
Soils Engineering Inc.	**4400 Yeager Way, Bakersfield, CA 93313**
Telephone Number	E-mail Address
661-831-5100	**bob@soilsengineering.com**

*If an easement containing a pipeline with a maximum allowable operating pressure at or above 80 psi is within 1500 feet of the proposed school site, an acceptable pipeline risk analysis must be prepared by a competent professional according to the California *Code of Regulations*, Title 5, and CDE protocols in order to be considered for approval.

APPENDIX D

PRELIMINARY ENVIRONMENTAL ASSESSMENT

DTSC DETERMINATION DOCUMENTATION

SOILS ENGINEERING, INC.

PRELIMINARY ENVIRONMENTAL ASSESSMENT REPORT

For:

Proposed School Site
Northeast of Eucalyptus Drive and Gargano St.
Bakersfield, CA
APNs: 388-140-03 & -12

Prepared For:

Edison School District
P.O. Box 368
Bakersfield, CA 93220
Attn: Todd Noble

Prepared By:

Soils Engineering, Inc.
4400 Yeager Way
Bakersfield, CA 93313

SEI File No. 18-16901

December 2018

SOILS ENGINEERING, INC.

PRELIMINARY ENVIRONMENTAL ASSESSMENT REPORT

For

PROPOSED SCHOOL SITE
NORTHEAST OF GARGANO ST. & EUCALYPTUS DRIVE
BAKERSFIELD, CALIFORNIA

This Preliminary Environmental Assessment Report (PEA Report) for a Proposed School site in Bakersfield, California was prepared by SOILS ENGINEERING INC. on behalf of the Edison School District (ESD) in a manner consistent with the level of care and skill ordinarily exercised by professional geologists and environmental scientists. This PEA Report was prepared under the technical direction of the undersigned, who is a California Professional Geologist.

SOILS ENGINEERING INC.

Robert J. Becker, P.G., CEG

Date: December 21, 2018

PROFESSIONAL GEOLOGIST
ROBERT J. BECKER
No. 5076
REN. 7/28/19
STATE OF CALIFORNIA

CERTIFIED ENGINEERING GEOLOGIST
ROBERT J. BECKER
No. 2238
Exp. Date 7/28/19
STATE OF CALIFORNIA

4400 YEAGER WAY • BAKERSFIELD, CALIFORNIA 93313 • PHONE (661) 831-5100 • FAX (661) 831-2111

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Appendix C, Historical Aerial Photos, QA/QC Summary

SOILS ENGINEERING, INC.

Preliminary Environmental Assessment Report

For
PROPOSED SCHOOL SITE
Edison School District
NE of Gargano St. & Eucalyptus Drive
Bakersfield, California

APN#'s: 388-140-03 & -12
December 2018

1.0 EXECUTIVE SUMMARY

Soils Engineering, Inc. (SEI) has completed a Preliminary Environmental Assessment (PEA) investigation of a Proposed School area located northeast of Gargano St. and Eucalyptus Drive in Bakersfield, CA (site). The project site covers approximately 18.44 acres as shown on the attached Location Map (Plate 1), Plot Plan (Plate 2) and Assessor's Parcel Map (Plate 4). The Edison School District (ESD) intends to utilize the site area for a school. The site has been utilized as agricultural property from at least the 1930's to 2006 growing oranges with no known permanent structures. Irrigation lines were formerly on-site with an off-site water well near the northeastern corner of the site. The site is currently idle land with the southeastern portion a small parking lot for the neighboring Orangewood Elementary School.

To assess near surface soil conditions within the Site, SEI collected a total of 64 (including 2 duplicates) on-site soil samples in general accordance with the Department of Toxic Substances Controls (DTSC's) PEA Guidance Manual and the DTSC's Interim Guidance for Sampling Agricultural Properties (3rd Revision). The soil samples were collected at depth intervals of 0" to 6" and 2' to 2.5' below ground surface (bgs) at the on-site sampling locations shown on Plate 2A.

The analytical results of the 0" to 6" composite samples (C1A,B,C, D-3" to C7A,B,C,D and C8A,B,C-3") and the 0 to 6" (-3") and 2' to 2.5' (-2') discrete soil samples analyzed for organo-chlorine pesticides (OCPs) within the Site area during this investigation, indicate that minor to moderate concentrations of the OCPs 4,4'-DDD (up to 17.6 ug/kg , 4,4'-DDE (up to 1290 ug/kg), 4,4'-DDT (up to 130 ug/kg) were reported, all below the EPA Regional Screening Levels (RSLs) and the DTSC's Recommended Screening Levels (SLs). Dieldrin was reported just above the EPA RSL (34 ug/kg) in 2 of the 0 to 6" soil samples with the highest reported concentration 42.8 ug/kg in sample C6C-3". None of the 2' to 2.5' samples analyzed for OCPs had any OCP concentrations of potential concern.

The analytical results of on-site arsenic concentrations ranged from 9.37 mg/kg to 14 mg/kg in the discrete soil samples analyzed. Five (5) of the soil samples had arsenic concentrations just above the normal DTSC level of concern (12 mg/kg).

Discrete soil samples were also collected beneath two (2) pole-mounted electrical transformers (T1 and T2) at depths of 0 to 6" and 2' to 2.5' with the -3" samples analyzed for polychlorinated biphenyl's (PCBs). No PCBs were reported in these 2 soil samples. See Table 1 for the soil sample analytical results.

A previous Phase 1 Environmental Site Assessment conducted at this site in 2006 by SEI, included the collection of soil samples within the orange orchard and within a small drainage sump in the southwest corner of the site. Six (6) composite soil samples and 12 discrete soil samples were analyzed for OCPs and 4 soil samples were analyzed for CAM 17 metals in the orchard area. The sump area sample (S1-3") was analyzed for OCPs and CAM 17 Metals. A soil sample T1-3" was also collected under some electrical transformers and analyzed for PCBs. The analytical results of these soil samples are shown on Table 2 and 2A.

The most recent soil samples collected at the site are more representative of the current site conditions then the analytical results from 2006. The soil sample (S1-3") collected in the sump area in 2006 will be utilized in this evaluation, since no current soil samples were collected in the now filled in sump area.

The highest concentrations of chemicals of potential concern (COPC) reported in this investigation were included in a comparison human health screening evaluation. Based on this screening evaluation a more detailed risk and hazard evaluation was also conducted. This included the following COPCs: 4,4'-DDD (17.6 ug/kg), 4,4'-DDE (1290 ug/kg), 4,4'-DDT (130 ug/kg), and Dieldrin (42.8 ug/kg). The levels of arsenic reported (high of 14 mg/kg) appear to be within the background concentrations of arsenic found in the eastern portion of the Bakersfield area based on SEI's historical sampling (see Table 7). The cancer risk calculated for this site was 2.2×10^{-6} and the cumulative hazard calculated was 0.0615. This indicates that there is a slightly elevated risk and a very low hazard to future occupants at the site from the on-site soil.

The PEA investigation indicates:

1) That the historical agricultural activities at this site have not significantly impacted the near surface soil within the former orange orchard areas and the former sump area. Based on the fate and transport properties of OCPs and metals it is highly unlikely that concentrations of potential concern of these constituents would migrate to depths below 2.5' in the soil (silty sand) encountered at this site. No additional sampling and analysis below a depth of 2.5' is warranted at the Site to achieve unrestricted Site closure.

2) There is a slightly elevated risk and a very low hazard to future occupants at this site from the on-site soil. The risk calculated is based on the highest concentrations of COPC's reported and this risk level appears to be acceptable for a school site.

SEI recommends that this Report be submitted to the DTSC for review and comment if the ESD wants to proceed with the development of this site.

Any off-site fill material necessary for the site will be sampled and analyzed for potential constituents of concern in accordance with the DTSC's "Information Advisory Clean Imported Fill Material", dated October 2001.

If during field investigation activities or construction activities new areas of potential environmental concern are discovered at the site work will cease in these areas and the DTSC will be notified. SEI will discuss these areas with the DTSC to determine the appropriate actions to be taken to assess and/or remediate these new potential areas of concern.

2.0 INTRODUCTION

Soils Engineering, Inc. (SEI) has prepared this Preliminary Environmental Assessment Report (PEA Report) following the completion of fieldwork and the receipt of analytical testing results. The fieldwork was completed in general accordance with the "Final DTSC PEA Guidance Manual dated October 2015" and the "DTSC Interim Guidance for Sampling Agricultural Land (Third Revision) dated August 7, 2008". This PEA Report describes the soil sampling procedures, analytical testing procedures, analytical results, a health risk assessment of the cumulative contaminate concentrations reported, with conclusions and recommendations for the site.

The overall objectives of the PEA include:

- Evaluating historical information for indications of the past use, storage, disposal, or release of hazardous wastes/substances at the site.

- Establishing through a field sampling and analysis program the nature of hazardous wastes/substances that may be present in the shallow soil at the site, their concentration and general extent.

- Estimating the potential threat to public health and/or the environment posed by hazardous constituents at the site using a residential land-use scenario.

Based on information developed during the PEA and the human risk evaluation using the DTSC's Final DTSC PEA Guidance Manual dated October 2015, the DTSC will then make an informed decision regarding potential risks posed by the site.

Possible outcomes of the PEA decision include the requirement for further investigation through the Remedial Investigation/Feasibility Study (RI/FS) process if the site is found to be significantly impacted by hazardous substances release(s); the need to perform a Removal Action if localized impacts by hazardous substances release(s) are found; and issuance of a "No Further Action" finding if the site is found not to be significantly impacted and risks to human health and the environment are found to be within acceptable levels based on the conservative screening level risk assessment.

3.0 SITE DESCRIPTION

The proposed ESD School site is located northeast of the intersection of Eucalyptus Drive and Gargano St., within the northeastern ¼ of Section 31, Township 29 South, and Range 29 East, in Bakersfield, CA (see attached Location Map, Plate 1 and Assessors Map, Plate 4). The project site covers approximately 18.44 acres as shown on the attached Location Map (Plate 1) and Plot Plan (Plate 2). Adjacent off-site properties are mainly residential properties, with the Orangewood Elementary School located to the east. The property is bordered by Eucalyptus Drive on the south, by Gargano St. on the west, by Pioneer Drive on the north and the Orangewood Elementary School to the east.

The site currently consists of idle land with low weed growth. Some concrete irrigation piping was present in the southern portion of the site along with an old concrete box. The concrete box appears to be from the former irrigation system located just off-site adjacent to the northeast corner of the Site (was located there during the 2006 investigation). Power poles are present along the eastern border of the site with pole-mounted electrical transformers at two (2) locations in good condition. An asphalt paved parking lot is present in the southeastern portion of the site. No signs of surface staining was observed at the site. A chain link fence surrounds the borders of the Site.

See Plate 2 for the Plot Plan and attached photos showing the areas discussed above.

3.1 SITE IDENTIFICATION

The following information describes the site for the Proposed School.

3.1.1 Site Name
The site is referred to as the Proposed ESD School Site.

3.1.2 Contact Person
Mr. Todd Noble, the MOTT Director for the Edison School District (ESD) is the contact person designated by the ESD for this project.

3.1.3 Site Address
The Proposed School site is located northeast of Gargano St. and Eucalyptus Drive in Bakersfield, California. The site has no physical address.

3.1.4 Mailing Address
The mailing address for the project designated by the ESD is:

Mr. Todd Noble
MOTT Director
Edison School District
P.O. Box 368
Bakersfield, CA. 93220-0368

3.1.5 Telephone Number

The telephone number for Mr. Noble is (661) 340-1150.

3.1.6 Other Site Names

No other site names are known.

3.1.7 U.S. Environmental Protection Agency (USEPA) Identification Number

Based on a review of the regulatory database search report and contacts with regulatory agencies, discussed further below, the site has not been issued a USEPA Identification Number.

3.1.8 EnviroStor Database Number and DTSC Site Code

Based on a review of the regulatory database search report (see Appendix B) and contacts with regulatory agencies, discussed further below, the subject site has the following CalSites and DTSC numbers:

- None

3.1.9 Assessor's Parcel Number(s) and Maps

Information regarding Assessor's Parcel Numbers (APN's) relating to the site and maps depicting parcel boundaries were obtained from the Kern County Tax Assessor's Office. The site comprises part of the following parcels:

Parcel Number	Owners:
APN: 388-140-03 & -12:	Edison School District

See Plate 4 for a copy of the Assessors Map.

3.1.10 Township, Range, Section and Meridian

Based on the USGS 7½-Minute Topographic Series, Lamont Quadrangle Map, the site is located in the northeastern ¼ of Section 31, Township 29 South, and Range 29 East. The central

geographic coordinates of the site are approximately Latitude 35.367170° North, Longitude -118.899765° West.

See Plate 5 for the site on the EDR Physical Setting Source Map.

3.1.11 Site Zoning

Information available on the Kern County Zone Maps reveals the site is zoned for Residential use (R1).

3.2 SITE MAPS

The following site maps are attached showing the Location of the site (Plate 1), the Plot Plan (Plate 2), the Sample Map (Plates 2A), the Parcel Map (Plate 4), the EDR Physical Source Setting Map (Plate 5), the EDR Overview Map (Plate 6), the EDR Detail Map (Plate 7), Depth to Water Map (Plate 8) and the DOGGR Map (Plate 9).

4.0 BACKGROUND

4.1 SITE STATUS & HISTORY

Based on historical documents reviewed, the majority of the site was used for agricultural purposes from prior to 1946 to approximately 2006 growing oranges and a few grapefruit. The citrus trees were removed in 2007 and the site has been idle land since then. No historical permanent structures are known on the site. A former irrigation well is located just off-site near the northeastern corner of the site.

The scope of SEI's preliminary assessment included a site inspection, survey of surrounding land use and regulatory agency and historic records review. SEI's preliminary assessment indicated that there was a low to moderate potential that hazardous materials have contaminated the site. Since the site has been used for agricultural purposes SEI concluded that it is possible that residual concentrations of OCPs and arsenic may be present in the shallow soil within the former orchard area. PCBs could also be present beneath pole-mounted electrical transformers.

Current Site Description

A site reconnaissance was conducted in November 2018 consisting of walking the property and taking photographs.

The property is bordered by Eucalyptus Drive on the south, by Gargano St. on the west, by Pioneer Drive on the north and the Orangewood Elementary School to the east.

The site currently consists of idle land with low weed growth. Some concrete irrigation piping was present in the southern portion of the site along with an old concrete box. The concrete box appears to be from the former irrigation system located just off-site adjacent to the northeast corner of the Site (was there in the 2006 investigation). Power poles are present along the eastern border of the site with pole-mounted electrical transformers at two (2) locations in good condition. An asphalt paved parking lot is present in the southeastern portion of the site. No signs of surface staining was observed at the site. A chain link fence surrounds the borders of the Site.

See Plate 2 for a Site Plan, Plate 3 for a Photo Map and attached photos showing the areas discussed above.

No naturally occurring asbestos (NOA) is known within 10 miles of the site area.

Based on the Lamont Quadrangle topographic map, a visual survey of the surrounding area and interviews with local utility companies, no high-pressure gas or crude oil pipelines are present within 1500' of the site. The nearest PG&E high-pressure natural gas line is over ½ mile to the west at Weedpatch Hwy. & Pioneer Drive.

The site is not located within an oil field and the nearest oil field is 1/4 mile to the south (Edison Oil Field). No on-site oil or gas wells were indicated on the DOGGR Well Finder webpage. The nearest well is located approximately 500' to the east and is a plugged and abandoned-dry hole designated Kearney 81-A (R.S. Rheem). The site is shown in relation to oil wells and oil fields on the DOGGR Map (Plate 9).

The depth to groundwater beneath the site as shown on maps and data prepared by the Kern Water Agency is approximately 150' (Spring 2017) below the ground surface (see Plate 8). 25 Federal and/or State water wells were indicated within one (1) mile of the site by GEOCHECK (see Appendix B). The general groundwater gradient in the area of the site is to the southwest (Kern County Water Agency Maps, 2017). No shallow ground water is shown beneath the site in the Depth to Shallow Groundwater Map dated Summer 2011 (KCWA). Maps prepared by the Kern County Water Agency, dated July 1997 indicate total dissolved solids (TDS) in the range of 200 ppm (confined aquifer) to 500 ppm (unconfined aquifer) for specific well sites within 1 mile of the site.

The source of the potable and non-potable water for the proposed school site will be from a local water company.

Historical Property Use

Based on a review of historical documents and interviews, the land was utilized for agricultural purposes from at least the 1940's to 2006. The site has been idle since the orchard was removed in ~2007.

A summary of the historical aerial photo review is presented below:

1946 Aerial Photo	The site appears to be agricultural land (orchard), which is surrounded by land that is either vacant or agricultural.
1956 Aerial Photo	The site appears to be agricultural land (orchard). Orangewood School is to the east and consists of multiple buildings. The rest of the surrounding land is agricultural or vacant.
1967 Aerial Photo	The site appears to be agricultural land (orchard). Orangewood School is to the east. A road leading to a structure to the north of the site is evident. The rest of the surrounding land is agricultural or vacant.
1975 Aerial Photo	The site appears to be agricultural land (orchard). Possible sump in SW corner. Orangewood School is to the east. A road leading to a structure to the north of the site is evident, as well as a structure to

the south of the site. The rest of the surrounding land is agricultural or vacant.

1983 Aerial Photo — The site appears to be agricultural land. Orangewood School is to the east. Farms and structures are evident to the north of the site. Residential lands seem to be encroaching upon the site from the west, and the vacant land to the east of the site shows evidence of row crops and possibly a couple of structures in the northeastern corner central area of this land. Structures to the south are also evident. The rest of the surrounding land is agricultural or vacant.

1994 Aerial Photo — The site appears to be agricultural land (orchard). Small sumps in SW corner of each parcel. Orangewood School is to the east, and the vacant land to the east also continues to show evidence of structures. Farms and structures are still to the north of the site. Residential lands continue to encroach upon the site from the west. Residences to the south are now evident. The rest of the surrounding land is agricultural or vacant.

2003 Aerial Photo — The site appears to be agricultural land (orchard). Small sumps in SW corner of each parcel. Orangewood School is to the east, and the vacant land to the east also continues to show evidence of structures. Farms and structures are still to the north of the site. Residential lands continue to encroach upon the site from the west. Residences to the south are now evident. The rest of the surrounding land is agricultural or vacant.

2008 Aerial Photo — The majority of the citrus orchard has been removed with some dead trees present in the northern portion of the site. Property to the west is now vacant land. Orangewood School is to the east, and some residences to the northeast Farms and structures are still to the north of the site. Residences to the south.

2013 Aerial Photo — The site is shown is vacant land. Dirt road through central portion of the site. A small graded area in the SE is now used for limited parking. Land to the west is still vacant land. Residential and the Orangewood School surrounds the site.

2016 Aerial Photo — The site now has a paved parking lot in the SE corner. Rest of site is vacant land. Some residential now starting to the west. Rest of surrounding area residential or school.

2018 Aerial Photo Similar to the 2016 aerial on-site. Off-site is also similar, with more residential now to the west.

See Appendix C for the historical aerial photos.

Historical Topographic Maps

Topographic maps of the area were reviewed to establish previous development of the site, adjoining properties, and surrounding areas. See Appendix B for copies of these maps. The topographic maps reviewed indicated the following:

1941 – Due to its scale, topographic map (Scale 1:125,000) shows very little detail at the site. However, the site is depicted as vacant land north of the railroad and northwest of Edison.

1954 - Topographic map (Scale 1:24,000) shows an orchard at the site. The Orangewood School buildings are shown just east of the site area. Breckenridge Road is to the south of site.

1968 - Topographic map (Scale 1:24,000) shows an orchard at the site. The Orangewood School buildings are shown just east of the site area. Breckenridge Road is to the south of site.

1973 - Topographic map (Scale 1:24,000) shows an orchard at the site. The Orangewood School buildings are shown just east of the site area. Breckenridge Road is to the south of site.

1992 - Topographic map (Scale 1:24,000) shows an orchard at the site. Streets of the residential areas are also visible. Breckenridge Road is to the south of the site.

Sanborn Map Review

No Sanborn Fire Insurance maps were available for this portion of Bakersfield, CA. See Appendix B for the results of this search.

City Directory Search

Neither the project address nor Orangewood School appears in the City Directory search conducted by EDR.

Preliminary Conclusions
Based on the above information the most likely residual chemicals in the soil at the site were narrowed down to the following:

- Chlorinated pesticides and arsenic within the former agricultural orchard area.
- PCBs in the areas beneath pole-mounted electrical transformers.

Current Status
Soils Engineering Inc. (SEI) has prepared this Preliminary Environmental Assessment (PEA) Report for submittal to the Department of Toxic Substance Control (DTSC) for their review and comment.

4.1.1 Business Type
This land was used for agricultural purposes from at least the 1940's to 2006. Oranges and a few grapefruit trees were grown on this land.

4.1.2 Years of Operation
Based on a review of historical documents, the land was farmed since at least 1940's up to 2006.

4.1.3 Prior Land Use
No other land use is suspected at this site.

4.1.4 Facility Ownership/Operators
According to Kern County Department of Agriculture the site was farmed by the Lehr Brothers from at least 1994 to 2006.

No other contacts knowledgeable regarding prior onsite operations were available for interview.

4.1.5 Property Owners
Information provided by the ESD and the Kern County Assessor's Office indicates that the current owners of the site are as shown below:

Parcel Number	Owners:
APN: 388-140-03 & -12:	Edison School District

4.1.6 Surrounding Land Use
At the time of the most recent site inspection by SEI in November 2018 surrounding land use was observed to be mainly residential land, along with the Orangewood Elementary School to the east. In general, prominent adjoining land uses are as follows:

North: Pioneer Drive and residential properties to the north.
East: Orangewood Elementary School and residential properties to the east.

West: Gargano St. and residential properties or vacant land west of Gargano St..
South: Eucalyptus Drive along the southern border. South of Eucalyptus Drive is residential properties.

Surrounding land use within 200 feet of the site is shown on Plate 2.

4.2 HAZARDOUS SUBSTANCE/WASTE MANAGEMENT INFORMATION

4.2.1 Business/Manufacturing Activities

Based on a review of historical documents, agricultural activities were conducted on the site for over 65 years.

No records of any hazardous waste/substance storage, treatment, or disposal activities at the proposed site were obtained from the local or State regulatory agencies, except for pesticide permits and use reports from the Kern County Department of Agriculture. Pesticide permits and pesticide use reports summaries are shown below for the years 1994 to 2005:

The following is a summary of the crops grown and chemicals used since 1994 on the site area.

Agricultural Crops & Operators:

Year 1994 to 2005: Lehr Brothers - Oranges

Chemicals Actually Listed in the Use Reports from 1994 to 2005 Include:

IMID AN 50-WP
Super 94 (Spray Oil)
DuPont Krovar I DF Herbicide
Baythroid 2 Emulsifiable Pyrethroid
Dipel 2X Wormkiller Wettable Powder Bio
Lorban 4-E HF
Knack Insect Growth Regulator
Admire 2 Flowable
Esteem Ant Bait
Princep Caliber 90 Herbicide
Direx 80DF
Ad Wet 90 CA
Clean Crop Super 94 Spray Oil
Applaud 70WP Insect Growth Regulator
Direx 4L
Latron B-1956 Spreader Sticker

Esteem 0.86 EC Insect Growth Regulator
Sorba-Spray MG
Nutra Wet
Gowan Dimethoate 4
Devrinol 50-WP Selective Herbicide

DOGGR Records

The DOGGR maps reviewed indicate that no oil wells have been drilled on the site or directly adjacent to the site area. See Plate 9 for a DOGGR Map of the site area.

4.2.2 On-Site Storage, Treatment and Disposal

Aerial photos and regulatory files indicate the historical presence of agricultural activity, but no evidence of stored hazardous substances.

4.2.3 Location of Solid Waste Landfills

The nearest landfill is located well over 1 mile from the site.

Section 17213 of the California Education Code and Section 21151.8 of the California Public Resources Code prohibit construction of a school upon a current or former hazardous waste disposal site or solid waste disposal site. Based on information reviewed for preparation of this PEA Report, the proposed ESD School site is not situated upon a current or former disposal site.

4.2.4 High Pressure Gas Lines & Oil Pipelines & High Voltage Power Transmission Lines

SEI contacted The Gas Company & PG&E to determine the nearest high-pressure natural gas transmission lines near the site. Representatives for PG&E and the Gas Company indicate that the nearest high-pressure transmission line are located over 1500' from of the site. No high-pressure petroleum pipelines are known within 1500' of the property border.

No power transmission lines >115 kV appear to be present within 350' of the property border.

4.2.5 Hazardous Air Emissions and Facilities Within ¼ Mile

A regulatory database search conducted by EDR, Inc. dated November 9, 2018, indicated no facilities with historical hazardous waste activities are present within ¼ mile of the site. No facilities have any current environmental issues which could impact the site area (see Plates 6 and 7 and Appendix B for more detail). In addition, SEI is not aware of any facilities within ¼ mile of the site, which might reasonably be anticipated to emit hazardous air emissions or handle hazardous materials, substances, or wastes that might significantly affect the proposed school site.

4.2.6 Regulatory Status

The site area was not listed in the EDR database search results. The site was historically included in the agricultural records which are summarized in Section 4.2.1 above.

4.2.7 Inspection Results

No records of previous inspections of Federal, State, or local agencies were available for the site.

The site currently consists of idle land with low weed growth. Some concrete irrigation piping was present in the southern portion of the site along with an old concrete box. The concrete box appears to be from the former irrigation system located just off-site adjacent to the northeast corner of the Site (was there in the 2006 investigation). Power poles are present along the eastern border of the site with pole-mounted electrical transformers at two (2) locations in good condition. An asphalt paved parking lot is present in the southeastern portion of the site. No signs of surface staining was observed at the site. A chain link fence surrounds the borders of the Site. See Plate 2 for a Plot Plan of the Site.

4.2.8 Prior Assessments/Remediation

SEI conducted an Enhanced Phase 1 ESA on this property in 2006 before the Edison School District acquired the property. The following is a summary of this limited investigation.

The following was identified at the site during this investigation:

- The review of Kern County Environmental Health Services records indicates that no off-site properties within a one-mile-radius of the site boundaries are currently an active threat to the subject property. No sites were listed for generating or storing hazardous materials, but they have no current problems that might impact the site area.

- Agricultural activities have been conducted at this site, from prior to 1946 to the present. Various pesticides and herbicides have likely been used to control insects and weeds on this land. Residual concentrations of pesticides, herbicides, and various metals are possible in the near-surface soil. On June 7, 2006, SEI collected a total of two (2) discrete and four (4) composite soil samples at the site. Soil sample T1-3" was collected beneath the power pole with the transformer and soil sample S1-3" was taken from the sump in the southwestern corner of the site. Both were advanced with a hand auger to a depth of 0 to 6". Each component of the composite samples (E1A, B, C, D-3" to E 4A, B, C, D-3") were also advanced with a hand auger to a depth of 0-6", alternating between and beneath the trees in the citrus grove. Later, after analysis of the composited samples, it became clear that 2' depth samples needed to be taken in the areas of composite soil samples E1 and E4. These were taken via hand auger on June 21, 2006 at the same or nearby the original soil sample locations. All soil samples were placed into a brass

sleeve, sealed with Teflon-lined caps, labeled and placed into a cooler with blue-ice. See Plate 2B for the soil sample locations.

The soil samples were transported to Positive Lab Service in Los Angeles, CA for chemical analysis in the sealed cooler with blue-ice by over-night courier. Half of the components of each composite sample were then combined by the lab at the time of analysis. The discrete 0 to 6" soil sample T1-3" was analyzed for PCB's by EPA Method 8082. Discrete sample S1-3" was analyzed for Organochlorine Pesticides (OCPs) by EPA Method 8081A and for CAM 17 Metals by EPA Method 6010/7471. The remaining portion of the "B" components for all the composite samples were analyzed for CAM 17 Metals. The composite samples were analyzed for OCPs by EPA Method 8081A. Due to high results of some of the OCP constituents in the composite soil samples, the analysis of each component making up the composite sample became necessary on samples from the areas E1 and E4. This also resulted in a need to take 2' composite soil samples in similar locations as previously sampled and were analyzed for OCPs. Composite soil sample E4-2' also had each component analyzed for OCPs. The analytical results are presented on Table 2. The analytical results indicate that no elevated concentrations of metals or PCBs are present at the soil sample locations analyzed for these constituents. However, in some samples the OCPs are slightly elevated. The highest OCP reported was 1450 μg/mg of 4, 4' DDE in soil sample E1C-3"; the highest concentration of 4,4'-DDT was 290 μg/mg in sample E4C-2'. The highest concentration of Dieldrin is 101 μg/mg in soil sample E4C-3".

- A soil sample collected beneath an electrical transformer located along the east-central border of the site had no PCBs reported.

- Utilizing the Department of Toxic Substances Control (DTSC) risk and hazard calculation tables the highest concentrations of the OCPs; 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, and Dieldrin, along with the metals copper and zinc were inputted into the risk and hazard calculations (soil and air pathways) for the northern and southern site areas. The northern ½ of the site has a slightly elevated cumulative risk of 2.3×10^{-6} and an acceptable hazard of 0.1. The southern ½ of the site has a slightly elevated cumulative risk of 3.83 x 10-6 and an acceptable hazard of 0.126. A risk of concern is anything over 1×10^{-6} and a risk over 5×10^{-6} may need mitigation. Based on the minimal number of soil samples collected and analyzed for this site, the northern ½ of the site appears to be less impacted with OCPs then the southern ½. Both parcels appear to be able to pass the DTSC's risk and hazard evaluation, but additional soil sampling and analysis during a Preliminary Environmental Assessment (PEA) may find higher concentrations of OCPs or other chemicals of concern that may warrant mitigation.

- No other significant recognized environmental concerns (REC's) were identified at this site.

The following were SEI's opinion as to the known or suspected recognized environmental concerns identified at the site:

- The analytical results of Dieldrin in the 0 to 6" soil samples are above the California Human Health Screen Level (CHHSL) of 35 ppm at most of the shallow soil sample locations (6 out of 8). The elevated dieldrin does not extend to a depth of 2'. The levels of dieldrin are highest in the southern parcel. The OCP, 4,4'-DDE results are slightly elevated in some of the 0 to 6" and some of the 2' soil samples taken, but do not exceed the CHHSL of 1.6 ppm. It appears that the risk and hazard evaluation of the highest OCP concentrations within each parcel exceed the risk of concern of 1×10^{-6}, but do not exceed a hazard level of 1. The use of organochlorine pesticides appear to be fairly consistent over most of the site. No metals of concern were reported in the soil samples. A more thorough PEA will be warranted for this site to determine if any mitigation of the top 1' of soil is necessary in portions of the site.

- If anything is uncovered of potential concern during clearing activities at the site, it should be investigated and remediated, if warranted.

See attached Table 2 and 2A for these historical analytical results and Plate 2B for the historical soil sample locations.

5.0 APPARENT PROBLEM

An estimated 65+ years of agricultural activity has taken place at this site. During this period of time pesticides and herbicides have been utilized in the former citrus orchard area. The residuals from some of these chemicals used at the site may be present in the soil. These residual chemicals in the soil may come in contact with construction workers, school children and teachers who will be present at the site. The most likely pathway for these residual chemicals in the soil to come in contact with biological receptors is from skin contact in exposed soil areas. The next likely contact would be inhalation of air-borne dust during construction activities or on windy days. Incidental ingestion of soil is also a potential pathway at this site.

No reported spills or releases have been reported for this site.

6.0 ENVIRONMENTAL SETTING

The site area is approximately 18.44 acres and consists of an idle field area. Surrounding properties consist mainly of residential land, with a school located to the east. The main pathways that potential contaminates could take would include soil and air pathways. Groundwater is not a likely pathway for contaminates at this location to affect biological receptors. In addition, the source for water (potable and non-potable) at the school site will be from public water company sources.

6.1 FACTORS RELATED TO SOIL PATHWAYS

Potential soil pathways would include ingestion of soil, and absorption through skin contact.

6.1.1 Topography

The site has a gentle slope to the southwest with property boundaries matching surface elevations of adjoining roads and properties. See Plate 5 for a Topographic Map.

6.1.2 Surface Evidence of Environmental Impact

The surfaces observed had no signs of stressed vegetation or ill effects on bio-receptors.

6.1.3 Site Lithology

Earth materials identified in the 2 onsite soil borings conducted in June 2006 consisted generally of intervals of Sandy Clay (CL), Clayey Sand (SC), and Well-Graded Sand (SW) in the top 50 feet below ground surface (bgs). These soils are classified as CL, SC, and SW respectively, in the Unified Soils Classification System. No shallow groundwater was encountered in the soil borings advanced up to a depth of 51'. Soil boring B-2 encountered rock at approximately 27' bgs, and boring B-1 encountered it at approximately 15' bgs.

6.1.3.1 Naturally Occurring Asbestos

No known areas with naturally occurring asbestos are present within 10 miles of the site according to State naturally occurring asbestos maps.

6.1.4 Surface Slope & Surface Water Bodies

Local topographic slope is to the southwest. The nearest active surface water is located 1.7 miles to the southwest (Canal).

6.1.5 Site Access

Site access is off of Eucalyptus Drive on the south, from Gargano St. on the west and from Pioneer Drive on the north.

6.1.6 Preventative Measures

The Site is surrounded by chain link fencing and locked gates that limit access and direct contact with the soil at the site.

6.1.7 Location of Nearest Residence

Residential properties are located approximately 100' to the west, south and east. The nearest emergency care facility (Kern Medical Hospital) is approximately 4 miles to the west-northwest at the intersection of Flower St. and Mt. Vernon Ave. in Bakersfield.

6.2 FACTORS RELATED TO WATER PATHWAYS

Water pathways are not being evaluated for this site. The source for water (potable and non-potable) at the school site will be from public water company sources.

6.3 FACTORS RELATED TO AIR PATHWAYS

Potential air pathways at the site would include inhalation of dust particles during grading activities or other disturbances of the soil at the site. The release of dust particles at the site would most likely be intermittent and related directly to heavy equipment operations at the site during the development of the school site. Residences to the south may be impacted by a portion of the dust generated by the proposed development of the site on windy days. Common practices of wetting soil and roadways to keep dust down to a minimum should be enforced during grading and construction activities at the site.

6.3.1 Potential Sources of Release

Potential sources or the mechanism of the release of contaminates into the air pathway would include; grading activities during construction of the school, tilling the surface as part of any weed control, and any general disturbance of the surface soil combined with heavy winds.

6.3.2 Daily Wind Direction

Based on available climate data as reported by the National Weather Service the estimated prevailing wind direction for this area of Kern County is approximately 277 degrees or from the West-Southwest with an average velocity of 5.53 mph. See Table below for the 1999 data utilized.

Month	Avg. Wind Speed	Wind Direction (360 Scale)
January	4.9	100
February	2	350
March	3.1	350
April	7.2	260
May	7.4	310
June	7.3	310
July	7.4	310
August	7.1	300
September	6	310
October	5	140
November	4.8	300
December	4.2	290
Average - 1999	**5.53**	**277.50**

6.3.3 Local Climatic Factors

The average seasonal temperature ranges from 50° F in the winter to 96° F in the summer. Temperature inversions are common during the fall and winter months. Prevailing wind patterns are predominately West-Southwesterly.

6.3.4 Timing of Potential Releases

The release of potential contaminates are most likely to occur during the grading of the site which will last approximately 1 to 2 months once the school site is approved.

6.3.5 Possible Dispersion Routes

The most likely dispersion routes for this site would be with the prevailing wind direction (westerly) so that properties south-southeast of the site may be affected.

6.3.6 Population of Nearby Residences

Since the site is in an area that is not densely populated, the population that a release may affect is small and would only involve the properties directly adjacent to the school site.

6.3.7 Surrounding Area

Residential properties are located approximately 100 feet to the south, west and east. Adjoining properties are mainly residential, with the Orangewood Elementary School directly to the east. State Hwy. 58 is located approximately 1 mile to the south. The nearest hospital is approximately 4 miles to the west-northwest.

7.0 SAMPLING ACTIVITIES AND RESULTS

7.1 SUMMARY OF ACTIVITIES

7.1.1 Soil Sampling Activities

Former Orchard Area
On November 8 and 9, 2018, SEI collected discrete soil samples at 31 locations within the former orange orchard area in general accordance with the the "DTSC Interim Guidance for Sampling Agricultural Land (Third Revision) dated August 7, 2008". The on-site soil samples (64 total including 2 duplicates) were collected at depth intervals of 0" to 6" (-3"), and 2' to 2.5'(-2') below ground surface (bgs) at evenly spaced intervals within 8 gridded areas (C1 to C8). Four (4) locations (A,B,C,D) were sampled within each grid area C1 to C7 and 3 locations (A,B,C) within section C8 with portions (~1/2) of the -3" soil samples composited by the analytical laboratory. Duplicate soil samples were collected at two (2) locations for Quality Assurance/Quality Control (QA/QC) purposes. See Plate 2A for soil sample locations.

Pole-Mounted Electrical Transformer Areas
Soil samples were also collected beneath two (2) pole-mounted electrical transformers (T1 and T2) located along the eastern border of the Site at depths of 0 to 6" and 2' to 2.5'. See Plate 2A for soil sample locations.

Soil Sampling Protocol
The majority of the soil samples were collected by hand auguring to the proposed sampling depth and then advancing the next 6" by utilizing a clean hand-auger. The samples were collected in stainless-steel sleeves and were sealed with Teflon-lined caps, labeled and placed into an iced cooler at 4° C. The soil samples were over-nighted to Positive Lab Services for chemical analysis along with multiple Chain-of Custody documents in sealed coolers with blue ice (see Appendix A for documents).

Decontamination Procedures
The hand auger samplers were decontaminated between each sampling event, utilizing water with Alconox (or equivalent) and a clean water rinse.

Boring Abandonment
The shallow sampling holes were filled and compacted with soil cuttings up to match the surface.

See Plate 2A for all of the soil sample locations conducted at the site.

7.1.2 Evaluation of Subsurface Lithology

The subsurface lithology encountered in the 33 hand-auger borings on-site were observed down to a maximum depth of 2.5' by a Professional Geologist (PG) or a technician overseen by a PG. In addition, staining and odor were evaluated in the soil cuttings evolved from the borings as well as the soil samples.

7.1.3 Analytical Testing of Soil Samples

Former Orchard Area

The soil samples were delivered with completed chain of title documents to Positive Lab Services in Los Angeles, CA, a State certified analytical laboratory. A portion (~1/2) of the 0 to 6" (-3") soil samples collected within each section (C#A-3" to C#D-3" and C8A-3" to C8C-3") were composited by the laboratory and analyzed for organochlorine pesticides (OCPs) by EPA Method 8081. The remaining portions of the discrete C#B-3" soil samples were all analyzed for arsenic by EPA Method 6010 along with duplicate discrete soil samples C8D-3" and C4E-3" collected at the same location and depth as discrete soil samples C8B-3" and C4B-3", respectively. The remaining individual discrete soil samples (-3" and -2') from the two (2) composites with the highest OCPs reported (C3 and C8) were also analyzed for OCPs. The C#B-3" samples with the highest arsenic results reported also had the associated -2' discrete soil sample analyzed for arsenic. This included discrete soil samples C3B-2', C4B-2' and C7B-2'. Additional discrete soil samples were also analyzed for OCPs to define the lateral and vertical extent of elevated dieldrin concentrations reported in samples C6C-3" and C8A-3". This included soil samples C5A-3", C5B-3", C5D-3", C6A-3", C6B-3", C6C-2', C6D-3", C6D-2', C7B-3" and C7D-3".

Pole-Mounted Electrical Transformer Areas

Discrete soil samples T1-3" and T2-3" collected beneath the pole-mounted electrical transformers were analyzed for polychlorinated biphenyls (PCBs) by EPA Method 8082.

7.1.4 Water Sampling & Analytical Testing

No water samples were collected at this site.

7.1.5 Soil Gas Evaluation

A soil gas survey did not appear to be warranted at this site based on historical use and the distance from possible soil vapor sources (oil wells, pipelines, etc.)

7.2 PRESENTATION OF DATA

7.2.1 Soil Sample Analytical Results

Former Orchard Area
The analytical results of the field area soil sampling conducted in November 2018 are presented on Table 1. The analytical results of the 0" to 6" composite soil samples (C1A,B,C,D-3" to C7A,B,C,D-3" and C8A,B,C-3") and the 0 to 6" (-3") and 2' to 2.5' (-2') discrete soil samples analyzed for organo-chlorine pesticides (OCPs) within the former orchard area during this investigation indicate that minor to moderate concentrations of the OCPs 4,4'-DDD (up to 17.6 ug/kg , 4,4'-DDE (up to 1290 ug/kg), and 4,4'-DDT (up to 130 ug/kg) were reported, all below the EPA Regional Screening Levels (RSLs) and the DTSC's Recommended Screening Levels (SLs). Dieldrin was reported just above the EPA RSL (34 ug/kg) in 2 of the 25 discrete soil samples analyzed for OCPs with the highest reported dieldrin concentration 42.8 ug/kg in sample C6C-3". Soil sample C8A-3" was the other soil sample with dieldrin reported above the EPA RSL (34 ug/kg) at 39.6 ug/kg. None of the -2" soil samples analyzed for OCPs had any reported concentrations of potential concern.

The results of on-site arsenic concentrations in the former orchard area ranged from 9.37 mg/kg to 14 mg/kg in the discrete soil samples analyzed. Five (5) of the 13 discrete soil samples analyzed for arsenic had concentrations just above the normal DTSC level of concern (12 mg/kg). The median arsenic concentration was 11.14 mg/kg. The analytical results are shown on Table 1.

Pole-Mounted Electrical Transformer Areas
No PCB's were reported in the two (2) discrete soil samples collected beneath the electrical transformers. The analytical results are shown on Table 1.

Certified Analytical Laboratory
The soil samples were analyzed at Positive Lab Services, a State certified analytical laboratory. The analytical laboratory used low detection limits for each constituent analyzed and provided Level II or III QA/QC with their laboratory reports (See Appendix A). These chemical analyses cover the past chemical usage at the site and the likely residual chemicals remaining.

7.2.2 Description of Subsurface Lithology
Soil samples were collected at 0 to 6" and 2' to 2.5' with a hand auger sampler. The collected soil samples were described by an SEI geologist or technician supervised by a State of California registered geologist in accordance with the Uniform Soil Classification System. Earth materials encountered beneath the site consisted generally of intervals of Silty Sand (SM) with some caliche in the top 2.5 feet below ground surface (bgs). These soils are classified as SM in the Unified Soils Classification System.

7.3 DISCUSSION OF RESULTS

The analytical results of the on-site soil samples indicate only minor to moderate concentrations of the OCP constituents 4,4,-DDD, 4,4'-DDE and 4,4'-DDT were present in the shallow composite and discrete soil samples analyzed for OCPs. None of the these OCP constituents have concentrations above the EPA Regional Screening Levels (RSLs) or the DTSC recommended screening levels (SLs) for these constituents. The OCP dieldrin had concentrations reported at 39.2 ug/kg and 42.8 ug/kg in soil samples C8A-3" and C6C-3", respectively, which is slightly above the EPA RSL of 34 ug/kg for dieldrin. Based on the analytical results of the surrounding discrete soil samples the area of slightly elevated dieldrin is restricted within an area of approximately 300' x 150' with a depth of <2'.

The arsenic analytical results indicate that the mean (average) on-site concentration (11.14 mg/kg) is within the range of local background concentrations (see Tables 2A and 7 for local background arsenic results) and below the DTSC concentration of concern (12 mg/kg). The highest arsenic concentration reported was 14 mg/kg in soil sample C6B-3".

See Table 1 for the OCP and on-site arsenic concentrations and the DTSC-SLs and the EPA RSLs for these constituents.

No PCBs were reported in the soil samples collected beneath the pole-mounted electrical transformers. See Table 1 for the PCB analytical results.

No elevated CAM 17 Metals or OCPs were reported in the discrete soil sample S1-3" collected from the former sump area in 2006 as shown on Tables 2 and 2A.

7.4 DEVIATIONS

The following describes any deviations from the DTSC PEA Guidance Manual or DTSC's Interim Guidance for Sampling Agricultural Properties (3rd Revision):

- No significant deviations

7.5 QUALITY ASSURRANCE/QUALITY CONTROL/DATA VALIDATION

The following describes the Quality Assurance/Quality Control (QA/QC) and Data Validation protocol that was conducted during this PEA investigation.

SEI followed the EPA Guidance for Data Validation during this investigation.

This included:

1) Reviewing the laboratory data to ensure that it contains all of the required documents and forms.
2) Assessing the results of all quality control checks and procedures performed by the analytical laboratory.
3) Examination of laboratory data in detail to verify the accuracy of all information presented by the laboratory.

Summary of Cursory Data Validation Review

Data was reviewed for QA/QC issues by a qualified environmental professional in accordance with EPA's National Functional Guidelines.

A total of 13 discrete soil samples were analyzed for arsenic by EPA Method 6010. 8 composites and 25 discrete soil samples were tested for OCPs by EPA Method 8081. A total of 2 discrete soil samples were analyzed for PCBs by EPA Method 8082. Some of the OCP analysis occurred after the normal 14 day holding time, but these soil samples were kept frozen at the analytical laboratory prior to analysis. The California State certified laboratories utilized, reported no abnormal QA/QC issues in the data summary package that was provided. No qualifications were required and no data was rejected. The data met all project-specific QA/QC goals and can be used for risk assessment purposes.

The results of the Data Validation conclude that the soil samples appear to have been analyzed and reported appropriately. The QC checks and analytical procedures conducted by the analytical laboratories appear to be in conformance with the QA/QC Plan for this project. These QC checks included method blanks, matrix spikes, duplicates, surrogate spike recoveries and internal standard calibrations. Unused portions of the soil samples were kept in a frozen state pending additional analysis, if requested.

The laboratory data presented by the analytical laboratories appears to be accurate and verifiable as submitted. A minimum of 10% of the analytical data was validated for this project. Copies of the data packages by the analytical laboratories are attached in Appendix A.

7.5.1 Precision

Duplicate results were assessed using the relative percent difference (RPD) between duplicate measurements. If the RPD for laboratory quality control samples exceeded 30 percent, the data will be qualified. If the RPD between primary and duplicate field samples exceeds 100 percent for soil or soil gas, data will be qualified. The RPD was calculated as follows:

$$\%RPD = 200 \times \frac{X_2 - X_1}{X_2 + X_1}$$

where X_1 is the larger of the two observed values, and X_2 is the smaller of the two observed values. The RPD's for the 2 field duplicate samples C4E-3" and C8D-3" were within acceptable values (<100%).

7.5.2 Accuracy

Accuracy of laboratory analyses was assessed by laboratory control samples, surrogate standards, matrix spikes, and initial and continuing calibrations of instruments. Laboratory accuracy is expressed as the percent recovery (%R). Accuracy limits are statistically generated by the laboratory or required by specified EPA methods. If the percent recovery is determined to be outside of acceptance criteria, the data was qualified. The calculation of percent recovery is provided below:

$$\% R = 100 \times \frac{X_S - X}{T}$$

where X_s is the measured value of the spiked sample, X is the measured value of the unspiked sample, and T is the true value of the spike solution added. The accuracy of the laboratory data was all within QC limits.

7.5.3 Representativeness

Representativeness is the degree to which data accurately and precisely represent selected characteristics of the media sampled. Representativeness of data collection is addressed by careful preparation of sampling and analysis programs. This PEA Investigation had sufficient and proper numbers and locations of samples; incorporated appropriate sampling methodologies; utilized proper sample collection techniques and decontamination procedures; utilized appropriate laboratory methods to prepare and analyze soil; and conducted proper field and laboratory QA/QC procedures.

7.5.4 Completeness

Completeness is the amount of valid data obtained compared to the amount that was expected under ideal conditions. The number of valid results divided by the number of possible results, expressed as a percentage, determines the completeness of the data set. The objective for completeness is to recover at least 90 percent of the planned data to support field efforts. Specifically for background samples, no less than 100 percent completeness of the planned data set will be acceptable. The formula for calculation of completeness is presented, as follows:

$$\% \text{ Completeness} = 100 \times \frac{\textit{number of valid results}}{\textit{number of expected results}}$$

This investigation had 100% completeness.

7.5.5 Comparability

Comparability is an expression of confidence with which one data set can be compared to another. The objective of comparability is to ensure that data developed during the investigation are comparable to site knowledge and adequately address applicable criteria or standards established by the DTSC or the USEPA. The laboratory methods that were utilized during this PEA investigation are consistent with the current standards of practice as approved by the DTSC and the USEPA.

7.5.6 Equipment Decontamination

Non-dedicated equipment (hand augers and slide hammer samplers) were decontaminated before and after each sample was collected. The equipment was washed in a non-phosphate detergent and potable water and rinsed in potable water.

7.5.7 Standards

Standards used for calibration or to prepare samples were certified by NIST, USEPA, or other equivalent source. The standards used were current.

7.5.8 Supplies

All supplies were inspected prior to their use in the field or laboratory. The descriptions for sample collection and analysis contained in the methods were used as a guideline for establishing the acceptance criteria for supplies. Efficiency and purity of supplies was monitored through the use of standards and blank samples.

7.5.9 Holding Time Compliance

Sample preparation and analysis was completed within the required method holding time, except for those soil samples held in a frozen state and analyzed after typical holding times. Holding time begins at the time of sample collection. If holding times were exceeded, and the analyses are performed, the associated results were qualified as described in the applicable validation procedure.

7.5.10 Preventive Maintenance

The Field Manager for SEI was responsible for documenting the maintenance of all field equipment prescribed in the manufacturer's specifications. Any maintenance performed was by trained personnel. The analytical laboratories utilized were responsible for all analytical equipment calibration and maintenance as described in their laboratory QA Plan.

8.0 HUMAN HEALTH SCREENING EVALUATION

Based on the analytical results reported in the soil samples collected at the site a human health screening evaluation was conducted by comparing the highest concentrations of all chemicals of potential concern (COPC) to the DTSC Recommended Screening levels (SLs) and if not available, then the EPA Regional Screening Levels (RSLs). If all of the COPC identified at the site, have an DTSC-SL or EPA RSL to compare to and do not exceed these screening levels, then a more detailed quantitative risk assessment may not be necessary for the site. This comparison is shown in the table below.

Chemical of Potential Concern (COPC)	DTSC SLs or EPA RSLs Residential Soils (mg/kg)	Maximum On-Site Concentration (mg/kg)
OCPs	4,4'-DDD = 1.9 4,4'-DDE = 2.0 4,4'-DDT = 1.9 Dieldrin = 0.034	4,4'-DDD = 0.0176 4,4'-DDE = 1.290 4,4'-DDT = 0.130 **Dieldrin = 0.0428**
Arsenic	Compare to Background and DTSC level of concern (12)	Median Concentration = 11.14, highest was **14**
PCBs Aroclor-1260	0.240	<0.050

Based on this comparison it appears that a more detailed risk and hazard analysis utilizing the formulas in the Preliminary Endangerment Assessment Guidance Manual is warranted for dieldrin at this site.

8.1 Exposure Pathways and Media of Concern

As stated in Section 6.0 the exposure pathways of concern are soil pathways (ingestion and absorption through skin contact) and air pathways (dust particles inhaled during soil disturbances). The media in both of these potential pathways are soil particles, which may have residual concentrations of pesticides and metals. The release of these soil particles would be intermittent and should be considered as a threatened release not as an actual release at this site. SEI has prepared a Conceptual Site Model to show the potential exposure pathways at this site, which is included as Plate 10. The terrestrial receptor pathway is incomplete with no significant on-site animal population at risk. Since there is no surface water or groundwater that will be present on the surface during regular school activities at this site, and the depth to groundwater is greater than 100 feet below ground surface, the groundwater pathway has been eliminated from consideration.

8.2 Calculation of Risk and Hazard

Utilizing the highest OCP concentrations of; 4,4'-DDD (17.6 ug/kg), 4,4'-DDE (1290 ug/kg), 4,4'-DDT (130 ug/kg), and Dieldrin (42.8 ug/kg) a risk and hazard evaluation was conducted for both soil and air pathways and is presented on Tables 4 to 6. These tables follow the risk and hazard equations from the DTSC PEA Guidance Manual (Revised October 2015) and HHRA Note No. 4 (October 26, 2016). This gives a very conservative approach for the calculation of risk and hazard for the site.

Arsenic was eliminated for the Risk and Hazard Calculations since the reported arsenic concentrations (high of 14 mg/kg) appear to be within the background concentrations of arsenic found in the eastern portion of the Bakersfield area based on SEI's historical sampling and the median arsenic concentration for the site (11.14 mg/kg) is <12 mg/kg.

The results are a total cumulative risk of 2.2×10^{-6} and a total cumulative hazard of 0.0615 for all pathways. These results are slightly more than a cumulative risk of 1×10^{-6} and less than a cumulative hazard of 1.0 that may pose a threat to humans or other biota at the site by potential pathways.

8.3 Risk Characterization Summary

Based on the comparison of the on-site concentrations of arsenic with background data and on-site OCP concentrations in soil and air exposure routes, the following is concluded:

1) The dieldrin concentrations in the near surface soil in the area of sample locations C6C and C8A in the southeastern portion of the site and other OCPs reported, present a slightly elevated cumulative risk to future occupants of the school site. The cumulative hazard calculated is very low and acceptable for a school site.

8.4 Uncertainty Analysis

This uncertainty analysis looks at areas of the human health screening evaluation, which may produce minor levels of uncertainty in the results of the evaluation.

This human health screening evaluation looks mainly at the transfer of contaminates from soil particles to school occupants through ingestion, absorption and dust inhalation. Some pathways that are not included in this evaluation include; transport of soil contaminates to groundwater, potential crops grown on-site and/or contaminated groundwater used to irrigate on-site crops eaten by students; contact and inhalation of chemicals in water while showering; and the drinking water pathway. At this site it is highly unlikely that crops will be grown on-site for human consumption and local water companies regulated by local authorities will supply the water to the site.

Results of the human health screening evaluation using the maximum detected concentration values indicate that chemical concentrations detected at the site do not represent a significant

threat to human health. The elevated dieldrin concentrations reported in only 2 shallow soil samples should be considered a less than significant threat to human health based on the limited extent and the concentrations reported. The frequency and duration of soil contact activities would be a significant factor affecting the potential for adverse human health impacts from the site.

This health risk evaluation was based on the application of conservative methods and assumptions in all phases of the assessment. Because exposure point concentrations were derived from fate and transport modeling, conservative assumptions and methodology were necessarily employed to eliminate the possibility of underestimating risks. This practice, although commonly used in the risk assessment process to eliminate the possibility of underestimating risk, necessarily introduces a significant level of conservatism in the conclusions derived from the assessment. Examples of some of the conservatism in this assessment include:

- It was assumed that potential receptors at the future School site will be exposed to chemicals in soil and dust 100 percent of the time while at the site. In reality, receptors at the site are not likely to be there for more than 8 hours a day, 5 days a week.

- It was assumed that chemicals of concern in the soil were all at maximum detected concentrations across the whole site. In reality, the concentrations of chemicals of concern (if present) vary throughout the site at lower concentrations.

- It was assumed that future occupants of the site will have contact with soil. However, it is known that most, if not all, of the site surface area will be occupied by buildings, asphalt or landscaped. Thus, future contact with soil will be minimal.

- Carcinogenic risks for all pathways were based on a residential exposure of 350 days per year for 26 years. A more realistic exposure scenario for a school site would be to assume an exposure frequency of 180 days per year for a duration of 4 years, representing a typical school exposure scenario. On-site teachers and other staff members may have the longer exposure utilized.

A risk assessment that relies upon conservative input values can be used as a valuable tool when risks are shown to be de minimus, as reported in this risk assessment. The reader of this risk assessment can confidently interpret the reported risk as a conservative overestimate of any site-related risks.

9.0 ECOLOGICAL SCREENING EVALUATION

The following is a brief ecological screening evaluation of the site.

9.1 Site Characterization

The majority of the site is currently vacant land with a dirt surface.

9.2 Biological Characterization

No wildlife beyond a few non-special status species of birds and small rodents have been observed at the site during SEI's visits. No nearby wildlife preserves or habitats are located within 1 mile of the site.

9.3 Pathway Assessment

Similar to the pathways discussed earlier, the most likely pathways for exposure at this site are by soil (ingestion and skin contact) and air (inhalation). The conceptual site model Plate 10 shows the most likely pathways for exposure for humans and other bio-receptors. No known or reported hazardous exposures to wildlife or humans have been identified at this site. No remedial measures beyond using water to limit dust generation at this site is recommended during construction activities. An Exposure Pathway Analysis for the Ecological Screening Evaluation is attached as Table 3.

9.4 Qualitative Summary

The site does not appear to pose a significant threat to the surrounding environment based on the concentrations of pesticides and arsenic reported in the soil and the lack of existing wildlife habitat that would be disturbed at the site during this project.

10.0 COMMUNITY PROFILE

10.1 Community Background/Profile Information

The City of Bakersfield is an incorporated community located approximately 100 miles north of Los Angeles and 100 miles south of Fresno, within the southern portion of the San Joaquin Valley. Bakersfield was founded in 1850's by early American settlers and was incorporated in 1890's. Bakersfield encompasses approximately 113 square miles and is at a mean elevation of 408 feet. The city's latitude is approximately 35.35°N and longitude is approximately119°W. Bakersfield has a council/manager form of government.

Bakersfield started as a rural farming community by Colonel Thomas Baker with a small community of settlers. In 1889 most of Bakersfield was burned down and the town was soon rebuilt with modern conveniences. Oil was discovered in 1899 in the nearby Kern River field, which fueled the economy of Bakersfield. The oil industry is still one of the largest employers in the area, with agricultural activities the largest. The main agricultural products are grapes, cotton and carrots. The largest employers in the area include the City of Bakersfield, Kern County, Target Distribution, Bolthouse Farms, Grimmway Farms, Chevron-Texaco, and Aera Energy.

The community demographic profile is as follows (City of Bakersfield 2010, U.S. Census Bureau):

Population:	
2016 Estimate	376,380
2010 Census	347,483
Estimated Growth 2010-2016	8.3%
Households: 2009-2013	109,932
Housing Units (2010 Census):	120,725
Estimated population by race (2010 Census):	
White	56.8%
Hispanic Origin*	45.5 %
Black	8.2%
Asian	6.2%

* Includes white, black, and Asian persons who identify themselves as being of Hispanic origin.

Age (2010 Census):	
Age 0-18	31.5%
Age 18-64	60.1%
Age 65 and older	8.4%

Language spoken at home (2010 Census-persons 5 years and older):	
English	62.1%
Spanish & Other Non-English Languages	37.9%

Education level (2010 Census-persons 25 years and over):	
High School diploma	78.5%
Associates degree or higher	20%

Median Household Income: 2010 Census	$56,204
Per Capita Income: 2010 Census	$23,316

10.2 Community Concerns

To date, the Proposed School project has not generated any public interest of concern.

10.3 Public Participation Plan Implementation

A public notice for the 30-day public review and comment period and the public hearing for the Draft PEA Report, pursuant to CEC Section l7213.1(a)(6)(A), will be prepared. A notice will be placed in the local paper and a flyer will be prepared and posted by the ESD stating the date, location and time of the Public Hearing and the start date of the 30-day comment period and the location of the Draft PEA Report for public review. The public comment period will be scheduled to run for 30-days and the public hearing for the Draft PEA Report will be scheduled near the end or just after the 30-day comment period. The PEA Report hearing and public comment review will likely be done separately from the CEQA negative declaration hearing. Once the dates for the 30-day review and comment period and the public hearing are determined the DTSC will be notified.

A public information repository has been established by the Edison School District. As shown below:

Edison School District office
11518 School Street
Bakersfield, CA 93307

Copies of this Draft PEA Report will be placed in this repository for access by local community members.

11.0 CONCLUSIONS & RECOMMENDATIONS

11.1 Conclusions

Based on the collection and analysis of soil samples, historical review, risk and hazard analysis, and visual observations by field personnel the following is concluded;

1) The site has been utilized for agricultural purposes for 65+ years with the application of pesticides and herbicides during this time period. The site has been idle since 2006 when the citrus orchard was removed.

2) Based on the fate and transport properties of OCPs and metals it is highly unlikely that concentrations of potential concern of these constituents would migrate to depths below 2.5' in the soil (silty sand) encountered at this site. No additional sampling and analysis below a depth of 2.5' is warranted in the former orchard area to achieve unrestricted Site closure.

3) Soil and air are the likely potential pathways for any contaminates at the site. Groundwater is not considered a potential pathway at the site. In addition, all water utilized at the site will be from public water sources.

4) Numerous soil samples (discrete and sub samples for composites) were collected at the site for chemical analysis of OCPs and arsenic by appropriate EPA Methods. The results of this chemical analysis indicate that minor to moderate concentrations of the OCPs 4,4'-DDD, 4,4'-DDE and 4,4'-DDT are present in the shallow soil within the former orchard areas all below the EPA RSLs and DTSC SLs for these constituents. The OCP dieldrin was reported above the EPA RSL of 34 ug/kg in 2 shallow soil samples with the high of 42.8 ug/kg. The results of on-site arsenic concentrations ranged from 9.37 mg/kg to 14 mg/kg in the soil samples analyzed with an average of 11.14 mg/kg which is below the normal DTSC level of concern (12 mg/kg). When compared to background arsenic concentrations for other school sites in eastern Bakersfield these arsenic concentrations appear to be within the background concentrations for arsenic.

5) No PCBs were reported in the soil samples collected beneath the two (2) pole-mounted electrical transformers.

6) The highest OCPs reported in the soil samples were compared to the EPA RSLs and the DTSC SLs in a human health screening evaluation. The cumulative risk calculated was 2.2 x 10^{-6} indicating a slightly elevated risk to future occupants mainly from the highest dieldrin concentration. The cumulative hazard calculated was very low at 0.0615 and acceptable as a school site.

7) SEI concludes that the elevated dieldrin reported in only 2 of the 25 discrete soil samples analyzed for OCPs is confined to a small area (~1 acre) and <2' in depth and does not appear to be a significant threat to future construction workers or future occupants.

11.2 Recommendations

SEI recommends that this PEA Report be submitted to the DTSC for review and approval if the ESD wants to proceed with the development of the site as a school.

Any proposed fill material for the site will be sampled and analyzed for potential constituents of concern in accordance with the DTSC's "Information Advisory Clean Imported Fill Material", dated October 2001.

If during field investigation activities or construction activities new areas of potential environmental concern are discovered at the site work will cease in these areas and the DTSC will be notified. SEI will discuss these areas with the DTSC to determine the appropriate actions to be taken to assess and/or remediate these new potential areas of concern.

12.0 LIMITATIONS

This report was prepared for the exclusive use of the Edison School District as it relates to the property described. The discussion and conclusions presented in this report are based on:

- The test borings performed at this site.
- The observations of field personnel.
- The results of laboratory tests performed by Positive Lab Service of Los Angeles, California.
- Our understanding of the regulations of the California Regional Water Quality Control Board, the DTSC and the EPA.

Possible variations in the soil or groundwater conditions which may exist beyond the points explored in this investigation might affect the validity of this report unless those variations or conditions come to our attention and are reviewed and assimilated into the conclusions and recommendations of this report. Also, changes in the hydrologic conditions found could occur with time due to variations in rainfall, temperature, regional water usage, or other factors, any of which could affect this report.

The services performed by SEI have been conducted in a manner consistent with the levels of care and skill ordinarily exercised by professionals currently practicing under similar conditions in California. The absence of contamination on or beneath the property cannot be guaranteed by this report. SEI is not responsible for any contamination or hazardous material found on the property. No other warranty expressed or implied is made.

13.0 REFERENCES

1. Wilson, S.A. et all, "Analysis of Soil Samples from the San Joaquin Valley of California", United States Geological Survey (USGS), Open File Report 90-214, undated.

2. Assembly Bill No. 2644, Chapter 443, State of California, September 14, 2000.

3. DTSC, Final DTSC PEA Guidance Manual dated October 2015.

4. DTSC Interim Guidance for Sampling Agricultural Land (Third Revision) dated August 7, 2008.

5. DTSC, Interim Guidance Evaluation of School Sites with Potential Soil Contamination as a Result of Lead from Lead-Based Paint, Organochlorine Pesticides from termiticides and Polychlorinated Biphenyls from Electrical Transformers (revised June 9, 2006).

6. DTSC, Arsenic Strategies, Determination of Arsenic Remediation Development of Arsenic Cleanup Goals for Proposed and Existing School Sites, March 21, 2007.

7. DTSC, CA EPA, LA & SF RWQCB, Final Advisory Active Soil Gas Investigations dated July 2015.

8. DTSC, HUMAN AND ECOLOGICAL RISK OFFICE (HERO), HHRA Note Number 3, August 2017.

9. DTSC, HUMAN AND ECOLOGICAL RISK OFFICE (HERO), HHRA Note Number 2, May 2009.

10. DTSC, HUMAN AND ECOLOGICAL RISK OFFICE (HERO), HHRA Note Number 4, October, 26, 2016.

11. Office of Emergency and Remedial Response (OERR) Directive 9345.3-02 dated May 1991.

12. USGS, Reported Historic Asbestos Mines, Historic Asbestos Prospects, and other Natural Occurrences of Asbestos in California, Map Sheet 59.

13. EPA, Regional Screening Level (RSL) Resident Soil Table (TR=1E-6, HQ=1) May 2018.

14. SEI, Phase 1 Environmental Site Assessment for Proposed 18.44 Acre School Site, NE of Eucalyptus Dr. & Gargano St., Edison, CA., dated July 25, 2006.

TABLE 1
Soil Sample Analytical Results For Organo-Chlorine Pesticides (OCPs), Arsenic & PCBs
Proposed School Site - Edison School District
NE of Eucalyptus Road & Gorgano Road, Bakersfield, CA

CONSTITUENTS			FORMER ORCHARD AREA - COMPOSITE ON-SITE SOIL SAMPLES (0 to 6" depth)								DISCRETE SOIL SAMPLES (0-6", 2' - 2.5')																																Discrete Soil Samples Beneath Electrical Transformers	
Chlorinated Pesticides (EPA 8081A)	PQL (ug/kg)	DTSC SLs or EPA RSLs (ug/kg)	C1-3" (A,B, C)	C2-3" (A,B, C)	C3-3" (A,B, C)	C4-3" (A,B, C)	C5-3" (A,B, C)	C6-3" (A,B, C)	C7-3" (A,B, C)	C8-3" (A,B, C)	C1B-3"	C2B-3"	C3A-3"	C3A-2'	C3B-3"	C3B-2'	C3C-3"	C3C-2'	C3D-3"	C3D-2'	C4B-3"	C4E-3" (dup of C4B-3")	C4B-2'	C5A-3"	C5B-3"	C5D-3"	C6A-3"	C6B-3"	C6C-3"	C6C-2'	C6D-3"	C6D-2'	C7B-3"	C7B-2'	C7D-3"	C8A-3"	C8A-2'	C8B-3"	C8D-3" (Dup of C8B-3")	C8B-2'	C8C-3"	C8C-2'	T1-3"	T2-3"
Aldrin	4	39	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	NA	<4	<4	<4	<4	NA	<4	<4	<4	NA	NA
Alpha-BHC	4	86	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	NA	<4	<4	<4	<4	NA	<4	<4	<4	NA	NA
Beta-BHC	4	300	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	NA	<4	<4	<4	<4	NA	<4	<4	<4	NA	NA
Delta-BHC	4		<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	NA	<4	<4	<4	<4	NA	<4	<4	<4	NA	NA
Gamma-BHC, Lindane	4	570	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	NA	<4	<4	<4	<4	NA	<4	<4	<4	NA	NA
alpha-Chlordane	4	440**	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	NA	<4	<4	<4	<4	NA	<4	<4	<4	NA	NA
gamma-Chlordane	4	440**	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	NA	<4	<4	<4	<4	NA	<4	<4	<4	NA	NA
4,4'-DDD	4	1900	8.64	7.14	11.7	10.6	6.47	4.1	4.4	4.12	NA	NA	17.6	<4	11.5	<4	11.7	<4	11.7	<4	NA	NA	NA	6.47	6.05	9.72	<4	<4	12.9	<4	4.27	<4	5.85	NA	5.85	5.08	<4	<4	NA	<4	6.28	<4	NA	NA
4,4'-DDE	8	2000	668	482	777	567	233	197	237	238	NA	NA	1290	<8	785	<8	679	19.2	550	<8	NA	NA	NA	233	174	312	88.6	76	309	27.2	214	<8	232	NA	232	315	9.95	74.2	NA	<8	414	12	NA	NA
4,4'-DDT	8	1900	57.5	43.3	61.1	64.4	63.3	40.5	35.7	81.2	NA	NA	130	<8	60	<8	78	<8	56	<8	NA	NA	NA	63.3	74.4	91.4	25.8	<8	93.2	8.14	15	<8	29.2	NA	29.2	77.4	<8	25.4	NA	<8	68.6	<8	NA	NA
Dieldrin	4	34	14.6	11.7	16.5	15	21.8	24.3	31.1	31.6	NA	NA	28.8	<4	13.3	<4	21.9	<4	9.92	<4	NA	NA	NA	21.8	13.3	30.6	9.16	27	**42.8**	<4	14.3	<4	22.7	NA	22.7	**39.6**	<4	5.74	NA	<4	33.1	<4	NA	NA
Endosulfan I	8	470000	<8	<8	<8	<8	<8	<8	<8	<8	NA	NA	<8	<8	<8	<8	<8	<8	<8	<8	NA	NA	NA	<8	<8	<8	<8	<16	<8	<8	<8	<8	<8	NA	<8	<8	<8	<8	NA	<8	<8	<8	NA	NA
Endosulfan II	4		<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	NA	<4	<4	<4	<4	NA	<4	<4	<4	NA	NA
Endosulfan Sulfate	4		<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	NA	<4	<4	<4	<4	NA	<4	<4	<4	NA	NA
Endrin	4	19000	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	NA	<4	<4	<4	<4	NA	<4	<4	<4	NA	NA
Technical Chlordane	20	440**	<20	<20	<20	<20	<20	<20	<20	<20	NA	NA	<20	<20	<20	<20	<20	<20	<20	<20	NA	NA	NA	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	NA	<20	<20	<20	<20	NA	<20	<20	<20	NA	NA
Endrin Aldehyde	4		<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	NA	<4	<4	<4	<4	NA	<4	<4	<4	NA	NA
Endrin Ketone	12		<12	<12	<12	<12	<12	<12	<12	<12	NA	NA	<12	<12	<12	<12	<12	<12	<12	<12	NA	NA	NA	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	NA	<12	<12	<12	<12	NA	<12	<12	<12	NA	NA
Heptachlor	4	130	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	NA	<4	<4	<4	<4	NA	<4	<4	<4	NA	NA
Heptachlor epoxide	4	70	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	NA	NA	NA	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	NA	<4	<4	<4	<4	NA	<4	<4	<4	NA	NA
Methoxychlor	20	320000	<20	<20	<20	<20	<20	<20	<20	<20	NA	NA	<20	<20	<20	<20	<20	<20	<20	<20	NA	NA	NA	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	NA	<20	<20	<20	<20	NA	<20	<20	<20	NA	NA
Toxaphene	60	490	<60	<60	<60	<60	<60	<60	<60	<60	NA	NA	<60	<60	<60	<60	<60	<60	<60	<60	NA	NA	NA	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	NA	<60	<60	<60	<60	NA	<60	<60	<60	NA	NA
Metals (EPA 6010)	**mg/kg**	**mg/kg**																																										
Arsenic	2	0.11 *	NA	NA	NA	NA	NA	NA	NA	NA	11	9.62	NA	NA	14	12.7	NA	NA	NA	NA	13.2	12.4	8.28	NA	11.8	NA	NA	10.8	NA	NA	NA	NA	12.3	9.47	NA	NA	NA	9.37	9.93	NA	NA	NA	NA	NA
PCBs (EPA 8082)	**ug/kg**	**ug/kg**																																										
Aroclor-1016	50	4100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50	<50
Aroclor-1221	50	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50	<50
Aroclor-1232	50	170	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50	<50
Aroclor-1242	50	230	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50	<50
Aroclor-1248	50	230	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50	<50
Aroclor-1254	50	240	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50	<50
Aroclor-1260	50	240	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50	<50

Note : Results in ppb unless otherwise noted, ppb = parts per billion (ug/kg), ppm= parts per million (mg/kg), ND = None Detected, NA = Not Analyzed, PQL = Practical Quantitation Limit For Reporting Purposes. Bold = concentration > RSLs, RSLs = EPA Regional Screening Levels May 2018, * = compare arsenic concentrations to ambient background. ** = HHRA Note #3 August 2017 with DTSC Recommended Screening Levels (SLs). TPH = Total Petroleum Hydrocarbons, BTEX = Benzene, Toluene, Ethylbenzene & Xylenes, VOCs - Volatile Organic Compounds

TABLE 2 (2006 Results)
Soil Sample Analytical Results For Organo-Chlorine Pesticides (8081A) & PCB (8082)
Edison School District
NE Corner of Gargano & Eucalyptus, Bakersfield, CA

CONSTITUENTS		COMPOSITE ON-SITE SOIL SAMPLES (0 to 6" & 2' to 2.5' depth)						Discrete Soil Samples													
Chlorinated Pesticides (EPA 8081A)	PQL (ppb)	E1-3" (A,B,C, D)	E2-3" (A,B,C, D)	E3-3" (A,B,C, D)	E4-3" (A,B,C, D)	E1-2' (A,B,C, D)	E4-2' (A,B,C, D)	E1A-3"	E1B-3"	E1C-3"	E1D-3"	E4A-3"	E4A-2'	E4B-3"	E4B-2'	E4C-3"	E4C-2'	E4D-3"	E4D-2'	S1-3"	T1-3"
4,4'-DDD	4	27.5	21.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
4,4'-DDE	4	1020	724	322	256	276	1340	1210	684	1450	1020	221	34.7	373	472	578	679	493	ND	ND	NA
4,4'-DDT	4	257	212	158	177	68.2	199	ND	ND	241	113	158	ND	78.2	60.9	248	290	95.8	ND	36	NA
Aldrin	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Alpha-BHC	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Beta-BHC	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
alpha-Chlordane	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
gamma-Chlordane	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Delta-BHC	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Dieldrin	4	44.9	28.7	46	58.3	ND	ND	ND	ND	ND	ND	38.7	ND	47.3	ND	101	ND	ND	ND	ND	NA
Endosulfan I	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Endosulfan II	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Endosulfan Sulfate	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Endrin	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Endrin Aldehyde	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Endrin Ketone	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Gamma-BHC, Lindane	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Heptachlor	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Heptachlor epoxide	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Methoxychlor	15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Toxaphene	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
PCB's (8082)	250 ppb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	All ND

Note : Results in ppb unless otherwise noted, ppb = parts per billion (ug/kg), ppm= parts per million (mg/kg), ND = None Detected, NA = Not Analyzed, PQL = Practical Quantitation Limit For Reporting Purposes

TABLE 2A

Soil Sample Analytical Results For CAM-17 Metals
Edison School District
NE Corner of Gargano & Eucalyptus, Bakersfield, CA

CONSTITUENTS (EPA Method)		DISCRETE SOIL SAMPLES (0 to 3", 2' to 2.5' depth)					Background From Off-Site (KHSD #1)					COMPARISON OF ON-SITE & BACKGROUND METAL CONCENTRATIONS		
CAM-Metals (6010/7471)	PQL (ppm)	E1B-3"	E2B-3"	E3B-3"	E4B-3"	S1-3"	BK1-5'	BK2-5'	BK3-5'	BK4-5'	BK5-5' (Dup. Of BK2-5')	On-Site Mean Concen-tration	0 to 6" Back-ground Concen-tration Range	Metal Eliminated As Chemical Of Concern?
Antimony, Sb	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<10	<10	Yes
Arsenic, As	1	10.4	9.57	10.8	13.3	12.1	8.62	10.6	14.4	9.07	15.7	11.23	8.62 to 15.7	Yes
Barium, Ba	1	95.7	65.5	89.6	109	140	161	178	112	70.8	126	99.96	70.8 to 178	Yes
Beryllium, Be	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<1.0	<1	Yes
Cadmium, Cd	1	ND	ND	ND	ND	ND	1	1.41	ND	ND	ND	0.00	1 to 1.41	Yes
Chromium, Cr	1	14.3	10.7	15.6	16.6	22.8	14.6	21	14.4	13.2	13.3	16.00	13.2 to 21	Yes
Cobalt, Co	1	4.37	4.45	5.71	6.11	8.16	6.65	8.85	6.81	6.87	6.21	5.76	6.21 to 8.85	Yes
Copper, Cu	1	23.9	13.7	28.8	21.7	31.4	12.8	19.1	12.2	13.4	15.8	23.90	12.2 to 19.1	No
Lead, Pb	1	13.9	5.46	11	13.4	23.5	4.66	6.97	4.58	3.29	3.62	13.45	3.29 to 6.97	No
Mercury, Hg	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.1	<0.1	Yes
Molybdenum, Mo	5	ND	ND	ND	ND	ND	1.79	2.9	2.28	1.84	2.33	0.00	1.79 to 2.9	Yes
Nickel, Ni	2	10.1	7.25	12.7	12.1	17	11.6	16	10.4	12.4	11.2	11.83	11.2 to 16	Yes
Selenium, Se	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<1	<1	Yes
Silver, Ag	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<1	<1	Yes
Thallium, Tl	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<1	<1	Yes
Vanadium, V	1	22.2	20	27	29.8	33.1	36	42.4	38.7	24.8	44.4	26.42	24.8 to 44.4	Yes
Zinc, Zn	5	144	56.5	156	186	308	45.1	68.7	48.9	37.8	49.1	170.10	37.8 to 68.7	No

Note : Results in ppm unless otherwise noted, ppm = parts per million (mg/kg), ND = None Detected, NA = Not Analyzed, PQL = Practical Quantitation Limit for Reporting, ppb = parts per billion. Metal eliminated as chemical of concern if on-site mean is within background range, **Bold** = Elevated concentration

TABLE 3
EXPOSURE PATHWAY ANALYSIS FOR ECOLOGICAL SCREENING EVALUATION
Edison School District - Proposed School Site
NE of Eucalyptus Dr. & Gargano St. in Bakersfield, CA.

Habitat Type	Potential Classes of Contaminants	Potentially Contaminated Media	Food Web Exposure	Potential Exposure Pathway	Complete Exposure Pathway
Former Citrus Orchard (mainly dirt surface)	Pesticides, Herbicides, Heavy Metals	Soil		Direct Ingestion	No
	Pesticides, Herbicides, Heavy Metals	Soil	Invertebrates to Mouse	Ingestion of prey	No
	Pesticides, Herbicides, Heavy Metals	Soil		Inhalation of Dust	No

TABLE 4

$Risk_{soil}$ and $Hazard_{soil}$ Calculations

Potential School, NE of Eucalyptus Dr. & Gargano St., in Bakersfield, CA

Chemical of Concern (COC)	EPA RSLs Residential Soils (mg/kg) or DTSC Mod. RSLs	HHRA Note #3 Residential Soils (mg/kg)	SF_o	C_s	CONSTANT 0.00000144	CONSTANT 0.00000462	ABS	$Risk_{soil}$	RfDo	CONSTANT 0.0000128	CONSTANT 0.000037	$Hazard_{soil}$
Arsenic	0.11	Use DTSC SL	1.50	**14**	0.00000144	0.00000462	0.03	NA	3.0E-04	0.0000128	3.7E-05	NA
4,4'-DDD	1.9	Use EPA	0.34	0.017	0.00000144	0.00000462	0.1	1.1E-08	5.0E-04	0.0000128	3.7E-05	0.00056
4,4'-DDE	2	Use EPA	0.34	1.29	0.00000144	0.00000462	0.1	8.3E-07	5.0E-04	0.0000128	3.7E-05	0.04257
4,4'-DDT	1.9	Use EPA	0.34	0.13	0.00000144	0.00000462	0.1	8.4E-08	5.0E-04	0.0000128	3.7E-05	0.00429
Dieldrin	0.034	Use EPA	16.00	**0.0428**	0.00000144	0.00000462	0.1	**1.302E-06**	5.00E-05	0.0000128	3.70E-05	0.01412
TOTALS								**2.2E-06**				0.0615

Notes: C_s = Concentration in soil in ppm, ppm =parts per million (mg/kg), Sfo = Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$, ABS = Absorption Fraction, Arsenic eliminated in comparison to background concentrations,
RfDo = Oral Reference Dose (mg/kg-day), NA = Data Not Available, Risksoil = (Sfo x Cs x (1.44 x 10-6)) + (Sfo x Cs x (4.62 x 10-6) x ABS), **Bold** = Elevated Result
$Hazard_{soil}$ = ((Cs/RfDo) x (1.28 x 10-5)) + ((Cs/RfDo) x (3.7 x 10-5) x ABS), HHRA = Human Health Risk Assessment, Note #3 August, 2017, RSL = EPA Regional Screening Levels 5-2018 Summary

TABLE 5
$Risk_{air}$ and $Hazard_{air}$ Calculations
Potential School, NE of Eucalyptus Dr. & Gargano St., in Bakersfield, CA

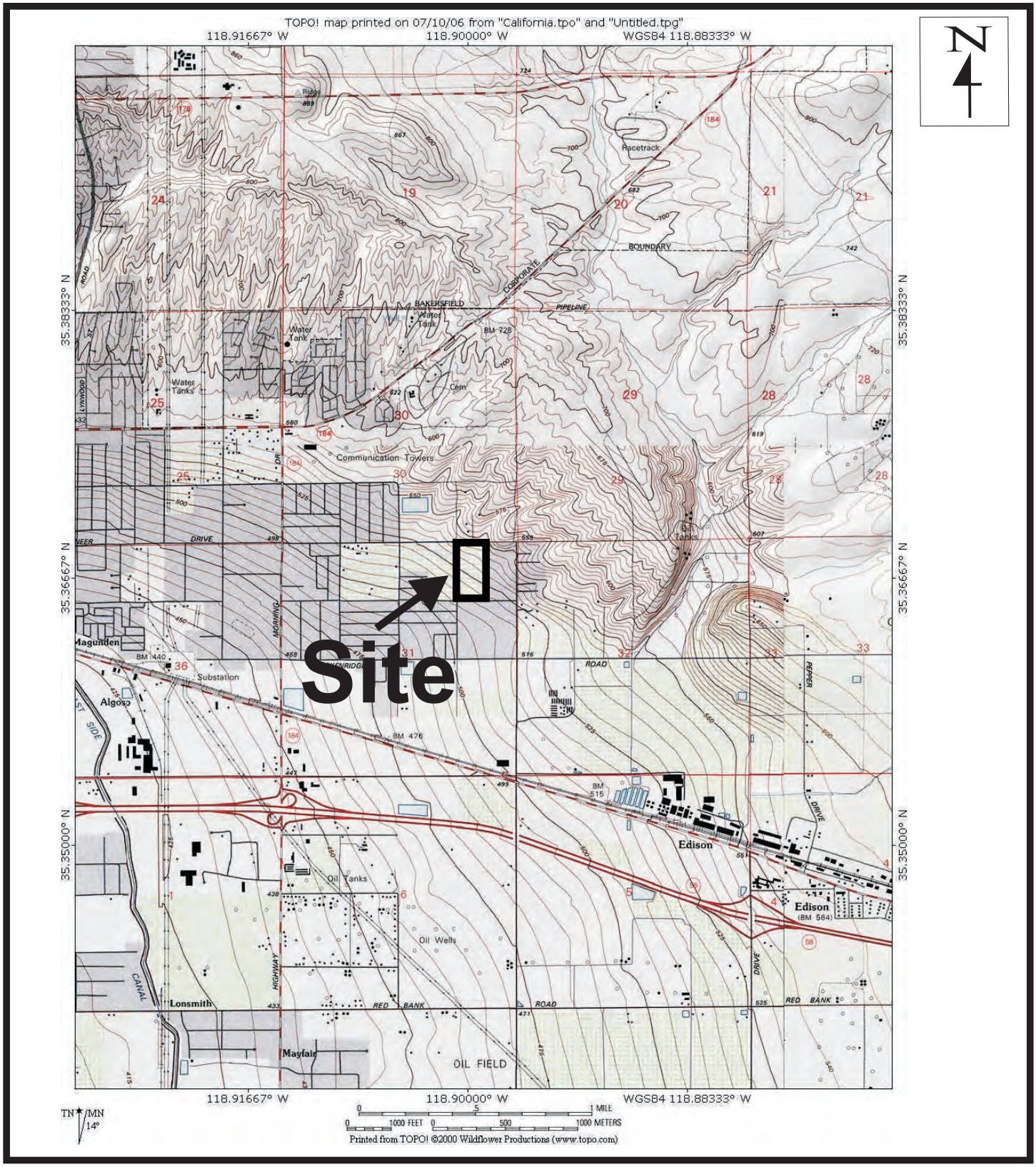
Constituent	EPA RSL's (ug/m3)	HHRA Indoor Air Residential (ug/m3)	IUR	C_s	CONSTANT 0.356	C_a	CONSTANT 1.36E6	$Risk_a$	RfC	CONSTANT 0.000959	$Hazard_a$
4,4'-DDD	0.029	Use EPA	9.70E-05	0.017	0.356	1.3E-08	1.36E+06	4.3E-13	NA	0.000959	NA
4,4'-DDE	0.029	Use EPA	9.70E-05	1.29	0.356	9.5E-07	1.36E+06	3.3E-11	NA	0.000959	NA
4,4'-DDT	0.029	Use EPA	9.70E-05	0.13	0.356	9.6E-08	1.36E+06	3.3E-12	NA	0.000959	NA
Dieldrin	0.00061	Use EPA	0.0046	**0.0428**	0.356	3.1E-08	1.36E+06	5.2E-11	NA	0.000959	NA
Totals								8.8E-11			0.0E+00

Notes: C_s = Maximum concentration in soil in ppm, ppm =parts per million (mg/kg), Ca = Concentration in Air ug/m^3 = (C_s/1.36E9 (default PEF) x 1000 ug/mg), IUR = Inhalation Unit Risk Factor (ug/m3)$^{-1}$, RfC = Reference Concentration (mg/m3), $Risk_a$ = IUR x C_a x 0.356, $Hazard_a$ = 1/(RfC) x CA x 0.000959, NA = Not Applicable. Equations are from Figures 2-8, 2-9 and 2-10 of PEA Guidance Manual January 1994 (Revised October 2015).

TABLE 6 Cumulative Risk and Hazard Calculations Potential School, NE of Eucalyptus Dr. & Gargano St., in Bakersfield, CA		
Cumulative Risk Calculation		
Total Risk Soil Pathway (From Table 3)		2.2E-06
Total Risk Air Pathway (From Table 4)	+	8.8E-11
Total Cumulative Risk All Pathways		**2.2E-06**
Cumulative Hazard Calculation		
Total Hazard Soil Pathway (From Table 3)		0.06
Total Hazard Air Pathway (From Table 4)	+	0.0000
Total Cumulative Hazard All Pathways		**0.06**

TABLE 7
COMPARISON OF ARSENIC CONCENTRATIONS AT SCHOOL SITES IN EASTERN BAKERSFIELD, ARVIN & LAMONT UNDERGOING OR HAVE COMPLETED PEA's

SITE NAME (Location is East Bakersfield Area unless otherwise noted)	ON-Site Total Arsenic Range (mg/kg)	On-Site Mean Concentration (mg/kg)	Background Range (mg/kg) Most at 5' Depth
KHSD - Golden Valley	2.9 to 11	4.94	3.5 to 5.6
KHSD - Site 1 (2004 Bond) Fairfax & Redbank	6.03 to **24.6**	10.74	8.6 to 15.7
Arvin SD - Myers & El Camino Elementary-Arvin	9.9 to 19.8	12.82	12 to18
KHSD - Cont. HS, E. Belle Terrace & Mt. Vernon	8.93 to 12.6	11.44	8.62 to 15.7
GUSD - Mid #4 & Elem, Cottonwood & Panama Ln	2.7 to 8.75	5.95	3.5 to 5.6
Fairfax & Zephyr	3.06 to 16.3	5.52	8.6 to 15.7
Lamont SD - Proposed School Site	9.21 to **30.2**	**20.4**	9.1 to 14 (6')
Edison SD - Proposed School Site	9.37 to 14	11.14	NA
Overall PEA Site Averages & Ranges	1 to **30.2**	10.37	3.5 to 18
Bold = Elevated Concentration Requiring Remedial Action or Above Normal Background			



SOILS ENGINEERING, INC.
4400 Yeager Way
Bakersfield, CA 93313
(661) 831 - 5100

DATE: 12/18
PROJECT: 16901

Edison Elementary School District
NE corner of Eucalyptus Dr. and Gargano St.
Edison, CA

Location Map

PLATE

1

SOILS ENGINEERING, INC. 4400 Yeager Way Bakersfield, CA 93313 (661) 831 - 5100 DATE: 12/18 PROJECT: 16901	Edison Elementary School District NE corner of Eucalyptus Dr. and Gargano St. Edison, CA **PLOT PLAN**	PLATE 2

⬠ Soil Sample Location for OCPs & Arsenic (0 to 6" and 2' to 2.5')

✦ Soil Sample Location for PCBs (0 to 6" and 2' to 2.5')

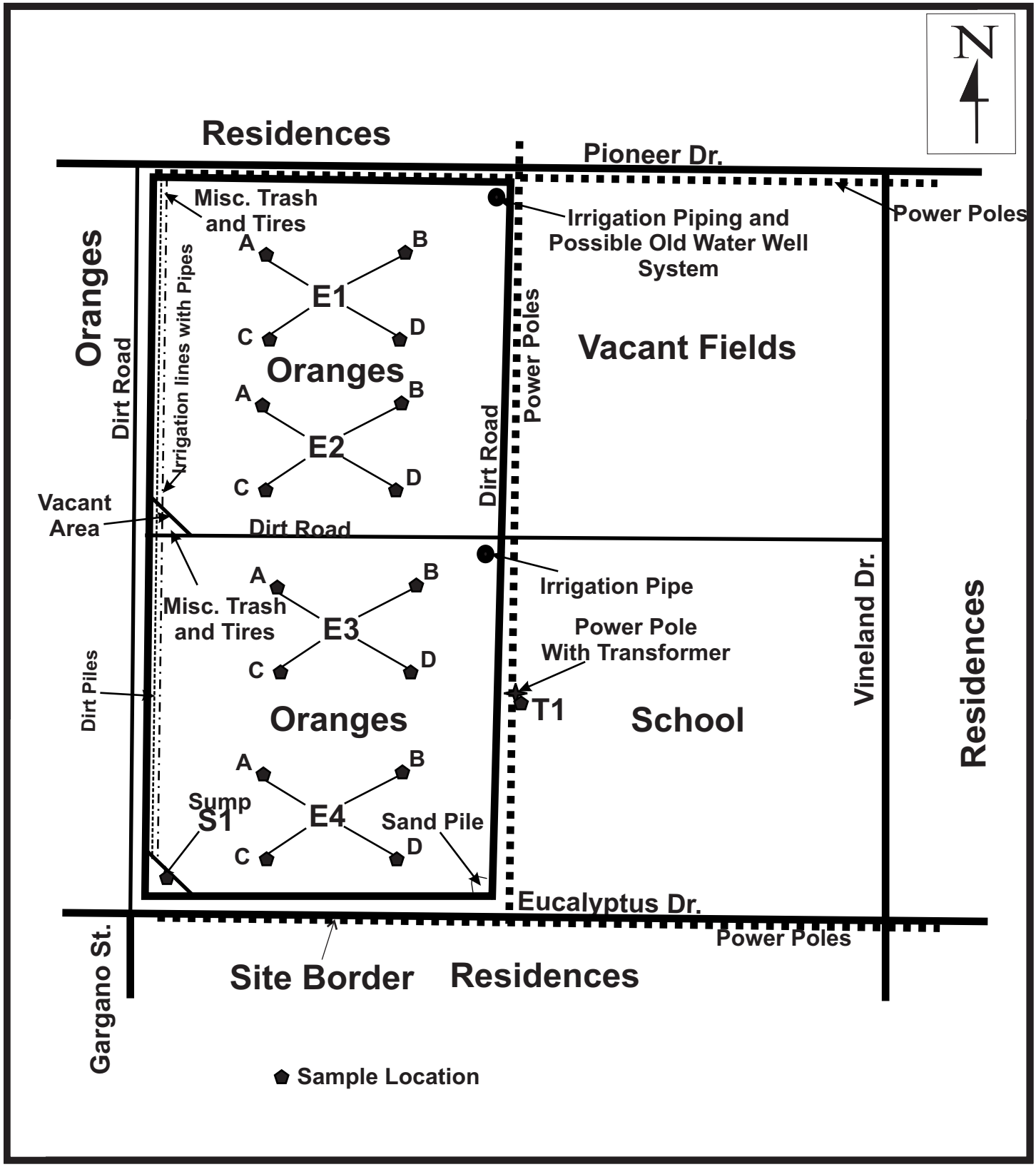
(-3"/-2') = Dieldrin Concentration in ug/kg in discrete soil samples

[#] = Dieldrin Concentration in ug/kg in 0 to 6" composite soil samples

Soil Sampling Map
Edison Elementary School District
NE corner of Eucalyptus Dr. and Gargano St.
Edison, CA

0 150' 300'
Approx. Scale

PLATE 2A



SOILS ENGINEERING, INC. 4400 Yeager Way Bakersfield, CA 93313 (661) 831 - 5100 DATE: 7/06 PROJECT: 11754e	Edison Elementary School District NE corner of Eucalyptus Dr. and Gargano St. Edison, CA **Sample Map (2006)**	PLATE **2B** No scale

SOILS ENGINEERING, INC. 4400 Yeager Way Bakersfield, CA 93313 (661) 831 - 5100 DATE: 12/18 PROJECT: 16901	Edison Elementary School District NE corner of Eucalyptus Dr. and Gargano St. Edison, CA **PHOTO MAP**	PLATE 3

Picture 1. Looking West from the SE portion of the site.

Picture 2. Looking North from the SE portion of the site.

Picture 3. Looking at a concrete box left over from irrigation system

Picture 4. Looking at 3 Transformers in SE area of the site.

Picture 5. Looking SW from the South-central portion of the site.

Picture 6. Looking SE from the West-Central Border

Picture 7. Looking northeast from the west-central area of the site.

Picture 8. Looking north from the west-central area of the site.

Picture 9. Looking at soil sampling activities..

Picture 10. Looking South-SE from the N-Central portion of the Site.

Picture 11. Looking East from the northwestern corner of the site.

Picture 12. Looking south from the northern portion of the site.

Picture 13. Looking West from the Eastern border of the site.

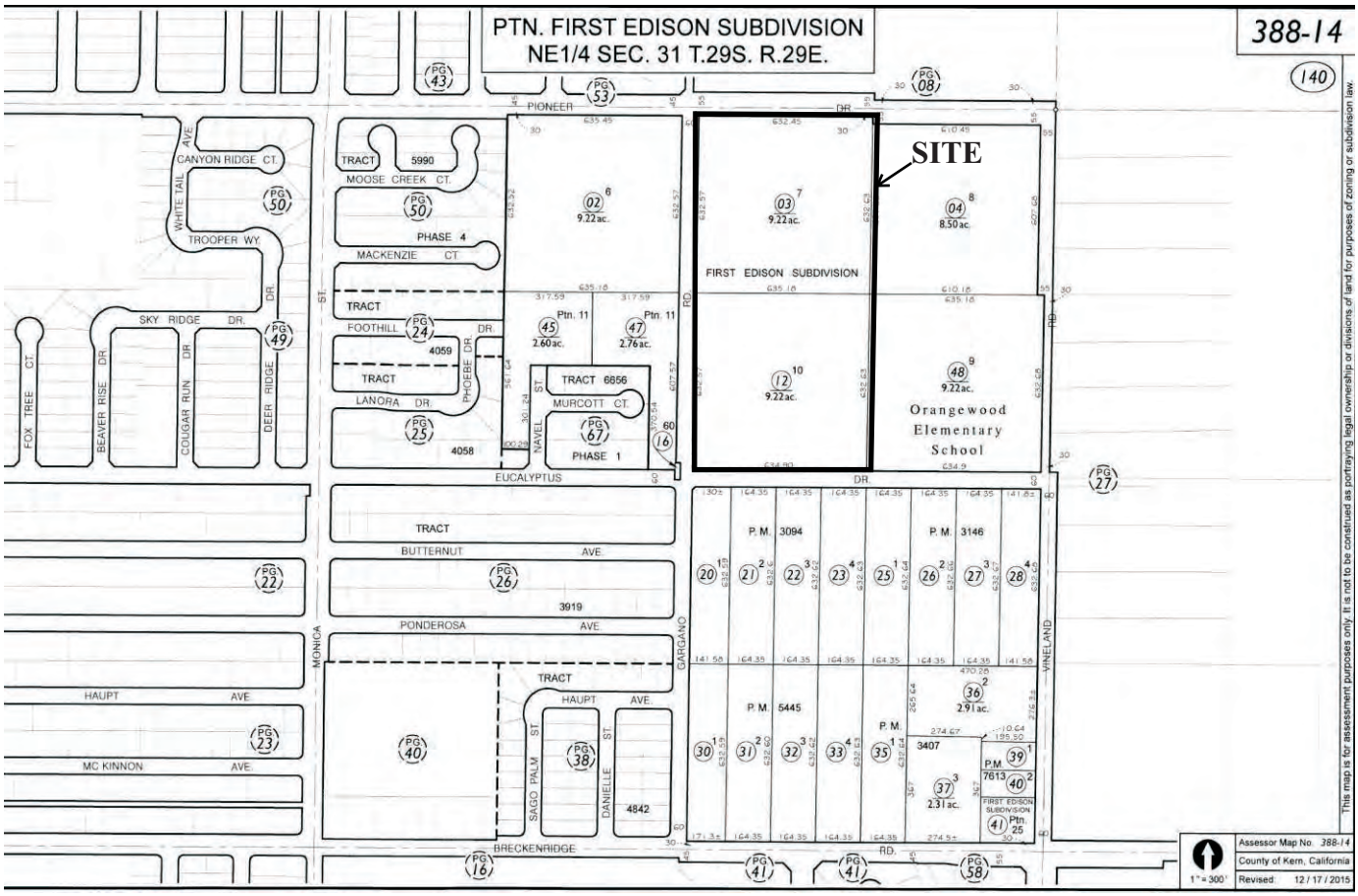
Picture 14. Looking North from the East-Central border of the site.

Picture 15. Looking South from the northeastern corner of the site.

Picture 16. Looking west from the NE corner of the site.

Picture 17. Looking North from the SW corner of the site.

Picture 18. Looking East from the SW corner of the site.



SOILS ENGINEERING, INC.
4400 Yeager Way
Bakersfield, CA 93313
(661) 831 - 5100

DATE: 12/18
PROJECT: 16901

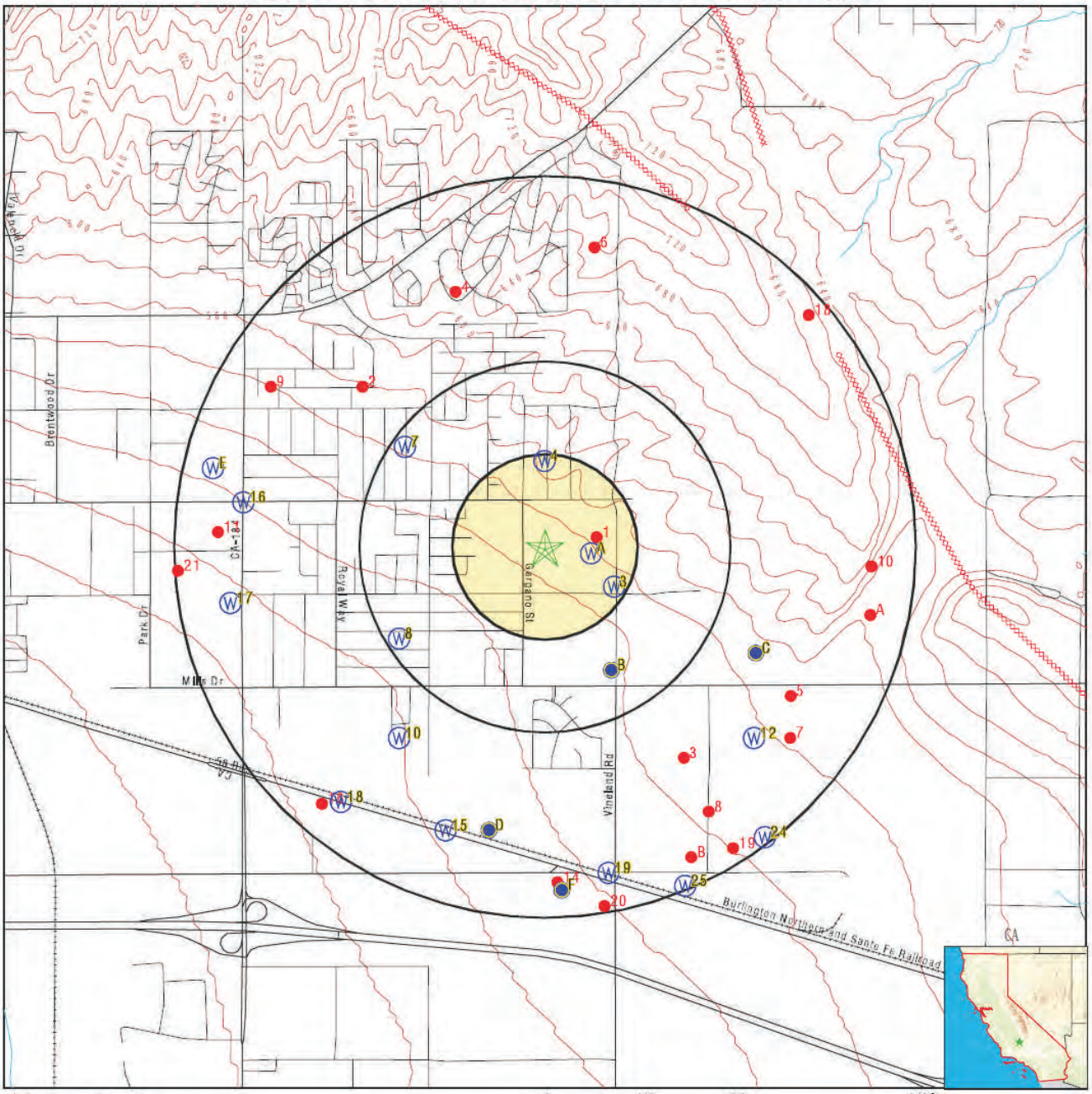
Edison Elementary School District
NE corner of Eucalyptus Dr. and Gargano St.
Edison, CA

Assessors Map

PLATE

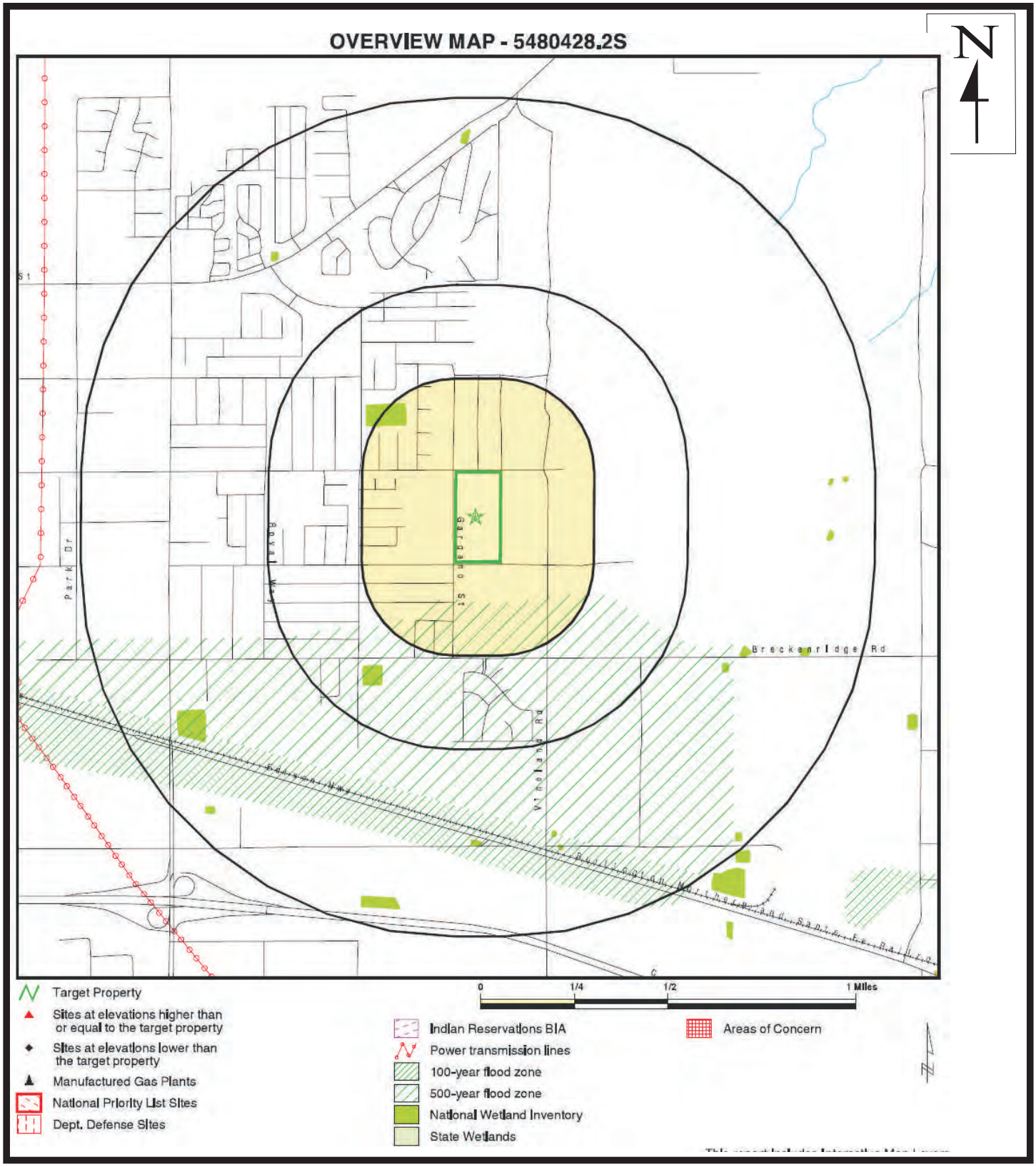
4

PHYSICAL SETTING SOURCE MAP - 5480428.2s

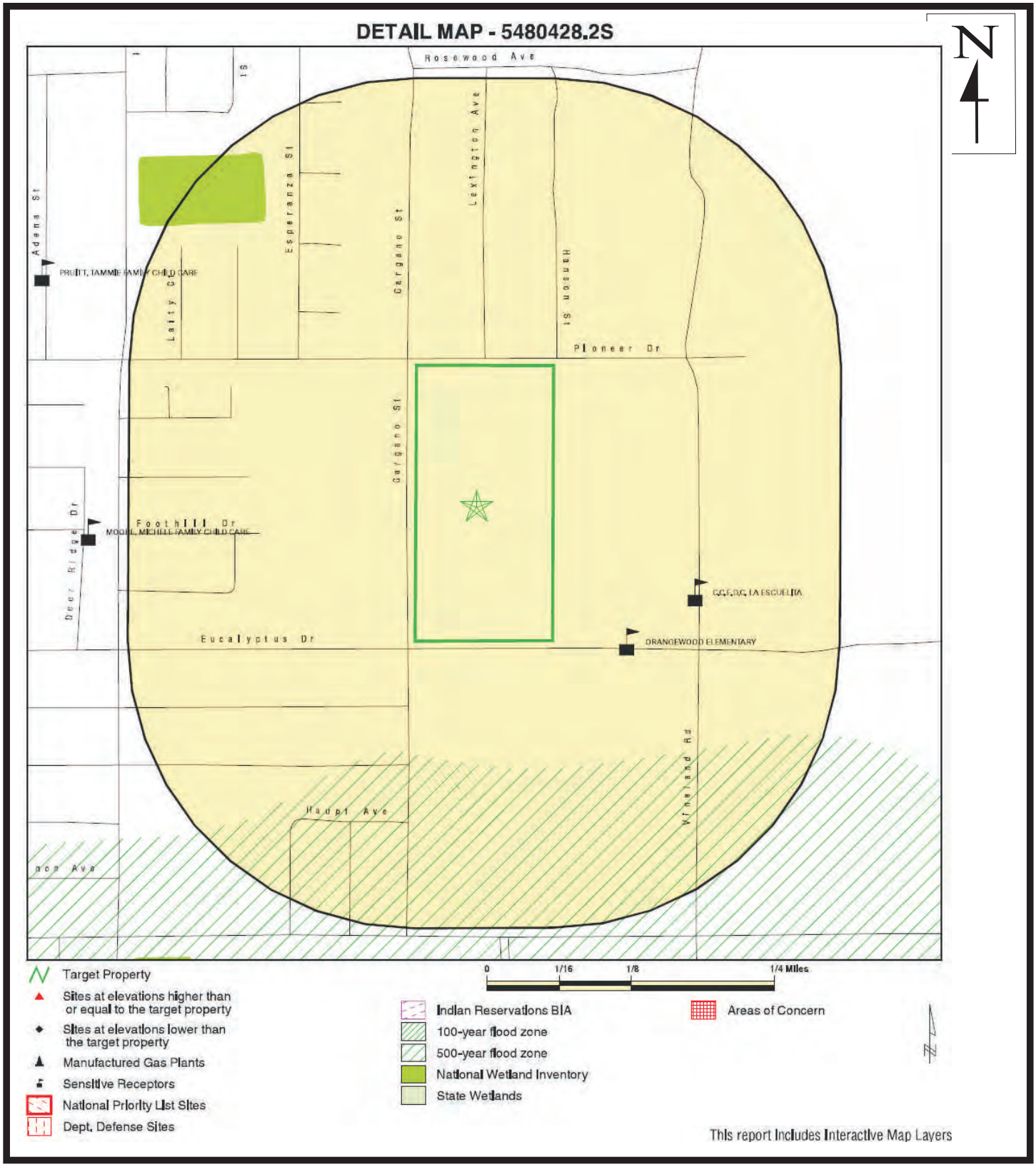


County Boundary
Major Roads
Contour Lines
Earthquake Fault Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons
Groundwater Flow Direction
Indeterminate Groundwater Flow at Location
Groundwater Flow Varies at Location
Closest Hydrogeological Data
Oil, gas or related wells

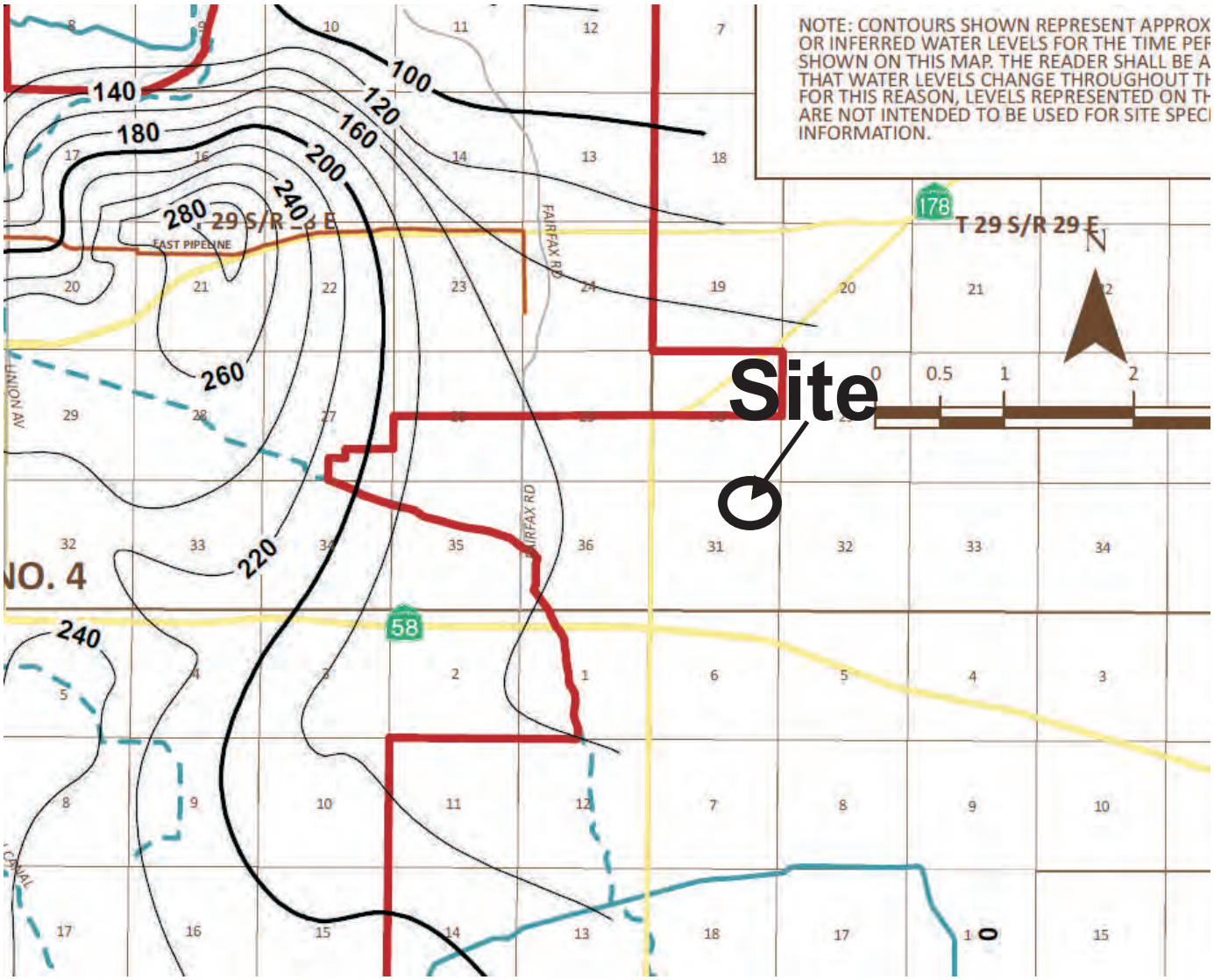
SOILS ENGINEERING, INC. **4400 Yeager Way** **Bakersfield, CA 93313** **(661) 831 - 5100** DATE: 12/18 PROJECT: 16901	**Edison Elementary School District** **NE corner of Eucalyptus Dr. and Gargano St.** **Edison, CA** **Physical Setting Source Map**	**PLATE** **5**



SOILS ENGINEERING, INC. **4400 Yeager Way** **Bakersfield, CA 93313** **(661) 831 - 5100** DATE: 12/18 PROJECT: 16901	**Edison Elementary School District** **NE corner of Eucalyptus Dr. and Gargano St.** **Edison, CA** **Overview Map**	**PLATE** **6**

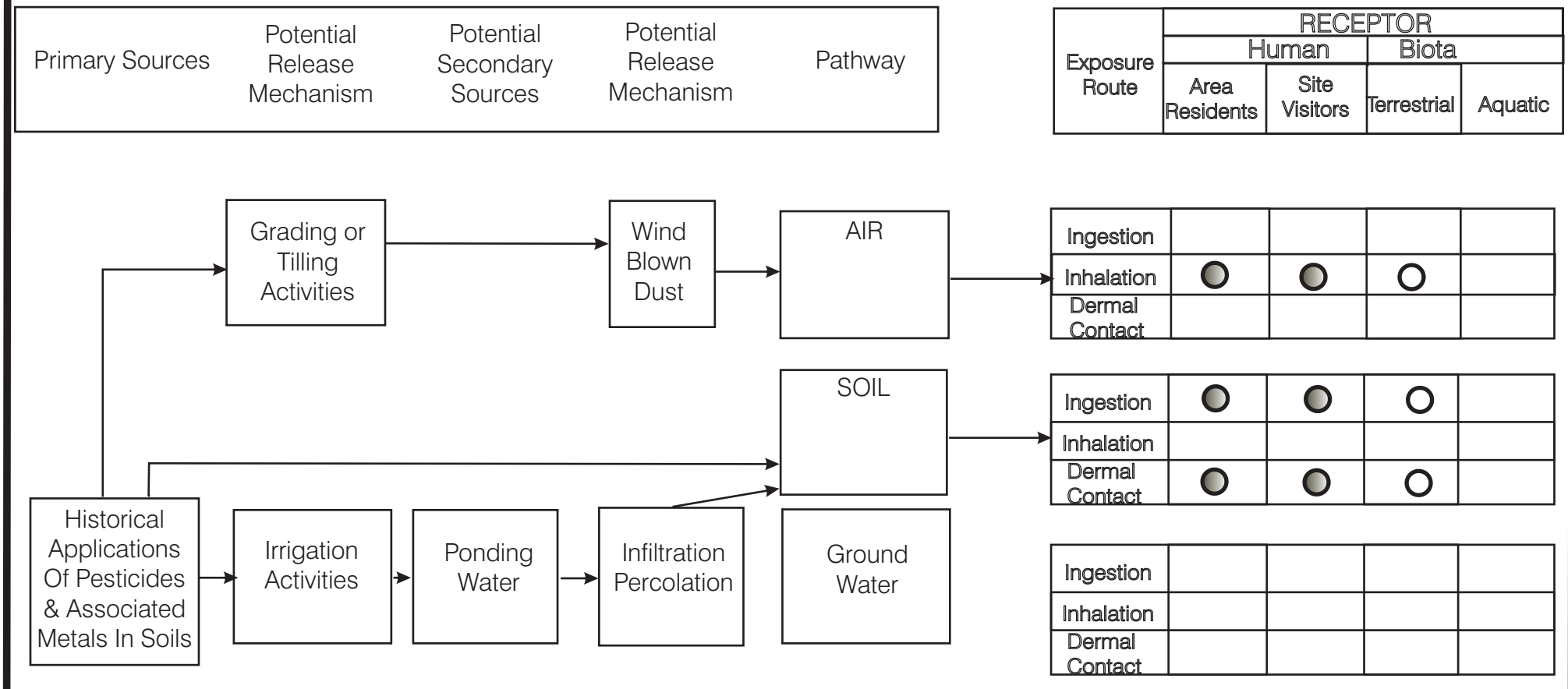


SOILS ENGINEERING, INC. **4400 Yeager Way** **Bakersfield, CA 93313** **(661) 831 - 5100** DATE: 12/18 PROJECT: 16901	**Edison Elementary School District** **NE corner of Eucalyptus Dr. and Gargano St.** **Edison, CA** **Detail Map**	**PLATE** **7**



SOILS ENGINEERING, INC. **4400 Yeager Way** **Bakersfield, CA 93313** **(661) 831-5100** DATE: 12/18 PROJECT: 16901	**Edison Elementary School District** **NE corner of Eucalyptus Dr. and Gargano St.** **Edison, CA** Depth To Water Map	**PLATE** **8**

SOILS ENGINEERING, INC. **4400 Yeager Way** **Bakersfield, CA 93313** **(661) 831 - 5100** DATE: 12/18 PROJECT: 16901	**Edison Elementary School District** **NE corner of Eucalyptus Dr. and Gargano St.** **Edison, CA** DOGGR Oil Well Map	**PLATE** 9



SOILS ENGINEERING INC.
4400 Yeager Way
Bakersfield, CA.

File No. 18-16901
December 2018

Conceptual Site Model Diagram
Proposed School Site
NE of Eucalyptus Dr. And Gargano St.
Bakersfield, CA.

PLATE 10

Appendix A

Analytical Reports and Chain of Custody Documents

POSITIVE
LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

November 15, 2018

Mr. Robert Becker
Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Report No.: 1811097
Project Name: 16901 ESD / P.O. # 16901-POS

Dear Mr. Robert Becker,

This report contains the analytical results for the sample(s) received under chain of custody(s) by Positive Lab Service on November 09, 2018.

The test results in this report are performed in compliance with ELAP accreditation requirements for the certified parameters. The laboratory report may not be produced, except in full, without the written approval of the laboratory.

The issuance of the final Certificate of Analysis takes precedence over any previous Preliminary Report. Preliminary data should not be used for regulatory purposes. Authorized signature(s) is provided on final report only.

If you have any questions in reference to this report, please contact your Positive Lab Service coordinator.

Project Manager

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 11/15/18
Submitted: 11/09/18
PLS Report No.: 1811097

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C5A-3", C5B-3", C5C-3", C5D-3" Composite Soil (1811097-01) Sampled: 11/08/18 14:00 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
4,4´-DDD	**6.47**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
4,4´-DDE	**233**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
4,4´-DDT	**63.3**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Dieldrin	**21.8**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*67.9 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*11/12/18*	*11/13/18*	*ai*	*BK81319*
Surrogate: Decachlorobiphenyl	*72.5 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*11/12/18*	*11/13/18*	*ai*	*BK81319*

Sample ID: C6A-3", C6B-3", C6C-3", C6D-3" Composite Soil (1811097-02) Sampled: 11/08/18 14:45 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
4,4´-DDD	**4.10**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
4,4´-DDE	**197**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
4,4´-DDT	**40.5**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Dieldrin	**24.3**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

File #:73443
Report Date: 11/15/18
Submitted: 11/09/18
PLS Report No.: 1811097

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C6A-3", C6B-3", C6C-3", C6D-3" Composite Soil (1811097-02) Sampled: 11/08/18 14:45 Received: 11/09/18 11:30

Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*63.5 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*11/12/18*	*11/13/18*	*ai*	*BK81319*
Surrogate: Decachlorobiphenyl	*83.5 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*11/12/18*	*11/13/18*	*ai*	*BK81319*

Sample ID: C7A-3", C7B-3", C7C-3", C7D-3" Composite Soil (1811097-03) Sampled: 11/08/18 13:05 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test	Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
4,4´-DDD	**4.40**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
4,4´-DDE	**237**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
4,4´-DDT	**35.7**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Dieldrin	**31.1**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*67.1 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*11/12/18*	*11/13/18*	*ai*	*BK81319*
Surrogate: Decachlorobiphenyl	*81.8 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*11/12/18*	*11/13/18*	*ai*	*BK81319*

Sample ID: C8A-3", C8B-3", C8C-3" Composite Soil (1811097-04) Sampled: 11/08/18 11:30 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test	Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
4,4´-DDD	**4.12**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
4,4´-DDE	**238**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
4,4´-DDT	**81.2**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Dieldrin	**31.6**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319

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Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 11/15/18
Submitted: 11/09/18
PLS Report No.: 1811097

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C8A-3", C8B-3", C8C-3" Composite Soil (1811097-04) Sampled: 11/08/18 11:30 Received: 11/09/18 11:30

Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/12/18	11/13/18	ai	BK81319
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*64.1 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*11/12/18*	*11/13/18*	*ai*	*BK81319*
Surrogate: Decachlorobiphenyl	*86.5 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*11/12/18*	*11/13/18*	*ai*	*BK81319*

Sample ID: C5B-3" Soil (1811097-05) Sampled: 11/08/18 13:35 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**11.8**		1	mg/kg	2.00	EPA 3050B	EPA 6010B	11/14/18	11/14/18	CG	BK81508

Sample ID: C6B-3" Soil (1811097-06) Sampled: 11/08/18 14:40 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**10.8**		1	mg/kg	2.00	EPA 3050B	EPA 6010B	11/14/18	11/14/18	CG	BK81508

Sample ID: T1-3" Soil (1811097-07) Sampled: 11/08/18 10:50 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	11/12/18	11/13/18	ai	BK81416
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	11/12/18	11/13/18	ai	BK81416
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	11/12/18	11/13/18	ai	BK81416
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	11/12/18	11/13/18	ai	BK81416
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	11/12/18	11/13/18	ai	BK81416
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	11/12/18	11/13/18	ai	BK81416
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	11/12/18	11/13/18	ai	BK81416
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*64.9 %*			*54-131*		*EPA 3550C*	*EPA 8082*	*11/12/18*	*11/13/18*	*ai*	*BK81416*
Surrogate: Decachlorobiphenyl	*91.1 %*			*53-131*		*EPA 3550C*	*EPA 8082*	*11/12/18*	*11/13/18*	*ai*	*BK81416*

Sample ID: C7B-3" Soil (1811097-08) Sampled: 11/08/18 12:35 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**12.3**		1	mg/kg	2.00	EPA 3050B	EPA 6010B	11/14/18	11/14/18	CG	BK81508

Sample ID: C8B-3" Soil (1811097-09) Sampled: 11/08/18 10:26 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**9.37**		1	mg/kg	2.00	EPA 3050B	EPA 6010B	11/14/18	11/14/18	CG	BK81508

Sample ID: C8D-3" Soil (1811097-10) Sampled: 11/08/18 10:26 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**9.93**		1	mg/kg	2.00	EPA 3050B	EPA 6010B	11/14/18	11/14/18	CG	BK81508

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(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 11/15/18
Submitted: 11/09/18
PLS Report No.: 1811097

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BK81319 - EPA 3550C										
Blank	**Prepared & Analyzed: 11/12/18**									
Aldrin	ND	2.00	ug/kg							
alpha-BHC	ND	2.00	ug/kg							
beta-BHC	ND	2.00	ug/kg							
delta-BHC	ND	2.00	ug/kg							
gamma-BHC (Lindane)	ND	2.00	ug/kg							
alpha-Chlordane	ND	2.00	ug/kg							
gamma-Chlordane	ND	2.00	ug/kg							
4,4´-DDD	ND	2.00	ug/kg							
4,4´-DDE	ND	4.00	ug/kg							
4,4´-DDT	ND	4.00	ug/kg							
Dieldrin	ND	2.00	ug/kg							
Endosulfan I	ND	4.00	ug/kg							
Endosulfan II	ND	2.00	ug/kg							
Endosulfan sulfate	ND	2.00	ug/kg							
Endrin	ND	2.00	ug/kg							
Technical Chlordane	ND	10.0	ug/kg							
Endrin aldehyde	ND	2.00	ug/kg							
Endrin ketone	ND	6.00	ug/kg							
Heptachlor	ND	2.00	ug/kg							
Heptachlor epoxide	ND	2.00	ug/kg							
Methoxychlor	ND	10.0	ug/kg							
Toxaphene	ND	30.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*8.15*		ug/kg	*12.50*		*65.2*	*55-126*			
Surrogate: Decachlorobiphenyl	*7.40*		ug/kg	*12.50*		*59.2*	*49-133*			
LCS	**Prepared & Analyzed: 11/12/18**									
Aldrin	7.83	2.00	ug/kg	10.00		78.3	56-130			
gamma-BHC (Lindane)	6.86	2.00	ug/kg	10.00		68.6	56-133			
4,4´-DDT	6.25	4.00	ug/kg	10.00		62.5	56-133			
Dieldrin	7.50	2.00	ug/kg	10.00		75.0	62-119			
Endrin	6.97	2.00	ug/kg	10.00		69.7	59-127			
Heptachlor	6.80	2.00	ug/kg	10.00		68.0	55-110			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*8.81*		ug/kg	*12.50*		*70.5*	*54-108*			
Surrogate: Decachlorobiphenyl	*8.91*		ug/kg	*12.50*		*71.3*	*54-127*			
Matrix Spike **Source: 1811083-01**	**Prepared: 11/12/18 Analyzed: 11/13/18**									
Aldrin	7.53	4.00	ug/kg	10.00	ND	75.3	39-124			
gamma-BHC (Lindane)	5.68	4.00	ug/kg	10.00	ND	56.8	44-120			
4,4´-DDT	13.7	8.00	ug/kg	25.00	ND	54.9	48-150			
Dieldrin	16.4	4.00	ug/kg	25.00	ND	65.5	48-144			
Endrin	18.8	4.00	ug/kg	25.00	ND	75.1	54-149			

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Bakersfield, CA 93313

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BK81319 - EPA 3550C										
Heptachlor	5.90	4.00	ug/kg	10.00	ND	59.0	46-135			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*7.25*		ug/kg	*12.50*		*58.0*	*55-126*			
Surrogate: Decachlorobiphenyl	*10.0*		ug/kg	*12.50*		*80.0*	*49-133*			
Matrix Spike Dup Source: 1811083-01	**Prepared: 11/12/18 Analyzed: 11/13/18**									
Aldrin	7.49	4.00	ug/kg	10.00	ND	74.9	39-124	0.519	30	
gamma-BHC (Lindane)	5.87	4.00	ug/kg	10.00	ND	58.7	44-120	3.24	30	
4,4´-DDT	14.2	8.00	ug/kg	25.00	ND	56.8	48-150	3.41	30	
Dieldrin	16.9	4.00	ug/kg	25.00	ND	67.5	48-144	3.03	30	
Endrin	18.7	4.00	ug/kg	25.00	ND	74.7	54-149	0.438	30	
Heptachlor	6.07	4.00	ug/kg	10.00	ND	60.7	46-135	2.89	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*7.55*		ug/kg	*12.50*		*60.4*	*55-126*			
Surrogate: Decachlorobiphenyl	*10.1*		ug/kg	*12.50*		*81.1*	*49-133*			
Batch BK81416 - EPA 3550C										
Blank	**Prepared: 11/12/18 Analyzed: 11/13/18**									
Aroclor-1016	ND	50.0	ug/kg							
Aroclor-1221	ND	50.0	ug/kg							
Aroclor-1232	ND	50.0	ug/kg							
Aroclor-1242	ND	50.0	ug/kg							
Aroclor-1248	ND	50.0	ug/kg							
Aroclor-1254	ND	50.0	ug/kg							
Aroclor-1260	ND	50.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*7.78*		ug/kg	*12.50*		*62.2*	*54-131*			
Surrogate: Decachlorobiphenyl	*6.69*		ug/kg	*12.50*		*53.5*	*53-131*			
LCS	**Prepared: 11/12/18 Analyzed: 11/13/18**									
Aroclor-1260	217	50.0	ug/kg	312.5		69.3	60-129			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*7.74*		ug/kg	*12.50*		*61.9*	*57-136*			
Surrogate: Decachlorobiphenyl	*6.66*		ug/kg	*12.50*		*53.3*	*53-141*			
Matrix Spike Source: 1811097-07	**Prepared: 11/12/18 Analyzed: 11/13/18**									
Aroclor-1260	137	50.0	ug/kg	200.0	ND	68.6	53-120			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*7.66*		ug/kg	*12.50*		*61.3*	*54-131*			
Surrogate: Decachlorobiphenyl	*10.5*		ug/kg	*12.50*		*83.8*	*53-131*			
Matrix Spike Dup Source: 1811097-07	**Prepared: 11/12/18 Analyzed: 11/13/18**									
Aroclor-1260	134	50.0	ug/kg	200.0	ND	66.9	53-120	2.56	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*6.00*		ug/kg	*12.50*		*48.0*	*54-131*			
Surrogate: Decachlorobiphenyl	*13.0*		ug/kg	*12.50*		*104*	*53-131*			
Batch BK81508 - EPA 3050B										
Blank	**Prepared & Analyzed: 11/14/18**									
Arsenic	ND	2.00	mg/kg							

POSITIVE LAB SERVICE

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(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

File #:73443
Report Date: 11/15/18
Submitted: 11/09/18
PLS Report No.: 1811097

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Quality Control Data

Analyte		Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BK81508 - EPA 3050B											
LCS		**Prepared & Analyzed: 11/14/18**									
Arsenic		47.6	2.00	mg/kg	49.72		95.8	80-120			
Matrix Spike	**Source: 1811115-01**	**Prepared & Analyzed: 11/14/18**									
Arsenic		69.4	2.00	mg/kg	49.72	22.4	94.5	75-125			
Matrix Spike Dup	**Source: 1811115-01**	**Prepared & Analyzed: 11/14/18**									
Arsenic		70.5	2.00	mg/kg	49.72	22.4	96.8	75-125	2.40	30	

Notes and Definitions

NA	Not Applicable
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
MDL	Method Detection Limit
PQL	Practical Quantitation Limit

Environmental Laboratory Accreditation Program Certificate No. 1131, Mobile Lab No. 2534, LACSD No. 10138

Authorized Signature(s)

91164

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE: 11/8/18 PAGE 1 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 1811097

CLIENT NAME: SEI

Project Name/No. 16901/ESD

P.O. NO. 16901-Pos

AIRBILL NO: GSO 5427222585

COOLER TEMP: 2.2°C

PRESERVED: _____

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PROJECT MANAGER: R. Becher

PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Becher (Printed) [signature] (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

ANALYSES REQUESTED:

REMARKS: Comp = use 1/2 for composites save remainder for discrete analysis

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	OCPs (8081)	Arsenic	PCBs (8082)					SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/8/18	1:45	C5A-3"		X			N	1	B								
2			1:35	C5B-3"								X	⊗						
3			2:00	C5C-3" (Comp)															
4			1:25	C5D-3"															
5			2:45	C6A-3"															
6			2:40	C6B-3" (Comp)								X	⊗						
7			2:10	C6C-3"															
8			2:20	C6D-3"															
9			10:50	T1-3"										⊗					
10			10:52	T1-2'															Hold

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
[signature] Robert Becher	[signature]	11/9/18	11:30
[signature]	[signature]	11/9/18	11:30
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:

SAMPLE DISPOSITION:
1. Samples returned to client? YES NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: _____ days

By _____ Date _____

SPECIAL INSTRUCTIONS: X = Composite sample analysis, ⊗ = discrete analysis

LAB COPY

91204

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

CHAIN OF CUSTODY AND ANALYSIS REQUEST

DATE: 11/8/18 PAGE 2 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 1811097

CLIENT NAME: SEI

Project Name/No. 16901/ESD

P.O. NO. 16901-Pos

AIRBILL NO: GSO 5427225855

COOLER TEMP: 2.2°C

PRESERVED: _____

ADDRESS: 4400 Yeager Way, Bakersfield, CA 93313

PROJECT MANAGER: R. Bech

PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Becher (Printed) [signature] (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

ANALYSES REQUESTED:

REMARKS: same as page 1

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	OCPs (8081)	Arsenic							SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/8/18	12:50	C7A-3"		X			N	1	B									
2			12:35	C7B-3"								X	⊗							
3			12:55	C7C-3"																
4			1:05	C7D-3"																
5			11:30	C8A-3"																
6			10:26	C8B-3"								X	⊗							
7			11:10	C8C-3"																
8			10:26	C8D-3" RJB									⊗							Discrete not part of comp
9			1:47	C5A-2"																Hold
10			1:37	C5B-2"																

Comp (7A–7D); Comp (8A–8C)

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
[signature] Robert Becher	[signature]	11/9/18	11:30
[signature]	[signature]	11/9/18	11:30

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By [signature] Date 11/8/18

SPECIAL INSTRUCTIONS:

LAB COPY

91199

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

CHAIN OF CUSTODY AND ANALYSIS REQUEST

DATE: 11/8/18 PAGE 3 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 811097

CLIENT NAME: SEI

Project Name/No. 16901 / ESD

P.O. NO. 16901-Pos

AIRBILL NO: GSO 542722585

COOLER TEMP: _____

PRESERVED: _____

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PROJECT MANAGER: R. Becher

PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Becher (Printed) (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

ANALYSES REQUESTED:

REMARKS:

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/8/18	2:02	C5C-2'		X				1	B	Hold
2			1:27	C5D-2'								
3			2:47	C6A-2'								
4			2:42	C6B-2'								
5			2:12	C6C-2'								
6			2:22	C6D-2'								
7			12:52	C7A-2'								
8			12:37	C7B-2'								
9			12:57	C7C-2'								
10			1:07	C7D-2'								

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
	Robert Becher	11/9/18	11:30
		11/9/18	11:30

SPECIAL INSTRUCTIONS:

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By _____ Date 11/8/18

LAB COPY

91201

POSITIVE LAB SERVICE

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CHAIN OF CUSTODY AND ANALYSIS REQUEST

DATE: 11/8/18 PAGE 4 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 181097

CLIENT NAME: SET

Project Name/No. 16901/ESD

P.O. NO. 16901-Pos

AIRBILL NO: G50 5427225 85

COOLER TEMP: _____

PRESERVED: _____

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PROJECT MANAGER: R. Becher PHONE NO: 661-831-5700 FAX NO: 831-2411

SAMPLER NAME: R. Becher (Printed) (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

ANALYSES REQUESTED:

REMARKS:

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX WATER	MATRIX SOIL	MATRIX SLUDGE	MATRIX OTHER	TAT	CONTAINER #	CONTAINER TYPE	SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/8/18	11:32	C8A-2-		X				1	B	Hold
2		↓	10:30	C8B-2-		↓				↓	↓	↓
3		↓	11:12	C8C-2-		↓				↓	↓	↓
4												
5												
6												
7												
8												
9												
10												

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Robert Becher		11/9/18	11:30
		11/9/18	11:30

SPECIAL INSTRUCTIONS:

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By _____ Date 11/8/18

LAB COPY

POSITIVE
LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

November 19, 2018

Mr. Robert Becker
Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Report No.: 1811120
Project Name: 16901 ESD / P.O. # 16901-POS

Dear Mr. Robert Becker,

This report contains the analytical results for the sample(s) received under chain of custody(s) by Positive Lab Service on November 13, 2018.

The test results in this report are performed in compliance with ELAP accreditation requirements for the certified parameters. The laboratory report may not be produced, except in full, without the written approval of the laboratory.

The issuance of the final Certificate of Analysis takes precedence over any previous Preliminary Report. Preliminary data should not be used for regulatory purposes. Authorized signature(s) is provided on final report only.

If you have any questions in reference to this report, please contact your Positive Lab Service coordinator.

Project Manager

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 11/19/18
Submitted: 11/13/18
PLS Report No.: 1811120

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C1A-3", C1B-3", C1C-3", C1D-3" Composite Soil (1811120-01) Sampled: 11/09/18 09:05 Received: 11/13/18 10:08

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
4,4´-DDD	**8.64**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
4,4´-DDE	**668**		10	ug/kg	80.0	EPA 3550C	EPA 8081A	11/14/18	11/16/18	ai	BK81623
4,4´-DDT	**57.5**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Dieldrin	**14.6**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*59.6 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*11/14/18*	*11/15/18*	*ai*	*BK81623*
Surrogate: Decachlorobiphenyl	*76.2 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*11/14/18*	*11/15/18*	*ai*	*BK81623*

Sample ID: C2A-3", C2B-3", C2C-3", C2D-3" Composite Soil (1811120-02) Sampled: 11/09/18 10:15 Received: 11/13/18 10:08

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
4,4´-DDD	**7.14**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
4,4´-DDE	**482**		10	ug/kg	80.0	EPA 3550C	EPA 8081A	11/14/18	11/16/18	ai	BK81623
4,4´-DDT	**43.3**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Dieldrin	**11.7**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

File #:73443
Report Date: 11/19/18
Submitted: 11/13/18
PLS Report No.: 1811120

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C2A-3", C2B-3", C2C-3", C2D-3" Composite Soil (1811120-02) Sampled: 11/09/18 10:15 Received: 11/13/18 10:08

Toxaphene	ND	1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*64.9 %*		*55-126*		*EPA 3550C*	*EPA 8081A*	*11/14/18*	*11/15/18*	*ai*	*BK81623*
Surrogate: Decachlorobiphenyl	*86.7 %*		*49-133*		*EPA 3550C*	*EPA 8081A*	*11/14/18*	*11/15/18*	*ai*	*BK81623*

Sample ID: C3A-3", C3B-3", C3C-3", C3D-3" Composite Soil (1811120-03) Sampled: 11/09/18 13:10 Received: 11/13/18 10:08

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
4,4´-DDD	**11.7**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
4,4´-DDE	**777**		10	ug/kg	80.0	EPA 3550C	EPA 8081A	11/14/18	11/16/18	ai	BK81623
4,4´-DDT	**61.1**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Dieldrin	**16.5**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*58.9 %*		*55-126*		*EPA 3550C*	*EPA 8081A*	*11/14/18*	*11/15/18*	*ai*	*BK81623*
Surrogate: Decachlorobiphenyl	*77.4 %*		*49-133*		*EPA 3550C*	*EPA 8081A*	*11/14/18*	*11/15/18*	*ai*	*BK81623*

Sample ID: C4A-3", C4B-3", C4C-3", C4D-3" Composite Soil (1811120-04) Sampled: 11/09/18 11:10 Received: 11/13/18 10:08

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
4,4´-DDD	**10.6**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
4,4´-DDE	**567**		10	ug/kg	80.0	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
4,4´-DDT	**64.4**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Dieldrin	**15.0**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 11/19/18
Submitted: 11/13/18
PLS Report No.: 1811120

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C4A-3", C4B-3", C4C-3", C4D-3" Composite Soil (1811120-04) Sampled: 11/09/18 11:10 Received: 11/13/18 10:08

Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/14/18	11/15/18	ai	BK81623
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*81.0 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*11/14/18*	*11/15/18*	*ai*	*BK81623*
Surrogate: Decachlorobiphenyl	*74.1 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*11/14/18*	*11/15/18*	*ai*	*BK81623*

Sample ID: C1B-3" Soil (1811120-05) Sampled: 11/09/18 08:45 Received: 11/13/18 10:08

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**11.0**		1	mg/kg	2.00	EPA 3050B	EPA 6010B	11/14/18	11/14/18	CG	BK81508

Sample ID: C2B-3" Soil (1811120-06) Sampled: 11/09/18 10:00 Received: 11/13/18 10:08

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**9.62**		1	mg/kg	2.00	EPA 3050B	EPA 6010B	11/14/18	11/14/18	CG	BK81508

Sample ID: T2-3" Soil (1811120-07) Sampled: 11/09/18 09:55 Received: 11/13/18 10:08

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	11/14/18	11/16/18	ai	BK81626
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	11/14/18	11/16/18	ai	BK81626
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	11/14/18	11/16/18	ai	BK81626
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	11/14/18	11/16/18	ai	BK81626
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	11/14/18	11/16/18	ai	BK81626
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	11/14/18	11/16/18	ai	BK81626
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	11/14/18	11/16/18	ai	BK81626
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*60.9 %*			*54-131*		*EPA 3550C*	*EPA 8082*	*11/14/18*	*11/16/18*	*ai*	*BK81626*
Surrogate: Decachlorobiphenyl	*35.6 %*	*M*		*53-131*		*EPA 3550C*	*EPA 8082*	*11/14/18*	*11/16/18*	*ai*	*BK81626*

Sample ID: C3B-3" Soil (1811120-08) Sampled: 11/09/18 12:45 Received: 11/13/18 10:08

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**14.0**		1	mg/kg	2.00	EPA 3050B	EPA 6010B	11/14/18	11/14/18	CG	BK81508

Sample ID: C4B-3" Soil (1811120-09) Sampled: 11/09/18 11:10 Received: 11/13/18 10:08

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**13.2**		1	mg/kg	2.00	EPA 3050B	EPA 6010B	11/14/18	11/14/18	CG	BK81508

Sample ID: C4E-3" Soil (1811120-10) Sampled: 11/09/18 11:10 Received: 11/13/18 10:08

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**12.4**		1	mg/kg	2.00	EPA 3050B	EPA 6010B	11/14/18	11/14/18	CG	BK81508

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 11/19/18
Submitted: 11/13/18
PLS Report No.: 1811120

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BK81623 - EPA 3550C										
Blank	**Prepared: 11/14/18 Analyzed: 11/15/18**									
Aldrin	ND	2.00	ug/kg							
alpha-BHC	ND	2.00	ug/kg							
beta-BHC	ND	2.00	ug/kg							
delta-BHC	ND	2.00	ug/kg							
gamma-BHC (Lindane)	ND	2.00	ug/kg							
alpha-Chlordane	ND	2.00	ug/kg							
gamma-Chlordane	ND	2.00	ug/kg							
4,4´-DDD	ND	2.00	ug/kg							
4,4´-DDE	ND	4.00	ug/kg							
4,4´-DDT	ND	4.00	ug/kg							
Dieldrin	ND	2.00	ug/kg							
Endosulfan I	ND	4.00	ug/kg							
Endosulfan II	ND	2.00	ug/kg							
Endosulfan sulfate	ND	2.00	ug/kg							
Endrin	ND	2.00	ug/kg							
Technical Chlordane	ND	10.0	ug/kg							
Endrin aldehyde	ND	2.00	ug/kg							
Endrin ketone	ND	6.00	ug/kg							
Heptachlor	ND	2.00	ug/kg							
Heptachlor epoxide	ND	2.00	ug/kg							
Methoxychlor	ND	10.0	ug/kg							
Toxaphene	ND	30.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*8.16*		ug/kg	*12.50*		*65.3*	*55-126*			
Surrogate: Decachlorobiphenyl	*10.0*		ug/kg	*12.50*		*80.2*	*49-133*			
LCS	**Prepared: 11/14/18 Analyzed: 11/16/18**									
Aldrin	7.51	2.00	ug/kg	10.00		75.1	56-130			
gamma-BHC (Lindane)	6.32	2.00	ug/kg	10.00		63.2	56-133			
4,4´-DDT	6.95	4.00	ug/kg	10.00		69.5	56-133			
Dieldrin	6.60	2.00	ug/kg	10.00		66.0	62-119			
Endrin	8.24	2.00	ug/kg	10.00		82.4	59-127			
Heptachlor	6.65	2.00	ug/kg	10.00		66.5	55-110			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*8.24*		ug/kg	*12.50*		*66.0*	*54-108*			
Surrogate: Decachlorobiphenyl	*8.51*		ug/kg	*12.50*		*68.1*	*54-127*			
Matrix Spike **Source: 1811120-03**	**Prepared: 11/14/18 Analyzed: 11/16/18**									
Aldrin	8.83	2.00	ug/kg	10.00	ND	88.3	39-124			
gamma-BHC (Lindane)	5.96	2.00	ug/kg	10.00	ND	59.6	44-120			
4,4´-DDT	74.6	4.00	ug/kg	25.00	61.1	53.7	48-150			
Dieldrin	31.5	2.00	ug/kg	25.00	16.5	60.1	48-144			
Endrin	18.2	2.00	ug/kg	25.00	ND	72.9	54-149			

POSITIVE LAB SERVICE

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Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 11/19/18
Submitted: 11/13/18
PLS Report No.: 1811120

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BK81623 - EPA 3550C										
Heptachlor	6.55	2.00	ug/kg	10.00	ND	65.5	46-135			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*7.78*		ug/kg	*12.50*		*62.3*	*55-126*			
Surrogate: Decachlorobiphenyl	*8.81*		ug/kg	*12.50*		*70.5*	*49-133*			
Matrix Spike Dup Source: 1811120-03	**Prepared: 11/14/18 Analyzed: 11/16/18**									
Aldrin	10.1	2.00	ug/kg	10.00	ND	101	39-124	13.0	30	
gamma-BHC (Lindane)	6.46	2.00	ug/kg	10.00	ND	64.6	44-120	8.18	30	
4,4'-DDT	77.6	4.00	ug/kg	25.00	61.1	65.6	48-150	20.0	30	
Dieldrin	33.8	2.00	ug/kg	25.00	16.5	69.4	48-144	14.4	30	
Endrin	20.4	2.00	ug/kg	25.00	ND	81.6	54-149	11.2	30	
Heptachlor	7.47	2.00	ug/kg	10.00	ND	74.7	46-135	13.1	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*8.34*		ug/kg	*12.50*		*66.7*	*55-126*			
Surrogate: Decachlorobiphenyl	*9.61*		ug/kg	*12.50*		*76.9*	*49-133*			
Batch BK81626 - EPA 3550C										
Blank	**Prepared: 11/14/18 Analyzed: 11/16/18**									
Aroclor-1016	ND	50.0	ug/kg							
Aroclor-1221	ND	50.0	ug/kg							
Aroclor-1232	ND	50.0	ug/kg							
Aroclor-1242	ND	50.0	ug/kg							
Aroclor-1248	ND	50.0	ug/kg							
Aroclor-1254	ND	50.0	ug/kg							
Aroclor-1260	ND	50.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*8.36*		ug/kg	*12.50*		*66.8*	*54-131*			
Surrogate: Decachlorobiphenyl	*7.12*		ug/kg	*12.50*		*57.0*	*53-131*			
LCS	**Prepared: 11/14/18 Analyzed: 11/16/18**									
Aroclor-1260	260	50.0	ug/kg	312.5		83.3	60-129			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*8.23*		ug/kg	*12.50*		*65.8*	*57-136*			
Surrogate: Decachlorobiphenyl	*7.63*		ug/kg	*12.50*		*61.1*	*53-141*			
Matrix Spike Source: 1811120-07	**Prepared: 11/14/18 Analyzed: 11/16/18**									
Aroclor-1260	204	50.0	ug/kg	200.0	ND	102	53-120			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*7.66*		ug/kg	*12.50*		*61.3*	*54-131*			
Surrogate: Decachlorobiphenyl	*3.91*		ug/kg	*12.50*		*31.3*	*53-131*			*M*
Matrix Spike Dup Source: 1811120-07	**Prepared: 11/14/18 Analyzed: 11/16/18**									
Aroclor-1260	208	50.0	ug/kg	200.0	ND	104	53-120	2.17	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*7.74*		ug/kg	*12.50*		*61.9*	*54-131*			
Surrogate: Decachlorobiphenyl	*3.95*		ug/kg	*12.50*		*31.6*	*53-131*			*M*
Batch BK81508 - EPA 3050B										
Blank	**Prepared & Analyzed: 11/14/18**									
Arsenic	ND	2.00	mg/kg							

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

File #:73443
Report Date: 11/19/18
Submitted: 11/13/18
PLS Report No.: 1811120

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Quality Control Data

Analyte		Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BK81508 - EPA 3050B											
LCS		**Prepared & Analyzed: 11/14/18**									
Arsenic		47.6	2.00	mg/kg	49.72		95.8	80-120			
Matrix Spike	**Source: 1811115-01**	**Prepared & Analyzed: 11/14/18**									
Arsenic		69.4	2.00	mg/kg	49.72	22.4	94.5	75-125			
Matrix Spike Dup	**Source: 1811115-01**	**Prepared & Analyzed: 11/14/18**									
Arsenic		70.5	2.00	mg/kg	49.72	22.4	96.8	75-125	2.40	30	

Notes and Definitions

M	Matrix interference
NA	Not Applicable
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
MDL	Method Detection Limit
PQL	Practical Quantitation Limit

Environmental Laboratory Accreditation Program Certificate No. 1131, Mobile Lab No. 2534, LACSD No. 10138

Authorized Signature(s)

91205

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE: 11/9/18 PAGE 1 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 1811120

CLIENT NAME: SEI

Project Name/No. 16901/ESD

P.O. NO. 16901-Pos

AIRBILL NO: GSO 542747508

COOLER TEMP: 3.3°C

ADDRESS: 4400 Yeager wy, Bakersfield, CA 93313

PRESERVED: _____

PROJECT MANAGER: R. Becker PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Beck (Printed) (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

ANALYSES REQUESTED:

REMARKS: Comp = use 1/2 for composites, save remainder for discrete analysis

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	OCPs (8081)	Arsenic	PCBs (8082)						SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/9/18	8:55	C1A-3"		X			N	1	B									
2			8:45	C1B-3" Comp								X	⊗							
3			9:05	C1C-3"																
4			8:25	C1D-3"																
5			10:15	C2A-3"																
6			10:00	C2B-3" Comp								X	⊗							
7			9:20	C2C-3"																
8			9:30	C2D-3"																
9			9:55	T2-3"										⊗						
10			9:57	T2-2"																Hold

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Robert Beck	[illegible]	11/13/18	10:08

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By _____ Date 11/9/18

SPECIAL INSTRUCTIONS: X = Composite Analysis, ⊗ = discrete analysis

LAB COPY

91206

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

CHAIN OF CUSTODY AND ANALYSIS REQUEST

DATE 11/9/18 PAGE 2 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 181120

CLIENT NAME: SEI

Project Name/No. 16901/ESD

P.O. NO. 16901/PO5

AIRBILL NO: GSO 5427475008

COOLER TEMP: 3.3°C

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PRESERVED: _____

PROJECT MANAGER: R. Becher PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Bech (Printed) (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

ANALYSES REQUESTED: OCPs (8081), Arsenic, PCBs

REMARKS: Same as page 1

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX WATER	MATRIX SOIL	MATRIX SLUDGE	MATRIX OTHER	TAT	CONTAINER #	CONTAINER TYPE	OCPs (8081)	Arsenic	PCBs	SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/9/18	1:00	C3A-3"		X			N	1	B				
2			12:45	C3B-3"								X	⊗		
3			1:10	C3C-3"											
4			12:25	C3D-3"											
5			10:30	C4A-3"											
6			11:10	C4B-3"								X	⊗		
7			10:50	C4C-3"											
8			11:00	C4D-3"											
9			11:10	C4E-3"									⊗		
10			8:57	C1A-2											Hold

Comp (C3A–C3D)

Comp (C4A–C4D)

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Robert Becher		11/13/18	10:08
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By _____ Date 11/9/18

SPECIAL INSTRUCTIONS: X = Composite analysis, ⊗ = discrete analysis

LAB COPY

91207

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE: 11/9/18 PAGE 3 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 181120

CLIENT NAME: SEI

Project Name/No. ESD/16901

P.O. NO. 16901-Pos

AIRBILL NO: GSO 5427475098

COOLER TEMP: 3.3°C

ADDRESS: 4400 Yeager Way, Bakersfield, CA 93313

PRESERVED: _____

PROJECT MANAGER: R. Becker PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Becker (Printed) (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

ANALYSES REQUESTED:

REMARKS:

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/9/18	8:47	C1B-2'		X				1	B	Hold
2			9:07	C1C-2'								
3			8:27	C1D-2'								
4			10:17	C2A-2'								
5			10:02	C2B-2'								
6			9:22	C2C-2'								
7			9:32	C2D-2'								
8			1:02	C3A-2'								
9			12:47	C3B-2'								
10			1:12	C3C-2'								

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Robert Becker		11/13/18	10:08
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:

SPECIAL INSTRUCTIONS:

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By _____ Date 11/9/18

LAB COPY

91202

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

CHAIN OF CUSTODY AND ANALYSIS REQUEST

DATE: 11/9/18 PAGE 4 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 1811120

CLIENT NAME: SEI

Project Name/No. ESD/16901

P.O. NO. 16901-Pos

AIRBILL NO: G50 5427475 08

COOLER TEMP: 3.3 c

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PRESERVED: _____

PROJECT MANAGER: R. Becker PHONE NO: 661-831-5100 FAX NO: 831-5100

SAMPLER NAME: R. Becker (Printed) (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

ANALYSES REQUESTED:

REMARKS:

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/9/18	12:27	C3D-2-		X				1	B	Hold
2		↓	10:32	C4A-2-		↓				↓	↓	↓
3		↓	11:12	C4B-2-		↓				↓	↓	↓
4		↓	10:52	C4C-2-		↓				↓	↓	↓
5		↓	11:02	C4D-2-		↓				↓	↓	↓
6												
7												
8												
9												
10												

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Robert Becker		11/13/18	10:08
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:

SPECIAL INSTRUCTIONS:

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 From ___ days

By _____ Date 11/9/18

LAB COPY

POSITIVE
LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

November 26, 2018

Mr. Robert Becker
Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Report No.: 1811097
Project Name: 16901 ESD / P.O. # 16901-POS

Dear Mr. Robert Becker,

This report contains the analytical results for the sample(s) received under chain of custody(s) by Positive Lab Service on November 09, 2018.

The test results in this report are performed in compliance with ELAP accreditation requirements for the certified parameters. The laboratory report may not be produced, except in full, without the written approval of the laboratory.

The issuance of the final Certificate of Analysis takes precedence over any previous Preliminary Report. Preliminary data should not be used for regulatory purposes. Authorized signature(s) is provided on final report only.

If you have any questions in reference to this report, please contact your Positive Lab Service coordinator.

Project Manager

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 11/26/18
Submitted: 11/09/18
PLS Report No.: 1811097

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C8A-3" Soil (1811097-11) Sampled: 11/08/18 11:30 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test	Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
4,4´-DDD	**5.08**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
4,4´-DDE	**315**		5	ug/kg	40.0	EPA 3550C	EPA 8081A	11/16/18	11/21/18	ai	BK82038
4,4´-DDT	**77.4**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Dieldrin	**39.6**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*64.5 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*11/16/18*	*11/20/18*	*ai*	*BK82038*
Surrogate: Decachlorobiphenyl	*72.9 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*11/16/18*	*11/20/18*	*ai*	*BK82038*

Sample ID: C8B-3" Soil (1811097-12) Sampled: 11/08/18 10:26 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test	Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
4,4´-DDD	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
4,4´-DDE	**74.2**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
4,4´-DDT	**25.4**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Dieldrin	**5.74**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

File #:73443
Report Date: 11/26/18
Submitted: 11/09/18
PLS Report No.: 1811097

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C8B-3" Soil (1811097-12) Sampled: 11/08/18 10:26 Received: 11/09/18 11:30

Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*69.4 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*11/16/18*	*11/20/18*	*ai*	*BK82038*
Surrogate: Decachlorobiphenyl	*87.7 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*11/16/18*	*11/20/18*	*ai*	*BK82038*

Sample ID: C8C-3" Soil (1811097-13) Sampled: 11/08/18 11:10 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test	Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
4,4´-DDD	**6.28**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
4,4´-DDE	**414**		5	ug/kg	40.0	EPA 3550C	EPA 8081A	11/16/18	11/21/18	ai	BK82038
4,4´-DDT	**68.6**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Dieldrin	**33.1**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*69.5 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*11/16/18*	*11/20/18*	*ai*	*BK82038*
Surrogate: Decachlorobiphenyl	*82.2 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*11/16/18*	*11/20/18*	*ai*	*BK82038*

Sample ID: C8A-2' Soil (1811097-14) Sampled: 11/08/18 11:32 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test	Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
4,4´-DDD	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
4,4´-DDE	**9.95**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
4,4´-DDT	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Dieldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 11/26/18
Submitted: 11/09/18
PLS Report No.: 1811097

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C8A-2' Soil (1811097-14) Sampled: 11/08/18 11:32 Received: 11/09/18 11:30

Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*73.7 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*11/16/18*	*11/20/18*	*ai*	*BK82038*
Surrogate: Decachlorobiphenyl	*91.3 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*11/16/18*	*11/20/18*	*ai*	*BK82038*

Sample ID: C8B-2' Soil (1811097-15) Sampled: 11/08/18 10:30 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test	Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
4,4´-DDD	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
4,4´-DDE	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
4,4´-DDT	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Dieldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*71.1 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*11/16/18*	*11/20/18*	*ai*	*BK82038*
Surrogate: Decachlorobiphenyl	*83.6 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*11/16/18*	*11/20/18*	*ai*	*BK82038*

Sample ID: C8C-2' Soil (1811097-16) Sampled: 11/08/18 11:12 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test	Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
4,4´-DDD	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
4,4´-DDE	**12.0**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
4,4´-DDT	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Dieldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

File #:73443
Report Date: 11/26/18
Submitted: 11/09/18
PLS Report No.: 1811097

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C8C-2' Soil (1811097-16) Sampled: 11/08/18 11:12 Received: 11/09/18 11:30

Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/16/18	11/20/18	ai	BK82038
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*70.2 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*11/16/18*	*11/20/18*	*ai*	*BK82038*
Surrogate: Decachlorobiphenyl	*81.2 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*11/16/18*	*11/20/18*	*ai*	*BK82038*

Sample ID: C7B-2' Soil (1811097-17) Sampled: 11/08/18 12:37 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**9.47**		1	mg/kg	2.00	EPA 3050B	EPA 6010B	11/19/18	11/19/18	CG	BK81938

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
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Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 11/26/18
Submitted: 11/09/18
PLS Report No.: 1811097

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BK82038 - EPA 3550C										
Blank	**Prepared: 11/16/18 Analyzed: 11/20/18**									
Aldrin	ND	2.00	ug/kg							
alpha-BHC	ND	2.00	ug/kg							
beta-BHC	ND	2.00	ug/kg							
delta-BHC	ND	2.00	ug/kg							
gamma-BHC (Lindane)	ND	2.00	ug/kg							
alpha-Chlordane	ND	2.00	ug/kg							
gamma-Chlordane	ND	2.00	ug/kg							
4,4´-DDD	ND	2.00	ug/kg							
4,4´-DDE	ND	4.00	ug/kg							
4,4´-DDT	ND	4.00	ug/kg							
Dieldrin	ND	2.00	ug/kg							
Endosulfan I	ND	4.00	ug/kg							
Endosulfan II	ND	2.00	ug/kg							
Endosulfan sulfate	ND	2.00	ug/kg							
Endrin	ND	2.00	ug/kg							
Technical Chlordane	ND	10.0	ug/kg							
Endrin aldehyde	ND	2.00	ug/kg							
Endrin ketone	ND	6.00	ug/kg							
Heptachlor	ND	2.00	ug/kg							
Heptachlor epoxide	ND	2.00	ug/kg							
Methoxychlor	ND	10.0	ug/kg							
Toxaphene	ND	30.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*7.98*		ug/kg	*12.50*		*63.8*	*55-126*			
Surrogate: Decachlorobiphenyl	*9.81*		ug/kg	*12.50*		*78.4*	*49-133*			
LCS	**Prepared: 11/16/18 Analyzed: 11/20/18**									
Aldrin	7.25	2.00	ug/kg	8.000		90.6	56-130			
gamma-BHC (Lindane)	6.24	2.00	ug/kg	8.000		78.0	56-133			
4,4´-DDT	5.77	4.00	ug/kg	8.000		72.1	56-133			
Dieldrin	6.90	2.00	ug/kg	8.000		86.2	62-119			
Endrin	7.36	2.00	ug/kg	8.000		92.0	59-127			
Heptachlor	6.26	2.00	ug/kg	8.000		78.2	55-110			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*9.26*		ug/kg	*12.50*		*74.1*	*54-108*			
Surrogate: Decachlorobiphenyl	*10.7*		ug/kg	*12.50*		*85.3*	*54-127*			
Matrix Spike Source: 1811097-14	**Prepared: 11/16/18 Analyzed: 11/20/18**									
Aldrin	6.91	2.00	ug/kg	10.00	ND	69.1	39-124			
gamma-BHC (Lindane)	5.66	2.00	ug/kg	10.00	ND	56.6	44-120			
4,4´-DDT	14.1	4.00	ug/kg	25.00	ND	56.3	48-150			
Dieldrin	16.1	2.00	ug/kg	25.00	ND	64.3	48-144			
Endrin	18.5	2.00	ug/kg	25.00	ND	73.9	54-149			

POSITIVE LAB SERVICE

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Certificate of Analysis

File #:73443
Report Date: 11/26/18
Submitted: 11/09/18
PLS Report No.: 1811097

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BK82038 - EPA 3550C										
Heptachlor	5.30	2.00	ug/kg	10.00	ND	53.0	46-135			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*8.80*		ug/kg	*12.50*		*70.4*	*55-126*			
Surrogate: Decachlorobiphenyl	*10.1*		ug/kg	*12.50*		*80.7*	*49-133*			
Matrix Spike Dup Source: 1811097-14	**Prepared: 11/16/18 Analyzed: 11/20/18**									
Aldrin	7.64	2.00	ug/kg	10.00	ND	76.4	39-124	10.0	30	
gamma-BHC (Lindane)	6.11	2.00	ug/kg	10.00	ND	61.1	44-120	7.75	30	
4,4'-DDT	14.3	4.00	ug/kg	25.00	ND	57.4	48-150	1.98	30	
Dieldrin	17.2	2.00	ug/kg	25.00	ND	68.9	48-144	6.96	30	
Endrin	19.9	2.00	ug/kg	25.00	ND	79.7	54-149	7.51	30	
Heptachlor	5.76	2.00	ug/kg	10.00	ND	57.6	46-135	8.44	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*9.12*		ug/kg	*12.50*		*73.0*	*55-126*			
Surrogate: Decachlorobiphenyl	*10.9*		ug/kg	*12.50*		*87.0*	*49-133*			
Batch BK81938 - EPA 3050B										
Blank	**Prepared & Analyzed: 11/19/18**									
Arsenic	ND	2.00	mg/kg							
LCS	**Prepared & Analyzed: 11/19/18**									
Arsenic	46.2	2.00	mg/kg	49.72		93.0	80-120			
Matrix Spike Source: 1811167-01	**Prepared & Analyzed: 11/19/18**									
Arsenic	58.3	2.00	mg/kg	49.72	15.6	85.8	75-125			
Matrix Spike Dup Source: 1811167-01	**Prepared & Analyzed: 11/19/18**									
Arsenic	58.4	2.00	mg/kg	49.72	15.6	86.1	75-125	0.360	30	

Notes and Definitions

NA	Not Applicable
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
MDL	Method Detection Limit
PQL	Practical Quantitation Limit

Environmental Laboratory Accreditation Program Certificate No. 1131, Mobile Lab No. 2534, LACSD No. 10138

Authorized Signature(s)

91164

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE: 11/8/18 PAGE 1 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 181097

CLIENT NAME: SEI

Project Name/No. 16901/ESD

P.O. NO. 16901-Pos

AIRBILL NO: GSO 5427225852

COOLER TEMP: 2.2°C

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PRESERVED: _____

PROJECT MANAGER: R. Becher

PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Becher (Printed) [signature] (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# _____

ANALYSES REQUESTED: OCPs (8081), Arsenic, PCBs (8082)

REMARKS: Comp = use 1/2 for composites save remainder for discrete analysis
Addon NTAT 11/15/18

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	OCPs (8081)	Arsenic	PCBs (8082)	SAMPLE CONDITION/ CONTAINER /COMMENTS:
1	11/8/18	1:45	C5A-3"		X			N	1	B				
2		1:35	C5B-3" (Comp)								X	⊗		
3		2:00	C5C-3"											
4		1:25	C5D-3"											
5		2:45	C6A-3"											
6		2:40	C6B-3" (Comp)								X	⊗		
7		2:10	C6C-3"											
8		2:20	C6D-3"											
9		10:50	T1-3"										⊗	
10		10:52	T1-2'											Hold

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
[signature] Robert Becher	[signature]	11/9/18	11:30
[signature]	[signature]	11/9/18	11:30
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:

SAMPLE DISPOSITION:
1. Samples returned to client? YES NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: _____ days

By _____ Date _____

SPECIAL INSTRUCTIONS: X = Composite sample analysis, ⊗ = discrete analysis

LAB COPY

91204

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE: 11/8/18 PAGE 2 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 181097

CLIENT NAME: SEI

Project Name/No. 16901/ESD

P.O. NO. 16901-Pos

AIRBILL NO: G50 5427225852

COOLER TEMP: 2.2

PRESERVED: _____

ADDRESS: 4400 Yeager Way, Bakersfield, CA 93313

PROJECT MANAGER: R. Bech

PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Bech (Printed) [signature] (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___

ANALYSES REQUESTED:

REMARKS: same as page 1

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	OCPs (8081)	Arsenic	OCP's (8081) Discrete						SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/8/18	12:50	C7A-3"		X			N	1	B									
2			12:35	C7B-3"								X	X							
3			12:55	C7C-3"																
4			1:05	C7D-3" (comp)																
5			11:30	C8A-3"										⊘						
6			10:26	C8B-3"								X	X	⊘						
7			11:10	C8C-3" (comp)										⊘						
8			10:26	C8D-3" RJB									X							Discrete not part of comp
9			1:47	C5A-2"																Hold
10			1:37	C5B-2"																

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
[signature] Robert Bech	[signature]	11/9/18	11:30
[signature]	[signature]	11/9/18	11:30

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By [signature] Date 11/8/18

SPECIAL INSTRUCTIONS:

LAB COPY

91199

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE: 11/8/18 PAGE 3 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 811097

CLIENT NAME: SEI

Project Name/No. 16901 / ESD

P.O. NO. 16901-Pos

AIRBILL NO: G50 542722585

COOLER TEMP: _____

PRESERVED: _____

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PROJECT MANAGER: R. Becher

PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Bech (Printed) (Signature)

TAT(Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

ANALYSES REQUESTED: As (discrete)

REMARKS:

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	As (discrete)	SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/8/18	2:02	C5C-2'		X				1	B		Hold
2			1:27	C5D-2'									
3			2:47	C6A-2'									
4			2:42	C6B-2'									
5			2:12	C6C-2'									
6			2:22	C6D-2'									
7			12:52	C7A-2'									
8			12:37	C7B-2'								⊘	
9			12:57	C7C-2'									
10			1:07	C7D-2'									

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
[signature]	Robert Becher	11/9/18	11:30
[signature]	[signature]	11/9/18	11:30

SPECIAL INSTRUCTIONS:

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By [signature] Date 11/8/18

LAB COPY

91201

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

CHAIN OF CUSTODY AND ANALYSIS REQUEST

DATE: 11/8/18 PAGE 4 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 181097

CLIENT NAME: SEI Project Name/No. 16901/ESD P.O. NO. 16901-Pos

AIRBILL NO: G50 542722585

COOLER TEMP: _____

PRESERVED: _____

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PROJECT MANAGER: R. Becher PHONE NO: 661-831-5700 FAX NO: 831-2411

SAMPLER NAME: R. Becher (Printed) (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

ANALYSES REQUESTED: OCP's (Discrete)

REMARKS:

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX WATER	MATRIX SOIL	MATRIX SLUDGE	MATRIX OTHER	TAT	CONTAINER #	CONTAINER TYPE	OCP's (Discrete)	SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/8/18	11:32	C8A-2'		X				1	B	⊘	Hold
2		↓	10:30	C8B-2'		↓				↓	↓	⊘	↓
3		↓	11:12	C8C-2'		↓				↓	↓	⊘	↓
4													
5													
6													
7													
8													
9													
10													

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Robert Becher	Robert Becher	11/9/18	11:30
		11/9/18	11:30

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By _____ Date 11/8/18

SPECIAL INSTRUCTIONS:

LAB COPY

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LAB SERVICE

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(213) 745-5312 FAX (213) 745-6372

November 28, 2018

Mr. Robert Becker
Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Report No.: 1811120
Project Name: 16901 ESD / P.O. # 16901-POS

Dear Mr. Robert Becker,

This report contains the analytical results for the sample(s) received under chain of custody(s) by Positive Lab Service on November 13, 2018.

The test results in this report are performed in compliance with ELAP accreditation requirements for the certified parameters. The laboratory report may not be produced, except in full, without the written approval of the laboratory.

The issuance of the final Certificate of Analysis takes precedence over any previous Preliminary Report. Preliminary data should not be used for regulatory purposes. Authorized signature(s) is provided on final report only.

If you have any questions in reference to this report, please contact your Positive Lab Service coordinator.

Project Manager

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

File #:73443
Report Date: 11/28/18
Submitted: 11/13/18
PLS Report No.: 1811120

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C3A-3" Soil (1811120-11) Sampled: 11/09/18 13:00 Received: 11/13/18 10:08

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test	Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
4,4´-DDD	**17.6**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
4,4´-DDE	**1290**		10	ug/kg	80.0	EPA 3550C	EPA 8081A	11/20/18	11/26/18	ai	BK82701
4,4´-DDT	**130**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Dieldrin	**28.8**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*57.1 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*11/20/18*	*11/21/18*	*ai*	*BK82701*
Surrogate: Decachlorobiphenyl	*96.4 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*11/20/18*	*11/21/18*	*ai*	*BK82701*

Sample ID: C3B-3" Soil (1811120-12) Sampled: 11/09/18 12:45 Received: 11/13/18 10:08

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test	Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
4,4´-DDD	**11.5**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
4,4´-DDE	**785**		10	ug/kg	80.0	EPA 3550C	EPA 8081A	11/20/18	11/26/18	ai	BK82701
4,4´-DDT	**60.0**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Dieldrin	**13.3**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701

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Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 11/28/18
Submitted: 11/13/18
PLS Report No.: 1811120

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C3B-3" Soil (1811120-12) Sampled: 11/09/18 12:45 Received: 11/13/18 10:08

Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*58.1 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*11/20/18*	*11/21/18*	*ai*	*BK82701*
Surrogate: Decachlorobiphenyl	*99.4 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*11/20/18*	*11/21/18*	*ai*	*BK82701*

Sample ID: C3C-3" Soil (1811120-13) Sampled: 11/09/18 13:10 Received: 11/13/18 10:08

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
4,4´-DDD	**11.7**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
4,4´-DDE	**679**		10	ug/kg	80.0	EPA 3550C	EPA 8081A	11/20/18	11/26/18	ai	BK82701
4,4´-DDT	**78.0**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Dieldrin	**21.9**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*62.5 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*11/20/18*	*11/21/18*	*ai*	*BK82701*
Surrogate: Decachlorobiphenyl	*101 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*11/20/18*	*11/21/18*	*ai*	*BK82701*

Sample ID: C3D-3" Soil (1811120-14) Sampled: 11/09/18 12:25 Received: 11/13/18 10:08

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
4,4´-DDD	**11.7**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
4,4´-DDE	**550**		10	ug/kg	80.0	EPA 3550C	EPA 8081A	11/20/18	11/26/18	ai	BK82701
4,4´-DDT	**56.0**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Dieldrin	**9.92**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701

POSITIVE LAB SERVICE

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Certificate of Analysis

File #:73443
Report Date: 11/28/18
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PLS Report No.: 1811120

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C3D-3" Soil (1811120-14) Sampled: 11/09/18 12:25 Received: 11/13/18 10:08

Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*66.1 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*11/20/18*	*11/21/18*	*ai*	*BK82701*
Surrogate: Decachlorobiphenyl	*102 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*11/20/18*	*11/21/18*	*ai*	*BK82701*

Sample ID: C3A-2' Soil (1811120-15) Sampled: 11/09/18 13:02 Received: 11/13/18 10:08

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test	Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
4,4'-DDD	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
4,4'-DDE	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
4,4'-DDT	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Dieldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*68.0 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*11/20/18*	*11/21/18*	*ai*	*BK82701*
Surrogate: Decachlorobiphenyl	*103 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*11/20/18*	*11/21/18*	*ai*	*BK82701*

Sample ID: C3B-2' Soil (1811120-16) Sampled: 11/09/18 12:47 Received: 11/13/18 10:08

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test	Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
4,4'-DDD	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
4,4'-DDE	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
4,4'-DDT	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Dieldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

File #:73443
Report Date: 11/28/18
Submitted: 11/13/18
PLS Report No.: 1811120

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C3B-2' Soil (1811120-16) Sampled: 11/09/18 12:47 Received: 11/13/18 10:08

Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*59.9 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*11/20/18*	*11/21/18*	*ai*	*BK82701*
Surrogate: Decachlorobiphenyl	*90.5 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*11/20/18*	*11/21/18*	*ai*	*BK82701*

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test	Method	Prepared	Analyzed	By	Batch
Arsenic	**12.7**		1	mg/kg	2.00	EPA 3050B	EPA 6010B	11/20/18	11/20/18	AM	BK82045

Sample ID: C3C-2' Soil (1811120-17) Sampled: 11/09/18 13:12 Received: 11/13/18 10:08

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test	Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
4,4´-DDD	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
4,4´-DDE	**19.2**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
4,4´-DDT	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Dieldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*68.8 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*11/20/18*	*11/21/18*	*ai*	*BK82701*
Surrogate: Decachlorobiphenyl	*118 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*11/20/18*	*11/21/18*	*ai*	*BK82701*

Sample ID: C3D-2' Soil (1811120-18) Sampled: 11/09/18 12:27 Received: 11/13/18 10:08

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test	Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

File #:73443
Report Date: 11/28/18
Submitted: 11/13/18
PLS Report No.: 1811120

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C3D-2' Soil (1811120-18) Sampled: 11/09/18 12:27 Received: 11/13/18 10:08

gamma-BHC (Lindane)	ND	1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
alpha-Chlordane	ND	1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
gamma-Chlordane	ND	1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
4,4´-DDD	ND	1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
4,4´-DDE	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
4,4´-DDT	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Dieldrin	ND	1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan I	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan II	ND	1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endosulfan sulfate	ND	1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin	ND	1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Technical Chlordane	ND	1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin aldehyde	ND	1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Endrin ketone	ND	1	ug/kg	12.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Heptachlor	ND	1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Heptachlor epoxide	ND	1	ug/kg	4.00	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Methoxychlor	ND	1	ug/kg	20.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Toxaphene	ND	1	ug/kg	60.0	EPA 3550C	EPA 8081A	11/20/18	11/21/18	ai	BK82701
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*69.4 %*		*55-126*		*EPA 3550C*	*EPA 8081A*	*11/20/18*	*11/21/18*	*ai*	*BK82701*
Surrogate: Decachlorobiphenyl	*103 %*		*49-133*		*EPA 3550C*	*EPA 8081A*	*11/20/18*	*11/21/18*	*ai*	*BK82701*

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 11/28/18
Submitted: 11/13/18
PLS Report No.: 1811120

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BK82701 - EPA 3550C										
Blank	**Prepared: 11/20/18 Analyzed: 11/21/18**									
Aldrin	ND	2.00	ug/kg							
alpha-BHC	ND	2.00	ug/kg							
beta-BHC	ND	2.00	ug/kg							
delta-BHC	ND	2.00	ug/kg							
gamma-BHC (Lindane)	ND	2.00	ug/kg							
alpha-Chlordane	ND	2.00	ug/kg							
gamma-Chlordane	ND	2.00	ug/kg							
4,4´-DDD	ND	2.00	ug/kg							
4,4´-DDE	ND	4.00	ug/kg							
4,4´-DDT	ND	4.00	ug/kg							
Dieldrin	ND	2.00	ug/kg							
Endosulfan I	ND	4.00	ug/kg							
Endosulfan II	ND	2.00	ug/kg							
Endosulfan sulfate	ND	2.00	ug/kg							
Endrin	ND	2.00	ug/kg							
Technical Chlordane	ND	10.0	ug/kg							
Endrin aldehyde	ND	2.00	ug/kg							
Endrin ketone	ND	6.00	ug/kg							
Heptachlor	ND	2.00	ug/kg							
Heptachlor epoxide	ND	2.00	ug/kg							
Methoxychlor	ND	10.0	ug/kg							
Toxaphene	ND	30.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*7.91*		ug/kg	*12.50*		*63.3*	*55-126*			
Surrogate: Decachlorobiphenyl	*12.6*		ug/kg	*12.50*		*101*	*49-133*			
LCS	**Prepared: 11/20/18 Analyzed: 11/21/18**									
Aldrin	7.69	2.00	ug/kg	10.00		76.9	56-130			
gamma-BHC (Lindane)	6.45	2.00	ug/kg	10.00		64.5	56-133			
4,4´-DDT	7.22	4.00	ug/kg	10.00		72.2	56-133			
Dieldrin	7.68	2.00	ug/kg	10.00		76.8	62-119			
Endrin	8.54	2.00	ug/kg	10.00		85.4	59-127			
Heptachlor	6.80	2.00	ug/kg	10.00		68.0	55-110			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*8.35*		ug/kg	*12.50*		*66.8*	*54-108*			
Surrogate: Decachlorobiphenyl	*12.8*		ug/kg	*12.50*		*102*	*54-127*			
Matrix Spike **Source: 1811120-18**	**Prepared: 11/20/18 Analyzed: 11/21/18**									
Aldrin	8.12	2.00	ug/kg	10.00	ND	81.2	39-124			
gamma-BHC (Lindane)	6.04	2.00	ug/kg	10.00	ND	60.4	44-120			
4,4´-DDT	12.4	4.00	ug/kg	25.00	ND	49.8	48-150			
Dieldrin	17.3	2.00	ug/kg	25.00	ND	69.4	48-144			
Endrin	23.8	2.00	ug/kg	25.00	ND	95.1	54-149			

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Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 11/28/18
Submitted: 11/13/18
PLS Report No.: 1811120

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BK82701 - EPA 3550C										
Heptachlor	5.51	2.00	ug/kg	10.00	ND	55.1	46-135			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*7.86*		ug/kg	*12.50*		*62.9*	*55-126*			
Surrogate: Decachlorobiphenyl	*12.7*		ug/kg	*12.50*		*102*	*49-133*			
Matrix Spike Dup Source: 1811120-18	**Prepared: 11/20/18 Analyzed: 11/21/18**									
Aldrin	8.54	2.00	ug/kg	10.00	ND	85.4	39-124	5.14	30	
gamma-BHC (Lindane)	6.39	2.00	ug/kg	10.00	ND	63.9	44-120	5.58	30	
4,4'-DDT	11.9	4.00	ug/kg	25.00	ND	47.6	48-150	4.55	30	
Dieldrin	18.3	2.00	ug/kg	25.00	ND	73.3	48-144	5.54	30	
Endrin	23.4	2.00	ug/kg	25.00	ND	93.8	54-149	1.38	30	
Heptachlor	5.86	2.00	ug/kg	10.00	ND	58.6	46-135	6.23	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*8.19*		ug/kg	*12.50*		*65.5*	*55-126*			
Surrogate: Decachlorobiphenyl	*12.7*		ug/kg	*12.50*		*102*	*49-133*			
Batch BK82045 - EPA 3050B										
Blank	**Prepared & Analyzed: 11/20/18**									
Arsenic	ND	2.00	mg/kg							
LCS	**Prepared & Analyzed: 11/20/18**									
Arsenic	47.5	2.00	mg/kg	49.92		95.2	80-120			
Matrix Spike Source: 1811170-06	**Prepared & Analyzed: 11/20/18**									
Arsenic	47.9	2.00	mg/kg	49.92	1.73	92.6	75-125			
Matrix Spike Dup Source: 1811170-06	**Prepared & Analyzed: 11/20/18**									
Arsenic	46.4	2.00	mg/kg	49.92	1.73	89.5	75-125	3.37	30	

Notes and Definitions

NA	Not Applicable
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
MDL	Method Detection Limit
PQL	Practical Quantitation Limit

Environmental Laboratory Accreditation Program Certificate No. 1131, Mobile Lab No. 2534, LACSD No. 10138

Authorized Signature(s)

91205

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

CHAIN OF CUSTODY AND ANALYSIS REQUEST

DATE: 11/9/18 PAGE 1 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 1811120

CLIENT NAME: SEI

Project Name/No. 16901/ESD

P.O. NO. 16901-Pos

AIRBILL NO: GSO 542747508

COOLER TEMP: 3.3°C

PRESERVED: _____

ADDRESS: 4400 Yeager wy, Bakersfield, CA 93313

PROJECT MANAGER: R. Becker PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Beck (Printed) (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___

ANALYSES REQUESTED:

REMARKS: Comp = use 1/2 for composites, save remainder for discrete analysis

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	OCPs (8081)	Arsenic	PCBs (8082)						SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/9/18	8:55	C1A-3"		X			N	1	B									
2			8:45	C1B-3" Comp								X	⊗							
3			9:05	C1C-3"																
4			8:25	C1D-3"																
5			10:15	C2A-3"																
6			10:00	C2B-3" Comp								X	⊗							
7			9:20	C2C-3"																
8			9:30	C2D-3"																
9			9:55	T2-3"										⊗						
10			9:57	T2-2"																Hold

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Robert Beck	[illegible]	11/13/18	10:08
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By _____ Date 11/9/18

SPECIAL INSTRUCTIONS: X = Composite Analysis, ⊗ = discrete analysis

LAB COPY

91206

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE 11/9/18 PAGE 2 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 1811120

CLIENT NAME: SEI

Project Name/No. 16901/ESD

P.O. NO. 16901/P05

AIRBILL NO: GSO 5427475008

COOLER TEMP: 3.3°C

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PRESERVED: _____

PROJECT MANAGER: R. Becher PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Bech (Printed) (Signature)

TAT(Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___

ANALYSES REQUESTED:

REMARKS: Same as page 1

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	OCPs (8081)	Arsenic	PCBs	8081 ~~8082~~ OCP discrete 11/9/18 2-TAT					SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/9/18	11:00	C3A-3"		X			N	1	B				X					
2			12:45	C3B-3" comp								X	⊗		X					
3			1:10	C3C-3"											X					
4			12:25	C3D-3"											X					
5			10:30	C4A-3"																
6			11:10	C4B-3" comp								X	⊗							
7			10:50	C4C-3"																
8			11:00	C4D-3"																
9			11:10	C4E-3"									⊗							
10			8:57	C1A-2																Hold

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Robert Becher		11/13/18	10:08
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:

SAMPLE DISPOSITION:
1. Samples returned to client? YES NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By _____ Date 11/9/18

SPECIAL INSTRUCTIONS: X = composite analysis, ⊗ = discrete analysis

LAB COPY

91207

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE: 11/9/18 PAGE 3 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 181120

CLIENT NAME: SEI

Project Name/No. ESD/16901

P.O. NO. 16901-P05

AIRBILL NO: GSO 5427475088

COOLER TEMP: 3.3°C

ADDRESS: 4400 Yeager Way, Bakersfield, CA 93313

PRESERVED: _____

PROJECT MANAGER: R. Becker PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Becker (Printed) (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

ANALYSES REQUESTED:

REMARKS:

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	8081 OCP Discrete 11/14/18 10-TAT	As 6010B Discrete 11/14/18 10-TAT						SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/9/18	8:47	C1B-2'		X				1	B								Hold
2			9:07	C1C-2'															
3			8:27	C1D-2'															
4			10:17	C2A-2'															
5			10:02	C2B-2'															
6			9:22	C2C-2'															
7			9:32	C2D-2'															
8			1:02	C3A-2'								X							Off Hold 11/14/18
9			12:47	C3B-2'								X	X						
10			1:12	C3C-2'								X							

Relinquished By: (Signature and Printed Name) Robert Becker — Received By: (Signature and Printed Name) — Date: 11/13/18 Time: 10:08

Relinquished By: (Signature and Printed Name) — Received By: (Signature and Printed Name) — Date: Time:

Relinquished By: (Signature and Printed Name) — Received By: (Signature and Printed Name) — Date: Time:

SPECIAL INSTRUCTIONS:

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By _____ Date 11/9/18

LAB COPY

91202

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

CHAIN OF CUSTODY AND ANALYSIS REQUEST

DATE: 11/9/18 PAGE 4 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 1811120

CLIENT NAME: SEI

Project Name/No. ESD/16901

P.O. NO. 16901-Pos

AIRBILL NO: G80 5427447508

COOLER TEMP: 3.3 a

PRESERVED: _____

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PROJECT MANAGER: R. Becker PHONE NO: 661-831-5100 FAX NO: 831-5100

SAMPLER NAME: R. Beck (Printed) (Signature)

TAT(Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

ANALYSES REQUESTED: 8081 OCP Discrete 11/14/18 2-TAT

REMARKS:

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	SOIL	SLUDGE	OTHER	TAT	CONTAINER: #	TYPE	8081 OCP	SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/9/18	12:27	C3D-2-		X				1	B	X	~~Hold~~ off Hold 11/14/18
2			10:32	C4A-2-									Hold
3			11:12	C4B-2-									
4			10:52	C4C-2-									
5			11:02	C4D-2-									
6													
7													
8													
9													
10													

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Robert Becker		11/13/18	10:08
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:

SPECIAL INSTRUCTIONS:

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 From ___ days

By _____ Date 11/9/18

LAB COPY

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

December 11, 2018

Mr. Robert Becker
Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Report No.: 1811097
Project Name: 16901 ESD / P.O. # 16901-POS

Dear Mr. Robert Becker,

This report contains the analytical results for the sample(s) received under chain of custody(s) by Positive Lab Service on November 09, 2018.

The test results in this report are performed in compliance with ELAP accreditation requirements for the certified parameters. The laboratory report may not be produced, except in full, without the written approval of the laboratory.

The issuance of the final Certificate of Analysis takes precedence over any previous Preliminary Report. Preliminary data should not be used for regulatory purposes. Authorized signature(s) is provided on final report only.

If you have any questions in reference to this report, please contact your Positive Lab Service coordinator.

Project Manager

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

File #:73443
Report Date: 12/11/18
Submitted: 11/09/18
PLS Report No.: 1811097

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C5D-3" Soil (1811097-18) Sampled: 11/08/18 13:25 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
alpha-BHC	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
beta-BHC	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
delta-BHC	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
gamma-BHC (Lindane)	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
alpha-Chlordane	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
gamma-Chlordane	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
4,4´-DDD	**9.72**	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
4,4´-DDE	**312**	R4	5	ug/kg	40.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
4,4´-DDT	**91.4**	R4	1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Dieldrin	**30.6**	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endosulfan I	ND	R4	1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endosulfan II	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endosulfan sulfate	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endrin	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Technical Chlordane	ND	R4	1	ug/kg	20.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endrin aldehyde	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endrin ketone	ND	R4	1	ug/kg	12.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Heptachlor	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Heptachlor epoxide	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Methoxychlor	ND	R4	1	ug/kg	20.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Toxaphene	ND	R4	1	ug/kg	60.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*71.6 %*	*R4*		*55-126*		*EPA 3550C*	*EPA 8081A*	*12/06/18*	*12/07/18*	*ai*	*BL81134*
Surrogate: Decachlorobiphenyl	*91.8 %*	*R4*		*49-133*		*EPA 3550C*	*EPA 8081A*	*12/06/18*	*12/07/18*	*ai*	*BL81134*

Sample ID: C6C-3" Soil (1811097-19) Sampled: 11/08/18 14:10 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
alpha-BHC	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
beta-BHC	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
delta-BHC	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
gamma-BHC (Lindane)	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
alpha-Chlordane	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
gamma-Chlordane	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
4,4´-DDD	**12.9**	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
4,4´-DDE	**309**	R4	5	ug/kg	40.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
4,4´-DDT	**93.2**	R4	1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Dieldrin	**42.8**	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endosulfan I	ND	R4	1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endosulfan II	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endosulfan sulfate	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endrin	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Technical Chlordane	ND	R4	1	ug/kg	20.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endrin aldehyde	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endrin ketone	ND	R4	1	ug/kg	12.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Heptachlor	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Heptachlor epoxide	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Methoxychlor	ND	R4	1	ug/kg	20.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 12/11/18
Submitted: 11/09/18
PLS Report No.: 1811097

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C6C-3" Soil (1811097-19) Sampled: 11/08/18 14:10 Received: 11/09/18 11:30

Toxaphene	ND	R4	1	ug/kg	60.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*73.9 %*	*R4*		*55-126*		*EPA 3550C*	*EPA 8081A*	*12/06/18*	*12/07/18*	*ai*	*BL81134*
Surrogate: Decachlorobiphenyl	*80.5 %*	*R4*		*49-133*		*EPA 3550C*	*EPA 8081A*	*12/06/18*	*12/07/18*	*ai*	*BL81134*

Sample ID: C6D-3" Soil (1811097-20) Sampled: 11/08/18 14:20 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
alpha-BHC	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
beta-BHC	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
delta-BHC	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
gamma-BHC (Lindane)	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
alpha-Chlordane	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
gamma-Chlordane	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
4,4´-DDD	**4.27**	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
4,4´-DDE	**214**	R4	5	ug/kg	40.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
4,4´-DDT	**15.0**	R4	1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Dieldrin	**14.3**	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endosulfan I	ND	R4	1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endosulfan II	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endosulfan sulfate	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endrin	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Technical Chlordane	ND	R4	1	ug/kg	20.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endrin aldehyde	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endrin ketone	ND	R4	1	ug/kg	12.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Heptachlor	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Heptachlor epoxide	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Methoxychlor	ND	R4	1	ug/kg	20.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Toxaphene	ND	R4	1	ug/kg	60.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*74.5 %*	*R4*		*55-126*		*EPA 3550C*	*EPA 8081A*	*12/06/18*	*12/07/18*	*ai*	*BL81134*
Surrogate: Decachlorobiphenyl	*83.6 %*	*R4*		*49-133*		*EPA 3550C*	*EPA 8081A*	*12/06/18*	*12/07/18*	*ai*	*BL81134*

Sample ID: C7B-3" Soil (1811097-21) Sampled: 11/08/18 12:35 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
alpha-BHC	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
beta-BHC	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
delta-BHC	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
gamma-BHC (Lindane)	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
alpha-Chlordane	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
gamma-Chlordane	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
4,4´-DDD	**5.85**	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
4,4´-DDE	**232**	R4	5	ug/kg	40.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
4,4´-DDT	**29.2**	R4	1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Dieldrin	**22.7**	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endosulfan I	ND	R4	1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endosulfan II	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endosulfan sulfate	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endrin	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Technical Chlordane	ND	R4	1	ug/kg	20.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 12/11/18
Submitted: 11/09/18
PLS Report No.: 1811097

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C7B-3" Soil (1811097-21) Sampled: 11/08/18 12:35 Received: 11/09/18 11:30

Endrin aldehyde	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endrin ketone	ND	R4	1	ug/kg	12.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Heptachlor	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Heptachlor epoxide	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Methoxychlor	ND	R4	1	ug/kg	20.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Toxaphene	ND	R4	1	ug/kg	60.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*69.8 %*	*R4*		*55-126*		*EPA 3550C*	*EPA 8081A*	*12/06/18*	*12/07/18*	*ai*	*BL81134*
Surrogate: Decachlorobiphenyl	*77.7 %*	*R4*		*49-133*		*EPA 3550C*	*EPA 8081A*	*12/06/18*	*12/07/18*	*ai*	*BL81134*

Sample ID: C7D-3" Soil (1811097-22) Sampled: 11/08/18 13:05 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
alpha-BHC	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
beta-BHC	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
delta-BHC	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
gamma-BHC (Lindane)	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
alpha-Chlordane	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
gamma-Chlordane	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
4,4´-DDD	**5.26**	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
4,4´-DDE	**191**	R4	5	ug/kg	40.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
4,4´-DDT	**22.0**	R4	1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Dieldrin	**30.3**	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endosulfan I	ND	R4	1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endosulfan II	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endosulfan sulfate	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endrin	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Technical Chlordane	ND	R4	1	ug/kg	20.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endrin aldehyde	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Endrin ketone	ND	R4	1	ug/kg	12.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Heptachlor	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Heptachlor epoxide	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Methoxychlor	ND	R4	1	ug/kg	20.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Toxaphene	ND	R4	1	ug/kg	60.0	EPA 3550C	EPA 8081A	12/06/18	12/07/18	ai	BL81134
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*79.5 %*	*R4*		*55-126*		*EPA 3550C*	*EPA 8081A*	*12/06/18*	*12/07/18*	*ai*	*BL81134*
Surrogate: Decachlorobiphenyl	*94.9 %*	*R4*		*49-133*		*EPA 3550C*	*EPA 8081A*	*12/06/18*	*12/07/18*	*ai*	*BL81134*

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 12/11/18
Submitted: 11/09/18
PLS Report No.: 1811097

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BL81134 - EPA 3550C										
Blank	**Prepared: 12/06/18 Analyzed: 12/07/18**									
Aldrin	ND	2.00	ug/kg							
alpha-BHC	ND	2.00	ug/kg							
beta-BHC	ND	2.00	ug/kg							
delta-BHC	ND	2.00	ug/kg							
gamma-BHC (Lindane)	ND	2.00	ug/kg							
alpha-Chlordane	ND	2.00	ug/kg							
gamma-Chlordane	ND	2.00	ug/kg							
4,4´-DDD	ND	2.00	ug/kg							
4,4´-DDE	ND	4.00	ug/kg							
4,4´-DDT	ND	4.00	ug/kg							
Dieldrin	ND	2.00	ug/kg							
Endosulfan I	ND	4.00	ug/kg							
Endosulfan II	ND	2.00	ug/kg							
Endosulfan sulfate	ND	2.00	ug/kg							
Endrin	ND	2.00	ug/kg							
Technical Chlordane	ND	10.0	ug/kg							
Endrin aldehyde	ND	2.00	ug/kg							
Endrin ketone	ND	6.00	ug/kg							
Heptachlor	ND	2.00	ug/kg							
Heptachlor epoxide	ND	2.00	ug/kg							
Methoxychlor	ND	10.0	ug/kg							
Toxaphene	ND	30.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*8.29*		ug/kg	*12.50*		*66.3*	*55-126*			
Surrogate: Decachlorobiphenyl	*9.06*		ug/kg	*12.50*		*72.4*	*49-133*			
LCS	**Prepared: 12/06/18 Analyzed: 12/10/18**									
Aldrin	6.99	2.00	ug/kg	8.000		87.3	56-130			
gamma-BHC (Lindane)	5.80	2.00	ug/kg	8.000		72.6	56-133			
4,4´-DDT	4.94	4.00	ug/kg	8.000		61.7	56-133			
Dieldrin	6.84	2.00	ug/kg	8.000		85.6	62-119			
Endrin	6.42	2.00	ug/kg	8.000		80.2	59-127			
Heptachlor	5.88	2.00	ug/kg	8.000		73.5	55-110			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*9.71*		ug/kg	*12.50*		*77.7*	*54-108*			
Surrogate: Decachlorobiphenyl	*12.0*		ug/kg	*12.50*		*96.0*	*54-127*			
Matrix Spike **Source: 1811097-22**	**Prepared: 12/06/18 Analyzed: 12/07/18**									
Aldrin	9.79	2.00	ug/kg	10.00	ND	97.9	39-124			
gamma-BHC (Lindane)	6.08	2.00	ug/kg	10.00	ND	60.8	44-120			
4,4´-DDT	38.0	4.00	ug/kg	25.00	22.0	64.2	48-150			
Dieldrin	43.9	2.00	ug/kg	25.00	30.3	54.5	48-144			
Endrin	15.5	2.00	ug/kg	25.00	ND	61.9	54-149			

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

File #:73443
Report Date: 12/11/18
Submitted: 11/09/18
PLS Report No.: 1811097

Project: 16901 ESD / P.O. # 16901-POS

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BL81134 - EPA 3550C										
Heptachlor	5.62	2.00	ug/kg	10.00	ND	56.2	46-135			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*9.48*		ug/kg	*12.50*		*75.9*	*55-126*			
Surrogate: Decachlorobiphenyl	*11.8*		ug/kg	*12.50*		*94.2*	*49-133*			
Matrix Spike Dup Source: 1811097-22	**Prepared: 12/06/18 Analyzed: 12/07/18**									
Aldrin	10.2	2.00	ug/kg	10.00	ND	102	39-124	3.88	30	
gamma-BHC (Lindane)	6.60	2.00	ug/kg	10.00	ND	66.0	44-120	8.22	30	
4,4'-DDT	44.3	4.00	ug/kg	25.00	22.0	89.4	48-150	32.8	30	
Dieldrin	44.4	2.00	ug/kg	25.00	30.3	56.3	48-144	3.30	30	
Endrin	18.6	2.00	ug/kg	25.00	ND	74.2	54-149	18.1	30	
Heptachlor	6.01	2.00	ug/kg	10.00	ND	60.1	46-135	6.72	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*9.51*		ug/kg	*12.50*		*76.1*	*55-126*			
Surrogate: Decachlorobiphenyl	*12.0*		ug/kg	*12.50*		*96.1*	*49-133*			

Notes and Definitions

R4	Analysis requested past Holding Time.
NA	Not Applicable
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
MDL	Method Detection Limit
PQL	Practical Quantitation Limit

Environmental Laboratory Accreditation Program Certificate No. 1131, Mobile Lab No. 2534, LACSD No. 10138

Authorized Signature(s)

91164

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE: 11/8/18 PAGE 1 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 181097

CLIENT NAME: SEI

Project Name/No. 16901/ESD

P.O. NO. 16901-Pos

AIRBILL NO: GSO 5427225855

COOLER TEMP: 2.2°C

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PRESERVED: _____

PROJECT MANAGER: R. Becher PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Becher (Printed) (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___

ANALYSES REQUESTED:

REMARKS: Comp = use 1/2 for composites save remainder for discrete analysis
Addon NTAT 11/15/18

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	SOIL	SLUDGE	OTHER	TAT	CONTAINER #	TYPE	OCBs (8081)	Arsenic	PCBs (8082)						SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/8/18	1:45	C5A-3" (Comp)		X			N	1	B									✓ Addons 12/5/18 @ 2:35 PM per Bob B. Discrete
2			1:35	C5B-3" (Comp)								X	⊗							
3			2:00	C5C-3" (Comp)																
4			1:25	C5D-3" (Comp)								✓								
5			2:45	C6A-3" (Comp)																
6			2:40	C6B-3" (Comp)								X	⊗							
7			2:10	C6C-3" (Comp)								✓								
8			2:20	C6D-3" (Comp)								✓								
9			10:50	T1-3"										⊗						
10			10:52	T1-2'																Hold

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Robert Becher	[signature]	11/9/18	11:30
[signature]	[signature]	11/9/18	11:30

SAMPLE DISPOSITION:
1. Samples returned to client? YES NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: _____ days

By _____ Date _____

SPECIAL INSTRUCTIONS: X = Composite sample analysis, ⊗ = discrete analysis

LAB COPY

91204

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE: 11/8/18 PAGE 2 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 181097

CLIENT NAME: SEI

Project Name/No. 16901/ESD

P.O. NO. 16901-Pos

AIRBILL NO: G50 5427225852.2

COOLER TEMP: _____

PRESERVED: _____

ADDRESS: 4400 Yeager Way, Bakersfield, CA 93313

PROJECT MANAGER: R. Bech

PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Becher (Printed) (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___

ANALYSES REQUESTED:

REMARKS: same as page 1

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	SOIL	SLUDGE	OTHER	TAT	CONTAINER #	TYPE	OCPs (8081)	Arsenic	OCP's (8081) Discrete						SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/8/18	12:50	C7A-3"		X			N	1	B									
2			12:35	C7B-3"								X ✓	⊘							
3			12:55	C7C-3" (comp)																
4			1:05	C7D-3"								✓								
5			11:30	C8A-3"										⊘						
6			10:26	C8B-3"								X	⊘	⊘						
7			11:10	C8C-3" (comp)										⊘						
8			10:26	C8D-3" RJB									⊘							Discrete not part of comp
9			1:47	C5A-2"																Hold
10		↓	1:37	C5B-2"		↓			↓	↓	↓									↓

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
[signature]	Robert Becher [signature]	11/9/18	11:30
[signature]	[signature]	11/9/18	11:30

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By [signature] Date 11/8/18

SPECIAL INSTRUCTIONS:

LAB COPY

91199

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE: 11/8/18 PAGE 3 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 811097

CLIENT NAME: SEI

Project Name/No. 16901 / ESD

P.O. NO. 16901-Pos

AIRBILL NO: GSO 542722585

COOLER TEMP: _____

PRESERVED: _____

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PROJECT MANAGER: R. Becher

PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Becher (Printed) (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

ANALYSES REQUESTED: As (discrete)

REMARKS:

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	As (discrete)	SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/8/18	2:02	C5C-2'		X				1	B		Hold
2			1:27	C5D-2'									
3			2:47	C6A-2'									
4			2:42	C6B-2'									
5			2:12	C6C-2'									
6			2:22	C6D-2'									
7			12:52	C7A-2'									
8			12:37	C7B-2'								⊘	
9			12:57	C7C-2'									
10			1:07	C7D-2'									

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
[signature]	Robert Becher	11/9/18	11:30
[signature]	[signature]	11/9/18	11:30

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By [signature] Date 11/8/18

SPECIAL INSTRUCTIONS:

LAB COPY

91201

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE: 11/8/18 PAGE 4 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 1811097

CLIENT NAME: SET

Project Name/No. 16901/ESD

P.O. NO. 16901-Pos

AIRBILL NO: GSO 542722585

COOLER TEMP: _____

PRESERVED: _____

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PROJECT MANAGER: R. Becher PHONE NO: 661-831-5100 FAX NO: 831-2411

SAMPLER NAME: R. Becher (Printed) (Signature)

TAT(Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

ANALYSES REQUESTED:

REMARKS:

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	OCP's (Discrete)							SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/8/18	11:32	C8A-2'		X				1	B	Ø							Hold
2		↓	10:30	C8B-2'		↓				↓	↓	Ø							↓
3		↓	11:12	C8C-2'		↓				↓	↓	Ø							↓
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Robert Becher	Robert Becher	11/9/18	11:30
		11/9/18	11:30

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By _____ Date 11/8/18

SPECIAL INSTRUCTIONS:

LAB COPY

POSITIVE
LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

December 18, 2018

Mr. Robert Becker
Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Report No.: 1811097
Project Name: 16901 ESD / P.O. # 16901-POS

Dear Mr. Robert Becker,

This report contains the analytical results for the sample(s) received under chain of custody(s) by Positive Lab Service on November 09, 2018.

The test results in this report are performed in compliance with ELAP accreditation requirements for the certified parameters. The laboratory report may not be produced, except in full, without the written approval of the laboratory.

The issuance of the final Certificate of Analysis takes precedence over any previous Preliminary Report. Preliminary data should not be used for regulatory purposes. Authorized signature(s) is provided on final report only.

If you have any questions in reference to this report, please contact your Positive Lab Service coordinator.

Project Manager

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 12/18/18
Submitted: 11/09/18
PLS Report No.: 1811097

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C5B-3" Soil (1811097-05) Sampled: 11/08/18 13:35 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
4,4´-DDD	**6.05**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
4,4´-DDE	**174**		2	ug/kg	16.0	EPA 3550C	EPA 8081A	12/13/18	12/18/18	ai	BL81744
4,4´-DDT	**74.4**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Dieldrin	**13.3**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*66.0 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*12/13/18*	*12/14/18*	*ai*	*BL81744*
Surrogate: Decachlorobiphenyl	*75.4 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*12/13/18*	*12/14/18*	*ai*	*BL81744*

Sample ID: C6B-3" Soil (1811097-06) Sampled: 11/08/18 14:40 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
4,4´-DDD	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
4,4´-DDE	**76.0**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
4,4´-DDT	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Dieldrin	**27.0**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 12/18/18
Submitted: 11/09/18
PLS Report No.: 1811097

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C6B-3" Soil (1811097-06) Sampled: 11/08/18 14:40 Received: 11/09/18 11:30

Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*68.0 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*12/13/18*	*12/14/18*	*ai*	*BL81744*
Surrogate: Decachlorobiphenyl	*68.1 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*12/13/18*	*12/14/18*	*ai*	*BL81744*

Sample ID: C6A-3" Soil (1811097-23) Sampled: 11/08/18 14:45 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
4,4´-DDD	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
4,4´-DDE	**88.6**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
4,4´-DDT	**25.8**		1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Dieldrin	**9.16**		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endrin aldehyde	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endrin ketone	ND		1	ug/kg	12.0	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Heptachlor	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Heptachlor epoxide	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Methoxychlor	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Toxaphene	ND		1	ug/kg	60.0	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*67.6 %*			*55-126*		*EPA 3550C*	*EPA 8081A*	*12/13/18*	*12/14/18*	*ai*	*BL81744*
Surrogate: Decachlorobiphenyl	*69.0 %*			*49-133*		*EPA 3550C*	*EPA 8081A*	*12/13/18*	*12/14/18*	*ai*	*BL81744*

Sample ID: C6D-2' Soil (1811097-24) Sampled: 11/08/18 14:22 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
alpha-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
beta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
delta-BHC	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
gamma-BHC (Lindane)	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
alpha-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
gamma-Chlordane	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
4,4´-DDD	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
4,4´-DDE	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
4,4´-DDT	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Dieldrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endosulfan I	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endosulfan II	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endosulfan sulfate	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endrin	ND		1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Technical Chlordane	ND		1	ug/kg	20.0	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 12/18/18
Submitted: 11/09/18
PLS Report No.: 1811097

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C6D-2' Soil (1811097-24) Sampled: 11/08/18 14:22 Received: 11/09/18 11:30

Endrin aldehyde	ND	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Endrin ketone	ND	1	ug/kg	12.0	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Heptachlor	ND	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Heptachlor epoxide	ND	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Methoxychlor	ND	1	ug/kg	20.0	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Toxaphene	ND	1	ug/kg	60.0	EPA 3550C	EPA 8081A	12/13/18	12/14/18	ai	BL81744
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*84.2 %*		*55-126*		*EPA 3550C*	*EPA 8081A*	*12/13/18*	*12/14/18*	*ai*	*BL81744*
Surrogate: Decachlorobiphenyl	*82.9 %*		*49-133*		*EPA 3550C*	*EPA 8081A*	*12/13/18*	*12/14/18*	*ai*	*BL81744*

POSITIVE LAB SERVICE

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Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

File #:73443
Report Date: 12/18/18
Submitted: 11/09/18
PLS Report No.: 1811097

Project: 16901 ESD / P.O. # 16901-POS

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BL81744 - EPA 3550C										
Blank	**Prepared: 12/13/18 Analyzed: 12/14/18**									
Aldrin	ND	2.00	ug/kg							
alpha-BHC	ND	2.00	ug/kg							
beta-BHC	ND	2.00	ug/kg							
delta-BHC	ND	2.00	ug/kg							
gamma-BHC (Lindane)	ND	2.00	ug/kg							
alpha-Chlordane	ND	2.00	ug/kg							
gamma-Chlordane	ND	2.00	ug/kg							
4,4´-DDD	ND	2.00	ug/kg							
4,4´-DDE	ND	4.00	ug/kg							
4,4´-DDT	ND	4.00	ug/kg							
Dieldrin	ND	2.00	ug/kg							
Endosulfan I	ND	4.00	ug/kg							
Endosulfan II	ND	2.00	ug/kg							
Endosulfan sulfate	ND	2.00	ug/kg							
Endrin	ND	2.00	ug/kg							
Technical Chlordane	ND	10.0	ug/kg							
Endrin aldehyde	ND	2.00	ug/kg							
Endrin ketone	ND	6.00	ug/kg							
Heptachlor	ND	2.00	ug/kg							
Heptachlor epoxide	ND	2.00	ug/kg							
Methoxychlor	ND	10.0	ug/kg							
Toxaphene	ND	30.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*9.29*		ug/kg	*12.50*		*74.3*	*55-126*			
Surrogate: Decachlorobiphenyl	*8.95*		ug/kg	*12.50*		*71.6*	*49-133*			
LCS	**Prepared: 12/13/18 Analyzed: 12/14/18**									
Aldrin	6.89	2.00	ug/kg	8.000		86.2	56-130			
gamma-BHC (Lindane)	7.25	2.00	ug/kg	8.000		90.6	56-133			
4,4´-DDT	6.40	4.00	ug/kg	8.000		80.1	56-133			
Dieldrin	8.99	2.00	ug/kg	8.000		112	62-119			
Endrin	6.77	2.00	ug/kg	8.000		84.6	59-127			
Heptachlor	7.42	2.00	ug/kg	8.000		92.8	55-110			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*9.81*		ug/kg	*12.50*		*78.5*	*54-108*			
Surrogate: Decachlorobiphenyl	*9.65*		ug/kg	*12.50*		*77.2*	*54-127*			
Matrix Spike **Source: 1812269-01**	**Prepared: 12/13/18 Analyzed: 12/14/18**									
Aldrin	7.48	2.00	ug/kg	10.00	ND	74.8	39-124			
gamma-BHC (Lindane)	7.51	2.00	ug/kg	10.00	ND	75.1	44-120			
4,4´-DDT	17.5	4.00	ug/kg	25.00	ND	70.2	48-150			
Dieldrin	21.1	2.00	ug/kg	25.00	ND	84.3	48-144			
Endrin	20.9	2.00	ug/kg	25.00	ND	83.8	54-149			

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
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Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 12/18/18
Submitted: 11/09/18
PLS Report No.: 1811097

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BL81744 - EPA 3550C										
Heptachlor	7.46	2.00	ug/kg	10.00	ND	74.6	46-135			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*9.15*		ug/kg	*12.50*		*73.2*	*55-126*			
Surrogate: Decachlorobiphenyl	*10.3*		ug/kg	*12.50*		*82.2*	*49-133*			
Matrix Spike Dup Source: 1812269-01	**Prepared: 12/13/18 Analyzed: 12/14/18**									
Aldrin	7.94	2.00	ug/kg	10.00	ND	79.4	39-124	6.04	30	
gamma-BHC (Lindane)	7.92	2.00	ug/kg	10.00	ND	79.2	44-120	5.31	30	
4,4′-DDT	19.2	4.00	ug/kg	25.00	ND	76.9	48-150	9.21	30	
Dieldrin	23.5	2.00	ug/kg	25.00	ND	94.1	48-144	11.0	30	
Endrin	22.9	2.00	ug/kg	25.00	ND	91.5	54-149	8.78	30	
Heptachlor	8.04	2.00	ug/kg	10.00	ND	80.4	46-135	7.57	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*10.3*		ug/kg	*12.50*		*82.4*	*55-126*			
Surrogate: Decachlorobiphenyl	*10.5*		ug/kg	*12.50*		*83.9*	*49-133*			

Notes and Definitions

R4	Analysis requested past Holding Time.
NA	Not Applicable
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
MDL	Method Detection Limit
PQL	Practical Quantitation Limit

Environmental Laboratory Accreditation Program Certificate No. 1131, Mobile Lab No. 2534, LACSD No. 10138

Authorized Signature(s)

91164

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE: 11/8/18 PAGE 1 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 181097

CLIENT NAME: SEI Project Name/No. 16901/ESD P.O. NO. 16901-Pos

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PROJECT MANAGER: R. Becher PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Becher (Printed) (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

AIRBILL NO: G50 5427222585

COOLER TEMP: 2.2°C

PRESERVED: _____

REMARKS: Comp = use 1/2 for composites save remainder for discrete analysis

Addon NTAT 11/15/18

ANALYSES REQUESTED:

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	OCBs (8081)	Arsenic	PCBs (8082)						SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/8/18	1:45	C5A-3" (Comp)		X			N	1	B									✓ Addons 12/5/18 @ 2:35 PM per Bob B. Discrete
2			1:35	C5B-3" (Comp)								* X	⊗							* Addons 12/11/18 @ 11:39 AM NTAT via email Discrete
3			2:00	C5C-3" (Comp)																
4			1:25	C5D-3" (Comp)								✓								
5			2:45	C6A-3" (Comp)								*								
6			2:40	C6B-3" (Comp)								* X	⊗							
7			2:10	C6C-3" (Comp)								✓								
8			2:20	C6D-3" (Comp)								✓								
9			10:50	T1-3"										⊗						
10			10:52	T1-2'																Hold

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Robert Becher	[signature]	11/9/18	11:30
[signature]	[signature]	11/9/18	11:30

SAMPLE DISPOSITION:
1. Samples returned to client? YES NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: _____ days

By _____ Date _____

SPECIAL INSTRUCTIONS: X = Composite sample analysis, ⊗ = discrete analysis

LAB COPY

91204

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE: 11/8/18 PAGE 2 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 181097

CLIENT NAME: SEI

Project Name/No. 16901/ESD

P.O. NO. 16901-Pos

AIRBILL NO: G50 5427225852

COOLER TEMP: 2.2

PRESERVED: _____

ADDRESS: 4400 Yeager Way, Bakersfield, CA 93313

PROJECT MANAGER: R. Beck

PHONE NO: 661-831-5100 FAX NO: 831-7111

SAMPLER NAME: R. Becher (Printed) [signature] (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___

REMARKS: same as page 1

ANALYSES REQUESTED:

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	OCPs (8081)	Arsenic	OCP's (8081) Discrete	SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/8/18	12:50	C7A-3"		X			N	1	B				
2			12:35	C7B-3"								X ✓	⊘		
3			12:55	C7C-3" (comp)											
4			1:05	C7D-3"								✓			
5			11:30	C8A-3"										⊘	
6			10:26	C8B-3"								X	⊘	⊘	
7			11:10	C8C-3" (comp)										⊘	
8			10:26	C8D-3" RJB									⊘		Discrete not part of comp
9			1:47	C5A-2"											Hold
10			1:37	C5B-2"											

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
[signature] Robert Becher	[signature]	11/9/18	11:30
[signature]	[signature]	11/9/18	11:30

SPECIAL INSTRUCTIONS:

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 From _____ days

By [signature] Date 11/8/18

LAB COPY

91199

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE: 11/8/18 PAGE 3 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 811097

CLIENT NAME: SEI

Project Name/No. 16901 / ESD

P.O. NO. 16901-Pos

AIRBILL NO: G50 5427225 85

COOLER TEMP: _____

PRESERVED: _____

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PROJECT MANAGER: R. Becher PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Becher (Printed) (Signature)

TAT(Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___

ANALYSES REQUESTED:

REMARKS:
*see pg 1
① Addons 12/17/18
3day TAT

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	As (Discrete)	OCP's (Discrete)						SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/8/18	2:02	C5C-2'		X				1	B								Hold
2		↓	1:27	C5D-2'		↓				↓	↓								↓
3		↓	2:47	C6A-2'		↓				↓	↓								↓
4		↓	2:42	C6B-2'		↓				↓	↓								↓
5		↓	2:12	C6C-2'		↓				↓	↓		①						↓
6		↓	2:22	C6D-2'		↓				↓	↓		*						↓
7		↓	12:52	C7A-2'		↓				↓	↓								↓
8		↓	12:37	C7B-2'		↓				↓	↓	①							↓
9		↓	12:57	C7C-2'		↓				↓	↓								↓
10		↓	1:07	C7D-2'		↓				↓	↓								↓

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
[signature]	Robert Becher	11/9/18	11:30
[signature]	[signature]	11/9/18	11:30

SPECIAL INSTRUCTIONS:

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By [signature] Date 11/8/18

LAB COPY

91201

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

CHAIN OF CUSTODY AND ANALYSIS REQUEST

DATE: 11/8/18 PAGE 4 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 181097

CLIENT NAME: SET Project Name/No. 16901/ESD P.O. NO. 16901-Pos

AIRBILL NO: G50 5427225 85

COOLER TEMP: _____

PRESERVED: _____

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PROJECT MANAGER: R. Becher PHONE NO: 661-831-5700 FAX NO: 831-2441

SAMPLER NAME: R. Becher (Printed) (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# _____

ANALYSES REQUESTED: OCP's (Discrete)

REMARKS:

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX WATER	MATRIX SOIL	MATRIX SLUDGE	MATRIX OTHER	TAT	CONTAINER #	CONTAINER TYPE	OCP's (Discrete)	SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/8/18	11:32	C8A-2'		X				1	B	⊘	Hold
2		↓	10:30	C8B-2'		↓				↓	↓	⊘	↓
3		↓	11:12	C8C-2'		↓				↓	↓	⊘	↓
4													
5													
6													
7													
8													
9													
10													

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
[signature] Robert Becher	[signature]	11/9/18	11:30
[signature]	[signature]	11/9/18	11:30

SPECIAL INSTRUCTIONS:

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days
By [signature] Date 11/8/18

LAB COPY

POSITIVE
LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

December 19, 2018

Mr. Robert Becker
Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Report No.: 1811097
Project Name: 16901 ESD / P.O. # 16901-POS

Dear Mr. Robert Becker,

This report contains the analytical results for the sample(s) received under chain of custody(s) by Positive Lab Service on November 09, 2018.

The test results in this report are performed in compliance with ELAP accreditation requirements for the certified parameters. The laboratory report may not be produced, except in full, without the written approval of the laboratory.

The issuance of the final Certificate of Analysis takes precedence over any previous Preliminary Report. Preliminary data should not be used for regulatory purposes. Authorized signature(s) is provided on final report only.

If you have any questions in reference to this report, please contact your Positive Lab Service coordinator.

Project Manager

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

File #:73443
Report Date: 12/19/18
Submitted: 11/09/18
PLS Report No.: 1811097

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C6C-2' Soil (1811097-25) Sampled: 11/08/18 14:22 Received: 11/09/18 11:30

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
alpha-BHC	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
beta-BHC	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
delta-BHC	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
gamma-BHC (Lindane)	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
alpha-Chlordane	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
gamma-Chlordane	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
4,4´-DDD	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
4,4´-DDE	**27.2**	R4	1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
4,4´-DDT	**8.14**	R4	1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
Dieldrin	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
Endosulfan I	ND	R4	1	ug/kg	8.00	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
Endosulfan II	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
Endosulfan sulfate	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
Endrin	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
Technical Chlordane	ND	R4	1	ug/kg	20.0	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
Endrin aldehyde	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
Endrin ketone	ND	R4	1	ug/kg	12.0	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
Heptachlor	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
Heptachlor epoxide	ND	R4	1	ug/kg	4.00	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
Methoxychlor	ND	R4	1	ug/kg	20.0	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
Toxaphene	ND	R4	1	ug/kg	60.0	EPA 3550C	EPA 8081A	12/18/18	12/19/18	ai	BL81955
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*71.2 %*	*R4*		*55-126*		*EPA 3550C*	*EPA 8081A*	*12/18/18*	*12/19/18*	*ai*	*BL81955*
Surrogate: Decachlorobiphenyl	*61.0 %*	*R4*		*49-133*		*EPA 3550C*	*EPA 8081A*	*12/18/18*	*12/19/18*	*ai*	*BL81955*

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 12/19/18
Submitted: 11/09/18
PLS Report No.: 1811097

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BL81955 - EPA 3550C										
Blank	**Prepared: 12/17/18 Analyzed: 12/18/18**									
Aldrin	ND	2.00	ug/kg							
alpha-BHC	ND	2.00	ug/kg							
beta-BHC	ND	2.00	ug/kg							
delta-BHC	ND	2.00	ug/kg							
gamma-BHC (Lindane)	ND	2.00	ug/kg							
alpha-Chlordane	ND	2.00	ug/kg							
gamma-Chlordane	ND	2.00	ug/kg							
4,4´-DDD	ND	2.00	ug/kg							
4,4´-DDE	ND	4.00	ug/kg							
4,4´-DDT	ND	4.00	ug/kg							
Dieldrin	ND	2.00	ug/kg							
Endosulfan I	ND	4.00	ug/kg							
Endosulfan II	ND	2.00	ug/kg							
Endosulfan sulfate	ND	2.00	ug/kg							
Endrin	ND	2.00	ug/kg							
Technical Chlordane	ND	10.0	ug/kg							
Endrin aldehyde	ND	2.00	ug/kg							
Endrin ketone	ND	6.00	ug/kg							
Heptachlor	ND	2.00	ug/kg							
Heptachlor epoxide	ND	2.00	ug/kg							
Methoxychlor	ND	10.0	ug/kg							
Toxaphene	ND	30.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*9.66*		ug/kg	*12.50*		*77.3*	*55-126*			
Surrogate: Decachlorobiphenyl	*7.77*		ug/kg	*12.50*		*62.2*	*49-133*			
Blank	**Prepared: 12/18/18 Analyzed: 12/19/18**									
Aldrin	ND	2.00	ug/kg							
alpha-BHC	ND	2.00	ug/kg							
beta-BHC	ND	2.00	ug/kg							
delta-BHC	ND	2.00	ug/kg							
gamma-BHC (Lindane)	ND	2.00	ug/kg							
alpha-Chlordane	ND	2.00	ug/kg							
gamma-Chlordane	ND	2.00	ug/kg							
4,4´-DDD	ND	2.00	ug/kg							
4,4´-DDE	ND	4.00	ug/kg							
4,4´-DDT	ND	4.00	ug/kg							
Dieldrin	ND	2.00	ug/kg							
Endosulfan I	ND	4.00	ug/kg							
Endosulfan II	ND	2.00	ug/kg							
Endosulfan sulfate	ND	2.00	ug/kg							

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

File #:73443
Report Date: 12/19/18
Submitted: 11/09/18
PLS Report No.: 1811097

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BL81955 - EPA 3550C										
Endrin	ND	2.00	ug/kg							
Technical Chlordane	ND	10.0	ug/kg							
Endrin aldehyde	ND	2.00	ug/kg							
Endrin ketone	ND	6.00	ug/kg							
Heptachlor	ND	2.00	ug/kg							
Heptachlor epoxide	ND	2.00	ug/kg							
Methoxychlor	ND	10.0	ug/kg							
Toxaphene	ND	30.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*8.52*		ug/kg	*12.50*		*68.2*	*55-126*			
Surrogate: Decachlorobiphenyl	*7.40*		ug/kg	*12.50*		*59.2*	*49-133*			
LCS	**Prepared: 12/17/18 Analyzed: 12/18/18**									
Aldrin	7.36	2.00	ug/kg	8.000		92.0	56-130			
gamma-BHC (Lindane)	7.89	2.00	ug/kg	8.000		98.6	56-133			
4,4´-DDT	6.07	4.00	ug/kg	8.000		75.9	56-133			
Dieldrin	9.40	2.00	ug/kg	8.000		117	62-119			
Endrin	7.33	2.00	ug/kg	8.000		91.6	59-127			
Heptachlor	7.51	2.00	ug/kg	8.000		93.9	55-110			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*10.1*		ug/kg	*12.50*		*80.4*	*54-108*			
Surrogate: Decachlorobiphenyl	*7.85*		ug/kg	*12.50*		*62.8*	*54-127*			
LCS	**Prepared: 12/18/18 Analyzed: 12/19/18**									
Aldrin	6.68	2.00	ug/kg	8.000		83.5	56-130			
gamma-BHC (Lindane)	7.10	2.00	ug/kg	8.000		88.8	56-133			
4,4´-DDT	6.40	4.00	ug/kg	8.000		80.0	56-133			
Dieldrin	8.72	2.00	ug/kg	8.000		109	62-119			
Endrin	7.82	2.00	ug/kg	8.000		97.8	59-127			
Heptachlor	7.24	2.00	ug/kg	8.000		90.5	55-110			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*9.33*		ug/kg	*12.50*		*74.7*	*54-108*			
Surrogate: Decachlorobiphenyl	*7.83*		ug/kg	*12.50*		*62.6*	*54-127*			
Matrix Spike Source: 1812374-01	**Prepared: 12/17/18 Analyzed: 12/18/18**									
Aldrin	5.17	2.00	ug/kg	10.00	ND	51.7	39-124			
gamma-BHC (Lindane)	6.10	2.00	ug/kg	10.00	ND	61.0	44-120			
4,4´-DDT	188	4.00	ug/kg	25.00	174	53.1	48-150			
Dieldrin	31.2	2.00	ug/kg	25.00	13.6	70.4	48-144			
Endrin	23.4	2.00	ug/kg	25.00	ND	93.7	54-149			
Heptachlor	10.1	2.00	ug/kg	10.00	ND	101	46-135			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*9.51*		ug/kg	*12.50*		*76.1*	*55-126*			
Surrogate: Decachlorobiphenyl	*7.86*		ug/kg	*12.50*		*62.9*	*49-133*			
Matrix Spike Dup Source: 1812374-01	**Prepared: 12/17/18 Analyzed: 12/18/18**									
Aldrin	5.53	2.00	ug/kg	10.00	ND	55.3	39-124	6.62	30	
gamma-BHC (Lindane)	6.00	2.00	ug/kg	10.00	ND	60.0	44-120	1.65	30	

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

File #:73443
Report Date: 12/19/18
Submitted: 11/09/18
PLS Report No.: 1811097

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BL81955 - EPA 3550C										
4,4'-DDT	188	4.00	ug/kg	25.00	174	53.1	48-150	0.0979	30	
Dieldrin	35.7	2.00	ug/kg	25.00	13.6	88.4	48-144	22.6	30	
Endrin	25.9	2.00	ug/kg	25.00	ND	104	54-149	10.0	30	
Heptachlor	9.83	2.00	ug/kg	10.00	ND	98.3	46-135	2.59	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*7.50*		ug/kg	*12.50*		*60.0*	*55-126*			
Surrogate: Decachlorobiphenyl	*7.30*		ug/kg	*12.50*		*58.4*	*49-133*			

Notes and Definitions

R4	Analysis requested past Holding Time.
NA	Not Applicable
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
MDL	Method Detection Limit
PQL	Practical Quantitation Limit

Environmental Laboratory Accreditation Program Certificate No. 1131, Mobile Lab No. 2534, LACSD No. 10138

Authorized Signature(s)

91164

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE: 11/8/18 PAGE 1 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 1811097

CLIENT NAME: SEI Project Name/No. 16901/ESD P.O. NO. 16901-Pos

AIRBILL NO: GSO 5427222585

COOLER TEMP: 2.2°C

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PRESERVED: _____

PROJECT MANAGER: R. Becher PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Becher (Printed) (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

ANALYSES REQUESTED:

REMARKS: Comp = use 1/2 for composites save remainder for discrete analysis
Addon NTAT 11/15/18

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	OCBs (8081)	Arsenic	PCBs (8082)						SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/8/18	1:45	C5A-3"		X			N	1	B									✓ Addons 12/5/18 @ 2:35 PM per Bob B. Discrete
2			1:35	C5B-3"								* X	⊘							* Addons 12/11/18 @ 11:39 AM NTAT via email Discrete
3			2:00	C5C-3" (Comp)																
4			1:25	C5D-3"								✓								
5			2:45	C6A-3"								*								
6			2:40	C6B-3" (Comp)								* X	⊘							
7			2:10	C6C-3"								✓								
8			2:20	C6D-3"								✓								
9			10:50	T1-3"										⊘						
10			10:52	T1-2"																Hold

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Robert Becher	[signature]	11/9/18	11:30
[signature]	[signature]	11/9/18	11:30

SAMPLE DISPOSITION:
1. Samples returned to client? YES NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: _____ days

By _____ Date _____

SPECIAL INSTRUCTIONS: X = Composite sample analysis, ⊘ = discrete analysis

LAB COPY

91204

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE: 11/8/18 PAGE 2 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 1811097

CLIENT NAME: SEI

Project Name/No. 16901/ESD

P.O. NO. 16901-Pos

AIRBILL NO: G50 5427225852.2

COOLER TEMP: _____

PRESERVED: _____

ADDRESS: 4400 Yeager Way, Bakersfield, CA 93313

PROJECT MANAGER: R. Bech

PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Becher (Printed) [signature] (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___

REMARKS: same as page 1

ANALYSES REQUESTED:

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	OCPs (8081)	Arsenic	OCP's (8081) Discrete					SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/8/18	12:50	C7A-3"		X			N	1	B								
2			12:35	C7B-3"								X ✓	⊘						
3			12:55	C7C-3" (comp)															
4			1:05	C7D-3"								✓							
5			11:30	C8A-3"										⊘					
6			10:26	C8B-3"								X	⊘	⊘					
7			11:10	C8C-3" (Comp)										⊘					
8			10:26	C8D-3" RJB									⊘						Discrete not part of Comp
9			1:47	C5A-2"															Hold
10			1:37	C5B-2"															

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
[signature] Robert Becher	[signature]	11/9/18	11:30
[signature]	[signature]	11/9/18	11:30

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By [signature] Date 11/8/18

SPECIAL INSTRUCTIONS:

LAB COPY

91199

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE: 11/8/18 PAGE 3 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 811097

CLIENT NAME: SEI

Project Name/No. 16901 / ESD

P.O. NO. 16901-Pos

AIRBILL NO: GSO 542722585

COOLER TEMP: _____

PRESERVED: _____

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PROJECT MANAGER: R. Becher

PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Becher (Printed) (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

REMARKS:
*see pg 1
① Addons 12/17/18
3day TAT

ANALYSES REQUESTED:

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	As (biscrete)	OCP's (biscrete)							SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/8/18	2:02	C5C-2'		X				1	B									Hold
2			1:27	C5D-2'																
3			2:47	C6A-2'																
4			2:42	C6B-2'																
5			2:12	C6C-2'									①							
6			2:22	C6D-2'									*							
7			12:52	C7A-2'																
8			12:37	C7B-2'								①								
9			12:57	C7C-2'																
10			1:07	C7D-2'																

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
[signature]	Robert Becher	11/9/18	11:30
[signature]	[signature]	11/9/18	11:30

SPECIAL INSTRUCTIONS:

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By [signature] Date 11/8/18

LAB COPY

91201

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

CHAIN OF CUSTODY AND ANALYSIS REQUEST

DATE: 11/8/18 PAGE 4 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 181097

CLIENT NAME: SET Project Name/No. 16901/ESD P.O. NO. 16901-Pos

AIRBILL NO: G50 542722585

COOLER TEMP: _____

PRESERVED: _____

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PROJECT MANAGER: R. Becher PHONE NO: 661-831-5700 FAX NO: 831-2411

SAMPLER NAME: R. Becher (Printed) (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

ANALYSES REQUESTED:

REMARKS:

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	OCP's (Discrete)							SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/8/18	11:32	C8A-2-		X				1	B	⊘							Hold
2		↓	10:30	C8B-2-		↓				↓	↓	⊘							↓
3		↓	11:12	C8C-2-		↓				↓	↓	⊘							↓
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Robert Becher	Robert Becher	11/9/18	11:30
		11/9/18	11:30

SPECIAL INSTRUCTIONS:

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By _____ Date 11/8/18

LAB COPY

POSITIVE
LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

December 19, 2018

Mr. Robert Becker
Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Report No.: 1811120
Project Name: 16901 ESD / P.O. # 16901-POS

Dear Mr. Robert Becker,

This report contains the analytical results for the sample(s) received under chain of custody(s) by Positive Lab Service on November 13, 2018.

The test results in this report are performed in compliance with ELAP accreditation requirements for the certified parameters. The laboratory report may not be produced, except in full, without the written approval of the laboratory.

The issuance of the final Certificate of Analysis takes precedence over any previous Preliminary Report. Preliminary data should not be used for regulatory purposes. Authorized signature(s) is provided on final report only.

If you have any questions in reference to this report, please contact your Positive Lab Service coordinator.

D Sandy
Project Manager

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

File #:73443
Report Date: 12/19/18
Submitted: 11/13/18
PLS Report No.: 1811120

Soils Engineering Inc.
4400 Yeager Way
Bakersfield, CA 93313

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

Project: 16901 ESD / P.O. # 16901-POS

Sample ID: C4B-2' Soil (1811120-19) Sampled: 11/09/18 11:12 Received: 11/13/18 10:08

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**8.28**		1	mg/kg	2.00	EPA 3050B	EPA 6010B	12/18/18	12/18/18	CG	BL81830

Quality Control Data

Analyte		Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BL81830 - EPA 3050B											
Blank		**Prepared & Analyzed: 12/18/18**									
Arsenic		ND	2.00	mg/kg							
LCS		**Prepared & Analyzed: 12/18/18**									
Arsenic		48.6	2.00	mg/kg	49.68		97.9	80-120			
Matrix Spike	**Source: 1812374-13**	**Prepared & Analyzed: 12/18/18**									
Arsenic		51.9	2.00	mg/kg	49.68	5.21	93.9	75-125			
Matrix Spike Dup	**Source: 1812374-13**	**Prepared & Analyzed: 12/18/18**									
Arsenic		52.6	2.00	mg/kg	49.68	5.21	95.4	75-125	1.63	30	

Notes and Definitions

NA	Not Applicable
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
MDL	Method Detection Limit
PQL	Practical Quantitation Limit

Environmental Laboratory Accreditation Program Certificate No. 1131, Mobile Lab No. 2534, LACSD No. 10138

Authorized Signature(s)

91205

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE: 11/9/18 PAGE 1 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 1811120

CLIENT NAME: SEI

Project Name/No. 16901/ESD

P.O. NO. 16901-Pos

AIRBILL NO: GSO 542747508

COOLER TEMP: 3.3°C

PRESERVED: _____

ADDRESS: 4400 Yeager wy, Bakersfield, CA 93313

PROJECT MANAGER: R. Becker PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Beck (Printed) (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

ANALYSES REQUESTED:

REMARKS: Comp = use 1/2 for composites, save remainder for discrete analysis

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	OCPs (8081)	Arsenic	PCBs (8082)					SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/9/18	8:55	C1A-3"		X			N	1	B								
2			8:45	C1B-3"								X	⊗						
3			9:05	C1C-3" (Comp)															
4			8:25	C1D-3"															
5			10:15	C2A-3"															
6			10:00	C2B-3"								X	⊗						
7			9:20	C2C-3" (Comp)															
8			9:30	C2D-3"															
9			9:55	T2-3"										⊗					
10			9:57	T2-2"															Hold

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Robert Beck	[illegible]	11/13/18	10:08
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By _____ Date 11/9/18

SPECIAL INSTRUCTIONS: X = Composite Analysis, ⊗ = discrete analysis

LAB COPY

91206

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE 11/9/18 PAGE 2 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 181120

CLIENT NAME: SEI

Project Name/No. 16901/ESD

P.O. NO. 16901/P05

AIRBILL NO: GSO 5427475088

COOLER TEMP: 3.3°C

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PRESERVED: _____

PROJECT MANAGER: R. Becher PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Becher (Printed) (Signature)

TAT(Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___

ANALYSES REQUESTED:

REMARKS: Same as page 1

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	OCPs (8081)	Arsenic	PCBs	8081 Pest OCP (discrete 11/9/18 N-TAT)					SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/9/18	1:00	C3A-3"		X			N	1	B				X					
2			12:45	C3B-3" (Comp)								X	⊗		X					
3			1:10	C3C-3"											X					
4			12:25	C3D-3"											X					
5			10:30	C4A-3"																
6			11:10	C4B-3" (Comp)								X	⊗							
7			10:50	C4C-3"																
8			11:00	C4D-3"																
9			11:10	C4E-3"									⊗							
10			8:57	C1A-2																Hold

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
[signature] Robert Becher	[signature]	11/13/18	10:08
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By [signature] Date 11/9/18

SPECIAL INSTRUCTIONS: X = composite analysis, ⊗ = discrete analysis

LAB COPY

91207

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

CHAIN OF CUSTODY AND ANALYSIS REQUEST

DATE: 11/9/18 PAGE 3 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 181120

CLIENT NAME: SEI

Project Name/No. ESD/16901

P.O. NO. 16901-P05

AIRBILL NO: 6950 5427477508

COOLER TEMP: 3.3°C

PRESERVED: _____

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PROJECT MANAGER: R. Becker PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Becker (Printed) (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

ANALYSES REQUESTED:

REMARKS:

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	8081 OCP	As 6010B							SAMPLE CONDITION/ CONTAINER /COMMENTS:
												Discrete 11/14/18 10-TAT	Discrete 11/14/18 10-TAT							
1		11/9/18	8:47	C1B-2'		X				1	B									Hold
2			9:07	C1C-2'																
3			8:27	C1D-2'																
4			10:17	C2A-2'																
5			10:02	C2B-2'																
6			9:22	C2C-2'																
7			9:32	C2D-2'																
8			1:02	C3A-2'								X								Off Hold 11/14/18
9			12:47	C3B-2'								X	X							
10			1:12	C3C-2'								X								

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Robert Becker		11/13/18	10:08
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:

SPECIAL INSTRUCTIONS:

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Frozen days

By _____ Date 11/9/18

LAB COPY

91202

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

CHAIN OF CUSTODY AND ANALYSIS REQUEST

DATE: 11/9/18 PAGE 4 OF 4

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 1811120

CLIENT NAME: SEI

Project Name/No. ESD/16901

P.O. NO. 16901-Pos

AIRBILL NO: G50 5427475008

COOLER TEMP: 3.3 c

PRESERVED: _____

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

PROJECT MANAGER: R. Becker PHONE NO: 661-831-5700 FAX NO: 831-5100

SAMPLER NAME: R. Beck (Printed) (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

ANALYSES REQUESTED:

REMARKS: * Addon 12/17/18 3day TAT

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER #	CONTAINER TYPE	8081 OCP Discrete 11/16/18 2-TAT	As							SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		11/9/18	12:27	C3D-2'		X				1	B	X								~~Hold~~ off Hold 11/12/18
2		↓	10:32	C4A-2'		↓				↓	↓									Hold ↓
3		↓	11:12	C4B-2'		↓				↓	↓		*							↓
4		↓	10:52	C4C-2'		↓				↓	↓									↓
5		↓	11:02	C4D-2'		↓				↓	↓									↓
6																				
7																				
8																				
9																				
10																				

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Robert Becker		11/13/18	10:08
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:

SPECIAL INSTRUCTIONS:

SAMPLE DISPOSITION:
1. Samples returned to client? (YES) NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 From _____ days

By _____ Date 11/9/18

LAB COPY

Appendix B

EDR-Summary Radius Map Report, Historical Topographic Maps, Sanborn Map Search, City Directory Search and EDR Vapor Encroachment Screening

Edison SD Site
Eucalyptus & Gargano
Bakersfield, CA 93306

Inquiry Number: 5480428.2s
November 09, 2018

EDR Summary Radius Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Map Findings Summary	4
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Orphan Summary	9
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

EUCALYPTUS & GARGANO
BAKERSFIELD, CA 93306

COORDINATES

Latitude (North):	35.3671550 - 35˚ 22' 1.75''
Longitude (West):	118.8998020 - 118˚ 53' 59.28''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	327403.3
UTM Y (Meters):	3915218.2
Elevation:	529 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property:	TP
Source:	U.S. Geological Survey

Target Property:	NW
Source:	U.S. Geological Survey

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140617
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
EUCALYPTUS & GARGANO
BAKERSFIELD, CA 93306

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

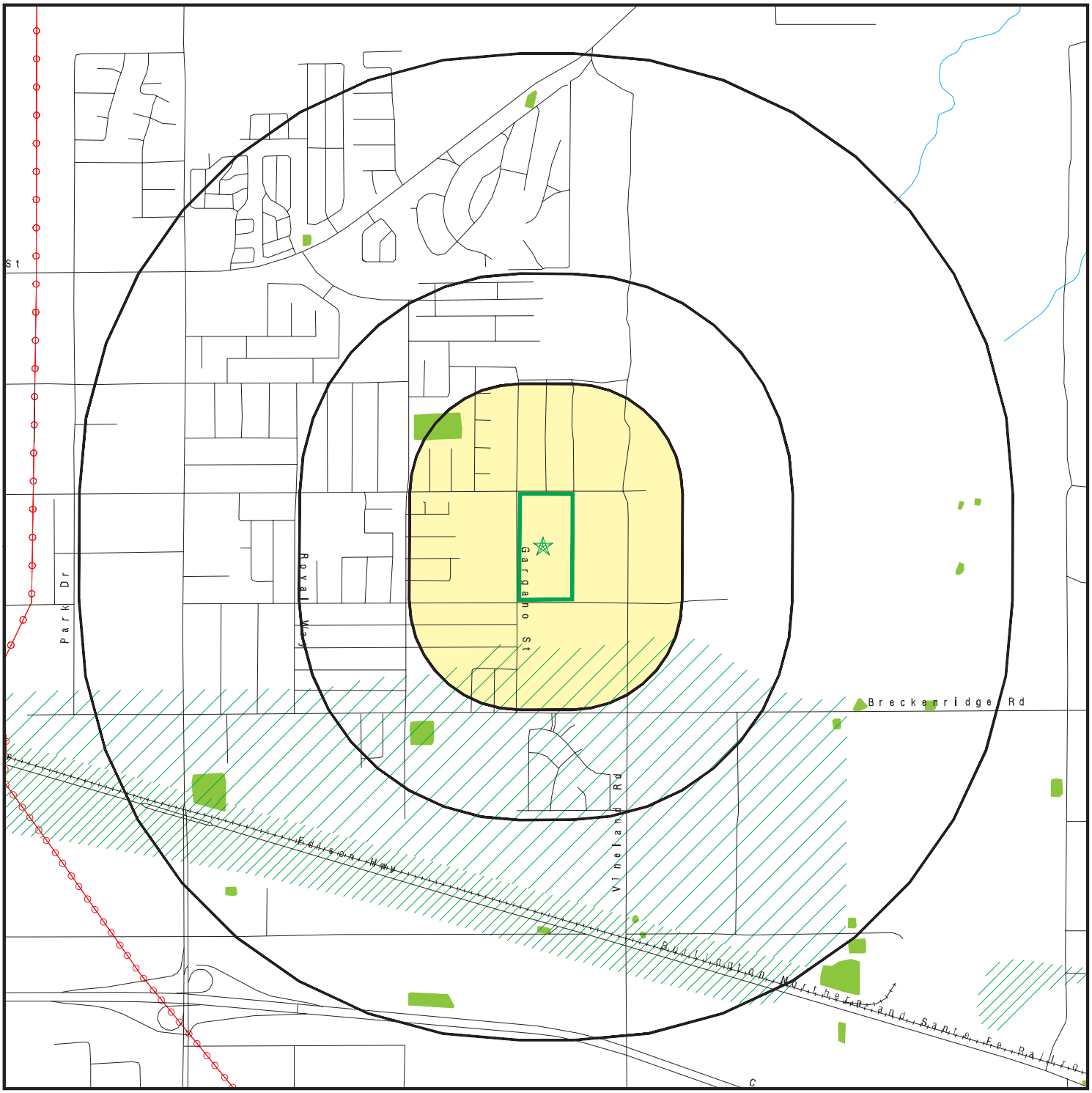
Unmappable (orphan) sites are not considered in the foregoing analysis.

Count: 0 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
		NO SITES FOUND			

OVERVIEW MAP - 5480428.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

Power transmission lines

100-year flood zone

500-year flood zone

National Wetland Inventory

State Wetlands

Areas of Concern

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Edison SD Site ADDRESS: Eucalyptus & Gargano Bakersfield CA 93306 LAT/LONG: 35.367155 / 118.899802	CLIENT: Soils Engineering, Inc. CONTACT: Robert Becker INQUIRY #: 5480428.2s DATE: November 09, 2018 12:43 pm

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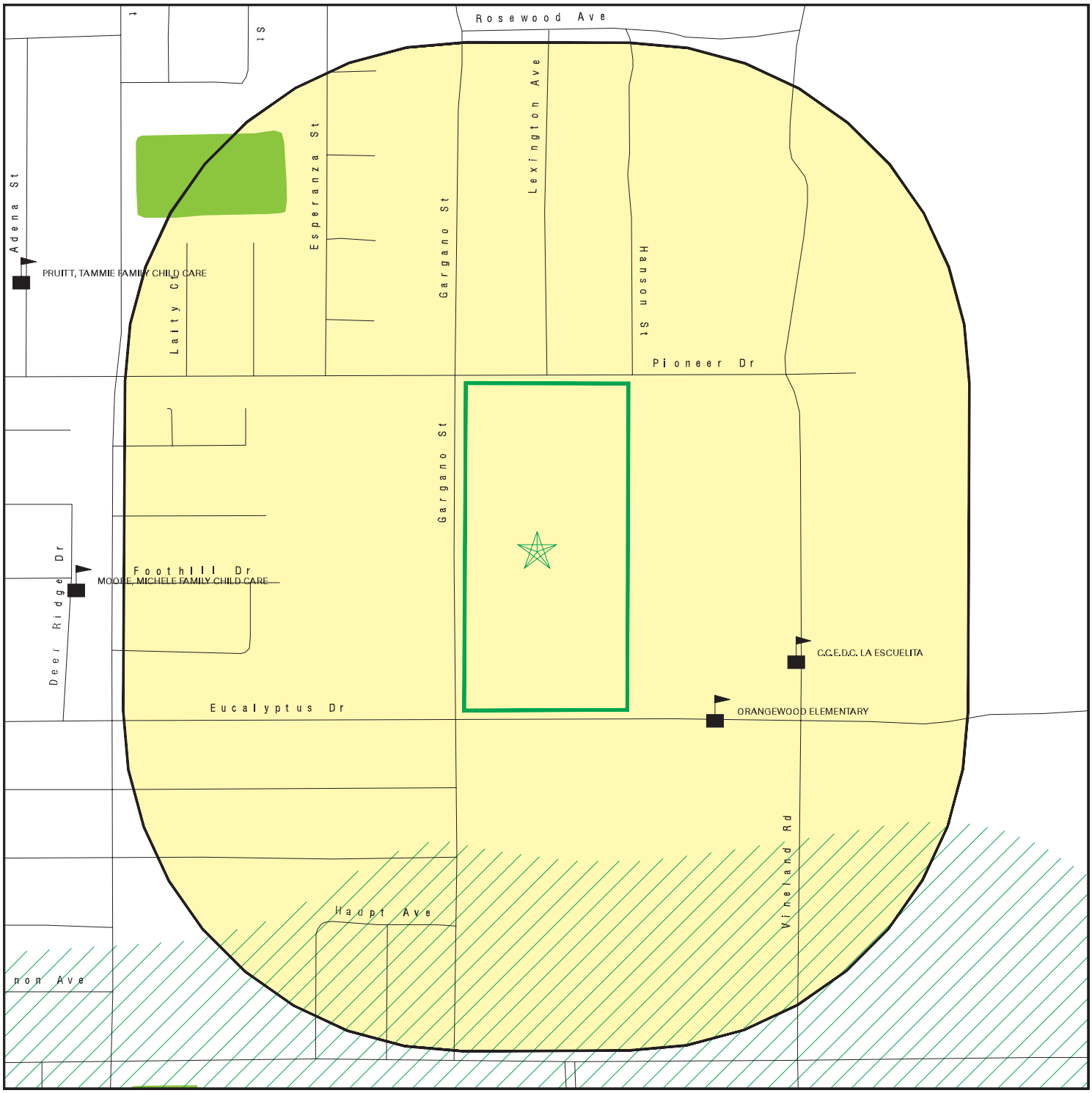
DETAIL MAP - 5480428.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Edison SD Site ADDRESS: Eucalyptus & Gargano Bakersfield CA 93306 LAT/LONG: 35.367155 / 118.899802	CLIENT: Soils Engineering, Inc. CONTACT: Robert Becker INQUIRY #: 5480428.2s DATE: November 09, 2018 12:47 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	0.001		0	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
CERS TANKS	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0
LIENS 2	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	0.001		0	NR	NR	NR	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.001		0	NR	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.001		0	NR	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	0	0	0	0	0	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

NO SITES FOUND

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	AST	Aboveground Petroleum Storage Tank Facilities	California Environmental Protection Agency	07/06/2016	07/12/2016	09/19/2016
CA	BROWNFIELDS	Considered Brownfieds Sites Listing	State Water Resources Control Board	09/24/2018	09/25/2018	10/15/2018
CA	CA BOND EXP. PLAN	Bond Expenditure Plan	Department of Health Services	01/01/1989	07/27/1994	08/02/1994
CA	CA FID UST	Facility Inventory Database	California Environmental Protection Agency	10/31/1994	09/05/1995	09/29/1995
CA	CDL	Clandestine Drug Labs	Department of Toxic Substances Control	12/31/2017	06/12/2018	08/06/2018
CA	CERS	CalEPA Regulated Site Portal Data	California Environmental Protection Agency	07/23/2018	07/25/2018	09/05/2018
CA	CERS HAZ WASTE	CERS HAZ WASTE	CalEPA	07/23/2018	07/25/2018	09/05/2018
CA	CERS TANKS	California Environmental Reporting System (CERS) Tanks	California Environmental Protection Agency	07/23/2018	07/25/2018	09/05/2018
CA	CHMIRS	California Hazardous Material Incident Report System	Office of Emergency Services	04/06/2018	04/24/2018	06/14/2018
CA	CIWQS	California Integrated Water Quality System	State Water Resources Control Board	09/04/2018	09/05/2018	10/02/2018
CA	CORTESE	"Cortese" Hazardous Waste & Substances Sites List	CAL EPA/Office of Emergency Information	09/24/2018	09/25/2018	10/16/2018
CA	CPS-SLIC	Statewide SLIC Cases (GEOTRACKER)	State Water Resources Control Board	09/10/2018	09/12/2018	10/09/2018
CA	CUPA LIVERMORE-PLEASANTON	CUPA Facility Listing	Livermore-Pleasanton Fire Department	08/28/2018	08/30/2018	11/01/2018
CA	CUPA SAN FRANCISCO CO	CUPA Facility Listing	San Francisco County Department of Environmen	09/11/2018	09/12/2018	09/19/2018
CA	DEED	Deed Restriction Listing	DTSC and SWRCB	09/04/2018	09/05/2018	10/02/2018
CA	DRYCLEAN AVAQMD	Antelope Valley Air Quality Management District Drycleaner L	Antelope Valley Air Quality Management Distri	06/25/2018	06/28/2018	08/06/2018
CA	DRYCLEAN SOUTH COAST	South Coast Air Quality Management District Drycleaner Listi	South Coast Air Quality Management District	10/04/2018	10/05/2018	11/01/2018
CA	DRYCLEANERS	Cleaner Facilities	Department of Toxic Substance Control	08/30/2018	09/27/2018	11/01/2018
CA	EMI	Emissions Inventory Data	California Air Resources Board	12/31/2017	06/20/2018	08/06/2018
CA	ENF	Enforcement Action Listing	State Water Resoruces Control Board	08/01/2018	08/02/2018	09/07/2018
CA	ENVIROSTOR	EnviroStor Database	Department of Toxic Substances Control	07/30/2018	07/31/2018	09/07/2018
CA	Financial Assurance 1	Financial Assurance Information Listing	Department of Toxic Substances Control	07/17/2018	07/24/2018	09/10/2018
CA	Financial Assurance 2	Financial Assurance Information Listing	California Integrated Waste Management Board	08/14/2018	08/16/2018	09/10/2018
CA	HAULERS	Registered Waste Tire Haulers Listing	Integrated Waste Management Board	09/26/2018	09/28/2018	11/01/2018
CA	HAZNET	Facility and Manifest Data	California Environmental Protection Agency	12/31/2016	07/12/2017	10/17/2017
CA	HIST CAL-SITES	Calsites Database	Department of Toxic Substance Control	08/08/2005	08/03/2006	08/24/2006
CA	HIST CORTESE	Hazardous Waste & Substance Site List	Department of Toxic Substances Control	04/01/2001	01/22/2009	04/08/2009
CA	HIST UST	Hazardous Substance Storage Container Database	State Water Resources Control Board	10/15/1990	01/25/1991	02/12/1991
CA	HWP	EnviroStor Permitted Facilities Listing	Department of Toxic Substances Control	08/20/2018	08/21/2018	09/10/2018
CA	HWT	Registered Hazardous Waste Transporter Database	Department of Toxic Substances Control	07/09/2018	07/11/2018	08/24/2018
CA	ICE	ICE	Department of Toxic Subsances Control	08/20/2018	08/21/2018	09/10/2018
CA	LDS	Land Disposal Sites Listing (GEOTRACKER)	State Water Qualilty Control Board	09/10/2018	09/12/2018	10/08/2018
CA	LIENS	Environmental Liens Listing	Department of Toxic Substances Control	08/29/2018	08/30/2018	10/01/2018
CA	LUST	Leaking Underground Fuel Tank Report (GEOTRACKER)	State Water Resources Control Board	09/10/2018	09/12/2018	10/08/2018
CA	LUST REG 1	Active Toxic Site Investigation	California Regional Water Quality Control Boa	02/01/2001	02/28/2001	03/29/2001
CA	LUST REG 2	Fuel Leak List	California Regional Water Quality Control Boa	09/30/2004	10/20/2004	11/19/2004
CA	LUST REG 3	Leaking Underground Storage Tank Database	California Regional Water Quality Control Boa	05/19/2003	05/19/2003	06/02/2003
CA	LUST REG 4	Underground Storage Tank Leak List	California Regional Water Quality Control Boa	09/07/2004	09/07/2004	10/12/2004
CA	LUST REG 5	Leaking Underground Storage Tank Database	California Regional Water Quality Control Boa	07/01/2008	07/22/2008	07/31/2008
CA	LUST REG 6L	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	09/09/2003	09/10/2003	10/07/2003
CA	LUST REG 6V	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	06/07/2005	06/07/2005	06/29/2005
CA	LUST REG 7	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	02/26/2004	02/26/2004	03/24/2004
CA	LUST REG 8	Leaking Underground Storage Tanks	California Regional Water Quality Control Boa	02/14/2005	02/15/2005	03/28/2005
CA	LUST REG 9	Leaking Underground Storage Tank Report	California Regional Water Quality Control Boa	03/01/2001	04/23/2001	05/21/2001
CA	MCS	Military Cleanup Sites Listing (GEOTRACKER)	State Water Resources Control Board	09/10/2018	09/12/2018	10/09/2018
CA	MILITARY PRIV SITES	Military Privatized Sites (GEOTRACKER)	State Water Resources Control Board	09/10/2018	09/12/2018	10/09/2018
CA	MILITARY UST SITES	Military UST Sites (GEOTRACKER)	State Water Resources Control Board	09/10/2018	09/12/2018	10/09/2018

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	MINES	Mines Site Location Listing	Department of Conservation	09/10/2018	09/12/2018	10/09/2018
CA	MWMP	Medical Waste Management Program Listing	Department of Public Health	08/28/2018	09/05/2018	10/03/2018
CA	NON-CASE INFO	Non-Case Information Sites (GEOTRACKER)	State Water Resources Control Board	09/10/2018	09/12/2018	10/09/2018
CA	NOTIFY 65	Proposition 65 Records	State Water Resources Control Board	09/19/2018	09/20/2018	10/19/2018
CA	NPDES	NPDES Permits Listing	State Water Resources Control Board	08/09/2018	08/10/2018	09/10/2018
CA	OTHER OIL GAS	Other Oil & Gas Projects Sites (GEOTRACKER)	State Water Resources Control Board	09/10/2018	09/12/2018	10/09/2018
CA	PEST LIC	Pesticide Regulation Licenses Listing	Department of Pesticide Regulation	09/04/2018	09/05/2018	10/03/2018
CA	PROC	Certified Processors Database	Department of Conservation	09/10/2018	09/12/2018	10/15/2018
CA	PROD WATER PONDS	Produced Water Ponds Sites (GEOTRACKER)	State Water Resources Control Board	09/10/2018	09/12/2018	10/09/2018
CA	PROJECT	Project Sites (GEOTRACKER)	State Water Resources Control Board	09/10/2018	09/12/2018	10/09/2018
CA	RESPONSE	State Response Sites	Department of Toxic Substances Control	07/30/2018	07/31/2018	09/07/2018
CA	RGA LF	Recovered Government Archive Solid Waste Facilities List	Department of Resources Recycling and Recover		07/01/2013	01/13/2014
CA	RGA LUST	Recovered Government Archive Leaking Underground Storage Tan	State Water Resources Control Board		07/01/2013	12/30/2013
CA	SAMPLING POINT	Sampling Point ? Public Sites (GEOTRACKER)	State Water Resources Control Board	09/10/2018	09/12/2018	10/09/2018
CA	SAN FRANCISCO AST	Aboveground Storage Tank Site Listing	San Francisco County Department of Public Hea	09/11/2018	09/12/2018	10/11/2018
CA	SCH	School Property Evaluation Program	Department of Toxic Substances Control	07/30/2018	07/31/2018	09/07/2018
CA	SLIC REG 1	Active Toxic Site Investigations	California Regional Water Quality Control Boa	04/03/2003	04/07/2003	04/25/2003
CA	SLIC REG 2	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board San Fran	09/30/2004	10/20/2004	11/19/2004
CA	SLIC REG 3	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Regional Water Quality Control Boa	05/18/2006	05/18/2006	06/15/2006
CA	SLIC REG 4	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Region Water Quality Control Board Los Angele	11/17/2004	11/18/2004	01/04/2005
CA	SLIC REG 5	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board Central	04/01/2005	04/05/2005	04/21/2005
CA	SLIC REG 6L	SLIC Sites	California Regional Water Quality Control Boa	09/07/2004	09/07/2004	10/12/2004
CA	SLIC REG 6V	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board, Victorv	05/24/2005	05/25/2005	06/16/2005
CA	SLIC REG 7	SLIC List	California Regional Quality Control Board, Co	11/24/2004	11/29/2004	01/04/2005
CA	SLIC REG 8	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Region Water Quality Control Board	04/03/2008	04/03/2008	04/14/2008
CA	SLIC REG 9	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Regional Water Quality Control Boa	09/10/2007	09/11/2007	09/28/2007
CA	SPILLS 90	SPILLS90 data from FirstSearch	FirstSearch	06/06/2012	01/03/2013	02/22/2013
CA	SWEEPS UST	SWEEPS UST Listing	State Water Resources Control Board	06/01/1994	07/07/2005	08/11/2005
CA	SWF/LF (SWIS)	Solid Waste Information System	Department of Resources Recycling and Recover	08/08/2018	08/10/2018	08/24/2018
CA	SWRCY	Recycler Database	Department of Conservation	09/10/2018	09/12/2018	10/15/2018
CA	TOXIC PITS	Toxic Pits Cleanup Act Sites	State Water Resources Control Board	07/01/1995	08/30/1995	09/26/1995
CA	UIC	UIC Listing	Deaprtment of Conservation	04/27/2018	06/13/2018	07/17/2018
CA	UIC GEO	Underground Injection Control Sites (GEOTRACKER)	State Water Resource Control Board	09/10/2018	09/12/2018	10/09/2018
CA	UST	Active UST Facilities	SWRCB	09/10/2018	09/12/2018	10/03/2018
CA	UST CLOSURE	Proposed Closure of Underground Storage Tank (UST) Cases	State Water Resources Control Board	09/10/2018	09/12/2018	10/03/2018
CA	UST MENDOCINO	Mendocino County UST Database	Department of Public Health	03/28/2018	05/25/2018	07/10/2018
CA	VCP	Voluntary Cleanup Program Properties	Department of Toxic Substances Control	07/30/2018	07/31/2018	09/07/2018
CA	WASTEWATER PITS	Oil Wastewater Pits Listing	RWQCB, Central Valley Region	05/08/2018	07/11/2018	09/13/2018
CA	WDR	Waste Discharge Requirements Listing	State Water Resources Control Board	09/10/2018	09/12/2018	10/09/2018
CA	WDS	Waste Discharge System	State Water Resources Control Board	06/19/2007	06/20/2007	06/29/2007
CA	WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)	State Water Resources Control Board	09/10/2018	09/12/2018	10/09/2018
CA	WIP	Well Investigation Program Case List	Los Angeles Water Quality Control Board	07/03/2009	07/21/2009	08/03/2009
CA	WMUDS/SWAT	Waste Management Unit Database	State Water Resources Control Board	04/01/2000	04/10/2000	05/10/2000
US	2020 COR ACTION	2020 Corrective Action Program List	Environmental Protection Agency	09/30/2017	05/08/2018	07/20/2018
US	ABANDONED MINES	Abandoned Mines	Department of Interior	09/10/2018	09/11/2018	09/14/2018
US	BRS	Biennial Reporting System	EPA/NTIS	12/31/2015	02/22/2017	09/28/2017
US	COAL ASH DOE	Steam-Electric Plant Operation Data	Department of Energy	12/31/2005	08/07/2009	10/22/2009

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	COAL ASH EPA	Coal Combustion Residues Surface Impoundments List	Environmental Protection Agency	07/01/2014	09/10/2014	10/20/2014
US	CONSENT	Superfund (CERCLA) Consent Decrees	Department of Justice, Consent Decree Library	06/30/2018	07/17/2018	10/05/2018
US	CORRACTS	Corrective Action Report	EPA	03/01/2018	03/28/2018	06/22/2018
US	DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations	EPA, Region 9	01/12/2009	05/07/2009	09/21/2009
US	DOCKET HWC	Hazardous Waste Compliance Docket Listing	Environmental Protection Agency	05/31/2018	07/26/2018	10/05/2018
US	DOD	Department of Defense Sites	USGS	12/31/2005	11/10/2006	01/11/2007
US	DOT OPS	Incident and Accident Data	Department of Transporation, Office of Pipeli	07/31/2012	08/07/2012	09/18/2012
US	Delisted NPL	National Priority List Deletions	EPA	07/17/2018	08/09/2018	09/07/2018
US	ECHO	Enforcement & Compliance History Information	Environmental Protection Agency	09/02/2018	09/05/2018	09/14/2018
US	EDR Hist Auto	EDR Exclusive Historical Auto Stations	EDR, Inc.			
US	EDR Hist Cleaner	EDR Exclusive Historical Cleaners	EDR, Inc.			
US	EDR MGP	EDR Proprietary Manufactured Gas Plants	EDR, Inc.			
US	EPA WATCH LIST	EPA WATCH LIST	Environmental Protection Agency	08/30/2013	03/21/2014	06/17/2014
US	ERNS	Emergency Response Notification System	National Response Center, United States Coast	06/18/2018	06/27/2018	09/14/2018
US	FEDERAL FACILITY	Federal Facility Site Information listing	Environmental Protection Agency	11/07/2016	01/05/2017	04/07/2017
US	FEDLAND	Federal and Indian Lands	U.S. Geological Survey	12/31/2005	02/06/2006	01/11/2007
US	FEMA UST	Underground Storage Tank Listing	FEMA	05/15/2017	05/30/2017	10/13/2017
US	FINDS	Facility Index System/Facility Registry System	EPA	08/07/2018	09/05/2018	10/05/2018
US	FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA/Office of Prevention, Pesticides and Toxi	04/09/2009	04/16/2009	05/11/2009
US	FTTS INSP	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA	04/09/2009	04/16/2009	05/11/2009
US	FUDS	Formerly Used Defense Sites	U.S. Army Corps of Engineers	01/31/2015	07/08/2015	10/13/2015
US	FUELS PROGRAM	EPA Fuels Program Registered Listing	EPA	08/22/2018	08/22/2018	10/05/2018
US	FUSRAP	Formerly Utilized Sites Remedial Action Program	Department of Energy	08/08/2017	09/11/2018	09/14/2018
US	HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HIST FTTS INSP	FIFRA/TSCA Tracking System Inspection & Enforcement Case Lis	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HMIRS	Hazardous Materials Information Reporting System	U.S. Department of Transportation	03/26/2018	03/27/2018	06/08/2018
US	ICIS	Integrated Compliance Information System	Environmental Protection Agency	11/18/2016	11/23/2016	02/10/2017
US	IHS OPEN DUMPS	Open Dumps on Indian Land	Department of Health & Human Serivces, Indian	04/01/2014	08/06/2014	01/29/2015
US	INDIAN LUST R1	Leaking Underground Storage Tanks on Indian Land	EPA Region 1	04/13/2018	05/18/2018	07/20/2018
US	INDIAN LUST R10	Leaking Underground Storage Tanks on Indian Land	EPA Region 10	04/12/2018	05/18/2018	07/20/2018
US	INDIAN LUST R4	Leaking Underground Storage Tanks on Indian Land	EPA Region 4	05/08/2018	05/18/2018	07/20/2018
US	INDIAN LUST R5	Leaking Underground Storage Tanks on Indian Land	EPA, Region 5	04/12/2018	05/18/2018	07/20/2018
US	INDIAN LUST R6	Leaking Underground Storage Tanks on Indian Land	EPA Region 6	04/01/2018	05/18/2018	07/20/2018
US	INDIAN LUST R7	Leaking Underground Storage Tanks on Indian Land	EPA Region 7	04/24/2018	05/18/2018	07/20/2018
US	INDIAN LUST R8	Leaking Underground Storage Tanks on Indian Land	EPA Region 8	04/25/2018	05/18/2018	07/20/2018
US	INDIAN LUST R9	Leaking Underground Storage Tanks on Indian Land	Environmental Protection Agency	04/10/2018	05/18/2018	07/20/2018
US	INDIAN ODI	Report on the Status of Open Dumps on Indian Lands	Environmental Protection Agency	12/31/1998	12/03/2007	01/24/2008
US	INDIAN RESERV	Indian Reservations	USGS	12/31/2014	07/14/2015	01/10/2017
US	INDIAN UST R1	Underground Storage Tanks on Indian Land	EPA, Region 1	04/13/2018	05/18/2018	07/20/2018
US	INDIAN UST R10	Underground Storage Tanks on Indian Land	EPA Region 10	04/12/2018	05/18/2018	07/20/2018
US	INDIAN UST R4	Underground Storage Tanks on Indian Land	EPA Region 4	05/08/2018	05/18/2018	07/20/2018
US	INDIAN UST R5	Underground Storage Tanks on Indian Land	EPA Region 5	04/12/2018	05/18/2018	07/20/2018
US	INDIAN UST R6	Underground Storage Tanks on Indian Land	EPA Region 6	04/01/2018	05/18/2018	07/20/2018
US	INDIAN UST R7	Underground Storage Tanks on Indian Land	EPA Region 7	04/24/2018	05/18/2018	07/20/2018
US	INDIAN UST R8	Underground Storage Tanks on Indian Land	EPA Region 8	04/25/2018	05/18/2018	07/20/2018
US	INDIAN UST R9	Underground Storage Tanks on Indian Land	EPA Region 9	04/10/2018	05/18/2018	07/20/2018
US	INDIAN VCP R1	Voluntary Cleanup Priority Listing	EPA, Region 1	07/27/2015	09/29/2015	02/18/2016

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	INDIAN VCP R7	Voluntary Cleanup Priority Lisitng	EPA, Region 7	03/20/2008	04/22/2008	05/19/2008
US	LEAD SMELTER 1	Lead Smelter Sites	Environmental Protection Agency	07/17/2018	08/09/2018	10/05/2018
US	LEAD SMELTER 2	Lead Smelter Sites	American Journal of Public Health	04/05/2001	10/27/2010	12/02/2010
US	LIENS 2	CERCLA Lien Information	Environmental Protection Agency	07/17/2018	08/09/2018	10/05/2018
US	LUCIS	Land Use Control Information System	Department of the Navy	05/14/2018	05/18/2018	07/20/2018
US	MLTS	Material Licensing Tracking System	Nuclear Regulatory Commission	08/30/2016	09/08/2016	10/21/2016
US	NPL	National Priority List	EPA	07/17/2018	08/09/2018	09/07/2018
US	NPL LIENS	Federal Superfund Liens	EPA	10/15/1991	02/02/1994	03/30/1994
US	ODI	Open Dump Inventory	Environmental Protection Agency	06/30/1985	08/09/2004	09/17/2004
US	PADS	PCB Activity Database System	EPA	06/01/2017	06/09/2017	10/13/2017
US	PCB TRANSFORMER	PCB Transformer Registration Database	Environmental Protection Agency	05/24/2017	11/30/2017	12/15/2017
US	PRP	Potentially Responsible Parties	EPA	10/25/2013	10/17/2014	10/20/2014
US	Proposed NPL	Proposed National Priority List Sites	EPA	07/17/2018	08/09/2018	09/07/2018
US	RAATS	RCRA Administrative Action Tracking System	EPA	04/17/1995	07/03/1995	08/07/1995
US	RADINFO	Radiation Information Database	Environmental Protection Agency	07/02/2018	07/05/2018	10/05/2018
US	RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated	Environmental Protection Agency	03/01/2018	03/28/2018	06/22/2018
US	RCRA-CESQG	RCRA - Conditionally Exempt Small Quantity Generators	Environmental Protection Agency	03/01/2018	03/28/2018	06/22/2018
US	RCRA-LQG	RCRA - Large Quantity Generators	Environmental Protection Agency	03/01/2018	03/28/2018	06/22/2018
US	RCRA-SQG	RCRA - Small Quantity Generators	Environmental Protection Agency	03/01/2018	03/28/2018	06/22/2018
US	RCRA-TSDF	RCRA - Treatment, Storage and Disposal	Environmental Protection Agency	03/01/2018	03/28/2018	06/22/2018
US	RMP	Risk Management Plans	Environmental Protection Agency	08/01/2018	08/22/2018	10/05/2018
US	ROD	Records Of Decision	EPA	07/17/2018	08/09/2018	10/05/2018
US	SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing	Environmental Protection Agency	01/01/2017	02/03/2017	04/07/2017
US	SEMS	Superfund Enterprise Management System	EPA	07/17/2018	08/09/2018	09/07/2018
US	SEMS-ARCHIVE	Superfund Enterprise Management System Archive	EPA	07/17/2018	08/09/2018	09/07/2018
US	SSTS	Section 7 Tracking Systems	EPA	12/31/2009	12/10/2010	02/25/2011
US	TRIS	Toxic Chemical Release Inventory System	EPA	12/31/2016	01/10/2018	01/12/2018
US	TSCA	Toxic Substances Control Act	EPA	12/31/2016	06/21/2017	01/05/2018
US	UMTRA	Uranium Mill Tailings Sites	Department of Energy	06/23/2017	10/11/2017	11/03/2017
US	US AIRS (AFS)	Aerometric Information Retrieval System Facility Subsystem (	EPA	10/12/2016	10/26/2016	02/03/2017
US	US AIRS MINOR	Air Facility System Data	EPA	10/12/2016	10/26/2016	02/03/2017
US	US BROWNFIELDS	A Listing of Brownfields Sites	Environmental Protection Agency	06/18/2018	06/20/2018	09/14/2018
US	US CDL	Clandestine Drug Labs	Drug Enforcement Administration	05/18/2018	06/20/2018	09/14/2018
US	US ENG CONTROLS	Engineering Controls Sites List	Environmental Protection Agency	07/31/2018	08/28/2018	09/14/2018
US	US FIN ASSUR	Financial Assurance Information	Environmental Protection Agency	05/31/2018	06/27/2018	10/05/2018
US	US HIST CDL	National Clandestine Laboratory Register	Drug Enforcement Administration	05/18/2018	06/20/2018	09/14/2018
US	US INST CONTROL	Sites with Institutional Controls	Environmental Protection Agency	07/31/2018	08/28/2018	09/14/2018
US	US MINES	Mines Master Index File	Department of Labor, Mine Safety and Health A	08/01/2018	08/29/2018	10/05/2018
US	US MINES 2	Ferrous and Nonferrous Metal Mines Database Listing	USGS	12/05/2005	02/29/2008	04/18/2008
US	US MINES 3	Active Mines & Mineral Plants Database Listing	USGS	04/14/2011	06/08/2011	09/13/2011
US	UXO	Unexploded Ordnance Sites	Department of Defense	09/30/2017	06/19/2018	09/14/2018

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CT	CT MANIFEST	Hazardous Waste Manifest Data	Department of Energy & Environmental Protecti	08/10/2018	08/10/2018	09/10/2018
NJ	NJ MANIFEST	Manifest Information	Department of Environmental Protection	12/31/2017	07/13/2018	08/01/2018
NY	NY MANIFEST	Facility and Manifest Data	Department of Environmental Conservation	07/01/2018	08/01/2018	08/31/2018
PA	PA MANIFEST	Manifest Information	Department of Environmental Protection	12/31/2016	07/25/2017	09/25/2017
RI	RI MANIFEST	Manifest information	Department of Environmental Management	12/31/2017	02/23/2018	04/09/2018
WI	WI MANIFEST	Manifest Information	Department of Natural Resources	12/31/2017	06/15/2018	07/09/2018
US	AHA Hospitals	Sensitive Receptor: AHA Hospitals	American Hospital Association, Inc.			
US	Medical Centers	Sensitive Receptor: Medical Centers	Centers for Medicare & Medicaid Services			
US	Nursing Homes	Sensitive Receptor: Nursing Homes	National Institutes of Health			
US	Public Schools	Sensitive Receptor: Public Schools	National Center for Education Statistics			
US	Private Schools	Sensitive Receptor: Private Schools	National Center for Education Statistics			
CA	Daycare Centers	Sensitive Receptor: Licensed Facilities	Department of Social Services			
US	Flood Zones	100-year and 500-year flood zones	Emergency Management Agency (FEMA)			
US	NWI	National Wetlands Inventory	U.S. Fish and Wildlife Service			
CA	State Wetlands	Wetland Inventory	Department of Fish & Game			
US	Topographic Map		U.S. Geological Survey			
US	Oil/Gas Pipelines		PennWell Corporation			
US	Electric Power Transmission Line Data		PennWell Corporation			

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

EDISON SD SITE
EUCALYPTUS & GARGANO
BAKERSFIELD, CA 93306

TARGET PROPERTY COORDINATES

Latitude (North):	35.367155 - 35˚ 22' 1.76''
Longitude (West):	118.899802 - 118˚ 53' 59.29''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	327403.3
UTM Y (Meters):	3915218.2
Elevation:	529 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5639192 LAMONT, CA
Version Date:	2012
Northwest Map:	5639200 OIL CENTER, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

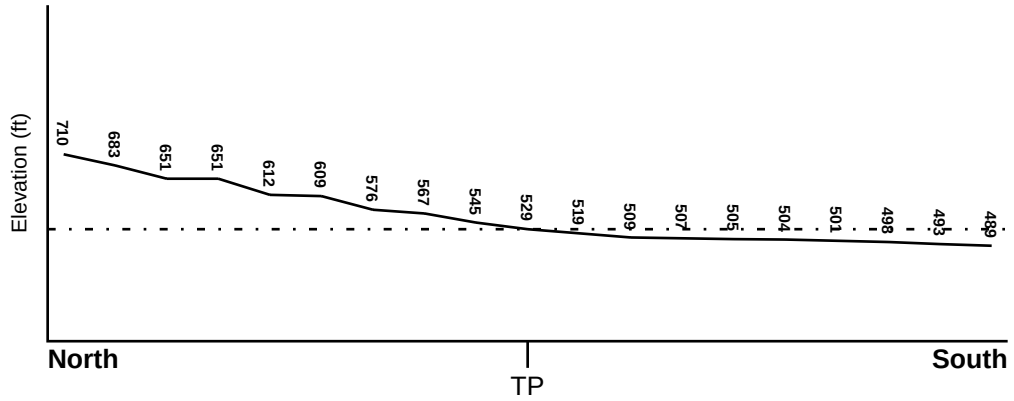
TOPOGRAPHIC INFORMATION

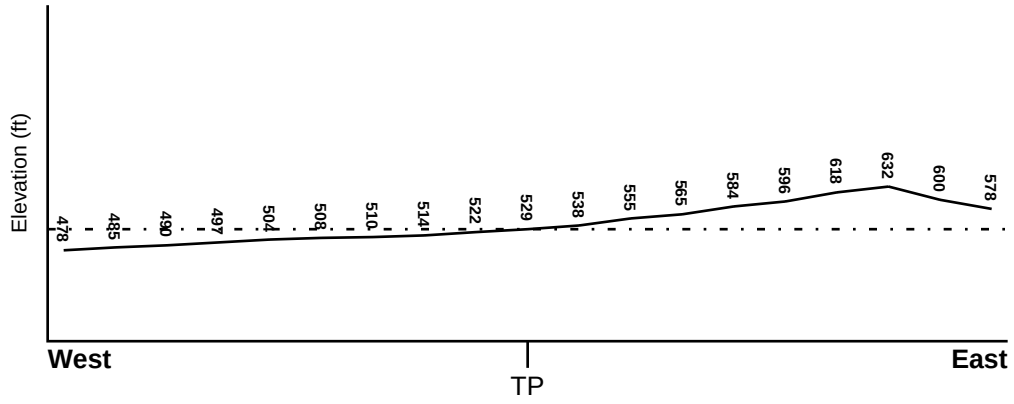
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

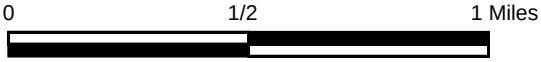
General Topographic Gradient: General SW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 529 ft.



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06029C2307E	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06029C1845E	FEMA FIRM Flood data
06029C2306E	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
LAMONT	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

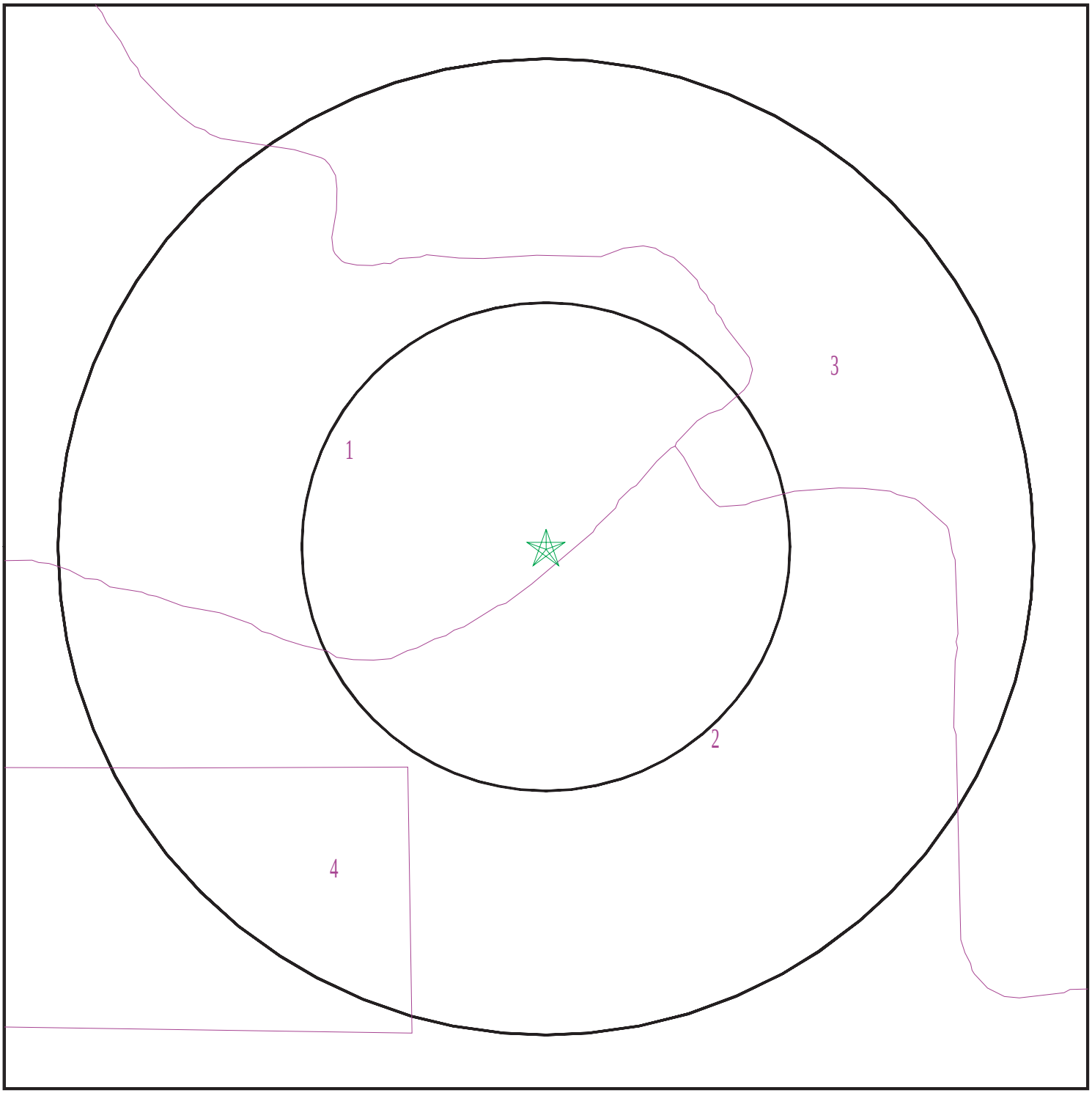
Era:	Cenozoic
System:	Tertiary
Series:	Pliocene
Code:	Tpc *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Continental Deposits

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 5480428.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Edison SD Site	CLIENT:	Soils Engineering, Inc.
ADDRESS:	Eucalyptus & Gargano Bakersfield CA 93306	CONTACT:	Robert Becker
		INQUIRY #:	5480428.2s
LAT/LONG:	35.367155 / 118.899802	DATE:	November 09, 2018 12:49 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: DELANO

Soil Surface Texture:
Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	11 inches		Not reported	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.9
2	11 inches	42 inches		Not reported	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.9
3	42 inches	62 inches		Not reported	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.9

Soil Map ID: 2

Soil Component Name: DELANO

Soil Surface Texture:
Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches		Not reported	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.9
2	16 inches	35 inches		Not reported	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.9
3	35 inches	59 inches		Not reported	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.9

Soil Map ID: 3

Soil Component Name: CUYAMA

Soil Surface Texture:
Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches		Not reported	Not reported	Max: 14 Min: 4	Max: 9 Min: 7.9
2	7 inches	18 inches		Not reported	Not reported	Max: 14 Min: 4	Max: 9 Min: 7.9

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
3	18 inches	35 inches		Not reported	Not reported	Max: 14 Min: 4	Max: 9 Min: 7.9
4	35 inches	55 inches		Not reported	Not reported	Max: 14 Min: 4	Max: 9 Min: 7.9
5	55 inches	64 inches		Not reported	Not reported	Max: 14 Min: 4	Max: 9 Min: 7.9

Soil Map ID: 4

Soil Component Name: DELANO

Soil Surface Texture:
Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class:
Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	11 inches		Not reported	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.9
2	11 inches	42 inches		Not reported	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.9
3	42 inches	62 inches		Not reported	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.9

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 0.001 miles
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	USGS40000163372	0 - 1/8 Mile East
A2	USGS40000163368	1/8 - 1/4 Mile ESE
4	USGS40000163417	1/8 - 1/4 Mile North
B6	USGS40000163327	1/4 - 1/2 Mile SSE
7	USGS40000163423	1/4 - 1/2 Mile NW
8	USGS40000163343	1/4 - 1/2 Mile WSW
10	USGS40000163294	1/2 - 1 Mile SW
C11	USGS40000163336	1/2 - 1 Mile ESE
12	USGS40000163313	1/2 - 1 Mile SE
D13	USGS40000163257	1/2 - 1 Mile South
15	USGS40000163258	1/2 - 1 Mile SSW
17	USGS40000163352	1/2 - 1 Mile West
18	USGS40000163263	1/2 - 1 Mile SW
19	USGS40000163218	1/2 - 1 Mile South
E20	USGS40000163413	1/2 - 1 Mile WNW
E22	USGS40000163414	1/2 - 1 Mile WNW
F23	USGS40000163197	1/2 - 1 Mile South

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
3	CADW60000004521	1/8 - 1/4 Mile ESE
B5	CADW60000004522	1/4 - 1/2 Mile SSE
C9	CADW60000004524	1/2 - 1 Mile ESE
D14	CADW60000004523	1/2 - 1 Mile SSW
16	CADW60000004517	1/2 - 1 Mile West
F21	CADW60000009218	1/2 - 1 Mile South
24	CADW60000009216	1/2 - 1 Mile SE
25	CADW60000014182	1/2 - 1 Mile SSE

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

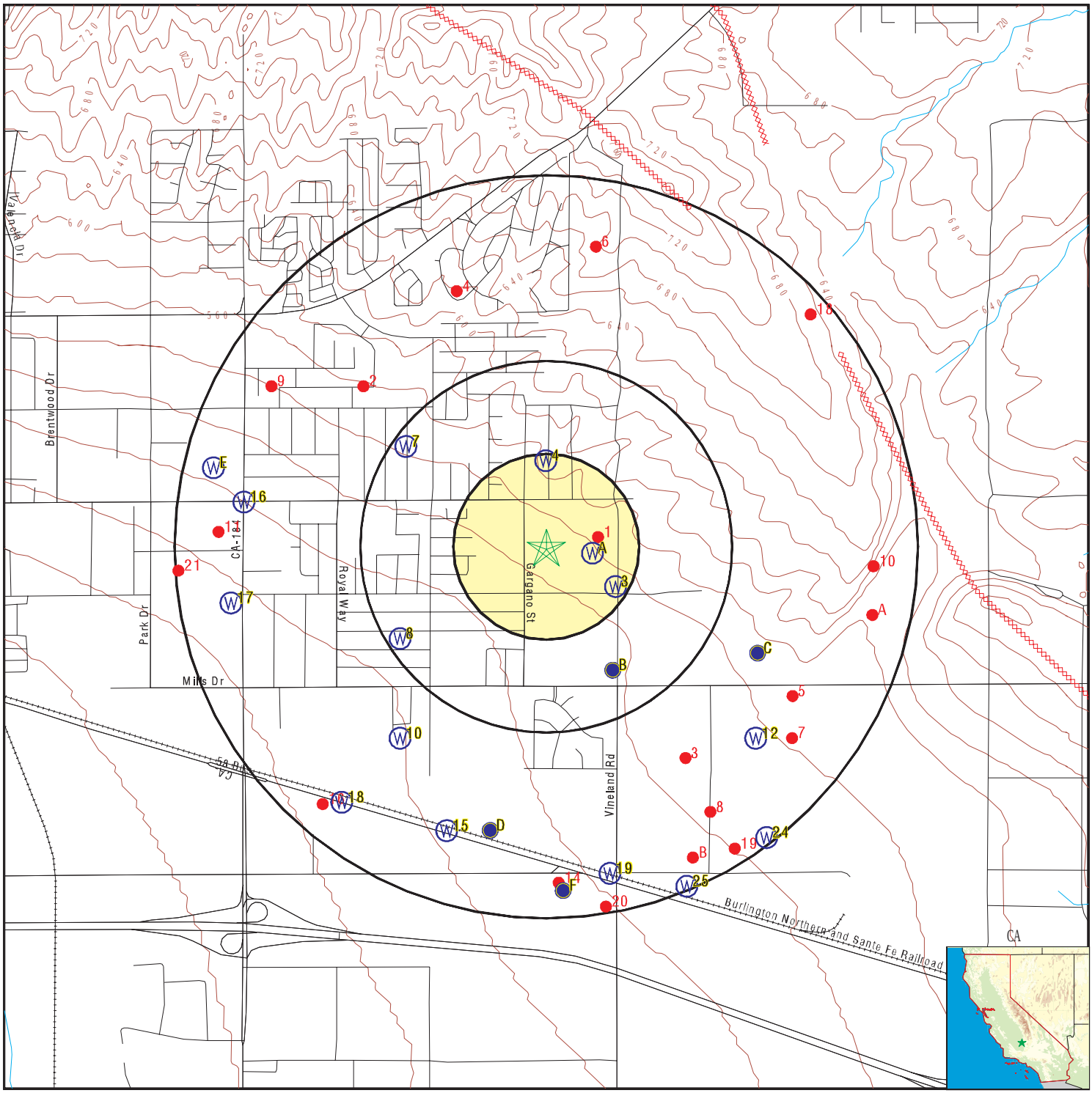
MAP ID	WELL ID	LOCATION FROM TP
1	CAOG11000042420	1/8 - 1/4 Mile East

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
2	CAOG11000042442	1/2 - 1 Mile NW
3	CAOG11000008027	1/2 - 1 Mile SSE
4	CAOG11000042391	1/2 - 1 Mile NNW
5	CAOG11000007414	1/2 - 1 Mile ESE
6	CAOG11000042445	1/2 - 1 Mile North
7	CAOG11000053940	1/2 - 1 Mile SE
8	CAOG11000089648	1/2 - 1 Mile SSE
9	CAOG11000042441	1/2 - 1 Mile WNW
10	CAOG11000005586	1/2 - 1 Mile East
11	CAOG11000042322	1/2 - 1 Mile West
A12	CAOG11000005583	1/2 - 1 Mile ESE
A13	CAOG11000005584	1/2 - 1 Mile ESE
14	CAOG11000007348	1/2 - 1 Mile South
B15	CAOG11000007816	1/2 - 1 Mile SSE
16	CAOG11000007375	1/2 - 1 Mile SW
B17	CAOG11000007365	1/2 - 1 Mile SSE
18	CAOG11000007745	1/2 - 1 Mile NE
19	CAOG11000005782	1/2 - 1 Mile SSE
20	CAOG11000007703	1/2 - 1 Mile South
21	CAOG11000040952	1/2 - 1 Mile West

PHYSICAL SETTING SOURCE MAP - 5480428.2s



County Boundary
Major Roads
Contour Lines
Earthquake Fault Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

0 1/4 1/2 1 Miles

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location
HD Closest Hydrogeological Data
Oil, gas or related wells

N

SITE NAME:	Edison SD Site	CLIENT:	Soils Engineering, Inc.
ADDRESS:	Eucalyptus & Gargano Bakersfield CA 93306	CONTACT:	Robert Becker
		INQUIRY #:	5480428.2s
LAT/LONG:	35.367155 / 118.899802	DATE:	November 09, 2018 12:48 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
1 **East** **1/8 - 1/4 Mile**	Click here for full text details	**OIL_GAS**	**CAOG11000042420**
2 **NW** **1/2 - 1 Mile**	Click here for full text details	**OIL_GAS**	**CAOG11000042442**
3 **SSE** **1/2 - 1 Mile**	Click here for full text details	**OIL_GAS**	**CAOG11000008027**
4 **NNW** **1/2 - 1 Mile**	Click here for full text details	**OIL_GAS**	**CAOG11000042391**
5 **ESE** **1/2 - 1 Mile**	Click here for full text details	**OIL_GAS**	**CAOG11000007414**
6 **North** **1/2 - 1 Mile**	Click here for full text details	**OIL_GAS**	**CAOG11000042445**
7 **SE** **1/2 - 1 Mile**	Click here for full text details	**OIL_GAS**	**CAOG11000053940**
8 **SSE** **1/2 - 1 Mile**	Click here for full text details	**OIL_GAS**	**CAOG11000089648**
9 **WNW** **1/2 - 1 Mile**	Click here for full text details	**OIL_GAS**	**CAOG11000042441**
10 **East** **1/2 - 1 Mile**	Click here for full text details	**OIL_GAS**	**CAOG11000005586**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
11 **West** **1/2 - 1 Mile**	Click here for full text details	**OIL_GAS**	**CAOG11000042322**
A12 **ESE** **1/2 - 1 Mile**	Click here for full text details	**OIL_GAS**	**CAOG11000005583**
A13 **ESE** **1/2 - 1 Mile**	Click here for full text details	**OIL_GAS**	**CAOG11000005584**
14 **South** **1/2 - 1 Mile**	Click here for full text details	**OIL_GAS**	**CAOG11000007348**
B15 **SSE** **1/2 - 1 Mile**	Click here for full text details	**OIL_GAS**	**CAOG11000007816**
16 **SW** **1/2 - 1 Mile**	Click here for full text details	**OIL_GAS**	**CAOG11000007375**
B17 **SSE** **1/2 - 1 Mile**	Click here for full text details	**OIL_GAS**	**CAOG11000007365**
18 **NE** **1/2 - 1 Mile**	Click here for full text details	**OIL_GAS**	**CAOG11000007745**
19 **SSE** **1/2 - 1 Mile**	Click here for full text details	**OIL_GAS**	**CAOG11000005782**
20 **South** **1/2 - 1 Mile**	Click here for full text details	**OIL_GAS**	**CAOG11000007703**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
21 **West** **1/2 - 1 Mile**	Click here for full text details	**OIL_GAS**	**CAOG11000040952**
A1 **East** **0 - 1/8 Mile** **Higher**	Click here for full text details	**FED USGS**	**USGS40000163372**
A2 **ESE** **1/8 - 1/4 Mile** **Higher**	Click here for full text details	**FED USGS**	**USGS40000163368**
3 **ESE** **1/8 - 1/4 Mile** **Higher**	Click here for full text details	**CA WELLS**	**CADW60000004521**
4 **North** **1/8 - 1/4 Mile** **Higher**	Click here for full text details	**FED USGS**	**USGS40000163417**
B5 **SSE** **1/4 - 1/2 Mile** **Lower**	Click here for full text details	**CA WELLS**	**CADW60000004522**
B6 **SSE** **1/4 - 1/2 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000163327**
7 **NW** **1/4 - 1/2 Mile** **Higher**	Click here for full text details	**FED USGS**	**USGS40000163423**
8 **WSW** **1/4 - 1/2 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000163343**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
C9 **ESE** **1/2 - 1 Mile** **Higher**	Click here for full text details	**CA WELLS**	**CADW60000004524**
10 **SW** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000163294**
C11 **ESE** **1/2 - 1 Mile** **Higher**	Click here for full text details	**FED USGS**	**USGS40000163336**
12 **SE** **1/2 - 1 Mile** **Higher**	Click here for full text details	**FED USGS**	**USGS40000163313**
D13 **South** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000163257**
D14 **SSW** **1/2 - 1 Mile** **Lower**	Click here for full text details	**CA WELLS**	**CADW60000004523**
15 **SSW** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000163258**
16 **West** **1/2 - 1 Mile** **Lower**	Click here for full text details	**CA WELLS**	**CADW60000004517**
17 **West** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000163352**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
18 **SW** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000163263**
19 **South** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000163218**
E20 **WNW** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000163413**
F21 **South** **1/2 - 1 Mile** **Lower**	Click here for full text details	**CA WELLS**	**CADW60000009218**
E22 **WNW** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000163414**
F23 **South** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000163197**
24 **SE** **1/2 - 1 Mile** **Lower**	Click here for full text details	**CA WELLS**	**CADW60000009216**
25 **SSE** **1/2 - 1 Mile** **Lower**	Click here for full text details	**CA WELLS**	**CADW60000014182**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93306	52	8

Federal EPA Radon Zone for KERN County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93306

Number of sites tested: 13

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.877 pCi/L	92%	8%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW[R] Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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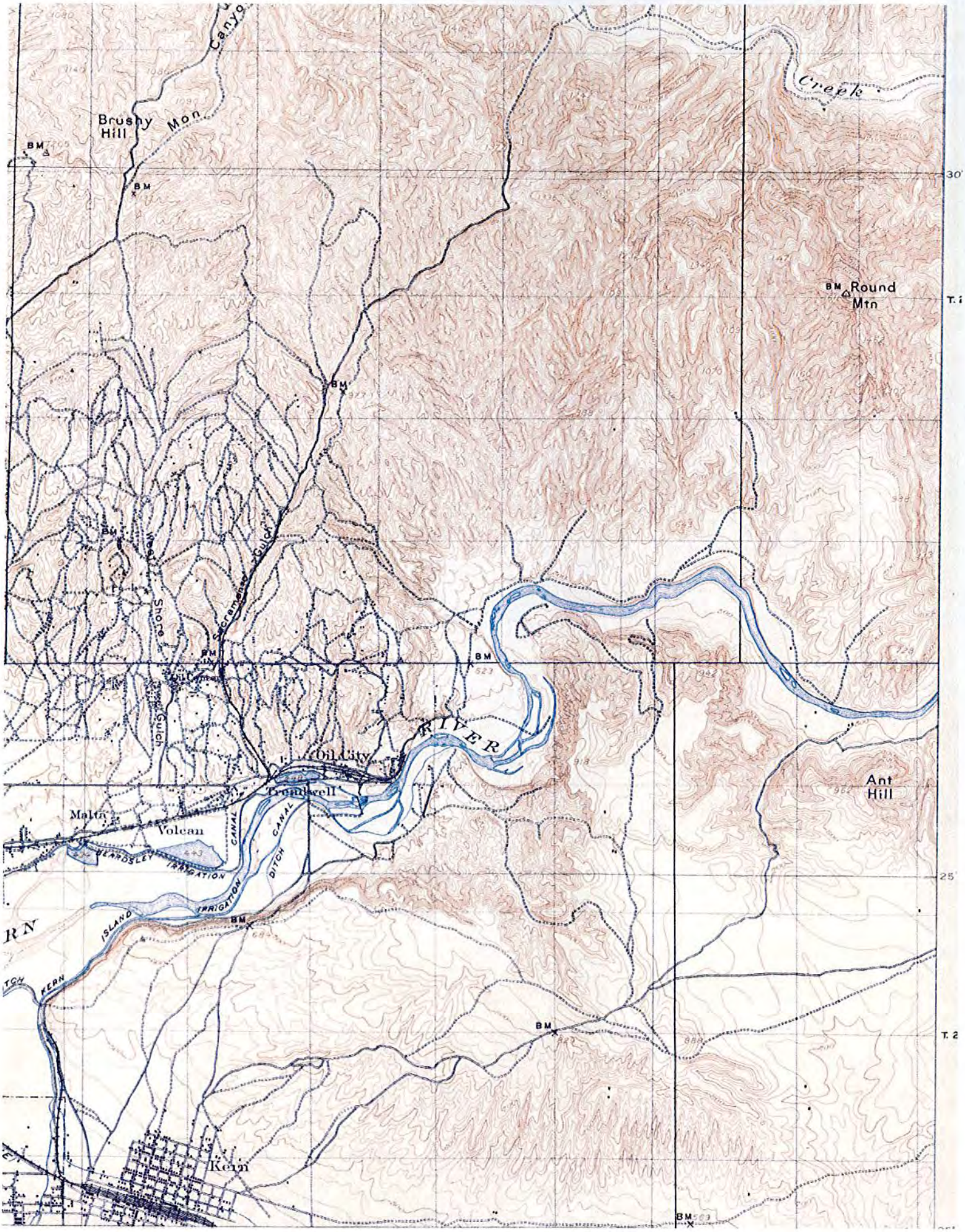
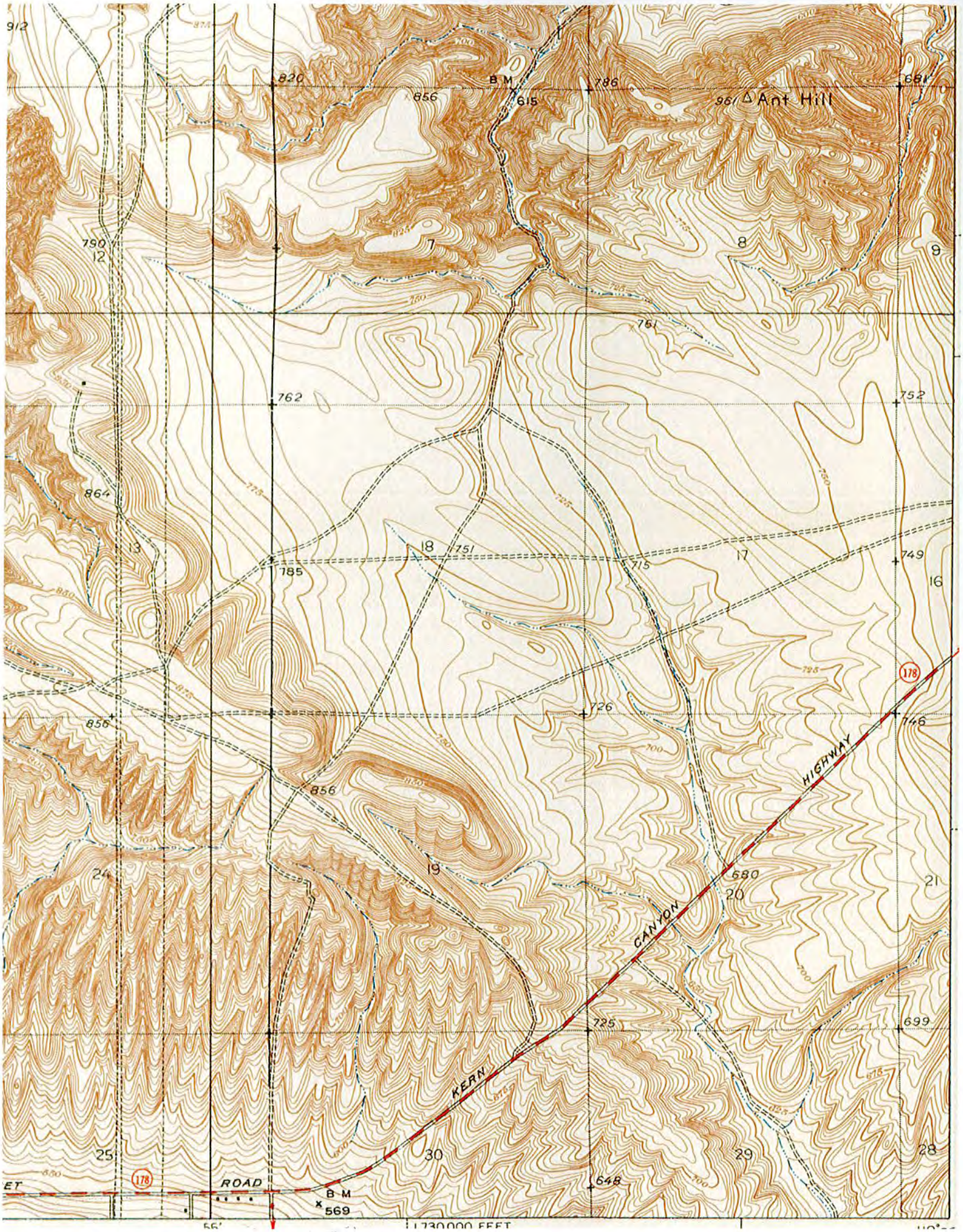
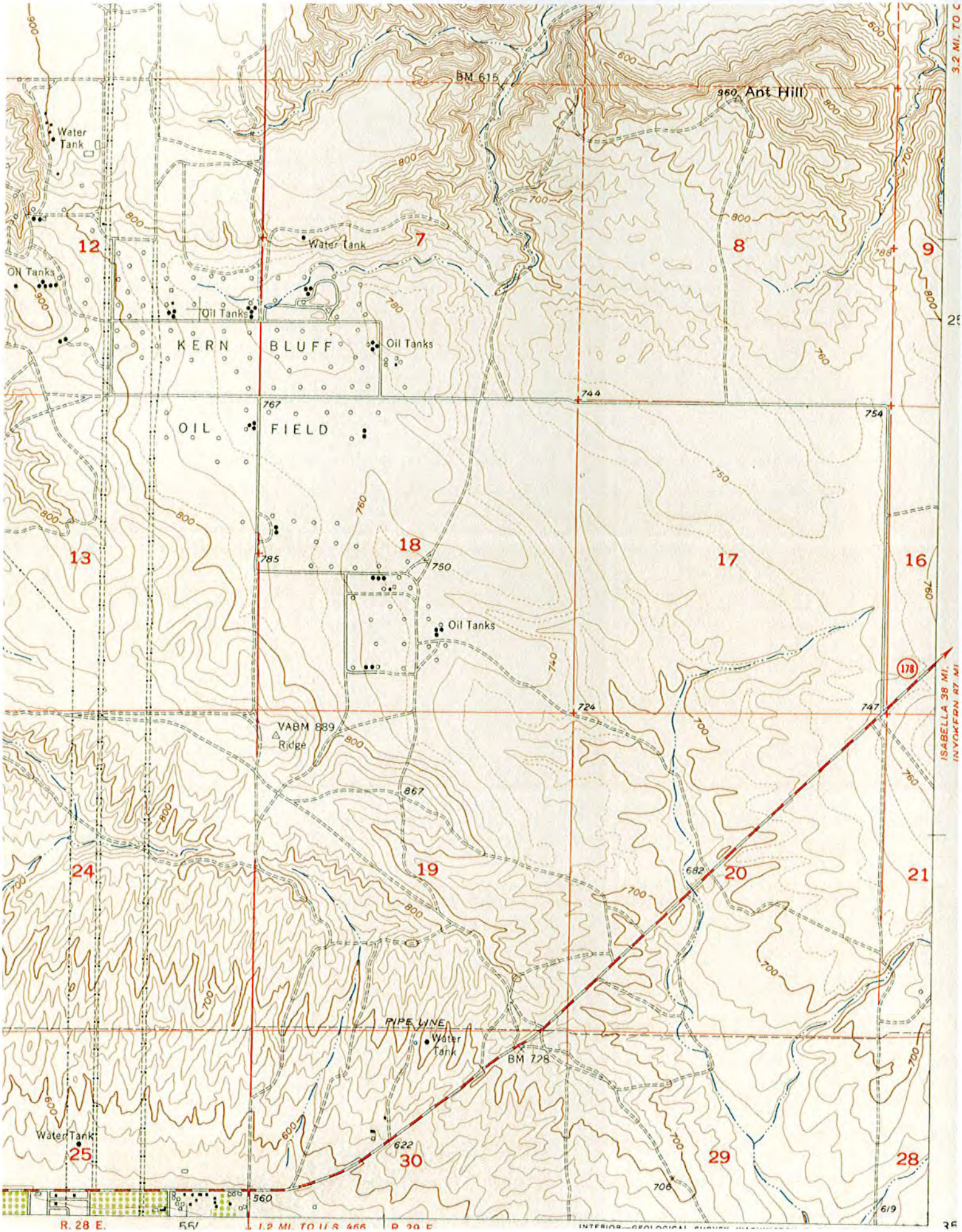


N ^ EDR INQUIRY# 1683783.4 ADJOINING QUAD: BAKERSFIELD YEAR: 1906 Series: 15' Scale: 1:62,500

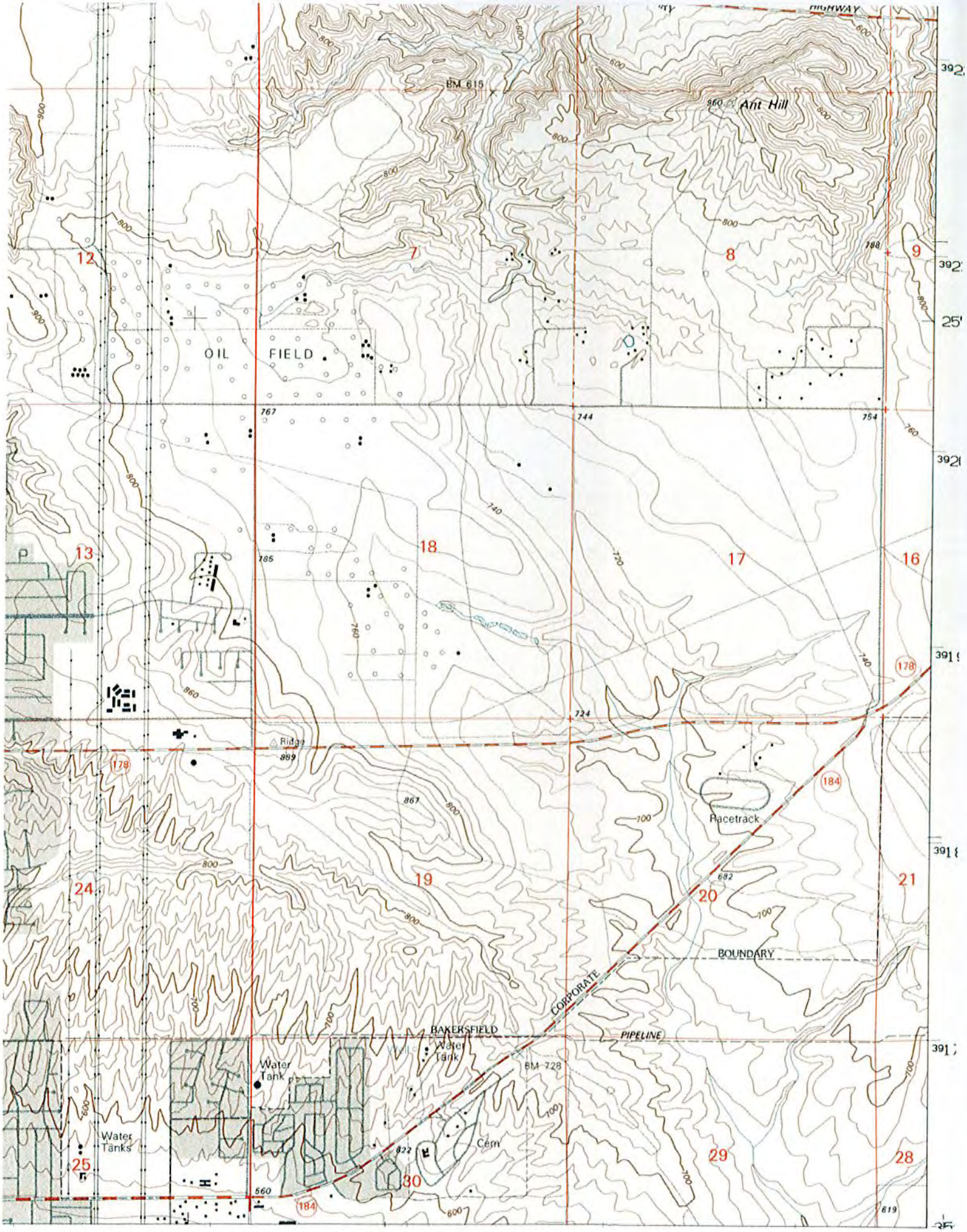
N ^ EDR INQUIRY# 1683783.4 ADJOINING QUAD: OILCENTER YEAR: 1940 Series: 7.5' Scale: 1:31,680



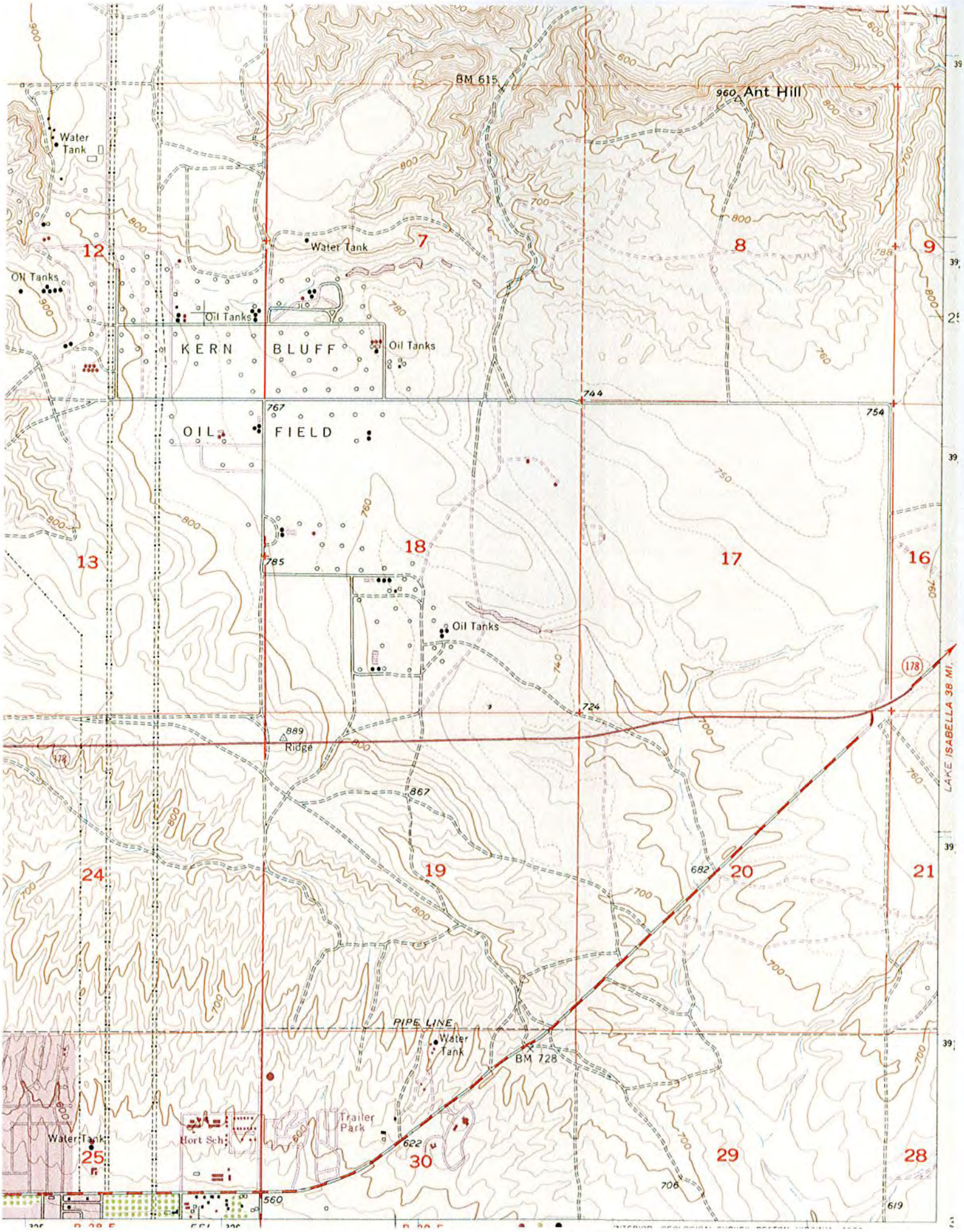
N ^ EDR INQUIRY# 1683783.4 ADJOINING QUAD: OILCENTER YEAR: 1950 Series: 7.5' Scale: 1:24,000



N ^ EDR INQUIRY# 1683783.4 ADJOINING QUAD: OILCENTER YEAR: 1954 Series: 7.5' Scale: 1:24,000



N ^ EDR INQUIRY# 1683783.4 ADJOINING QUAD: OILCENTER YEAR: 1992 Series: 7.5' Scale: 1:24,000



N ^ EDR INQUIRY# 1683783.4 ADJOINING QUAD: OILCENTER PhotoRevised: 1954-1973 Series: 7.5' Scale: 1:24,000

EDR® Environmental Data Resources Inc

"Linking Technology with Tradition"®

Sanborn® Map Report

Ship To: Bob Becker
Soils Engineering, Inc.
4400 Yeager Way
Bakersfield, CA 93313

Order Date: 5/25/2006 **Completion Date:** 5/25/2006
Inquiry #: 1683783.3
P.O. #: 11754- EDR
Site Name: Edison Elem SD
Address: Eucalyptus Drive/Vineland Drive
City/State: Bakersfield, CA 93306
Cross Streets:

Customer Project: 11754
1013823PEP 661-831-5100

This document reports that the largest and most complete collection of Sanborn fire insurance maps has been reviewed based on client supplied information, and fire insurance maps depicting the target property at the specified address were not identified.

NO COVERAGE

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The EDR-City Directory
Abstract

Edison Elem SD
Eucalyptus Drive/Vineland Drive
Bakersfield, CA 93306

Inquiry Number: 1683783.6

Latitude = 35.3672
Longitude = 118.899

Thursday, May 25, 2006

EDR® Environmental
Data Resources Inc

The Standard in Environmental Risk Management Information

440 Wheelers Farms Road
Milford, Connecticut 06461

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

EDR City Directory Abstract

Environmental Data Resources, Inc.'s (EDR) City Directory Abstract is a screening report designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Abstract includes a search and abstract of available city directory data. For each address, the directory lists the name of the corresponding occupant at five year intervals.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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SUMMARY

- ***City Directories:***

Business directories including city, cross reference and telephone directories were reviewed, if available, at approximately five year intervals for the years spanning 1922 through 2002. (These years are not necessarily inclusive.) A summary of the information obtained is provided in the text of this report.

This report compiles information by geocoding the subject properties (that is, plotting the latitude and longitude for such subject properties and obtaining data concerning properties within 1/8th of a mile of the subject properties). There is no warranty or guarantee that geocoding will report or list all properties within the specified radius of the subject properties and any such warranty or guarantee is expressly disclaimed. Accordingly, some properties within the aforementioned radius and the information concerning those properties may not be referenced in this report.

Date EDR Searched Historical Sources: May 25, 2006

Target Property:
Eucalyptus Drive/Vineland Drive
Bakersfield, CA 93306

Year	*Uses*	*Source*
1922	Address Not Listed in Research Source	Polk-Husted Directory Co.
1928	Address Not Listed in Research Source	R.L. Polk Co Publishers
1930	Address Not Listed in Research Source	R. L. Polk Co.
1935	Address Not Listed in Research Source	R.L. Polk Co Publishers
1940	Address Not Listed in Research Source	R. L. Polk Co.
1945	Address Not Listed in Research Source	R. L. Polk Co.
1951	Address Not Listed in Research Source	R. L. Polk Co.
1955	Address Not Listed in Research Source	R. L. Polk Co.
1960	Address Not Listed in Research Source	R.L. Polk Co Publishers
1965	Address Not Listed in Research Source	R.L. Polk Co Publishers
1970	Address Not Listed in Research Source	R.L. Polk Co Publishers
1971	Address Not Listed in Research Source	B&G Publications
1975	Address Not Listed in Research Source	R.L. Polk Co Publishers
1976	Address Not Listed in Research Source	B&G Publications
1980	Address Not Listed in Research Source	R.L. Polk Co Publishers

Year	Uses	Source
1986	Address Not Listed in Research Source	Pacific Telephone
1990	Address Not Listed in Research Source	Pacific Bell Telephone Co
1995	Address Not Listed in Research Source	R.L. Polk Co Publishers
2002	Address Not Listed in Research Source	R.L. Polk Co Publishers

Adjoining Properties

SURROUNDING

Multiple Addresses
Bakersfield, CA 93306

Year	Uses	Source
1922	Address Not Listed in Research Source	Polk-Husted Directory Co.
1928	Address Not Listed in Research Source	R.L. Polk Co Publishers
1930	Address Not Listed in Research Source	R. L. Polk Co.
1935	Address Not Listed in Research Source	R.L. Polk Co Publishers
1940	Address Not Listed in Research Source	R. L. Polk Co.
1945	Address Not Listed in Research Source	R. L. Polk Co.
1951	Address Not Listed in Research Source	R. L. Polk Co.
1955	Address Not Listed in Research Source	R. L. Polk Co.
1960	Address Not Listed in Research Source	R.L. Polk Co Publishers
1965	Address Not Listed in Research Source	R.L. Polk Co Publishers
1970	Address Not Listed in Research Source	R.L. Polk Co Publishers
1971	Address Not Listed in Research Source	B&G Publications

Year	Uses	Source
1975	Address Not Listed in Research Source	R.L. Polk Co Publishers
1976	Address Not Listed in Research Source	B&G Publications
1980	Address Not Listed in Research Source	R.L. Polk Co Publishers
1986	**PIONEER DR**	Pacific Telephone
	RANSICK HENRY G (9346)	
1990	**PIONEER DR**	Pacific Bell Telephone Co
	RANSICK HENRY G (9346)	
1995	**EUCALYPTUS DR**	R.L. Polk Co Publishers
	HOLDER GEORGE & JANICE E A (9551)	
	PIONEER DR	R.L. Polk Co Publishers
	RAPP EDDIE (9346)	
	RAPP THURSTON & NORMA (9346)	
2002	**EUCALYPTUS DR**	R.L. Polk Co Publishers
	NOT VERIFIED (9551)	
	PIONEER DR	R.L. Polk Co Publishers
	D AGUILAR RAFAELA & SENOBIO A I (9310)	
	NAVA ALICIA R EL A (9330)	
	RAPP ED HANDY SVC FIX IT SHOPS (9346)	
	RAPP EDDIE (9346)	
	RAPP NORMA M IB (9346)	
	THURSTON NORMA T 14 A (9346)	

VAPOR ENCROACHMENT SCREEN

Prepared by: Soils Engineering, Inc.

11/15/2018

TABLE OF CONTENTS

Executive Summary

Primary Map

Map Findings

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The EDR Vapor Encroachment Worksheet enables EDR's customers to make certain online modifications that effects maps, text and calculations contained in this Report. As a result, maps, text and calculations contained in this Report may have been so modified. EDR has not taken any action to verify any such modifications, and this report and the findings set forth herein must be read in light of this fact. Environmental Data Resources shall not be responsible for any customer's decision to include or not include in any final report any records determined to be within the relevant minimum search distances.

This report contains information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANYSUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OR DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES.ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.**

Purchaser accepts this report "AS IS". Any analyses, estimates, ratings, or risk codes provided in this report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can produce information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

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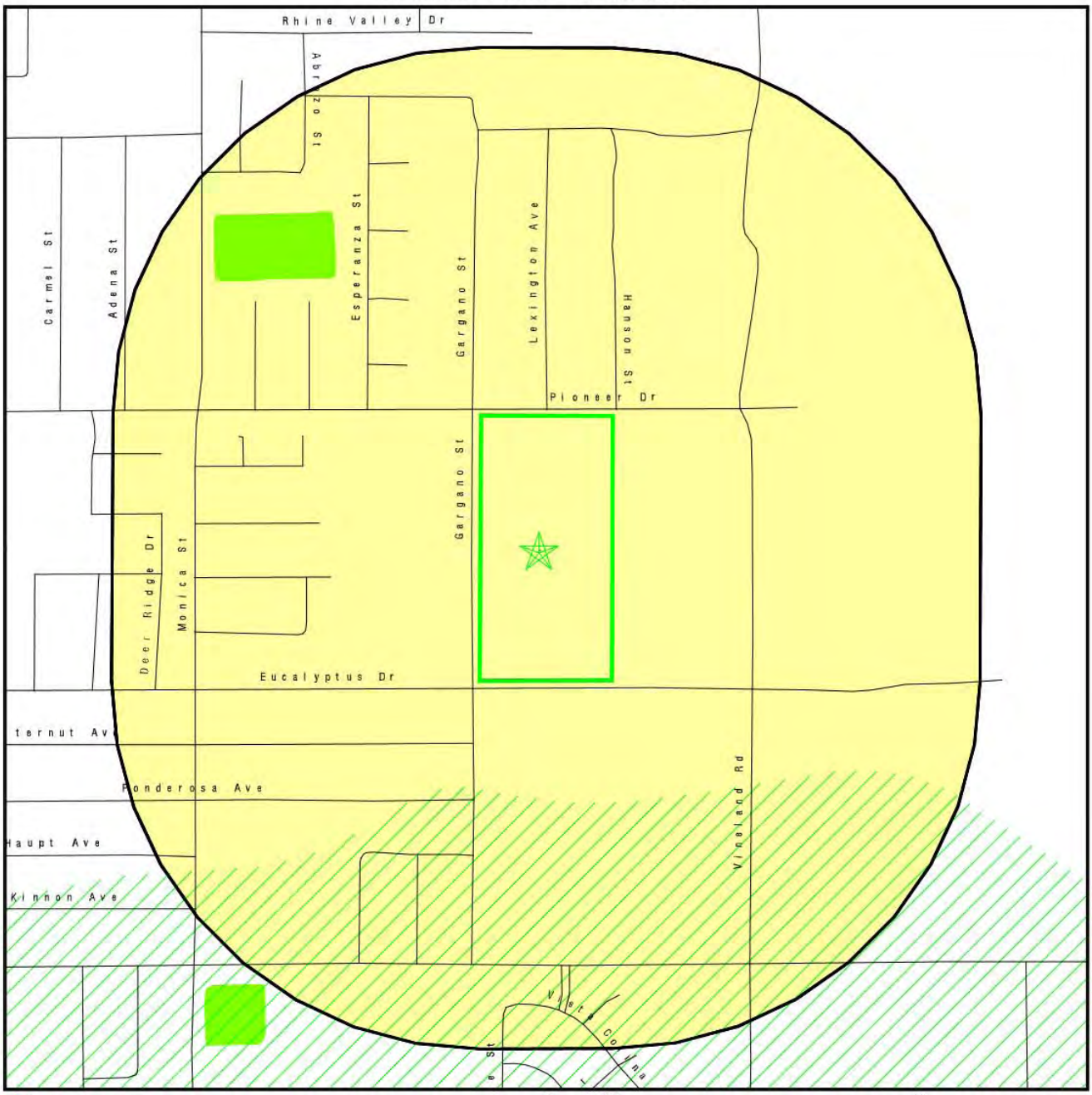
EXECUTIVE SUMMARY

PRIMARY MAP - 5480428.2S



0 300 1/3 1/2 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Edison SD Site ADDRESS: Eucalyptus & Gargano Bakersfield CA 93306 LAT/LONG: 35.367155 / 118.899802	CLIENT: Soils Engineering, Inc. CONTACT: Robert Becker INQUIRY #: 5480428.2s DATE: November 09, 2018 12:44 pm

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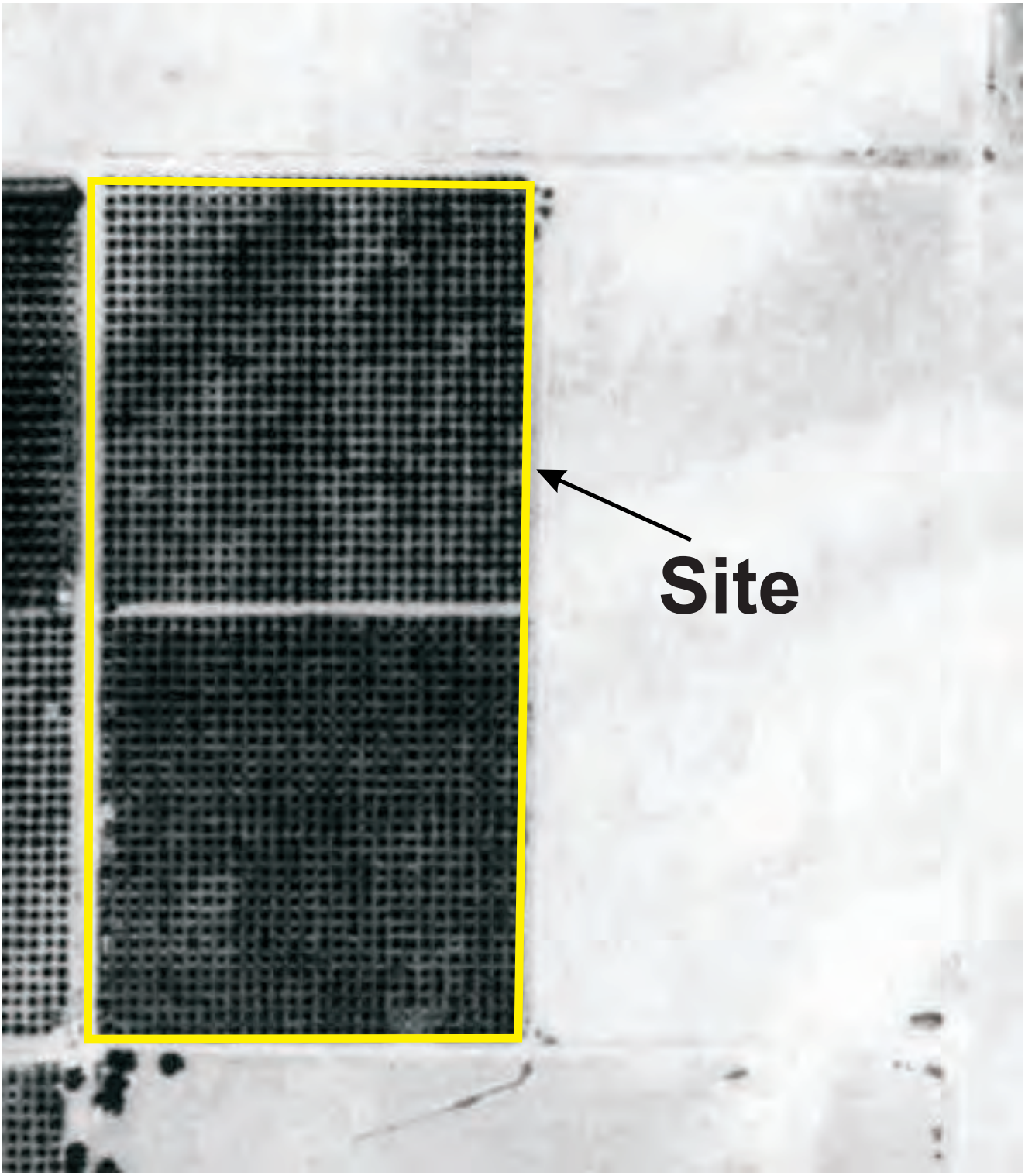
MAP FINDINGS

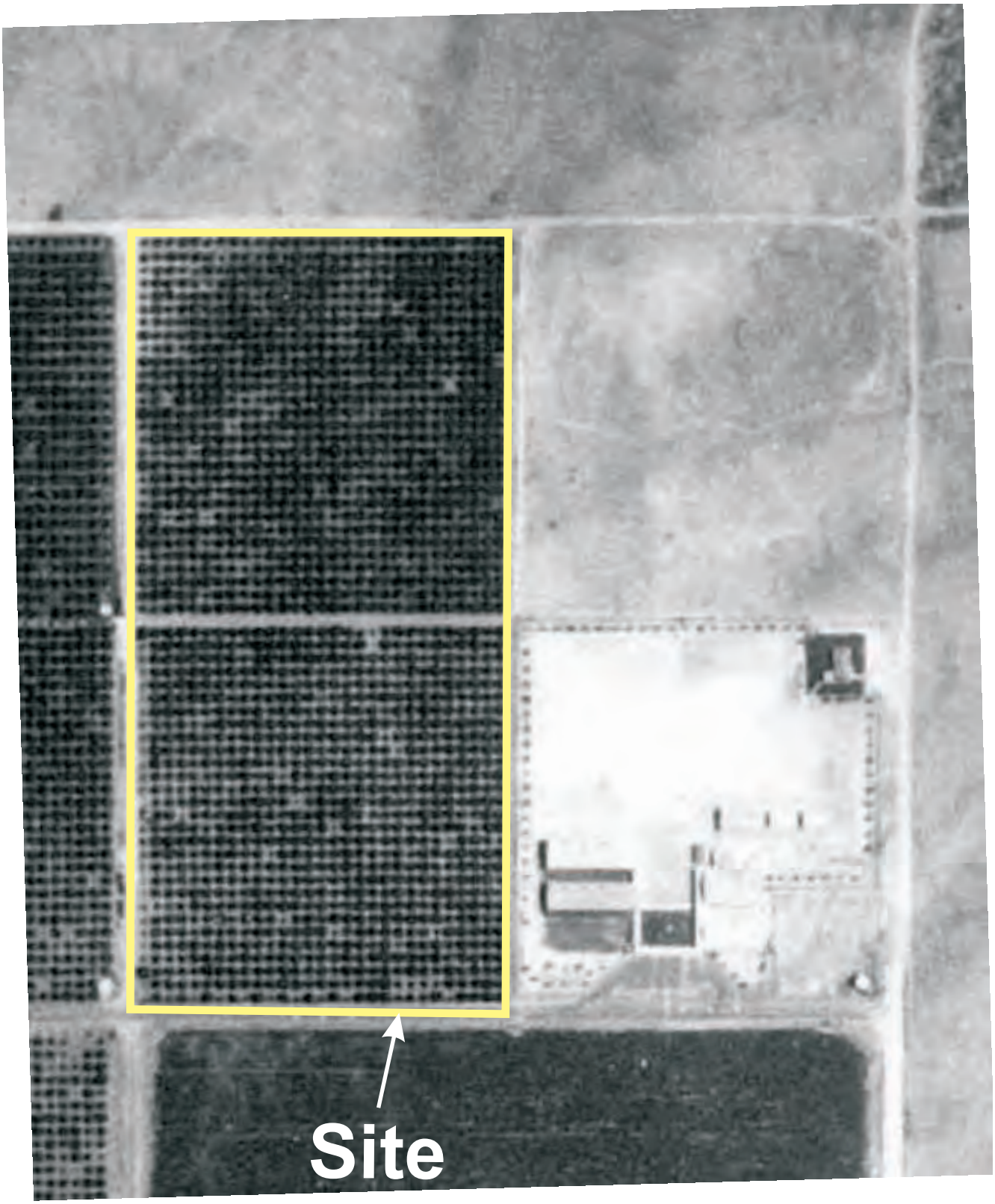
Appendix C

Historical Aerial Photographs & QA/QC Summary



N

SOILS ENGINEERING, INC. **4400 Yeager Way** **Bakersfield, CA 93313** **(661) 831 - 5100** DATE: 12/18 PROJECT: 16901	**Edison Elementary School District** **NE corner of Eucalyptus Dr. and Gargano St.** **Edison, CA** **1946 Aerial Photograph**	**PLATE**



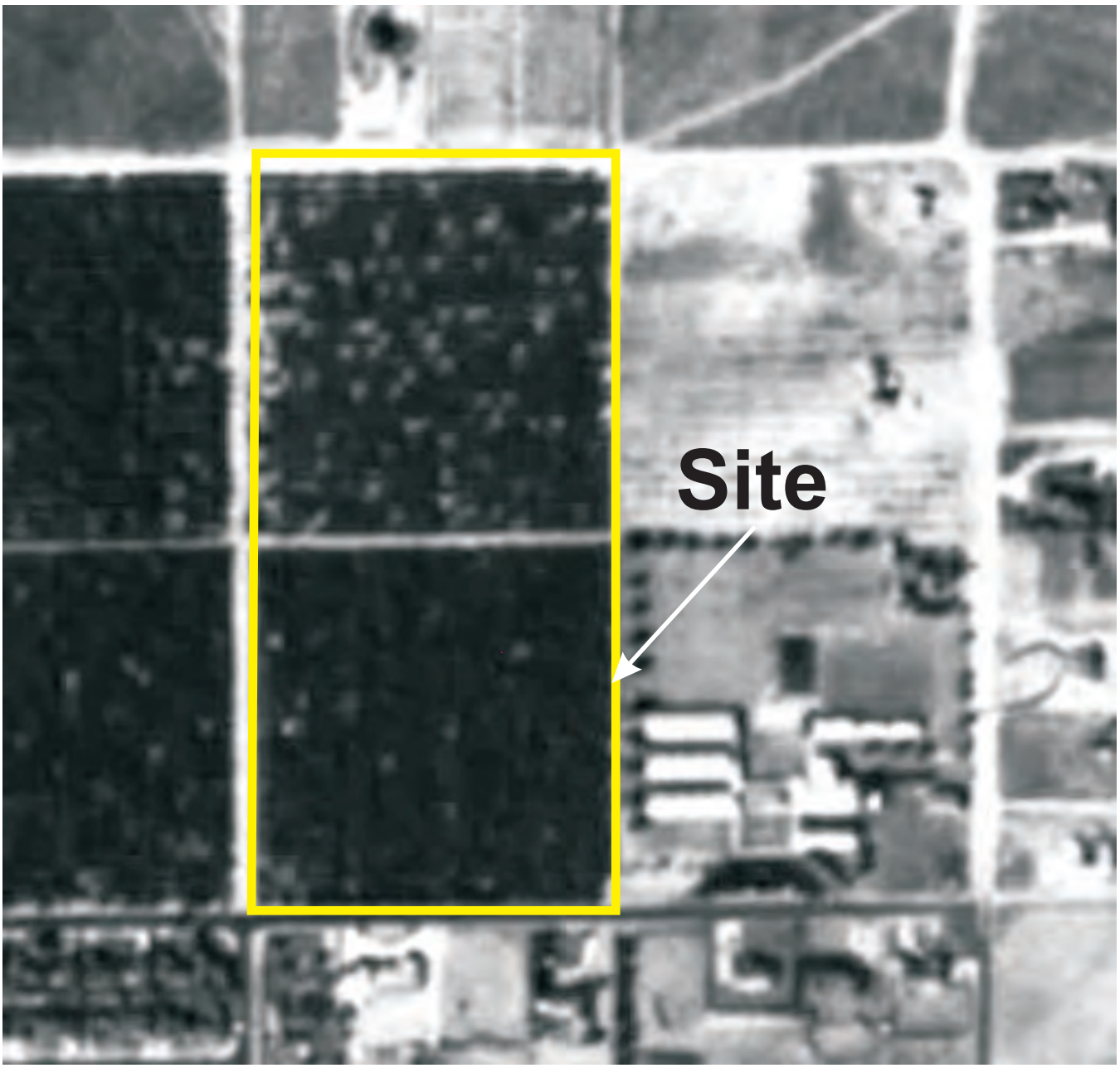
SOILS ENGINEERING, INC. **4400 Yeager Way** **Bakersfield, CA 93313** **(661) 831 - 5100** DATE: 12/18 PROJECT: 16901	**Edison Elementary School District** **NE corner of Eucalyptus Dr. and Gargano St.** **Edison, CA** **1957 Aerial Photograph**	**PLATE**

N

SOILS ENGINEERING, INC. **4400 Yeager Way** **Bakersfield, CA 93313** **(661) 831 - 5100** DATE: 12/18 PROJECT: 16901	**Edison Elementary School District** **NE corner of Eucalyptus Dr. and Gargano St.** **Edison, CA** **1967 Aerial Photograph**	**PLATE**

N

SOILS ENGINEERING, INC. **4400 Yeager Way** **Bakersfield, CA 93313** **(661) 831 - 5100** DATE: 12/18 PROJECT: 16901	**Edison Elementary School District** **NE corner of Eucalyptus Dr. and Gargano St.** **Edison, CA** **1975 Aerial Photograph**	**PLATE**



N

SOILS ENGINEERING, INC. **4400 Yeager Way** **Bakersfield, CA 93313** **(661) 831 - 5100** DATE: 12/18 PROJECT: 16901	**Edison Elementary School District** **NE corner of Eucalyptus Dr. and Gargano St.** **Edison, CA** **1983 Aerial Photograph**	**PLATE**

N

SOILS ENGINEERING, INC. **4400 Yeager Way** **Bakersfield, CA 93313** **(661) 831 - 5100** DATE: 12/18 PROJECT: 16901	**Edison Elementary School District** **NE corner of Eucalyptus Dr. and Gargano St.** **Edison, CA** **1994 Aerial Photograph**	**PLATE**

N

Site

SOILS ENGINEERING, INC. **4400 Yeager Way** **Bakersfield, CA 93313** **(661) 831 - 5100** DATE: 12/18 PROJECT: 16901	**Edison Elementary School District** **NE corner of Eucalyptus Dr. and Gargano St.** **Edison, CA** **2003 Aerial Photograph**	**PLATE**

N

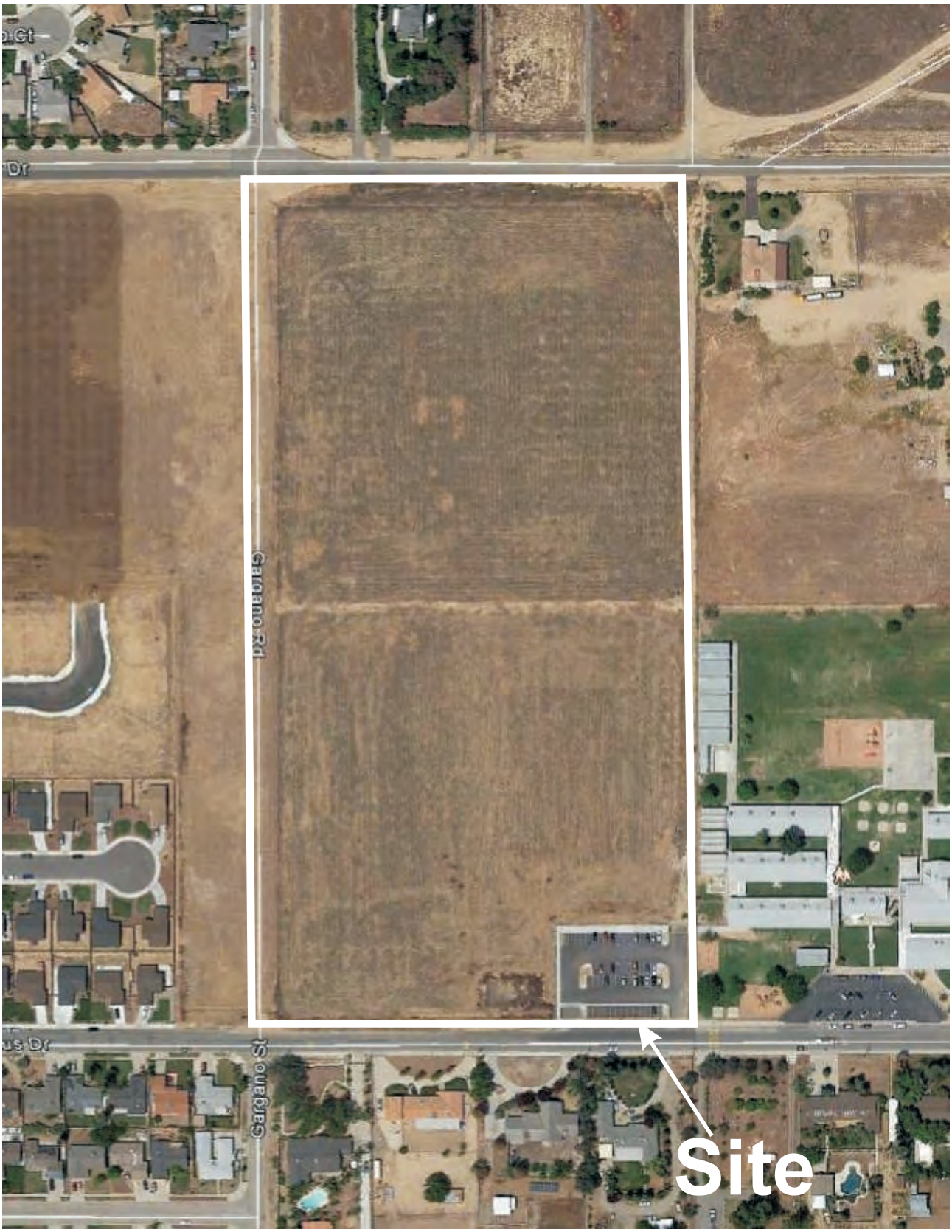
SOILS ENGINEERING, INC. **4400 Yeager Way** **Bakersfield, CA 93313** **(661) 831 - 5100** DATE: 12/18 PROJECT: 16901	**Edison Elementary School District** **NE corner of Eucalyptus Dr. and Gargano St.** **Edison, CA** **2008 Aerial Photograph**	**PLATE**

N

SOILS ENGINEERING, INC. **4400 Yeager Way** **Bakersfield, CA 93313** **(661) 831 - 5100** DATE: 12/18 PROJECT: 16901	**Edison Elementary School District** **NE corner of Eucalyptus Dr. and Gargano St.** **Edison, CA** **2013 Aerial Photograph**	**PLATE**

N

SOILS ENGINEERING, INC. **4400 Yeager Way** **Bakersfield, CA 93313** **(661) 831 - 5100** DATE: 12/18 PROJECT: 16901	**Edison Elementary School District** **NE corner of Eucalyptus Dr. and Gargano St.** **Edison, CA** **2016 Aerial Photograph**	**PLATE**



N

SOILS ENGINEERING, INC. **4400 Yeager Way** **Bakersfield, CA 93313** **(661) 831 - 5100** DATE: 12/18 PROJECT: 16901	**Edison Elementary School District** **NE corner of Eucalyptus Dr. and Gargano St.** **Edison, CA** **2018 Aerial Photograph**	**PLATE**

QA/QC - FORM D-1
Specific Issues

Y/N	Issue	Y/N	Issue
N	Above Ground Storage Tank(s)	N	Underground Storage Tank(s) – Removed
N	Clarifiers	Y	Fill (Earth Berms) - Former
Y	Vent Pipes (irrigation lines) - Former	N	Fuel Islands
N	Drums	N	Other Containers (Oil Tanks, Pipelines)
N	Surface Staining	N	Solid Waste Disposal
Y	Sump (small) - Former	N	Pits
N	Ponds	N	Lagoons
N	Stockpiled Soils	N	Distressed Vegetation
N	Oil or Gas Wells (Abandoned)	N	Monitoring Wells
N	Water Well	N	Dry Wells- Oil Exploration
Y	Possible Underground irrigation lines	N	Chemical Process
N	Waste Treatment	N	Hazardous Waste Discharge
N	Septic Systems	N	Waste Water Discharge
N	Dry Cleaners	N	Repair or Servicing Facilities
N	Photo Processing	N	Manufacturing
N	Distribution Warehouse	N	Asbestos Containing Materials
N	High Radon Levels (See Geocheck Version 2.1)	N	Suspect Lead Containing Paint
N	Lead in Water	N	Others (Stand-pipe) See Footnote
N	Is/was heating fuel provided by on-site storage fuel oil?		
N	On-site use, disposal, treatment, storage, or emission, of significant quantities of hazardous materials or wastes.		
N	Evidence of any on-site release of hazardous materials which could impact the subject site?		
N	Evidence of any off-site release of hazardous materials which could impact the subject site?		

QA/QC - FORM D-2
Historical Research Checklist

Source/Year	2018	2013	2008	2006	2003	1994	1983	1975	1967	1957	1946	MORE
Title Search	X			X								
Aerial Photos	X	X	X		X	X	X	X	X	X	X	
Building Department Permits	X	X	X	X	X	X	X	X	X			
Building Department Plans												
Planning Department Records	X			X								
Fire Insurance Maps	X			X								
Oil and Gas Maps	X			X								
Fire Department Records	X			X								
UST Permits and Registrations	X			X								
Street Directories				X								
Observation (2006,2018)	X			X								
Personal knowledge (2006,2018)	X			X								
Others	X			X								
Personnel Interviews (2006,2018)	X			X								

QA/QC FORM D-3 AERIAL PHOTOGRAPH REVIEW		
Concern	On-Site	Off-Site
Improvements	Former Citrus Orchard, Parking Lot in SEC	School and Residential
USE - Note evidence of:		
Above Ground Storage Tanks	N	N
Fuel Islands	N	N
Drums	N	N
Other Containers	N	N
Surface Staining	N	N
Solid Waste Disposal/Land Fill	N	N
Pits, Ponds, Lagoons	N	N
Stockpiled Soils	Y	N
Distressed Vegetation	N	N
Wells	N	Y
Repair or Servicing Facilities	N	N
Industrial/Manufacturing	N	N
Warehouse	N	N
Gas Station	N	N
Others: Agricultural	Y	Y
Note: Not found where left blank		

QA/QC - FORM D-4
Exception Items

Areas Not Available and Restrictions on Accessibility to Environmental Data		Status of Documents and Agency Reviews	
Areas	**Restrictions**	**List of Documents Requested**	**Status of Availability**
None		None	

No Restrictions

Department of Toxic Substances Control

Jared Blumenfeld
Secretary for
Environmental Protection

Meredith Williams, Ph.D.
Acting Director
5796 Corporate Avenue
Cypress, California 90630

Gavin Newsom
Governor

May 31, 2019

Mr. Todd Noble
MOTT Director
Edison School District
11518 School Street
Bakersfield, California 93307

REVIEW OF DRAFT PRELIMINARY ENVIRONMENTAL ASSESSMENT REPORT, PROPOSED SCHOOL SITE, EDISON SCHOOL DISTRICT, NORTHEAST OF EUCALYPTUS DRIVE AND GARGANO STREET, BAKERSFIELD
(SITE CODE: 104798)

Dear Mr. Todd Noble:

The Department of Toxic Substances Control (DTSC) reviewed the Draft Preliminary Environmental Assessment Report (PEA), prepared by Soils Engineering, Inc., dated December 2018 and received on January 15, 2019. Environmental Oversight Agreement (EOA) was executed on April 9, 2019. The PEA presents investigation results and conclusions based on a health risk screening evaluation for the Proposed School site (Site).

According to the PEA, the Site consists of approximately 18.44-acre vacant lot. The Site is located at the northeast of the intersection of Eucalyptus Drive and Gargano Street. The Site is bordered by Pioneer drive to the north, Orangewood Elementary School to the east, Gargano street to the west, and Eucalyptus drive to the south. The Site was used for agricultural purposes from prior to 1946 to approximately 2006 growing oranges and a few grapefruit. The citrus trees were removed in 2007 and the Site has been idle since then. An asphalt paved parking lot is present in the southeast portion of the Site. Two pole-mounted transformers are also present along the eastern boundary of the Site. Some concrete irrigation piping was present in the southern portion of the Site along with an old concrete box which appears to be from former irrigation system located just off-site adjacent to the northeast corner of the Site. Surrounding land use was observed to be mainly residential neighborhood.

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To evaluate the residual agricultural chemicals, the Site soil was investigated for organochlorine pesticides (OCPs) and metals from agricultural use, polychlorinated biphenyls (PCBs) around transformers.

DTSC has identified discrepancies in the PEA that require clarification or modification. DTSC comments on the Draft PEA Report are enclosed. Please submit a table with responses to the enclosed comments and a revised document by June 15, 2019 for DTSC review and approval. The table should restate each comment and provide the associated response. Revision to the document is not necessary.

DTSC understands that Edison School District (District) made the Report available for public review and comment concurrent with DTSC review pursuant to Option A (Ed. Code § 17213.1, subd. (a)(6)(A)). As such, this letter, the enclosed comments, responses to the comments and the revised document should be made available to the public in the information repository.

Immediately after the public comment period and hearing, the District should provide written notification to DTSC of the start and end dates of the public comment period, date of the public hearing, and all public comments received on the PEA Report.

If you have any questions regarding this project, please contact Mr. Aslam Shareef, Project Manager, at (714) 484-5472 or by email at aslam.shareef@dtsc.ca.gov, or me at (714) 484-5368 or by email at shahir.haddad@dtsc.ca.gov.

Sincerely,

Shahir Haddad, P.E.
Supervising Engineer
Brownfields Restoration and School Evaluation Branch
Site Mitigation and Restoration Program

mv/as/sh

Enclosure

cc: Mr. Bob Becker (via e-mail)
Soils Engineering, Inc.
bob@soilsengineering.com

BERP Schools Team Reading File – Cypress Office

DTSC COMMENTS
DRAFT PRELIMINARY ENVIRONMENTAL ASSESSMENT REPORT
PROPOSED SCHOOL SITE, EDISON SCHOOL DISTRICT,
NORTHEAST OF EUCALYPTUS DRIVE AND GARGANO STREET,
BAKERSFIELD

The following DTSC staff reviewed and provided comments herein to the Draft Preliminary Environmental Assessment (PEA). All questions regarding these comments should be directed to the Project Manager. Original comments are available for review in DTSC project files.

Aslam Shareef
Hazardous Substances Engineer
Brownfields Restoration and School Evaluation Branch

COMMENTS

1. The PEA indicates arsenic level higher than 12 ppm. The PEA should include justification as to why step out sampling is not warranted based on statistical analysis of data and/or using "Arsenic Strategies Determination of Arsenic Remediation Development of Arsenic Cleanup Goals (January 16, 2009).

2. The PEA should include justification as to why additional sampling or excavation is warranted in the area where OCPs were detected above screening level. This can be based on statistical analysis of data within the potential hot spot area near boring E4,C6", and C8".

Mr. Joe Hwong, P.G., C.HG.
Senior Engineering Geologist
Brownfields Restoration and School Evaluation Branch

COMMENTS

1. The Report lists several arsenic background samples from other school sites to compare to onsite data. Because insufficient information about lithology from each site, it is inappropriate to compare them with onsite soil data. In addition, Table 2A has a column of 0 to 6" background concentration ranges, which may be incorrect because a typical depth for background sample should be at least 5' bgs.

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2. Because of incomparable background information, DTSC recommends the background section be removed from the Report. A risk assessment should be performed based on onsite arsenic data. If risk is above management level, consultant should propose Supplemental Site Investigation (SSI) to further assess the arsenic issue.

Dr. Karen W. DiBiasio, Ph.D.
Staff Toxicologist
Human and Ecological Risk Office

(See comments in the attached DTSC memorandum, dated May 23, 2019.)

Department of Toxic Substances Control

Jared Blumenfeld
Secretary for
Environmental Protection

Meredith Williams, Ph.D.
Acting Director
8800 Cal Center Drive
Sacramento, California 95826-3200

Gavin Newsom
Governor

MEMORANDUM

TO: Aslam Shareef, Project Manager
Schools Unit – Cypress Office
Site Mitigation and Restoration Program (SMRP)
5796 Corporate Avenue
Cypress, California 90630

FROM: Karen W. DiBiasio, Ph.D. Karen W. DiBiasio
Staff Toxicologist (Specialist)
Human and Ecological Risk Office (HERO)
Site Mitigation and Restoration Program

DATE: May 23, 2019

SUBJECT: Edison School District – Proposed School at Eucalyptus Dr. and Gargano St. Bakersfield, CA

Preliminary Environmental Assessment Report

Project Code: DTSC104798-11 Activity: 12018

DOCUMENT REVIEWED

Per your April 11, 2019 work request, HERO reviewed the December 2018 "Preliminary Environmental Assessment Report for Proposed School Site, Northeast of Eucalyptus Drive and Gargano St., Bakersfield, CA" (PEA or Report) prepared by Soils Engineering, Inc.(SEI) in Bakersfield, CA for the Edison School District.

BACKGROUND

The Site is approximately 18.44 acres and currently idle with low weed growth. The property consists of two parcels (APN 388-140-03 & -12, northern and southern parcels, respectively) that were used from at least the 1930's to 2006 as orchards for growing oranges and a few grapefruit with no known permanent structures. Most of the citrus trees were removed by 2008, with only some dead trees remaining at the time of the aerial photo. The two parcels are separated by a road that is apparent in the historical aerial photos. Adjacent and nearby properties are primarily residential, with the

Orangewood Elementary School directly east of the Site. The depth to groundwater is approximately 150 ft below ground surface (bgs). The source of potable water for the proposed school is from a local water company. No naturally occurring asbestos (NOA) is within 10 miles of the Site, thus NOA is not a concern for this proposed school Site.

Currently, the southeastern portion of the Site contains a small asphalt paved parking lot for the neighboring elementary school. Off-site water well is near the northeastern corner of the Site. Some concrete irrigation piping was present in the southern portion of the site along with an old concrete box that was apparently from the former irrigation system located just off-site adjacent to the northeast corner of the Site. The map in Plate 3 also shows a concrete box that was apparently from the former irrigation system located in the eastern side of the southern parcel. There is a small sump in the southwest corner of each parcel. Power poles are along the eastern border with two pole mounted electrical transformers that are reportedly in good condition. A small graded area in the southeast, north of the currently paved parking area, was observed to have appeared between the 2008 and 2013 time frame based on aerial photos.

Chemicals of potential concern (COPCs) evaluated include organochlorine pesticides (OCPs), metals and polychlorinated biphenyls (PCBs). Dieldrin is the only chemical of concern (COC) that has been detected in soil at 6 inches (") bgs above risk-based screening levels (SLs) recommended by DTSC. Dieldrin was not detected in any of the 2 to 2.5 ft bgs samples, however other OCPs were detected at concentrations below SLs.

SCOPE OF REVIEW

HERO reviewed the Report for aspects related to risk assessment and protection of human health.

GENERAL COMMENTS

1. <u>PEA Inadequate & Additional Investigation Needed</u>: HERO disagrees with the PEA conclusion that the risk is acceptable for a school site and were shown to be de minimus in the PEA. The predicted cumulative risk in the Report is 2×10^{-6}, however using the maximum detected dieldrin (101 μg/kg from the 2006 data) and the maximum detected concentrations of other COPCs from both the 2006 and 2016 data sets, the cumulative risks are predicted by HERO at 4×10^{-6}. Risks exceed the regulatory point of departure of 1×10^{-6}, however are within the risk management range of 5×10^{-6} intended for school sites. Furthermore, the sampling and analysis was insufficient to adequately characterize potential risks and hazards. All potential source areas need sampling, step-out and step-down sampling are needed from some locations, and soil arsenic up to 14 mg/kg on Site is not supported as background with the data within the Report. HERO recommends a Supplemental Site Investigation (SSI) Work Plan (WP), followed by the SSI then a revised assessment of risks in the SSI Report.

2. Insufficient Sampling and Analysis

   A. Sampling Density for the orchard areas may be insufficient if both parcels were not under the same ownership. HERO recommends presenting the ownership records for the orchards in the SSI WP.

   B. Potential Source Areas that were identified in the Report and not investigated in the sampling and analysis conducted to date include the following.
      - Current and old (unpaved) parking lots
      - Sump in southeast corner of northern parcel
      - Road between north and south parcels
      - Irrigation pipes and associated structures (pesticide mixing may have occurred)
      - Miscellaneous trash and tires in the northwestern and southwestern corners of northern parcel (Plate 2B)
      - Irrigation lines with pipes along the western boundary (Plate 2B)
      - Dirt piles along the western side of the southern parcel (Plate 2B)
      - Sand pile in southeastern corner of southern parcel (Plate 2B)
      - Concrete box in southern parcel (Plate 3)

   C. Step-Out and/or Step-Down Sampling potentially needed where OCPs were detected above screening levels or cumulative risks were above 1×10^{-6}.

      Lateral extents have not been defined to below dieldrin screening levels. HERO defers to SMRP Project Management staff regarding further characterization with **step-out samples** from the following locations sampled during the Phase I ESA and PEA investigations that had dieldrin detected above risk-based screening levels.
      - E4A-3", E4B-3", E4C-3", C6C-3", C8A-3"

      Vertical extents are not fully defined to non-detect for OCPs, but are below risk-based screening levels (SLs). If previous activities of pesticide mixing or spills cannot be ruled out, then HERO recommends SMRP Project Management staff consider **step-down samples** from the following locations sampled during the Phase I ESA and PEA investigations.
      - E3-3" (A, B, C, D), E4B-2 ft, E4C-2 ft, S1-3"
      - C3C-2 ft, C6C-2 ft, C7B-2 ft, C8A-2 ft, C8C-2 ft

3. A Phase 1 Environmental Site Assessment (ESA) was conducted in 2006 by SEI with some of the elements (for example, maps and summary tables with analytical results) included in the PEA. Since the Phase I ESA was not previously reviewed by DTSC and dieldrin was up to 101 µg/kg (about 3 times the screening level of 34 µg/kg), include in the SSI WP and SSI Report the full reporting of the ESA sampling and analysis methods, maps with sample locations, tabulated summary of results, laboratory analytical reports and chain of custody documents. Furthermore, the text refers to calculation of cumulative risks of 2×10^{-6} for the northern parcel and 4×10^{-6} for the southern parcel. None of the documentation for the risk analyses was provided in the

PEA. Furthermore, the 2006 data demonstrated locations with dieldrin in soil above SLs was more widespread than the 2018 PEA data. HERO recommends including all soil analytical data collected for COPCs since they are all non-volatile.

4. Incongruent Analytical Results between the 2006 Phase I ESA and 2018 PEA Sampling. OCPs are not expected to significantly degrade in soil.

   A. North Parcel, E1-3": The Phase I ESA analytical data from the four-sample composite E1-3 inches (A, B, C, D) found dieldrin at 44.9 µg/kg, however subsequent analysis of the four (A, B, C, D) separate parts of the composite each were non-detect with a practical quantitation limit (PQL) of 4 µg/kg. In the PEA investigation, C1 and C2 four sample composites covered the area of E1 from the Phase 1 ESA. Analytical results for dieldrin from C1 and C2 were 14.6 and 11.7 µg/kg, respectively. These incongruent results result in additional uncertainty in the risk estimates that could be reduced with further investigation. HERO defers to SMRP Project Management staff regarding additional sampling from these areas.

   B. South Parcel, E4-3": The Phase I ESA soil analytical data from the four-sample composite E4-3" (A, B, C, D) found dieldrin at 58.3 µg/kg. Subsequent analysis of the four (A, B, C, D) separate parts of the composite found dieldrin at 38.7, 47.3 and 101 µg/kg in A, B, and C, respectively. In the same area, PEA sampling did not find dieldrin above its SL in any of the composites, however found dieldrin above its SL in two of the component samples, C6C-3" and C8A-3" at 42.8 and 39.6 µg/kg, respectively. These incongruent results result in additional uncertainty in the risk estimates that could be reduced with further investigation. HERO defers to SMRP Project Management staff regarding additional sampling from these areas.

5. Radon: The PEA presents radon results from the California data base for the Site zip code and the Federal data base for Kern County, demonstrating that indoor air at several locations in the vicinity of the Site had radon above the 4 pCi/L target action level established by USEPA. HERO recommends revising the PEA WP to describe the measures proposed, consistent with USEPA recommendations, to mitigate potential indoor air migration of radon.

6. Arsenic Background: The Site soil arsenic concentrations ranged from 9.37 to 14 mg/kg, with five of the samples reported as "just above the normal DTSC level of concern (12 mg/kg)".

   A. The Report presents Site background levels for soil arsenic and local background from other school sites in eastern Bakersfield. The Report does not include the complete background data sets with depth discrete results, or maps with the locations of the background samples both relative to each other and relative to the Site. HERO recommends including complete scientifically defensible background soil arsenic data sets in future Reports.

B. HERO defers to DTSC Project Management staff for geological consultation on which of the data sets are from similar geological makeup. HERO notes from the data in Table 7 that the Site arsenic concentration maximum is greater than the background maximum for some of the data sets, suggesting that arsenic is present at the Site above background levels and warrants evaluation as a COPC in the human health risk assessment (HHRA). HERO recommends statistical hypothesis testing between the Site and each regional background arsenic data set. HERO recommends future Reports present the comprehensive scientifically defensible methods of statistical and/or graphical analysis performed on the background data set used to develop the background concentrations for arsenic

C. Another option recommended by HERO is to collect arsenic background data during the SSI from the Site at 5 ft bgs, if DTSC Geological Support Branch concurs that the geological makeup is similar to the Site surface soils.

D. In many places in the Report, phrases such as "DTSC concentration of concern" or "the normal DTSC level of concern" are used to describe background levels for arsenic. These phrases are inaccurate because the levels of concern for HHRA are specified in the SLs in DTSC HHRA Note 3 and the USEPA Regional SLs. For arsenic, the 12 mg/kg level is not the DTSC recommend soil background level for arsenic, but an indication of the upper bound arsenic soil concentration likely to occur in southern California. The Site is in Bakersfield, not southern California. HERO recommends (a) consulting with a DTSC Geologist and (b) specifying in the SSI WP how the site-specific arsenic concentration will be estimated either using one of the nearby schools' background data sets, conducting on-site-characterization sampling, or site-characterization from areas nearby this Site.

7. Calculations of risks and hazards were not transparent and contained some errors in the toxicity criteria. HERO recommends future Reports calculate risks and hazards for each chemical of potential concern (COPC) using the most recent versions of DTSC Human Health Risk Assessment (HHRA) Notes 3 and 4 which can be found using the following hyperlinks.

   HHRA Note 4 (October 26, 2016):
   https://dtsc.ca.gov/AssessingRisk/upload/HERO-HHRA-Note-4.pdf
   HHRA Note 3 (April 2019):
   https://dtsc.ca.gov/AssessingRisk/upload/HHRA-Note-3-2019-04.pdf

8. Other Potential Source Areas

   A. Municipal sludge spreading on agricultural properties with or without a permit was a practice in Kern County. HERO recommends addressing in the SSI WP whether any municipal sludge spreading occurred on the Site.

   B. Since the Site was used for citrus growing, HERO recommends discussing in the SSI WP whether any smudge pots existed on the Site.

SPECIFIC COMMENTS

1. Page 17, Second Bullet, Section 4.2.8, Prior Assessments/Remediation: California Human Health Screening Levels (CHHSLs) are outdated. HERO recommends removing any discussions on comparisons to CHHSLS in the upcoming SSI WP and Report.

2. Page 19, Section 6.1.3.1, Environmental Setting, Factors Related to Soil Pathways, Naturally Occurring Asbestos: The source for the State naturally occurring asbestos maps needs citation within the upcoming SSI WP and Report.

3. Page 23, Section 7.1.3, Sampling Activities and Results, Soil Sampling Activities, Analytical Testing of Soil Samples: Lateral extents of soil contamination are not adequately defined by samples located more than 150 ft apart. HERO disagrees that the lateral extents of dieldrin are defined. As noted above in HERO General Comments, HERO recommends additional sampling and analysis of soil contaminants to adequately predict potential human health risks.

4. Tables: HERO recommends including the source for each SL in future Reports.

5. Maps: The power pole with transformer along the eastern side of the northern parcel is inconsistently located on Plate 2, Plate 2A, Plate 2B and Plate 3. HERO recommends consistency and accuracy in mapped site features in future Reports.

6. Conceptual Site Model (CSM) Diagram (Plate 10): School receptors (students, staff and other workers) are missing from the CSM. Also missing is a key to identify complete versus incomplete exposure pathways. HERO recommends adding these elements to the CSM in future Reports.

CONCLUSION AND RECOMMENDATIONS

HERO reviewed the December 2018 PEA. HERO disagrees with the PEA conclusion that the predicted cumulative risk is 2×10^{-6} because the risk analysis did not include the Phase I ESA data (predicted cumulative risk 4×10^{-6}) and the sampling and analysis was insufficient to adequately characterized potential risks and hazards. All potential source areas need sampling and soil arsenic up to 14 mg/kg on Site is not supported as background with the data within the Report. HERO defers to SMRP Project Management staff regarding additional characterization to reduce the uncertainty in risk estimates with (a) step-out and step-down sampling for dieldrin, and (b) to address incongruent dieldrin results. HERO recommends a Supplemental Site Investigation (SSI) Work Plan (WP), followed by the SSI then a revised assessment of risks in the SSI Report.

If you have additional questions or I can be of further assistance, please contact me at 916-255-6633 or via e-mail at Karen.DiBiasio@dtsc.ca.gov.

Reviewed by: Farah Esfandiari, Ph.D.
Staff Toxicologist (Specialist),
Human and Ecological Risk Office
Cal Center (Sacramento Office)

Concurrence: Brian P. Endlich, Ph.D.
Senior Toxicologist,
Chief, Central California Unit
Human and Ecological Risk Office
Berkeley

Department of Toxic Substances Control

Jared Blumenfeld
Secretary for
Environmental Protection

Meredith Williams, Ph.D.
Acting Director
5796 Corporate Avenue
Cypress, California 90630

Gavin Newsom
Governor

July 10, 2019

Mr. Todd Noble
MOTT Director
Edison School District
11518 School Street
Bakersfield, California 93307

APPROVAL OF PRELIMINARY ENVIRONMENTAL ASSESSMENT REPORT, PROPOSED SCHOOL SITE, EDISON SCHOOL DISTRICT, NORTHEAST OF THE INTERSECTION OF EUCALYPTUS DRIVE AND GARGANO STREET, BAKERSFIELD (SITE CODE: 104798)

Dear Mr. Noble:

The Department of Toxic Substances Control (DTSC) reviewed the Response to Comments (RTC) on Draft Preliminary Environmental Assessment Report (PEA), prepared by Soils Engineering, Inc., dated and received on June 11, 2019 for the Proposed Edison School District site (Site). The RTC was prepared in response to DTSC comments on Draft PEA, forwarded in a letter dated May 31, 2019. The PEA presents investigation results and conclusions based on a health risk screening evaluation for the Site.

In addition, the Edison School District (District) notified DTSC on June 20, 2019, that it has complied with all public review and comment requirements for the PEA pursuant to Option A (Ed. Code § 17213.1, subsec. (a)(6)(A)). The District made the PEA available for public review and comment from May 17, 2019 through June 17, 2019 and a public hearing was held on June 17, 2019. No public comments were received regarding the PEA.

According to the PEA, the Site consists of approximately 18.44-acre vacant lot located at the northeast of the intersection of Eucalyptus Drive and Gargano Street, Bakersfield. The Site is bordered by Pioneer drive to the north, Orangewood Elementary School to the east, Gargano street to the west, and Eucalyptus drive to the south. The Site was

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used for agricultural purposes from prior to 1946 to approximately 2006 growing oranges and a few grapefruit. The citrus trees were removed in 2007 and the Site has been idle since then. An asphalt paved parking lot is present in the southeast portion of the Site. Two pole-mounted transformers are also present along the eastern boundary of the Site. Surrounding land use was observed to be mainly residential neighborhood. During the PEA, the Site was investigated for organochlorine pesticides (OCPs) and metals from agricultural use, polychlorinated biphenyls around transformers.

The PEA indicates that OCPs detections above screening level and arsenic above background. Consequently, DTSC requested additional evaluation of the OCP and arsenic detections. The RTC proposes a Supplemental Site Investigation (SSI) to further define the extent of OCP detections, additional OCP and arsenic sampling within the paved parking lot, and determine if arsenic is within background level.

Therefore, DTSC concurs with the RTC and hereby approves the PEA as amended by the RTC. Furthermore, a SSI Workplan was submitted on June 25, 2019, and DTSC review is underway.

If you have any questions please contact Mr. Aslam Shareef, Project Manager, at (714)484-5472 or by e-mail at Aslam.Shareef@dtsc.ca.gov, or me at (714)484-5368 or by e-mail at Shahir.Haddad@dtsc.ca.gov.

Sincerely,

Shahir Haddad, P.E.
Supervising Engineer
Brownfields Restoration and School Evaluation Branch
Site Mitigation and Restoration Program

mv/as/sh

cc: Mr. Bob Becker (via e-mail)
Soils Engineering, Inc
bob@soilsengineering.com

BERP Schools Team Reading File – Cypress Office

Department of Toxic Substances Control

Jared Blumenfeld
Secretary for
Environmental Protection

Meredith Williams, Ph.D.
Acting Director
5796 Corporate Avenue
Cypress, California 90630

Gavin Newsom
Governor

July 23, 2019

Mr. Todd Noble
MOTT Director
Edison School District
11518 School Street
Bakersfield, California 93307

APPROVAL OF SUPPLEMENTAL SITE INVESTIGATION WORKPLAN, PROPOSED SCHOOL SITE, EDISON SCHOOL DISTRICT, NORTHEAST OF THE INTERSECTION OF EUCALYPTUS DRIVE AND GARGANO STREET, BAKERSFIELD
(SITE CODE: 104798)

Dear Mr. Noble:

The Department of Toxic Substances Control (DTSC) reviewed the Supplemental Site Investigation Workplan (Workplan), prepared by Soils Engineering, Inc., dated June 2019, and received on June 25, 2019 for the Proposed Edison School District site (Site). The WP includes Site background information and proposed investigation activities.

According to the Workplan, the Site consists of approximately 18.44-acre vacant lot located at the northeast of the intersection of Eucalyptus Drive and Gargano Street, Bakersfield. The Site is bordered by Pioneer drive to the north, Orangewood Elementary School to the east, Gargano street to the west, and Eucalyptus drive to the south. The Site was used for agricultural purposes from prior to 1946 to approximately 2006 growing oranges and a few grapefruit. The citrus trees were removed in 2007 and the Site has been idle since then. An asphalt paved parking lot is present in the southeast portion of the Site. Two pole-mounted transformers are also present along the eastern boundary of the Site. Surrounding land use was observed to be mainly residential neighborhood. To assess the potential impacts to the Site, a Preliminary Environmental Assessment (PEA) was conducted to investigate organochlorine pesticides (OCPs) and metals from agricultural use and polychlorinated biphenyls (PCBs) around transformers. The PEA Report indicated elevated levels of OCPs in shallow soils beneath the Site. Consequently, DTSC requested additional evaluation of

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the OCP and arsenic detections. A Supplemental Site Investigation is proposed to delineate the extent of impacted soil.

DTSC hereby approves the Workplan. If Site conditions differ from those presented in the approved Workplan, additional work may be necessary. Please provide a notice approved in form by DTSC, to residents in the immediate area prior to the commencement of field work and notify DTSC a minimum of 48 hours in advance of field work or schedule changes.

If you have any questions please contact Mr. Aslam Shareef, Project Manager, at (714)484-5472 or by e-mail at Aslam.Shareef@dtsc.ca.gov, or me at (714)484-5368 or by e-mail at Shahir.Haddad@dtsc.ca.gov.

Sincerely,

Shahir Haddad, P.E.
Supervising Engineer
Brownfields Restoration and School Evaluation Branch
Site Mitigation and Restoration Program

mv/as/sh

cc: Mr. Bob Becker (via e-mail)
Soils Engineering, Inc
bob@soilsengineering.com

Schools Evaluation and Cleanup Team Reading File – Cypress Office

Department of Toxic Substances Control

Jared Blumenfeld
Secretary for
Environmental Protection

Meredith Williams, Ph.D.
Acting Director
5796 Corporate Avenue
Cypress, California 90630

Gavin Newsom
Governor

November 13, 2019

Mr. Todd Noble
MOTT Director
Edison School District
11518 School Street
Bakersfield, California 93307

APPROVAL OF SUPPLEMENTAL SITE INVESTIGATION REPORT, PROPOSED EDISON SCHOOL DISTRICT SITE, NORTHEAST OF THE INTERSECTION OF EUCALYPTUS DRIVE AND GARGANO STREET, BAKERSFIELD
(SITE CODE: 104798)

Dear Mr. Noble:

The Department of Toxic Substances Control (DTSC) reviewed the Supplemental Site Investigation report (SSI), prepared by Soils Engineering, Inc., dated September 2019, and received on September 26, 2019. The SSI presents investigation results and conclusions based on a health risk screening evaluation for the Proposed Edison School District site (Site).

According to SSI, the Site, depicted on the figure enclosed herein, consists of approximately 18.44-acre vacant lot located at the northeast of the intersection of Eucalyptus Drive and Gargano Street, Bakersfield. The Site is bordered by Pioneer drive to the north, Orangewood Elementary School to the east, Gargano Street to the west, and Eucalyptus drive to the south. The Site was used for agricultural purposes from prior to 1946 to approximately 2006 growing oranges and a few grapefruit. The citrus trees were removed in 2007 and the Site has been idle since then. An asphalt paved parking lot is present in the southeast portion of the Site. Two pole-mounted transformers are also present along the eastern boundary of the Site. Surrounding land use was observed to be mainly residential neighborhood. To assess the potential impacts to the Site, a Preliminary Environmental Assessment (PEA) was conducted to investigate organochlorine pesticides (OCPs) and metals from agricultural use and polychlorinated biphenyls (PCBs) around transformers. The PEA Report indicated elevated levels of OCPs in shallow soils beneath the Site. Consequently, DTSC

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requested additional evaluation of the OCPs, metals and arsenic detections. The SSI includes the results from additional sampling event to evaluate the extent of OCPs, metals and arsenic impact that may pose a threat to human health and the environment.

The SSI concludes that cancer risk due to dieldrin in Site soil is within the risk management range and unlikely to result in adverse health effects and recommends no further action for the Site. DTSC concurs with these conclusions and recommendations and hereby approves the SSI.

If you have any questions please contact Mr. Aslam Shareef, Project Manager, at (714) 484-5472 or by email at Aslam.Shareef@dtsc.ca.gov, or me at (714)484-5368 or by email at Shahir.Haddad@dtsc.ca.gov.

Sincerely,

Shahir Haddad, P.E.
Supervising Engineer
Brownfields Restoration and School Evaluation Branch
Site Mitigation and Restoration Program

mv/as/sh

Enclosure

cc: (via e-mail)

Mr. Bob Becker
bob@soilsengineering.com

Schools Evaluation and Cleanup Team Reading File – Cypress Office

⬠ Soil Sample Location for OCPs & Arsenic (0 to 6" and 2' to 2.5')

✚ Soil Sample Location for PCBs (0 to 6" and 2' to 2.5')

(-3"/-2') = Dieldrin Concentration in ug/kg in discrete soil samples

[#] = Dieldrin Concentration in ug/kg in 0 to 6" composite soil samples

Soil Sampling Map
Edison Elementary School District
NE corner of Eucalyptus Dr. and Gargano St.
Edison, CA

0 150' 300'
Approx. Scale

PLATE 2A